Segregated waste collection in non-public spaces

Guidance for the Further and Higher Education Sectors in Scotland.

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1 Introduction

The Scottish Government is developing policies which will move Scotland towards the implementation of source segregated collections. The overall objectives of separate collections are to:

- increase the quantity of recyclable materials collected;
- to improve the quality of recyclable materials by minimising contamination;
- support stable market demand for high quality, high value recyclable materials; and
- save costs.

As a result, the Waste (Scotland) Regulations 2012 emphasise the importance of separating different materials in the waste stream. Improving the source segregation and management of priority materials within the Public Sector, in accordance with the requirements of the Regulations and the 2015 Waste Framework Directive, will help to simplify the process of recovering their value.

The purpose of this guide is to explain why Further and Higher Education (FE/HE) establishments must comply with the Waste (Scotland) Regulations and introduce a system for the separate collection of key recyclables materials, e.g. paper, cardboard, glass, plastics and metals, and food waste. Source segregation can also apply to less commonly disposed of materials such as IT equipment, furniture and household items, such as those utilised in halls of residence, and electrical items, such as Waste Electrical and Electronic Equipment (WEEE).

The principal aim is to provide FE/HE establishments with knowledge and best practice to inform their decision-making in the provision of co-located facilities for the collection of key recyclable materials and residual waste arising within all buildings on campus.

The FE/HE sector also has duties under the Climate Change (Scotland) Act 2000, whereby all public bodies have a duty to carry out their activities and operations in ways which contribute to the Scottish Government’s headline emissions targets and to act sustainably. The Scottish Government guidance on the duties under the Climate Change Act encourages public bodies to undertake regular reporting of their climate change actions, either through a dedicated reporting process, or other arrangements.

The main benefits to implementing a source segregated collection are: a better quality of source segregated recyclables attracts the best market prices; a potential for cost savings; source segregation of materials leads to better environmental performance; more accurate reporting; and, ultimately, meeting environmental and legislative targets.

A number of FE/HE organisations have been contacted during the development of this guide and their feedback incorporated throughout. The guide also contains a series of case studies, illustrating good practice approaches adopted in relevant organisations, which provide practical insights into scheme development and, critically, lessons learned that will be beneficial to other FE/HE organisations.
1.1 Scope of the guidance

This guide is aimed at FE/HE institutions in Scotland including colleges and universities and incorporates halls of residences. It considers the siting of recycling facilities within mainly non-public, back of house areas including, for example:

- office spaces;
- food and drink areas, e.g. canteens, refectories;
- retail areas;
- lecture theatres and classrooms;
- technical areas, e.g. workshops and labs, maintenance workshops; and
- grounds maintenance areas.

There is a link between installing a source segregated recycling system and the Recycling on the Go (RoTG) services offered in some public places, by local authorities and other public and private organisations e.g. transport hubs, airports, shopping centres, etc. The system approaches for RoTG and source segregated recycling collections are highlighted in the table below.

<table>
<thead>
<tr>
<th>Recycling on the Go</th>
<th>Source segregation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials suitable for collection</td>
<td>Paper</td>
</tr>
<tr>
<td></td>
<td>Cans</td>
</tr>
<tr>
<td></td>
<td>Glass</td>
</tr>
<tr>
<td></td>
<td>Card</td>
</tr>
<tr>
<td></td>
<td>Food waste</td>
</tr>
<tr>
<td></td>
<td>WEEE</td>
</tr>
<tr>
<td></td>
<td>Furniture</td>
</tr>
<tr>
<td></td>
<td>Bulky items</td>
</tr>
<tr>
<td>Potential users</td>
<td>Public</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
</tr>
<tr>
<td></td>
<td>Students</td>
</tr>
<tr>
<td>Location</td>
<td>Publicly accessible units in areas of high footfall</td>
</tr>
</tbody>
</table>

Table 1: System approaches

Some FE/HE institutions have installed RoTG systems across campuses and halls of residence either as a separate service or as part of an integrated contract. While RoTG may be part of your recycling service it should be recognised that, despite some crossover in the areas of procurement and contracts, it is not the main focus of this guide. It may, however, be appropriate to consider whether any existing RoTG system could be expanded to serve non-public spaces in order to maintain consistency of containers across your site.

There is separate RoTG guidance which is complementary to this guide. This provides advice on RoTG in public locations across a range of areas including local authority areas, shopping centres, railway stations and other transport hubs, hospitals and sporting arenas. To view the guide, visit: http://www.zerowastescotland.org.uk/recycleonthego.
1.2 Using this guide

The guide is structured to present in a logical order the steps that will take you through the process of implementing a source segregated recycling collection at your institution. We recommend you read each of the chapters within the guide. You can also direct colleagues with specific roles to key chapters. The information below provides an overview of each chapter for reference.

**Key Drivers for Implementation** describes the key drivers to introducing compliant segregated collections in non-public areas of FE/HE institutions. It outlines the relevant policies, strategies, legislation and organisational drivers, including national waste strategies. It also discusses the role of Zero Waste Scotland, and the legislative requirements for the collection and storage of waste.

**System Options** covers the prevention and re-use of waste, and has guidance on a source segregation strategy which includes auditing, options appraisal, and the location and siting of collection bins and units. Information on costs and communications is also included.

**Logistics and Contractual Arrangements** reviews the procurement of equipment, facilities and waste management services and how changes to existing collection and servicing arrangements can be made.

**Health and Safety** focusses on health and safety, which is an important consideration in the development and implementation of a source segregated recycling service.

**Performance Monitoring and Evaluation of Facilities** looks at performance monitoring and the importance of gathering relevant data and measuring outcomes.

There are also seven case studies presented as an Annexe to this guide. These should be used for reference to highlight, by way of example, what other FE/HE institutions have done in the different areas outlined in the list below. It may be that these approaches could be replicated, in whole or in part, or used to help guide you through a similar process.

The Case Studies include:

- Re-use at the University of St. Andrews
- Office waste segregation at Queen Margaret University
- Food Waste at the University of Aberdeen
- Segregation of Wood and Metal at Adam Smith College
- Recycling on the Go at the University of Dundee
- Halls of Residence Recycling at the University of Edinburgh
- Bulking at Heriot-Watt University
2 Key drivers for implementation

This chapter describes the key drivers to introducing compliant source-segregated collections in non-public areas of FE/HE institutions. It outlines the policy, strategy, legislation and organisational drivers, including national waste strategies, the role of Zero Waste Scotland and the legislative requirements for the collection and storage of waste.

The diagram below outlines the key drivers for implementing source segregated collections at FE/HE institutions. These include policy, strategy, legislation and organisational drivers, national waste strategies, the role of Zero Waste Scotland and the legislative requirements for the collection and storage of waste.

Figure 1: Drivers for implementing segregated facilities in non-public areas

2.1 Legislative compliance

2.1.1 Regulations

The Scottish Government has introduced new regulations to support the delivery of actions within the Zero Waste Plan and also to meet the requirements of the revised European Waste Framework Directive (rWFD). The Waste (Scotland) Regulations 2012 address the practical implementation of provisions within the rWFD such as the separate collection of recyclable materials, processing and management of waste and the promotion of 'high quality' recycling.

Specific measures introduced by the regulations include:

- A requirement on all waste holders to take reasonable steps to promote high quality recycling; and

- A requirement for businesses to take reasonable steps to present dry recyclables (metals, plastics, paper, card and glass) and food waste for collection depending upon whether a business is producing more or less than 50kg of food waste per year.
Therefore, the Waste (Scotland) Regulations require any organisation that produces, keeps or manages waste, to take all such measures as are reasonable in the circumstances, to apply the waste hierarchy in order to prevent waste. To support organisations to meet their obligations the Scottish Government has developed guidance on applying the waste hierarchy.

To view and download the guidance, please visit: [http://www.scotland.gov.uk/Publications/2012/10/1428](http://www.scotland.gov.uk/Publications/2012/10/1428).

### 2.1.2 Applying the Waste Hierarchy

It is your duty to take all reasonable steps to apply the waste hierarchy. You must therefore apply the hierarchy as a priority order to the management of your waste. This goes hand in hand with the duty to promote 'high quality recycling' as described below in Section 2.1.3.

**Figure 2: The Waste Hierarchy**

The Waste Hierarchy Guidance provides details of the priority outcomes for a range of common waste streams. Appendix 2 provides an overview of the hierarchy and the general principles involved.

### 2.1.3 Interpreting the options

The Scottish Government guidance referenced above provides a clear indication of the priority order that the Scottish Government believes waste producers should be following in respect of materials commonly collected via business waste collections. The structure of the guidance is material-specific and is centred on presenting the options in one of three categories - "high quality", “acceptable” and “avoid” - which reflect the above purpose. These categories are described below.

