

Performance analysis of mixed food and garden waste collection schemes



A project to explore the effectiveness of mixed food and garden waste kerbside collection schemes in diverting food waste for recycling.

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Summary of Findings

This report was commissioned by WRAP (Waste & Resources Action Programme) to look at the effectiveness of recycling food waste via mixed food and garden waste collections. Six authorities with established organic waste collection services were selected for monitoring. For the purpose of this report they are referred to as Authorities A, B, C, D, E and F. The residual and organic waste collection services in these authorities covered both weekly and fortnightly collection frequencies. In all the authorities residents were provided with caddies to encourage the separation of food waste in the kitchen.

The project consisted of three main components:

- Samples of residual and organic waste were taken for compositional analysis from all six authorities to determine food waste concentrations and effectiveness in diverting food waste for recycling.
- Set out of food & garden waste containers in the six authorities was recorded over three consecutive collections; this allowed participation rates to be calculated.
- Face to face interviews with a sample of residents were conducted in two authorities to give an insight into behaviours, attitudes and barriers towards food waste recycling.

The key findings are highlighted below.

Capture rate and quantities of food waste diverted

The analysis compares the amount and types of food and garden waste diverted by fortnightly and weekly collection schemes and looks at the impact on performance of both weekly and fortnightly collections of residual waste.

Comparison of Weekly and Fortnightly Recycling Collection Schemes

- For food & garden waste collected on a weekly basis an average of 3.86kg/hh/wk of waste was presented for collection. This includes all materials presented in the organic waste bin including, cardboard, newspaper, caddy liners, plus any contamination. Where food & garden waste was collected on a fortnightly basis an average of 5.86kg/hh/wk of waste was presented.
- The amount of food in the organic waste bin was much lower where bins were collected fortnightly (0.55kg/hh/wk) as opposed to weekly (1kg/hh/wk).
- Food waste made up around 25% (by weight) of the waste in the organic waste bin where collections of mixed food and garden waste were weekly; where collections were fortnightly food waste was on average 9.3%.
- A high proportion of food waste captured for recycling was potentially “home compostable”; for fortnightly collections 73% of food waste was considered suitable for composting at home.
- The food waste in organic waste bins collected weekly had concentrations of unused or unopened food waste at 25% (by weight). In comparison, food waste in fortnightly collected food & garden waste had much greater concentrations of unused or unopened food waste at 52%.
- Residents with weekly collections of food & garden waste captured more food waste (31.5%) than those on fortnightly collections (21.8%).

| | Weekly mixed food & garden recycling collections | Fortnightly mixed food & garden recycling collections |
|--|--|---|
| Total yield of food <i>and</i> garden waste in the recycling collections* | 3.86kg/hh/wk | 5.86kg/hh/wk |
| Yield of food waste in the recycling collection | 1kg/hh/wk | 0.55kg/hh/wk |
| Capture rate for food waste | 31.5% | 21.8% |
| Percentage of food waste in the recycling collection | 26.6% | 9.3% |
| Percentage of food waste in the recycling collection that was home compostable | 62% | 73% |

| | | |
|---|-------|-------|
| Percentage of food in the recycling collection that was purchased whole unopened | 11.5% | 37.0% |
| Percentage of food in the recycling collection that was partly consumed | 13.5% | 15.3% |
| Percentage of food in the recycling collection that was post preparation / consumption | 20.3% | 9.5% |
| Percentage of food in the recycling collection that was preparation by products, non edible element | 54.6% | 38.1% |

Across all the six authorities average households generated 2.76kg/hh/wk of food waste. This ranged from 2.06kg/hh/wk in Authority B to 3.55kg/hh/wk in Authority E. Capture rates for garden waste were extremely high in all areas at between 91% and 99%, capture rates for food waste were lower and more variable at between 8.7% and 54.5%. On average across the six authorities around **41kg/hh/yr** of food waste was diverted for recycling, the range being between 10.9kg/hh/yr and 85.5kg/hh/yr.

Capture rates for certain types of food wastes appeared to vary depending on the frequency of collection of residual waste and/or the organic waste. It is suggested that perhaps 'messier' food waste such as bones, meat & plate scrapings will be disposed of more readily via a weekly collection. Whereas residents appear more likely to recycle waste such as fruit and vegetable peelings even if the collection frequency is fortnightly.

Comparison of Weekly and Fortnightly Residual Waste Collections

- Residents with fortnightly collections of residual waste generated less total food waste at 2.38kg/hh/wk compared to where collections of residual waste were weekly (3.50kg/hh/wk).
- The amount of food remaining in the residual waste was lower where containers were collected fortnightly (1.57kg/hh/wk) as opposed to weekly (2.99kg/hh/wk).
- Households with fortnightly residual waste collections produced significantly less residual waste
- Weekly collected residual waste had concentrations of food waste at 31.4% (by weight) compared with 27.1% where it was collected fortnightly.
- In general households on a weekly residual waste collection schedule captured far less food waste for recycling (14.7%) than those on a fortnightly residual waste service (33.7%).

| | Weekly Residual Waste Collections | Fortnightly Residual Waste Collections |
|--|-----------------------------------|--|
| Total <i>food</i> waste in residual waste <i>and</i> recycling collections | 3.50kg/hh/wk | 2.38kg/hh/wk |
| Total food in residual waste only | 2.99kg/hh/wk | 1.57kg/hh/wk |
| Food waste capture rate | 14.7% | 33.7% |
| Set out rate of residual waste | 85% | 79% |
| Total residual waste | 9.5kg/hh/wk | 5.8kg/hh/wk |

Set out and participation

Set out of organic waste containers was monitored in all six authorities and from this data participation rates for the mixed food and garden waste recycling service were determined.

Key findings

- For weekly collections the average set out rate was 51%. Where food & garden waste was collected fortnightly the average set out rate was higher at 58%.
- Five of the six authorities achieved participation rates of over 65% for the food and garden waste service. This indicates that people are taking part in the service but not how much food waste is being presented for collection. In some cases residents may not be presenting any food waste in their containers.
- Authority E had the lowest participation rate; this is the only authority to operate a weekly collection of both food & garden waste and residual waste.

- Overall, fortnightly collections of food and garden waste achieved higher participation rates when compared with weekly collections. Weekly collections showed average participation rates around 58% whereas the average participation rate for fortnightly collections was 62%.
- Participation rates were around 20% higher than set out rates which suggests that residents are not setting out containers on every collection opportunity. The variation between set out and participation can help inform whether the amount collected (kg/household) is due to high participation with low capture (per hh) or low participation but high capture.

Feedback from residents

A sample of residents in authorities B and E were interviewed. Authority B provides a fortnightly collection of food and garden waste, while Authority E operates a weekly collection of mixed food, garden and cardboard.

Key findings

- 13% of Authority B respondents and 15% of Authority E respondents are classified as CFWRs (Committed Food Waste Reducers), a similar percentage to the national average of 17%.
- In Authority E almost one third of respondents stated they did not use the mixed food and garden waste service to dispose of food. Just over one third stated they used it every collection to dispose of food. In Authority B 5% stated that they did not dispose of food waste via this service, with 80% stating they disposed of food in the food & garden waste collection at every opportunity.
- For Authority E, infrastructural reasons were the most common barriers to using the service; residents were either unaware of their recycling service or had seen limited information on it.
- For Authority B behavioural reasons were the most common barrier; most significantly residents believed they didn't have enough food to recycle or they composted it at home.
- Authority E (weekly collection service) respondents were more likely to place food items in the refuse bin
- Claimed participation at each opportunity was generally high although the yield results suggest that low amounts of food waste were being captured.
- The majority of respondents in both authorities stated that they were very satisfied with the service provided. In each authority less than 1% stated that they were 'very dissatisfied' with the service.

Comparison with food only collections

WRAP's separate food waste collection trials programme¹ found that more food waste was diverted at the kerbside by households provided with a fortnightly residual waste collection service – average 1.5kg/hh/wk compared to 1.3kg/hh/wk for households with weekly residual waste collections, or between average 68kg/hh/yr (with weekly residual collections) and 78kg/hh/yr (with fortnightly residual collections) of food waste. A similar observation can be made from the data for the mixed food and garden collections in the Tables below.

| | Weekly Residual Waste | Fortnightly Residual Waste |
|---|-----------------------|----------------------------|
| Separate weekly food waste collections – average yield of food recycled | 68kg/hh/yr | 78kg/hh/yr |
| Mixed food and garden collections – average yield of food recycled | 31 kg/hh/yr | 45 kg/hh/yr |

¹http://www.wrap.org.uk/downloads/Evaluation_of_the_WRAP_FW_Collection_Trials_Update_June_2009.b63e62f2.7271.pdf

| | Lowest in Range | Highest in Range | Average |
|---|--|---|---------------|
| Food waste diverted when food and garden waste collections are combined | 0.2 kg/hh/wk <i>With fortnightly mixed food and garden waste and fortnightly residual waste</i> | 1.6 kg/hh/wk <i>With weekly mixed food and garden waste and fortnightly residual waste</i> | 0.79 kg/hh/wk |
| Food waste diverted with separate food only collections | 1.04 kg/hh/wk <i>With weekly separate food waste and weekly residual waste</i> | 2.1kg/hh/wk <i>With weekly separate food and fortnightly residual</i> | 1.8 kg/hh/wk |

Capture rates for food waste for mixed schemes show a wider range of results than separate food only collection schemes. The average capture rate for food only schemes is twice that for mixed schemes.

Deprivation levels were identified in the WRAP food waste collection trials as accounting for some of the variation in performance of different schemes. Whilst deprivation levels as such were not considered in this study, data was collected for different ACORN categories. This indicated that ACORN 2 categories (urban prosperity), and 3 (comfortably off) tended to divert more food waste but ACORN 1 (Wealthy Achievers) recorded higher participation rates.

Key conclusions

Overall residual waste per household was significantly lower in those authorities where residual waste collections were fortnightly. Where residual waste was collected fortnightly it also contained less food waste than in weekly collections.

This study indicates that if food waste is collected with garden waste then *fortnightly* collections of *residual* waste and *weekly* collections of food & garden waste facilitate more diversion of food waste at the kerbside for recycling than the other service configurations reviewed.

Although participation rates for fortnightly food & garden waste services were higher, higher levels of food waste (as measured in kg/household) were diverted where collections were provided weekly. This suggests that those residents that are taking part in weekly services are diverting more of their food waste.

A higher proportion of targeted “messier” food types were captured in the weekly combined food and garden waste collections. In addition, food & garden waste, collected weekly, tended to contain a lower proportion of unused or unopened food.

Despite high levels of claimed use of the food waste element of the combined service actual captures tended to be low, particularly when food was collected fortnightly.

When compared to weekly food waste only collections combined food and garden waste schemes achieve a much lower yield per household and hence lower level of diversion. The implications of this are that combined organic waste collections are less effective in diverting food waste for recycling compared to food only collections. As a result it will be much more difficult to achieve high diversion / recycling targets with combined food and garden collections systems. Furthermore the food waste remaining in the residual bin will need to be managed at increasingly higher disposal costs.

Acknowledgements

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1.0 Background

1.1 Introduction

WRAP has carried out trials of separate food waste collections with a view to recommending good practice. As a result WRAP now has considerable data on the performance of separate food waste collection schemes, including participation, set out and capture rates, and yields of food waste collected per household.

In May 2007 WRAP published a study undertaken by Eunomia that assessed different approaches to the collection and management of household biowaste². This included waste flow modelling that estimated diversion rates for food waste collection schemes – both food only and combined food and garden collections. There was limited data on the performance of combined food and garden waste collection schemes, with best estimates from available data suggesting 50kg per household per year of food waste.

More recent work also indicates that combined food and garden waste collections do not perform as well as separate food waste collection schemes in diverting food waste from disposal³. As a result WRAP commissioned this project to gather more evidence on the performance of combined food and garden waste collection schemes in order to inform its advice to local authorities considering which type of food waste scheme to introduce, and how to maximise the performance of combined schemes for those authorities wishing to pursue this approach to collecting food waste.

1.2 Objectives of this work

To gather evidence on the performance of combined food and garden waste schemes in England including typical:

- quantities of food waste and garden waste collected per household;
- set-out and participation rates;
- levels of satisfaction and the nature of issues and complaints that might be expected from residents;
- capture rates for food waste; and
- content of the diverted food waste.

1.3 Local authorities

After consultation with WRAP six collection authorities were identified for the waste analysis and participation monitoring elements of the project and two were also included in the survey work. To allow the results to focus on collection type and frequency rather than the participating authorities themselves the authorities have not been cited by name in this report. Instead each authority name has been replaced with a letter that is used throughout this report. Below is a summary of each authority.

- **Authority A** – is in the West Midlands region. It is centred on a market town with a number of light industries and the majority of the population is White British (98%).
- **Authority B** – Also in the West Midlands region, the majority of the population of this authority (98%) is White British and there is a lower percentage of non-white ethnic groups.
- **Authority C** - Authority C is a local government district in Kent. The majority of the population (96%) is White British. Authority C has a lower percentage of non British groups compared to the South East and England as a whole.
- **Authority D** - Authority D is an outer London borough. The majority of the population of Authority D is White British (56%), but this is a much lower percentage when compared to the national average. It has a higher percentage of non-white ethnic groups compared to the national average.

² http://www.wrap.org.uk/local_authorities/research_guidance/food_waste/index.html

³ BrookLyndhurst (2009) *Enhancing Participation in Kitchen Waste Collections*. Defra Waste Research and Evidence Programme (WR0209)

- **Authority E** – Authority E is also a London borough. It has a mixed ethnic population with just over a quarter (30%) White British, 28% of an Asian origin and 20% either Black or Black British.
- **Authority F** – Authority F is another outer London borough and the ethnic background is also very mixed with half (50%) being White British and 30% being of Asian origin.

1.4 Collection scheme overview

Table 1.1 (on the following page) details the collection schemes provided in each of the participating authorities for each waste stream collected at kerbside.

1.5 Monitoring and analysis conducted

Table 1.2 below summarises the monitoring and analysis undertaken within the selected authorities.

Table 1.2: Monitoring data collected during project.

| Type of data collected | Areas where data was collected | Summary of methodology |
|--------------------------------|--|---|
| Set out and participation rate | Authority A Authority B Authority C Authority D Authority E Authority F | Set out of food and garden waste containers was recorded for each property in the sample areas over three successive weeks. A household that set out a container for collection at least once during the three weeks of monitoring was considered as participating. Participation rates were calculated by collection round and ACORN category. |
| Householder views | Authority B & Authority E | Doorstep questionnaire, with 609-617 responses obtained per area surveyed. Attitudinal survey investigating a range of issues relating to the service and food & garden waste in the household. The questionnaire was standardised apart from an additional ethnicity question for Authority E. |
| Waste compositional analysis | Authority A Authority B Authority C Authority D Authority E Authority F | Analysis of residual waste and food and garden waste for a target 150 households per authority. This comprised of 50 households from each of three different Acorn categories. Residual and food and garden waste streams were weighed and analysed, with food waste subjected to detailed sort and categorisation. |

Table 1.1: Waste collection and recycling systems for all six authorities

| Local Authority | Waste Collection Services | | | | | |
|-----------------|---------------------------|-------------------------------|---------------|---------------|----------------|------------------------|
| | Food & Garden waste | | Dry Recycling | | Residual Waste | |
| | Frequency | Containment | Frequency | Containment | Frequency | Containment |
| Authority A | Fortnightly | 240LBrown wheeled bin | Weekly | Green box | Fortnightly | 240L Black bin |
| Authority B | Fortnightly | 240L Brown wheeled bin | Fortnightly | 140L Grey bin | Fortnightly | 180L Grey bin/blue lid |
| Authority C | Fortnightly | 240L Green lidded wheeled bin | Fortnightly | Green box | Fortnightly | 240L Black bin |
| Authority D | Fortnightly | 240L Brown wheeled bin | Weekly | Black box | Weekly | 240L Black bin |
| Authority E | Weekly | 240L Green wheeled bin | Weekly | Green Box | Weekly | 240L Grey bin |
| Authority F | Weekly | 240L Brown wheeled bin | Fortnightly | 180L Blue bin | Fortnightly | 240L Green/Grey bin |

*(All authorities provide kitchen caddies for separating food waste in the home)

2.0 Waste compositional analysis

2.1 Introduction

Between September and November 2008, each of the six authorities was visited separately with a view to collecting residual waste and organic waste (food and garden) samples for compositional analysis. Around 50 households from each of three ACORN categories were selected within each Council area. A brief description of the demographics linked with each ACORN category is shown in Appendix A. Both waste streams were collected from each household in the sample areas and sorted separately in order to help to identify the proportion of households participating in each collection as well as giving data ranges for food waste amounts, composition and capture within each ACORN sample.

Across the six authorities it was possible to sample households from all five ACORN categories (see Table 2.1.1); aggregation of this data will show any major differences in the waste disposal behaviour of different demographic groups*. In addition data from the six authorities can be aggregated for those with weekly / fortnightly residual waste collections; those with weekly / fortnightly food and garden waste collections and for those authorities that either do or do not allow cardboard in their food and garden waste containers (see Table 2.1.2)**.

Table 2.1.1: ACORN categories surveyed within each local authority

| Local Authority | Acorn 1 | Acorn 2 | Acorn 3 | Acorn 4 | Acorn 5 |
|-----------------|---------|---------|---------|---------|---------|
| Authority A | ✓ | | ✓ | | ✓ |
| Authority B | ✓ | | ✓ | | ✓ |
| Authority C | ✓ | | ✓ | ✓ | |
| Authority D | | ✓ | | ✓ | ✓ |
| Authority E | | ✓ | ✓ | | ✓ |
| Authority F | ✓ | ✓ | ✓ | | |

Table 2.1.2: Differences in waste collection services available in each authority area

| Local Authority | Frequency of Food & Garden Waste Collections | Frequency of Residual Waste Collections | Cardboard Permitted in Food & Garden Waste Containers |
|-----------------|--|---|---|
| Authority A | Fortnightly | Fortnightly | No |
| Authority B | Fortnightly | Fortnightly | Yes |
| Authority C | Fortnightly | Fortnightly | Yes |
| Authority D | Fortnightly | Weekly | No |
| Authority E | Weekly | Weekly | Yes |
| Authority F | Weekly | Fortnightly | No |

* It should be noted that aggregated ACORN data is taken from authorities with different collection frequencies, each of which may or may not permit cardboard.

** It should be noted that aggregated collection frequency data is taken from variable ACORN samples, each of which may or may not permit cardboard.

2.2 Set out rates and waste generation levels

Table 2.2.1 highlights the set out rates for each waste stream; set outs were recorded at the time the waste was collected for compositional analysis. Around 50 households were surveyed from three different ACORN categories in each Authority (150 in total) with the set out relating to the proportion of these households actively placing out each container regardless of whether it contains food or not. The final two columns show the kilograms per household per week of waste collected for the total sample of around 150 households, not just those setting out containers for the food and garden waste collection service. Firstly the average amount of weekly residual and food & garden waste is shown; with the final column representing the amount of food waste disposed of in each waste stream.

Across the six authorities set out rates ranged between 68% and 88.7% for residual waste and 38.7% to 66.7% for food and garden waste. Two authorities operated a weekly collection of residual waste (Authority E & Authority D); here an average set out rate of 82.95% was observed with on average 9.51kg/hh/wk of residual waste being presented. Households where residual waste was collected on a fortnightly rotation had a slightly lower set out rate of 79.1% on average but significantly lower quantities – average of 5.82kg/hh/wk.

In relation to frequency of kerbside food and garden waste collections this trend waste reversed. Two authorities had a weekly collection of food & garden waste (Authority E & Authority F); here an average set out rate of 51.4% was observed with on average 3.9kg/hh/wk of food & garden waste being presented. Households where food & garden waste was collected on a fortnightly rotation showed a higher set out rate of 58.0% and significantly higher volumes with on average 5.86kg/hh/wk.

Table 2.2.1: Kerbside set out rates and collected waste amounts – by authority

| Local Authority | Waste Collection | Set Out Rate (%) | Kg/hh/wk of Waste | Kg/hh/wk of Food Waste |
|-----------------|------------------------|------------------|-------------------|------------------------|
| Authority A | Food & Garden | 59.54% | 5.78 | 0.20 |
| | Residual | 88.51% | 6.85 | 2.10 |
| Authority B | Food & Garden | 74.57% | 10.29 | 0.96 |
| | Residual | 68.00% | 4.26 | 1.10 |
| Authority C | Food & Garden | 66.67% | 5.06 | 0.42 |
| | Residual | 88.19% | 7.20 | 1.75 |
| Authority D | Food & Garden | 38.67% | 2.28 | 0.60 |
| | Residual (weekly) | 80.00% | 9.62 | 2.87 |
| Authority E | Food & Garden (weekly) | 40.27% | 2.06 | 0.44 |
| | Residual (weekly) | 85.91% | 9.41 | 3.11 |
| Authority F | Food & Garden (weekly) | 62.67% | 5.77 | 1.61 |
| | Residual | 88.67% | 4.98 | 1.35 |
| Average | Food & Garden | 55.99% | 5.19 | 0.71 |
| | Residual | 83.58% | 7.05 | 2.05 |

Figure 2.2.1: Total kerbside waste - residual and food & garden waste (kg/hh/wk).

