Collecting food waste from NHS hospitals: a guide for waste management companies

A guide to help inform waste management companies how best to meet the food waste collection service requirements of hospitals

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Summary of Considerations

Research by WRAP indicates that there is a significant opportunity for waste management contractors to provide food waste collection services to the NHS:

- There are around 2,300 hospitals in the UK\(^1\).
- Around 0.5 kilograms of food waste is produced per patient per week.
- Most food waste is currently either disposed of mixed as part of the general waste stream, or macerated for disposal to sewer.
- There are a number of drivers encouraging the NHS to separate food waste for treatment.

This guide has been developed based on interviews with NHS hospitals with food waste collections and their waste management companies. It aims to help waste management companies understand how best to meet the food waste collection service requirements of NHS hospitals.

The research identified the following key considerations:

- **Provision and management of food:** The way in which food is provided and managed within different areas of a hospital influences the amount, type and presentation of the food waste arising. This could be explored by waste management companies with the NHS during the planning stage of a service to ensure that the needs of different buildings and hospital sites are most effectively met. However, it is important to recognise that not all Trusts / Boards will desire this level of involvement from waste management companies.

- **Collection operations:** Within a hospital site food waste can be collected from a number of areas, transferred between containers and transported large distances to the vehicle collection point. Waste management companies should help ensure containers and equipment that support good manual handling practices are provided as part of the contract or are purchased by the Trust / Board for each stage of collection. Different systems may need to be considered for different sites. Where vehicles need to enter public areas the potential to schedule collections for less busy times could be considered to minimise risk to the public.

- **Packaged food:** Some food waste arising in hospitals is contained within packaging (predominantly yoghurts, sandwiches and un-served meals within foil and plastic packaging). If the waste treatment site is unable to accept packaged food the management of this element of the food waste will need to be considered.

- **Charging mechanisms:** Waste management companies engaged with during this research charged for food waste services:
  - Per collection: with charges based on the number of bins lifted per collection.
  - By weight: with charges based on the weight of food waste collected

Both mechanisms broadly relate charges levied to amounts of food waste generated. This was well received by the NHS as it gave an opportunity for charges to reduce as food waste was minimised (e.g. via sustainability strategies or FM contracts with waste reduction targets). Charging per lift may result in more food waste being presented

\(^1\) [http://www.nhsconfed.org/priorities/political-engagement/Pages/NHS-statistics.aspx](http://www.nhsconfed.org/priorities/political-engagement/Pages/NHS-statistics.aspx)
per container than with other charging mechanisms. This could have manual handling implications, particularly where larger containers are used and it may be prudent to require use of smaller containers.

**Budgets and wider benefits:** The NHS may make cost savings from ceasing use of macerating systems. However these savings may be made by an alternative budget area to the one that would cover the cost of food recycling collections. For example, savings will be made in the estates budget responsible for the macerator, but pressure will be placed on the waste management budget that was previously not responsible for management of food waste. Information from waste management companies can support NHS cost benefit exercises regarding food waste collection.

**Communication and coordination:** Roles in managing food waste may be managed in-house or split across several different facilities management contractors with numerous staff from different services involved in the management of food waste. This makes effective communication and coordination critical and means that the role of different players needs to be considered by the waste management company if it is supporting communications and advising the NHS on internal food waste operations. Communication activities and materials need to be appropriate to the target audience.

**Data and feedback:** Food waste collection from NHS properties often forms a small part of the wider sustainability strategy. Waste management companies should consider what data and information they could provide to help the NHS assess the contribution of the food waste service to the wider sustainability strategy objectives.

**Procurement:** Procurement of services tends to be via formal routes meaning that speculative approaches are unlikely to be as effective with the NHS. Instead waste management companies should consider:

  o Building relationships with facilities management (FM) companies likely to sub-contract waste collection elements of larger contracts
  o Building relationships with waste brokers
  o Discussing the potential for food waste to be added as a variation of existing NHS contracts
  o Marketing via NHS / health sector targeted communication channels to increase the likelihood of being selected to bid for low value contracts
  o Bidding to be included on appropriate procurement frameworks
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1.0 Introduction

1.1 Background
WRAP’s Food Waste Collections Programme seeks to support an increase in the quality and quantity of food waste collected for treatment from a range of sectors and in doing so contribute to the delivery of the Government’s Anaerobic Digestion (AD) action plan\(^2\). Through the Programme WRAP has identified that NHS hospitals offer a significant opportunity to improve the management of food waste particularly since it is thought that much of the NHS’ current food waste is disposed of to sewer, or as part of the general waste stream.

1.2 Purpose and use of this guidance document
This guide has been developed based on interviews with NHS hospitals and waste management companies undertaking food waste collections from hospitals. It aims to improve and increase the NHS food waste collection services by helping waste management companies understand how best to meet the requirements of NHS hospitals.

It is intended that this document can be read in discrete sections with key information provided in the body of the document with further information provided within appendices and case studies. Links to relevant reports that provide additional information are highlighted throughout. Recommendations are provided in each section and are summarised on page 1 of this document.

1.3 Scope
This guide is focused on the collection of food waste for recycling at offsite AD / IVC facilities, with advice targeted at waste management companies. On-site treatment and technologies that treat waste before discharge to sewer are not in the scope of this document. WRAP and Zero Waste Scotland have developed a significant amount of other resources that address wider issues surrounding prevention, management, collection and processing of food waste including resources targeted at the NHS. Some examples of these resources are provided throughout this document and in Section 10.

1.4 Methodology
The broad methodology employed for developing this guide was to undertake site visits at five NHS sites supported by discussions with relevant collection contractors to view how food waste is managed and undertaking phone and email interviews with a further three NHS Trusts. Further details of the methodology employed are provided in Appendix A.

2.0 Benefits of food waste collection from the NHS

Some of the common benefits of collecting food waste from hospitals for the NHS and their contractors are summarised in Figure 1 below.