"**High Quality**” – these options typically focus on preventing waste, re-using it or recycling it where the inherent value in the waste material is fully preserved – typically this includes remanufacturing and closed-loop recycling. In regard to energy recovery via anaerobic digestion, it is only considered recycling and fully compliant where PAS 110 standards are adhered to. These options must be prioritised.
“Acceptable” – these options do not deliver as large an environmental benefit across the life-cycle of the material as those that are fully compliant, nor are they likely to deliver as much benefit to Scotland’s communities and/or economy, nor will they help to fully meet the aspirations set out in the Zero Waste Plan. Options in this category include lower-value open-loop recycling and recovery of energy (for Anaerobic Digestion and composting where PAS standards are not met). Choosing management options in this category should be considered only after exhausting the options further up the hierarchy.

“Avoid” – these options are generally not compatible with the longer-term ambitions for Zero Waste, are banned (and therefore are not compliant) under the Waste (Scotland) Regulations 2012 or deliver little environmental value from the waste material. Landfill and incineration without energy recovery typically fall within this category. Producers, collectors and processors of waste should seek to avoid these options.

<table>
<thead>
<tr>
<th>Collection type</th>
<th>Benefits/Risks</th>
<th>Compliant with Duty?</th>
</tr>
</thead>
</table>
| Separate collection             | • Quality of source segregated recyclables attracts best market prices.  
• Materials may preclude sorting by collection crews and require dedicated containers for individual types of recyclable material.                          | Fully compliant with the duty. Most likely to achieve closed loop recycling in compliance with the waste hierarchy.                                      |
| Co-mingling (with glass)        | • Reduces the number of individual recyclables containers required.  
• Simpler for on-site users and collection crews.  
• Potential for contamination.                                                                                       | Compliant with the duty only where material separation results in materials which meet the relevant quality standard.                              |
| Co-mingling (without glass)     | • Reduces the number of individual containers for recyclables required.  
• Simpler for on-site users and collection crews.  
• Potential for contamination / cross contamination from glass element.                                                  | Compliant with the duty only where material separation results in materials which meet the relevant quality standard. Unlikely to meet standard if severely compacted in vehicle. |
| Survival Bags                   | • Simple service for on-site users.  
• Minimal value of recyclable materials due to cost of sorting / processing.  
• Potential for contamination.                                                                                         | Option of last resort. Compliant with the duty only where material separation results in materials which meet the relevant quality standard.            |
| Residual waste sorting          | • Does not encourage recycling at source.  
• Major contamination issues.                                                                                           | Not compliant with the duty.                                                                                                             |

Table 2: Benefits, risks and compliance of different collection types

From carrying out background research on colleges and universities in Scotland it is apparent that some segregate at the point of collection but then mix the recycling back into one bin for the contractor to collect. Using the table above as a guide, this method would be compliant only where material separation results in materials meeting the relevant quality standard. When implementing source segregation collections, full segregation at the point of collection is important.
Segregated waste collection in non-public spaces | 10

Some FE/HEs have reported that they do not know how their waste is processed once it leaves their site. Some waste management contractors provide an overall percentage of waste recycled at a material recycling facility, offering this figure to a college or university to use as their recycling rate.

Where recyclate and waste from FE/HE organisations is collected and taken to a Material Recovery Facility (MRF) to be and sorted with trade waste from other premises, the recycling figure provided by waste management contractors is unlikely to accurately reflect the true rate of recycling at the FE/HE premises. It is therefore recommended that each FE/HE organisation ensures it is fully aware of how waste is sorted, and that, where possible, actual weights for material uplifted by their waste management contractor are provided.

2.2 Duty of Care

Table 3 provides an outline of the aspects that you need to consider in order to ensure compliance with the requirements of the Duty of Care Regulations.

<table>
<thead>
<tr>
<th>Aspect/Issue</th>
<th>What to do …</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Is the waste stored securely?</strong></td>
<td>Check that waste receptacles (individual receptacles as well as any bulking containers) are secured (e.g. locked) to minimise opportunity for entry.</td>
</tr>
<tr>
<td></td>
<td>Take reasonable precautions to ensure that receptacles are not left to become overfull and spill.</td>
</tr>
<tr>
<td></td>
<td>Check that vehicles used in the collection service provide a secure means of containing and transporting the material(s) during collections.</td>
</tr>
<tr>
<td><strong>Is the transporter of the material authorised to carry the waste?</strong></td>
<td>Check with SEPA: <a href="http://www.sepa.org.uk/waste/waste_regulation/waste_carriers_and_brokers/who_is_registered.aspx">www.sepa.org.uk/waste/waste_regulation/waste_carriers_and_brokers/who_is_registered.aspx</a></td>
</tr>
<tr>
<td></td>
<td>Further guidance on how to become an authorised waste carrier is also available.</td>
</tr>
<tr>
<td><strong>Is the site receiving the material authorised to accept it?</strong></td>
<td>Check that the receiving site holds a waste management licence or exemption which allows them to accept the material. It is recommended that copies of these are obtained from the receiving sites on an annual basis. SEPA can also advise on this.</td>
</tr>
<tr>
<td><strong>Is the transfer accompanied by a waste transfer note?</strong></td>
<td>Check that waste transfer notes have been provided for the movement of all waste, and are retained for the minimum period of two years. Note that waste transfer notes are not necessarily required for every movement, as ‘season tickets’ can be used for regular transfers of the same quantity and type of material.</td>
</tr>
<tr>
<td><strong>Do you require a consignment note for moving special waste?</strong></td>
<td>All movements of special waste must be accompanied by a Special Waste Consignment Note (SWCN). The SWCN consists of five different coloured, self-carbonising pages, each with five sections, which refer to a different aspect of the waste transfer.</td>
</tr>
</tbody>
</table>

Table 3: Complying with Duty of Care

[1](http://www.sepa.org.uk/waste/waste_regulation/special_waste.aspx)
Waste transfer notes, which form part of the Duty of Care requirement, must include the following information:

- written description of the waste, e.g. paper, commingled plastic bottles and cans;
- any process that the waste has been through, e.g. compaction of cardboard;
- how the waste is contained or packaged, e.g. bags, plastic drums, skip;
- the quantity of the waste (weight or volume), e.g. 2 x 60 litre bags of waste, 1 x 9 cubic yard skip;
- the appropriate European Waste Catalogue (EWC) code for the waste – guidance on EWC codes is available from: www.sepa.org.uk/waste/waste_data/reporting_definitions_and_term/coding_systems.aspx#EWC2002;
- the place, date and time of transfer;
- the name and address of both parties involved in the transfer, i.e. the waste producer and waste contractor;
- details of the permit, licence or exemption of the person receiving the waste, i.e. the waste contractor;
- declaration that the waste hierarchy has been considered before disposing of the waste; and
- Standard Industrial Classification (SIC) 2007 code of the person holding the waste – these are available from: www.sepa.org.uk/waste/waste_data/reporting_definitions_and_term/coding_systems.aspx#UKSIC.

2.3 Environmental protection

We are entering an era of resource scarcity. The extraction and processing of raw materials to manufacture new products is becoming more and more challenging. If we can capture and recycle certain waste materials, we will help to protect the environment by relieving the pressure on natural resources and reducing the need for mining, quarrying, logging, refining and processing - all of which damage natural habitats and create air and water pollution.

By providing facilities to enable staff and students to recycle, we can close the resource management loop on materials otherwise destined for final disposal. Furthermore, using recycled materials in the manufacturing process requires considerably less energy than the amount needed to create new products from virgin materials.
Recycling helps to:

- conserve resources;
- protect the environment;
- reduce landfill; and
- save energy.

Increased public awareness means increased staff and student awareness and many FE/HE institutions have started introducing recycling schemes. Institutions must consider resource management in its entirety rather than simply dealing with the disposal of waste.

**Holistic approach to Waste Management (University of St. Andrews)**

The University of St. Andrews is a good example of the implementation of a holistic approach to waste management. The university considers take-back schemes for IT packaging, furniture re-use, bike recycling and has a comprehensive segregation system in place and use an in-vessel composter (IVC) for food waste.

The University has adopted an online redistribution network tool called ‘WARPit’. This is a re-use portal, which allows the Estates Team to list unwanted items in an electronic catalogue so they can be re-used elsewhere when required. Key findings from the initial trial include:

- The weight of total items re-used within the University rose by 20 tonnes – a 67% increase;
- Saved 2.8 tonnes of CO₂;
- Diverted 0.97 tonnes of waste from landfill; and;
- Saved £4,129 in waste disposal and procurement costs.

Please see the University of St. Andrews case study for more information.