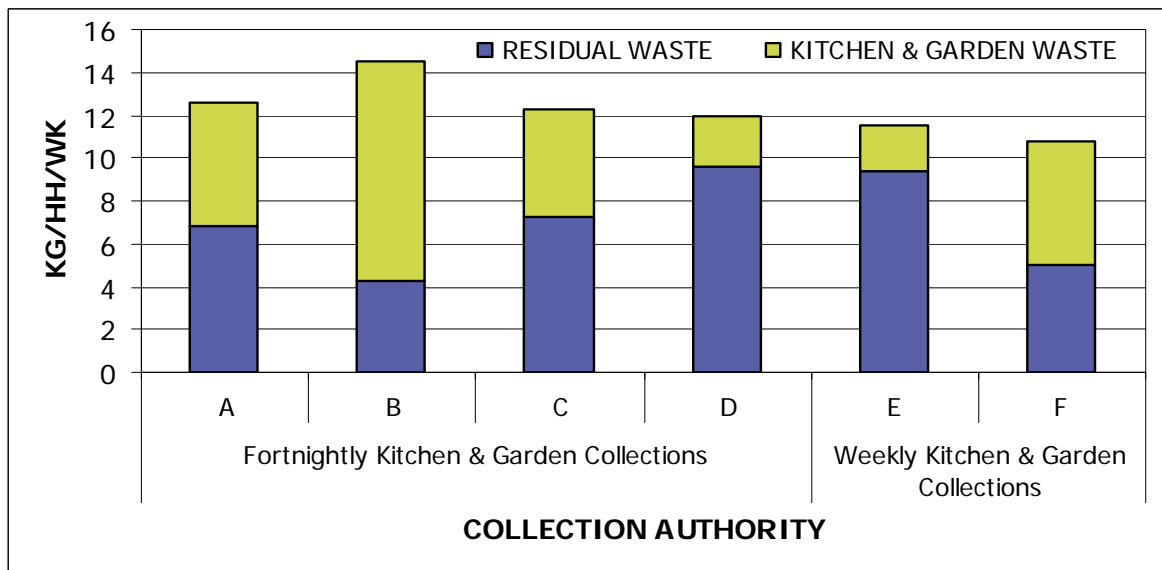


Figure 2.2.1 shows the total waste collected from the residual and food & garden waste containers for each authority. Authority B disposed of the least residual waste but the most overall waste. This is largely due to large quantities of garden waste present in the food & garden containers.

As well as showing the greatest total amounts of residual waste; the two authorities with weekly residual waste collections (D & E) disposed of the most food waste at the kerbside at 3.47kg/hh/wk and 3.55kg/hh/wk respectively. This compares with between 2.07kg/hh/wk and 2.96kg/hh/wk of food waste where residual waste is collected on a fortnightly basis. Figure 2.2.2 shows the residual food waste and the food waste in the food & garden containers.

Figure 2.2.2: Total kerbside waste - residual waste and food & garden food only (kg/hh/wk).

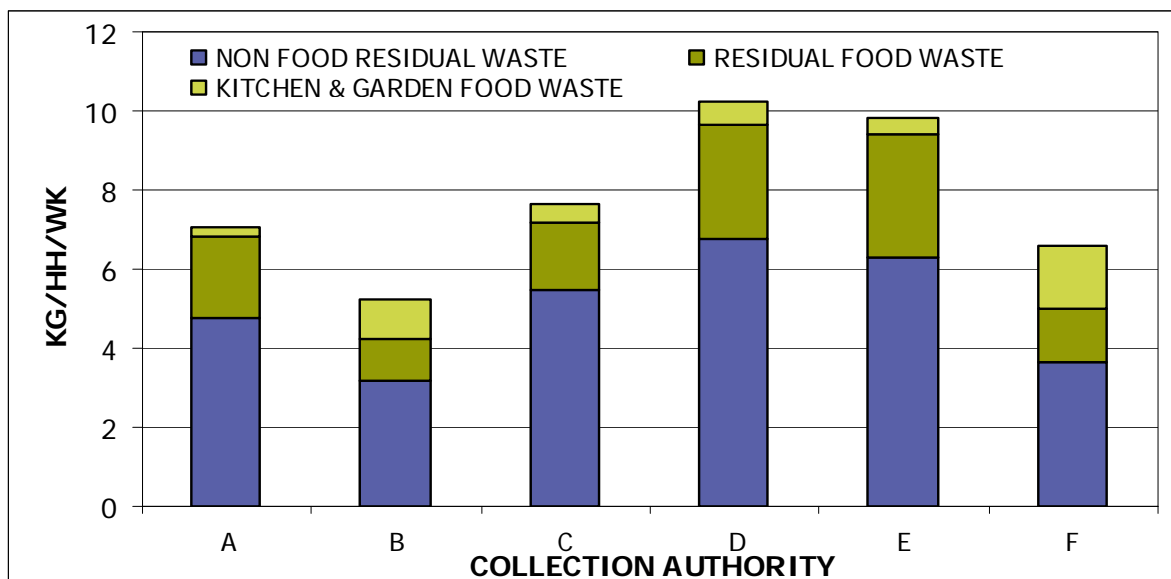
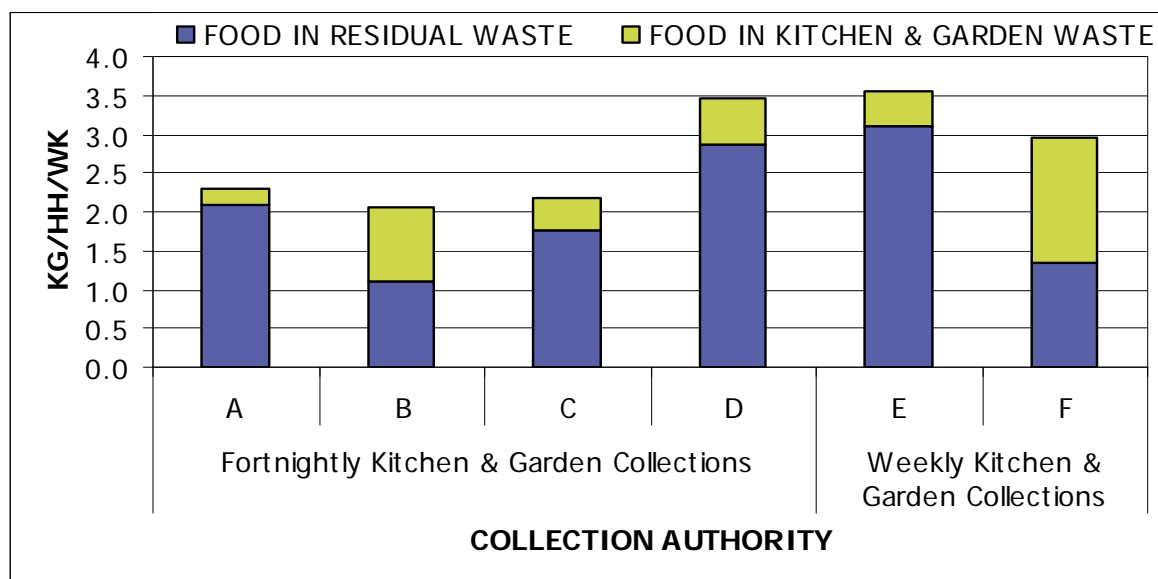


Figure 2.2.3 shows the higher amounts of food waste where residual waste is collected on a weekly basis (D&E). This is particularly marked for the residual waste stream where an average of 2.99kg/hh/wk of food waste was present within weekly collected containers compared with 1.57kg/hh/wk from fortnightly collections.

Figure 2.2.3: Total kerbside food waste within residual and food & garden waste (kg/hh/wk).



In summary the total amount of food and garden waste collected from authorities with a fortnightly collection of these materials was higher (5.86kg/hh/wk) than where it was collected weekly (3.86kg/hh/wk). In terms of its food content, however, the reverse was observed. Households in two authorities had access to a weekly collection of food & garden waste (Authority E & Authority F); these households placed out around 1kg/hh/wk of food waste for recycling. This compares with just 0.55kg/hh/wk in those authorities where food & garden waste is collected every other week.

Key points:

More residual waste was collected at the kerbside where weekly as opposed to fortnightly collections were in place.

- Almost twice as much food waste was thrown away in the residual waste stream where these collections were weekly.
- Overall more food and garden waste (combined) was set out where these collections were fortnightly, however in terms of the food content almost double the amount of food waste was present where containers were collected on a weekly basis.
- Lower total food waste for disposal appears to be related to alternate weekly collections of residual waste and food and garden waste as seen in Authority A, Authority B and Authority C.

2.3 Residual waste composition by collection frequency

Residual waste bins collected from the sample areas with a weekly collection tended to be less full (61%) than those where residual collections took place fortnightly (74%). As well as collecting more waste, it was observed that where residual waste was collected weekly then its associated content of food waste was greater. Just under a third (31% by weight) of residual waste was classed as food waste from samples where it was collected weekly. This compared with food waste content of 27% (by weight) from samples where residual waste was collected fortnightly. There was seen to be almost twice as much food waste disposed of in residual bins that were collected weekly (2.99kg/hh/wk) as opposed to those collected fortnightly (1.58kg/hh/wk).

Overall, 37% of weekly collected residual waste and around 33% of fortnightly collected residual waste would be acceptable for collection via the separate food & garden waste collection scheme.

Table 2.3.1: Summary data for households with weekly and fortnightly residual collections

| Residual waste figures | Weekly residual collections | Fortnightly residual collections |
|--|-----------------------------|----------------------------------|
| Set out rate | 84.9% | 79.1% |
| Kg/hh/wk | 9.5 | 5.8 |
| % Recyclable as food waste | 31.4% | 27.0% |
| % Recyclable as garden waste | 1.1% | 1.4% |
| % Acceptable for food & garden recycling (includes composite organics & cardboard if applicable) | 37.0% | 33.2% |

Figure 2.3.1: Key data - residual waste

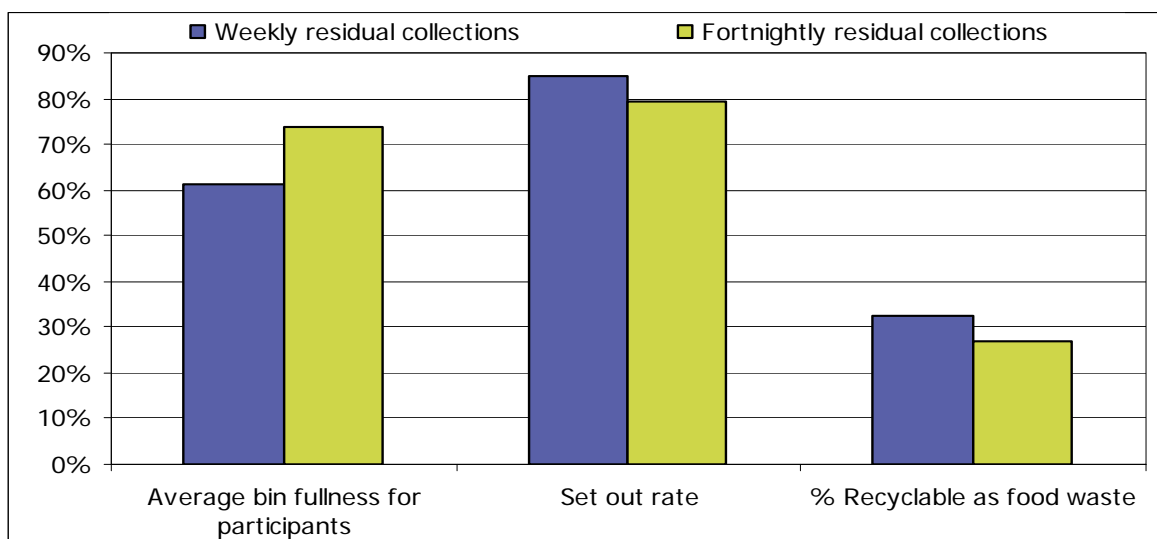


Table 2.3.2 and Figures 2.3.2 and 2.3.3 show the content of residual and food & garden waste in kg/hh/wk by percentage for the major categories of waste examined. In contrast, Table 2.4.2 and Figure 2.4.2 (in section 2.4) show this breakdown in relation to weekly and fortnightly collections of food & garden waste – regardless of the residual waste collection scheme.

Table 2.3.2: Breakdown of residual waste for households with weekly and fortnightly residual collections

| Residual waste components | Weekly residual collections | | Fortnightly residual collections | |
|---|-----------------------------|-------------|----------------------------------|-------------|
| | kg/hh/wk | % conc. | kg/hh/wk | % conc. |
| Food purchased whole unopened | 0.49 | 5.17% | 0.32 | 5.49% |
| Food that has been partly consumed | 0.74 | 7.74% | 0.48 | 8.30% |
| Food post preparation, consumption | 0.63 | 6.58% | 0.27 | 4.70% |
| Preparation by products, non edible element | 1.14 | 11.94% | 0.50 | 8.56% |
| Composite gunge | 0.19 | 2.00% | 0.12 | 2.05% |
| Card & Cardboard | 0.58 | 6.10% | 0.16 | 2.74% |
| Garden Waste | 0.10 | 1.07% | 0.08 | 1.40% |
| All Other Waste | 5.65 | 59.39% | 3.89 | 66.75% |
| Total | 9.51 | 100% | 5.82 | 100% |

Figure 2.3.2: Breakdown of residual waste for households with weekly residual collections

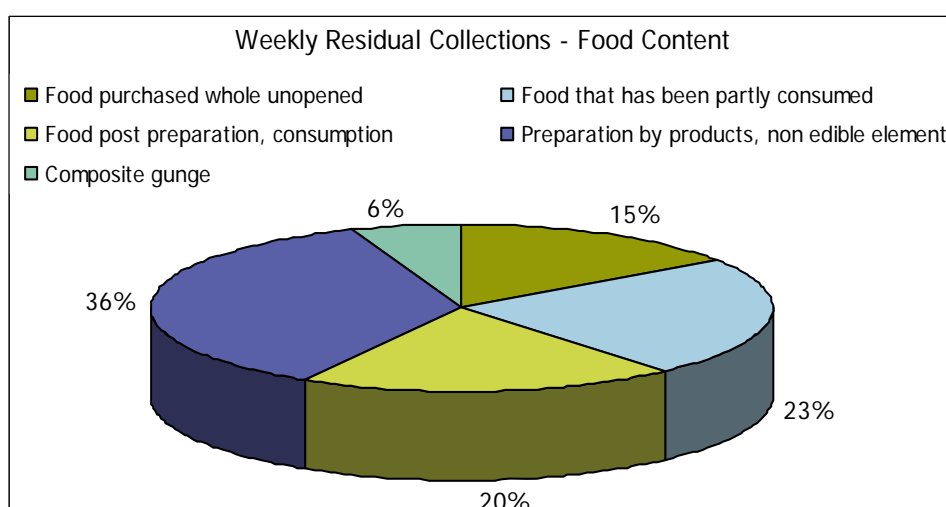
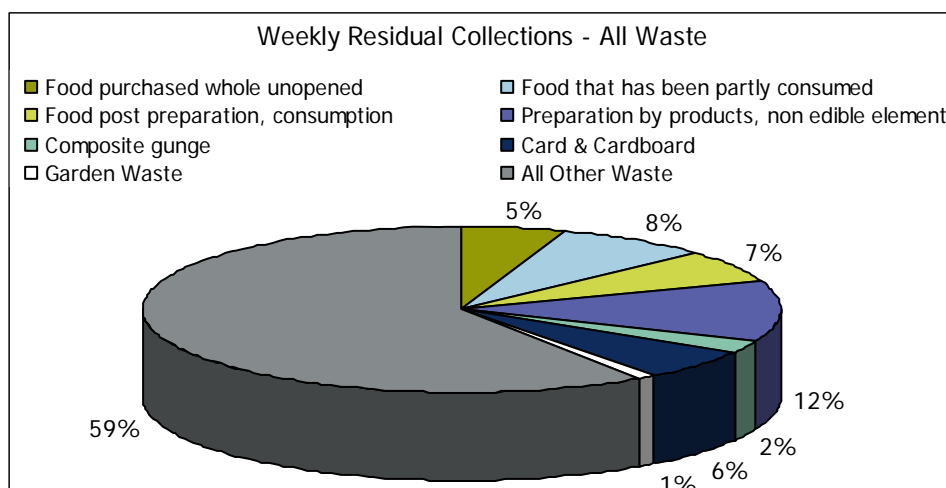


Figure 2.3.3: Breakdown of residual waste for households with fortnightly residual collections

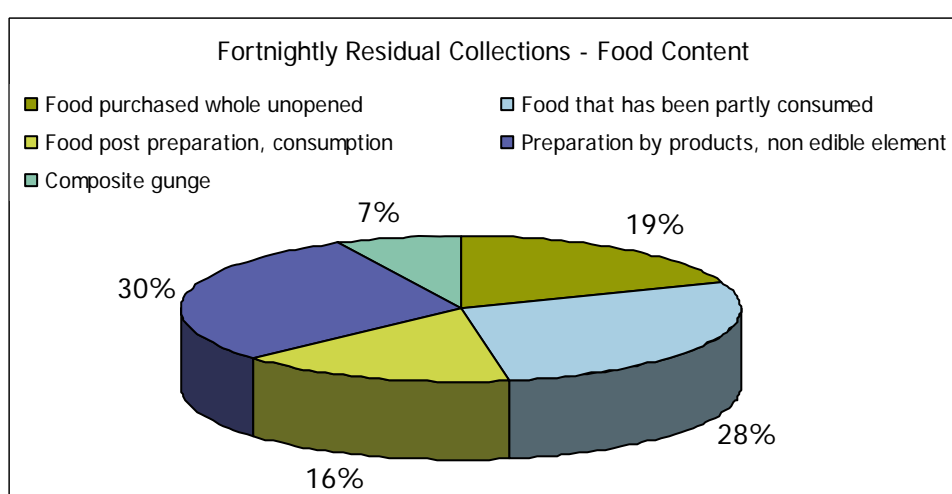
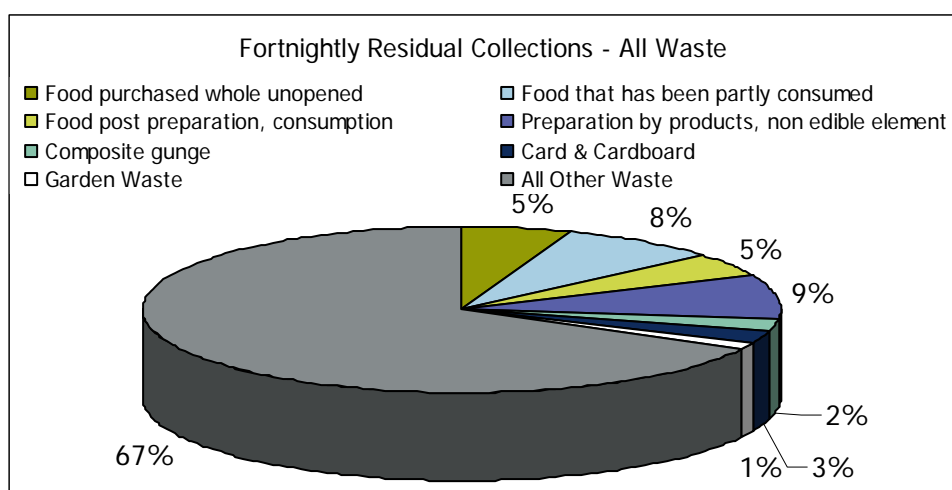


Table 2.3.3: Food waste element of residual waste for households with weekly and fortnightly residual collections

| Residual waste composition | Weekly residual collections | Fortnightly residual collections |
|--|-----------------------------|----------------------------------|
| Recyclable food waste | 31.4% | 27.1% |
| kg/hh/wk food waste | 2.99 | 1.58 |
| Composition of food waste in residual waste stream | Weekly residual collections | Fortnightly residual collections |
| Home compostable proportion of total food waste | 42.8% | 39.8% |
| Food purchased whole unopened | 16.5% | 20.3% |
| Food that has been partly consumed | 24.6% | 30.7% |
| Food post preparation, consumption | 20.9% | 17.4% |
| Preparation by products, non edible element | 38.0% | 31.7% |

Around 42.8% of food waste in weekly collected residual waste bins was 'home compostable', that is to say it consisted of raw fruit and vegetable waste. For fortnightly collected residual waste the 'home compostable' portion was around 39.8%. Where residual waste is collected on a weekly basis around 41% of the food waste was disposed of whole and unused or only partially consumed. This figure was higher (51%) for fortnightly collected residual waste. These two categories of food waste are most likely to be disposed of partially or wholly in their original packaging.

Of all the food waste in weekly collected residual waste around 59% was post preparation / consumption waste along with non-edible by-products such as bones, peel etc. For fortnightly collected residual waste, less than half (49%) of the food waste was made of up of these items. These two categories of food waste tend to be 'messier' as they contain mixed processed foods and plate scrapings.

Key points:

- Weekly collected residual waste contained more potentially recyclable food waste than found in fortnightly collected residual waste.
- Residual waste placed out on a fortnightly basis contained more unused or partially consumed food.
- Residual waste placed out on a weekly basis had a higher content of post preparation / consumption food waste and non-edible by-products.

2.4 Food & garden waste composition by collection frequency

Table 2.4.1: Summary data for households with weekly and fortnightly food & garden waste collections

| Food & garden figures | Weekly food & garden collections | Fortnightly food & garden collections |
|---------------------------|----------------------------------|---------------------------------------|
| Set out rate | 51.4% | 58.0% |
| Kg/hh/wk | 3.9 | 5.9 |
| % Recyclable food waste | 26.6% | 9.3% |
| Kg/hh/wk food waste | 1.0 | 0.55 |
| % Recyclable garden waste | 62.0% | 78.8% |
| % Card & Cardboard | 4.4% | 6.2% |

Food & garden waste containers collected from sample areas with a weekly collection tended to be far less full (35.8%) than those where these collections took place fortnightly (62.6%). Despite generating higher levels of food & garden waste, it was observed that where this waste was collected fortnightly then its associated concentration of food waste was far less than where weekly collections were in place. Just 9.3% (by weight) of food & garden waste was classed as food waste from samples where it is collected fortnightly. This compares with food waste concentrations of 26.6% (by weight) from samples where food and garden is collected on a weekly basis. There was twice as much food waste by weight in food & garden waste containers that were collected weekly (1.02kg/hh/wk) as opposed to those collected fortnightly (0.55kg/hh/wk).

