

## Case Study

### Background

Every year 400,000 tonnes of carpet waste arises in the UK. Carpet Recycling UK, the industry body for carpet recycling, estimates that currently 28% of carpet waste is reprocessed, which means 72% is going to landfill.

A large proportion of carpet waste ends up at household re-use and recycling centres (HRRCs) or is collected through bulky waste collections from residential properties. Only around 25% of waste disposal authorities (WDAs) are actually segregating carpet waste into dedicated bins for the purpose of recycling. Given that up to 15% of the residual waste at HRRCs is estimated to be carpet, there is a huge potential to divert more waste from landfill.

It is a particularly large opportunity in London: given a household count of [3.27 million](#) and an average of 6.5kg of carpet waste per household per year, there is potential to recycle or re-use more than 21,250 tonnes of carpet waste per year.

However, very few London boroughs are currently segregating their carpet waste. This is due to a number of reasons including a lack of space on site for segregating and bulking, and the distance to carpet reprocessors (and resulting high haulage costs).

One London waste authority that has tackled these issues successfully is the West London Waste Authority. Six of the seven HRRCs that they look after are now recycling carpet, and the following case study explains how – and why – it works for them.

### The West London Waste Authority

The West London Waste Authority (WLWA) was established in 1986 and is responsible for disposing of waste collected by the London boroughs of Brent, Ealing, Harrow, Hillingdon, Hounslow and Richmond-upon-Thames. Approximately 1.6 million people live in this area, representing over 600,000 households; this equates to around 3,900 tonnes of carpet waste per year. The six boroughs covered by WLWA are shown in Figure 1.



Figure 1 - Boroughs covered by WLWA

## Case Study

### Carpet recycling activities in West London

The WLWA began to investigate carpet recycling in October 2012 following a review of the composition of their residual waste stream. Having contacted reprocessors for gate fee and transportation costs, they found that diverting carpet waste from landfill offered the opportunity to increase their recycling rate as well as save money on waste disposal. Their calculations showed that, if the carpet could be bulked and compacted into full loads, WLWA could save 14% on costs.

As a result they set up a contractual relationship with Carpet Recycling Group (CRG), based in Grantham, to collect and recycle carpet from their HRRCs. CRG uses an innovative recycling technology which means that they can accept a range of materials including carpet tiles, underlay, foam sofa cushions and pillows; this enabled the WLWA to increase their recycling rate without requiring additional space for further segregation.

Following a successful trial of carpet segregation for recycling at the Hounslow Re-use and Recycling Centre in October 2012, the WLWA rolled out the collections to six of their seven HRRCs over the following months. Details of how carpet recycling works at each of the HRRCs are shown below, in Table 1.

**Table 1 - Carpet recycling set up at each HRRC**

Waste Facility	Carpet Recycling Set Up
1. Hillingdon HRRC, New Years Green Lane	Bulked on site. House holders are directed to place carpet in a special area (this area changes every day so there is no specific signage). The carpet is then moved by shovel at the end of each day into a bay at the back of the site, where it is stored for collection by CRG. They get a payload of 20-25 tonnes on a walking floor container loaded by 360° grab.
2. Harrow HRRC, Forward Drive	Bulked on site. This is a small site without space for a separate container. They grab material out of the general waste skip using 360° grab and place in a dedicated carpet bay.
3. Brent HRRC, Abbey Road	Bulked on site. Carpets are collected in a dedicated, clearly signed, 20yard skip. The skip is emptied on a daily basis and bulked in a bay at the back of the site. This is a large site, which also bulks material from two HRRCs located in Ealing and from the collections of fly-tipped material.

## Case Study

<p>4. Ealing HRRC, Greenford Road</p>	<p>Bulked at Brent HRRC. Run by Amey on behalf of Ealing Council. Carpets are collected in a dedicated 40yard skip. There is no space for bulking on-site. The site compacts the carpet skips using 360° grab, this means they can transport 7 tonnes in a skip to Brent RRC, compared to only 3.5 tonnes if not compacted.</p>
<p>5. Ealing HRRC, Stirling Road</p>	<p>Bulked at Brent HRRC. This is a small site run by Amey on behalf of Ealing Council. There are four 40yard skips on-site, one of them is dedicated to carpet and is well signposted and the skip is clearly labelled. There is no space for bulking on-site so carpet is sent to Brent HRRC. This site does not have any equipment for compacting the carpet in the skips, therefore each skip is transported with only 3 to 3.5 tonnes of material in each skip.</p>
<p>6. Hounslow HRRC, Space Waye, Pier Road</p>	<p>Bulked on-site. Carpet is collected in a 40yard skip which is strategically placed at the end of the row to avoid contamination. This was the first WLWA site to implement carpet segregation for recycling. CRG collects full loads from this site, holding up to 20 tonnes. The reprocessor collects on average 2 to 3 full loads per month. Commercial carpet waste is tipped directly into the bulking bay or is pulled out of the general commercial waste skip.</p>
<p>7. Richmond HRRC, Townmead Road</p>	<p>This site is not currently segregating carpet for recycling due to space constrictions as they receive large volumes of green waste in the summer months. They will consider recycling carpet in the future if circumstances change.</p>

