University of York
General Waste Strategy

Introduction

Since September 2010 the University has been working in partnership with Yorwaste to attain maximum diversion from landfill of the general and kitchen waste generated on campus.

To maximise recycling, since 2010, waste on campus has been separated at source. There are 6 separate waste collections for:

- Cardboard
- Plastics
- Cans
- Paper & books
- Glass
- Residual waste (landfill)

Communal indoor areas have clearly labelled designated bins for each waste stream. The small indoor bins are decanted in to the larger outside bins. Yorwaste are contracted to empty all general waste bins on campus at least twice a week.

The Waste (England and Wales) Regulations 2011

In 2011 new legislation came in to force compelling all businesses and public body’s to review their waste management practices to ensure they use the waste hierarchy in their waste management decision making process, and to take all such measures as are reasonable in the circumstances to apply the waste hierarchy, and to apply the hierarchy as a priority order when transferring waste to another person.

Figure 1
The Waste Hierarchy:
To comply with this legislation the University must demonstrate that all reasonable measures have been taken to avoid waste being generated and when waste is generated; the waste must be disposed of as high up the hierarchy as possible. Systems and procedures need developing to encourage all campus users to think about waste and to avoid its generation. Requests for extra waste collections or bins should be investigated to ascertain why they are required and can the waste be avoided?

**Review of the waste hierarchy**

In 2011 at source separation of waste achieved a recycling rate of <29% with the residual waste going to landfill.

![General waste separation in 2011](image)

The 2011 figures indicates at source separation is not achieving good recycling rates and the amount of waste going for landfill disposal is too high. Feedback from the Student Union was that students would recycle more if the process was made easier. It was suggested that materials that could be recycled are going into residual waste bins due to time and effort involved in sorting.

**Commingled or Source Separation of recyclables**

The University in partnership with Yorwaste assessed the benefits and risks of source separation and commingled collections.

Benefits of Source-Separation include:

- Cheaper disposal costs for the recyclables:
No requirement for extensive equipment or specialised facility for sorting
  - cleaner materials to market
- Participants have increased confidence in the efficiency of recycling
- Visually more acceptable.

Risks associated with Source-Separation include:

- Lower participation rates
  - In student accommodation (and other areas) far easier to have one waste bin and dispose of the contents in a landfill bin.
- Each new recycling stream requires an additional bin.
- Additional labour to empty more bins
- Increased space required for bins.

Benefits of Commingling include:

- Single commingled waste containers make it easier to add or subtract types of approved recyclable materials without additional bins
  - New MRF technology / market conditions / legislation will increase the number of waste recycling streams.
- Produces higher tonnage of materials than separated programs, due to increased participation
- Reduced number of vehicle movements on campus
  - reduced amount of bins on site will reduce the vehicle movements
  - reducing time taken to collect bins from bin bays (with engine running) will reduce vehicle emissions
  - Will reduce the cost of collections and offset increased cost associated with mechanically separating the waste.

Risks associated with Commingling include:

- New and emerging technologies are less proven and may not achieve anticipated low contamination rates
- Students are not responsible for the sorting of materials, therefore they are less aware of their personal waste stream and less likely to reduce the volume of waste they create
- Still require separate collections for glass.

Over recent years there have been several studies undertaken to try and ascertain the best environmental option for the collection and recycling of household waste. A common conclusion of the studies is that there is no ‘one size fits all’ solution. A White Young Green (WYG) report in 2010 indicated commingled waste collections gave higher recycling rates of 25% compared to source separation.
The current arrangements are not diverting significant amounts of waste from landfill. The WYG report is for household waste, which is similar in nature to campus waste. However, with household waste the producer of the waste retains the waste in their possession until it is collected; they have limited space for non recyclable waste thus forcing residents to recycle more.

At the University there are no disadvantages for staff or students not to recycle waste; in fact it is easier not to recycle. Staff and students have to separate their entire waste, find the different bins and deposit their waste; once deposited in a bin their ownership ends (unlike a household resident).