Figure 2.4.1: Waste figures – mixed food & garden waste collections

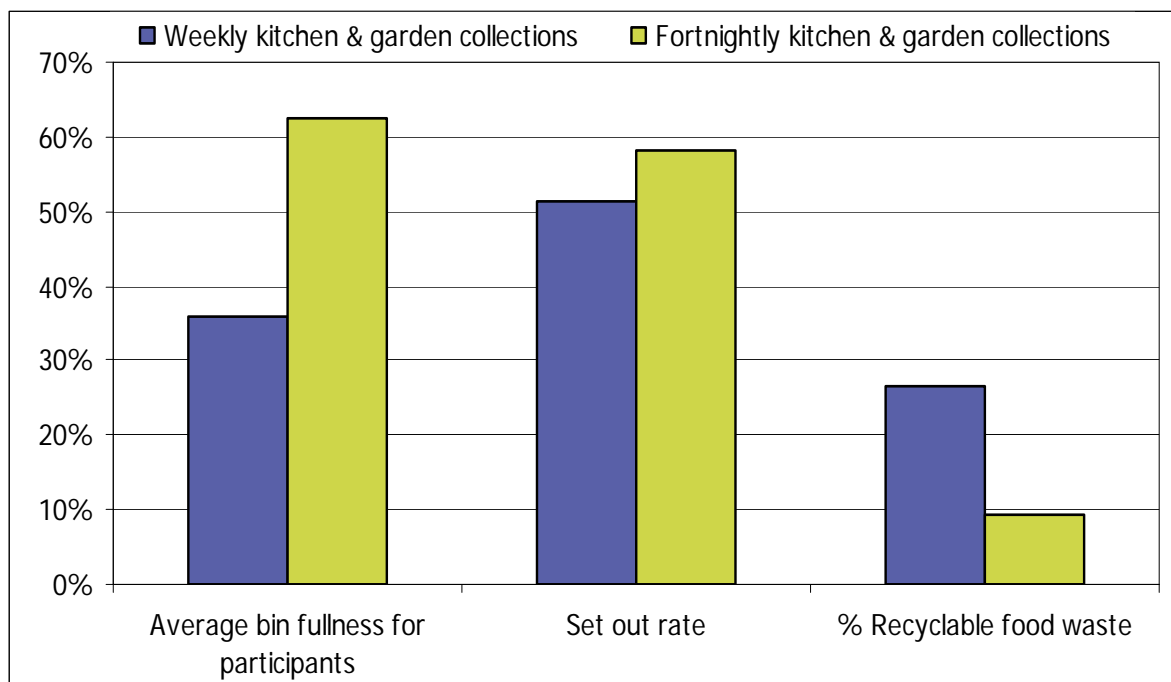
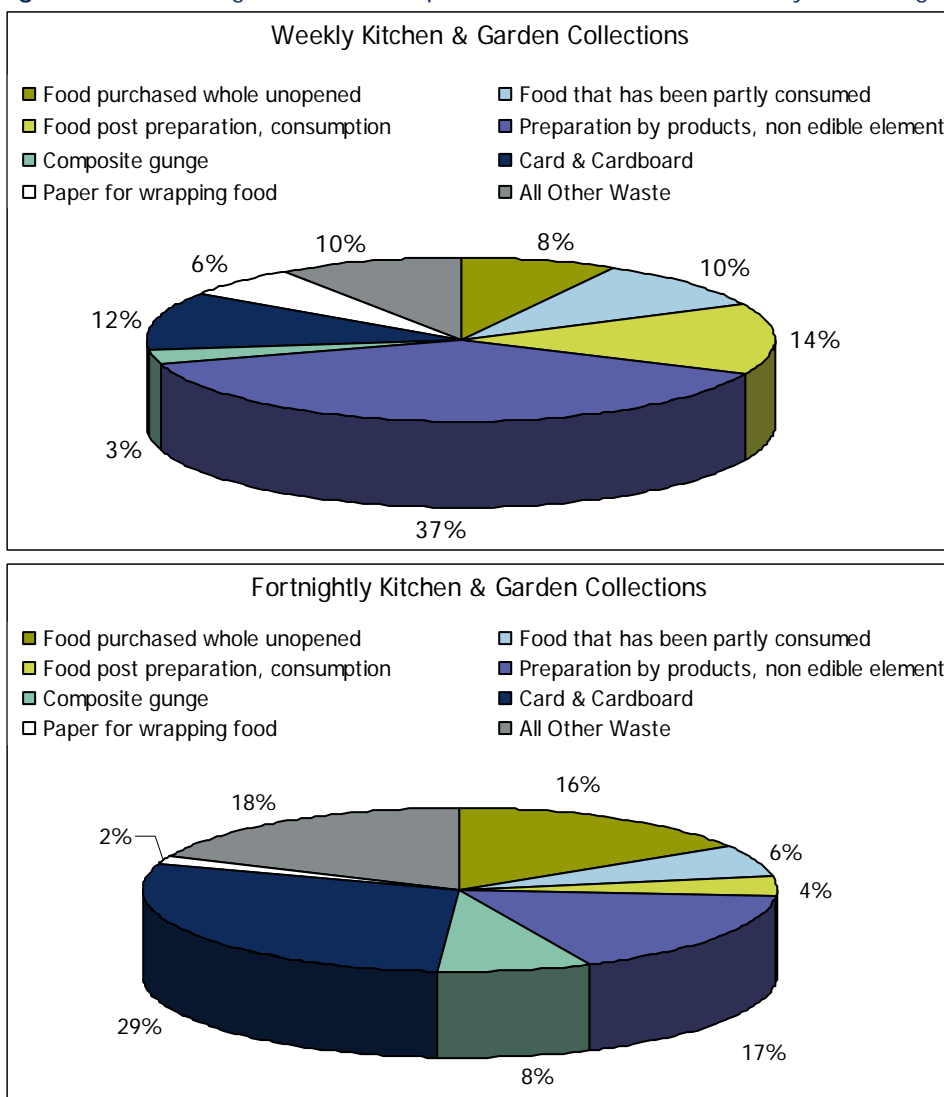


Table 2.4.2: Food & garden waste composition for households with weekly and fortnightly collections.

| Food & garden waste components | Weekly food & garden collections | | Fortnightly food & garden collections | |
|---|----------------------------------|-------------|---------------------------------------|-------------|
| | kg/hh/wk | % conc. | kg/hh/wk | % conc. |
| Food purchased whole unopened | 0.12 | 3.06% | 0.20 | 3.45% |
| Food that has been partly consumed | 0.14 | 3.60% | 0.08 | 1.43% |
| Food post preparation, consumption | 0.21 | 5.39% | 0.05 | 0.89% |
| Preparation by products, non edible element | 0.56 | 14.52% | 0.21 | 3.55% |
| Composite gunge | 0.04 | 0.93% | 0.10 | 1.63% |
| Card & cardboard | 0.17 | 4.39% | 0.36 | 6.17% |
| Garden waste | 2.39 | 61.97% | 4.61 | 78.76% |
| Paper for wrapping food waste | 0.09 | 2.40% | 0.02 | 0.26% |
| All other waste | 0.14 | 3.73% | 0.23 | 3.86% |
| Total | 3.86 | 100% | 5.86 | 100% |

Figure 2.4.2 Food & garden waste composition for households with weekly and fortnightly collections.



* Charts exclude garden waste portion to give better indication of food waste concentrations.

Table 2.4.3: Food waste element for households with weekly and fortnightly food & garden collections

| Food & garden waste composition | Weekly food & garden collections | Fortnightly food & garden collections |
|---|----------------------------------|---------------------------------------|
| Recyclable food waste | 26.6% | 9.3% |
| kg/hh/wk food waste | 1.02 | 0.55 |
| Food & garden waste composition | Weekly food & garden collections | Fortnightly food & garden collections |
| Home compostable proportion | 62.2% | 72.6% |
| Food purchased whole unopened | 11.5% | 37.0% |
| Food that has been partly consumed | 13.5% | 15.3% |
| Food post preparation, consumption | 20.3% | 9.5% |
| Preparation by products, non edible element | 54.6% | 38.1% |

Around 62% of weekly collected food & garden waste is 'home compostable' (i.e. raw fruit and vegetable waste). This compares with 73% for fortnightly collected food & garden waste. In both cases this is significantly higher than the 40% levels recorded for food waste in residual bins. Where food & garden waste is collected weekly around 25% of the food waste was disposed of either whole and unused or only partially consumed. This figure was much higher (52%) for food waste in fortnightly collected food & garden waste. As mentioned in the

previous section, these food items are most likely to be disposed of partially or wholly in their original packaging. This type of food waste was also seen to be present in higher concentrations in residual bins collected fortnightly rather than weekly.

Of all the food waste in weekly collected food & garden waste around 75% was post preparation / consumption and non-edible by-products such as bones, peel etc. For fortnightly collected food & garden less than half (48%) the food waste consisted of these items.

Key points:

- Weekly collected food & garden waste gave lower set out rates than fortnightly collections.
- The total amount of organic waste collected weekly for recycling was less; however the associated quantities of food waste collected were higher than for fortnightly food and garden waste collections.
- A higher proportion of food waste in mixed food and garden waste containers was 'home compostable' compared to that in residual bins. This was especially the case where food & garden waste was collected fortnightly.
- The majority of weekly collected food & garden waste was post preparation / consumption waste along with non-edible by-products.
- The majority of fortnightly collected food & garden waste was whole and unused or only partially consumed food items.

2.5 Food & garden waste capture rates by collection frequency

Capture rates indicate the proportion of a waste material correctly placed in a recycling container from the total amount available for disposal. Table 2.5.1 shows capture rates relative to weekly and fortnightly collections of residual waste, regardless of the frequency of the food & garden waste scheme. Table 2.5.2 shows capture rates relative to weekly or fortnightly collections of food & garden waste, regardless of the arrangements for collecting residual waste.

Table 2.5.1: Capture rates for households with weekly and fortnightly residual waste collections

| Food & garden waste capture rates | Weekly residual collections | Fortnightly residual collections |
|--|------------------------------------|---|
| Food purchased whole unopened | 32.2% | 31.1% |
| Food that has been partly consumed | 5.9% | 21.2% |
| Food post preparation, consumption | 7.1% | 32.5% |
| Preparation by products, non edible element | 14.1% | 44.2% |
| Garden Waste | 92.5% | 98.5% |
| TOTAL FOOD WASTE CAPTURE | 14.7% | 33.7% |

Table 2.5.2: Capture rates for households with weekly and fortnightly food & garden waste collections

| Food & garden waste capture rates | Weekly food & garden waste collections | Fortnightly food & garden waste collections |
|---|--|---|
| Food purchased whole unopened | 23.4% | 35.2% |
| Food that has been partly consumed | 22.7% | 11.9% |
| Food post preparation, consumption | 30.9% | 12.8% |
| Preparation by products, non edible element | 38.2% | 25.3% |
| Garden Waste | 96.7% | 98.0% |
| TOTAL FOOD WASTE CAPTURE | 31.5% | 21.8% |

For all collection regimes the capture rates for garden waste are similar at between 92.6% and 98.5%. The capture rates for food waste are significantly below these figures and appear to relate more closely to whether residents have their waste collected on a weekly or fortnightly schedule.

Residents with a weekly collection of residual waste correctly captured 14.7% of their food waste in the food & garden waste collection. However where residual waste collections are fortnightly over a third (33.7%) of food waste is captured. Comparisons between households with weekly and fortnightly collections of food & garden waste indicate that where food and garden waste is collected on a weekly basis then capture rates for food waste tend to be higher (31.5%) than if the service is fortnightly (21.8%).

Fortnightly collection of residual waste and weekly collection of food waste appears to facilitate the most effective capture of food waste. Authority F was the only authority surveyed that operated this collection scheme and was the only area where the majority of food waste was captured for recycling (54.5%).

Figure 2.5.1: Capture rates for households with weekly and fortnightly residual waste collections.

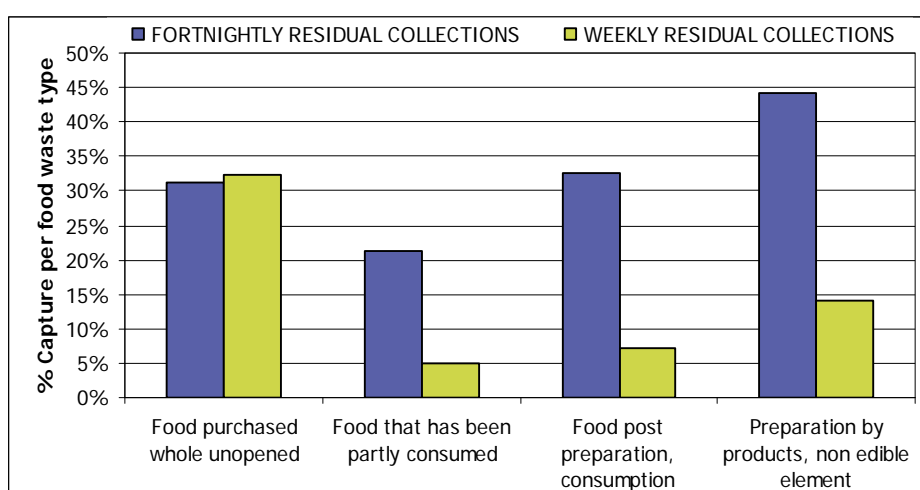
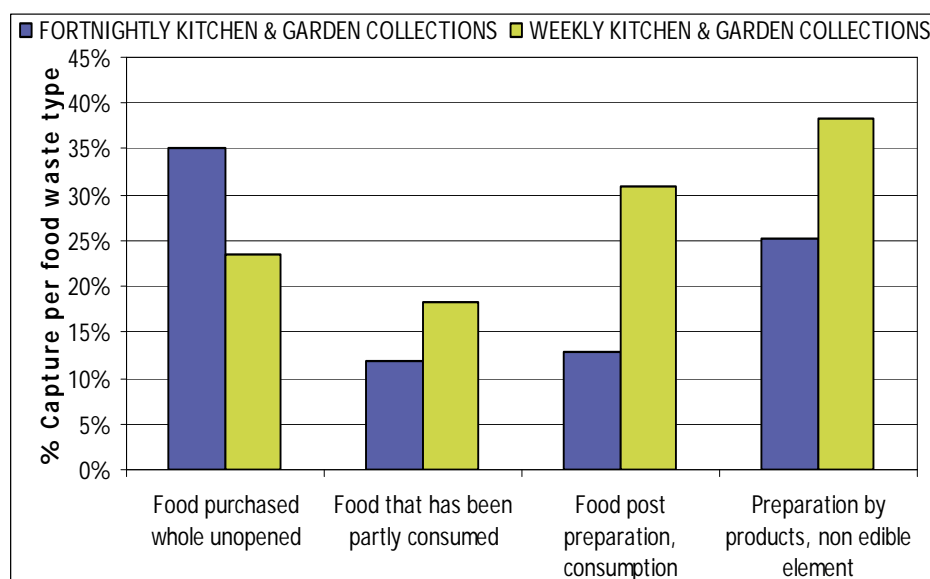


Figure 2.5.2: Capture rates for households with weekly and fortnightly food & garden waste collections.



Overall different items were separated out for recycling with differing levels of efficiency. Home compostable items such as fruit and vegetable waste, teabags and peelings were the items captured most effectively. Residents in Authority F and Authority B captured around two thirds of this compostable waste while Authority E and Authority A managed less than a fifth (Table 2.5.3).

Table 2.5.3: Capture rates for specific food items relative to residual and food & garden waste collections.

| CAPTURE RATES | | | | |
|--|---------------------|--------------|--------------------------|--------------|
| FOOD SUB CATEGORIES | RESIDUAL COLLECTION | | FOOD & GARDEN COLLECTION | |
| | weekly | fortnightly | weekly | fortnightly |
| Bread, cereal, pasta, rice | 7.25% | 31.97% | 32.40% | 14.72% |
| Meat | 6.11% | 23.09% | 18.69% | 14.32% |
| Fish | 0.00% | 18.49% | 2.24% | 13.46% |
| Milk, cheese, eggs | 0.08% | 10.96% | 4.51% | 7.21% |
| Butter, margarine, fat | 0.16% | 5.38% | 0.00% | 4.10% |
| Fruit | 34.39% | 41.49% | 40.05% | 37.36% |
| Vegetables | 32.92% | 37.79% | 37.02% | 35.37% |
| Sugar, jam, chocolate, crisps, ice cream | 5.20% | 1.48% | 8.46% | 0.23% |
| Food products not elsewhere specified | 2.71% | 5.86% | 7.24% | 2.50% |
| Drinks | 5.40% | 0.00% | 6.89% | 0.95% |
| Composite meal | 4.18% | 28.12% | 27.81% | 13.63% |
| Meat bones, fat, gristle | 4.68% | 33.31% | 27.22% | 8.61% |
| Fish bones, fat, gristle | 0.33% | 25.37% | 8.05% | 0.00% |
| Cheese rinds, eggshells | 10.17% | 38.30% | 26.82% | 19.74% |
| Used grease | 3.45% | 0.00% | N/A | 1.99% |
| Fruit peelings, pips etc | 12.04% | 46.94% | 35.59% | 22.26% |
| Vegetable peelings, pips etc | 21.08% | 50.61% | 46.57% | 33.90% |
| Food products not elsewhere specified | 0.00% | 7.57% | 0.00% | 7.64% |
| Drinks tea bags, coffee grinds etc | 11.73% | 31.43% | 35.62% | 20.10% |
| TOTAL FOOD ITEMS | 14.7% | 33.7% | 31.5% | 21.8% |

Key points:

- Food waste was more effectively captured for recycling where residual waste collections were fortnightly rather than weekly.
- Weekly food & garden waste collections tended to more effective in capturing food waste than fortnightly collections.
- Food waste items that are also suitable for home composting were the most effectively captured materials observed.
- Capture rates for certain types of foods (highlighted above) maybe determined depending on the frequency of collection of the residual and/or food and garden collection. It is thought maybe 'messier' food waste such as bones, meat & plate scrapings will be disposed of more readily via a weekly collection (be this residual or recycling) so as it is not hanging around. Residents are more likely to recycle 'less offensive foods' such as fruit and vegetable peelings even if the collection frequency is fortnightly.

2.6 Results by authority

Table 2.6.1 and Figure 2.6.1 show the amount of food waste within the residual waste for each authority. Note the higher levels of total residual waste and associated food waste for Authority E and Authority D. These are the only two areas sampled with weekly collections of residual waste.

Table 2.6.1: Food waste content of residual waste by authority

| Collection Authority | A | B | C | D | E | F |
|--|--------|--------|--------|--------|--------|--------|
| Kg/hh/wk food waste | 2.10 | 1.10 | 1.75 | 2.87 | 3.11 | 1.35 |
| Kg/hh/wk (all other waste in residual bin) | 4.75 | 3.16 | 5.46 | 6.38 | 6.30 | 3.63 |
| Kg/hh/wk total residual waste | 6.85 | 4.26 | 7.20 | 9.24 | 9.41 | 4.98 |
| % recyclable food waste | 30.64% | 25.92% | 24.25% | 31.01% | 33.03% | 27.06% |

Figure 2.6.1: Food waste content of residual waste by authority

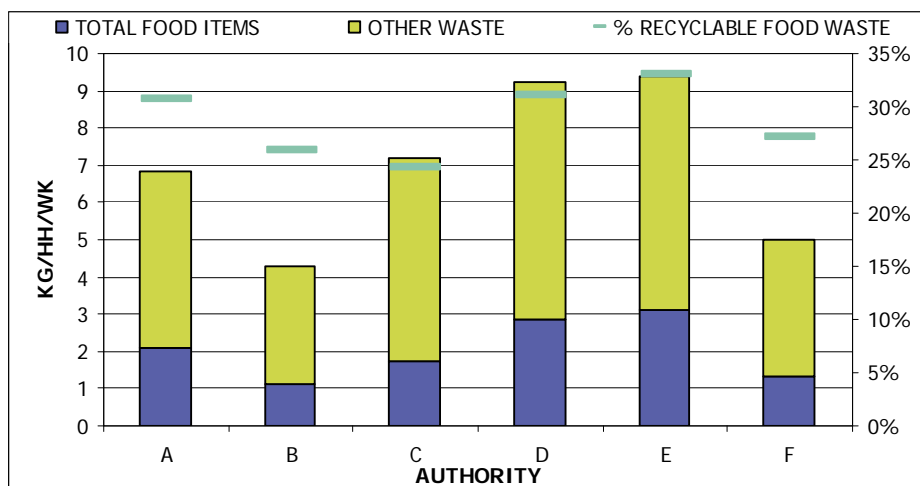


Table 2.6.2 and Figure 2.6.2 give a breakdown of waste in the food & garden waste stream for each authority. Authority E and Authority F both provide weekly collections of food and garden waste; however Authority F collects residual waste fortnightly and Authority E weekly where levels of presented food and garden waste can be seen to be far lower. In all cases garden waste makes up the vast majority of collected food and garden waste. Authority F, Authority A, Authority B and Authority C all had Acorn 1 areas surveyed and show relatively higher concentrations of garden waste.

Authority B, Authority C and Authority E all allow cardboard to be collected as part of the food & garden waste collection; consequently it is present in greater proportions than in authorities where it is not accepted.