**Figure 1: Benefits of collecting food waste from NHS hospitals**

<table>
<thead>
<tr>
<th>NHS</th>
<th>Waste Management Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost savings from food waste in residual waste stream (if not macerating)</td>
<td>Increased revenue from collection of potentially new material stream from new clients</td>
</tr>
<tr>
<td>Cost savings from maintenance and repair of macerator (if macerating)</td>
<td>Large amounts of material presented at a single site</td>
</tr>
<tr>
<td>Contributes to wider objectives within sustainability strategy (e.g. CO₂ savings)</td>
<td>Reduced landfill and increased capture of material</td>
</tr>
<tr>
<td>Moves food waste up the waste hierarchy</td>
<td>Increased satisfaction for existing NHS customers through wider waste management service</td>
</tr>
<tr>
<td>Supports waste minimisation by monitoring food waste and changing procurement activities and reducing purchasing costs</td>
<td>Reputational benefit of providing food waste services to a well known client</td>
</tr>
<tr>
<td>May assist with compliance with legislative requirements</td>
<td></td>
</tr>
</tbody>
</table>
3.0 The context of food waste within the NHS

3.1 The role of the NHS Trust / Board and hospital sites

The role of the Trust / Board and individual hospital sites may differ; however procurement of waste management services and development of waste and environmental policies are likely to be at a Trust / Board level. Responsibilities are likely to fall as shown in Figure 2 with tasks managed externally by Facilities Management (FM) or catering contractors in some instances.

Figure 2: Responsibilities in relation to food waste

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3 Within Scotland hospitals are managed by one of a number of health boards rather than Trusts.
3.2 Drivers for introducing food waste collections
In England and Wales the main drivers for food waste collection reported were to reduce waste management costs or improve environmental performance, whilst in Scotland a key driver is the Waste (Scotland) Regulations 2012. Specific drivers cited were:

- **Cost**: Reducing costs via separate food waste collection systems in comparison to alternatives e.g. landfill or purchasing and maintaining maceration units.

- **Environmental performance**: Improving environmental performance including meeting ISO 14001 requirements, improving energy use (e.g. via AD) and increasing recycling.

- **Meeting maceration requirements**: Some regional water companies restrict maceration because of overcrowded sewage networks and blockages.

- **Meeting legislative requirements**: The Waste (Scotland) Regulations 2012 and the revised Duty of Care requires Scottish hospitals (other than in rural areas) to segregate food waste and imposes a ban on the disposal of macerated food waste to the sewer by 2016. There are proposals in Wales and Northern Ireland for similar regulations requiring businesses to segregate food waste and banning disposal of macerated food waste to sewer.

- **Managing waste in line with good practice**: The English Healthcare Technical Memorandum HTM07-01 provides guidance on management of healthcare wastes, including how the waste hierarchy and sustainable procurement of related services. The Scottish Healthcare Technical Note SHTN3 provides specific guidance on relevant regulations and more detailed guidance on non-healthcare streams, including food waste.
4.0 Provision and management of food within hospitals

4.1 Food waste provision models

Work undertaken by WRAP to map the flow of food waste within hospitals identified that there are three main models for producing and providing patient meals:

- **Cook-serve**: The hospital has its own kitchen on-site producing meals to serve the same day. The food is usually plated up in the kitchen, placed on trays in a trolley rack and transported to the wards. Alternatively food is sometimes bulk served on the ward.

- **Central production unit (CPU)**: This is a centralised hospital kitchen that produces food to serve a number of hospitals in the same Trust / Board and often provides meals for other Trusts / Boards on a commercial basis. It can be located on the site of a hospital or off site. Meals are packed into portion sizes, either chilled or frozen and regenerated when required at ward level. Food is plated up from the regeneration trolley from bulk portions, but the number of portions per pack can vary depending of the operation.

- **Ready meals regeneration**: Main meals are cooked off site by an external company and supplied frozen or chilled. These can either be purchased directly by a Trust or they can form part of a single catering contract of meal provision and service. The regeneration and plating up process is the same as described above in the CPU.

The provision of catering services for staff and visitors varies considerably between hospitals, in terms of scale, range of foods available and opening hours. Some hospitals only provide café outlets providing takeaway food such as sandwiches and jacket potatoes. These can be either provided in-house or out-sourced. If a hospital has its own kitchen on-site then they are more likely to provide hot meals in a restaurant for staff and sometimes also visitors. Some hospitals that buy in ready meals for patients may also offer the same type of ready meals in a restaurant allowing an opportunity to sell over-ordered food.

4.2 Food waste handling and arisings

Initial indications from WRAP research are that for a single day around 0.5 kg of food will be generated per patient although the type and amount of food waste arising in different areas can differ significantly.

Questions that could be considered by a waste management company when planning the food waste service include:
What types of ward are there at each hospital site and how might this affect the types and amounts of food waste arising? The quantity of food waste arising from a ward is influenced by many factors including the type of catering service, the meal ordering system, the menu choices, the quality of food, portion sizes and the ward type. From data collected for WRAP’s food waste mapping project, more food waste tended to arise from elderly wards and surgical wards. Key factors contributing to this are lack of appetite and scheduling of operations. Anecdotal information also suggests that intensive care wards often have no or very little food waste provided (and therefore have little arising), wards for children are likely to be provided with finger foods and wards for the elderly may have pureed food. However, due to the many influencing factors it is difficult to isolate reasons for waste generation or predict waste arisings at ward level.

Are there any regeneration kitchens at the site? If so, what type of packaging for food waste is use and how is it managed? In regeneration kitchens chilled or frozen foods that have been prepared and packaged elsewhere are heated and the cooking process completed. Typically the food waste generated in regeneration kitchens will be from over ordering (e.g. food ordered for beds that are empty or patients that cannot eat) surplus portions as a result of a bulk food service, or from uneaten food (plate scrapings). Food waste produced from over ordering often needs to be removed from packaging (usually foil / plastic) (Figure 3) if the treatment plant used is not able to accept packaging. Some hospitals were using, or investigating use of, biodegradable packaging to address this issue.

