A guide for waste management companies and local authorities to encourage the collection of food waste from small to medium sized enterprises (SMEs), public sector organisations and larger businesses.
WRAP’s vision is a world in which resources are used sustainably.

Our mission is to accelerate the move to a sustainable resource-efficient economy through re-inventing how we design, produce and sell products; re-thinking how we use and consume products; and re-defining what is possible through re-use and recycling.

Find out more at [www.wrap.org.uk](http://www.wrap.org.uk)

**Written by:** Ashley Robb, Green Gain Ltd with input from WRAP and drawing on the experiences of the 10 supported Demonstration Projects
Executive summary

This good practice guide is aimed at waste management companies and local authorities (‘collectors’) to encourage the collection of food waste from small to medium sized enterprises (SMEs), public sector organisations, and larger businesses. It provides a step-by-step approach to the implementation of a commercial food waste collection service. The guide largely draws on WRAP’s previous work in the sustainable management of food waste and the learnings from 10 WRAP-funded business food waste ‘demonstration projects’, launched in England in 2012.

The document is broken into six sections that an organisation should considered in developing a food collection service. From consultation with the industry it is likely that different people within the collection organisation might be responsible for particular steps and so each section has been developed with these roles in mind.

**Step 1: Assessing the opportunities and barriers**

This step provides an insight into the legislative and economic drivers that contribute to the business case for diverting food waste from landfill, including requirements for source-separation of food waste and the opportunities for setting up a service in the face of increased consumer pressure for more sustainable business activities.
Step 2: Scoping the service
This step highlights the issues that need addressing in order to put together a well thought-out business case. It emphasises the need to carry out comprehensive market research, as well as having a firm understanding of the composition and weight of waste generated across food waste producing businesses. It outlines the challenges posed by the dense nature of food waste, suggestions on the minimal amounts of food waste that need to be collected and provides online tools that can be used to support the business case.

Step 3: Service planning and delivery
This step provides practical considerations that senior management and operational staff need to know about how to effectively design a service that befits the target market. It provides information on the Animal By Products Regulations (ABPR), questions to ask of operators treating the collected food waste and both the minimum number of customers and the weight of food waste required to make a service economic to operate. Crucially, it considers the collection configuration (bin uplift; bin swap and sack collections) together with the relative merits of each. One size does not fit all, and so purchasing the right vehicle, containers and liners are decisions that should not be taken lightly. Case study examples help inform this thought-process, as well as providing advice on health and safety and the launch of the service.

Step 4: Resourcing and costing the service
The collection service will not be a success unless it has an effective team managing and operating it. This step identifies the roles and responsibilities of the team members - through the provision of guidance on staffing, building in contingency and crew sizing. It provides information that will allow the service to be competitively priced and comprehensively costed, ensuring that it becomes a profitable operation.

Step 5: Marketing and promotion
A critical mass of customers can only be gained through the adoption of a well-rounded marketing strategy with key messages and a strong brand. This step illustrates the pros and cons of a number of methods in which the service can be promoted including: promotional literature, use of mail shots, one-to-one contact, advertising/promotion and the use of websites and social media.

Step 6: Monitoring and performance improvement
This may be the final step in the process but it needs to be considered at the outset of the development of the service. It discusses the need to collect and report on performance baseline data and the requirement for monthly performance review meetings. It suggests a series of Key Performance Indicators (KPIs) that can be used to supplement existing ones relating to broader operations across the rest of the business.

Accompanying this good practice guide are three appendices that will assist in the planning and mobilisation of the collection service:

Appendix 1: Implementation Plan Template

Appendix 2: Cash flow Model

Appendix 3: Communication and Marketing Plan Template
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This document closely links to WRAP’s Commercial Recycling Collection Guide and has utilised some content from it.
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABPR</td>
<td>Animal By-Products Regulations</td>
</tr>
<tr>
<td>AD</td>
<td>Anaerobic Digestion</td>
</tr>
<tr>
<td>AHVLA</td>
<td>Animal Health and Veterinary Laboratories Agency</td>
</tr>
<tr>
<td>Bin swap</td>
<td>System whereby a bin is replaced at the point of collection with a similar bin and the full container is loaded onto a vehicle and removed off-site</td>
</tr>
<tr>
<td>Bin uplift</td>
<td>System whereby a bin is collected, the contents are emptied into the back of a Refuse Collection Vehicle (RCV) and the bin is returned to the customer</td>
</tr>
<tr>
<td>Capture rate</td>
<td>Term used to determine the success of diverting a particular material away from the residual waste stream into a separate container destined for recycling, reuse or recovery</td>
</tr>
<tr>
<td>Collector</td>
<td>Waste management company or local authority</td>
</tr>
<tr>
<td>CSR</td>
<td>Corporate Social Responsibility</td>
</tr>
<tr>
<td>DARD</td>
<td>Department of Agriculture and Rural Development</td>
</tr>
<tr>
<td>Defra</td>
<td>Department for Environment, Food and Rural Affairs</td>
</tr>
<tr>
<td>DMR</td>
<td>Dry Mixed Recycling</td>
</tr>
<tr>
<td>EPP</td>
<td>Environmental Permitting Programme</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>Gate fee</td>
<td>Charge levied upon a given quantity of waste received at a waste processing facility</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographic Information System</td>
</tr>
<tr>
<td>HaFS</td>
<td>Hospitality and Food Service Sector</td>
</tr>
<tr>
<td>HSE</td>
<td>Health and Safety Executive</td>
</tr>
<tr>
<td>IVC</td>
<td>In Vessel Composting</td>
</tr>
<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
</tr>
<tr>
<td>Liner</td>
<td>Compostable liner used for the collection of biodegradable food waste</td>
</tr>
<tr>
<td>L</td>
<td>Litre</td>
</tr>
<tr>
<td>Mail shot</td>
<td>Bulk mail advertising sent through the mail</td>
</tr>
<tr>
<td>Macerator</td>
<td>Machine that reduces solids to small pieces in order to dispose to sewer</td>
</tr>
<tr>
<td>MRF</td>
<td>Material Recovery Facility</td>
</tr>
<tr>
<td>PLA</td>
<td>Polylactic Acid</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>PR</td>
<td>Public Relations</td>
</tr>
<tr>
<td>RCV</td>
<td>Refuse Collection Vehicle</td>
</tr>
<tr>
<td>QSR</td>
<td>Quick Service Restaurant including fast food retailers, cafes, takeaways and sandwich bars</td>
</tr>
<tr>
<td>RDF</td>
<td>Refuse Derived Fuel</td>
</tr>
<tr>
<td>Rear loader</td>
<td>Refuse collection vehicle that uses a bin-lifting mechanism to load the contents of a bin to the rear of the vehicle</td>
</tr>
<tr>
<td>RFID</td>
<td>Radio-Frequency Identification</td>
</tr>
<tr>
<td>SIC</td>
<td>Standard Industrial Classification (see <a href="http://www.companieshouse.gov.uk/about/sic2007.shtml">www.companieshouse.gov.uk/about/sic2007.shtml</a> for more information)</td>
</tr>
</tbody>
</table>
| Small & Medium Sized Enterprise (SME) | According to the European Commission SMEs are:  
- Medium sized businesses with less than 250 staff, a turnover of less than €50 million, or a balance sheet total of less than €43 million;  
- Small businesses with less than 50 staff, a turnover of less than €10 million, or a balance sheet total of less than €10 million; and  
- Micro-businesses with less than 10 staff, a turnover of less than €2 million, or a balance sheet total of less than €2 million |
| Top loader            | Refuse collection vehicle that uses a bin-lifting mechanism to load the contents of a bin at the top of the vehicle                           |
| WCN                   | Waste Consignment Note                                                                                                                  |
Introduction

This guide provides information for both local authorities and waste management companies (hereafter referred to as ‘collectors’) on the key steps involved in developing, managing, expanding and optimising a commercial food waste collection scheme. It provides insight and guidance for the introduction of a new service as well as for those seeking support to enhance an existing service. Each chapter has a brief introduction to the issues being covered, an indication of the primary audience and a summary of the key points to consider.

The guide draws on WRAP’s previous work in the sustainable management of food waste¹ and the learnings from 10 WRAP funded food waste ‘demonstration projects’ operating in England which were launched in 2012. The aim of these projects was to gather key information on the experiences of delivering a range of food waste recycling collection services to businesses. A summary of the demonstration projects is provided below.

<table>
<thead>
<tr>
<th>Contractor</th>
<th>Region</th>
<th>Urban / Rural</th>
<th>Container type</th>
<th>Vehicle type</th>
<th>Crew</th>
<th>Collection Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioco</td>
<td>Coventry, Manchester, Oxford,</td>
<td>Urban/Rural</td>
<td>240L &amp; 360L wheeled bin</td>
<td>15 tonne double rear lift Refuse Collection</td>
<td>Driver</td>
<td>Dedicated Food Waste</td>
</tr>
<tr>
<td></td>
<td>Grantham and Cambridge</td>
<td></td>
<td></td>
<td>Vehicle (RCV)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bywaters</td>
<td>London</td>
<td>Urban</td>
<td>120L wheeled bin</td>
<td>15 tonne tail lift enclosed wagon</td>
<td>Driver plus one</td>
<td>Dedicated Food Waste</td>
</tr>
<tr>
<td>Cape</td>
<td>Cornwall</td>
<td>Rural</td>
<td>240L wheeled bins &amp; sacks</td>
<td>7.5 tonne top loader RCV</td>
<td>Driver</td>
<td>Dedicated Food Waste</td>
</tr>
<tr>
<td>First Mile</td>
<td>London</td>
<td>Urban</td>
<td>120L wheeled bin &amp; sacks</td>
<td>7.5 tonne single side lift RCV</td>
<td>Driver</td>
<td>Dedicated Food Waste</td>
</tr>
<tr>
<td>Leeds Paper Recycling / WRD</td>
<td>Leeds</td>
<td>Urban</td>
<td>240L wheeled bin</td>
<td>26 tonne RCV</td>
<td>Driver</td>
<td>Dedicated Food Waste</td>
</tr>
<tr>
<td>Brighton Paper Round</td>
<td>Brighton</td>
<td>Urban</td>
<td>40L caddy &amp; 120L wheeled bin</td>
<td>15 tonne tail lift enclosed wagon</td>
<td>Driver plus one</td>
<td>Co-collection with residual waste and recycling</td>
</tr>
<tr>
<td>Paper Round</td>
<td>London</td>
<td>Urban</td>
<td>120L wheeled bin</td>
<td>12 tonne tail lift open wagon</td>
<td>Driver plus one</td>
<td>Dedicated Food Waste</td>
</tr>
<tr>
<td>SITA</td>
<td>Birmingham</td>
<td>Urban</td>
<td>120L &amp; 240L wheeled bin</td>
<td>Split top-loading RCV</td>
<td>Driver</td>
<td>Dedicated Food Waste</td>
</tr>
<tr>
<td>South Hams District Council</td>
<td>Plymouth</td>
<td>Rural</td>
<td>120L &amp; 240L wheeled bin</td>
<td>7.5 tonne single side lift RCV</td>
<td>Driver</td>
<td>Dedicated Food Waste</td>
</tr>
<tr>
<td>Yorwaste</td>
<td>York</td>
<td>Urban</td>
<td>240L wheeled bin</td>
<td>7.5 tonne vehicle RCV</td>
<td>Driver</td>
<td>Dedicated Food Waste</td>
</tr>
</tbody>
</table>

¹ Collecting food waste from small businesses and schools, WRAP, 2011;  
Food Waste Collections to SMEs: Developing the Business Case, WRAP, 2012;  
Food Waste Collection Guidance, WRAP, 2011;  
The Composition of Waste Disposed of by the UK Hospitality Industry, WRAP, 2011;  
Operational data gathering and analysis for commercial food waste collections, WRAP, 2014.
The service planning cycle below illustrates the key ‘steps’ for the sustainable collection of commercial food waste around which this guide is based. Each of the ‘steps’ outlined below are elaborated upon in this document. Although the guide maybe useful for all it is split into sections aimed at different audiences within a collection organisation according to their role in the service delivery.

**Service planning cycle**

- **Step 1: Assessing the opportunities and barriers**
- **Step 2: Scoping the service (The business case)**
- **Step 3: Service planning & delivery (Operational considerations)**
- **Step 4: Resourcing & costing the service (Undertaking the collections)**
- **Step 5: Marketing & promotion (Successful customer recruitment)**
- **Step 6: Monitoring & performance improvement (Data capture & continuous improvement)**
1.0 STEP 1: Assessing the opportunities and barriers

1.1 Introduction

Aimed at senior and middle management, this stage will help you understand the: Drivers for more widespread collections of commercial food waste; Legislative requirements for the collection of food waste across the UK; and Key barriers that need to be overcome to introduce a sustainable collection service.

1.2 Legislative context

1.2.1 United Kingdom (UK)

The UK as a whole needs to comply with the requirements of the revised EU Waste Framework Directive, (rWFD) which includes increasing waste prevention measures and a regulatory target to reduce the amount biodegradable municipal waste landfilled to 35% of that produced in 1995 by 2020. Other general factors encouraging the provision of commercial food waste collection services are:

- The Landfill Tax escalator, reached £80 per tonne in 2014 which, when added to the gate fee, makes landfill an expensive waste disposal option (in excess of £100 per tonne based upon median gate fees for landfill);
- Increasing awareness and sensitivity of businesses to their waste management bills and growing expectations to reduce food waste; and
- Increasing technological capacity and availability to manage different types of food waste.