Table 2.6.2: Composition of food & garden waste by authority

| Collection Authority | A | B | C | D | E | F |
|----------------------|------|-------|------|------|------|------|
| Food waste | 0.20 | 0.96 | 0.42 | 0.60 | 0.44 | 1.61 |
| Card & Cardboard | 0.13 | 0.77 | 0.53 | 0.00 | 0.29 | 0.05 |
| Garden waste | 5.32 | 7.93 | 3.71 | 1.48 | 1.04 | 3.73 |
| Other waste | 0.13 | 0.62 | 0.39 | 0.20 | 0.28 | 0.39 |
| Total waste | 5.78 | 10.29 | 5.06 | 2.28 | 2.06 | 5.77 |

Figure 2.6.2: Composition of the food & garden waste by authority

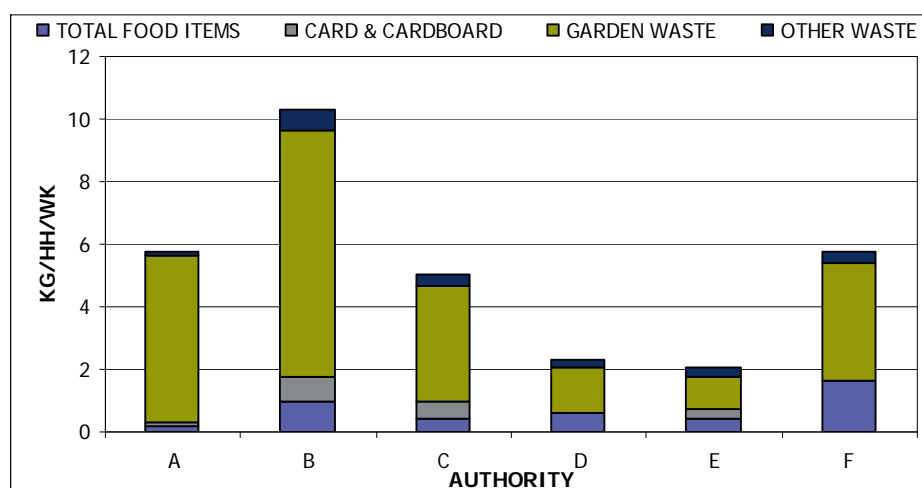
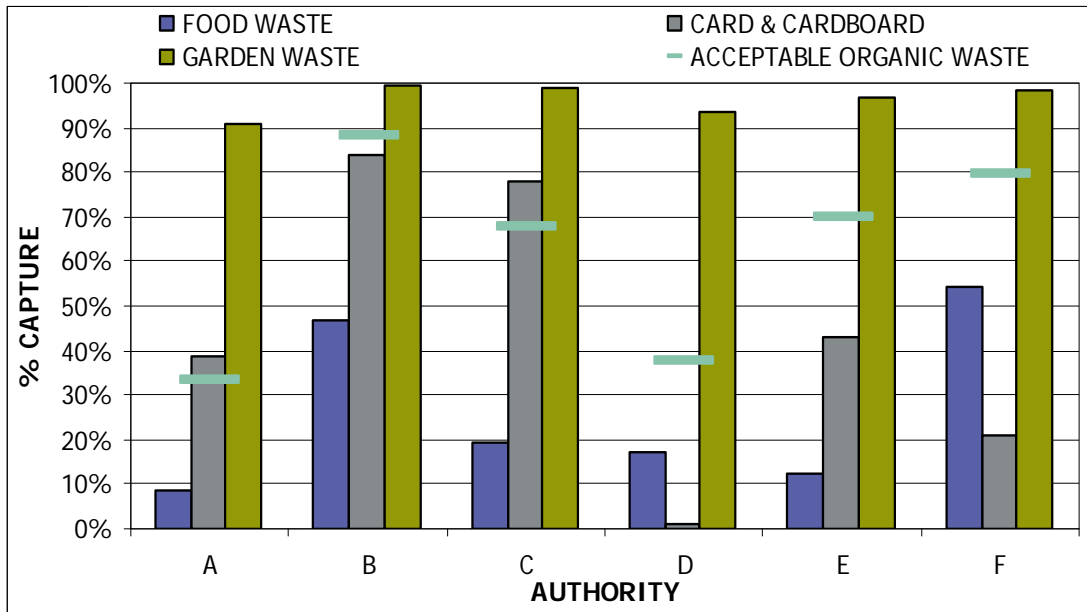


Table 2.6.3 and Figure 2.6.3 show the capture rates for food waste, garden waste and cardboard. Authority F (54.5%) and Authority B (46.6%) capture a significantly higher proportion of food waste than the other sample areas (8.7% - 19.6%). Garden waste is successfully captured in all areas at rates of between 91% and 99%. Authority B and Authority C appear to be effective at capturing cardboard with capture rates of 83.9% and 78.2% respectively. Authority E captures less than half of the available cardboard (43.2%). Even though Authority F and Authority A residents are not supposed to put cardboard in their food and garden waste container; between 21% and 39% of the total available cardboard is captured. Of all the materials accepted by the food and garden waste collections between 33.2% (Authority E) and 88.2% (Authority B) was correctly captured.

Table 2.6.3: Capture rates and diversion for food and garden waste materials.

| Collection Authority | A | B | C | D | E | F |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Food waste | 8.7% | 46.6% | 19.6% | 17.2% | 12.4% | 54.5% |
| Card & Cardboard | 38.8% | 83.9% | 78.2% | 1.2% | 43.2% | 21.1% |
| Garden waste | 91.0% | 99.5% | 98.7% | 93.7% | 96.8% | 98.5% |
| All accepted organics | 33.2% | 88.2% | 67.9% | 37.7% | 69.8% | 79.6% |
| Total organic diversion | 43.8% | 68.3% | 38.3% | 18.6% | 16.1% | 52.4% |
| Food waste diversion | 1.6% | 6.6% | 3.5% | 5.0% | 3.8% | 15.0% |

Figure 2.6.3: Capture rates for food and garden waste materials.



Between 16.1% (Authority E) and 68.3% (Authority B) of organic materials were diverted at the kerbside – this includes contributions from garden waste and cardboard (where it is collected). Food waste made up a relatively small proportion of the overall diverted organics. In terms of food waste capture Authority B and Authority F performed significantly better than the other sample areas. This is reflected in the diversion rates for these two authorities where 6.6% and 15% respectively of total waste was diverted as food waste items. Diversion due to food waste recycling was seen to be between 1.6% and 5% for the other four authorities.

Figure 2.6.4: Diversion via food & garden collection scheme

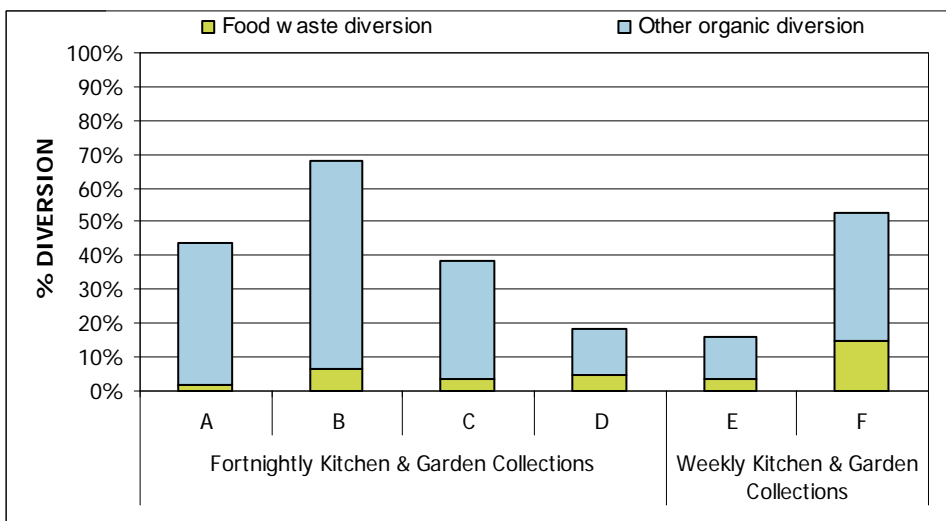


Figure 2.6.5: Kg/hh/wk of kerbside food waste and overall capture for each authority.

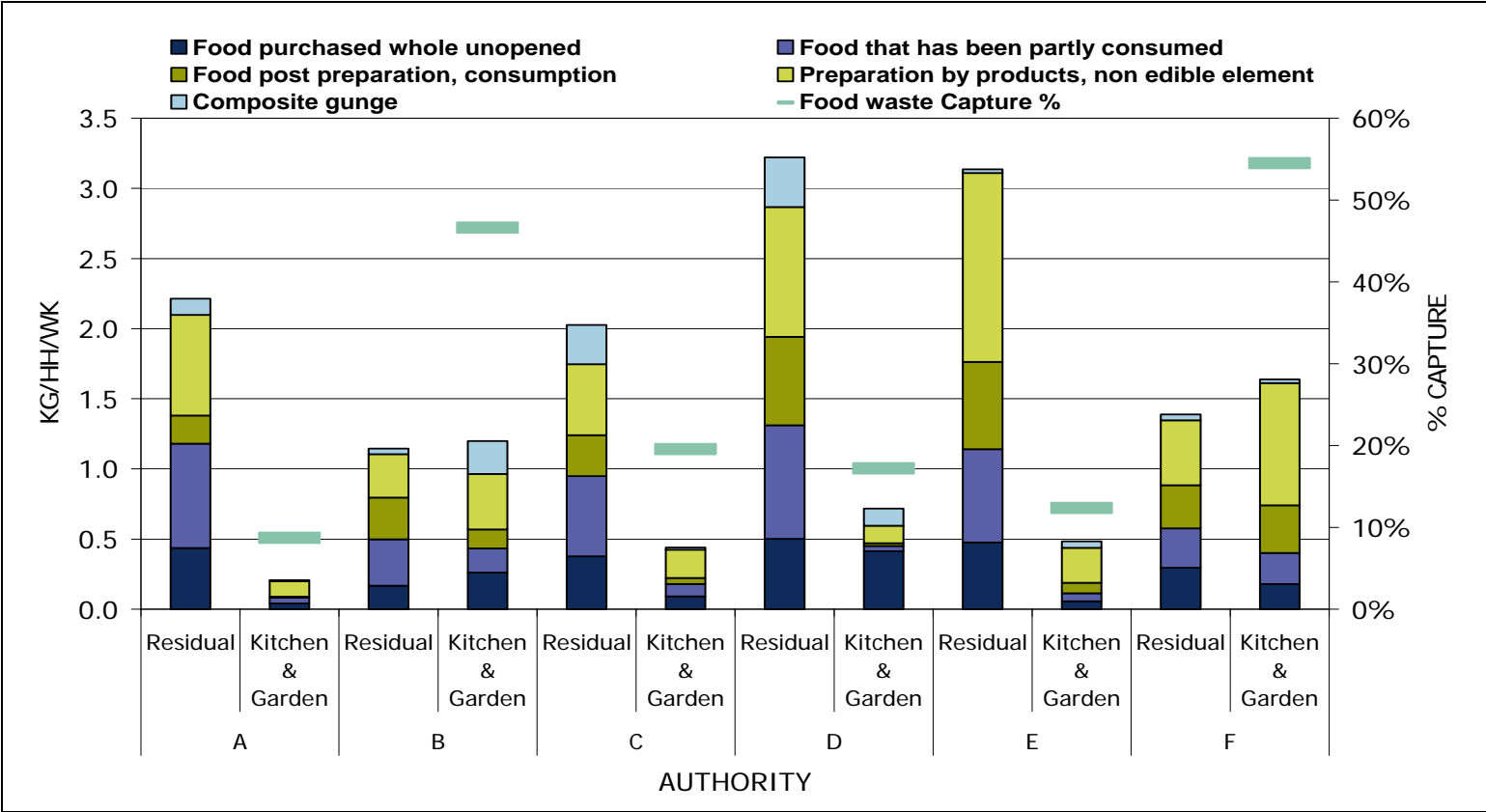
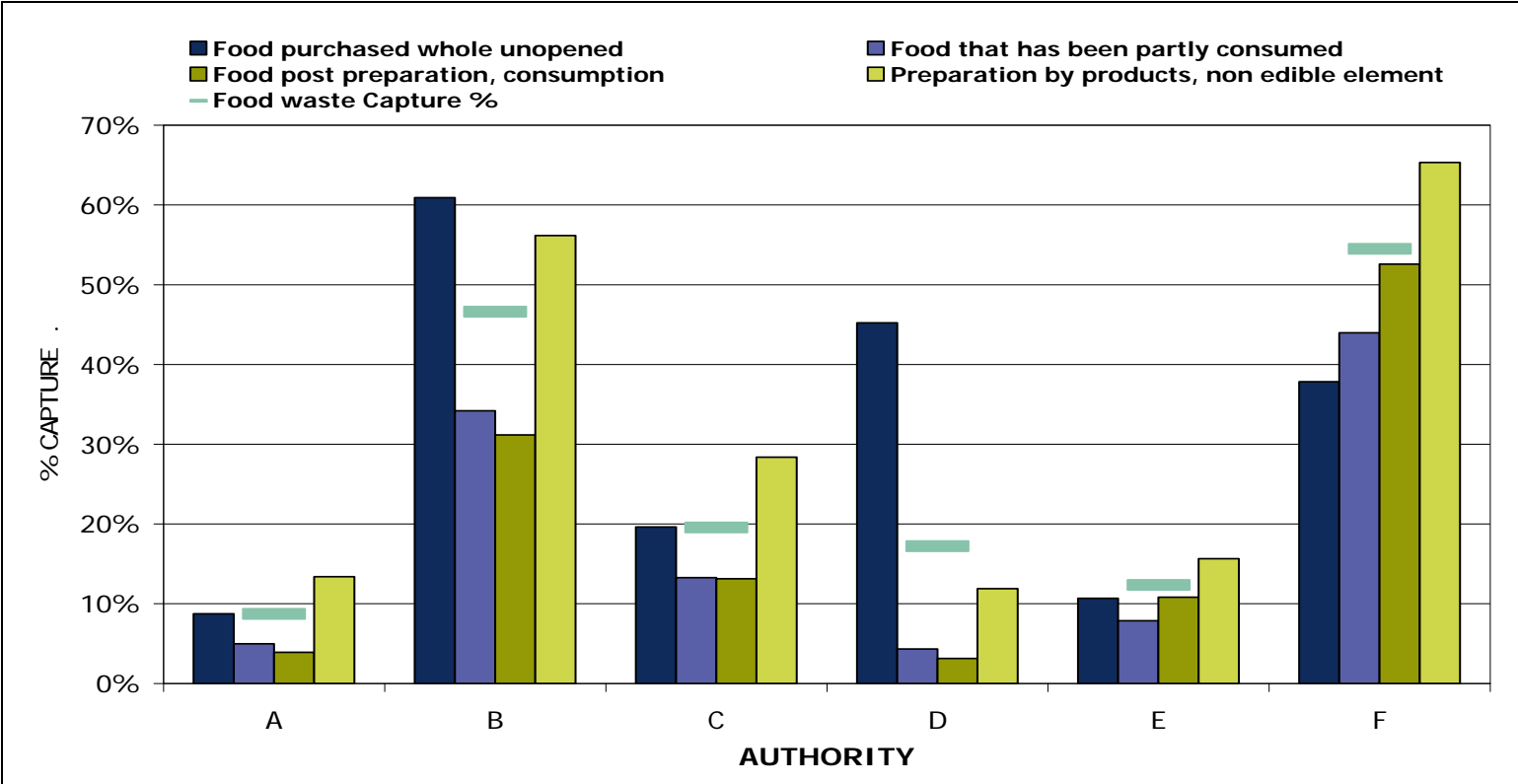


Figure 2.6.6: Food category capture rates for households within each authority



Key points:

- Food waste capture rates ranged between 8.7% and 54.5% with more than 91% of garden waste captured in all areas.
- Capture rates of 43.2% to 83.9% were observed for cardboard in areas where this material was accepted into the food and garden waste collection scheme.
- Capture rates of 1.2% to 38.8% were observed for cardboard in areas where this material was not targeted for collection with food and garden waste.
- Overall between 16.5% and 68.3% of kerbside waste was diverted via food & garden waste collections. Most of this was seen to be garden waste with between 1.6% and 15% of all waste diverted as food waste.

2.7 Estimated annual food waste diversion

Tables 2.7.1 to 2.7.3 provide estimates of food waste diversion relative to collection area, waste collection frequency and ACORN category. On average this survey estimates that 41kg/hh/yr of food waste is being diverted via food and garden waste collections based on the variable collection schemes in operation. This is slightly less than the figure of 50kg/hh/yr assumed in the WRAP research of 2007⁴. This figure indicates that diversion rates of just under 6% are seen for food waste collected in combined food & garden containers.

Table 2.7.1 Estimated food waste diversion in kg/hh/yr for each authority

| KG/HH/YR FOOD WASTE DIVERSION BY AUTHORITY | | | | | | |
|--|-------|-------|-------|-------|-------|---------|
| A | B | C | D | E | F | AVERAGE |
| 25.29 | 62.53 | 22.93 | 37.48 | 10.87 | 85.49 | 40.77 |

Table 2.7.2 Estimated food waste diversion relative to residual waste and food & garden collection frequencies

| KG/HH/YR FOOD AND PERCENTAGE FOOD WASTE DIVERSION | | | |
|---|-------------|---------------------------|-------------|
| RESIDUAL COLLECTIONS | | FOOD & GARDEN COLLECTIONS | |
| WEEKLY | FORTNIGHTLY | WEEKLY | FORTNIGHTLY |
| 31.20 | 45.51 | 55.33 | 33.44 |
| 4.40% | 6.39% | 9.27% | 4.25% |

Table 2.7.3: Estimated food waste diversion relative to ACORN category

| KG/HH/YR FOOD AND PERCENTAGE FOOD WASTE DIVERSION | | | | | |
|---|---------|---------|---------|---------|------------------|
| ACORN 1 | ACORN 2 | ACORN 3 | ACORN 4 | ACORN 5 | WEIGHTED AVERAGE |
| 36.14 | 39.57 | 52.63 | 41.20 | 31.13 | 40.83 |
| 4.60% | 7.48% | 7.29% | 5.85% | 4.19% | 5.82% |

⁴ http://www.wrap.org.uk/local_authorities/research_guidance/food_waste/index.html

In June 2009 WRAP published a report highlighting the effectiveness of separate food waste collections from 20 local authorities that had received funding to carry out trials to collect food waste separately from residual and garden waste⁵. One of the key points observed during this survey was that separate food waste collections taking place alongside fortnightly (as opposed to weekly) residual waste collections achieved a higher weekly yield of food waste. Results show that between 1.12kg/hh/wk and 1.48kg/hh/wk (average 1.3kg/hh/wk) of food waste was presented by residents with weekly residual waste collections. In contrast between 1.04kg/hh/wk and 2.10kg/hh/wk (average 1.5kg/hh/wk) of food waste was presented by residents with fortnightly residual waste collections.

Results from the current survey show a similar pattern with households on weekly residual waste collections generally seen to be presenting less food waste for recycling. From individual samples between 0.15kg/hh/wk and 0.85kg/hh/wk of food waste was present in food and garden collection bins – an average of 0.51kg/hh/wk. Where fortnightly residual waste collections are in place, between 0.11kg/hh/wk and 2.09kg/hh/wk of food waste was present in the food and garden containers – an average of 0.80kg/hh/wk. The results are summarised in Table 2.7.4.

Table 2.7.4: Annual food waste collected relative to residual waste collection frequency – average kg/hh/yr

| | WEEKLY RESIDUAL WASTE | FORTNIGHTLY RESIDUAL WASTE |
|---|-----------------------|----------------------------|
| COMBINED FOOD & GARDEN WASTE* | 31.20 | 45.51 |
| SEPARATE WEEKLY FOOD WASTE ONLY (WRAP TRIALS) | 67.83 | 78.27 |

* Includes contribution from non-sortable organic composite waste

Figure 2.7.1: Average Kg/hh/yr of food waste relative to residual waste collection frequency



Figure 2.7.1 suggests if food waste is collected separately (and weekly), as opposed to combined with garden waste, this is likely to result in higher levels of food waste being placed out for recycling by residents. It also indicates that more food waste is likely to be collected for recycling where the associated residual waste collection is fortnightly rather than weekly. From these figures, 46% more food waste (14kg/hh/yr) is collected from combined food & garden schemes where residual collections are fortnightly. Around 21% more food waste (16kg/hh/yr) is collected from separate food collections where residual collections are fortnightly.

⁵ http://www.wrap.org.uk/downloads/Evaluation_of_the_WRAP_FW_Collection_Trials_Update_June_2009.836cb2a8.7271.pdf

More significantly where residual waste collections are weekly, more than double the amount of food waste (42kg/hh/yr) is collected from separate food collections as opposed to combined food & garden waste schemes. Where residual collections are fortnightly, around 95% more food waste (43kg/hh/yr) is collected from separate food collections as opposed to combined food & garden waste schemes.

3.0 Participation monitoring of the food and garden waste services

3.1 Introduction

The purpose of undertaking participation monitoring was to:

- Record the number of food and garden waste containers set out⁶ for collection on each collection day monitored;
- Determine the participation rate⁷ for the food and garden waste service; and
- Determine the participation rate by ACORN category

The monitoring was carried out in line with WRAP guidance which states that collections should be monitored for three consecutive collections. The monitoring was undertaken by experienced M·E·L monitors who walked ahead of the collection crew on the identified rounds and recorded the number of households setting out containers for collection. The bins lids were not lifted and the contents not visually examined therefore it was not possible to record the set out rate and hence determine the participation rate for the food waste aspect of the service in each authority. The set out and participation rates quoted relate to the service as whole. It is possible that some households may be taking part in the service but not putting food waste in their bins.

The monitoring was conducted between September and December 2008. Overall 11,898 properties were monitored across the six authorities. The number of households monitored in each authority is listed in Table 3.1.

Table 3.1: Number of households monitored by authority

| Authority | Count of households monitored in each authority |
|--------------|---|
| A | 2,218 |
| B | 1,513 |
| C | 1,685 |
| D | 2,890 |
| E | 1,928 |
| F | 1,664 |
| Total | 11,898 |

3.2 Results

This section presents the top line results from the participation monitoring. **The results have been weighted by ACORN to ensure that they are representative of the each authority.**

The set out rates vary between each authority with Authority B averaging the highest set out rate at 67% compared to 32% for Authority E.