Are there any food preparation kitchens? Hospitals that use a cook serve food provision model will have one or more kitchens where food is prepared. Initial indications from WRAP research are that these sites may produce around 10% more food waste than sites that regenerate ready meals.
Is there any equipment used in any of the areas that could influence the amount food waste presented? One hospital contacted for this research had a dewatering system for food waste. Dewatering systems separate solids from liquids to allow the liquid fraction to be disposed of via drainage systems and reduce the overall weight of food waste, therefore reducing disposal costs. Food waste treated with dewatering systems will have less liquid content than untreated food waste. This may reduce tonnages collected and since AD processes may be affected waste management companies should ensure that that treatment site will be able to accept the amount of dewatered food waste expected to be generated.

Are there any canteen areas that would benefit from a food waste collection? Some hospitals provide separate containers for food waste in canteen areas. These containers are generally accompanied with communications detailing exactly what can be disposed of (e.g. whether or not food packaging is accepted through the service). The amount of food waste produced within a canteen depends on the size of the operation (e.g. if the canteen was for staff and visitors) and the types of meals served.

How is food waste handled currently? It tends to be common, even within hospitals without a food waste collection service, for food waste to be separated from other waste streams (for maceration and / or to allow appropriate charging to be applied to catering contractors who may be contractually responsible for waste generated through their services). Therefore the separation of food waste for collection may not require significant cultural or operational change.

Are there any retail areas? If so, how can packaged food be handled? Some hospitals provide food waste collection containers within retail outlets. These outlets tend to serve predominantly packaged sandwiches and other takeaway items which may need to be de-packaged if packaging is not accepted by the food waste treatment site. It should be noted that staff at some sites may be used to de-packaging food waste if they have previously used a macerator for disposal, although this may be less likely where retailers do not have kitchens (e.g. in the case of a newsagent located in a hospital that also sells packaged sandwiches). In the sites engaged with through this
research food waste recycling containers in retail areas were located only in staff controlled areas and were not available for customer use.

- **Are there isolated infection controlled areas?** Good practice for infection control applies throughout the hospital, however there are specific areas dedicated to critical or contagious patients where special processes (including cleansing) are used to isolate infections to prevent them spreading. This means that the way in which food waste from these areas is managed is likely to differ to other areas in the hospital (i.e. be treated as clinical waste and kept separate from all other waste streams at all times). Therefore food waste from these areas may not be presented in the food waste collections.

- **Is there any information regarding current food waste arisings?** A number of NHS Trusts / Boards contacted in the development of this document had very little understanding of the amount of food waste generated prior to introducing a food waste collection service. This is likely to be particularly true of sites where food waste is currently macerated and therefore cannot be visually assessed. When initiating a new contract waste management companies might need to allow for flexibility in container number and / or collection frequency to ensure the amount of waste generated can be accommodated.

**Consideration:** The way in which food is provided and managed within different areas of a hospital influences the amount, type and presentation of the food waste arising. This could be explored by waste management companies with the NHS during the planning stage of a service to ensure that the needs of different buildings and hospital sites are met. However, it is important to recognise that not all Trusts / Boards will desire this level of involvement.
Further information: Zero Waste Scotland has developed a [calculator tool](#) which allows the user to take account of the amount of waste produced by a hospital, based on the number of beds and adjusted depending on the approach to food provision.
5.0 Collection operations
5.1 External collection methodologies
The research undertaken identified that there were three main approaches being used by waste management companies to collect food waste from NHS sites.

Container lift systems

Figure 5: Food waste containers are lifted by an RCV for emptying.

*Please note that since servicing of containers was not observed as part of the site visits the images of the container lift system and container exchange system are provided from observations of commercial food waste collection systems undertaken by LRS Consultancy on behalf of WRAP.*
Container exchange systems

**Figure 6**: Full containers are exchanged for empty ones using a tail lift vehicle.

![Image of container exchange](image)

Vacuum pipe system

**Figure 7**: A vacuum pipe is used to transport food waste from the hospital kitchen to a central storage tank. The tank is periodically emptied by a tanker vehicle.

![Image of vacuum pipe system](image)
5.2 Operational and containment considerations for container systems
The following diagram summarises typical operations used by the NHS to manage food waste internally and present it externally for collection by the contractor. The dotted lines denote potential additional steps which may be undertaken dependant on the hospital layout (e.g. not all sites will have interim waste storage areas).

A summary of operational / containment considerations for the contractor is provided at each stage. Some examples of collection systems in operation are provided as appended case studies which are listed in Appendix B.

Figure 8 and Figure 9: Movement of food waste through hospital (dotted lines denote potential additional steps)
Process for managing food waste

On ward
Plates may be scraped into liners hung from service trolleys or small lined containers on the trolley.

Satellite kitchen or trolley
Over ordered food and patient plates are likely to be scraped into small containers with biodegradable liners.

Interim internal storage area
At some sites materials were transferred into a larger container in an internal interim waste storage area (e.g., a room at ward level).

Interim external storage area
At some sites materials were transported to an interim external waste storage area (e.g., a small bin area outside each building).

Final collection point
Food waste was transported to the final collection point for collection by the contractor.

Considerations for waste management companies

- Any liners provided should be of an appropriate size, gauge and design to enable them to be hung from the trolley or line the container on the trolley.
- An appropriate size of food waste collection container to sit on the trolley should be considered.
- Arrangements for disposal of food waste from infection controlled areas should be discussed with the hospital.