1.2.2 Scotland

Scotland’s Zero Waste Plan (ZWP) and Waste (Scotland) Regulations (WSRs) aim to drive materials up the waste hierarchy by promoting source-segregation, introducing a phased programme of landfill restrictions and ensuring that only waste which could not have been recycled is incinerated. Policy measures related to commercial food waste separation are outlined below:

- All waste producers are required to separate key recyclable materials at source for collection. This includes mandatory food waste collection from businesses that manufacture, prepare or retail food on their premises, including commercially-organised public events;
- Food businesses (except in rural areas) which produce over 50kgs of food waste per week to present that food waste for separate collection from 1 January 2014;
- Food businesses (except in rural areas) which produce over 5kgs of food waste per week to present that food waste for separate collection from 1 January 2016;
- A ban on any metal, plastic, glass, paper, card and food collected separately for recycling from going to incineration or landfill from 1 January 2014;
- The WSRs require Scottish Local Authorities (SLAs) to offer food waste and dry recycling collection services to commercial customers where this is requested, thus ensuring a minimum level of service that will be made available to local businesses;

---

2 The Hospitality and food service agreement signatory pack, WRAP, 2012
3 Gate Fees Report, WRAP, 2013
A ban on the non-domestic use of food waste disposal units and digesters to macerate or pre-treat food and dispose of it through the sewer network; and

A property-based ban on landfilling biodegradable material by 2020.

1.2.3 Wales

The ‘Towards Zero Waste’ strategy for Wales was published in June 2010 with a commitment to a 70% recycling rate across all waste streams by 2024/25 (for food waste, the priority is to get this waste to Anaerobic Digestion (AD) plants that produce publicly available specification (PAS 110) compliant digestate, which is classed as being recycled). The policy measures intended to achieve these targets are set out in a series of sector plans. Sector plans relevant to commercial food waste collections include:

- Food Manufacture, Service and Retail Sector Plan (FMSR);
- Collections, Infrastructure and Markets Sector Plan (CIMS); and
- Commercial and Industrial Sector Plan (on-site canteens).

In October 2013 the Welsh Government launched a consultation on proposals for an Environment Bill. The Environment Bill White Paper proposed extending the separate collection requirements for paper, glass, metal and plastic, introduced through the Waste (England and Wales) Regulations 2011, to include card, wood and food wastes in 2017. This requirement would apply to all wastes – household, commercial and industrial, and construction and demolition wastes. Following consultation the Welsh Government has indicated its intention to develop the proposals contained in the White Paper into draft legislation.

1.2.4 Northern Ireland

The revised Northern Ireland Waste Management Strategy entitled ‘Delivering Resource Efficiency’ (2013) highlights a number of policy and legislative proposals, of which the most significant is the introduction of a landfill restriction on food waste. The Department of Environment NI introduced the Food Waste Regulations (Northern Ireland) in February 2015 and in relation to commercial waste places these place specific duties on food producing businesses:

- Food producing businesses generating in excess of 5kg of food waste per week must present food waste for separate collection by April 2016;
- Where food waste is presented for collection mixed with other bio-wastes the amount of food waste collected should not be substantially less than would be the case were the wastes not mixed;
- Food waste should not be deposited in a lateral drain or sewer or in a drain or sewer that connects to a lateral drain or public sewer from 1st April 2017. This provision limits the use of macerators or digester units.

1.2.5 England

The Waste Review for England, published on 14 June 2011, made a commitment to the development of a responsibility deal for the Hospitality and Food Service Sector (HaFS), covering products and materials identified as having high embedded carbon, namely food and packaging waste. This HaFS Agreement covers both prevention and the sustainable use of the waste that still arises, for example greater composting or use of anaerobic digestion for food waste and more recycling for packaging. The Agreement covers a broad range of businesses including contract caterers, hotels, pubs and restaurants.

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*Delivering Resource Efficiency, DOENI, 2013*
1.3 Key opportunities for consideration

**Food waste should be considered as a valuable resource which can be recycled to produce a range of benefits to businesses.** When not separated food waste is often consigned to landfill where it breaks down anaerobically and produces methane, a potent greenhouse gas. The separate collection and treatment of food waste ensures that these emissions are avoided, providing reassurance that the food waste is being recovered and harnessed into renewable energy and/or fertiliser or compost.

Consumers are increasingly demanding of businesses to demonstrate a commitment to more environmentally sustainable practices. Consequently, many larger organisations now look at what environmental data can be provided by a service provider so that they can meet their internal Key Performance Indicators (KPIs) and demonstrate to their customers ‘they practice what they preach’, e.g. reduction in CO₂ contributions, percentage recycling rate and percentage waste reduced year on year.

WRAP’s web site ‘Food waste recycling for your business’ [www.wrap.org.uk/recyclingfood](http://www.wrap.org.uk/recyclingfood) was designed to help businesses consider the wider benefits of food recycling and show how other businesses have adopted safe separation of food waste in their busy work environments. Given the difficulties in conveying all the necessary information about food recycling in simple leaflets why not provide the link to the WRAP website to provide more information and help convince more businesses to try a collection service.

The website contains a number of informative examples, ‘Success Stories’, of businesses that have introduced food waste collections and the reasons for doing so. One case study example has won a series of awards for their commitment to sustainability including: Sustainable Restaurant of the Year 2013, CSR and Environment winners at the Eat Out Awards 2013.

As a collector, offering a package of services including residual waste, Dry Mixed Recycling (DMR) and source-separated food waste collections will help satisfy these increasing business needs. Key reasons for this are:

- A lot of businesses prefer to have their waste services delivered by one service provider, as it reduces the perceived ‘hassle’ of setting up another service contract;
- Selling a recycling service will be easier if costs can be kept neutral for the business. This may be easier to achieve if you can ‘re-profile’ the existing services offered under one provider to accommodate a separate food waste collection;
- The necessary back-office resources and processes are in place, (e.g. invoicing system, etc); and
- There is adequate resource in place for marketing and promoting the new service.
Understanding both your customers’ needs and the barriers that might prevent them from taking up a food waste recycling scheme is a high priority in order to develop a service that meets their requirements and market it effectively.

The majority of SMEs in the HAFS industry do not consider food waste to be an issue or a waste stream that they need help with and there is little evidence of customers demanding the service. Bringing food waste to their attention will therefore be the first obstacle to overcome. Most SMEs do not have specific waste management knowledge and expertise and, like many of the services they procure, tend to go on the guidance given to them by their current service providers.

A barrier for some SMEs taking up food waste collection services is that they do not produce enough regular amounts of food waste to enable them to reduce their residual waste collection requirements. For SMEs that do generate larger amounts of food waste such as the Food and Drink sector the cost barrier relates directly to the nature of the material rather than the price of a collection service. The vast majority of service providers charge for waste/recycling based on volumes, not weight. Because food waste is typically very dense the diversion of even large amounts of food waste may deliver very little residual bin volume savings. Where reductions of residual bin capacity can’t be made this can mean that separate food waste collections would be an additional cost, regardless of how cheap the service is. The approach to re-configuring all the waste management services represents the best way of keeping costs down and attractive for businesses. The approach to costing services in this way is dealt with in step 4.

Other factors that impact on the take-up of a service commonly include lack of storage space, odour and hygiene issues and the perceived hassle food segregation can cause. These are often ‘perceived’ issues that can be addressed by a well-informed salesperson who can talk through the practicalities of the service, backed up by case studies of where schemes have been successfully implemented. Even where financial savings can be realised, businesses may not wish to separate food waste due to the extra effort perceived to be involved in separating it for collection. However, WRAP has a number of case studies illustrating how businesses have found it ‘easy and straightforward’ to separate their waste, as one of the demonstration projects’ customers (Friska Café) proved during a video shoot: www.wrap.org.uk/recyclingfood.

The use of macerators in large businesses and public sector organisations can hinder the take-up of commercial food waste collections, where investment and commitment has already been made in particular disposal routes. This is a notable issue in health care trusts and schools where large quantities of food waste are being excluded from source-separated collections because major organisations deem the use of macerators to be convenient and cost-effective. This is something the water companies are keen to address, due to increased maintenance costs associated with the discharge of food waste to sewer and the inherent environmental benefits associated with treating food waste through AD.

In the food manufacturing sector, the majority of food waste from the larger manufacturers is spread on land. The collection opportunities are from businesses who are producing less than 25 tonne bulk loads of food waste (as that is the threshold above which the food waste
would be going to land spreading). For manufacturers that produce the right type and significant quantities of food waste, land spreading is a more economical disposal route than sending it for AD treatment or to landfill. Food manufacturers that produce by-products that can be used in animal feed, (e.g. wastes from the manufacture of bread, pastries, cakes and cereal products) pay a lot less for its ‘removal’ than would be the case with recycling via AD and in some cases can obtain an income.

1.5 Summary

- The UK as a whole needs to comply with the requirements of the revised EU Waste Framework Directive, (rWFD) which includes increasing waste prevention measures and a regulatory target to reduce the amount biodegradable municipal waste landfilled to 35% of that produced in 1995 by 2020;
- The most pressing areas for separating food waste for a separate collection is in Scotland and more recently in Northern Ireland. From 1st January 2016 in Scotland and from 1st April 2016 in Northern Ireland, food businesses (except in rural areas) which produce over 5kgs of food waste per week have to present that food waste for separate collection. Measures to extend the separate collection of food waste to businesses in Wales could be introduced by the Welsh Government with in 2017.
- With Landfill Tax reaching £80 per tonne in 2014 which, when added to the gate fee, makes landfill an expensive waste disposal option for food waste (in excess of £100 per tonne based upon median gate fees for landfill) compared to a median gate of £45 per tonne for AD;
- As consumers become increasingly aware of the need to become ‘greener’ then the greater the pressure put on businesses to demonstrate a commitment to more environmentally sustainable practices;
- Offering a package of services including residual, Dry Mixed Recycling (DMR) and source-separated food waste collections will satisfy these increasing business needs. Key reasons for this are: a lot of businesses (SMEs in particular) prefer to have their waste services delivered by one service provider, as it reduces the perceived ‘hassle’ of setting up another service contract. Selling a recycling service will be easier if overall costs can be kept neutral for the business;
- Common barriers for the lack of take-up of food waste collections include an unwillingness to pay more for the service, hygiene and odour concerns, lack of storage space for containers and the ‘hassle’ of additional segregation particularly if working in a busy commercial kitchen;
- The use of macerators by large businesses and public sector organisations can hinder the take-up of commercial food waste collections; and
- In the food manufacturing sector, the majority of food waste is spread on land. The collection opportunities are from businesses which are producing less than 25 tonne bulk loads of food waste (as that is the threshold above which the food waste would be going to land spreading).
2.0 STEP 2: Scoping the service

2.1 Introduction

Aimed at senior operations and middle management, this stage will help you understand:

- Pre-requisites for an effective food waste collection service;
- Composition of waste originating from hospitality sector businesses;
- Typical yields of food waste that you could expect to collect by business type; and
- Customer expectations.

2.2 Estimating food waste arisings

A previous study by WRAP\(^5\) estimated the hospitality sector produces 3.4 million tonnes of waste each year, of which 41% is food, 14% glass, 13% paper and 9% card. The data in Table 2.1 below has been extracted from a WRAP study of compositional analysis of commercial waste collected by local authorities in Wales\(^6\). It concludes that by weight, food, paper and cardboard make up the largest proportion of waste in this case. ‘Other plastic’ includes plastic film and ‘other organics’ includes waste vegetable oil.

<table>
<thead>
<tr>
<th></th>
<th>Food &amp; Drink</th>
<th>Retail</th>
<th>Office</th>
<th>Leisure</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed paper</td>
<td>11.3</td>
<td>19.4</td>
<td>34.1</td>
<td>19.5</td>
<td>35.6</td>
</tr>
<tr>
<td>Cardboard</td>
<td>12.1</td>
<td>17.8</td>
<td>12.5</td>
<td>13.9</td>
<td>14</td>
</tr>
<tr>
<td>Food waste</td>
<td>41.3</td>
<td>13.8</td>
<td>16.3</td>
<td>20</td>
<td>11.2</td>
</tr>
<tr>
<td>Other organics</td>
<td>9.5</td>
<td>8.3</td>
<td>6.2</td>
<td>8.5</td>
<td>7.9</td>
</tr>
<tr>
<td>Plastic film</td>
<td>5.9</td>
<td>9.6</td>
<td>8.5</td>
<td>6.9</td>
<td>6.1</td>
</tr>
<tr>
<td>Plastic bottles</td>
<td>1.9</td>
<td>1.7</td>
<td>2.9</td>
<td>3.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Other dense plastic</td>
<td>0.5</td>
<td>3.6</td>
<td>2.1</td>
<td>1.3</td>
<td>1.1</td>
</tr>
<tr>
<td>Other plastic</td>
<td>2.4</td>
<td>3.6</td>
<td>3.7</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Packaging glass</td>
<td>5.5</td>
<td>1.6</td>
<td>1.3</td>
<td>9.3</td>
<td>1.8</td>
</tr>
<tr>
<td>Other metal</td>
<td>1.4</td>
<td>2.9</td>
<td>3.7</td>
<td>3.3</td>
<td>4</td>
</tr>
<tr>
<td>Other glass</td>
<td>0.3</td>
<td>5.9</td>
<td>0.4</td>
<td>1.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Metal cans</td>
<td>1.9</td>
<td>0.5</td>
<td>0.9</td>
<td>1.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>11.3</td>
<td>7.4</td>
<td>7.7</td>
<td>9.9</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure 2.1 shows that the proportion of food waste produced by a ‘typical’ hospitality sector business by weight is high (41%); however, by volume, it equates to less than 10%. This means that the volume of the residual waste bin may not always be reduced enough to warrant reducing its size or reducing the frequency of collection (see Section 1.4).