⁶ **Set out rate:** The percentage of households setting out the food and garden waste container for collection on a particular day

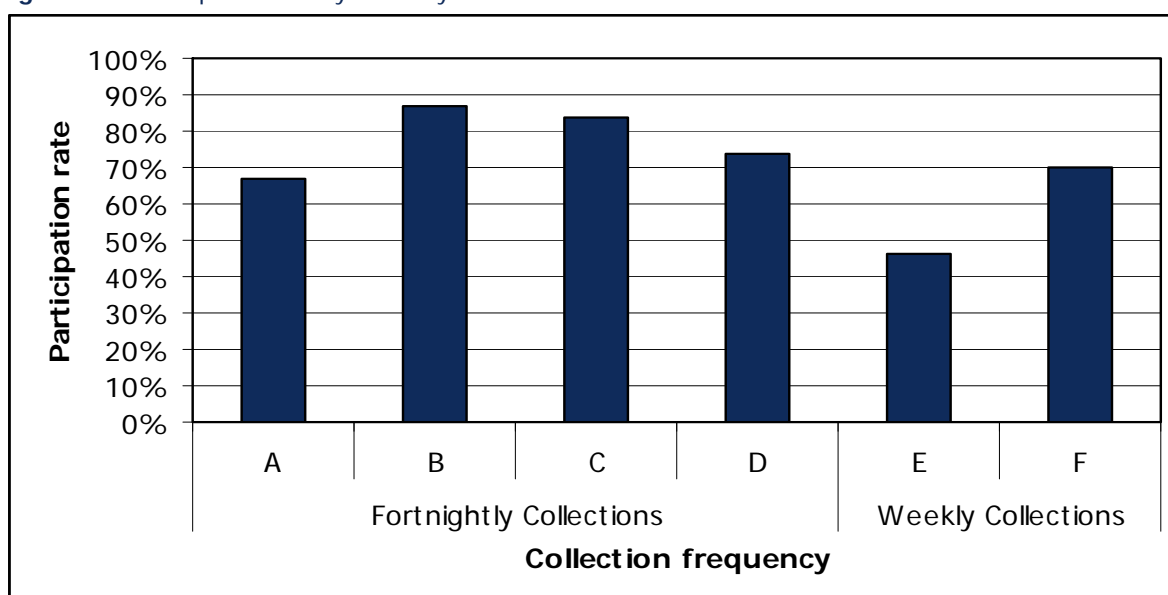
⁷ **Participation rate:** The percentage of households setting out the food and garden waste container for collection at least once during the monitoring period

Table 3.2: Set out rate and number of households setting out by authority

| | | Week 1 | Week 2 | Week 3 |
|---|---------|--------|--------|--------|
| A | Set out | 1122 | 924 | 879 |
| | % | 50.6% | 41.7% | 39.6% |
| B | Set out | 964 | 1038 | 1052 |
| | % | 63.7% | 68.6% | 69.5% |
| C | Set out | 1174 | 1006 | 1099 |
| | % | 69.7% | 59.7% | 65.2% |
| D | Set out | 1643 | 1707 | 1407 |
| | % | 56.8% | 59.1% | 48.7% |
| E | Set out | 641 | 576 | 639 |
| | % | 33.2% | 29.9% | 33.2% |
| F | Set out | 832 | 967 | 928 |
| | % | 50.0% | 58.1% | 55.8% |

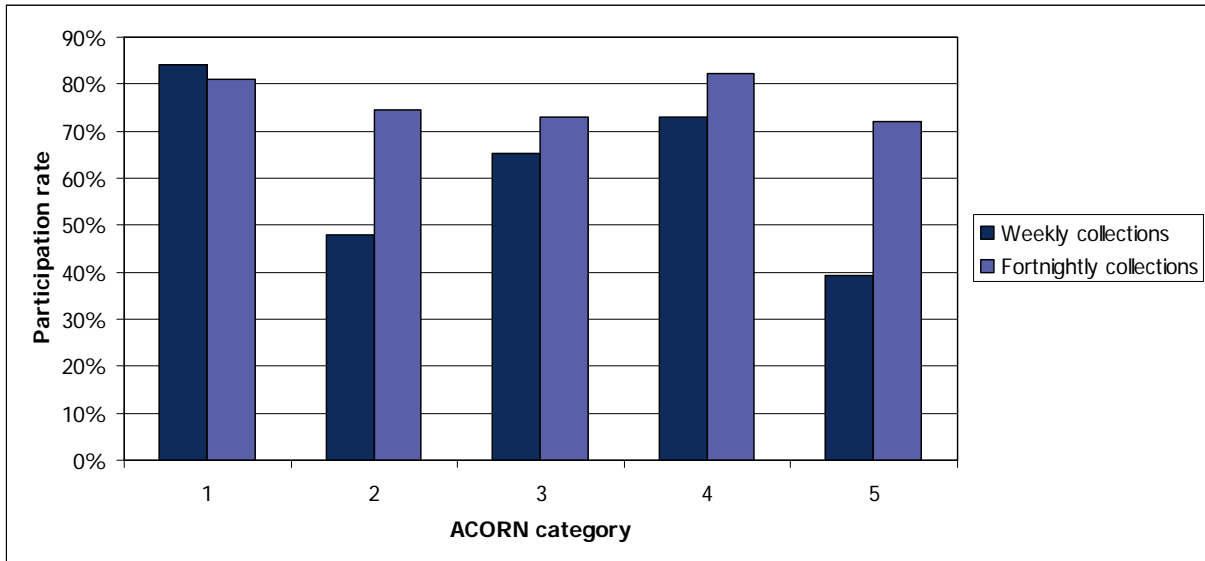
The majority of the monitored areas with a fortnightly collection achieved higher participation rates compared to those with weekly collections. Authority A showed a slightly lower participation rate overall (67%) compared to the other authorities operating a fortnightly collection service.

Figure 3.1: Participation rate by authority



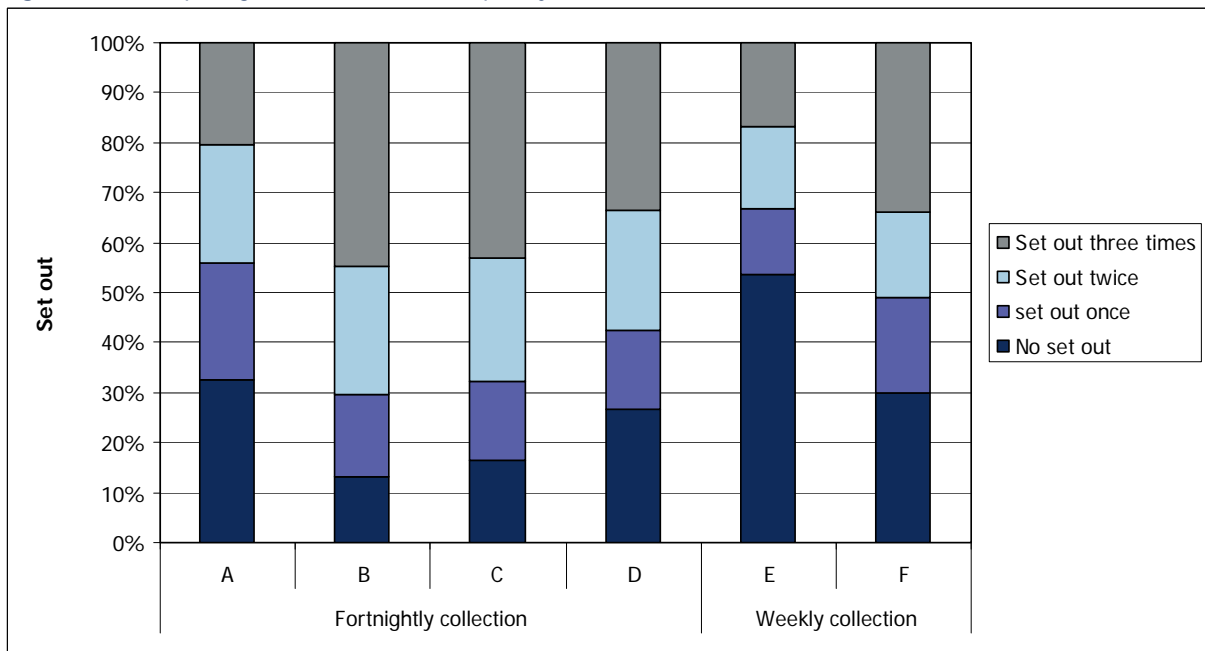
For weekly collections ACORN 1 households had the highest participation rate at 84%. ACORN 4 with fortnightly collections had the next highest at 82%. The lowest performers were ACORN 5 households on a weekly collection at 39%.

Figure 3.2: Participation rate by ACORN



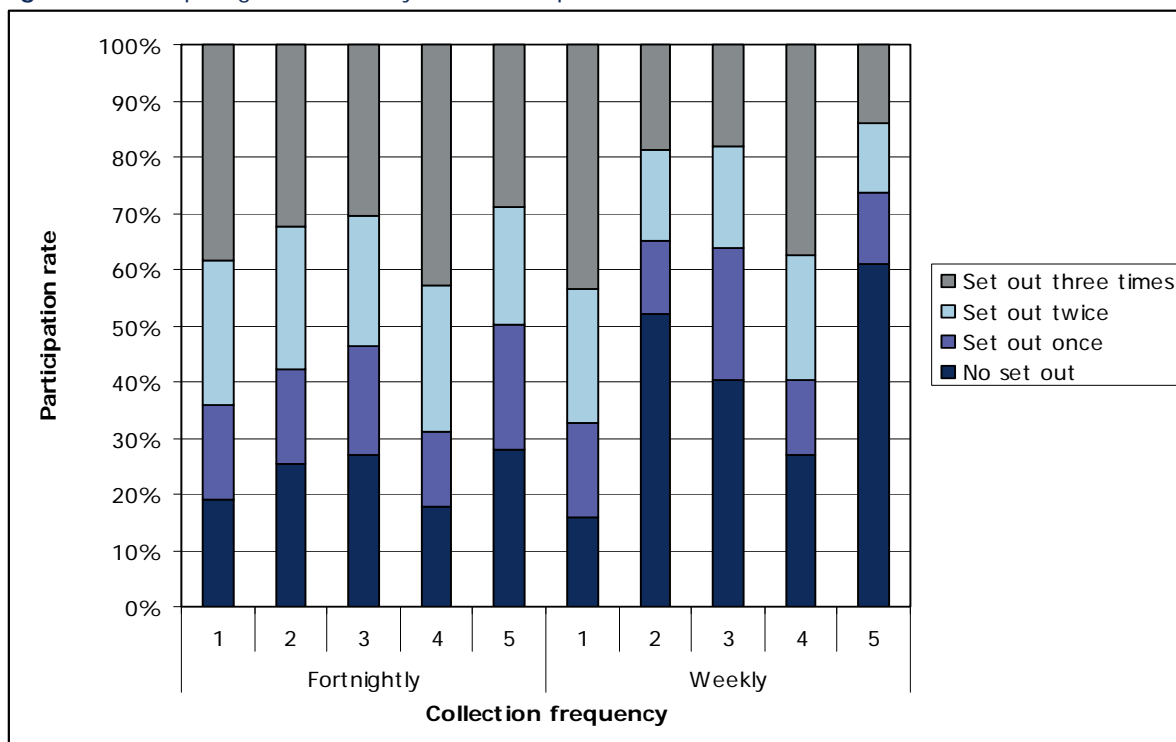
The majority of authorities with a fortnightly collection had households setting out the food and garden waste container more consistently throughout the monitoring period.

Figure 3.3: Comparing set out rates and frequency of collection



A large percentage of ACORN categories 2 and 5 with a weekly collection set out their collection containers less frequently than those receiving a fortnightly collection. Overall all ACORN categories with a weekly collection set out collection containers less frequently than those households receiving a fortnightly collection.

Figure 3.4: Comparing set out rate by ACORN Group



Key findings from participation monitoring carried out:

- Five of the six authorities monitored achieved participation rates of over 65%.
- Authority B had the lowest participation rate; this is the only authority to operate a weekly collection of both food & garden waste and residual waste.
- Overall, fortnightly collections of food and garden waste achieved higher participation rates when compared with weekly collections.

4.0 Face to Face Surveys

This section provides the results of face to face surveys of householders in Authorities B and E. The surveys were carried out to assess householder behaviour towards the disposal of food, and their understanding and satisfaction with their mixed food and garden waste service.

The surveys took place in November and December 2008.

Table 4.1: Collection and recycling schemes in Authority B & Authority E

| Local Authority | Waste Collection Services | | | | | |
|-----------------|---------------------------|-------------------|---------------|-------------|----------------|-------------------|
| | Food & Garden waste | | Dry Recycling | | Residual Waste | |
| | Frequency | Containment | Frequency | Containment | Frequency | Containment |
| Authority B | Fortnightly | Brown wheeled bin | Fortnightly | Grey bin | Fortnightly | Grey bin/blue lid |
| Authority E | Weekly | Green wheeled bin | Weekly | Green Box | Weekly | Grey bin |

4.1 Survey Methods

Face-to-face, doorstep interviews were conducted with a representative sample of residents categorised according to the profile of the number of people per household and ACORN group. Households selected for sampling were interviewed between early afternoon and 19:00 on weekdays and between 10:00 and 19:00 over weekends. The surveyor stated their name and that they worked for M·E·L Research. Respondents were informed that the survey was on behalf of their local council and it was about food. Each interview lasted between 10 and 12 minutes.

Prior to the start of each phase of fieldwork, a small team of surveyors underwent training to ensure familiarity with the project, the questionnaire design, wider waste and recycling issues and market research techniques. The procedures of the Market Research Society were followed throughout; more information can be found on their website: www.mrs.org.uk.

The surveys were completed using paper records and each respondent was given a number of show cards to refer to, to help create a more interactive approach. Some of the questions required a single coded response while others were multi-coded; these are noted within the results. A copy of the questions is in the Appendix.

In total 617 surveys in Authority B were completed and 609 in Authority E.

4.2 Data entry and analysis

Experienced data clerks based in M·E·L's office in Birmingham entered data using specially developed entry forms in SPSS format (proprietary software used for questionnaire analysis). A rigorous data quality checking protocol was used to detect and eliminate errors; staff are trained to a keystroke error rate standard of less than 0.01%. Logic and range checks were also carried out to ensure operatives were performing to this standard. Since the introduction of the SPSS package, data cleansing is much easier, as only certain data entry codes are accepted, and the software rejects erroneous codes.

For questions where there was an 'other' option, a coding frame was developed before the data entry was undertaken. Numbers were allocated to different categories of response from the additional information the surveyors had recorded on the questionnaires.

Once the data checking was complete, the data analysis was undertaken in SPSS, using a combination of socio-demographic criteria to assess the trends in the data. The raw results are provided in the Appendix and the main results are discussed below.

4.3 Committed food waste reducers

The committed food waste reducer (CFWR) metric was developed by WRAP to measure the impact of the 'Love Food Hate Waste' campaign. A series of five questions were specifically designed to measure changes in attitudes to food waste that together can be used to estimate commitment to food waste prevention. The change in CFWRs can also be used in conjunction with other information to estimate the quantity of food waste avoided. These five questions were included in the survey questionnaire.

4.4 Demographics

The sample surveyed was not totally representative of Authority E with regards to Age Group categories. The middle age groups (25-44 and 45-64) are better represented overall.

Table 4.2: Age profile of authority and sample contacted

| Age | Authority B Actual % | Authority B Sample % | Authority E Actual % | Authority E Sample % | England % |
|-------|----------------------|----------------------|----------------------|----------------------|-----------|
| 18-24 | 8.8 | 2.9 | 13.6 | 7.7 | 11.4 |
| 25-44 | 31.4 | 21.4 | 46 | 31.2 | 37.8 |
| 45-64 | 36.5 | 38.6 | 25.5 | 32 | 30.6 |
| 65-74 | 12.8 | 1.2 | 8.6 | 14.4 | 10.5 |
| 75+ | 10.6 | 15.4 | 6.3 | 9.9 | 9.7 |
| Total | 100 | 100 | 100 | 100 | 100 |

For both Authorities B and E the samples surveyed were a very close representation of the ACORN categories in each. Authority B has a much higher proportion of ACORN 1 households when compared to the rest of England, and the most dominant category is ACORN 1 at 45%, followed by ACORN 3 at 31%. Authority E has a much higher proportion of ACORN 2 households when compared to the rest of England, and the most dominant ACORN category was ACORN 2 at 46%, followed by ACORN 3 at 26%.

Table 4.3: ACORN Categories by authority and sample contacted

| ACORN | Authority B Actual % | Authority B Sample % | Authority E Actual % | Authority E Sample % | England % |
|--------------|----------------------|----------------------|----------------------|----------------------|-----------|
| 1 | 45.2 | 45.5 | 2.8 | 3.0 | 23.3 |
| 2 | 1.5 | 1.5 | 46.3 | 46.3 | 13.3 |
| 3 | 31 | 31 | 25.7 | 25.8 | 28.1 |
| 4 | 10.7 | 10.4 | 7.1 | 7.2 | 13.2 |
| 5 | 11.6 | 11.7 | 18 | 17.7 | 21.7 |
| unclassified | 0 | N/A | 0.2 | N/A | 0.4 |
| Total | 100 | 100 | 100 | 100 | 100 |

For both Authority B and Authority E the most common family size was two (44% and 28% respectively). A fifth (20%) of Authority E households had a family size of 5 or more, compared to 4% of Authority B households.

Table 4.4: Family Size in both authorities

| | Authority B Actual % | Authority B Valid % | Authority E Actual % | Authority E Valid % |
|-----------|----------------------|---------------------|----------------------|---------------------|
| 1 | 29.0 | 19.3 | 24.9 | 18.1 |
| 2 | 27.2 | 43.9 | 37.5 | 28.4 |
| 3 | 16.5 | 17.8 | 17.6 | 18.9 |
| 4 | 15.3 | 15.4 | 14.3 | 14.4 |
| 5 or more | 12.1 | 3.6 | 5.7 | 20.2 |
| Total | 100 | 100 | 100 | 100 |

Almost half (41%) of Authority B households were couples with no children, compared to just over a quarter (28%) of Authority E households which were couples with children at home. For Authority B the second most common household make-up was couples with children at home (22%) whereas for Authority E it was couples with no children at home (23%).

Table 4.5: Household Make Up

| | Authority B Frequency | Authority B Valid % | Authority E Frequency | Authority E Valid % |
|-----------------------------------|-----------------------|---------------------|-----------------------|---------------------|
| One person household | 119 | 19.3 | 105 | 17.4 |
| Couple, no children | 254 | 41.2 | 140 | 23.2 |
| Other household: all adults | 67 | 10.9 | 94 | 15.6 |
| Lone parent with children at home | 24 | 3.9 | 47 | 7.8 |
| Couple with children at home | 138 | 22.4 | 168 | 27.9 |
| Other | 14 | 2.3 | 8 | 1.3 |
| Total | 616 | 100 | 603 | 100 |

4.5 Results

The results are presented with a column of frequencies. There are two columns of percentages. The column with non response excluded is discussed in the text, unless otherwise stated.

4.5.1 Committed food waste reducers

13% of respondents in Authority B and 15% in Authority E were Committed Food Waste Reducers slightly less than the national tracker survey of 17% (March 2009).

Table 4.6: Committed food waste reducers in Authority B and Authority E

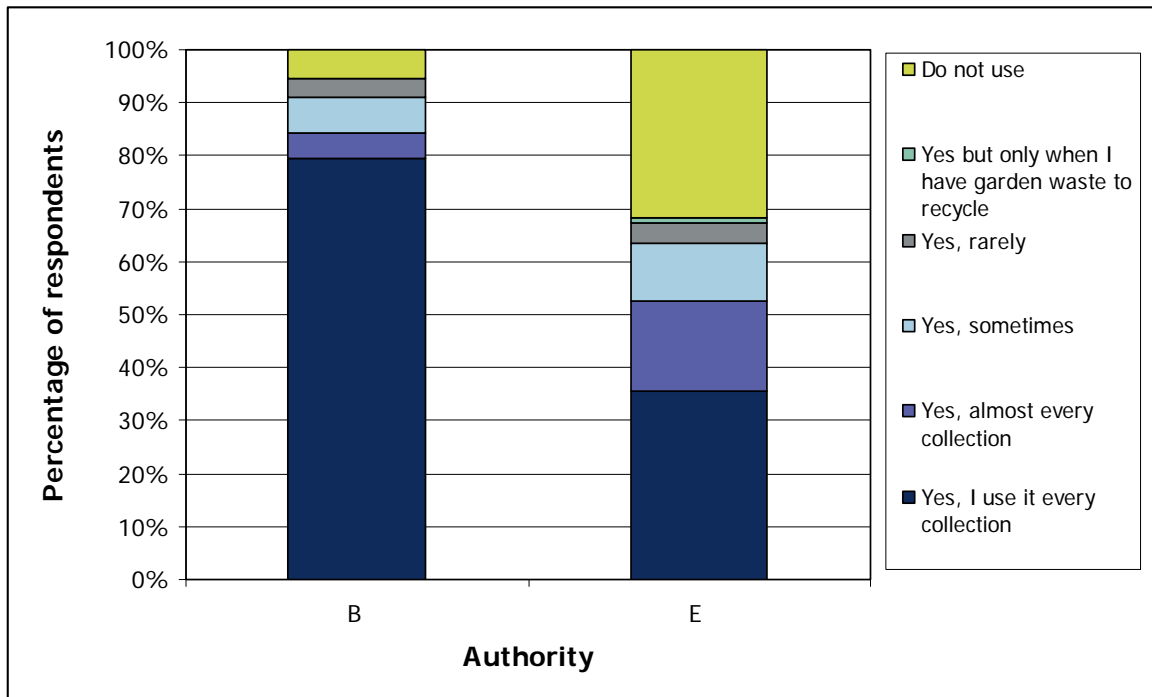
| | Authority B Frequency | Authority B Valid % | Authority E Frequency | Authority E Valid % |
|----------------------------------|-----------------------|---------------------|-----------------------|---------------------|
| Committed Food Waste Reducer | 78 | 12.6 | 94 | 15.4 |
| Non-Committed Food Waste Reducer | 539 | 87.4 | 515 | 84.6 |
| Total | 617 | 100 | 609 | 100 |

4.5.2 Use of the collection scheme

All respondents were asked if they used the mixed food and garden waste collection service to dispose of food. In Authority E almost one third stated that they did not use it to dispose of food. Just over one third stated they

used it on every collection to dispose of food. In Authority B 5% stated they did not dispose of food in this way, with 80% stating they disposed of food in every collection.