- Small food waste containers tended to be washed using dishwashers therefore container size and material should allow this.
- Containers with fully removable lids tended to be preferred to those with hinged lids and having a container that can be fully and easily disassembled is important for cleaning.
- Since the container tended to be emptied manually (into a larger container or onto a trolley) the container should be of a suitable size and shape to minimise the risks from manual handling.
- Ideally liners will be used within the small container to ease the removal/handling of food waste and reduce washing requirements.

- The food waste container should fit within the space available, ideally without blocking access to other containers.
- The distance that food waste needs to be transported to and from the container should be considered (e.g., a wheeled container or trolley could be used to reduce manual handling of food waste).
- The process used for removing food waste from the container should be considered (e.g., liners could ease removal of food waste and staff should not need to bend into the container).

- Food waste tended to be transported relatively large distances to the external storage area often using trolleys or slave bins.
- In some instances, food waste contained only in a liner was transported alongside other bagged wastes. Liners for this purpose must be robust to withstand this handling and be easily identifiable.
- Some sites were using drop fronted eurobin containers for food waste in order to ease loading of the food waste into them.
- At some sites, food waste bins were transported to the main collection site using an electric vehicle. Therefore, containers may need to be compatible with this type of equipment.

- A number of sites commented that food waste bins are heavy to move when full. It is important that the bins used are of a suitable size to move safely when full (a WRAP steering group convened to consider collection of food from small businesses suggested that containers should be no larger than 130 litres).
- Container size may be particularly important where the NHS is charged per ‘lift’ and in these circumstances, there is an incentive for the bins to be entirely filled.
- Cleaning of the containers should be considered and is particularly important where the external containers are taken inside the hospital for exchange or transport.
Containers at different stages of the operation should ideally be:

- **Covered and leak-proof** to prevent odour, leakage and deter vermin (this is required for external containers for compliance with the Animal By-Products Regulations).
- **Easy to clean** to prevent issues with smells and odours and ensure that staff are not put off using the containers. For small internal containers, such as caddies, cleansing was generally undertaken by NHS staff using internal dishwashers. Containers should be an appropriate size, shape and material to allow for this. Having a fully dismantle-able internal container will allow for thorough cleaning of all parts to avoid having areas where germs can breed. For external containers, rounded edges can ease of cleaning, reducing likelihood of food waste residue getting caught in the corner of containers (Figure 10). Frequency of cleaning may vary depending on the time of year, the use of liners, the location of the containers and the procedures for cleaning the container. WRAP expand on these factors in their guidance for local authorities on food waste collection for flats.

- **Of a suitable size, strength and construction** for the contents or the container to be handled safely. Advice from an expert steering group convened by WRAP for a project to assess food waste collections from small businesses was that the container size should not exceed 180 litres in order to avoid health and safety issues associated with manual handling. This is because food waste is dense making the containers heavy and potentially unsafe to move when full. For example an average 240 litre bin could weigh 120kg when full of food waste. It should be noted that one Trust commented that it considered the 240 litre wheeled bins that they were using to be unsafe as the tilting required to move them was difficult when they were full and heavy. For this reason, the Trust’s contractor is trialling four-wheeled 500 litre bins at another site which, despite the additional weight, staff have reported are more stable and easier to manoeuvre.

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Suitable for use with a liner as lining the internal bins can help reduce the frequency of cleansing of both internal and external containers and may assist internal transport of the food waste (dependent on handling techniques used).

Appropriate for the area in which it is located. For example locks can be considered for any containers located in publicly accessible areas to reduce the potential for contamination and the size and shape of container should allow it to fit within the area in which it is located.

Designed ergonomically for the way in which they will be used. For example if food waste is to be transferred to another container or trolley manually the size and depth of the container is important to ensure that staff are not leaning into a large container. A container of a suitable height to be placed on a counter top will enable staff to scrape food waste directly into the container without bending down to do this. A foot pedal or lid that lifts off entirely could enable staff to easily scrape plates into the container. One site commented that staff preferred containers with a fully removable vs hinged lid as this made scraping plates easier (see Figure 11). Supporting equipment such as trolleys or electrical vehicles should be considered to ensure that the containers are compatible with this (Figure 12 and 12).

The design of any liners used should also be considered. Key requirements for liners are that:

- They are compatible with the collection system and treatment plant used (for example some will accept plastic liners while others will require biodegradable liners).
- They are of a suitable size and design to line the bin used and allow for the liner to be easily removed e.g. by allowing enough spare material at the top or tie handles to allow the bags to be securely gripped. Fill lines can be used to help meet H&S requirements for handling weights.
- They are of an appropriate gauge not to burst or leak during handling.
5.3 Operational considerations for vacuum pipe systems

Vacuum pipe systems can reduce the manual handling of food waste by allowing materials from multiple areas of the hospital to be drawn to one central storage tank for periodic emptying. Given the infrastructure requirements, vacuum systems are most commonly installed during a new build or refurbishment programme. The management and maintenance of the system is likely to be the responsibility of the Trust / Board’s facilities function, involving specialist engineering contractors where required. Waste management company involvement is likely to be limited to collection and sludge removal operations.
Please note that since only one vacuum pipe system was visited as part of this research the information presented in this section is based on relatively limited information. Details of this system are provided as an appended case study (Appendix B).

Figure 14: Operational considerations for vacuum pipe systems
5.4 Vehicle access arrangements

Typically the external waste collection areas viewed at hospital sites as part of this research:

- Were relatively large and had sufficient space to allow for vehicle movements.
- Allowed the vehicle to pull up close to the collection point meaning drag distances for containers were minimal.
- Had restricted access via a security hut or locked gate to which the contractor was provided with a set of keys.
- Were external meaning that containers were exposed to the elements.
- Were located in areas where a number of different waste streams were stored, transferred and processed (e.g. compaction).
- Were not accessible to the public.
- In some instances were within a large hospital site and were accessed via relatively narrow internal hospital site roads with tight corners.
- Had clearly identified / separate areas for containers that were filled and required servicing to those that were empty (as in some cases there were more containers provided than were used every week)

The layout of the sites assessed meant that beyond providing access to the vehicles and transporting food waste to the containers the NHS staff were not playing a role in the presentation of containers e.g. they were not pulling them out to an alternate collection point.
on collection day. The time of day that collection operations occurred was site dependant and a matter of preference of the collection contractor in relation to their usual practices and rounds.