### 2.4 Organisational corporate social responsibility

Being resource-efficient will help you to cut the costs associated with waste disposal and also other processes, such as if waste is generated as a result of wasteful activities, etc. In reviewing the waste management practises carried out at your institution, it is important to have a basic understanding of what waste is generated and why, and to be aware of the types of waste stream that you are likely to encounter. How waste is classified is largely based on its properties, and there are a series of legal definitions² that you will need to be familiar with if you are going to manage your waste effectively in line with statutory requirements.

You will require storage space in order to house furniture if, for example, you are to set up an equipment exchange and electrical testing of items donated before being passed on. There could be pressure to set up re-use and recycling schemes from staff and students via the students union and / or any green academic courses your institution may run.

There is evidence that environmental credibility is one of the reasons students pick universities, therefore providing a recycling service throughout the campus could lead to more students choosing to study at your institution.

² [http://www.defra.gov.uk/publications/2012/08/20/pb13813-legal-def-waste/]
2.5 National and local policy

In Scotland, the Zero Waste Plan has set a 70% recycling and composting target for all waste by 2020. To achieve this, recycling of all materials will need to be maximised, with the provision of recycling facilities playing a key part in reaching this target.

Following on from the publication of the Zero Waste Plan, Scotland published the Waste (Scotland) Regulations 2012, which place a duty on businesses to introduce dry recyclable collections from 1 January 2014. The Regulations will require businesses to segregate paper and card, glass, metals and plastic for recycling. Businesses involved in food manufacture, preparation, or retail have to separate food waste for recycling from 1st January 2014 – unless they produce less than 50kg of food waste per week, in which case they have until 1st January 2016 to comply with the Regulations. FE/HEs will have to source segregate food waste within canteens/ refectories and within halls of residence.

2.6 Operational efficiencies

Economic incentives exist for institutions that are able to divert their waste through more environmentally benign disposal routes: savings can be made by introducing recycling schemes. Waste prevention initiatives have demonstrated the economic benefits to be gained from efficient resource use and re-use.

For FE/HE institutions that have implemented a source segregated recycling system, the operational efficiencies include:

- increased recycling and reduced disposal to landfill;
- reduced costs to enable service investment; and
- responding to staff and students requests for enhanced recycling facilities.

Furniture Re-use Project (Glasgow Caledonian University)

Glasgow Caledonian University (GCU) reupholsters furniture as a way of following the waste hierarchy and prepares for re-use rather than recycle/dispose. They have had a £20,000 budget cut on furniture procurement so have had to find savings through re-use. The photograph below shows some reupholstered furniture at the Saltire Centre at GCU.

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3 System Options

This chapter looks at prevention and re-use and contains guidance on a source segregation strategy which includes: auditing; an options appraisal; and the location and siting of collection bins/units. Information on costs and communications are also included in this chapter. A diagram highlighting the layout of the chapter, including the source segregation strategy, is shown in Figure 2 below.

**Figure 3: System Options Flow Chart**

Collections from FE/HE institutions are usually carried out by private and/or third sector organisations. From the point at which a user deposits an item into a waste or recycling unit, the material becomes the responsibility of the managers of the site where the unit is located. The material is emptied from the unit and taken to a store or prepared on site for later collection and removal by a waste management contractor. Once removed the material is taken for sorting, treatment and reprocessing.
3.1 System Options

The Waste Hierarchy (as shown in Figure 2 and described in Appendix 2) ranks waste management options in order of sustainability, the first level being the most sustainable. Prevention is the first level of the Waste Hierarchy and means taking steps to reduce the amount of waste produced.

Thinking about prevention across campus, there are simple things that can be done to encourage the production of less waste on campus. The ‘Waste Aware Campus’ is an online resource to encourage Scottish universities and colleges to Reduce, Reuse and Recycle waste. The website has been endorsed by the Environmental Association for Universities and Colleges (EAUC) to promote waste reduction, reuse and recycling within Scottish universities and colleges. Please see the following link:
http://www.zerowastescotland.org.uk/content/campus-reducing-waste/.

The website contains a number of ‘How To’ guides providing practical information and advice for staff and students on how to set up a recycling scheme and raise awareness of recycling and waste prevention initiatives.

A Recycling Directory allows staff to find organisations that can provide recycling collections for campuses. There is also a poster creator to enable staff and students to create and download posters to raise awareness and help implement campus recycling schemes.

Students can also find out how they themselves can raise awareness of waste prevention and other environmental issues in the Environmental Campaigning section of the website.

3.2 Re-use

Re-using and redeploying items rather than disposing of them to landfill or to recycling can reduce the costs associated with managing and handling waste, and reduce expenditure on new goods and materials. In addition, you could achieve greater carbon benefits in using items time and time again instead of disposing of them and support local third sector organisations who could reuse and/or sell onto people on low incomes.

This chapter focuses on re-use at FE/HE establishments, including the segregated collection of different materials such as:

- Furniture;
- IT equipment;
- Textiles, etc.

It also has examples of FE/HEs working in partnership with third sector organisations and end of term re-use schemes at halls of residence.

Re-using materials/items that you think are no longer needed is an easy way of limiting the amount of waste that your organisation produces. Many, if not most of the items used in FE/HE institutions can be re-used. If an item cannot be used by you, it could be used by someone else from another department within your institution, by other institutions, or local organisations.
Key things to consider include:

- Circulate an email saying you have an unwanted desk, chair, filing cabinet etc. or place advertisements on notice boards or in an internal newsletter.

- Alternatively:
  
  o can it be used outside your organisation, for example by a charity?
  
  o If the item is broken or obsolete can it be repaired or upgraded? Sometimes the initial cost of the repair or upgrade is perceived to be a restricting factor, but the extended life of the item may make repairs/upgrades worthwhile in the long term.

  o Is the item suitable to be used for another purpose? For example, boxes originally used for the delivery of computer paper, could be used as recycling trays or for temporary storage of other items.

- Keep an inventory or asset list of furniture in a particular room/department and ensure that this is updated when the item is no longer required in that location. Keep furniture lists, asset tracks, lists of furniture in each room and have a drive towards reducing procurement of new items. Depending on your procurement IT system, it may be possible to block the purchase of new equipment if existing items are in stock elsewhere that can re-used.

- Combine storage facilities with the establishment of procurement policies that encourage the re-use of these items. These give greater control over how furniture is bought and disposed of in your organisation and will also help you to track the benefits of re-use (financial or environmental) which can help in securing continued support for such schemes.

- Ensure members of staff responsible for procurement are briefed / trained to use re-use schemes (where available) over buying new items.

- How local charities might become involved.

3.2.1 Examples of re-use options

Swap Shops

Queen Margaret University and the University of Dundee run informal swap shops where staff or students can donate unwanted or surplus items at the end of term or throughout term time for re-use by new students.

Use of Asset Registers

The University of Aberdeen, Glasgow Caledonian University, the University of Edinburgh and the University of St. Andrews all collect data on waste generation/re-use of electronic and electrical goods, textiles and furniture and provided evidence of a structured re-use system e.g. a tracking system, procedures, policies, defined roles, dedicated storage, etc. Systems are being developed to track resources such as the WARP-it scheme at the University of St. Andrews (see case studies for more information).
Equipment Exchange

The University of Edinburgh Equipment Exchange website allows redundant equipment to be advertised and exchanged or sold between departments within the University and promotes the re-use or repair of unwanted, old or broken furniture. The University of the West of Scotland reported it has a more informal system for internal re-use and redeployment of resources involving the estates management team. The team record details of items available and items wanted and matches requests.

See the website at the following link: [http://www.ed.ac.uk/schools-departments/estates-buildings/waste-recycling/equipment-exchange](http://www.ed.ac.uk/schools-departments/estates-buildings/waste-recycling/equipment-exchange).

The University of St. Andrews and Glasgow Caledonian University both display replicable, good practice in re-use and redeployment of resources. Both university re-use schemes have a structured holistic approach to re-use and demonstrate a high level of competency and understanding by staff of the contribution that re-use and redeployment of resources can make to wider waste prevention initiatives.

End of Term Re-use Scheme (University of Aberdeen)

Since 2005, the Environment Office has been working to change how the University of Aberdeen views environmental issues associated with sustainability. Over the last few years the University has recorded a marked increase in the re-use of items. In 2007/8 the re-use rate was 1%. Over the last financial year (August 2011 to the end of July 2012), 5.01% of waste (81 tonnes) was re-used - predominantly through charitable donation - and 34.02% was recycled.

Many of the items that have been re-used and donated to local charities are: furniture, computer equipment, books, mattresses and stationery. At the end of the summer term when students vacate their halls, they are asked to leave any unwanted items for recycling at designated collection points around the campus.

The University supports local schools and charities - where possible - and has become a corporate member of the Creative Waste Exchange, developed by Aberdeen Forward. The University donates items for re-use within educational projects both within Scotland and in Africa and also donates to the New Hope Trust – a charity undertaking humanitarian work focusing upon Eastern Europe, providing emergency relief and aid to children.