Figure 4.1: Disposing of food waste via the mixed food and garden collection service

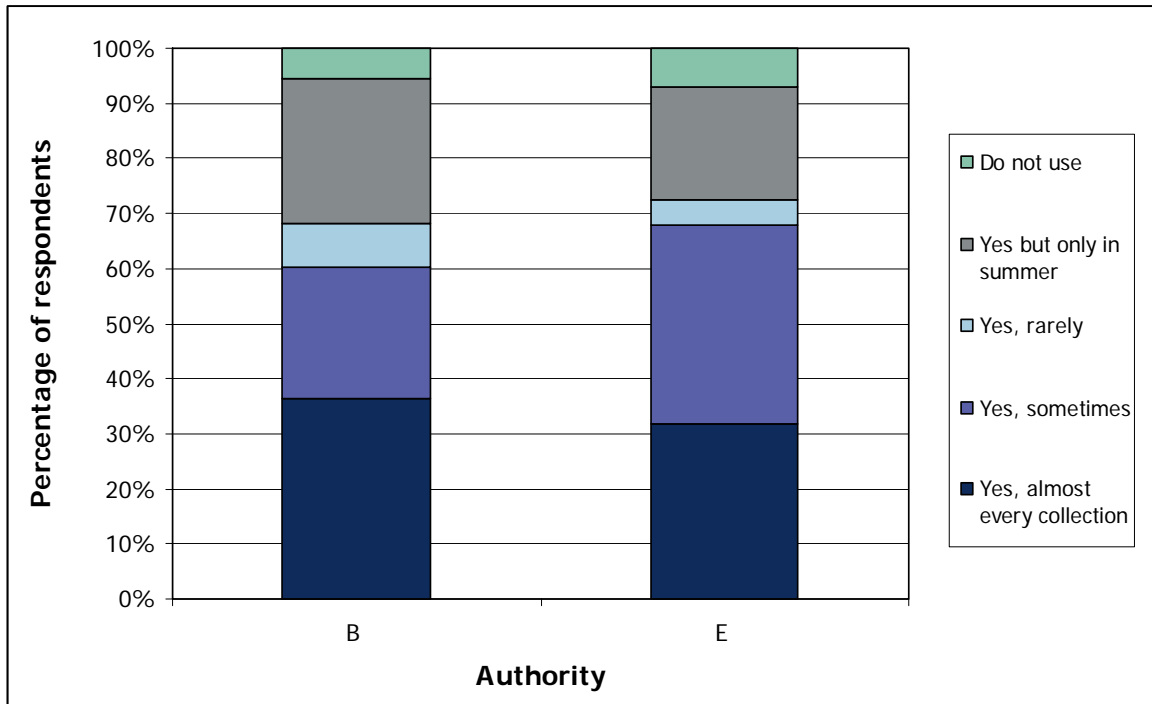


In both authorities the majority of respondents stated that they used the service to dispose of garden waste. In Authority B 44% stated they used it every collection compared to 12% in Authority E.

Despite the fact that the majority of residents surveyed expressed satisfaction with the recycling service, capture rates for food and overall diversion were seen to be low overall; ranging between 8.7% for authority A and 54.5% for Authority F. As has been observed for other types of recycling service, claimed behaviour from interviews did not necessarily match actual behaviour as measured through the survey work. Authority E recorded the lowest recycling rate (12% capture, 4% diversion) for food despite the fact that 62% of residents were very satisfied with the service. In interviews however 52% indicated that they used the service on every, or almost every opportunity. Monitoring recorded that even fewer residents (46%) were actually classified as participants.

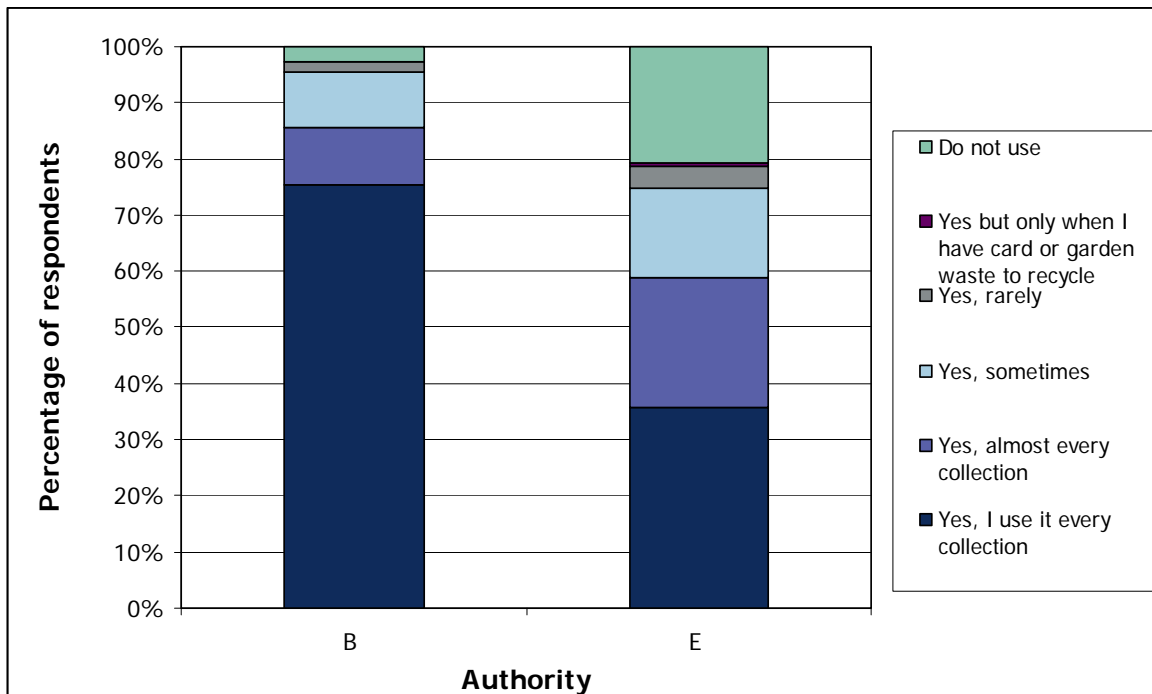
Authority B residents captured 47% of their food and recorded the second highest diversion rate for food of the six authorities at 7%. Overall 70% of residents were very satisfied with the service. In this case over 84% of residents interviewed suggested that they used the service at every; or almost every opportunity. Participation monitoring recorded that even more residents (87%) were actually classified as participants.

Figure 4.2: Disposing of garden waste via the mixed food and garden waste collection



In Authority E, 21% stated they did not put card into the bin compared to 3% in Authority B. Just one third (36%) of survey respondents in Authority E claimed to dispose of cardboard every collection compared to 75% in Authority B.

Figure 4.3: Disposing of card via the mixed food and garden waste collection



4.5.3 Reasons for not using the collection for food waste

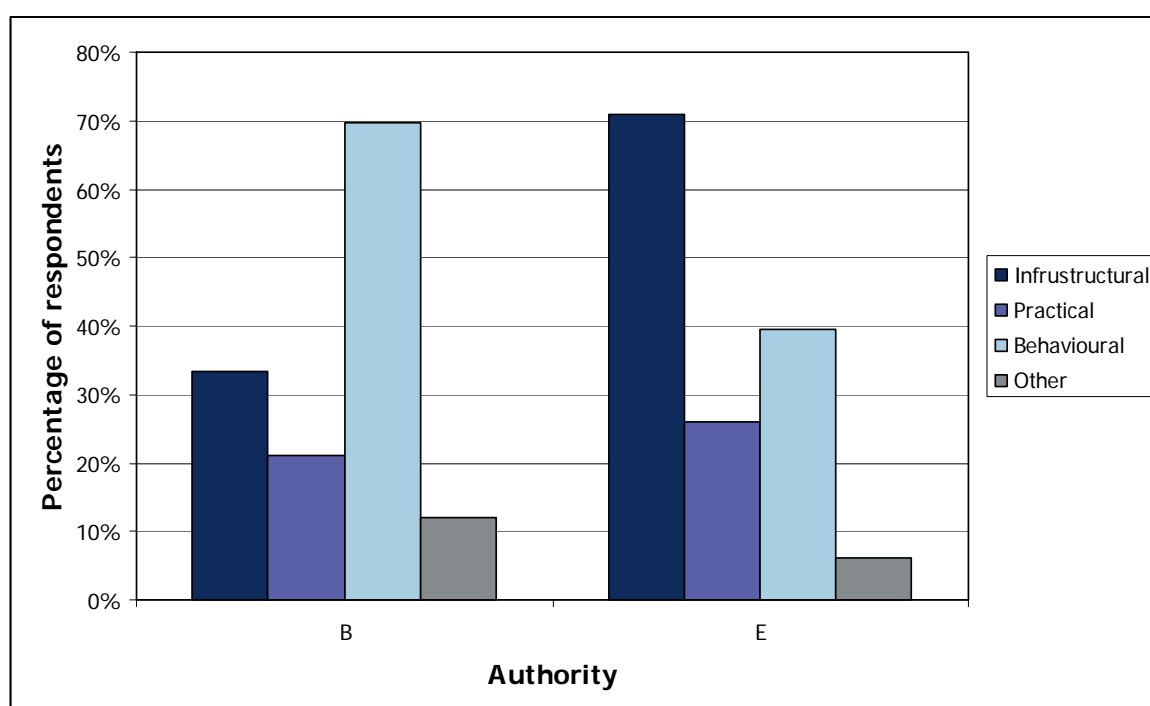
Those respondents that stated they did not put food in the mixed food, cardboard and garden waste collection were asked 'why don't you participate?' Some respondents gave more than one reason. The answers have been coded into the following categories: practical; infrastructural; behavioural; and other disposal.

For Authority E, infrastructural reasons were the most common barriers to using the service, whereas for Authority B behavioural reasons were the most common barrier.

Significantly more reasons were given by Authority E respondents as to why they do not participate. The most common reason (52%) was that they did not know they could recycle food waste, followed by not having enough food waste to recycle (23%). The latter was the reason most given for not participating in food waste collections by respondents to surveys conducted as part of the WRAP food waste collection trials.

For Authority B respondents the most common reason (39%) given was that they do not have enough food waste to recycle. The second most common response was that they home compost their food waste (18%), followed by feeding the food to their animals (12%).

Figure 4.4: Reasons for not participating in the food waste collection

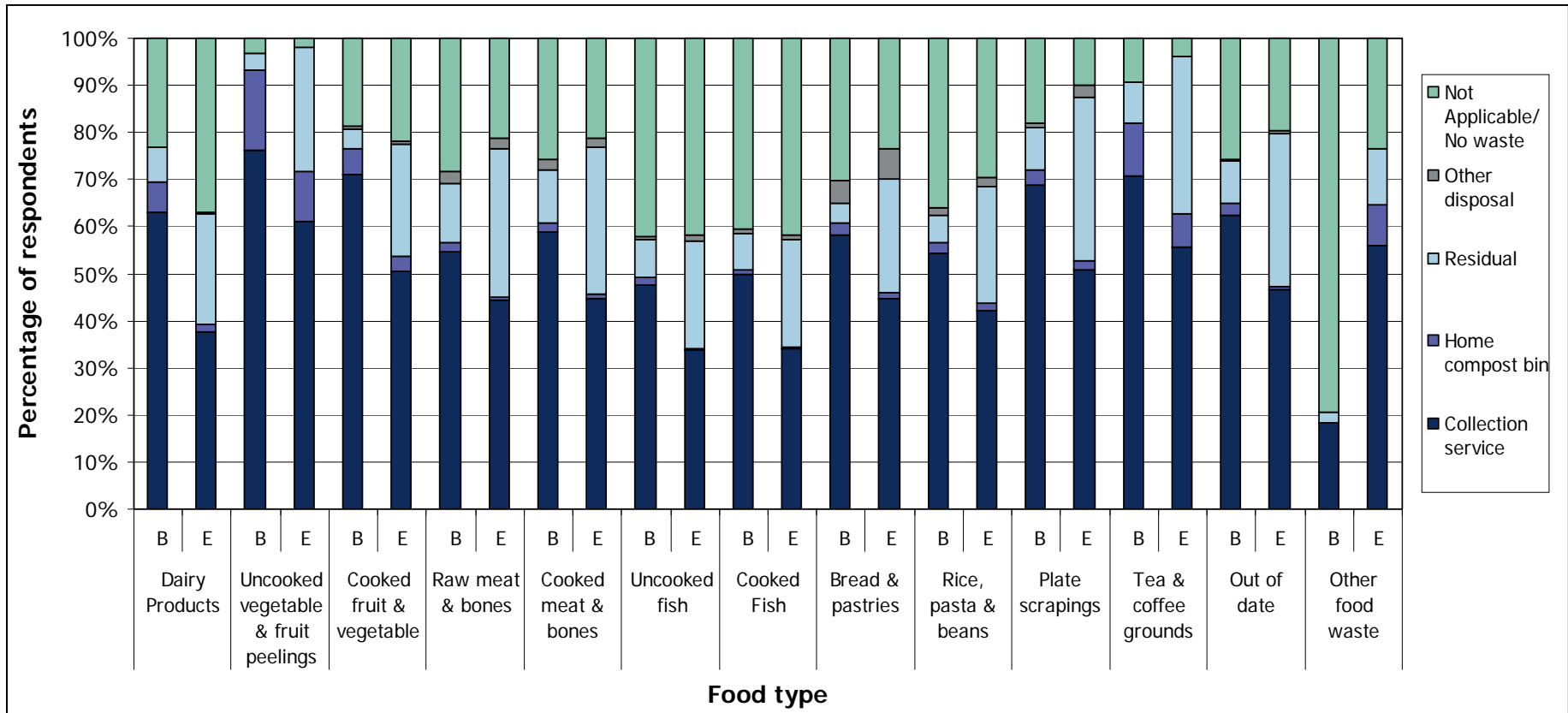


4.5.4 Disposal of food waste

Respondents were asked a series of questions on how they dispose of certain types of wastes. The options were - in the mixed food and garden container, home compost bin or in the refuse bin. Apart from 'other food waste' the majority of residents claimed to be disposing of their food waste via the mixed food and garden waste collection service. Other food waste is material other than that listed separately in Appendix E.

A greater number of Authority E residents (weekly collection service) compared to Authority B residents (fortnightly collection service) said they place items in the refuse bin, which could be placed in a home compost bin or the food and garden waste container. To give a couple of examples, just over a quarter (27%) of Authority E respondents placed 'uncooked vegetables and fruit peelings' in the refuse bin, compared to only 3% of Authority B respondents. Also, just over a third (35%) of Authority E respondents placed 'plate scrapings' in the refuse bin, compared to 9% of Authority B respondents.

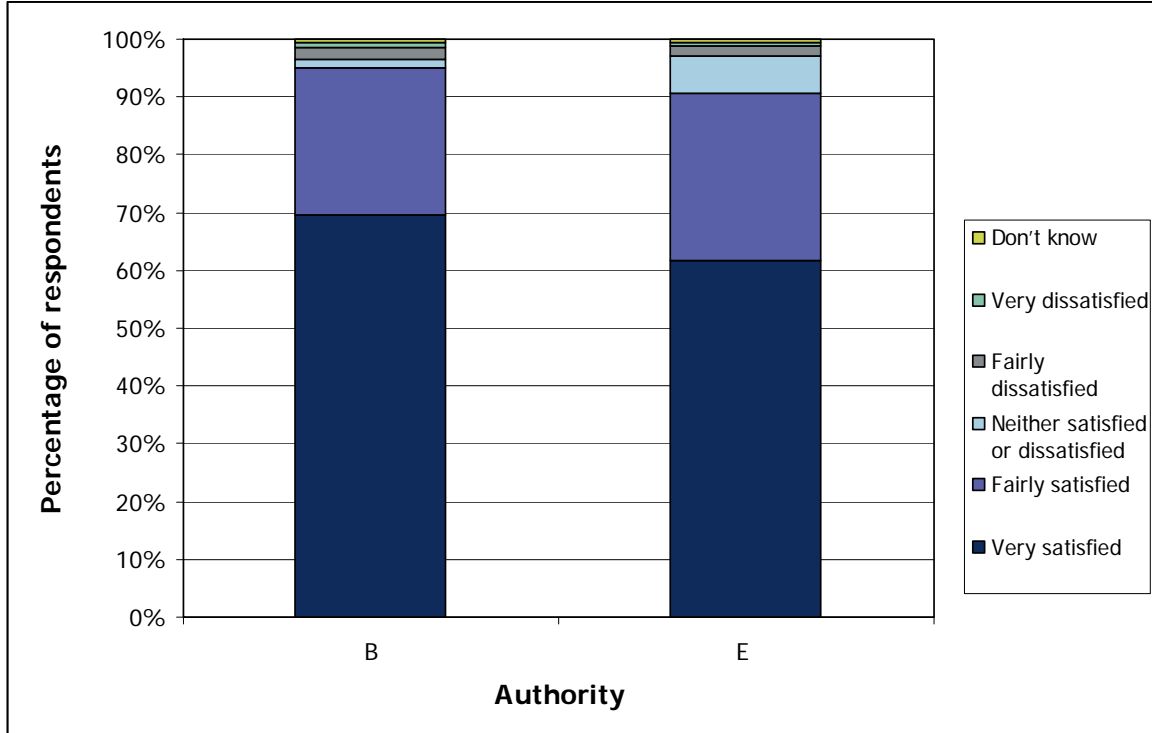
Figure 4.5: Disposal of food waste (Data tables can be found in Appendix D)



4.5.5 Satisfaction with the collection service

Respondents were asked 'How satisfied they are with the mixed food, cardboard and garden waste service'. The majority of respondents in both Authority B and Authority E stated that they were 'very satisfied' with the service received (70% and 62% respectively). Only 3% in each authority rated themselves as either fairly or very dissatisfied with the service.

Figure 4.6: Satisfaction with the collection service



Finally, respondents were asked 'Have you experienced any problems when using the mixed food, cardboard and garden waste collection?' In both Authority B and Authority E the majority of respondents had not experienced any problems when using the service (77% and 75% respectively).

In Authority B the main problems experienced were:

- The collection is not frequent enough (4.5%);
- Missed collections / collection unreliable (3.1%); and
- Food waste smells (3.1%).

In Authority E the main problems experienced were:

- Missed collections / collection unreliable (6.3%);
- Food waste smells (5.5%); and
- Food waste attracts flies (3.1%).

Key findings from face to face surveys:

- 13% of Authority B and 15% of Authority E respondents were Committed Food Waste Reducers. In a recent national Love Food Hate Waste campaign tracker survey carried out on behalf of WRAP 17% of respondents were categorised as Committed Food Waste Reducers.
- In Authority E almost one third of respondents stated they did not use the service to dispose of food waste and just over one third stated they used it every collection to dispose of food waste. In Authority B 5% stated they did not use the service to dispose of food waste with 80% stating they used it every collection to dispose of food waste.
- In both authorities the majority of respondents stated they used the service to dispose of garden waste. In Authority B 44% stated they used it every collection compared to 12% in Authority E
- In Authority E 21% stated they did not put card into the bin compared to 3% in Authority B. Just over one third (36%) in Authority E disposed of cardboard every collection compared to 75% in Authority B.
- For Authority E, infrastructural reasons were the most common barriers to using the service, whereas for Authority B behavioural reasons were the most common barrier.
- Authority E (weekly collection service) respondents were more likely to place food items in the refuse bin that could have been disposed of through home composting or via the mixed food and garden collection.