Figure 16: Waste container storage area which is accessed by vehicles at The Royal London Hospital (Barts NHS Trust)

**Consideration:** Within a hospital site food waste can be collected from a number of areas, transferred between containers and transported large distances to the vehicle collection point. Waste management companies should help ensure containers and equipment that support good manual handling practices are provided as part of the contract or purchased by the Trust / Board for each stage of collection. Different systems may need to be considered for different sites. Where vehicles need to enter public areas the potential to schedule collections for less busy times could be considered to minimise risk to the public.
6.0 Communications
Dependant on the scope of the contract it can be either the responsibility of the hospital or of the waste management company to deliver communications activities that support the food waste service. In either case the waste management company has an interest in ensuring that the communications approach used is based on good practice in order to maximise the quality and quantity of food waste captured.

Waste management companies engaged with as part of the research were playing varying roles in supporting communications. The most active were leading service monitoring through regular audits of waste and recycling containers at ward level and using the outcomes to undertake ongoing face to face staff engagement.

A principal indicator of a successful food waste collection system is the degree to which the service is embedded into the everyday culture of the NHS. Mobilising culture change was cited as a key obstacle at the introduction stage by many NHS contacts. Developing and delivering an effective engagement plan which considers appropriate messages to different audiences is key to the success of food waste collection services including achieving optimal capture rates, high quality material and appropriate health and safety management.

Where waste management companies provide communication services it may be prudent to agree a communications plan and procedural documents with the NHS to ensure that all parties involved in the management and delivery of communications have a clear agreement of the approach that will be taken (e.g. the process, timescales and sign off procedures involved in the development of a new communications material). The NHS and waste management company should each nominate a named contact to aid communications between the two organisations to facilitate feedback and aid the quick resolution of issues.

Target audiences should be identified with the NHS and their roles considered when developing messaging, overall strategy, communication methods and activities. It is important to identify any barriers that may need to be overcome in relation to the target audience,

Further information: An approach to developing an effective communications plan that is transferrable to the NHS is outlined in WRAP’s Improving recycling through effective communications’ guidance document and further support is provided through the WRAP Recycle Now Partners website.
including identifying the groups that will require the most motivation to engage in the service, whilst taking into account which groups are the most significant in terms of capture rates and overall impact on the food waste service.

Whilst not involved in the day to day running of the food waste collection service, one key audience is the CEO and board. Receiving buy in at a high level within the Trust is important for both the initial launch and continued operation of food waste collection services. Services that receive recognition at board level and/or are supported by strategic documentation, especially if inclusive of food waste targets, are likely to place food waste collections higher on the staff agenda.

**Figure 17: Stakeholders involved in the food waste management process.**

![Diagram of stakeholders involved in the food waste management process]

*Note: ‘waste management staff’ is used as a broad term to describe a number of roles required to make the food waste service work operationally, e.g. porters, housekeeping staff etc). ‘Wider staff’ refers to staff such as doctors, nurses and healthcare assistants that are not necessarily involved in the management of the service but may need to be aware of it.*
Appendix C outlines some of the key audiences, messages and communications methods that could be considered in the development of a communications plan. Pictorial communication materials may help to communicate effectively with staff that do not speak English as a first language (Figure 18 and Figure 19).

Figure 18: Labelling for external food waste containers developed by WRAP for schools which could be used for containers at NHS sites

![Figure 18](image1.png)

Figure 19: Examples of kitchen area food waste signage. Signage placed above internal food waste containers at Royal Bournemouth (left). Example WRAP food waste recycling poster (right).

![Figure 19](image2.png)
Consideration: Roles in managing food waste may be managed in-house or split across several different facilities management contractors with numerous staff from different services involved in the management of food waste. This makes effective communication and coordination critical and means that the role of different players needs to be considered by the waste management company if it is supporting communications and advising the NHS on internal food waste operations. Communication activities and materials need to be designed to be appropriate to the target audience.
7.0 Data provision

The NHS sustainability strategy 2013-2016 sets out that where possible the NHS will report quantitatively on progress including waste recycled, carbon emissions and energy used\(^6\). Offering data services to NHS clients that incorporate these additional elements can add value and transparency to the overall food waste collection service.

Key data reported to the NHS could include:

- **Tonnage data**: Tonnage data reported by the contractors engaged with as part of this research tended to be either monthly or quarterly. The method of data gathering was generally dependent upon the collection system. With container collections tonnage data tended to be calculated in relation to container fill level. With the vacuum pipe system weighbridge data was used which was made convenient by the disposal site with the weighbridge being close to the hospital.

- **Recycling rate**: If food waste is collected as part of a wider contract including residual waste and dry recycling tonnage data can be used to calculate how food waste contributes to the overall recycling rate.

- **Treatment information**: Carbon savings and energy information provided from treatment of food waste can contribute to wider sustainability aims. For example, one Trust was provided with energy generation data from the AD process, based on assumption of 1 tonne generates 265 kWh.

- **Performance / improvement information**: Providing monitoring data through visual auditing of individual containers can provide an opportunity for targeting improvements to capture and contamination rates in particular building or areas of the hospital. This information can then be used in staff education activities. In one Trust where this activity was undertaken by the contractor photographs were taken to support the data from observations to provide visual recognition of good and poor practice. Making staff accountable for their actions through these processes was reported to support communications to correct behaviour.