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\(^5\) The Composition of Waste Disposed of by the UK Hospitality Industry, WRAP, 2011;

\(^6\) The composition of municipal solid waste in Wales, WRAP Cymru, 2010.
Figure 2.1: Typical hospitality business’s residual waste bin (composition vs weight) 

Hospitality - Composition [% Volume.]

- Paper and cardboard: 18.6%
- Plastics: 26.1%
- Glass: 5.7%
- Food: 9.4%
- Metals: 3.8%
- Residual waste: 36.5%

Hospitality - Composition [%wt.]

- Paper and cardboard: 13.7%
- Plastics: 4.6%
- Glass: 14.3%
- Food: 40.7%
- Metals: 2.1%
- Residual waste: 24.7%

Source: Amec Environment and Infrastructure Ltd
As it can be difficult to divert 100% of a material from the residual waste into a recycling stream a capture rate figure is often used for estimations. Capture rates can vary between users of a service and can be affected by:

- Employee knowledge of how to use the scheme;
- Willingness of individuals to recycle;
- Whether there are alternative routes available for the material in question within a business (e.g. food waste macerators);
- Whether there is sufficient space (footprint) to store additional containers and container capacity for the segregated material; and
- Distance from where the waste arises to a disposal point.

From experience of the WRAP funded Demonstration Projects it seems that the capture rate for food waste from businesses can be high at around 85%. It is worth noting that, as well as capture rates being affected by the range of factors already highlighted, ‘early users’ of a service might be ‘better users’ of a scheme than later ones (as they may be those who need more persuading).

Typically, WRAP research shows that businesses need to be producing more than 40kg of food waste per week for a separate collection to be viable. To help build the business case for a new service configuration, use WRAP’s online calculator tool: [www.wrap.org.uk/content/sme-food-waste/2a-calculator](http://www.wrap.org.uk/content/sme-food-waste/2a-calculator)

Table 2.2 outlines headline results from the 10 food waste collection demonstration projects carried out in different regions in England. The average weekly yields for different business types are also shown in Figure 2.2. These yields are the weight of food waste collected per location (collection point) per week, calculated across all the demonstration projects. These average yield figures need to be treated cautiously: the weekly yield varied considerably across the different demonstration projects, as shown by the minimum and maximum figures in Table 2.2. The average number of locations collected from in the demonstration projects is also given in this table to show the variability across the different business types. The large range of weekly yield figures across the demonstration projects reflects the wide variety and sizes of the establishments that produce the food waste. Restaurants and food manufacturers, in particular, can vary greatly in size and hence amount of food waste generated.

To help monitor and evaluate performance (see Section 6.0) it is recommended you adopt a consistent approach to classifying business customers, possibly classifying them in accordance with the categories set out in Table 2.2 or in line with Standard Industrial Classifications (SIC) which is a Duty of Care requirement when completing a Waste Consignment Note (WCN). Either way, understanding business types will help encourage sales staff to focus their engagement during the sales and marketing phase of your service development.
Table 2.2: Weekly yields from the collection demonstration projects across England

<table>
<thead>
<tr>
<th>Business type</th>
<th>Weekly averages (kgs)</th>
<th>Average</th>
<th>Min</th>
<th>Max</th>
<th>Average number of locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food manufacturers</td>
<td></td>
<td>153</td>
<td>17</td>
<td>197</td>
<td>39</td>
</tr>
<tr>
<td>Grocery stores</td>
<td></td>
<td>230</td>
<td>46</td>
<td>237</td>
<td>493</td>
</tr>
<tr>
<td>Higher education</td>
<td></td>
<td>177</td>
<td>56</td>
<td>448</td>
<td>85</td>
</tr>
<tr>
<td>Hotels</td>
<td></td>
<td>341</td>
<td>38</td>
<td>1,359</td>
<td>88</td>
</tr>
<tr>
<td>NHS</td>
<td></td>
<td>150</td>
<td>0</td>
<td>489</td>
<td>23</td>
</tr>
<tr>
<td>Offices with canteens</td>
<td></td>
<td>401</td>
<td>16</td>
<td>717</td>
<td>251</td>
</tr>
<tr>
<td>Offices without canteens</td>
<td></td>
<td>55</td>
<td>5</td>
<td>123</td>
<td>236</td>
</tr>
<tr>
<td>Pubs</td>
<td></td>
<td>276</td>
<td>24</td>
<td>408</td>
<td>209</td>
</tr>
<tr>
<td>Quick service restaurants</td>
<td></td>
<td>162</td>
<td>23</td>
<td>412</td>
<td>126</td>
</tr>
<tr>
<td>Restaurants</td>
<td></td>
<td>467</td>
<td>52</td>
<td>2,229</td>
<td>154</td>
</tr>
<tr>
<td>Schools</td>
<td></td>
<td>114</td>
<td>60</td>
<td>141</td>
<td>97</td>
</tr>
</tbody>
</table>

Source: data derived from the WRAP funded demonstration projects

Notes:
1 The weekly average figures in the table are averages across the demonstration projects for collections made over eight months.
2 The table shows the minimum and maximum figures of average weekly yield for each trial.
3 The average number of locations that each trial collected from.

Figure 2.2: Average yields (kg per location per week) for different business types
2.3 Understanding customer needs

Understanding the market in which you want to operate (and critically whether there is a market for you to enter) is a key step in the service scoping process. You will need to understand:

- How many food waste producing businesses are located within the target area;
- How many of your existing customers produce food waste;
- The type and the volume of food waste they produce;
- How their waste/recycling is currently being managed;
- What level of services and information they require;
- Local competition and any gaps in service provision/providers; and
- The potential total demand in your target area.

You will need to undertake market research to fully understand your target market. Depending on the information required and resources available, surveys of potential customers could be conducted by letter, telephone, email, or face-to-face interviews.

The service will be particularly relevant for those businesses that produce food waste in significant quantities, or where food waste forms a large part of their waste stream. You may want to liaise with the relevant local authority trading standards department to see whether you can obtain a list of registered food service businesses that have to comply with Food Hygiene Standards. These businesses will predominantly be within the hospitality sector, e.g. hotels, cafés and restaurants. Small food manufacturers may also be a target. Equally, public sector bodies such as schools, universities and NHS Trusts with canteens are likely to generate food waste in quantities justifying separation at source. Many of these organisations will have strict sustainability agendas involving a staged-approach to reducing their carbon emissions and reducing waste sent to landfill. Introducing commercial food waste collections can have a big impact in these areas.

It is highly recommended that you have a mix of businesses on a collection round. An established contract with a larger business may mean collections from smaller businesses in the surrounding area are more viable, as the bulk of costs incurred in providing the service are covered in the income from the main commercial customer. This enables spare capacity to be used to increase coverage at limited extra cost. Conversely, focussing collections around one or two larger clients is risky if these contracts change over time, rendering the service financially non-viable to deliver.

Businesses that are part of a chain or group can be attractive customers, but national contracts are often awarded to a single company. Some national or regional waste management companies may subcontract collection services locally. It is therefore worth contacting these waste management companies to see if there are any sub-contracting opportunities for the collection of commercial food waste from their existing customer base.

Before undertaking work to understand customer needs, visit WRAP’s website: www.wrap.org.uk/recyclingfood to help you ‘think like your customer’. Amongst other things, the website hosts a number of downloadable resources including posters, bin signage and an online calculator to compare the different options for the collection of waste using relative costs and environmental performance indicators.
2.4 Summary

- The proportion of food waste in the hospitality sector is high in terms of weight (41%) but somewhat less in terms of volume (10%). However, from the limited information available, it seems that the capture rate of food waste for recycling can be high at around 85%;
- Typically, WRAP research shows that businesses need to be producing more than 40kg of food waste per week for a separate collection to be viable for them;
- Before undertaking work to understand your customer needs, you should visit WRAP’s web site to help you ‘think like your customer’: [www.wrap.org.uk/recyclingfood](http://www.wrap.org.uk/recyclingfood). The website hosts a number of downloadable resources including posters, bin signage and an on-line calculator to compare the different options for collection of waste using relative costs and environmental performance indicators;
- You will then need to undertake market research to fully understand your target market. Depending on the information required and resources available, surveys of potential customers can be conducted by letter, telephone, email, or face-to-face interviews;
- It is highly recommended that you target a mix of businesses on a collection round; and

Businesses that are part of a chain or group can be attractive customers, but national contracts are often awarded to a single company. Some national or regional waste management companies may subcontract collection services locally. Contact these waste management companies to see if there are any sub-contracting opportunities for commercial food waste collection.
3.0 STEP 3: Service planning and delivery

3.1 Introduction

Aimed at operational staff, this stage will help you understand the:
- Impact of food waste treatment on your service plan;
- Operational considerations including vehicles, containers and associated infrastructure;
- Most appropriate collection options for your proposed scheme; and
- Health and safety considerations.

To ensure a consistent approach, the issues highlighted on the planning and delivery cycle in Figure 3.1 should be viewed in their entirety (not in isolation). You may need to revisit each theme several times before your optimal service is developed. Most importantly, do not forget your customers’ needs. If you do not deliver what your customers require then you will not maintain a long-term viable customer base.

Figure 3.1: Planning and delivery considerations
3.2 Compliance with Animal By-Products Regulations

Under the Animal By-products Regulations (ABPR), it is illegal for catering waste to be fed to farm animals. Where food waste is separately collected for biological treatment, it must be treated in either an ABPR approved enclosed/in-vessel composting facility or anaerobic digestion (AD) biogas plant. The ABPR, introduced in 2003, aim among other things to control the processing and end-use of composted material derived from food waste (which the regulations refer to as ‘catering waste’).

Defra has issued Guidance Notes on the legislation, key points from which are:

- Any food waste that is deemed to have entered the kitchen environment should be considered as category 3 material (low risk - includes former foodstuffs from food factories and retail premises such as butchers and supermarkets, including domestic kitchen waste). This includes vegetable peelings and fruit;
- Food waste must be properly secured in containers on the vehicle to prevent any release;
- Consignment notes are required to track loads of catering waste;
- Designated clean and dirty areas on treatment sites should be maintained;
- Food stuffs should be stored undercover in a bay or enclosed skip;
- Drainage systems are required at facilities to prevent leachate release;
- The wheels (of vehicles) need to be cleaned; and
- Vehicle compartments should not be interchanged for use without cleansing.

Other legal requirements include compliance with environmental health and waste management legislation and regulations. It is recommended that collectors should engage with the Environment Agency in England, Natural Resources Wales in Wales, Animal Health and Veterinary Laboratories Agency (AHVLA) in Scotland and Department of Agriculture and Rural Development (DARD) in Northern Ireland as plans develop. It should be noted that the aforementioned points are a summary and the detail of each point should be agreed with the enforcing Authority before commencement of a new collection service. Specific details of ABPR can be found at: https://www.gov.uk/government/collections/guidance-for-the-animal-by-product-industry.

3.3 Treatment and transfer of food waste

The selection of a suitable food waste treatment facility is a fundamental component in a commercial food waste collection service. It dictates travel times, gate fees and how the food waste should be presented. Any food waste collection service needs a suitable treatment facility at an acceptable distance. Transporting food waste long distances is likely to affect the financial viability of the service, and leave it more vulnerable to increases in fuel costs. If a lengthy journey to the treatment plant/transfer point is required, (a journey of more than 30 minutes one-way), the efficiency of the collections will be compromised and transfer costs will increase.

Many collectors deliver directly to a food waste treatment facility. However, food waste can be bulked up at depots prior to delivery to a treatment facility if this helps to reduce costs. Three of WRAP’s demonstration projects operate a ‘bin swap’ collection, with the bins emptied at the depots and the food waste bulked prior to being transported to the treatment plant.

Some AD plants also have advanced de-packaging facilities capable of removing plastics and metals, offering high tolerance levels of contaminants. Some Demonstration Projects avoided the need for compostable container liners by allowing the service user to present food waste...
in clear plastic bags. Most processes can comfortably deal with compostable liners (provided liners are certified to BS EN 13432 Standard) during the pasteurisation stage. However, whilst the tolerance for packaged food materials may benefit the customer by avoiding the need for further separation of waste streams, the treatment facility is likely to charge a higher gate fee for large quantities of packaged material. You will need to ensure that any treatment facility used has the appropriate permits under the Environmental Permitting Programme (EPP) to effectively manage the food waste and is ABPR-approved. You should ensure the operators are aware of the most likely contaminants in the food waste, e.g. plastic bags and items of cutlery, so they can prepare for these being present in the collected material.