Appendix A: ACORN Categories

Table A1: ACORN Category Classification⁸.

| ACORN CATEGORY | DESCRIPTION | % U.K. |
|-----------------------|---|--------|
| 1 – Wealthy Achievers | These are some of the most successful and affluent people in the UK. They live in wealthy, high status rural, semi-rural and suburban areas of the country. Middle-aged or older people predominate, with many empty nesters and wealthy retired. Some neighbourhoods contain large numbers of well-off families with school age children, particularly in the more suburban locations. These people live in large houses, which are usually detached with four or more bedrooms. Almost 90% are owner occupiers, with half of those owning their home outright. They are very well educated and most are employed in managerial and professional occupations. Many own their own business. Car ownership is high, with many households running two or more cars. Incomes are high, as are levels of savings and investments. These people are well established at the top of the social ladder. They enjoy all the advantages of being healthy, wealthy and confident consumers. | 23.3% |
| 2 – Urban Prosperity | These are well educated and mostly prosperous people living in our major towns and cities. They include both older wealthy people living in the most exclusive parts of London and other cities, and highly educated younger professionals moving up the corporate ladder. This category also includes some well educated but less affluent individuals, such as students and graduates in their first jobs. The wealthier people tend to be in senior managerial or professional careers, and often live in large terraced or detached houses with four or more bedrooms. Some of the younger professionals may be buying or renting flats. The less affluent will be privately renting. These people have a cosmopolitan outlook and enjoy their urban lifestyle. They like to eat out in restaurants, go to the theatre and cinema and make the most of the culture and nightlife of the big city. | 13.3% |
| 3 – Comfortably Off | This category contains much of 'middle-of-the-road' Britain. Most people are comfortably off. They may not be wealthy, but they have few major financial worries. All lifestages are represented in this category. Younger singles and couples, just starting out on their careers, are the dominant group in some areas. Other areas have mostly stable families and empty nesters, especially in suburban or semi-rural locations. Comfortably off pensioners, living in retirement areas around the coast or in the countryside, form the other main group in this category. Most people own their own home, with owner occupation exceeding 80%. Most houses are semidetached or detached. Employment is in a mix of professional and managerial, clerical and skilled occupations. Educational qualifications tend to be in line with the national average. This category incorporates the home-owning, stable and fairly comfortable backbone of modern Britain. | 28.1% |
| 4 – Moderate Means | This category contains much of what used to be the country's industrial heartlands. Many people are still employed in traditional, blue-collar occupations. Others have become employed in service and retail jobs as the employment landscape has changed. In the better off areas, incomes are in line with the national average and people have reasonable standards of living. However, in other areas, where levels of qualifications are low, incomes can fall below the national average. There are also some isolated pockets of unemployment and long-term illness. This category also includes some neighbourhoods with very high concentrations of Asian families on low incomes. Most housing is terraced, with two or three bedrooms, and largely owner occupied. It includes many former council houses, bought by their tenants in the 1980s. Overall, the people in this category have modest lifestyles, but are able to get by. | 13.2% |
| 5 – Hard Pressed | This category contains the poorest areas of the UK. Unemployment is well above the national average. Levels of qualifications are low and those in work are likely to be employed in unskilled occupations. Household incomes are low and there are high levels of long-term illness in some areas. Housing is a mix of low-rise estates, with terraced or semi-detached houses, and purpose built flats, including high-rise blocks. Properties tend to be small and there is much overcrowding. Over 50% of the housing is rented from the local Council or a housing association. There are a large number of single adult households, including many single Pensioners and lone parents. In some neighbourhoods, there are high numbers of black and Asian residents. These people are experiencing the most difficult social and economic conditions in the whole country, and appear to have limited opportunity to improve their circumstances. | 21.7% |

⁸ <http://www.caci.co.uk/download.aspx?path=/libraries/document/394.pdf>

Appendix B: waste compositional analysis

Table B1: Food waste classification sort sheet

| Primary Cats | Sub-Categories | Weight |
|---|--|--------|
| Food purchased whole unopened | Bread, cereal, pasta, rice | |
| | Meat | |
| | Fish | |
| | Milk, cheese, eggs | |
| | Butter, margarine, fat | |
| | Fruit | |
| | Vegetables | |
| | Sugar, jam, chocolate, crisps, ice cream | |
| | Food products not elsewhere specified | |
| | Drinks | |
| | Composite meal | |
| Food that has been partly consumed | Bread, cereal, pasta, rice | |
| | Meat | |
| | Fish | |
| | Milk, cheese, eggs | |
| | Butter, margarine, fat | |
| | Fruit | |
| | Vegetables | |
| | Sugar, jam, chocolate, crisps, ice cream | |
| | Food products not elsewhere specified | |
| | Drinks | |
| | Composite meal | |
| Food post preparation, consumption | Bread, cereal, pasta, rice | |
| | Meat | |
| | Fish | |
| | Milk, cheese, eggs | |
| | Butter, margarine, fat | |
| | Fruit | |
| | Vegetables | |
| | Sugar, jam, chocolate, crisps, ice cream | |
| | Food products not elsewhere specified | |
| | Drinks | |
| | Composite | |
| Preparation by products, non edible element | Meat bones, fat, gristle | |
| | Fish bones, fat, gristle | |
| | Cheese rinds, eggshells | |
| | Used grease | |
| | Fruit peelings, pips etc | |
| | Vegetable peelings, pips etc | |
| | Food products not elsewhere specified | |
| | Drinks tea bags, coffee grinds etc | |
| Composite gunge | Composite | |
| Weight of all card and cardboard | | |
| Weight of all garden waste | | |
| Weight of all other waste | | |
| Total | | |

Appendix C: Participation monitoring

Table C1: Participation rate for all six authorities, along with collection frequency

| Collection Frequency | Areas monitored | Overall participation rate % |
|-------------------------|-----------------|------------------------------|
| Fortnightly Collections | A | 67% |
| | B | 87% |
| | C | 84% |
| | D | 74% |
| Weekly Collections | E | 46% |
| | F | 70% |

Table C2: Participation rate by ACORN

| | | ACORN | | | | |
|------------------------|----------------------|--------|--------|--------|--------|--------|
| | | 1 | 2 | 3 | 4 | 5 |
| Weekly collection | Households monitored | 303 | 1495 | 1359 | 200 | 357 |
| | Number Participated | 255 | 715 | 886 | 146 | 140 |
| | Participation | 84.24% | 47.83% | 65.19% | 72.90% | 39.15% |
| Fortnightly collection | Households monitored | 2494 | 1707 | 2499 | 573 | 917 |
| | Number Participated | 2021 | 1273 | 1823 | 471 | 662 |
| | Participation | 81.07% | 74.55% | 72.93% | 82.27% | 72.17% |

Table C3: Set out rates and frequency of collection

| Set out | Fortnightly collection | | | | Weekly collection | |
|------------|------------------------|--------|--------|--------|-------------------|--------|
| | A | B | C | D | E | F |
| 0 set outs | 32.6% | 13.1% | 16.3% | 26.5% | 53.8% | 30.0% |
| 1 set outs | 23.3% | 16.5% | 15.8% | 15.9% | 13.1% | 19.2% |
| 2 set outs | 23.6% | 25.7% | 25.0% | 24.2% | 16.2% | 17.0% |
| 3 set outs | 20.5% | 44.7% | 43.0% | 33.5% | 16.9% | 33.8% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Table C4: Comparing the set out with ACORN

| | Fortnightly | | | | |
|------------|-------------|---------|---------|---------|---------|
| | 1 | 2 | 3 | 4 | 5 |
| 0 set outs | 18.93% | 25.45% | 27.07% | 17.73% | 27.83% |
| 1 set outs | 16.95% | 16.70% | 19.20% | 13.22% | 22.39% |
| 2 set outs | 25.85% | 25.38% | 23.28% | 26.09% | 21.00% |
| 3 set outs | 38.27% | 32.47% | 30.45% | 42.95% | 28.78% |
| Total | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| | Weekly | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 0 set outs | 15.76% | 52.18% | 34.80% | 27.03% | 60.86% |
| 1 set outs | 16.92% | 13.05% | 20.36% | 13.28% | 12.83% |
| 2 set outs | 23.72% | 16.13% | 15.72% | 22.31% | 12.50% |
| 3 set outs | 43.60% | 18.64% | 15.72% | 37.38% | 13.82% |
| Total | 100.00% | 100.00% | 86.61% | 100.00% | 100.00% |

Appendix D: Data tables - face to face survey

Table D1: Disposing of food waste via the mixed food and garden collection

| Food waste | Authority | | | |
|--|-----------|---------|-----------|---------|
| | B | | E | |
| | Frequency | Valid % | Frequency | Valid % |
| Yes, I use it every collection | 489 | 79.5 | 216 | 35.5 |
| Yes, almost every collection | 30 | 4.9 | 103 | 16.9 |
| Yes, sometimes | 42 | 6.8 | 66 | 10.8 |
| Yes, rarely | 20 | 3.3 | 23 | 3.8 |
| Yes but only when I have garden waste to recycle | 1 | 0.2 | 6 | 1 |
| Yes but only when I have card or garden waste to recycle | 0 | 0 | 2 | 0.3 |
| No, I did use it but not any more | 1 | 0.2 | 16 | 2.6 |
| No, but I intend to start using it | 2 | 0.3 | 6 | 1 |
| No, never used it | 30 | 4.9 | 171 | 28.1 |
| Total | 615 | 100 | 609 | 100 |

Table D2: Disposing of garden waste via the mixed food and garden waste collection

| Garden waste | Authority | | | |
|------------------------------------|-----------|---------|-----------|---------|
| | B | | E | |
| | Frequency | Valid % | Frequency | Valid % |
| Yes, I use it every collection | 269 | 43.8 | 70 | 11.5 |
| Yes, almost every collection | 125 | 20.4 | 170 | 28 |
| Yes, sometimes | 82 | 13.4 | 194 | 31.9 |
| Yes, rarely | 27 | 4.4 | 25 | 4.1 |
| Yes but only in summer | 91 | 14.8 | 110 | 18.1 |
| No, I did use it but not any more | 0 | 0 | 2 | 0.3 |
| No, but I intend to start using it | 2 | 0.3 | 2 | 0.3 |
| No, never used it | 17 | 2.8 | 35 | 5.8 |
| Total | 614 | 100 | 608 | 100 |

Table D3: Disposing of card via the mixed food and garden waste collection

| Cardboard | Authority | | | |
|--|-----------|---------|-----------|---------|
| | B | | E | |
| | Frequency | Valid % | Frequency | Valid % |
| Yes, I use it every collection | 463 | 75.2 | 217 | 35.6 |
| Yes, almost every collection | 62 | 10.1 | 141 | 23.2 |
| Yes, sometimes | 62 | 10.1 | 96 | 15.8 |
| Yes, rarely | 10 | 1.6 | 23 | 3.8 |
| Yes but only when I have card or garden waste to recycle | 0 | 0 | 5 | 0.8 |
| No, I did use it but not any more | 0 | 0 | 8 | 1.3 |
| No, but I intend to start using it | 1 | 0.2 | 4 | 0.7 |
| No, never used it | 16 | 2.6 | 113 | 18.6 |
| Total | 616 | 100 | 609 | 100 |

Table D4: Reasons for not participating in the food waste collection

| | Authority | | | |
|--|-----------|-------------|------------|--------------|
| | B | | E | |
| | Frequency | Valid % | Frequency | Valid % |
| I didn't know I could | 2 | 6.1 | 101 | 52.3% |
| I did not have any information on the collection | 2 | 6.1 | 17 | 8.8% |
| I have only just found out about the collection | 2 | 6.1 | 0 | 0.0% |
| I did not understand the information about the collection | 0 | 0 | 0 | 0.0% |
| Poor bin design / difficult to use | 0 | 0 | 0 | 0.0% |
| Bin is too big for just food waste | 0 | 0 | 2 | 1.0% |
| I don't have a kitchen caddy | 0 | 0 | 7 | 3.6% |
| Liners are not currently accepted | 0 | 0 | 3 | 1.6% |
| Don't have a bin | 3 | 9.1 | 4 | 2.1% |
| Just moved in | 1 | 3 | 0 | 0.0% |
| Fortnightly collection | 1 | 3 | 3 | 1.6% |
| Infrastructural | 11 | 33.4 | 137 | 71.0% |
| It is too messy | 1 | 3 | 11 | 5.7% |
| It is too smelly | 2 | 6.1 | 17 | 8.8% |
| It attracts flies | 2 | 6.1 | 12 | 6.2% |
| It attracts vermin | 0 | 0 | 10 | 5.2% |
| I am worried about hygiene / children near it | 1 | 3 | 0 | 0.0% |
| Use a food waste disposal unit | 1 | 3 | 1 | 0.5% |
| Practical | 7 | 21.2 | 51 | 26.4% |
| I home compost food waste | 6 | 18.2 | 17 | 8.8% |
| I haven't got enough food waste to recycle | 13 | 39.4 | 44 | 22.8% |
| I don't see the benefit of recycling | 0 | 0 | 1 | 0.5% |
| I don't have enough space to store recycling | 0 | 0 | 4 | 2.1% |
| I prefer to use the general waste bin | 1 | 3 | 4 | 2.1% |
| I am not fit/well enough to manage* | 1 | 3 | 3 | 1.6% |
| I don't use it in winter when there is no garden waste to get rid of | 0 | 0 | 0 | 0.0% |
| Waste goes to the farm | 2 | 6.1 | 1 | 0.5% |
| Behavioural | 23 | 69.7 | 74 | 38.3% |
| Other | 4 | 12.1 | 13 | 0.5% |
| No response | 1 | 3 | 0 | |
| Don't know | 0 | 0 | 1 | 0.5% |

Table D5: Disposal of food waste in Authority B

| | | Authority B | |
|---------------------------------------|---|--------------------|----------------------|
| | | Frequency | Respondents % |
| Dairy products | Mixed food, cardboard and garden collection | 396 | 64.2% |
| | Home compost bin | 40 | 6.5% |
| | Refuse bin (blue lid) | 46 | 7.5% |
| | Feed to animals | 1 | .2% |
| | Not Applicable/No Waste | 145 | 23.5% |
| | Non-Response | 1 | .2% |
| | Total | 617 | 100.0% |
| Uncooked vegetable and fruit peelings | Mixed food, cardboard and garden collection | 492 | 79.7% |
| | Home compost bin | 111 | 18.0% |
| | Refuse bin (blue lid) | 21 | 3.4% |
| | Feed to animals | 2 | .3% |
| | Not Applicable/No Waste | 20 | 3.2% |
| | Total | 617 | 100.0% |
| Cooked fruit and vegetable | Mixed food, cardboard and garden collection | 446 | 72.3% |
| | Home compost bin | 34 | 5.5% |
| | Refuse bin (blue lid) | 27 | 4.4% |
| | Feed to animals | 4 | .6% |
| | Not Applicable/No Waste | 117 | 19.0% |
| | Total | 617 | 100.0% |
| Raw meat and bones | Mixed food, cardboard and garden collection | 343 | 55.6% |
| | Home compost bin | 11 | 1.8% |
| | Refuse bin (blue lid) | 79 | 12.8% |
| | Feed to animals | 16 | 2.6% |
| | Not Applicable/No Waste | 177 | 28.7% |
| | Non-Response | 1 | .2% |
| | Total | 617 | 100.0% |
| Cooked meat and bones | Mixed food, cardboard and garden collection | 370 | 60.0% |
| | Home compost bin | 11 | 1.8% |
| | Refuse bin (blue lid) | 71 | 11.5% |
| | Feed to animals | 15 | 2.4% |
| | Not Applicable/No Waste | 161 | 26.1% |
| | Total | 617 | 100.0% |
| Uncooked fish | Mixed food, cardboard and garden collection | 297 | 48.1% |
| | Home compost bin | 10 | 1.6% |
| | Refuse bin (blue lid) | 51 | 8.3% |
| | Feed to animals | 3 | .5% |
| | Not Applicable/No Waste | 263 | 42.6% |
| | Total | 617 | 100.0% |
| Cooked fish | Mixed food, cardboard and garden collection | 310 | 50.2% |
| | Home compost bin | 7 | 1.1% |
| | Refuse bin (blue lid) | 47 | 7.6% |
| | Feed to animals | 7 | 1.1% |

| | | | |
|---------------------------|---|-----|--------|
| | Not Applicable/No Waste | 251 | 40.7% |
| | Non-Response | 2 | .3% |
| | Total | 617 | 100.0% |
| Bread, cakes and pastries | Mixed food, cardboard and garden collection | 363 | 58.8% |
| | Home compost bin | 16 | 2.6% |
| | Refuse bin (blue lid) | 27 | 4.4% |
| | Feed to animals | 30 | 4.9% |
| | Not Applicable/No Waste | 188 | 30.5% |
| | Non-Response | 1 | .2% |
| | Total | 617 | 100.0% |
| Rice, pasta and beans | Mixed food, cardboard and garden collection | 340 | 55.1% |
| | Home compost bin | 14 | 2.3% |
| | Refuse bin (blue lid) | 35 | 5.7% |
| | Feed to animals | 9 | 1.5% |
| | Not Applicable/No Waste | 226 | 36.6% |
| | Non-Response | 1 | .2% |
| | Total | 617 | 100.0% |
| Plate scrapings | Mixed food, cardboard and garden collection | 435 | 70.5% |
| | Home compost bin | 19 | 3.1% |
| | Refuse bin (blue lid) | 58 | 9.4% |
| | Feed to animals | 6 | 1.0% |
| | Not Applicable/No Waste | 113 | 18.3% |
| | Total | 617 | 100.0% |
| Tea and coffee grounds | Mixed food, cardboard and garden collection | 447 | 72.4% |
| | Home compost bin | 73 | 11.8% |
| | Refuse bin (blue lid) | 53 | 8.6% |
| | Feed to animals | 0 | .0% |
| | Not Applicable/No Waste | 60 | 9.7% |
| | Non-Response | 1 | .2% |
| | Total | 617 | 100.0% |
| Out of date food | Mixed food, cardboard and garden collection | 390 | 63.2% |
| | Home compost bin | 17 | 2.8% |
| | Refuse bin (blue lid) | 56 | 9.1% |
| | Feed to animals | 2 | .3% |
| | Not Applicable/No Waste | 161 | 26.1% |
| | Non-Response | 4 | .6% |
| | Total | 617 | 100.0% |
| Other food waste | Mixed food, cardboard and garden collection | 16 | 18.2% |
| | Home compost bin | 0 | .0% |
| | Refuse bin (blue lid) | 2 | 2.3% |
| | Feed to animals | 0 | .0% |
| | Not Applicable/No Waste | 70 | 79.5% |
| | Total | 88 | 100.0% |

Table D6: Disposal of food waste in Authority E

| | | Frequency | Respondents % |
|---------------------------------------|---|-----------|---------------|
| Dairy Products | Mixed food, cardboard and garden collection | 226 | 37.1% |
| | Home compost bin | 9 | 1.5% |
| | Refuse bin (Grey) | 141 | 23.2% |
| | Feed to animals | 2 | 0.3% |
| | Not Applicable/No waste | 222 | 36.5% |
| | Non response | 12 | 2.0% |
| | Total | 609 | 100.0% |
| Uncooked vegetable and fruit peelings | Mixed food, cardboard and garden collection | 382 | 62.7% |
| | Home compost bin | 68 | 11.2% |
| | Refuse bin (Grey) | 164 | 26.9% |
| | Feed to animals | 0 | 0.0% |
| | Not Applicable/No waste | 13 | 2.1% |
| | Non response | 4 | 0.7% |
| | Total | 609 | 100.0% |
| Cooked fruit and vegetable | Mixed food, cardboard and garden collection | 309 | 50.7% |
| | Home compost bin | 18 | 3.0% |
| | Refuse bin (Grey) | 146 | 24.0% |
| | Feed to animals | 5 | 0.8% |
| | Not Applicable/No waste | 133 | 21.8% |
| | Non response | 4 | 0.7% |
| | Total | 609 | 100.0% |
| Raw meat and bones | Mixed food, cardboard and garden collection | 268 | 44.0% |
| | Home compost bin | 4 | 0.7% |
| | Refuse bin (Grey) | 190 | 31.2% |
| | Feed to animals | 13 | 2.1% |
| | Not Applicable/No waste | 129 | 21.2% |
| | Non response | 10 | 1.6% |
| | Total | 609 | 100.0% |
| Cooked meat and bones | Mixed food, cardboard and garden collection | 273 | 44.8% |
| | Home compost bin | 5 | 0.8% |
| | Refuse bin (Grey) | 190 | 31.2% |
| | Feed to animals | 11 | 1.8% |
| | Not Applicable/No waste | 130 | 21.3% |
| | Non response | 5 | 0.8% |
| | Total | 609 | 100.0% |
| Uncooked fish | Mixed food, cardboard and garden collection | 204 | 33.5% |
| | Home compost bin | 2 | 0.3% |
| | Refuse bin (Grey) | 139 | 22.8% |
| | Feed to animals | 7 | 1.1% |
| | Not Applicable/No waste | 254 | 41.7% |
| | Non response | 5 | 0.8% |
| | Total | 609 | 100.0% |
| Cooked fish | Mixed food, cardboard and garden collection | 207 | 34.0% |
| | Home compost bin | 2 | 0.3% |
| | Refuse bin (Grey) | 137 | 22.5% |

| | | | |
|---|---|-----|--------|
| | Feed to animals | 7 | 1.1% |
| | Not Applicable/No waste | 252 | 41.4% |
| | Non response | 6 | 1.0% |
| | Total | 609 | 100.0% |
| Bread, cakes and pastries | Mixed food, cardboard and garden collection | 271 | 44.5% |
| | Home compost bin | 7 | 1.1% |
| | Refuse bin (Grey) | 146 | 24.0% |
| | Feed to animals | 39 | 6.4% |
| | Not Applicable/No waste | 143 | 23.5% |
| | Non response | 6 | 1.0% |
| | Total | 609 | 100.0% |
| Rice, pasta and beans | Mixed food, cardboard and garden collection | 256 | 42.0% |
| | Home compost bin | 9 | 1.5% |
| | Refuse bin (Grey) | 149 | 24.5% |
| | Feed to animals | 12 | 2.0% |
| | Not Applicable/No waste | 179 | 29.4% |
| | Non response | 7 | 1.1% |
| | Total | 609 | 100.0% |
| Plate scrapings (uneaten food from your plates or dishes) | Mixed food, cardboard and garden collection | 308 | 50.6% |
| | Home compost bin | 12 | 2.0% |
| | Refuse bin (Grey) | 210 | 34.5% |
| | Feed to animals | 15 | 2.5% |
| | Not Applicable | 60 | 9.9% |
| | Non response/No waste | 9 | 1.5% |
| | Total | 609 | 100.0% |
| Tea and coffee grounds | Mixed food, cardboard and garden collection | 345 | 56.7% |
| | Home compost bin | 44 | 7.2% |
| | Refuse bin (Grey) | 207 | 34.0% |
| | Feed to animals | 1 | 0.2% |
| | Not Applicable/No waste | 23 | 3.8% |
| | Non response | 4 | 0.7% |
| | Total | 609 | 100.0% |
| Out of date food | Mixed food, cardboard and garden collection | 282 | 46.3% |
| | Home compost bin | 5 | 0.8% |
| | Refuse bin (Grey) | 197 | 32.3% |
| | Feed to animals | 4 | 0.7% |
| | Not Applicable/No waste | 118 | 19.4% |
| | Non response | 12 | 2.0% |
| | Total | 609 | 100.0% |
| Other food waste (specify) | Mixed food, cardboard and garden collection | 19 | 50.0% |
| | Home compost bin | 3 | 7.9% |
| | Refuse bin (Grey) | 4 | 10.5% |
| | Feed to animals | 0 | 0.0% |
| | Not Applicable/No waste | 8 | 21.1% |
| | Non response | 4 | 10.5% |
| | Total | 38 | 100.0% |

Table D7: Satisfaction with the mixed food and garden waste collection service

| | Authority B | | Authority E | |
|-----------------------------------|--------------------|----------------|--------------------|----------------|
| | Frequency | Valid % | Frequency | Valid % |
| Very satisfied | 404 | 69.7 | 256 | 61.7% |
| Neither satisfied or dissatisfied | 9 | 1.6 | 27 | 6.5% |
| Very dissatisfied | 5 | 0.9 | 3 | 0.7% |
| Fairly satisfied | 147 | 25.3 | 120 | 28.9% |
| Fairly dissatisfied | 12 | 2.1 | 7 | 1.7% |
| Don't know | 3 | 0.5 | 2 | 0.5% |
| Total | 580 | 100.0 | 415 | 100.0% |