\(^6\) Where this is not possible the NHS will report on progress in qualitative terms, such as added value, risk mitigation, and improved supply chain resilience. Such information could include the qualitative impact of abolishing maceration of food waste.
**Consideration:** Food waste collection from NHS properties often forms a small part of the wider sustainability strategy. Waste management companies should consider what data and information they could provide to help the NHS assess the contribution of the food waste service to their wider sustainability strategy objectives.
8.0 Approaches to charging and NHS budget considerations

8.1 Approaches to charging

The research undertaken identified that broadly two mechanisms were used by waste management companies to charge for food waste collection services. These were:

- **Per collection:** with charges based on the number of bins lifted per collection.
- **By weight:** with charges based on the weight of food waste collected. This tended to be calculated based on estimations based on bin fill level. One contractor was supporting estimates with periodic bin weighing exercises. With the vacuum pipe system weighbridge data was used to measure disposal tonnages. This weighing was made convenient by the disposal site (with the weighbridge) being close to the hospital. On board weighing equipment could also be considered for measuring weights.

Both types of charging mechanism broadly allow for charges to be levied in relation to the amount of food waste generated at a site. This was well received by the NHS contacts since they considered that it gave an opportunity for service charges to reduce as the amount of food waste was minimised (e.g. via the implementation of sustainability strategies or new facilities management contracts that included food waste reduction targets).

In one instance (the vacuum pipe system) the charges were levied in two discrete elements: a per collection charge and a treatment charge per tonne. The NHS Board reported that they felt this was a good mechanism as it had allowed them to reduce costs by reviewing and reducing the servicing frequency of the storage tank.

8.2 NHS budget considerations

A commonly cited benefit of introducing a food waste collection service from the NHS contacts is the cost saving made from ceasing use of a macerating system including maintenance, repair and energy costs, and disposal in the residual waste stream when a macerating system breaks down. The pressure food maceration places on the sewer may also have financial repercussions should any damage or problems occur in the wider estate.

Further information:
Previous WRAP research, *Food Waste Collections to SMEs: Developing the Business Case, 2011*, modelled costs associated with different food waste collection operations for SME’s which may provide a useful reference for waste management companies considering different models for service provision for NHS sites.
Whilst these elements support separate food waste collections, the savings may well be made by an alternative budget area. For example, waste management at some hospitals may have a separate budget to estates management, in this instance, savings will be made in the estates budget but pressure will be placed on the waste management budget that was previously not responsible for management of food waste.

Further to this catering departments may not be re-charged for the electricity and water consumption from maceration but they might have to pay capital and maintenance costs for the macerators. Therefore it may not be in a catering department’s interest to instigate food waste collection if they will be responsible for the associated costs.

This information may be useful for waste management companies when undertaking marketing activities and engaging with different NHS budget holders regarding the provision of services to ensure that the bigger picture of cost / benefit of services is considered.

**Consideration:** Waste management companies should consider that charging per container lift may result in more food waste being presented per container than with other charging mechanisms (e.g. systems where charges are made per tonne collected or per visit). This could have manual handling implications for NHS staff and collection operatives, particularly where larger containers are used. With this type of charging mechanism it may be prudent to provide or require use of smaller containers such as 140 litre wheeled containers.
**Consideration:** The NHS may make cost savings from ceasing use of macerating systems. However these savings may be made by an alternative budget area to the one that would cover the cost of food recycling collections. Information from waste management companies can support NHS cost benefit exercises and help support food waste collection.
9.0 **Contract procurement**

9.1 **How the NHS procures food waste collections**

As a public sector body, the NHS is subject to regulatory and policy requirements that define how services are procured. The majority of procurements will use a formal route meaning that speculative marketing approaches to hospitals are unlikely to be successful.

The primary factors influencing the approach of Trust / Board in procuring a food waste collection service are likely to be:

- The flexibility of existing waste management contracts i.e. can a separate food waste collection be added to an existing contract without a formal procurement process?
- The financial scale of the proposed contract. European regulations\(^7\) require public sector bodies to use increasingly open and more competitive procurement routes with wider advertising of opportunities for higher value contracts. The limits of these are predefined by the internal policy of the organisation and, at the upper limits, by regulations.
- NHS guidance / policy

In practice, a food waste only collection contract can be relatively low value, principally because the quantities of waste may themselves be small. The lower the value of a contract, the greater the opportunity for the NHS to use a simpler or less formal procurement process; for the NHS itself this approach may be beneficial in terms of incurring less internal cost and may be quicker to completion.

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\(^7\) Public procurement in the UK and the rest of the European Union is governed by a number of Directives and Regulations which are then implemented in national legislation. The Public Contracts Directive 2004/18/EC outlines procedures for the award of public works contracts, public supply contracts and public service contracts.
The research undertaken identified that the following approaches to procurement were being used:

- Competitive tender through an open public advertisement, usually via public sector contract portals.
- Invitation to tender as part of a competitive process with bidders selected by the NHS from a framework or similar pre-selected list.
- Invitation to tender as part of a competitive process, with bidders chosen by the NHS but with no formal pre-selection process such as a framework.
- Where the value of the contract is low, waste management companies may be invited to provide a quotation for providing the service on a single action basis with no competition.
- Waste management companies may be sourced through existing contractual arrangements for example with an existing service provider, facilities contractor or waste broker.

The most common contract length among participants in the research was a three year contract with an optional one year extension period (3+1); however there were also shorter length contracts of one year and one instance where there was no formal contract agreement with the collection contractor.

Further details regarding contract procurement are provided in Appendix D.

Further information:

Many NHS food waste service contract procurements will be publically advertised. The links below provide further information regarding procurement portals.