Key considerations:

- Can you deliver direct to a facility or will you need to bulk-up food waste prior to delivery?
  - If food waste is to be bulked-up, have you accounted for the additional costs associated with this?
- Agree a gate fee based on the anticipated composition and weight of food waste and determine the timescale over which this gate fee applies.
- Do the operating times of the facility mean that collected food waste will need to be stored overnight? If so, do you have a secure facility for this?
- Do you have a contingency arrangement should your primary treatment facility suffer a temporary plant closure?

If you intend using a bulking-up facility then issues to consider include:

- Is there sufficient space within existing depots or the ability to expand or develop them to provide the additional space?
- How is food waste to be handled and what resources are required?
- Is planning permission or an amendment to an existing waste management license needed? (E.g. for a change in the quantity/range of materials handled and potential increase in vehicle movements).
- Is a weighbridge needed?
- Unloading and storage must comply with ABPR and vehicles must tip into a secure area either at the treatment facility or an intermediate bulking point. In Scotland a food waste bulking facility needs to be approved by the Scottish Government.

3.4 Collection options

WRAP conducted a study\(^8\) in 2012 to look at ways of making food waste collection services more efficient and more affordable to businesses, with the aim of increasing take-up and diverting more food waste from landfill. It considered a number of potential service profiles for collecting food waste, including integrating food waste with collections of dry recyclables and refuse.

The primary conclusions from this work were as follows:

- The different collection options analysed had, overall, similar service costs;
- The addition of a new food waste collection service should be able to be provided to a small to medium sized enterprise (SME) at a similar overall cost to a baseline situation, where a dry recyclables and residual waste service is provided. This is based on the proviso that efficiencies across the different waste streams are maximised;

\(^8\) Food Waste Collections to SMEs: Developing the Business Case, WRAP, 2012
Future increases in residual waste costs though Landfill Tax and/or higher gate fees in some regions could make the overall service cost lower for a system that includes the separate collection of food waste compared to one without the separate collection of food waste; and

As a minimum, to make a separate food waste collection worthwhile you will need to collect a 140 litre bin weekly - at least 40kg per collection from customers. Around 70 SME customers are required to make a service viable with some larger businesses in the mix to fill-up capacity and improve the contract base of collection rounds.

Three of the demonstration projects (Bywaters, Paper Round London and Paper Round Brighton) used a bin swap system, typically removing a 120 litre bin, and replacing it with a clean empty receptacle using a flatbed vehicle with a tail lift. At the Bywaters depot, the bins were emptied using a bin hoist fitted to a bulking container. The container was then transported to the treatment plant. The remaining demonstration projects all provided a bin-uplift service. It is not possible to suggest that one service configuration is more successful than another as it depends largely on customer needs and property access. Bin swap systems typically take longer to deliver (in terms of collection) but can offer cleaner, more practical services for the customer than bin emptying arrangements. Bin swap systems tended to be particularly attractive to those with limited outdoor space or whose bins are in public areas.

Key considerations:
- The removal of food waste from the residual waste stream makes the waste stream more viable in terms of extracting higher value recyclables through a residual waste treatment facility with a front-end Materials Recovery Facility (MRF); with the resultant residue being processed as a Refuse Derived Fuel (RDF). The removal of food waste reduces the level of contamination in this process;
- DMR collection combined with a separate food waste collection is an easier service package for SMEs to understand. Recycling companies only able to offer DMR collections and without access to at least a transfer station may, therefore, be at a significant disadvantage when it comes to setting up food waste collections. This is an important barrier to consider, as it would appear that only companies already offering their customers a multi-faceted service are likely to have a customer base that is flexible to consider new recycling options (see Section 4.3).
- The prices charged for residual waste collections will impact on how cost effective it can be to introduce food waste recycling; and
- For bin swap systems, results from the demonstration projects suggest collection round efficiencies could be improved if major food waste producers were served first as their bins are typically fuller, thus minimising time taken to reorganise bins on the vehicle.
3.5 Vehicle type

The selection and operation of an appropriate collection vehicle is a key capital cost component in the business case for a commercial food waste collection service. The design and style of commercial food waste collection vehicles should be influenced primarily by the yields generated from the collection rounds, site or area, access issues and travel distances to unload. It will also be influenced by the demands of the delivery arrangements at the location where collected loads are deposited and this should be checked. In selecting co-collection options you should consider the relative volumes of the high density food waste and low density packaging recyclables and their subsequent space requirements in vehicle compartments from likely yields. The vehicle types that could be used for commercial food waste collections include:

- rear load;
- twin pack (split body) RCV;
- toploder; and
- flatbed 7.5 tonne or 15 tonne with tail lift (for bin swap model).

Relatively large capacity toploder vehicles or compacting RCVs (with the compaction pressure turned down or, where feasible, the compression plate positioned at the front of the vehicle) offer a degree of flexibility as they can be deployed on other services. However, the drawback can be high running costs for a large vehicle that may be under-utilised in early phases of the scheme. Use of smaller vehicles might be appropriate if the tipping destination is proximate to the collection rounds. It will also be important to ensure that the selected vehicle is adequately sealed in order that any liquid from the food waste is not leaked from the vehicle, to comply with the requirements of the ABPR (2003).

WRAP’s 10 demonstration projects mainly used 7.5 or 15 tonne RCVs for bin-uplift services or a 15 tonne flatbed vehicle (with tail lift) for a bin swap service, although First Mile used their 7.5 tonne vehicle also to collect sacks of food waste. All of the demonstration projects provided a dedicated food waste collection service except for Brighton Paper Round, who co-collected food waste with residual waste and dry recyclables.

One of the demonstration projects planned to operate a glass/food waste co-collection servicing pubs and restaurants. However, separate rounds (with the same vehicle on different days) proved more practical due to varied customer uptake of the respective service offerings.

Insights from collection crews involved in the WRAP demonstration projects:

- The bin swap approach using a 15 tonne flatbed vehicle (with tail lift) offered a 2.3 tonne payload capacity for bin swap and a 1 tonne capacity on the tail lift. A tail-lift can accommodate eight full 120 litre bins and two crew in a single uplift;
- The efficiency of the bin swap approach is heavily influenced by the approach used by operatives to load and manoeuvre containers onto the flatbed to maximise space;
- Paper Round London locked rows of wheeled bins in place to ensure there was no risk of movement in transit. A 7.5 tonne truck offered an excellent axel turning circle (useful in narrow hard-to-access areas) although the vehicle can feel a little top-heavy if fully laden;
- Two of the demonstration projects used a 15 tonne double rear-lift RCV with a short wheelbase with an excellent turning circle which was useful for collecting in dense urban areas. A vehicle could uplift 720 litres of container capacity (two x 360 litre containers) at any one time, saving loading time and allowing a significant weight of food to be emptied on a single lift. These were viewed as practical vehicles for bin-lift collections. WRAP
recommends not using containers larger than 140 litres to collect food waste for manual handling reasons;

- High water content of food waste makes it heavy and sticky and means that the food waste might not easily be ejected from the collection vehicle. High degrees of lift of the body may be required before waste is fully tipped into the designated containers;
- Vehicle bin wash equipment was viewed as a positive additional operational measure. Do take into account potential issues around water being left in bins, and the practical issues of water spillage from bins if they are washed near premises;
- Ideally, any spare capacity in existing fleets would be utilised in the first instance, but consideration could be given to the short-term hire of a vehicle for pilots/demonstration projects; and
- Contingency arrangements should always be in place to cover vehicle breakdowns.

3.6 Collection round optimisation

Through the evaluation exercise, collection rounds in eight of the 10 demonstration project were filmed as part of a time and motion study. As such, the following findings provide insights that may help optimise your collection rounds. The findings (see Figure 2.2) showed that shops and offices had the longest collection times per 120 litre bin capacity, as they tended to have smaller amounts of food waste presented in smaller containers accessed from a rear secured area meaning more time was spent per bin. For larger sites such as non-residential institutions, industrial premises and food manufacturing businesses where larger quantities of waste were presented for collection in larger containers located in central locations, these sites could be serviced comparatively quickly.

The timings review showed that grocery stores individually took a long time to collect from but this was principally down to the large numbers of containers presented at each site. A key factor in grocery stores having an efficient collection rate per 120 litres is that containers generally were presented in car parks/yards; this provided easy access for the collection truck and allowed it to park near the containers.

As shown in Figures 3.2 and 3.3, Quick Service Restaurants (QSR), including fast food retailers, cafes, takeaways, sandwich bars had the longest servicing time per container. This was due to a number of factors, largely attributed to a delay due to drag distance to the vehicle, obstruction of bins or gated/locked access. Food waste containers in QSR are often located near to goods (food, drink, etc) storage areas and, therefore, were often found to be locked. One influential factor is the large quantity of dry recyclable waste that is produced by QSR from food deliveries, which added significant time to the co-collection service operated by Paper Round London.

Industrial premises (‘Other’ in the WRAP categories) also had a long servicing time per container (Figure 3.3) which can be attributed to one anomaly from the SITA Birmingham round, where significant time was spent gaining access to the premises, a large drag distance and further time spent re-arranging the bins.

A general trend was identified (Figure 3.4) whereby the time per bin collected was greater at sites with fewer bins than at sites with more bins, as more time was spent opening a bin store, gaining access to a property or lifting time for a multiple bin lift. This trend was broadly consistent across business types.
**Figure 3.2:** Average collection time per 120 litre capacity by business type

<table>
<thead>
<tr>
<th>Business Type</th>
<th>Mins</th>
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</thead>
<tbody>
<tr>
<td>Restaurants</td>
<td></td>
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<tr>
<td>Offices combined</td>
<td></td>
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<tr>
<td>Grocery stores</td>
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<tr>
<td>QSRs</td>
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<td>Hotels</td>
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<td>Pubs</td>
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<tr>
<td>Education combined</td>
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<tr>
<td>NHS</td>
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</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Food manufacturers</td>
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</tr>
</tbody>
</table>

**Figure 3.3:** Average collection time per bin by business type

<table>
<thead>
<tr>
<th>Business Type</th>
<th>Mins</th>
</tr>
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<tbody>
<tr>
<td>Restaurants</td>
<td></td>
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<tr>
<td>QSRs</td>
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<td>Pubs</td>
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<td>Hotels</td>
<td></td>
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<tr>
<td>Food manufacturers</td>
<td></td>
</tr>
</tbody>
</table>
Key collection round considerations:

- If payload capacity is relatively low, it will be important to have a quick route to the tipping location and, in all circumstances, it will be important that the tipping locations for each segregated stream are in close proximity to each other. Distances between food waste and other material tipping points may be significant which will have an impact on the efficiency of collection rounds;

- Collecting materials in addition to food waste on the same pass forces the frequency of collection to be the same across the different streams. This reduces possibilities of offering higher frequency food waste collections to customers without incurring unnecessary additional costs;

- For tourist areas, there are significant seasonal variations in the amount of food waste collected. This can mean fewer bins to empty out of season, which means quicker collection times per site;

- For highly populated urban areas, night time collections may be appropriate as traffic volumes will be low, although both parked cars and other access difficulties are often encountered;

- Consider the time taken to service potential customers given their particular site locations and food production potential. For example, the time taken to service individual customers by Brighton Paper Round was high due to accessibility issues and a large number of small retail customers. Bioco Coventry, Bywaters London and Bioco Manchester had large sites which took a longer time to service, but each yielded a comparatively large amount of food waste;

- Collections based on bin swap systems took significantly longer than those with bin lifting systems (including those with bin wash); and

- There are also a number of barriers delaying container collection, including drag distance, bins being obstructed, access difficulties, contamination, bin wash and on-board container re-arrangement. The former contributes to most operational delays. This is illustrated in Figure 3.5.
Figure 3.5: Causes of delays during food waste collections recorded from assessment

Breakdown of barriers faced by type

- 56% Drag distance
- 14% Bin wash
- 12% Bins obstructed
- 11% Rearrange
- 4% Contamination
- 3% Access

Source: WRAP survey of frontline staff from 8 demonstration projects

The size, location and type of businesses all influence the collection time. Operational findings from this are not always transferable between schemes, i.e. the Bioco Manchester trial was very efficient from a time/volume perspective. However, this approach could not be transferred to First Mile London (which had a high time per volume collected), as the customers required a different approach and the areas differed.

3.7 On-board vehicle weighing

On-board weighing systems require bins to have a Radio-frequency identification (RFID) chip installed, which is used to identify the customer and the individual bin. The RFID chip is read whilst the bin lift registers the weight of each bin during tipping. The collection vehicle is fitted with a transponder, which then communicates the weight of the bin to a central database. Geographic Information System (GIS) mapping is incorporated into the system; this provides information on the last known location of the bin and its weight.

The GIS data can enable collection rounds to be optimised by creating the shortest route between customers with the benefits of reducing fuel usage and carbon emissions. The ability to record the time and locations also improves customer service, preventing non pick-ups escalating into complaints or disputes.

The importance of weight data as a monitoring tool should not be understated and can provide an attractive selling point of the service. Having regular weight data is important feedback for businesses. It can go so far as helping inform which menus are successful and where upstream savings can be made in menu planning, stock control and portioning.