Appendix E: Face to face questionnaire

Committed food reducer questions

| | | | |
|--|--------------------------|-----|----------------------------|
| (A) How responsible are you for food shopping in your house? | | | |
| (B) And how responsible are you for the preparation and cooking of food in your house? | | | |
| [READ OUT OR SHOW CARD, TICK ✓ ONE BOX] | | | |
| | | Q1a | Q1b |
| I have responsibility for all or most of it | <input type="checkbox"/> | 1 | <input type="checkbox"/> |
| I have responsibility for about half of it | <input type="checkbox"/> | 2 | <input type="checkbox"/> |
| I have responsibility for less than half of it | <input type="checkbox"/> | 3 | <input type="checkbox"/> |
| I'm not responsible for any of it | <input type="checkbox"/> | 4 | <input type="checkbox"/> |
| How much uneaten food, overall, would you say you generally end up throwing away? | | | |
| [READ OUT OR SHOW CARD, TICK ✓ ONE BOX] | | | |
| Quite a lot | <input type="checkbox"/> | 1 | Hardly any |
| A reasonable amount | <input type="checkbox"/> | 2 | None |
| Some | <input type="checkbox"/> | 3 | Don't know [DO NOT PROMPT] |
| A small amount | <input type="checkbox"/> | 4 | |
| Thinking about when you have to throw food away, to what extent, if at all, does it bother you? | | | |
| [READ OUT, OR SHOW CARD, TICK ✓ ONE BOX] | | | |
| A great deal | <input type="checkbox"/> | 1 | Not very much |
| A fair amount | <input type="checkbox"/> | 2 | Not at all |
| A little | <input type="checkbox"/> | 3 | Don't know [DO NOT PROMPT] |
| How much effort do you and your household make to minimise the amount of uneaten food you throw away? | | | |
| [READ OUT OR SHOW CARD, TICK ✓ ONE BOX] | | | |
| A great deal | <input type="checkbox"/> | 1 | Not very much |
| A fair amount | <input type="checkbox"/> | 2 | None at all |
| A little | <input type="checkbox"/> | 3 | Don't know [DO NOT PROMPT] |

Food waste questions

The following questions are about the mixed food, card and garden waste collection in your area. We would like to find out your views about this service.

| | | | | | | |
|---|--------------------------|-------------|--|--------------------------|---|-----------------|
| Do you use the mixed food, cardboard and garden waste collection (green bin) | | | | | | |
| [READ OUT OR SHOW CARD, TICK ✓ ONE BOX FOR EACH MATERIAL] | | | | | | |
| Garden | | Card | | Food | | GO TO Q7 |
| Yes, I use it every collection | <input type="checkbox"/> | 1 | Yes, I use it every collection | <input type="checkbox"/> | 1 | |
| Yes, almost every collection | <input type="checkbox"/> | 2 | Yes, almost every collection | <input type="checkbox"/> | 2 | |
| Yes, sometimes | <input type="checkbox"/> | 3 | Yes, sometimes | <input type="checkbox"/> | 3 | |
| Yes, rarely | <input type="checkbox"/> | 4 | Yes, rarely | <input type="checkbox"/> | 4 | |
| Yes but only in summer | <input type="checkbox"/> | 5 | Yes but only when I have garden waste to recycle | <input type="checkbox"/> | 5 | |

| | | | | | | |
|-------------------------------------|----------------------------|-------------------------------------|----------------------------|--|-----------------------------|-----------------|
| | | | | Yes but only when I have card or garden waste to recycle | <input type="checkbox"/> 6 | |
| No, I did use it but not any more | <input type="checkbox"/> 6 | No, I did use it but not any more | <input type="checkbox"/> 6 | No, I did use it but not any more | <input type="checkbox"/> 7 | GO TO Q6 |
| No, but I intend to start using it | <input type="checkbox"/> 7 | No, but I intend to start using it | <input type="checkbox"/> 7 | No, but I intend to start using it | <input type="checkbox"/> 8 | |
| No, never used it | <input type="checkbox"/> 8 | No, never used it | <input type="checkbox"/> 8 | No, never used it | <input type="checkbox"/> 9 | |
| Don't know [DO NOT PROMPT] | <input type="checkbox"/> 9 | Don't know [DO NOT PROMPT] | <input type="checkbox"/> 9 | Don't know [DO NOT PROMPT] | <input type="checkbox"/> 10 | |

If NO, why don't you put FOOD in the mixed food, cardboard and garden waste collection?
[DO NOT PROMPT, TICK ✓ ALL THAT APPLY]

| | | | |
|---|-----------------------------|--|-----------------------------|
| I didn't know I could | <input type="checkbox"/> 1 | I don't have a kitchen caddy | <input type="checkbox"/> 12 |
| I did not have any information on the collection | <input type="checkbox"/> 2 | Liners are not currently accepted | <input type="checkbox"/> 13 |
| I have only just found out about the collection | <input type="checkbox"/> 3 | I haven't got enough food waste to recycle | <input type="checkbox"/> 14 |
| I did not understand the information about the collection | <input type="checkbox"/> 4 | I don't see the benefit of recycling | <input type="checkbox"/> 15 |
| It is too messy | <input type="checkbox"/> 5 | I don't have enough space to store recycling | <input type="checkbox"/> 16 |
| It is too smelly | <input type="checkbox"/> 6 | I don't have enough time to recycle | <input type="checkbox"/> 17 |
| It attracts flies | <input type="checkbox"/> 7 | I prefer to use the general waste bin | <input type="checkbox"/> 18 |
| It attracts vermin | <input type="checkbox"/> 8 | I am not fit/well enough to manage* | <input type="checkbox"/> 19 |
| Poor bin design / difficult to use | <input type="checkbox"/> 9 | I am worried about hygiene / children near it | <input type="checkbox"/> 20 |
| Bin is too big for just food waste | <input type="checkbox"/> 10 | I don't use it in winter when there is no garden waste to get rid of | <input type="checkbox"/> 21 |
| I home compost food waste | <input type="checkbox"/> 11 | Don't know [DO NOT PROMPT] | <input type="checkbox"/> 22 |

Other (specify)

What do you do with the following wastes?

[READ OUT OR SHOW CARD, TICK ✓ ALL THAT APPLY]

| | Mixed food, cardboard and garden collection | Home compost bin | Refuse bin (Grey) |
|---|---|-----------------------------|-----------------------------|
| Dairy products (eg eggs / cheese / yogurt) | <input type="checkbox"/> 1 | <input type="checkbox"/> 1 | <input type="checkbox"/> 1 |
| Uncooked vegetable and fruit peelings | <input type="checkbox"/> 2 | <input type="checkbox"/> 2 | <input type="checkbox"/> 2 |
| Cooked fruit and vegetable | <input type="checkbox"/> 3 | <input type="checkbox"/> 3 | <input type="checkbox"/> 3 |
| Raw meat and bones | <input type="checkbox"/> 4 | <input type="checkbox"/> 4 | <input type="checkbox"/> 4 |
| Cooked meat and bones | <input type="checkbox"/> 5 | <input type="checkbox"/> 5 | <input type="checkbox"/> 5 |
| Uncooked fish | <input type="checkbox"/> 6 | <input type="checkbox"/> 6 | <input type="checkbox"/> 6 |
| Cooked fish | <input type="checkbox"/> 7 | <input type="checkbox"/> 7 | <input type="checkbox"/> 7 |
| Bread, cakes and pastries | <input type="checkbox"/> 8 | <input type="checkbox"/> 8 | <input type="checkbox"/> 8 |
| Rice, pasta and beans | <input type="checkbox"/> 9 | <input type="checkbox"/> 9 | <input type="checkbox"/> 9 |
| Plate scrapings (uneaten food from your plates or dishes) | <input type="checkbox"/> 10 | <input type="checkbox"/> 10 | <input type="checkbox"/> 10 |

| | | | |
|----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Tea and coffee grounds | <input type="checkbox"/> 11 | <input type="checkbox"/> 11 | <input type="checkbox"/> 11 |
| Out of date food | <input type="checkbox"/> 12 | <input type="checkbox"/> 12 | <input type="checkbox"/> 12 |
| Other food waste (specify) | <input type="checkbox"/> 13 | <input type="checkbox"/> 13 | <input type="checkbox"/> 13 |

Has your household regularly composted its food waste at home over the last 12 months (eg uncooked food, fruit and vegetable waste)?

[TICK ✓ ONE BOX]

| | | | |
|-----------------------------------|----------------------------|---|---|
| Yes | <input type="checkbox"/> 1 | <i>For USERS of the collection for food waste from Q5</i> | For NON-USERS of the collection for food waste from Q5 GO TO Question 14 |
| No | <input type="checkbox"/> 2 | | |
| Don't know [DO NOT PROMPT] | <input type="checkbox"/> 3 | | |

A kitchen caddy and an outside green waste bin have been provided for the collection of food, cardboard and garden waste.

Did you find the collection containers provided useful?

[DO NOT PROMPT, TICK ✓ ALL THAT APPLY]

| | Yes | No | Too big | Too small | |
|---|----------------------------|----------------------------|----------------------------|----------------------------|--|
| Kitchen caddy | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | Don't have one <input type="checkbox"/> 5 |
| | | | | | Never use the caddy <input type="checkbox"/> 6 |
| | | | | | The caddy handle is hard to close <input type="checkbox"/> 7 |
| | | | | | The caddy handle breaks <input type="checkbox"/> 8 |
| Outside mixed food, card and garden waste bin | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | Never use the bin <input type="checkbox"/> 6 |

Other (specify)

Do you line the inside of your mixed food, cardboard and garden waste bins?

[DO NOT PROMPT, TICK ✓ ONE BOX]

| | | | |
|---|----------------------------|------------------------------------|----------------------------|
| No, I do not line the my bins at all | <input type="checkbox"/> 1 | Yes, I buy rolls of liners locally | <input type="checkbox"/> 3 |
| Yes, I use newspaper to wrap the food waste | <input type="checkbox"/> 2 | Yes, I use plastic bags | <input type="checkbox"/> 4 |
| Yes, I use cardboard to line my bin | | Yes, I use paper bags | <input type="checkbox"/> 5 |

Other (specify)

Do you clean your green outside bin?

[DO NOT PROMPT, TICK ✓ ONE BOX]

| | | | |
|--|----------------------------|-------------------------------------|----------------------------|
| No, I do not clean the bin at all | <input type="checkbox"/> 1 | Yes, I clean it myself occasionally | <input type="checkbox"/> 3 |
| Yes, I employ a company to clean it for me | <input type="checkbox"/> 2 | Yes, I clean it myself regularly | <input type="checkbox"/> 4 |

Other (specify)

| How satisfied are you with the mixed food, cardboard and garden waste service? [READ OUT OR SHOW CARD, TICK ✓ ONE BOX] | | | |
|---|-----------------------------|--|-----------------------------|
| Very satisfied | <input type="checkbox"/> 1 | Fairly satisfied | <input type="checkbox"/> 4 |
| Neither satisfied or dissatisfied | <input type="checkbox"/> 2 | Fairly dissatisfied | <input type="checkbox"/> 5 |
| Very dissatisfied | <input type="checkbox"/> 3 | Don't know | <input type="checkbox"/> 6 |
| Have you experienced any problems when using the mixed food, card and garden waste collection? [DO NOT PROMPT, TICK ✓ ALL THAT APPLY] | | | |
| None | <input type="checkbox"/> 1 | The collection is not frequent enough | <input type="checkbox"/> 9 |
| Missed collections / collection unreliable | <input type="checkbox"/> 2 | The kitchen caddy became unpleasant to use | <input type="checkbox"/> 10 |
| Litter | <input type="checkbox"/> 3 | The outside bin became unpleasant to use | <input type="checkbox"/> 11 |
| Food waste attracts vermin (eg rats / mice) | <input type="checkbox"/> 4 | Free liners are not provided | <input type="checkbox"/> 12 |
| Food waste attracts flies | <input type="checkbox"/> 5 | Liners are not currently accepted | <input type="checkbox"/> 13 |
| Food waste smells | <input type="checkbox"/> 6 | I have limited storage space | <input type="checkbox"/> 14 |
| The collection staff are unfriendly | <input type="checkbox"/> 7 | The collection has to be left out too early | <input type="checkbox"/> 15 |
| I do not understand what food waste is collected | <input type="checkbox"/> 8 | I would prefer separate collections for food and garden waste | <input type="checkbox"/> 16 |
| | | Don't know [DO NOT PROMPT] | <input type="checkbox"/> 17 |
| Other (specify) | | | |
| What promotional material about food waste have you seen in the last year? [DO NOT PROMPT, TICK ✓ ALL THAT APPLY] | | | |
| None / nothing / cannot remember | <input type="checkbox"/> 1 | Use up leftovers | <input type="checkbox"/> 11 |
| Sticker | <input type="checkbox"/> 2 | Council website | <input type="checkbox"/> 12 |
| Local Press – Wembley Leader, Wembley Observer | <input type="checkbox"/> 3 | Council Newsletter – Authority E Magazine | <input type="checkbox"/> 13 |
| Council leaflet | <input type="checkbox"/> 4 | "Love Food Hate Waste" | <input type="checkbox"/> 14 |
| Road show / stall at local event | <input type="checkbox"/> 5 | Wasting food is a waste of money/we waste £10 billion a year/ £420 per household | <input type="checkbox"/> 15 |
| Crying pear/tomato | <input type="checkbox"/> 6 | There are lots of easy things we can do to cut down on food waste | <input type="checkbox"/> 16 |
| Sad isn't it? | <input type="checkbox"/> 7 | No one likes to throw away good food/It's wrong to throw good food away/it's immoral/unethical | <input type="checkbox"/> 17 |
| A third of the food we buy gets thrown away | <input type="checkbox"/> 8 | 6.7 million tonnes of food is thrown away each year | <input type="checkbox"/> 18 |
| 1 in every 3 bags of shopping gets thrown away | <input type="checkbox"/> 9 | Stopping food waste would save as much CO ₂ as taking 1 in 5 cars off the road | <input type="checkbox"/> 19 |
| Food thrown away damages the environment | <input type="checkbox"/> 10 | News report or advert about food waste (not specified) | <input type="checkbox"/> 20 |
| Other (please specify) | | | |

Background information

We would like some information about you and your household that will help us to understand the survey results. The information will be treated confidentially.

| | | | |
|---|----------------------------|--|----------------------------|
| How many people live in your household (including yourself)? [PUT NUMBER IN RELEVANT BOX] | | | |
| Adults | <input type="checkbox"/> | Children 18 and under | <input type="checkbox"/> |
| What type of household do you live in? [READ OUT OR SHOW CARD, TICK ✓ ONE BOX] | | | |
| One person household | <input type="checkbox"/> 1 | Lone parent with children at home | <input type="checkbox"/> 4 |
| Couple, no children | <input type="checkbox"/> 2 | Couple with children at home | <input type="checkbox"/> 5 |
| Other household: all adults | <input type="checkbox"/> 3 | Other household with children | <input type="checkbox"/> 6 |
| Other type of household (specify) | | | |
| What type of occupancy do you have? [READ OUT OR SHOW CARD, TICK ✓ ONE BOX] | | | |
| Own outright | <input type="checkbox"/> 1 | Rented from private landlord / letting agency | <input type="checkbox"/> 4 |
| Own with a mortgage or loan | <input type="checkbox"/> 2 | Rented from relative or friend | <input type="checkbox"/> 5 |
| Rented from council (local authority) | <input type="checkbox"/> 3 | Unwilling to say [DO NOT PROMPT] | <input type="checkbox"/> 6 |
| Other type of occupancy (specify) | | | |
| What type of dwelling do you live in? [READ OUT OR SHOW CARD, TICK ✓ ONE BOX] | | | |
| Detached house or bungalow | <input type="checkbox"/> 1 | Flat, maisonette or apartment: In a purpose-built block of flats | <input type="checkbox"/> 4 |
| Terraced house or bungalow | <input type="checkbox"/> 2 | Flat, maisonette or apartment: part of a converted or shared house | <input type="checkbox"/> 5 |
| Semi-detached house or bungalow | <input type="checkbox"/> 3 | Flat, maisonette or apartment: In a commercial building | <input type="checkbox"/> 6 |
| Other type of dwelling (specify) | | | |

| To which of these groups do you consider that you belong? | | | | | |
|---|----------------------------|-----------------------------|-----------------------------------|------------------------------------|-----------------------------|
| [READ OUT OR SHOW CARD, TICK ✓ ONE BOX] | | | | | |
| Black or Black British | Black Caribbean | <input type="checkbox"/> 1 | White | White British | <input type="checkbox"/> 14 |
| | Black African | <input type="checkbox"/> 3 | | White Irish | <input type="checkbox"/> 15 |
| | Black British | <input type="checkbox"/> 4 | | Other, e.g. Polish (Specify) | <input type="checkbox"/> 16 |
| | Black other (Specify) | <input type="checkbox"/> 5 | | | |
| Asian | Asian Indian | <input type="checkbox"/> 6 | Mixed background | Mixed White and Black Caribbean | <input type="checkbox"/> 17 |
| | Asian Pakistani | <input type="checkbox"/> 7 | | Mixed White and Black African | <input type="checkbox"/> 18 |
| | Asian Bangladeshi | <input type="checkbox"/> 8 | | Mixed White and Asian | <input type="checkbox"/> 19 |
| | Asian British | <input type="checkbox"/> 9 | | Mixed other (Specify) | <input type="checkbox"/> 20 |
| | Asian other (Specify) | <input type="checkbox"/> 10 | | | |
| Chinese | Chinese | <input type="checkbox"/> 11 | Refused | | <input type="checkbox"/> 21 |
| | Chinese British | <input type="checkbox"/> 12 | Other ethnic background (specify) | | |
| | Chinese other (Specify) | <input type="checkbox"/> 13 | | | |

| To which age group do you belong? | | | | | |
|---|-------|----------------------------|--|---------|----------------------------|
| [READ OUT OR SHOW CARD, TICK ✓ ONE BOX] | | | | | |
| | 18-24 | <input type="checkbox"/> 1 | | 55-64 | <input type="checkbox"/> 5 |
| | 25-34 | <input type="checkbox"/> 2 | | 65-74 | <input type="checkbox"/> 6 |
| | 35-44 | <input type="checkbox"/> 3 | | 75+ | <input type="checkbox"/> 7 |
| | 45-54 | <input type="checkbox"/> 4 | | Refused | <input type="checkbox"/> 8 |

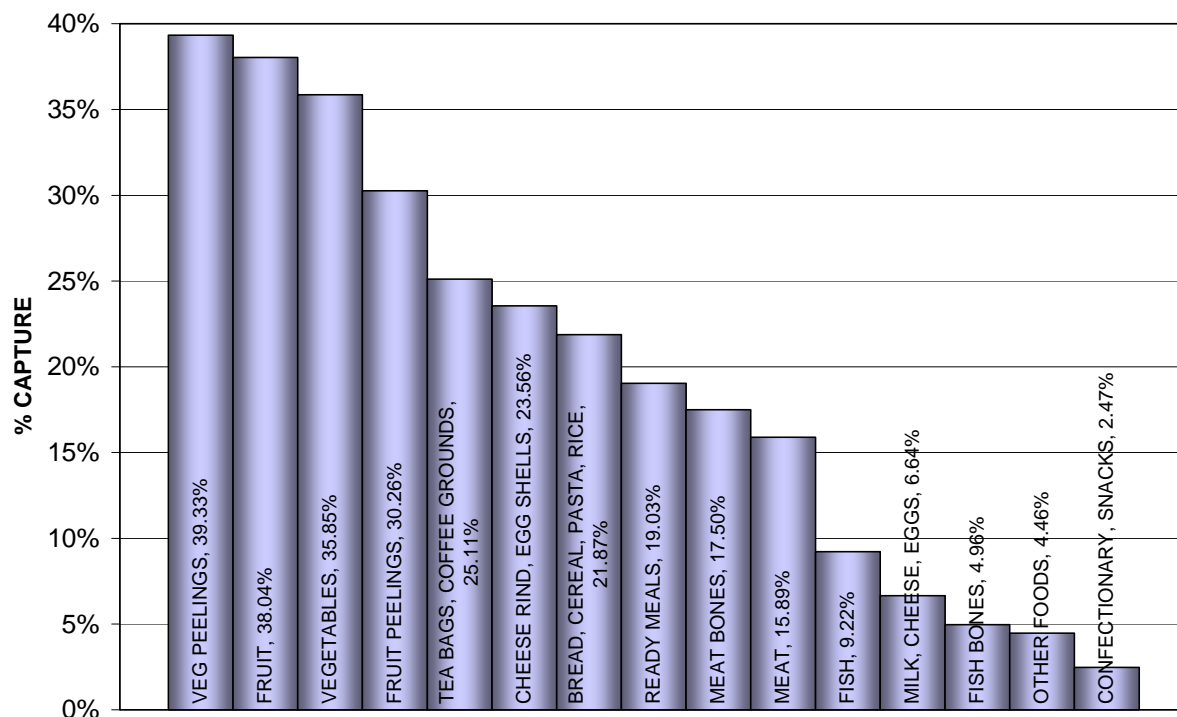
As part of our quality checking process, some of the people who answered the survey will be selected at random to check that they really were interviewed. Could I please take your name and telephone number so that you can be called if necessary? This will not be passed to anyone else.

| | | | |
|-------------------------|------|----------------------------|-----------------------------------|
| Respondent name | | | |
| Telephone number | | | |
| Postcode | | | |
| Gender | Male | <input type="checkbox"/> 1 | Female <input type="checkbox"/> 2 |

Thank them for their time

Appendix E: Capture rates for individual food items

| FOOD SUB CATEGORIES | OVERALL AVERAGE |
|--|-----------------|
| Bread, cereal, pasta, rice | 21.87% |
| Meat | 15.89% |
| Fish | 9.22% |
| Milk, cheese, eggs | 6.64% |
| Butter, margarine, fat | 3.12% |
| Fruit | 38.04% |
| Vegetables | 35.85% |
| Sugar, jam, chocolate, crisps, ice cream | 2.47% |
| Food products not elsewhere specified | 4.46% |
| Drinks | 3.16% |
| Composite meal | 19.03% |
| Meat bones, fat, gristle | 17.50% |
| Fish bones, fat, gristle | 4.96% |
| Cheese rinds, eggshells | 23.56% |
| Used grease | 1.99% |
| Fruit peelings, pips etc | 30.26% |
| Vegetable peelings, pips etc | 39.33% |
| Food products not elsewhere specified | 6.02% |
| Drinks tea bags, coffee grinds etc | 25.11% |
| TOTAL FOOD ITEMS | 25.62% |



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