In 2011/12 the high level of re-use was attributed to the decommissioning of the University’s Queen Mother Library, with major charitable donations of books, furniture and metal shelving. The University also reported an estimated 5 tonnes of items re-used internally. While the University does not have a formal policy in place for the refurbishment of furniture, a contract is in place with the furniture supplier to refurbish, rather than dispose of items. This is managed by the furnishing manager.

The University will continue to develop charitable partnerships with the New Hope Trust and will maintain on-going environmental awareness raising activity through e-zines, posters, emails and events.
3.3 Developing a Source Segregation Strategy

Figure 4 below illustrates the common criteria you should consider when planning your segregated recycling system with further explanation below.

Figure 4: What to consider ...

Stage 1 - Review

It is important to understand and analyse your current situation before planning a reuse or recycling scheme. If you already have a recycling scheme in place and are looking to expand, you must also consider whether your current scheme can cope with expansion, or whether a new collection service will be needed.

You should consider:

- Who the main people responsible for waste management are, e.g. Head of Estates, Facilities Management, Department Heads, Student Services, etc.;

- What your current waste management arrangements are, including costs and length of contract(s);
- Where existing recycling and waste disposal units are located including space for bulk bins, balers and compactors;

- How the existing units are used by staff and students (performance and observation); and

- What information you have on usage, including tonnage, waste composition, user statistics and anecdotal information – be sure to include all buildings and campuses.

A review of current practice is essential to gather information on the waste generated by your institution, how it is managed and indicative costs. Without a review it would be very difficult to improve current operations, reduce costs and ensure legal compliance or even know what materials to collect for recycling and where the materials are generated to ensure units are appropriately sited. The review can also provide equally important information to assist in changing the emphasis of waste management from disposal to waste prevention, re-use and recycling.

Depending on the size of the facility, the review could be department or faculty based as shared waste facilities may be in place across a number of departments or buildings. Consider how costs for waste collections are split between buildings and/or departments and also bear in mind it may be difficult to ascertain where waste has actually come from and to assign appropriate costs. This is important if facilities management is not responsible for the cost of waste collection (i.e. it falls within the jurisdiction of individual departmental budgets).

Other sources of information for the review should be available from your institution. For example, the finance office can identify which sections or departments have their own budgets for waste management or specific parts of it e.g. general, confidential or special/hazardous wastes. There are likely to be some departments that will produce more waste than others – e.g. printing services, central services, computing, grounds and catering services, (including cafes and bars).

Mapping of Bin Locations (Napier University)

Napier University mapped all the bin sites on campus, to assess the suitability of locations.


**Stage 2 – Options Appraisal**

After the initial review, you need to decide which materials to collect through your recycling scheme. The choice of materials should be driven by the Waste (Scotland) Regulations 2012. Site managers should also bear in mind that users will expect to be able to dispose of the following commonly produced materials: paper, cardboard, drinks cans, plastic bottles and glass bottles. In some cases, separate collections for food waste may also be required.

Remember, if you manufacture, prepare or sell food you will need to comply with the Regulations.

**Target Materials**

Recycling is about collecting and then delivering materials for reprocessing. Each material has a value and this value is affected by quality. The costs of sorting material for recycling and reprocessing are usually either met from the amount the reprocessor receives for material or from a gate fee that is charged.

For details of current material prices see Let’s Recycle: [http://www.letsrecycle.com/prices](http://www.letsrecycle.com/prices).

Decisions about target materials are closely linked to the availability of space on site and the materials your waste management contractor has facilities to manage. Will you have the same system running throughout your site(s), or alter the service according to specific site requirements? Can you collect materials separately in separate units?

Other drivers behind your decisions could include:

- what materials reprocessing facilities accept;
- the market for these materials; and what value they can bring you.

Other issues you need to consider are:

- the collection, treatment and disposal options available;
- the location of your organisation;
- how much waste is produced; and
- your corporate objectives.

Remember, some materials might be of greater interest to your organisation than others.

The most common materials to collect from departments around campus are: paper, drinks cans, plastic bottles and glass bottles. Other materials to consider collecting are cardboard and plastic packaging. It is best to collect materials that have a value (such as paper, cans, and plastic) and are found in large amounts. With cardboard and plastic packaging, for example, you may consider siting collection facilities in areas where staff members take breaks / generate waste, and whether your on-site catering facilities sells glass or plastic food/drinks packaging.
The different types of material you collect will influence the success of your scheme. Contamination can be a big issue. If you are using an on-site cleaner to manage the recycling units, you might want to ask them to monitor contamination. You could even ask them to litter pick the recyclables, although this may have an impact on contract costs.

You could use green teams'/environmental volunteers, in the form of staff and students, who can act as your eyes and ears and help you get the support of colleagues and students to avoid contamination. These people can also help plan recycling schemes so the onus is not just on one person. For example, the cleaners at the University of St. Andrews were consulted about the location of the units and also on recognising and reporting contamination. It is important to make staff feel involved and consulted. They could also have good ideas on a proposed scheme or improvements to an existing scheme.

Assessing which materials to collect might involve a waste composition analysis or a visual inspection to identify what materials are being collected on-site. It is extremely important that you know what is in the waste stream before tailoring your collection service. Find out what materials are produced on site. Strathclyde University did a waste audit to identify the main waste streams in advance of tendering a new segregated collection contract.

You should also analyse what is brought on site by visitors to the area – what is sold within the area and what comes from retail outlets? You could source information on your current collections from your current waste collection contractor – it is a requirement for contractors to provide Waste Transfer Notes and information on the total weight collected by week or month including details of type, number and size of containers and frequency of collection.

Figure 5: Which materials? A decision summary
**Unit Design**

The design and specification of the recycling unit is a crucial factor to consider when introducing or expanding a recycling scheme. You should think about the visual aspect of the unit and whether it presents any issues relating to corporate image. You should also bear in mind all the key considerations listed in Table 4.

<table>
<thead>
<tr>
<th><strong>Design and specification</strong></th>
<th><strong>What to consider ...</strong></th>
</tr>
</thead>
</table>
| **Fit-for-purpose for chosen locations** | Does the unit provide the right service for the location, e.g. does it have the facility to collect paper in an office?  
Will it be accessible to the students using it? Is it in a well-used area with high footfall?  
Will it be accessible to collection staff and vehicles? |
| **Type and range of materials collected** | Is the unit designed to collect everything we want it to collect? |
| **Unit capacity** | Is the unit big enough for the needs of the location?  
Does the capacity match the frequency of collection that we can provide (smaller units may need to be emptied more frequently)? |
| **Colour, size and shape** | What colours and design fit with your site?  
Do you have to follow corporate guidelines or branding?  
What size unit do you want to provide? Between 120 – 240 litre, or do you have space to provide larger units (240 litre – 1,100 litre or more)?  
What shape do you want the unit to be? Regular wheeled bin? specific type of bin within a housing unit? Contoured? Stylish? Single or multiple units etc? |
| **Aperture(s) and on-unit signage** | What materials are you going to collect? What size and shape of aperture will encourage recycling and discourage unwanted items? (e.g. a slit will encourage the recycling of paper and will discourage users to insert round items such as drinks cans and bottles. A round hole will encourage users to recycle drinks cans and bottles.)  
Ability to attach signage or change signage over time. |
| **Make and model of the unit (look and feel)** | Will the unit fit within the surroundings?  
How easy will it be to obtain replacements or maintain the unit?  
How expensive is the unit and what will be the cost of replacement units or keys? (Keys are used to gain access to the storage container within the unit and are used by staff when emptying and cleaning.)  
How easy are they to open and to clean? |

*Table 4: Key considerations for unit design*
Stage 3 – Location and siting of recycling units

This guide targets the siting of recycling facilities within non-public areas of FE/HE establishments. The non-public areas described, include:

- Office spaces;
- Food and drink areas;
- Retail areas;
- Lecture halls and classrooms;
- Technical areas – workshops and labs, maintenance workshops; and
- Grounds maintenance areas.