The 2011 Waste regulations compel the University to minimise, or even eliminate, the waste going to landfill. The priority for the University is to choose the correct recycling scheme for the campus. The existing source separation scheme is not diverting significant amounts of waste from landfill. The WYG report indicates that if the University moves to commingled waste collections recycling will increase by 25%. Additionally; feedback from the Student Union and current recycling rates indicate that source separation participation on campus is very low; therefore the University could see a significantly higher increase in commingled recycling than 25%.

Therefore it is proposed that from May 2012 the University will move to commingled waste collections for paper, card, cans & plastics.

Commingled bins will replace the current separate bins for paper, card, cans & plastics. All the 1100 litre commingled bins will be clearly labelled to identify what can be placed in the bin. A desktop study indicates that many bins on campus are underutilised, thus no additional 1100 litre bins will require ordering.

Commingled waste will initially be collected twice weekly by Yorwaste. The waste will be taken to the Yorwaste York depot where it will be bulked up and transported to the Yorwaste Scarborough depot. Here it will be processed and separated into individual waste streams. The separate streams will then go on for recycling. After 6 months a review of collection volumes will be undertaken to ascertain if it is possible to move to weekly campus waste collections. This would reduce collection costs and vehicle movements on campus.

**Glass Waste:**

Glass waste will still require separate collections; however, there is a possibility that in future this may be included in the commingled waste stream. Until such time, clearly labelled 140 litre bins will be placed in central areas for glass waste. The 140 litre bins will be reused source separation bins. Glass collected off campus will go to the Yorwaste York depot where it will be bulked up and sent for recycling.

**Food Waste:**
The 1999 Landfill Directive sets targets for the diversion of biodegradable municipal food waste going to landfill, however, future legislation is likely to ban biodegradable waste going to landfill as is the case in Scotland.

Presently food waste from catering areas is either macerated for discharge down the drains or it is placed in to the general waste bins. Food waste from smaller kitchens and student living areas is deposited in to the general residual waste bins for landfill disposal.

To comply with regulation 12 of The Waste Directive (2011) and help the government comply with The Landfill Directive (1999), the current arrangements for food waste require reviewing. In addition, removing food waste from the residual waste stream will give an opportunity to extract more recyclables from the waste.

**Residual Waste:**
With the introduction of commingled waste collections and the removal of food waste it is anticipated that the mass of residual waste will drop dramatically. However, it will still remain a large percentage of total campus waste.

The waste collected will go to the Yorwaste York depot where the entire waste stream will go through a materials recycling facility (MRF). The MRF will manually and mechanically extract any valuable recyclables from the waste including, paper, card, plastics, ferrous & non ferrous metals. The remaining materials will be shredded and sorted in to fine aggregate material or refuse derived fuel (RDF). The RDF will be sold onto a third party and used as energy from waste, which is higher up the waste hierarchy than landfill. Dependent on input, the MRF operates at approximately 55% recycling to 45% RDF.

The residual waste will initially continue to be collected 3 times per week but this arrangement will be reviewed after 6 month.

The changes to the management and disposal of general waste across campus will deliver a significant step in minimising campus waste going to landfill and thus move campus waste up the waste hierarchy.

*Figure 3*
Final disposal point of all campus waste 2011 (excludes macerated food waste)
Figure 4
Projected final disposal point of all campus waste (excludes food waste)

Note:
Presently the University does not know the presumed cost saving in diverting the residual waste from landfill to a MRF, this will be discussed with Yorwaste soon.

The ultimate aspiration of the University is zero to landfill. Figure 4 (above), shows the significant step that may be achieved by a combination of commingled waste collections and sending the residual through a MRF.

The waste hierarchy is a continual review process. The next part of the process must be to target the projected 15% still being sent to landfill. However, attaining zero to landfill for the remaining small percentage will require imaginative thinking and willingness by all to achieve zero to landfill.
Reference:
DEFRA waste hierarchy guidance
The European Waste Framework Directive
The Waste regulations 2011
Let's recycle.com