However, a high proportion of the sector does not have either system and nor did the majority of the demonstration projects. The primary advantage of a bin weighing system is that the customer gets important weight data and can use this data to report on their environmental performance. This can also be provided by collectors using mobile weighing equipment and weighing off individual bins or by taking sample weights and making estimates based on number of containers emptied and estimated fill levels.
3.8 Containment and receptacles

3.8.1 External containers

Due to the high density of food waste, careful consideration should be given to the size of containers issued to customers. This is often overlooked, resulting in bins that are too heavy for operatives or customers to move and too heavy for bin-lifting equipment on vehicles. For example, a 240 litre wheeled bin of food waste can weigh more than 140kg when close to being filled depending on the food types collected.

Although a range of container sizes are being used by organisations running food waste collections, it is advised that containers of 140 litres or less are provided as larger bins (when full) can pose a problem for both operatives and kitchen staff. Hence, for the average customer, it may be worth considering either more than one 140 litre bin for a weekly collection or alternatively, if the service can accommodate it, more frequent collections.

Key considerations:

- When purchasing containers consider the durability and maximum weight that the bins are designed to accommodate. In some demonstration projects, bins began to split after a number of cycles, while in one trial the plastic plugs used to hinge the lid often broke or became detached, significantly impacting on container performance. Bin wheels can be damaged if the bins are overloaded. Check the specification for maximum weights prior to purchase;
- Ensure that collection crews position the bins on the vehicle lifting mechanism properly to prevent container damage;
- For densely-populated areas with narrow streets/alleyways, 120/140 litre containers are the most appropriate container size;
- For bin swap systems, you may want to consider purchasing bins with brakes to prevent movement whilst in transit;
- Consider putting 'maximum fill' marks on the bins to act as a maximum capacity indicator. This may stop the customer over-filling and reduce spillage when the bin is emptied into the collection vehicle. Enforcement of this is problematic however but, you could consider including this within the contract;
- If the customer is to use plastic bags (subject to agreement with the treatment plant) instead of compostable liners, the bags must be clear so the driver can inspect the contents for contamination (as unacceptable levels of contamination could lead to the load being rejected and thus sent to landfill) (see 3.10 below);
- If the customer does not use liners (either in external or internal containers), the bins can become messy and smelly which can impact participation. If liners are used properly, the frequency of the bin cleaning can be reduced, thus providing a cost saving to the customer;
- One of the demonstration projects (bin swap) provided a 120 litre wheeled bin with a rounded base which (while more costly than the traditional 120 litre wheeled bin) lent itself to easier and faster bin-cleaning as food waste did not become embedded in the corners of the container; and
- Consider bin wash facilities - cleaning bins can be time-consuming so this should be costed as part of the pricing of the service.
3.9 Internal bins

Internal bins are likely to increase the overall capture rate of food waste and will deter kitchen staff, in particular, from putting it in the residual bins, (e.g. by siting food waste caddies in kitchens and canteen areas). For any new customer, it is highly recommended that you have a ‘walk around’ (particularly in larger business premises) to suggest where containers could be located.

Key considerations:
- Use signs or place labels on the container(s) indicating what types of food waste can be deposited*;
- Availability of space in chosen locations to locate containers;
- Manual handling given the likely quantity of food waste to be collected and emptying/storage arrangements;
- Width of doorways and corridors;
- Presence of any stairs or other impediments to wheeled containers;
- Availability of any service lifts to transfer materials;
- Many businesses will prefer to use their own containers;
- Kitchen managers will know where food waste arises and where to position internal containers; and
- Involving the kitchen manager in the new scheme design.

It is important to note that whilst kitchen managers will be receptive to ideas from waste management companies on scheme set-up, they are more likely to base decisions on how their service operates and gain information from peers. For these reasons WRAP provides ‘Food waste recycling for your business’ web pages (www.wrap.org.uk/recyclingfood) which use industry examples and case studies (‘success stories’) as well as providing communication templates*. Kitchen managers are often concerned with how the new service might affect their food safety and legal requirement, how their support staff might use the bins and ensuring that additional separation does not affect the running of their kitchen. These web pages have useful sections covering these points, which have been extensively reviewed by industry caterers and professionals.

For smaller premises such as offices and schools, food waste containers typically provided for household collections (20-25 litres) or ‘household kitchen caddies’ (5-10 litres) may be more suitable. **It is suggested that these should not be any bigger than 35 litres in capacity (weighing no more than 15kgs when full)** to prevent any health and safety issues arising from lifting and handling.
3.10 Container liners

Bin or caddy liners are considered by many organisations running food waste collection services to be a key factor influencing the uptake of the service, continued participation in the service and help improve the capture of wetter food waste. Liners keep containers clean and reassure customers that the service is hygienic. In addition, encouraging the use of clear or translucent liners has been found to help reduce contamination as customers are not tempted to use black bin bags as a substitute. A number of the demonstration projects provided liners, the cost of which was included as part of the service charge to the customer.

Key considerations:
- Liners are not necessary for bin swap schemes but will reduce the amount of time it takes to clean the bins;
- Check with your food waste treatment facility (preferred and back-up) as to whether they have a de-packaging facility. If so, this may negate the need for the provision of liners which can be more costly to customers allowing the service user to present food waste in clear plastic bags;
- All liners or plastic sacks should be translucent or transparent to allow collection crews to identify potential contamination. Black sacks are likely to be rejected by the treatment facility;
- No ‘one type fits all’ applies in the provision of liners and caddies. Therefore, the offering should be tailored to the customers. Appropriately sized liners (and different gauges), should be offered to customers depending on the size of caddies/bins;
- Sacks which are intended to be presented on the kerbside must be of a significantly higher gauge than standard liners to prevent splitting e.g. First Mile used 120mu sacks; and
- Liners are an additional cost which needs to be factored in to the price charged for the service.

It is also important to consider the size of the liner in relation to the size of container as some ‘over hang’ is beneficial. **The liner must fit the container, as this also helps**
combat potential odour and hygiene issues. In a kitchen/food preparation area, 35 litre containers with 40 litre liners (to allow for some overhang to avoid the liner splitting or slipping down inside the container) should provide adequate capacity. Any thickness of liner can be used so long as it is certified compostable and biodegradable according to the European standard for compostable packaging (EN 13432). Before deciding which type of liners to purchase, it is worth checking with the food treatment facility as to their preferred option.

Minimal reporting of problems relating to odour and hygiene were logged during the demonstration projects. Where issues were reported, liners were considered to be the main solution. Bin cleaning services can be expensive and may incur an additional cost to the customer of around £5/240l bin.9

3.11 Container placement and presentation

An initial site visit to all new customers is advised, in order to assess individual situations and develop tailored solutions for customers. Prior to commencement of a service, a site survey should be undertaken to ensure user requirements are satisfied and the space for the storage of bins is considered, as well as checking that operational needs can be met (e.g. vehicle access and bin loading considerations). From experience in the demonstration projects it seemed more sensible for sales representatives to initiate this process in order to minimise additional visits to the business.

3.12 Contamination

Contamination was not considered a major problem for any of the demonstration projects. However, the main contamination source reported was the presence of black bag (general) waste. One demonstration project did report high degrees of contamination at one of their sites (a student hall of residence). Overall, the results suggest that one or two bins were rejected per week, but contamination subsided as the service matured and users became more aware of how to use the service.

Key considerations:

- Provide clear instructions with good images and illustrations on how to use the service including what wastes can/cannot be put in the food waste containers (include posters and stickers for the bins/bin areas). A range of staff resources can be found on the Food waste recycling for your business web pages (www.wrap.org.uk/recyclingfood);
- Provide internal containers to be located at key waste production points;
- Identify ‘staff champions’ to explain the system to colleagues;
- Provide lockable external containers;
- Issue non-compliance notices and non-removal of material to businesses with persistent contamination; and
- Ensure that collection operatives are able to report contamination to the contact centre in a timely and effective manner.

SITA and South Hams District Council both offered direct training to customers on separation and, in all cases, drivers also helped to remove contamination where required. The most effective means of mitigation is through face-to-face communication.

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9 Collecting food waste from small businesses and schools, WRAP, 2011
3.13 Frequency and timing of collection

The hospitality sector operates to meet its customers’ needs which vary in peak times during the day, week and time of year. It is commonplace for some businesses to request food waste collections within certain time windows and at times which may fall outside the normal nine-to-five business hours. In general, businesses are sensitive about food waste being stored on their premises for too long. It is advisable to find out at which point in the week food waste generation is likely to peak. Depending upon the business, food waste may build up over the weekend and, therefore, a collection following the weekend would be required. Alternatively, a business predominantly doing trade from Monday to Friday may prefer a collection towards the end of the week to avoid food waste being stored over the weekend.

The demonstration projects running ‘dedicated food waste services’ offered collections ranging from daily to fortnightly. Most of the demonstration projects found that weekly or twice-weekly collections were the most commonplace. First Mile operated the highest frequency of collections, providing overnight daily pick-ups. This was largely due to the nature of the central London customer base. Seasonality can also play a part. South Hams District Council reduced the collection frequency of their service from three days per week in the summer to two days per week in the winter due to the fall in tourist numbers during the low season.

Some commercial customers are likely to have specific collection requirements, e.g. the need for additional collections due to seasonal variations in their business activities, such as at Christmas or other holiday periods.

Key considerations:

- More frequent collections may mean a smaller container can be used without restricting the quantity of waste that can be put out for collection in a given period;
- Higher frequency collections can help avoid potential nuisance, particularly at busy or warmer times of the year;
- Reviewing food waste yields produced by customers wanting regular collections is important because, for small amounts, a service may become prohibitively expensive. Yield information is important in being able to offer a business a more cost-effective service which balances frequency of collection with needs; and
- Offering different frequencies of food collections in an area is likely to mean that pick-ups are dispersed through the week rendering collections inefficient and expensive. Working with customers to trial moves to 'scheduled collections' benefits both customers and service providers.

3.14 Health and safety

Health and safety should be considered in all aspects of your service. A health and safety review, including a full risk assessment, should be carried out when making any change to a service in addition to any carried out on an on-going basis. Method statements and safe systems of work may need to be revised, particularly if collections are made more frequently than before in pedestrian areas or on busy high streets.

None of the demonstration projects noted any serious health and safety concerns throughout extensive delivery of the services across the country. Food waste is one of the more dense materials in the waste stream therefore the containment capacity provided (volume) should not need to be overly large, since weight and manual handling issues are likely to become a barrier even at relatively low volumes.
The relative bulk density of food waste varies according to the food types and how it has been prepared. This means that cooked foods with high water content e.g. rice and pasta will be especially heavy. One of the demonstration projects found that fish waste from market collections was very heavy. The vehicle may also need cleaning more frequently depending on waste type.

The bin swap collection methodology, by necessity, requires often full wheeled bins to be manually wheeled onto a collection vehicle. Despite the use of an automated tail lift, the weight of the bins can make this task physically-challenging.

**Although a range of container sizes are being used by organisations running food waste collections, it is advised that containers of 140 litres capacity or less are provided.** Even when completely full, these can be very heavy and pose a problem for both operatives and kitchen staff. Hence, for the average customer, it may be worth considering either more than one 140 litre bin for a weekly collection or, alternatively, if the service can accommodate it, more frequent collections. Only where more than one operative is available to handle containers should larger containers be considered.

It is advised that a site audit and risk assessment should be carried out for each prospective customer, to ensure the most appropriate containers (size and number) are provided for their needs. Larger internal containers (e.g. 50 litres) may present potential issues in terms of their safe handling. A 50 litre container nearing capacity may weigh as much as 25kg. For this reason, it is advised that internal containers with a capacity of no greater than 35 litres be used.

For operator safety all collection staff should use personal protective equipment. High visibility clothing is essential for staff working in busy environments in and around traffic. Crew should wear gloves when handling food containers and wash hands before taking breaks or refreshment. As many of these collections are operated as driver only services some of the Demonstration Projects had vehicle trackers and regular reporting in procedures to ensure staff could be monitored and alerted to key issues.

Key considerations:
- Bins no larger than 140 litres capacity should be used for collections due to the inherent weight and density of food waste;
- Collection operatives should be trained to identify when a container is too heavy for a lifting comb on a vehicle;
- Caddies / internal containers need to be appropriately sized so that they can be manually lifted by catering staff;
- The risk assessment should consider manual handling and ‘dragging’ of full containers;
- Collection staff must wear PPE during collections. It is good practice to adopt regular monitoring of collection staff particularly when operatives are lone working.

The Waste Industry Safety and Health (WISH) forum provide guidance on the HSE website: [www.hse.gov.uk/waste/wish.htm](http://www.hse.gov.uk/waste/wish.htm)
3.15 Timings for implementation

Detailed in Appendix 1 ('Implementation Plan Template') is a step-by-step approach for effective service planning. It illustrates outline timescales that will help bring your service plan to life, the basis for which is derived from the 10 commercial food waste collections demonstration projects and their practical experiences.

3.16 Launching the service

The timing for the launch of a new service depends on a range of factors, both operational and communications. Assuming that everything to do with the service planning phase has been completed and that a critical mass of customers has been recruited to make the collection round viable, then an intensive PR-centred service-launch should be implemented.