- **Contracts Finder** - public sector contract opportunities in England
- **Sell2Wales** - opportunities with public sector bodies in Wales
- **Public Contracts Scotland** - opportunities with public sector bodies in Scotland
- **eSourcing NI** - opportunities with public sector bodies in Northern Ireland
- **Delta eSourcing** – eTendering portal used by public bodies including a number of NHS Trusts
Consideration: Procurement of services tends to be via formal routes meaning that speculative approaches are unlikely to be as effective with the NHS as they might be with businesses. Instead waste management companies should consider:

- Building relationships with facilities management (FM) companies likely to sub-contract waste collection elements of larger contracts
- Building relationships with waste brokers
- Discussing the potential for food waste to be added as a variation of existing NHS contracts
- Marketing via NHS / health sector targeted communication channels to increase the likelihood of being selected to bid for low value contracts
- Bidding to be included on appropriate frameworks
10.0 Further links
Some links to further information available from WRAP and Zero Waste Scotland are summarised below.

**Reduction and management of food waste for hospitals**
- [Opportunities for resource saving in the FM sector](#)
- [WRAP's hospitality and food service website hub](#)
- [Zero Waste Scotland’s hospitality and food service website page](#)
- [WRAP's facilities management procurement toolkit](#)
- [General advice on food waste reduction via WRAP's Love Food Hate Waste](#)

**Collection of commercial food waste**
- [WRAP's commercial food waste collection guide](#)

**Collection of food waste (general information)**
- [WRAP's food waste recycling hub](#)
- [Guidance from WRAP regarding communications](#)
- [Waste Contractors Communications Toolkit for the Waste (Scotland) Regulations](#)

**Processing of food waste**
- [Guidance from WRAP for on-site treatment of organic waste from the public and hospitality sectors](#)
- [Guidance from WRAP on enhancement and treatment of digestates from anaerobic digestion](#)
- [WRAP's anaerobic digestate quality protocol](#)
- [Guidance from WRAP on garden and food waste processing](#)
Appendix A. Methodology employed

The broad methodology employed for developing this guide was:

- Identification of NHS sites receiving food waste collections via internet research and engagement with forums, waste management companies and representative bodies in England, Wales, Scotland and Northern Ireland.
- Development of questions for NHS representatives and waste management companies involved in managing food waste collections from hospitals to form a basis for the information provided in this guidance document.
- Undertaking site visits at five NHS sites supported by discussions with relevant collection contractors to view how food waste is managed.
- Undertaking phone and email interviews with a further three NHS Trusts to identify how their food waste collection services are provided.
- Establishment of a panel of waste management companies to review and comment on the guidance document.
- Development of this guidance document and supporting case studies with amends made based on feedback from WRAP and the Steering Group of waste management companies.

Appendix B. Case studies

Further details regarding five services that were assessed as part of this research are provided in the form of case studies:

- Appendix B2: Barts Health NHS Trust. Tailoring food waste collection systems to varying hospital building design and layout.
- Appendix B3: Cardiff and Vale University Health Board. The collection of food waste undertaken by Cardiff City Council’s commercial collection service.
- Appendix B4: Central Manchester University Hospitals NHS Foundation Trust. Improving recycling rates through the collection of food waste using wheeled containers.
- Appendix B5: Taunton and Somerset NHS Foundation Trust. The collection of food waste at a hospital that has evolved over time using wheeled containers.
Appendix C. Key audiences, messages and methods for communications

Key audiences, messages and communications methods that could be considered as part of the development of a communications plan for the NHS.

<table>
<thead>
<tr>
<th>Audience</th>
<th>Message</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEO / board</td>
<td>- The benefits of the service</td>
<td>- Briefing session</td>
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<tr>
<td></td>
<td>- How the service supports wider aspirations / strategies (and legal compliance)</td>
<td>- Briefing note</td>
</tr>
<tr>
<td></td>
<td>- Their role in supporting the service</td>
<td>- Regular updates at management meetings</td>
</tr>
<tr>
<td>Management staff / ward matrons</td>
<td>- How the service works</td>
<td>- Regular onsite meetings during implementation phase for guidance and troubleshooting</td>
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<tr>
<td></td>
<td>- Their role in managing the service operations and communications</td>
<td>- Regular performance reports</td>
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<tr>
<td></td>
<td>- The benefits of the service</td>
<td>- Staff / ward / hospitals awards service</td>
</tr>
<tr>
<td></td>
<td>- How the service supports wider aspirations / strategies (and legal compliance)</td>
<td>- Activities as below for catering and operational staff</td>
</tr>
<tr>
<td></td>
<td>- General misconceptions around odour and vermin</td>
<td></td>
</tr>
<tr>
<td>Catering staff and operational</td>
<td>- How the service works</td>
<td>- Details within job description and policy documents</td>
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<tr>
<td>staff</td>
<td>- How and where to present materials for collection</td>
<td>- Induction training with supporting documents and FAQ sheets</td>
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<td></td>
<td>- Their role in managing the service</td>
<td>- Regular refresher training (with feedback and consideration of any issues identified)</td>
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<tr>
<td></td>
<td>- The benefits of the service</td>
<td>- Monitoring of performance and face to face discussion of issues</td>
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<tr>
<td></td>
<td>- Feedback on performance and recognition of achievements</td>
<td>- Staff / ward / hospitals awards scheme</td>
</tr>
<tr>
<td></td>
<td>- General misconceptions around odour and vermin</td>
<td>- Intranet information</td>
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<td></td>
<td></td>
<td>- Reminder screen savers</td>
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<td></td>
<td></td>
<td>- Staff / hospital newsletters</td>
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<tr>
<td></td>
<td></td>
<td>- Reminder posters in relevant areas (see Image 22)</td>
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<tr>
<td></td>
<td></td>
<td>- Container labelling (see Image 23)</td>
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</tbody>
</table>
### Audience | Message | Method
--- | --- | ---
Agency operation / catering staff | - How the service works  
- How and where to present materials for collection  
- Their role in managing the service  
- The benefits of the service | - Inclusion within induction  
- Simple briefing sheet  
- Reminder posters in relevant areas  
- Container labelling |
Wider staff (not directly involved in the management of the service) | - How the service works  
- The benefits of the service  
- Service performance and achievements | - Intranet information  
- Staff newsletters  
- Container labelling  
- Posters |
Public that have access to the service (e.g. via canteen collections) | - What can and cannot be put in the food waste container  
- The benefits of the service | - Container labelling  
- Posters  
- Newsletters |
Appendix D. Procurement

Further to section 9.0 of this document this appendix provides details of formal procurement processes that may be used by the NHS to secure food waste collection services.