When planning where to locate recycling facilities, you should consider the key aspects detailed in Table 5 below.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>What to consider ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access</td>
<td>Units must not block access for disabled or visually impaired people.</td>
</tr>
<tr>
<td></td>
<td>Units should not cover any inspection chambers or electricity boxes.</td>
</tr>
<tr>
<td></td>
<td>Units should be accessible to users (to recycle) and collection staff (to access the</td>
</tr>
<tr>
<td></td>
<td>unit for emptying).</td>
</tr>
<tr>
<td>Location</td>
<td>Units should be placed where the highest volume of people work for maximum impact and</td>
</tr>
<tr>
<td></td>
<td>use. Consider places likely to generate high volumes of waste or specific types of</td>
</tr>
<tr>
<td></td>
<td>waste such as offices, canteens, etc.</td>
</tr>
<tr>
<td></td>
<td>To understand this you should:</td>
</tr>
<tr>
<td></td>
<td>look at the largest departments and the number of staff and students working there;</td>
</tr>
<tr>
<td></td>
<td>review sales figures for on-site catering facilities;</td>
</tr>
<tr>
<td></td>
<td>speak to operational staff to gain insight;</td>
</tr>
<tr>
<td></td>
<td>conduct an operational walk at different times and days of the week to understand</td>
</tr>
<tr>
<td></td>
<td>visitor flow through the site (entrance and exit points, catering facilities,</td>
</tr>
<tr>
<td></td>
<td>seating areas/waiting rooms, car parks and bathroom facilities); and</td>
</tr>
<tr>
<td></td>
<td>observe how any current on-site recycling units or litter units are used.</td>
</tr>
<tr>
<td></td>
<td>Site containers centrally or near the point of generation for maximum convenience/capture.</td>
</tr>
<tr>
<td>Health &amp; Safety</td>
<td>Fire risk; make sure exits are not blocked by recycling units.</td>
</tr>
<tr>
<td>Residual waste</td>
<td>It is advisable to locate a waste unit next to, or within the vicinity of, the</td>
</tr>
<tr>
<td>units</td>
<td>recycling unit, to reduce the risk of high levels of contamination.</td>
</tr>
<tr>
<td>Space</td>
<td>Allow enough space for people to use them freely and not obstruct any corridors or</td>
</tr>
<tr>
<td></td>
<td>access routes.</td>
</tr>
</tbody>
</table>

Table 5: Key considerations for location and siting
Examples of in-situ recycling units

Recycling units within Pollock Halls of Residence pantries (University of Edinburgh)

Food waste caddy (University of Aberdeen)

Recycling units (Queen Margaret University)

Furniture storage area (University of St. Andrews)

For details of various types of unit please view the container guide at the following link: http://www.zerowastescotland.org.uk/recycleontheego.
Composting

Institutions with large grounds may benefit from setting up a composting scheme. Most garden waste (e.g. grass clippings or fallen leaves) is biodegradable and can easily be composted. Some waste from kitchens (e.g. vegetable peelings) can be added to this. The compost can subsequently be spread back onto landscaped areas and flower beds around the institution. If you decide to compost waste material, bear in mind that the size of the campus often means that the location and maintenance of compost heaps may be subject to planning controls and legal restrictions.

Another consideration if food waste is collected on-site are the Animal By-Products Regulations (ABPR). Animal by-products (ABPs) are animal carcasses, parts of carcasses, or products of animal origin not intended for human consumption. They can present a risk to human and animal health if not used or disposed of safely. There are rules on use and disposal of animal by-products are set out in EU and UK legislation.

See DEFRA’s website for more information: http://www.defra.gov.uk/food-farm/byproducts/.

On-site composting scheme (Lewes Castle College)

At Lewes Castle College, some compostable food waste from catering classrooms is separated and taken to on-site compost bins in the horticultural area where the compost is re-spread and used for learning by horticulture students.

3.4 Costs of implementing or expanding recycling provisions

The key aspects to consider in establishing the cost of the recycling system are:

- capital costs, such as infrastructure costs, e.g. recycling units, signage, etc.;
- operational costs, including:
  - treatment and disposal;
  - collection – i.e. staff time to service the recycling units;
  - maintenance costs – cleaning, repairs etc.; and
  - promotional materials /communication campaigns.

In addition, you may realise financial benefits from the introduction of a recycling scheme. These may include reduced costs associated with landfill disposal, or avoidance of penalties related to potential breaches in legislation. Segregating high-value materials can generate income or offset the cost of collection by waste management and recycling contractors. Evaluating these options is critical to making an informed financial decision as to whether you are able to provide a cost-effective recycling scheme.
Bath Spa University manage the collections of all recycling streams and invested in a number of balers. Each material is sorted and baled on-site allowing the university grounds maintenance staff to sell the material direct to reprocessors, therefore generating income.

Zero Waste Scotland has produced a guidance document titled ‘Working with your waste and recycling contractor to reduce waste and cut costs’[^4] which could help you better understand the opportunities that exist to work with your waste and recycling contractor to cut your business waste and the costs associated with waste disposal.

Table 6 below shows a range of costs for wheeled bins and recycling on the go units. However, the actual cost may vary depending on your individual specifications. Costs are reduced with greater economies of scale.

<table>
<thead>
<tr>
<th>Unit Type</th>
<th>Approximate cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheeled bin (240-litre)</td>
<td>£20-30</td>
</tr>
<tr>
<td>Single compartment unit (50-litre)</td>
<td>£15-£85</td>
</tr>
<tr>
<td>Single compartment unit (100-litre)</td>
<td>£115-£160</td>
</tr>
<tr>
<td>Single compartment unit (120-litre)</td>
<td>£250</td>
</tr>
<tr>
<td>Single compartment unit (240-litre)</td>
<td>£200-740</td>
</tr>
<tr>
<td>Twin compartment unit (80-litre)</td>
<td>£350-625</td>
</tr>
<tr>
<td>Triple compartment unit (60-litre)</td>
<td>£750</td>
</tr>
<tr>
<td>Quadruple compartment unit (240-litre)</td>
<td>£990</td>
</tr>
</tbody>
</table>

In your institution, the collection of material from non-public facing waste facilities may be managed by in-house or external cleaning staff. The addition of recycling facilities is likely to generate extra demand in terms of time and effort from cleaning staff which may lead to an increase in costs. The segregation of new materials may also require supplementary waste facilities to be provided by an existing or new waste management contractor. For example, containers may need to be added at existing bulking point(s) for materials collected by the scheme. There are also maintenance costs to consider too, such as keeping units clean and presentable and carrying out repairs.

When implementing any recycling scheme, promotional material will be required to raise awareness of the programme and to encourage correct participation.

Recycling also provides income-generating potential that can help to offset implementation and running costs. The diversion of material away from landfill, for example, can carry significant financial benefits. These can be quantified by looking at the relative costs of landfill disposal versus reprocessing. The costs saved will increase year on year, as, not only landfill gate fees increase, but also landfill tax, which is currently £64 per tonne (2012/13) and is set to increase by £8 per tonne each year until 2014.

3.5 Communications

Communicating the recycling service to staff and students is of upmost importance to ensuring good take up and participation.

3.5.1 Target audience

When developing your communications for the recycling service, there are four main audience groups to consider:

- **Staff** – staff need to know about your communications plan and may be able to help. Consider your own staff as a key audience as they will be ‘front-line’ in delivering this for your organisation. Procedures and messages need to be clear and easily understood by all so that they can be followed.

- **Students** – a focus for your communications for accessible recycling units across campus and in departments. You could target certain students clubs such as ‘People and Planet’ for example, and the students union if applicable.

- **Specific subgroups** – community groups, religious and cultural groups, potential groups/organisations to help communicate your messages, such as caretakers.

- **External groups** – such as the media, community groups, other FE/HE institutions.

You must be clear about the target audience for your communications and keep them as the focus of your effort at all stages. This is important, because your target audiences must be at the heart of your thinking about your messaging, overall strategy, communication methods and activities. You may wish to draw on your organisation’s own communications plan for this information to tailor your messaging and approach.
Communication case study (Glasgow Caledonian University)

GCU has established a fun and accessible way of communicating its green agenda to staff, students and other stakeholders through EcoMan, the university’s very own environmental superhero. Originally created during a marketing challenge where students were tasked with helping GCU reach its target of 20% carbon emission savings by 2014, EcoMan was launched in February 2011, with support from the communications department and the university executive.

Wearing a costume of recyclable materials designed by GCU fashion students, EcoMan’s pledge of ‘To sustainability…and beyond!’ is becoming a familiar refrain across campus. He has visited lectures, offices and social spaces to advise people what they can do to help the environment. Twitter and Facebook sites reinforce the message and encourage two-way communication, and EcoMan also provides a consultancy service for environmental queries or suggestions.

3.5.2 Developing strategies and methods

In order to ensure your communications are effective, you must select the most appropriate methods to raise awareness of what to recycle and where people can recycle on your site.

The key to a successful recycling scheme is choosing which communication methods to use and where to use them. Consider your existing communications strategy and whether there are any existing methods that could be used. Examine your budget and consider which mix of existing and new materials will be the most effective. The main objective of the activity is to overcome the barriers to recycling and encourage your target to recycle more materials more often when in their place of work or study.


http://www.gcu.ac.uk/sustainability/community.html
Dundee City Council re-designed the signage on the recycling units for one block of halls of residence where foreign students lived. There was a noticeable increase in the recycling rate due to the use of clear images of materials which overcame language barriers. Please see Dundee University case study in Appendix 2 for more information.