Key considerations:

- New customers are likely to want to start the service at different times. Initially, to ensure early adopters are kept on board, ad-hoc collections may be required until sufficient businesses can be put onto a schedule;
- Once a critical mass of customers has been recruited, new customers should be supplied with containers a week before collections commence and notified of the schedule;
- Ensure vehicle and crew are available, round sheets issued, operatives briefed and trained;
- Complete all administration tasks – ensuring agreements are signed, waste transfer notes have been issued, accounts on system, payments confirmed for prepaid elements, etc;
- A contingency plan is important to ensure the service can still be delivered in the event of vehicle breakdown. More so than other waste collections, customers are unforgiving about missed food waste collections;
- Call centre staff should be notified and fully briefed. This will need to be done prior to the recruitment of customers and the issuing of containers;
- Sales staff and other third parties (as appropriate) also need to be notified and briefed;
- The treatment facility has been notified and briefed as appropriate, e.g. collection vehicle registration numbers supplied;
- Avoid peak sales times (particularly Christmas) and peak tourism months when businesses may not have time to consider an additional service/operation; and
- Avoid launching a service at the same time as major changes to other services.

3.17 Summary

- Where food waste is separately collected for biological treatment, it must be treated in either an Animal By-products Regulations (ABPR) approved enclosed/in-vessel composting facility or AD biogas plant;
- The selection of a suitable food waste treatment facility is a fundamental component in a commercial food waste collection service. If a lengthy journey to the treatment plant/transfer point is required, (a journey of more than 30 minutes one-way), the efficiency of the collections will be compromised and transfer costs will increase;
- Some AD plants have advanced de-packaging equipment capable of removing plastics and metals, offering higher tolerance levels of contaminants;
To make a separate food waste collection worthwhile, at least 40kg per collection is needed. Around 70 SME customers are required to make a service viable with some larger businesses to fill-up capacity, although the number of collections per day may be low, with a maximum of 30/day due to scattered sites and bin swap arrangements;

- Sack collections of commercial food waste offer significant benefits in areas of low storage capacity. Bin swap services work well for customers with limited outdoor space, although they require careful planning to maximise efficiency, as a significant amount of time can be spent by the crew re-arranging bins on the vehicle. This is even more important if collecting other materials on the same vehicle. Bin swap systems typically take longer to deliver (in terms of collection) but can offer cleaner more practical services for the customer, particularly for those with limited outdoor space. Bin-uplift services work well for customers wanting a lower cost service, although the provision of liners may be required by some customers;

- In selecting a vehicle, you need to ensure it is adequately sealed in order that any liquid from the food waste is not leaked from the vehicle, to comply with the requirements of the ABPR;

- Larger 15 tonne twin lift RCVs have a greater lift and storage capacity than their smaller counterparts, while smaller 7.5 tonne RCVs are best suited for customers in small, narrow streets which can be harder to reach. Always consider a back-up vehicle in the event of the principle vehicle breaking down;

- Although a range of container sizes are being used by organisations running food waste collections, it is advised that containers of 120 litres or less are provided as larger bins (when full) can pose a problem for both operatives and kitchen staff;

- Internal bins are likely to increase the capture rate of food waste, (e.g. siting food waste caddies in kitchens and canteen areas). It is suggested that they should not be any bigger than 35 litres in capacity (weighing no more than 15kgs when full) to prevent any health and safety issues arising from lifting and handling;

- All liners or sacks should be transparent or translucent to allow collection crews to identify sources of contamination. High levels of contamination are unlikely to be an issue although where this does arise the most effective means of mitigation is through face-to-face communication;

- Prior to the commencement of a service, a site survey should be undertaken to ensure user requirements will be satisfied and that space for the storage of bins is considered, as well as checking that operational needs can be met (e.g. vehicle access and bin loading considerations);

- A health and safety review, including a full risk assessment, should be carried out when making any change to a service in addition to maintaining these on an on-going basis. Method statements and safe systems of work may need to be revised; and

- Avoid launching a service at the same time as major changes to other services and at peak sales times (particularly Christmas) and peak tourism months when businesses may not have time to consider an additional service/operation.
4.0 STEP 4: Resourcing and costing the service

4.1 Introduction

Aimed at senior management and operational staff, this stage will help you understand the:
- Capital and revenue costs and an appropriate pricing structure;
- Human resource requirements; and
- How to sustain operations and build in contingency.

4.2 Staffing

An effective team with dedicated roles is one of the most critical components in the service plan. It involves getting buy-in and support from senior management, having adequate and effective administrative staff and customer-focused collection crews.

4.2.1 Management

Your commercial food waste collection service should be driven and directed at a senior management level to ensure the service benefits from having ring-fenced resources and budgetary control. Without this buy-in, the service will always rank lower in priority when compared to other collection operations. Setting up a commercial food waste collection service will require staff time to plan and manage its roll out. Identifying a suitable person within your team with the capacity, knowledge and skills to do this is key to the success of the initial set up and on-going deliverability of the new service offering.

4.2.2 Administration and sales

You need to ensure all administrative staff are informed of the imminent launch of the service, what it aims to achieve (including the benefits of recycling food waste), proposed collection round dates and times, food waste containment and prices (including any bin rental charges for internal and external containers). Once the service is bedded in, it is worthwhile issuing a series of Frequently Asked Questions (FAQs) to administrative staff. While these are likely to be unique to your food waste collection service, some useful pointers can be derived from Step 6.0 (Monitoring and performance improvement).

Key considerations:
- Are there adequate resources in place to handle any additional clerical/administrative tasks such as invoicing?
- Does the call centre/office have capacity to deal with additional enquiries?
- Changing collection arrangements and rounds might require some modifications that require careful planning;
- It may be advisable to check your data handling systems to ensure that they can support a co-collection approach (e.g. source separated collection of two or more materials on the same vehicle), if this is to be adopted;
- Consider what analysis needs to be done using the database for monitoring and improvement purposes, as well as day-to-day needs. If accounting information is held on a separate system, then consider how the two can be linked for analysis purposes, e.g. customer reference numbers; and
Adequate contingency plans should be in place in the event of (un)planned staff absence. The loss of a key member of staff can have a devastating impact on the effective operation of a scheme. Ensure that the knowledge and understanding of the service does not sit with just one person.

4.2.3 Collection crews

The driver of the collection vehicle is the main point of contact between the service and the customer. A well-informed and enthusiastic driver is an important advocate for the service. As in the case for administrative staff, collection crews should be kept abreast of developments with regards to the proposed service. Ensure management, administrative and operational staff are able to talk to each other and host a series of meetings during the service planning stage to keep all parties informed.

Experience from the demonstration projects tells us that most schemes were comfortable operating the collection service with a driver only, largely because a lot of ‘dead time’ was involved in driving to customer premises. Bin swap collections operated on the basis of a driver plus one operative. Typically up to 30 sites per day are serviced during a nine hour shift, although it should be acknowledged that this is a relatively low number because many services were still in their infancy at the time of monitoring.

In terms of recruitment of operatives, seasonality impacted upon some of the demonstration projects, e.g. Cape struggled to recruit drivers at certain times of the year due to the transient nature of the workforce in the region and the presence of other more lucrative casual jobs during the summer months.

Key considerations:
- Is there capacity within existing crews?
- How can drivers and crew be trained to ensure they are championing the service at the point of customer interface and are able to head off any problems before they develop?
- For collection rounds where there are large food waste producing customers, a driver and operative should be deployed to help move heavy bins;
- Could crews be re-organised to optimise efficiency?
- What additional training do crews require? Do they require additional driving qualifications?
- Could current services be reviewed and reorganised to release vehicles and crew to deliver the new service?
- Consider taking collection crew staff to the proposed food waste treatment facility so that they understand what happens to food waste beyond collection, namely production of renewable energy and/or production of a nutrient-rich fertiliser/compost and are familiar with the off-loading arrangements at the plant.
A firm handle on the costs of running your service is required to understand what charges should be made and to ensure that the service is covering its costs. Typical costs are outlined in the checklist below (Table 4.1). Appendix 2 (‘Cash flow Model’) provides a model that can be used to develop financial projections over a two year period. It is important to note that while this model helps plot out the costs and cash flow of the food waste service it does not take account of changes to other services e.g. the avoided costs of disposing of food waste, potential decrease in income through a reduction in container size or frequency of collection of the general/residual waste stream or potential increase in dry recycling. For collectors who provide dry recycling and/or general waste services, the costs/income for all services should be considered holistically.

Table 4.1: Typical collection service costs checklist

<table>
<thead>
<tr>
<th>Cost item</th>
<th>Should include</th>
<th>Tick</th>
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<tbody>
<tr>
<td>Collection vehicle/s</td>
<td>Hire charges, capital repayment costs, maintenance costs, fuel costs, insurance, road fund allowance, allowance for accident repairs, sign-writing, allowance for ‘spare vehicle’ cover for routine maintenance and breakdowns and vehicle depreciation (over 5 or 7 years).</td>
<td></td>
</tr>
<tr>
<td>Collection crews (labour)</td>
<td>The cost of driver and loaders, including salary, employer’s National Insurance, pension costs, sickness and holiday cover.</td>
<td></td>
</tr>
<tr>
<td>Supervision &amp; management</td>
<td>The cost of supervision/management, including salary, employer’s National Insurance pension costs, sickness and holiday cover.</td>
<td></td>
</tr>
<tr>
<td>Depot overheads</td>
<td>A reasonable share of the costs of the collection depot, potentially allocated according to the number of vehicles based at the facility (or a proportion of this if the vehicle(s) is also used on other services).</td>
<td></td>
</tr>
<tr>
<td>Container costs</td>
<td>The cost of purchasing all internal and external containers (and liners as necessary) as well as refurbishment and repair. A method of calculating depreciation and replacement should be determined (ideally over 5 or 7 years). It may be appropriate to include storage costs for the period before they can be deployed to customers.</td>
<td></td>
</tr>
<tr>
<td>Material handling, bulking and transport costs</td>
<td>If the collected food waste cannot be directly tipped at a treatment facility then there will be costs associated with bulking and onward transport of this waste. This may be in the region of £5 to £10 per tonne.</td>
<td></td>
</tr>
<tr>
<td>Food waste treatment costs</td>
<td>Costs should be calculated based on the gate fee charged by the treatment facility multiplied by the quantity of material (tonnes) to be treated. In Vessel Composting (IVC) gate fees (median £46/t, range £28 - £60/t), AD gate fees (median £40/t, range £19 - £63/t).10</td>
<td></td>
</tr>
<tr>
<td>Contamination</td>
<td>Costs arising from rejection of a load due to contamination/failure to meet food waste treatment quality specification including transfer, disposal and landfill tax costs.</td>
<td></td>
</tr>
<tr>
<td>Marketing and</td>
<td>Costs of promotional literature, signage, marketing,</td>
<td></td>
</tr>
</tbody>
</table>

Cost item | Should include | Tick
---|---|---
**Promotional costs** | customer recruitment and conversion, and providing any direct support to customers on managing their food waste. |  
**Service administration** | The cost of maintaining customers lists, billing customers, processing payments and dealing with service requests. |  
**Miscellaneous** | Could include items such as training and personal protective equipment (PPE) for the workforce and bin cleansing - if not included elsewhere. |  
**Additional charges** | Core re-charges (call centre costs, IT, HR, etc.) and profit margin. |  

All of the demonstration project participants charged on the basis of container uplift, bin swap or charge per sack. Some of the demonstration projects offered the service as a loss leader/added value to win larger contracts.

Key considerations:

- Common feedback from SMEs is that they believe recycling services should be free. The reasons why this is not feasible need to be communicated to SMEs in marketing materials and via other routes, e.g. on the website, during face-to-face meetings, on site visits, etc;
- Some flat costs should be applied per lift regardless as it costs the same to drive to collect a 120 litre bin as it does a 240 litre bin but other costs can be reflective of the bin size, (e.g. a 240 litre bin is more costly to purchase than a 120 litre bin and it would be expected to contain more waste);
- Clearly outline on invoices what proportion of the price relates to food waste treatment;
- Review at least once a year in line with the budgeting process and to ensure local market relevance;
- In order to incentivise businesses to separate food waste, it is advised that charges for a commercial food waste collection service are set at a lower rate than those for residual commercial waste (where feasible). The cost of liners should be included in the service charge (or the bin lift charge); and

A key sales strategy to recruit more customers to food waste recycling should be (where possible) to reduce the size of the residual commercial waste bins (or reduce frequency of collection) per in order to balance out the costs of the service to the business.

### 4.4 Pricing the service

The average price across the demonstration projects to service a 240 litre and 140 litre food waste bin was between £7 and £10.50 per lift, depending on geographical location. A general theme which has arisen is that most SMEs do not seem to consider the volume of waste they produce worth worrying about; they do not consider food waste a problem waste stream needing to be tackled with a specialist waste service. This view is not helped by the general availability of low cost waste collection services.

The price charged will be dictated by the:

- Cost items outlined in Table 2.1;
- Minimum and maximum numbers of customers that can be serviced per collection round;
- Prices charged by competitors; and
- Ability to offset the costs of the food waste collection service through adapting the pricing for the collection of dry recyclables and res and and general waste.
This said, some of the demonstration projects adopted a ‘sales hook’ majoring on the cost savings (through the reduction in size/frequency of general waste collection and the environmental benefits) rather than winning work solely on price, (e.g. Paper Round Brighton used their ‘no contracts’ flexible policy as a marketing tool, while SITA used longer term contracts with larger producers to guarantee covering set up costs).