Informal contract procurement

In some instances the NHS is able to engage a waste management company without a formal procurement or competitive process. Generally this approach will be restricted to where contracts already in place for a related service can be varied to add food waste or, where an existing contractor is tasked with sourcing support services on behalf of the NHS. Specific examples might include:

- Where a facilities management contractor sources waste services on behalf of the NHS using a waste broker.
- Where an existing waste management contractor is able to offer the food waste collection as a variation to an existing contract without requiring re-procurement or the service (the ability to do this is generally dependent on the contract specification and how the original contract was procured).
- Where the food waste collection is small scale, a contractor may provide the service on an informal basis. This is most likely to occur when food waste collection is first set up on a site and information on the quantities and logistics are at a development stage.

Formal contract procurement

Formal procurement processes can vary from very small to large scale and value contracts. The process may be competitive or single action and it may include a single evaluation stage or be preceded by a prequalifying stage to reduce the number of potential bidders to a manageable level.

Contract procurement can be a much simpler process for both parties where the contract is small scale and low value. In these cases the process can have shorter timescales through:

- The use of waste management companies who are pre-qualified through a framework.
- Selection of just a small pool of bidders (e.g. three bidders) to request quotes from.
- At the lowest end of the scale there may be single action tenders with no competitive process.

Where food waste collection is procured alone it is likely that the contract will fall within these small scale categories; however there are instances where larger scale contracts may be
sought, for instance where food waste collections are procured by a number of NHS partners or procured alongside other waste services (e.g. dry recyclables and residual waste).

**Procurement models**

At the highest end of the value scale, public sector contract advertisements are required to be published in the Official Journal of the European Community European (OJEC). This applies (from January 2014, noting the figure is subject to change) to NHS service contracts above the upper limit of £111,676.

Below this level the approach is subject to the policy of the organisation concerned and the sign-off level of responsible staff. The following approaches to procurement may be taken (ordered highest to lowest value with broad indicative values provided in brackets⁸):

- For contracts over the procurement upper limit, bidders will be invited to tender competitively though an open public advertisement in the OJEU. It is likely this will be a two stage process including a pre-qualifying or PQQ stage (contracts exceeding current EU upper limit).
- For larger contracts that do not exceed the procurement upper limit, bidders will be invited to tender competitively though an open public advertisement which will likely be published in one of the government’s public procurement portals. This may be a two stage process including a PQQ stage if the NHS expects a large number of responses (e.g. £50,000 up to EU upper limit).
- For smaller contracts bidders may be selected by the NHS from a framework or similar pre-selected list and invited to tender competitively, often with three to five bidders involved in total (e.g. up to £25-£50,000).
- For smaller contracts bidders may be selected by the NHS based on industry knowledge alone and invited to bid. In Scotland this approach includes the Public Procurement Scotland (PPS) ‘Quick Quote’ system which requires both parties to be registered on the PPS portal, but does not require any pre-selection process (e.g. up to £25-£50,000).
- Where the value of the contract is low, a waste management company may be invited to provide a quotation for providing the service on a single action basis with no competition (e.g. less than £5-10,000).

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⁸ The contract values (other than the OJEU limit) are not consistently prescribed across the UK, please note that the example values provided above are indicative only.
Procurement timeframes
The actual procurement timeframe will vary considerably depending on the amount of information that needs to be included in the bid and whether the tender is publicly advertised or restricted to just a small number of invited bidders. Timescales could range from between one to six weeks for food waste services alone and will be significantly longer than this where food waste services are procured within wider facilities management services.

Tendering
As part of the tendering process bidders will have to provide:

- **Compliance:** The NHS has its own responsibilities under the waste Duty of Care to ensure that their waste is dealt with appropriately. Through any tender process they will need assurance that the successful bidder will provide a fully compliant service. This assurance may require bidders to provide details and references, or may simply require a signed statement of compliance.

- **Ability to deliver the service:** The NHS will also need assurance that the bidder has the ability to deliver the service. Again, this assurance may require bidders to provide details and references, or may simply require a signed statement of compliance.

- **Cost:** The highest weighted evaluation criterion is almost invariably the cost of the service.

In addition, especially for larger scale and longer period contracts, information may be requested, which could include:

- **Detailed compliance information** in particular Duty of Care, Waste (Scotland) Regulations 2012 (i.e. in Scotland), Animal by-Products Regulations (ABPR, impacting on collection vehicle types, management of transfer and handling operations and choice of treatment route), Waste Carriers Licence, adequate licensing of any facilities to be used in the delivery of the contract.

- **Treatment information** including the proposed treatment site and process, energy generation (for AD), compost/digestate end use and certifications (e.g. PAS100/PAS110).

- **Data and performance** e.g. the reporting data and process expected to be provided to the NHS customer.

- **Track record of delivering a similar service** with examples and references.

- **Add-on services** e.g. support to implementation, training and internal communications.

- **Health and Safety** information including the proposed approach, risk assessment, company track record / RIDDOR reporting.
Company policies and statements e.g. Environmental, Equal Opportunities, Health and Safety, and Staff training.

Generally the evaluation of the tender is likely to be broken down under the main headings of 'Cost' and 'Quality'. For food waste and combined waste services tenders, our research identified that common weighting for the two are 60% evaluation on Cost and 40% on Quality or, 80% on Cost and 20% on Quality. Smaller scale contracts could simply evaluate all compliant bids (i.e. those meeting all regulatory and specified service delivery requirements) against cost alone.