### 3.5.3 Choosing effective communication methods/channels

No single activity will be as effective in isolation as a combination of channels; however, budget and time will dictate the scale of your communications efforts. Your individual promotional activities will also be dictated by the location and number of the recycling units you have, the service you offer and how people interact with your organisation.

Some examples of effective communication methods:

- Plasma/TV screens are good for targeting people in large spaces and for displaying several messages in a loop.

- Signage near the recycling unit is useful, but will only target people who pass those units.

- Consider your ‘internal’ audience as well e.g.; intranet, websites, email, internal posters in staff rooms, incorporating material into training packs to staff, social media updates, awareness days, competitions, reward schemes etc.
3.5.4 Linking with the national brand

Templates are available for communications use the look and feel developed for the national Recycle for Scotland brand. Crucially, they incorporate the UK-wide Recycle Now brand, as industry research shows that local communications benefit from association with national campaigns and messages.

Some of the benefits of using the Recycle for Scotland brand are:

- The brand and its activities are extensively tested on the public and evaluated.

- In March 2011, 55% of people in Scotland recognised the Recycle for Scotland brand.

- The Recycle Now logo and iconography is in widespread use by some of the UK’s biggest retailers and is being used by an ever-increasing range of other organisations to communicate recycling messages.

- The Recycle for Scotland brand has an extensive range of free, evidenced-based, consumer-tested resources which can be tailored to support your recycling scheme. [www.recycleforscotland.org.uk](http://www.recycleforscotland.org.uk)

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Some example templates available are shown below:

You can change the messages according to the materials you are collecting, the needs of your own corporate or localised messaging and the stage you are at with your recycling scheme. Here are some examples:

- **New scheme** – consider a generic message on the availability of a new scheme within your premises or location, e.g. “You can now recycle your drinks cans, bottles and paper!”

- **Existing scheme with new recycling facilities** – consider directional messaging to ensure consumers are aware the location/existence of new facilities and to encourage continued use of the service, e.g. “Recycle your drinks cans, bottles and paper at our recycling points.”

- **Established scheme** – consider additional motivational messaging, such as facts on how recycled materials are transformed to new products, to inform consumers of the benefits of recycling, e.g. “Our old drinks cans become new ones in just six weeks!”

There is also a set of images available for specific materials (cans, bottles etc.). These can be applied to the templates to reflect the materials you are collecting.

You can access the full range of iconography and other resources via the Recycle Now partners’ website; [http://www.recyclenowpartners.org.uk/](http://www.recyclenowpartners.org.uk/)

Whilst all templates use Scottish national branding and offer space for localised elements, they are not definitive. FE/HE organisations are encouraged to consider the best communication channels for their organisation and to use the guidance below and available to develop a communication campaign tailored to their individual needs.

### 3.5.5 Material stream guide

A series of material stream icons have been developed to support communications. The icons have been consumer-tested and their application represents an effective way to show people what to recycle and where.

Additional icons are available on the Zero Waste Scotland website: [http://www.zerowastescotland.org.uk/content/recycle-scotland-exemplar-portfolio-0](http://www.zerowastescotland.org.uk/content/recycle-scotland-exemplar-portfolio-0).
### 3.6 Section Summary

The **key messages** to consider from an attitudinal/behavioural aspect are:

- Carefully consider unit type and target materials in conjunction with the available space for signage. It is vital that users can readily identify the target material, and if required, consider reducing the number of accepted materials to avoid confusing users.

- Test signage with potential users to ensure that it provides clear information on acceptable materials and cannot be misinterpreted. Terms such as ‘mixed recyclables’ and ‘bottles’ should be avoided.

- Ensure that container locations are identifiable to those familiar with the area, as the natural flow of people is a key factor in establishing appropriate RoTG locations.

- Residual waste facilities should be co-located or be integral to recycling facilities, with the recycling unit differentiated from the residual waste unit through the use of colour; and

- If possible, provide recycling facilities for all the core group of materials: cans, glass, paper and plastic bottles, as users typically perceive that these materials can be recycled and expect schemes to accept them. Select apertures that provide further clues to the materials accepted by the units.

From a communications perspective, you need to:

- Ensure your target audience is at the heart of all your efforts;

- Make good use of the available templates;

- Choose the communication channels most likely to give you greatest exposure;

- Ensure clarity of signage on units and avoid ambiguous words;

- Consider the size of messages and placement of message on units – especially when/if combined with sponsorship logo on units;

- Test your signage designs and messages with local users to minimise the risk of misinterpretation;

- Train your staff and inform stalls, caterers or other relevant people who might be responsible for recycling and waste; and

- Inform consumers pre-attendance if possible.
4 Logistics and contractual arrangements

This chapter reviews the procurement of infrastructure and waste management services and how changes to existing collection and servicing arrangements can be made.

You need to look at what your current waste management contract will enable you to do and what services are offered in your area by waste management companies. Do you need to agree a contract variation, or will your current contract cover the new collection/treatment requirements and materials to adequately service the new recycling units?

4.1 Collection

It is important to understand and analyse your current contractual arrangements before planning a recycling collection service. If you are planning to expand an existing service, e.g. add more recycling units or expand the service, can your current collection method be adapted to incorporate additional units, or will you need new collection contracts? It might not be a contractual issue but a resource one – in which case, do you have the staff/collection crews/vehicles to include recycling and to deal with potentially variable collection frequencies?

Similarly, if you’re setting up a new system, will your current contractual arrangements be suitable and easily adapted, or will you need to find a different solution? If your organisation will be providing the service in-house (using your own staff), you will need to think about:

- Resource requirements – will additional staff be required?
- Costs – how much will it cost to provide the service, and will any income be available from the material collected?
- Will you require any changes to internal contracts such as maintenance and cleansing?
- Is there capacity for the new system to be incorporated into an existing service, for example can the current cleaning service cope with additional tasks and capacity requirements?
- How frequently will units require emptying?

The first step in the process is to review any current contracts for:

- Waste and recycling collections;
- Facilities management:
  - Site maintenance;
  - Site cleansing;
  - Facilities management services including emptying units;
• Site infrastructure:
  o Storage;
  o Restrictions placed on changes to current infrastructure, for example, fittings and fixtures;

• Employee contracts:
  o Changes to job description; and
  o Training

4.2 Service contracts – things to consider

4.2.1 Varying an existing contract (Service Level Agreements)

You may be able to change the service requirements agreed in writing at the start of a contract to incorporate servicing of new or expanded recycling facilities.

Be sure to build in annual reviews to make the re-negotiation process easier and the contract more flexible. Variations to service can be a costly addition to an existing contract, so consider what compromises can be made. If you’re introducing new recycling units, can you remove or replace some existing residual waste units?

4.2.2 Procuring a new service

The best type of contract will be one that provides a value-for-money service which ensures you meet legal requirements and maximise environmental performance. We would recommend that you discuss procurement requirements with your in-house team to understand what your organisation’s procedures are.
### Before you start ...

**Objectives**
- What objectives do you have for the service?
- How will bidders demonstrate they can meet these objectives? (Think about your evaluation criteria for the contract.)
- Do you want your contractor to continually improve the efficiency and environmental performance of your premises? Be aware that enhanced performance may incur additional costs.
- The Waste (Scotland) Regulations 2012 will require businesses to comply with a new range of legal requirements from the end of 2013. Is this factored into your objectives?

**Scope**
What’s the scope of the service you want to procure, and what services do you have available in-house?
- Recycling collection only?
- Waste and recycling collection?
- Service (emptying), maintenance and cleansing of infrastructure, e.g. bins, balers etc.?
- Provision of infrastructure and any auxiliary items needed, e.g. the provision of wire for the baler. Provision of signage and associated communications material?
- You may be able to make things easier by procuring services together. This, however, may not provide you with the value for money that you need. Speak to contractors about what they could provide.
- Depending on arrangements with contractors, baling and bulking material on site or at a transfer station may attract a better price and help generate revenue. But remember that some contractors prefer to receive loose material so that it can be sorted and baled to market standards.
- Are there any additional requirements that need to be included in terms of security, for example, access to the site and units?

**Cost**
- What will give you value for money, in the context of legal requirements on handling and management of waste and recycling?
- The services required may change over the contract term. You may decide to remove some existing residual waste containers and replace them with additional containers for dry recyclable streams as the amount of recycling you do on site increases.
- Will you be looking for a ‘pay-by-weight of material collected’ arrangement, or a pay-by-lift approach? For a bulking operation a ‘pay-by-weight’ approach for the collection of material is a standard approach and should not cost you more.

**Length of contract**
- How long does the contract need to be in place?
- Will you need an extension?
- What flexibility will be incorporated? Will there be regular review points?