Once a pricing structure has been derived, ‘how and where’ price lists need to be decided and published. The benefits of advertising the price list are set out in Table 4.2.

### Table 4.2: Benefits and considerations involved in advertising your price list

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparency and reassurance to the customer.</td>
<td>If a business is forced to enquire, then it might provide additional opportunity to explain the benefits and other aspects of your particular service as well as capturing their contact details so you can follow-up later.</td>
</tr>
<tr>
<td>Provides businesses with a benchmark when they get quotes from other companies so they can be assured that they are not being misled.</td>
<td>By not advertising prices, this can enable sales staff to charge customers based on individual circumstances.</td>
</tr>
<tr>
<td>Convenience for businesses, many of which are used to reviewing charges for products and services via company/organisation websites.</td>
<td>Makes it less easy for competitors to compare and adjust their pricing.</td>
</tr>
</tbody>
</table>

Services will do best when maximising the ratio between the collection revenue and the gate fee at the treatment plant. A packaged service offering food waste, dry recyclables and general waste are the most cost-effective configuration for the customer. A stand-alone food waste collection is unlikely to be competitive. Such an approach should be assessed within the context of the overall service contract. WRAP’s online calculator will help make the business case: [www.wrap.org.uk/content/sme-food-waste/2a-calculator](http://www.wrap.org.uk/content/sme-food-waste/2a-calculator)

To help illustrate this point, Table 4.3 outlines an existing weekly waste collection regime for a small restaurant that generates a relatively large amount of food waste (~45% by weight). The existing residual waste and DMR is collected by one company. The unit costs are relatively typical for the market at the time of writing. The waste management company is looking to roll out a commercial food waste collection service. It is looking to reduce the frequency of the collection of the two 1100 residual waste bins from twice per week to weekly, with the collection of the DMR unchanged. To off-set this reduction in residual waste capacity, two 140 litre food waste bins are introduced, collected twice weekly. The customer makes an annual saving of £104 per year (excl. VAT) while the waste management company makes a better margin on the food waste collection due to having a critical mass of food waste collection customers on the twice weekly collection rounds.
### Table 4.3: Hypothetical illustration of cost savings to a business through re-profiling a waste collection service

<table>
<thead>
<tr>
<th>Waste stream</th>
<th>Collections per week</th>
<th>Unit cost (£ excl. VAT)</th>
<th>Cost (£ excl. VAT)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing waste collection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Residual waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 * 1100 litre</td>
<td>2</td>
<td>£17.00</td>
<td>£68.00</td>
</tr>
<tr>
<td>2. Dry Mixed Recyclables (DMR)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 * 1100 litre</td>
<td>1</td>
<td>£10.00</td>
<td>£10.00</td>
</tr>
<tr>
<td><strong>Total cost per week (£ excl. VAT)</strong></td>
<td></td>
<td></td>
<td><strong>£78.00</strong></td>
</tr>
<tr>
<td><strong>New waste collection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Residual waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 * 1100 litre</td>
<td>1</td>
<td>£17.00</td>
<td>£34.00</td>
</tr>
<tr>
<td>2. Dry Mixed Recyclables (DMR)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 * 1100 litre</td>
<td>1</td>
<td>£10.00</td>
<td>£10.00</td>
</tr>
<tr>
<td>3. Food waste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 * 140 litre</td>
<td>2</td>
<td>£8.00</td>
<td>£32.00</td>
</tr>
<tr>
<td><strong>Total cost per week (£ excl. VAT)</strong></td>
<td></td>
<td></td>
<td><strong>£76.00</strong></td>
</tr>
<tr>
<td><strong>Annual saving (£ excl. VAT)</strong></td>
<td></td>
<td></td>
<td><strong>£104.00</strong></td>
</tr>
</tbody>
</table>

#### 4.4.1 Use of contracts

Contracts are legally enforceable agreements between two or more parties. Commercial waste and recycling contracts provide details of the service to be provided to the customer and any charges that apply. Assessing the merits of using contracts (6 or 12 months), particularly for larger customers, may help cover some of the capital and revenue costs associated with marketing, the provision of internal food waste containers and associated instructional signage and literature. For SME hospitality businesses, the flexibility of not using contracts may enhance the take-up of the service.

Key considerations:
- Addresses and contact details of both parties;
- Agreed service level;
- Provision of collection containers and food waste liners (depending on service provided);
- Collection frequency and collection procedures, e.g. where the containers are to be placed;
- Contamination policy and costs;
- Fill limits (of containers) - side waste policy and costs;
- Contract length, e.g. minimum 6 months;
- Termination policy and costs (including notice periods and amendment terms);
- Price of service and service charging structure; and
- Invoicing and payment terms.

It is important to ensure that there is no time lag between contracts starting and finishing and collections being made, e.g. customers start paying for a service before collections commence, and/or customers still receiving collections after the contract has ended.
4.5 Summary

- Your commercial food waste collection service should be driven and directed at a senior management level to ensure the service benefits from having ring-fenced resources and budgetary control;
- Ensure all administrative staff are informed of the imminent launch of the service, what it aims to achieve (including the benefits of recycling food waste), proposed collection round dates and times, food waste containment and prices (including any bin rental charges for internal and external containers);
- Adequate contingency plans should be in place in the event of (un)planned staff absence. The loss of a key member of staff can have a devastating impact on the effective operation of a scheme. Ensure that knowledge and understanding of the service does not sit with one person;
- A commercial food waste collection service can be operated with a driver only, largely because there is a lot of dead time involved in driving to the customer premises. Bin swap collections use a driver plus one operative;
- Typically up to 30 sites per day are serviced during a nine hour shift, although it should be acknowledged that this is a relatively low number because many schemes were still in their infancy at the time or monitoring;
- All of the demonstration projects charged on the basis of container uplift, bin swap or a charge per sack collected. A packaged service offering food, dry recyclables and general waste is the most cost-effective configuration for the customer. A stand-alone food waste collection is unlikely to be competitive;
- Most commercial waste collection contracts charge by volume and not by weight. This is not advantageous for food waste, which is relatively dense and means that any savings from removing food waste from residual waste have not been that significant in the majority of cases to-date. The average price across the demonstration projects to service a 240 litre and 120 litre food waste bin was between £7 and £10.50 per lift, depending on geographical location;
- Existing contractual commitments of potential customers can be a significant barrier to customer recruitment. Conversely, those not using contracts can use this as a sales tool. This is particularly useful for SMEs. Offering a potential customer a long term (6 to 12 month) contract (with an initial discount) can help cover initial set up costs. This is particularly useful for the public sector and larger businesses; and
- Sub-contracted work can be valuable in the short-term but presents a long term risk if the primary contractor decides to bring such services in-house.
5.0 Step 5: Marketing and promotion

5.1 Introduction

Aimed at management, operational and marketing/sales staff, this stage will help you understand:
- Different options for promoting your service and their relative impact and cost;
- What tools are available to assist you; and
- Key messages and high impact branding for service literature.

It is recommended to consider the known barriers to businesses taking up food waste recycling services because this will help inform the marketing strategy. As stated in the barriers section, the majority of businesses in the HAFS sector do not consider food waste to be an issue or a waste stream that they need help with and therefore taking a proactive approach to sales and marketing is important.

WRAP provides web-based information, guidance and tools which will be helpful to your customers (and you when selling/implementing the service) that cover:
- Why to recycle food waste – business benefits and case studies
- How to recycle – considerations when procuring a waste service
- Implementing food recycling – practical considerations, staff training materials and bin signage

It can all be accessed through: http://www.recyclenow.com/recycle/recycle-work-1

5.2 Marketing and promotional strategy

A service that is affordable, convenient, reliable, and flexible will attract new customers and retain existing ones. Retention of existing customers and successful recruitment of new ones to an existing or new service depends on their perception of the extent to which the service meets their needs and is affordable to the business.

It is important to be proactive in sales and marketing, especially when launching a new service. Investing resources in communications to recruit businesses and provide on-going support is crucial but should be proportionate to the size of the collection business.

To build up a customer base, a proactive marketing strategy is needed which communicates information about the service in a clear, concise manner appropriate to the target audience. The success rate of different promotional methods in generating new customers will be dependent on many factors, such as rapport between the customer and sales staff, quality of promotional materials and the perceived quality/value of the service. Typical success rates for different approaches are outlined below in Figure 5.1.
Evidence from the demonstration projects showed that blanket approaches (using telesales, advertising and information packs) can be expensive and are less effective in terms of resultant uptake. Although some blanket methods are not necessarily costly (e.g. leafleting), the low take-up means the cost per converted business can be high.

Key findings from the demonstration projects:

- The most successful demonstration projects, in terms of recruitment, had some form of trained and dedicated sales team resource. Poorer performing schemes lacked teams with sales skills or the resource to dedicate to sales;
- There can be a significant time lag between direct sales and a resulting contract. This is due to a range of factors including ties to existing contracts, but also the time taken to engage business managers who may work on a regional basis;
- Face-to-face marketing was viewed as the most effective proactive marketing method, although this was most effective when backed by other elements such as targeted leaflets and an informative website;
- A key strategy amongst most companies was to target their current customer base first (if they had one) and to prioritise likely food waste producers. The net to cold call and contact relevant food producing businesses not currently on their client list were broadened. First Mile had the highest impacts from businesses outside their core target markets of offices;
- Paper Round (London and Brighton) attended networking events and exhibitions to try and recruit customers, including Brighton Eco Technology Show and Fashion Week and London Total Workplace Management. Bioco was successful at recruiting from events, specifically targeting food and drink festivals, where they generated leads in major hospitality and retail businesses; and
- Public sector customers were not the focus of the demonstration projects. However, it was found that recruitment was tricky due to restrictions on using framework contractors, in many cases, and lengthy contracts already in place. WRAP has produced some good practice information on the collection of food waste from the NHS.
There is no agreed average cost for recruiting an additional customer to a service. Based on the findings from the demonstration projects, the cost was broad ranging. To demonstrate this point, one project spent £111 on marketing and promotion per recruited business (excluding staff time), another spent £28, whilst a third spent £8 per recruited customer.

The customer mix across the 10 demonstration projects was incredibly varied with one of the London-based demonstration projects having 216 paying customers (mainly hospitality-based customers). Two of the demonstration projects mainly targeted supermarkets, with their customer base largely comprising 100 paying customers. Conversely, one of the demonstration projects only had 31 customers, comprising of universities and fast food outlets. The results suggest that having a varied mix of over 70 customers requiring at least one collection of food waste per week provides a firm foundation for a sustainable commercial food waste collection service.

**Figure 5.2: Origin of material collected over 15 months by three demonstration projects**

The results from the 10 demonstration projects proved that no one method of marketing and promotion works effectively in isolation. Appendix 3 (Communication and Marketing Plan Template) can be used to inform your marketing and promotional strategy. The most successful demonstration projects had marketing and communications strategy, containing various promotional elements including PR. Figure 5.2 illustrates the customer profile (based on tonnages collected) across three contrasting demonstration projects. The four primary sources of food waste across the demonstration projects were from grocery stores, hotels, offices and pubs. Quite importantly, all three demonstration projects had a good customer mix, spreading the risk should one customer group fail to produce enough food waste.
5.3 Key messages

The core elements of the service which need to be communicated to customers are price, convenience, reliability and flexibility, providing clarity to a non-specialist audience. As discussed in previous sections, the introduction of food waste may have an effect on the collection of other waste streams including general waste and dry mixed recyclables. This may present cost-saving opportunities through the reduction in the frequency of the general waste collection. One waste stream should not be dealt with in isolation from the others. The promise of a punctual and flexible service can be adapted and reviewed periodically and can be an attractive proposition to a potential or existing customer.

Other issues which customers may find important include:

- **Environmental indicators** - larger organisations are now looking at what environmental data (such as reduction in CO₂ contributions, % recycling rate and % waste reduced year on year) can be provided by a service provider so that they can measure their performance against their Key Performance Indicators (KPIs); and

- **Environmental benefits** - when food waste is disposed of in the residual waste stream, it is often consigned to landfill. Here, it breaks down anaerobically and produces methane, a potent greenhouse gas. The separate collection and treatment of food waste ensures that these emissions are avoided, providing reassurance that the food waste is being recovered and harnessed into renewable energy and/or fertiliser or compost.

Some companies are likely to be strongly motivated by environmental concerns or reputational gains through improved environmental credentials and, may demonstrate a willingness to pay for the service. Others will be more sensitive to the costs of the service and will be less likely to take up the service if additional costs are incurred. For target customers who are responding to environmental drivers gaining regular tonnage data is important to their continued use of the service.

WRAP’s website contains information about the benefits and practicalities of sourcing a collection for food waste for businesses (see Section 3.3 **www.wrap.org.uk/recyclingfood**). This could be used as an additional tool for convincing and recruiting new customers and, in particular, reviewing some of the ‘success stories’ of customers from the demonstration projects, to uncover their motivations for participation in the services. The web link above plays host to a very inspirational video that shows how a Bristol-based restaurant chain has introduced a food waste collection across all of its restaurants and how this was instrumental in it gaining a number of awards, including one from the Sustainable Restaurant Association.