**Monitoring**
- How will your objectives be measured and performance monitored? Consider how you want the contractor to provide information regarding the operation of the service to help you monitor performance.
- How will they provide a system for data collection – by recording and monitoring of weight, or number of bales collected?

*Table 7: Key points to consider when procuring a new service*
4.2.3 Developing your specification

Once you have decided that you need to procure a service for recycling, you need to develop a specification. A specification is a detailed guide that explains exactly what you require, how the service should be delivered, and what you will provide as part of that service. Consider who will perform the following services and how frequently they should be undertaken:

- Cleaning;
- Emptying;
- Maintenance;
- Promotion;
- Purchase; and
- Storage

4.2.4 Unit emptying frequency

Location, footfall and how the units are used will affect how frequently units require emptying. Some may be emptied on a daily basis and others less frequently.

Simple calculations can be done to assess unit capacity and potential use by utilising footfall data and/or sales data. Knowing how many drinks are sold in plastic bottles or cans at your site will help you understand the potential for capturing material for recycling.

Recycling facilities that are located in eating areas where high volumes of single-use beverages are consumed may require emptying more than once per day. Some units are also designed to send alerts remotely when they are full and require emptying. This can be particularly useful if recycling units are far away from ‘usual’ collection rounds.

4.2.5 Responsibility for unit emptying

The responsibility for emptying the unit will depend on your site locations. For publicly-accessible units a waste management contractor may have responsibility for emptying the units. For non-public areas it may be the responsibility of care takers / facilities management.

Monitoring of Recycling on the Go units (University of Dundee)

Dundee University has a partnership in place with Dundee City Council whereby the Council empties the RoTG units located around the campus. In the partnership, the Council covers the operational costs and keeps the tonnage and, as a result, the university’s only cost was 50% of the capital cost to purchase the units.

Please see Dundee University case study in Appendix 2 for more information.
4.2.6 Obtaining data

To measure the success of your scheme, it will be important to keep track of the weight of material collected. Sometimes, contractors make collections as part of a standard collection round. This can mean that the weight of waste and recycling collected at each location cannot be separated. You should consider where the waste is measured; from individual units and / or the bulk units.

Make sure you stipulate contractually that staff weigh material collected and keep a regular record of weights. This may cost you more but will provide valuable performance data. Even just a simple sheet that records the number and fullness of bags collected from each location can help you identify if changes need to be made. This will enable you to identify patterns and seasonal trends. For example, collection crews complete a log sheet estimating fullness for each unit they empty. This gives a rough and ready method for estimating tonnage based on the size of the container and volume of material collected. This system allows them to monitor performance and make changes to underperforming sites.

**Advanced Procurement for Universities and Colleges (APUC)**

The Advanced Procurement for Universities and Colleges (APUC) has set up a Framework Agreement for Waste Management contracts open for use by all universities and colleges in Scotland. It is the procurement centre of expertise for Scotland’s 60 universities and colleges and is a private limited company. APUC is owned by its client institutions and was established in response to the McClelland Report: ‘Review of Public Procurement in Scotland’, which made recommendations for public procurement reform. In responding to the challenges of procurement reform, APUC aims to meet and exceed client expectations through the delivery of four client service streams: operational procurement - collaborative contracting; processes and best practice; college services; and e-solutions.

For more information visit the following website: [http://www.apuc-scot.ac.uk/Home.htm](http://www.apuc-scot.ac.uk/Home.htm).

4.3 Section Summary

- Make sure you analyse your contractual arrangements before planning a service.
- What objectives do you have for the recycling service?
- How can your existing service be adapted to incorporate recycling?
- Carry out annual contract reviews to enable greater contract flexibility.
- What is the associated cost?
- Consider how best to get value for money in the context of legal requirements.
- Consider what you would like to provide and who should deliver the individual elements.
- Talk to the key contractors and see what is potentially available.
5 Health and Safety

This chapter focusses on health and safety which is an important aspect to consider in the development and implementation of a source segregated recycling service. This is particularly relevant to those organisations with older building stock and/or halls of residence where, for a variety of reasons, there may be limited space for recycling points. Each site is unique and will have its own opportunities and restrictions in terms of a recycling system.

The two major risks associated with recycling facilities relate to the use of vehicles and the manual handling of waste/recycling containers. You can find further information on these in the following guidance documents:

- [www.hse.gov.uk/pubns/waste04.pdf](http://www.hse.gov.uk/pubns/waste04.pdf) provides guidance on H&S issues around the use of vehicles in on-street waste and recycling collections. Much of this guidance will also be relevant to other sites where the collection team is in close proximity to visitors, e.g. tourist attractions.

- [www.hse.gov.uk/research/hsl_pdf/2006/hsl0625.pdf](http://www.hse.gov.uk/research/hsl_pdf/2006/hsl0625.pdf) provides guidance on reducing the risks associated with manual handling, including staff training, and determining the appropriate collection frequency.

- [www.hse.gov.uk/pubns/waste23.pdf](http://www.hse.gov.uk/pubns/waste23.pdf) provides guidance from the Waste Industry Safety and Health (WISH) Forum and Health and Safety Executive on the safe collection of waste and recycling. Although this is focussed on domestic kerbside collections, the recommendations are relevant to other types of services.

Other key H&S considerations include:

- Do the units have any sharp edges?

- Is there potential for any sharp items to escape from the unit? The use of brushes on apertures can minimise this.

- Is there potential for users to access the units to remove material, with a risk of injury from sharp objects such as broken bottles? The type and size of aperture selected can be used to minimise this, e.g. circular aperture for bottles, slot for paper. Lids can also be locked.

- Is there potential for the unit to be moved by the public? The use of fixed units and locking plates can limit this, but it needs to be considered particularly for the provision of units at events.

- Does the unit design allow easy access to the service for disabled users?

- Is there space to move freely around the unit, i.e. is the space around the unit too large that the unit causes an obstruction in an office, canteen or outside on a pathway / access route?

- Is there sufficient space available to safely enable collection staff to service the unit?
- Is there sufficient space available to ensure that the unit can be cleaned and maintained regularly?
- Does the unit block access to any emergency exits?

Table 5.1 sets out the key H&S requirements to complete before rolling out your new scheme, as well as recommended actions.

<table>
<thead>
<tr>
<th>Aspect / Issue</th>
<th>What to do ...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Has a Risk Assessment been completed for the bulking operation?</strong></td>
<td>Consult HSE guidance on conducting Risk Assessments: <a href="http://www.hse.gov.uk/risk/fivesteps.htm">www.hse.gov.uk/risk/fivesteps.htm</a></td>
</tr>
<tr>
<td><strong>Does the Risk Assessment consider the aspects outlined in this Section?</strong></td>
<td>Consult with your organisations H&amp;S Officer and any operational staff for their input into the Risk Assessment.</td>
</tr>
<tr>
<td><strong>Have standard operating procedures or method statements been prepared, based on the findings of the Risk Assessment?</strong></td>
<td>If no standard operating procedures or method statements are in place, draft a simple procedure or flowchart outlining the steps to be taken to conduct activities safely. An audit template and timetable should also be developed to regularly review site operations and assess compliance with procedures. The results of the audit should be fed back to staff, and the risk assessment and procedures updated if appropriate.</td>
</tr>
</tbody>
</table>

Table 8: Health and Safety requirements
6 Performance monitoring and evaluation of facilities

This chapter looks at performance monitoring and the importance of gathering relevant data and measuring outcomes. This is an important part of any project, whether that data is quantitative (e.g. tonnage, profit) or qualitative (staff attitude). It can also be one of the most challenging elements. Measuring and understanding outcomes helps to demonstrate success and provides the basis for future investment in the area. The data issues must be addressed early on in a project and with a delicate approach, so that an understanding of baseline performance can be gained. Any interventions that are subsequently implemented can be assessed by evaluating changes to that baseline.

6.1 What to monitor

The first stage in deciding what you should monitor is to look at the aims and objectives that have been set for the service, campaign or activity you are measuring.

Remember, any objectives you set should be SMART:

- Specific;
- Measurable;
- Achievable;
- Relevant; and
- Time-Bound

One of the most important performance measures is the extent and effectiveness with which recycling facilities are being used. This is important in terms of cost efficiency and service planning. Key performance indicators for you to consider include:

- The amount of the target material collected (tonnage);
- Capture rate for each target material as a proportion of the total generated;
- The quality of the material collected (e.g. is contamination an issue, are the wrong materials being placed in the recycling unit?); and
- Awareness of the service by potential users.