5.4 Who in the organisation to target

It is important to appreciate that there are different people within a hospitality sector business each operating at different levels who will all have influence on take up and success.
of a new service. WRAPs research\textsuperscript{11} on food waste recycling in SMEs in the hospitality sector highlighted:

- For smaller HAFS businesses such as QSRs, small hotels, pubs and restaurants the business owner is the main decision maker. The smaller the business size the more hands on the business owner will be in making decisions that impact on cash flow and costs. For SMEs with 15 – 20 employees operating in these sectors there is likely to be a more formal management structure with the owner’s decisions influenced by a manager.

- For small chains of outlets, such as regionally owned QSRs or pubs there is a mix of responsibility for making decisions. The local managers at each premise will have local issues to deal with and will be more familiar with the level of service provision available in their area. Their recommendations are then acted upon by a more senior manager at head office. In some instances each branch of the chain may have its own specific service contracts but in others a deal to cover all of the branches under one contract may be preferred.

- For larger restaurants and hotels, especially those that are part of a chain, there will normally be a senior hotel or restaurant manager who makes the decisions on where to procure waste services from and what format they should take. Because of the size of these operations section heads are normally responsible for presenting the case for new services to the general manager.

5.5 Branding and iconography

A strong brand is a key component of a successful business model. All the demonstration projects used their corporate brand and some blended it with Recycle Now iconography. To access a large range of resources including relevant logos and icons register on the Recycle Now Partners web site: \url{www.partners.wrap.org.uk/}

- For commercial food waste collectors: click on the retail and high street tab/download area/business recycling.
- Other food waste resources: click on local authorities/download area/food waste collections.

The branding of your service should be consistent throughout your promotional media: vehicle livery, bin stickers, posters, leaflets, website and any other signage. The most successful demonstration projects used clean, crisp images and very little text, creating a professional and instantly recognisable brand.

\textsuperscript{11} Decision making in SMEs in setting up and implementing a new food recycling scheme (unpublished)
Professional promotional material is another key component of your marketing strategy. It will act as a useful resource to remind your contacts of the service, re-affirming the key messages outlined in Section 6.3 (price, convenience, reliability and flexibility) and can act as a way of ‘getting your foot in the door’. Advice on how to secure staff buy-in to any new food waste recycling service and how to run the food waste collections internally is often required. Language can be a barrier, particularly within the hospitality sector in major cities where employees for whom English is not their first language are commonplace. Heavy use of text (that is not translated) can result in confusion over what can and cannot be placed in food waste bins. **Images, iconography, bin stickers and posters can help alleviate language barriers.** Many of the demonstration projects provided these resources and, in some cases, even went in and spoke to staff to get them to understand the importance of the collections. Language should be kept positive and simple to understand and it may be beneficial to include some basic information on what happens to the food waste once it is collected.

It is not recommended to use images of food waste within literature. This is because people do not always recognise what the picture is depicting and feedback from surveys has suggested that some do not think it is very nice to look at (which could have negative connotations that recycling food waste is unpleasant). Generally businesses prefer images that depict a thriving and efficient business e.g. happy staff, food service in operation and clean working environment.

Leaflets can be viewed as ‘teasers’ which encourage decision-makers to explore the issue of food waste recycling further. All the demonstration projects produced a promotional leaflet. Some examples are shown in Figures 5.3 and 5.4 (overleaf). The most notable approaches are outlined below:

- 1,500 leaflets promoting First Mile’s food waste collection service were circulated to coffee shops across London producing 249 ‘hot leads’ from which 11 were converted into new customers during the two month period of the project. For offices, 500 promotional leaflets were circulated to larger offices across London producing 21 ‘expressions of interest’. From these, 10 ‘hot leads’ were followed up which resulted in the recruitment of six new customers in a one month period following the promotion;
- SITA UK purchased a sector-based database of local businesses and sent an e-flyer to businesses in and around the Birmingham area; and
- A specific food waste leaflet was developed by South Hams District Council and distributed to a list of premises in the area that prepare/sell food from the environment health department describing the service to generate initial interest.
WRAP has developed a poster and sticker to help anyone in the hospitality sector promote food waste recycling within their business to their colleagues. These resources should help get buy-in from staff and encourage them to recycle food waste using the appropriate bins. These are contained on WRAP’s website: [www.wrap.org.uk/content/sme-food-waste/6-resources](http://www.wrap.org.uk/content/sme-food-waste/6-resources).

It is important to develop a customer information pack containing all relevant information about the service. This might include:

- Guidance on internal food waste storage;
- Details of compostable bag suppliers;
- Details of acceptable and unacceptable wastes, including posters for kitchen areas;
- Details of the treatment process and its environmental benefits;
- A helpline telephone number; and
- Responses to Frequently Asked Questions (FAQs).
5.7 Mail shots

It is advisable to channel marketing efforts to a targeted selection of businesses rather than adopt a blanket approach. This will depend upon the existing customer base, but could include existing trade customers for either refuse and/or recycling services - promotional material about new services can be sent with invoices or individual customers can be approached directly. The food waste collection could be marketed as part of a package of services.

5.8 One-to-one contact

Whilst resource intensive, face-to-face visits can be effective in recruiting customers, the ability to build rapport with a potential customer, together with a relatively detailed understanding of how the service will work on the ground, are key attributes successful sales representatives require. Having a well-thought-out 'on-the-ground' sales strategy is the first stage in this process, which then links to a set number of target visits per day. A performance-related bonus scheme is a powerful means of incentivising sales lead conversions. Equally, the sales representative needs to be able to assess the logistics of collection, e.g. vehicle accessibility, density of the round when developing the service, so it is useful to train sales representatives to be able to consider how the logistics of the collection will work.
Key findings from the demonstration projects:

- Bioco did not have a large team, but were targeted in their approach to recruiting new customers. The team went to hospitality events where they had the best chance of meeting relevant businesses and the key decision-makers within those organisations. They attended a number of exhibitions, including: the Facilities show, Recycling and Wastes Management (RWM) exhibition, and networking events including National Industrial Symbiosis Programme (NISP) workshops. In 33% of instances, drivers had a role in recruiting new businesses to the round;

- London Paper Round's face-to-face marketing included field sales/door knocking (five meetings per day) and leaflet drops. They attended two London-based exhibitions - Total Workplace Management and Hotelympia, as well as undertaking networking at British Institute of Facilities Management (BIFM) Catering & Hospitality Special Interest Group and at The Sustainable Restaurant Association; and

- For SITA, telesales and face-to-face sales were carried out via local, regional and national sales teams and; follow-up visits were carried out by South Hams District Council to those who had received an initial leaflet through the mail out.

Key considerations:

- Often in smaller hospitality businesses, the business owner is the main decision-maker. The smaller the business size, the more hands-on the business owner will be in making decisions that impact on cash flow and costs;

- For small chains of outlets, such as regionally-owned QSRs or pubs, there is a mix of responsibility for making decisions. The local managers at each premise will have local issues to deal with and will be more familiar with the level of service provision available in their area. Their recommendations can be acted upon by a more senior manager at head office. In some instances, each branch of the chain may have its own specific service contracts but in others a deal to cover all of the branches under one contract may be preferred; and

- For larger restaurants and hotels, especially those that are part of a chain, there will normally be a senior hotel or restaurant manager who makes the decisions on where to procure waste services, and what format they should take. Because of the size of these operations, section heads are normally responsible for presenting the case for new services to the general manager.

5.9 Advertising and promotion

Only four of the demonstration projects embarked upon a PR campaign to promote the service:

- Press releases were circulated by Brighton Paper Round to local and trade press. They attended local exhibitions and worked with a local fashion designer to make a dress out of food waste for Brighton Fashion Week to gain PR coverage and raise awareness of the scheme;

- London Paper Round - press releases were circulated to local and trade press;

- SITA UK used online magazines to promote the food waste recycling service. This was sent to all existing customers; and

- South Hams District Council’s internal communication department wrote press releases to promote the service, distributing these to all local press in the area.
5.10 Social media and websites

Before embarking on a social media campaign, it is crucial that the food waste collection service features prominently on your website. A number of the demonstration projects engaged in a lot of online activity:

- First Mile engaged in online activity via Twitter, Facebook and Linked-In, as well as Google Ad Words;
- London Paper Round’s web pages were updated with information on commercial food waste collections which were then signposted through Twitter and an online blog; and
- As well as promoting the service through its website, SITA UK advertised on Google via a web-leased platform. Scheduled Tweets linking to target audiences were sent out.

5.11 Summary

- Investing in a comprehensive marketing strategy is key to the success of a proposed service. Create high impact promotional material and target existing customers first;
- Key target sectors are the hospitality, retail, food manufacturing and public sectors;
- Ensure adequate internal resources for marketing and sales. Build in contingency to cover (un)planned staff absence i.e. the provision of the right amount and type of support to cover maternity, illness or general staff turnover;
- Target events with relevant business decision-makers. One of the demonstration projects was successful in securing a nationwide contract with a high street restaurant chain through exhibiting at a nationally-recognised hospitality sector event. Local Chamber of Commerce networking events can also provide good opportunities to meet with business leaders;
- Understanding customer needs and service delivery practicalities up front will help ensure the development of a successful service. ‘One size does not fit all’ - service flexibility is key to customer retention;
- Understand your competition. This not only applies to other food waste collectors but also companies offering low cost general waste and recycling collection services. There is increased competition for the provision of these services, particularly in high density urban areas. New entrants can single-handedly undermine an existing customer base in a short space of time; and
- Use resources provided by WRAP to help your target businesses to understand why to recycle, how to recycle and how to maximise recycling.

http://www.recyclenow.com/recycle/recycle-work-1
6.0  **STEP 6: Monitoring and performance improvement**

6.1  **Introduction**

Aimed at management and operational staff, this stage will help you to understand:
- Why it’s important to monitor and evaluate your service; and
- What and how to monitor.

6.2  **Key Performance Indicators (KPIs)**

At the outset of the service it is crucial some key parameters are set out to monitor the success (or otherwise) of the service plan, by creating a set of Key Performance Indicators (KPIs) and a baseline against which to compare all future activity. Accordingly, KPIs tend to be defined in a way that is understandable, meaningful, and measurable. The KPIs should reflect what is important to your business as a whole (e.g. the KPIs useful to finance will be quite different from the KPIs assigned to sales or operations). If a KPI is to be of value, there must be a way to accurately define and measure it. ‘Generate more repeat customers’ is useless as a KPI without some way to distinguish between new and repeat customers. It is also important to stay with the same definition for KPIs from year to year.

To measure performance against these KPIs, it is crucial to think through how to collect and record this information. Table 6.1 provides some examples of performance, cost and marketing KPIs. These KPIs can be used in addition to standard operational measures relating to the performance of the crew (productive time, travelling time, time spent at the transfer station, etc). It is recognised that some of these KPIs may not be relevant and, indeed, the data may not be obtainable. Understanding business types (see section 2.2) is important in terms of establishing your core customer base and thus benchmarking as the service matures. This will help inform your marketing strategy as it changes and adapts. It is important to consider the use of KPIs at the service planning stage to ensure that systems and procedures are in place to collect this data.

Unless you have reliable on-board weighing equipment, obtaining accurate tonnage data per premises/customer is difficult. Overall tonnage data is easily obtainable from weighbridge tickets if you have dedicated food waste collection vehicles, but individual bin lift data will be reliant on collection crew estimating ‘fill rates’ of bins, logging the number uplifted and then applying a typical bin weight. This tool can help you to work out the weight of the bins: [www.wrap.org.uk/la-apportionment](http://www.wrap.org.uk/la-apportionment)
### Table 6.1: Example Key Performance Indicators (KPIs)

<table>
<thead>
<tr>
<th>Performance KPIs</th>
<th>Cost KPIs</th>
<th>Marketing KPIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av kgs/premises/week (by business type)</td>
<td>Charging method (e.g. charge per uplift/monthly charge plus bin rental)</td>
<td>Marketing spend (£)/customer recruited</td>
</tr>
<tr>
<td>Av kgs/collection round</td>
<td>Charge/container type (140 litre)</td>
<td>Marketing spend (£)/kg collected</td>
</tr>
<tr>
<td>Av kgs/container (by container type)</td>
<td>Collection cost (£/tonne)</td>
<td>Conversion rate/marketing activity</td>
</tr>
<tr>
<td>Total tonnes/business type/month over 12 months</td>
<td>Average gate fee (£/tonne)</td>
<td></td>
</tr>
<tr>
<td>Av mileage/day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Av number of. businesses serviced/collection round/week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Av number of contaminated bins/100 bins</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 6.3 Continuous improvement

The baseline data should be collated in the first month, followed by monthly reviews thereafter. Close scrutiny of the collection service should be paid over the first three months of operation, involving an assessment of the service’s KPIs, but also a review of the qualitative elements of the service, including customer satisfaction, missed collections, feedback from sales/administrative/collections staff. It is important to host periodic meetings with all staff involved in the service delivery to reflect on areas of performance enhancement and integration with other waste collection services. This will ensure the optimisation of resources across the business.

#### 6.4 Summary

- It is crucial key parameters are set to monitor the success (or otherwise) of elements of the service plan; create a set of Key Performance Indicators (KPIs) and a baseline against which to compare all future activity;
- The baseline data should be collated in month one, followed by monthly reviews thereafter; and
- It is important to host periodic meetings with all staff involved in the service delivery to reflect on areas of performance enhancement and integration with other waste collection services.