‘Capture’ refers to the quantity of a particular target material that is collected by the recycling service designed to accept that material. ‘Capture rate’ therefore refers to the proportion (as a percentage) of a targeted material that has been collected relative to the total quantity of that material arising (i.e. including both the residual waste and material recycled). Understanding capture rate will highlight whether you need to target a particular material.
6.2 When to monitor

You should carry out monitoring and evaluation after your scheme is established, for example after the launch and at various points thereafter, as well as after specific campaigns, such as new signage etc. It is recommended that you collect periodic tonnage (estimated or actual) and contamination data from the start of the scheme and on an ongoing basis thereafter.

Also, bear in mind that any new scheme will go through a ‘bedding in’ period, so when evaluating results, consider whether the collection frequency needs to change during the monitoring period. If your site has regular visitors, try looking at the results gained from three-to-six months onwards to see whether visitor numbers and unit usage are increasing.

If you are conducting any communications campaigns, you should monitor scheme performance before any activity is undertaken (to establish a baseline), and then one month after promotions end.

**Mini-Case Study (University of Dundee)**

In the University of Dundee/Dundee City Council partnership mentioned previously, a Council monitoring officer visits the Recycling on the Go sites once a week and estimates the fill rate of each bin, whether it needs repair, whether the location is still appropriate, etc. Please see the University of Dundee case study in Appendix 2 for more information.

6.3 Tonnage data

You can obtain tonnage data from your waste management contractor via records such as weighbridge tickets. However, this is only possible if the material from your recycling units is collected separately from other collection rounds. If tonnage data are needed, it may be advisable to include this data requirement in contract conditions, service level agreements or memorandums of understanding, specifying the data that are required and how frequently they are needed.

6.4 Quality of collected material

The most effective way to assess the quality of material collection is via a waste composition analysis. This will help to identify levels of the target materials and levels of contamination. A waste composition analysis of residual waste will also help you assess the additional proportion of material that has the potential to be captured by the recycling units (capture rate), but that is currently being disposed of within the residual waste bin. However, this approach can be time-consuming and costly.

An alternative is to visually check contamination in your recycling units and assess the type and nature of contaminants that are visible on the surface of the deposited material. Are the contaminants non-target materials? Or is food and drink residue reducing the quality of the collected materials to such an extent that they cannot be recycled? These checks will enable you to estimate the proportion of contaminated recycling units.
You may also be able to establish the types of main contaminant and the proportion of overall contamination. This is particularly useful for identifying whether certain types of non-target materials are frequently being deposited in recycling units. For example, users may misinterpret the information and signage on units and assume that glass bottles can be deposited for recycling if signage say 'bottles', when it may only be plastic bottles that are being targeted.

6.5 Evaluation

Evaluating performance helps to identify those activities and campaigns that provide the biggest increase in recycling rates from a given financial investment.

Points to consider:

- Ensure that when progress is evaluated, it is completed on all of the units with the scheme and not done in isolation.

- Calculating a cost per tonne or per resident/visitor spend for the service will facilitate a comparative analysis to be conducted.

- Benchmarking a service will identify where money is being spent, what impact it is having and where to target improvements.

Plan to have a monitoring schedule at the outset of your scheme and not as an add-on. One of the best ways to determine whether positive change is being made is to establish benchmarks at the beginning of the roll-out so you can measure such things as the proportion of residual waste reduced over time or the increased recycling.

Conducting monitoring before and after broader communication activity will help you to determine not only the effectiveness of individual communication events, but also its cost-effectiveness.
Appendix 1: Glossary of Terms

**Anaerobic digestion (AD)** is a process where biodegradable material is encouraged to break down in the absence of oxygen, in an enclosed container. It produces carbon dioxide, methane and solids/liquors known as digestate, which can be used as fertiliser. The biogas produced can be used to generate electricity and heat to power.

**Commercial and Industrial (C&I) waste** is controlled waste arising from the business sector. Commercial waste is waste arising from the activities of wholesalers, catering establishments, shops and offices. Industrial waste is waste generated by factories and industrial plants. Other categories of waste arising from industrial and commercial activities include hazardous waste.

**Construction and demolition (C&D) waste** arises from construction, repair, maintenance and demolition of buildings and structures. It mostly includes brick, concrete, hardcore, subsoil, and topsoil, but it can also contain quantities of timber, metal, plastics and occasionally hazardous waste materials.

**Composting** uses oxygen to biologically decompose waste materials in a controlled condition until it stabilizes so that it can be used as a soil improver, as an ingredient in growing media, of blended to produce other marketable products (that meet recognised industry standards).

**Controlled waste** is any waste subject to the provisions of the Control of Pollution Act 1974 (COPA, as amended) and the Environmental Protection Act (EPA). Controlled wastes are: commercial and industrial waste (including construction and demolition waste); household waste. Agricultural and mining wastes are now classified respectively as commercial and industrial waste and are therefore controlled. (Definition valid at November 2007).

**Department for Environment, Food and Rural Affairs (DEFRA)** is a government department in the UK. DEFRA makes policy and legislation in areas such as: the natural environment, biodiversity, plants and animals; sustainable development and the green economy; food, farming and fisheries; animal health and welfare; environmental protection and pollution control; rural communities and issues.

**Energy from Waste (EfW)** is the conversion of waste into energy in the form of electricity and/or heat by combustion or thermal treatment.

**Environmental Association for Universities and Colleges (EAUC)** is a not for profit Member based charity run by Members for Members. EAUC is financed by subscriptions and service generated revenue which funds the work of representing and promoting the interests of Members and the provision of support services to drive sustainability to the heart of tertiary education across the UK.

**Environmental Services Association (ESA)** is a membership organisation that works to support and promote the waste and resource management industry.

**Hazardous Waste** are harmful to human health, or to the environment, either immediately or over an extended period of time and defined according to properties listed in Annex III to Council Directive 91/689/EEC on hazardous waste.
**Materials Reclamation Facilities (MRF)** is a facility where waste is received and mechanically or manually separated in order to recover recyclable materials, which may undergo further processing, for marketing to end-user manufacturers. (Also referred to as Materials Recovery Facilities or Materials Recycling Facilities).

**Recycling** is the collection or recovery of used materials from waste and their subsequent reprocessing into new products to prevent the discarding of potentially useful and valuable items so as to reduce our reliance on the use of raw materials.

**Reuse** is the reintroduction of waste material into the life cycle without the need for reprocessing.

**Residual Waste** is the amount of waste left over after recycling and composting.

**Standard Industrial Classification (SIC)** is used to classify business establishments and other statistical units by the type of economic activity in which they are engaged. The classification provides a framework for the collection, tabulation, presentation and analysis of data, and its use promotes uniformity. In addition, it can be used for administrative purposes and by non-government bodies as a convenient way of classifying industrial activities into a common structure.

**Trade waste** is the general term used for waste collected from businesses and incorporates waste such as commercial and industrial and construction and demolition.

**Treatment** is the physical, thermal, chemical or biological processes, including sorting, that change the characteristics of the waste in order to reduce its volume and hazardous nature, facilitate its handling or enhance recovery.

**Value Added Tax (VAT)** is an indirect consumption tax assessed on the value added to a product at each point in the cycle of production and distribution. It is a consumption tax because it is ultimately borne by the consumer, who pays a fixed percentage of the final sale price of a product.

**Waste Disposal Authority (WDA)** is a Local Authority which is responsible for the treatment and final disposal of municipal waste after collection. In England these are the District Councils and Unitary Authorities.

**Waste Electrical and Electronic Equipment Directive (WEEE Directive)** aims to reduce the amount of electrical and electronic equipment being produced and to encourage everyone to reuse, recycle and recover it. The WEEE Directive also aims to improve the environmental performance of businesses that manufacture, supply, use, recycle and recover electrical and electronic equipment.

**Waste Transfer Station** is a site to which waste is delivered for sorting prior to transfer to another place for recycling, treatment or disposal.

**Waste Prevention** according to European Environment Agency is the measures and or techniques that reduce the amount of wastes generated during any domestic, commercial and industrial process.
Appendix 2: An overview of the waste hierarchy

The Waste Framework Directive (WFD) is an EU-wide directive that aims to reduce the amount of waste across Europe and increase recycling and re-use. In Scotland, the WFD has been translated into national law by Waste (Scotland) Regulations 2011 and Waste (Scotland) Regulations 2012. There is currently (February 2013) a consultation on ‘guidance on applying the waste hierarchy’ being undertaken by the Scottish Government.7

The WFD has been revised several times since it was first introduced in the 1970s. The most recent version introduced a revised waste hierarchy, which prioritises different waste management options based on their environmental impact.

Figure 6: The Waste Hierarchy

This hierarchy is a key consideration for policy and service decisions, both nationally and locally. All organisations now have a legal duty to consider it when disposing of their waste. This means that when addressing waste disposal you should aim to manage their waste higher up the hierarchy to promote high quality recycling. You will also be required to provide evidence of this approach in your waste transfer notes.

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