## Key success factors

There are five key factors which have contributed to the successful implementation of carpet recycling in West London.

### 1. Compaction equipment

It is important to have access to equipment on-site that can load carpets into a walking floor container and compress the carpet to achieve maximum payloads onto the vehicle. At most of the six sites covered by the WLWA, a 360° grab is used to load and compress the carpets, by doing this a payload of 20-22 tonnes of carpet per container can be achieved.

At two of the six HRRCs which segregate carpet waste for storage, there is not enough space to bulk up enough to fill the walking floor containers, so these sites store the material in 40yard containers which are then transported to Brent HRRC. Using a grab to compress the carpets in the containers prior to transport can double the weight in each load: the mass of carpet that fits into a 40yard skip can be increased from 3.5 tonnes to up to 8 tonnes.

## Case Study

### 2. Signposting

Where there is space for separate carpet skips on site, the skips are clearly signposted. This enables householders to put their carpet in the right place at the HRRC and reduces the risk of the carpets being placed in the general waste skip and ensures the carpet container is not contaminated. At Hounslow Re-use and Recycling Centre they have endeavoured to further reduce contamination in the carpet skip by placing it at the end of a row with its own access gantry, unlike the other skips that share an access gantry.



Figure 2 - Example of clear carpet container signage

### 3. Space for segregation

Ideally a HRRC taking carpets for recycling should have enough space on-site to provide a separate container for carpets, as well as space to store up to 22 tonnes of carpet for collection by the reprocessor. This is however not always possible, especially in London where space is at a premium.

At HRRCs in Hillingdon, Harrow, Brent and Hounslow carpets are bulked on-site. In most cases residents place the carpets in 20- or 40-yard skips which are emptied into a separate bulking bay when they are full. However, the Harrow HRRC at Forward Drive for example does not have space for a separate container. At this site they take carpet out of the general waste skips and place it in a bay at the back of the site for storage and bulking. Although not ideal due to the increased likelihood of contamination, the reprocessor will still accept the material. Extra labour is required to extract the carpet but the site operators believe the extra effort yields genuine benefits in terms of recycling levels.

At Hillingdon HRRC there is no dedicated container either. Staff meet and greet residents and direct them to place carpet in a specific area, which changes depending on what space happens to be available. Staff then remove the carpets and place them in a bay for bulking prior to collection by CRG.

Each site's requirements are assessed on an individual basis.

## Case Study

### 4. HRRCs working together

Although operated by different councils and waste management companies, the HRRCs have demonstrated that they can work together to bulk carpet waste. Smaller HRRCs work with a larger HRRC to bulk carpet for collection: for example, Brent Re-use and Recycling Centre accepts carpet from the two HRRCs in Ealing for bulking.

Ultimately, bulking the material on one site reduces transportation costs and makes carpet recycling economically competitive compared to landfill disposal.



**Figure 3 - Bulking carpet ready for collection from three HRRCs at Brent Re-use and Recycling Centre**

### 5. Relationship with the reprocessor

In order to ensure the collection and recycling agreement works for both the waste disposal authority and the reprocessor, strong working relationships are required.

WLWA and CRG work together and communicate with each other to make the system work. The HRRCs bulk the carpet waste and only request a collection when one full load is available. CRG collect the carpet on a walking floor vehicle on which the maximum payload is 25 tonnes. CRG provide feedback on quality and contamination which in the long term improves the quality of the segregated carpet waste. It is communication and a strong working relationship which will ensure the long-term stability of the carpet recycling contract.

#### **TOP TIPS – Requirements for carpet recycling at HRRCs**

- Segregation in separate skips if possible
- Clear signage on containers
- Equipment to compact material on-site or pick carpet out of general waste skip if necessary
- Space on site for segregation and bulking – optimum payload is 20-25 tonnes
- Co-operation between boroughs and HRRCs
- Working closely with the reprocessor

## Case Study

### Benefits of recycling carpets

Two years since starting carpet recycling in October 2012, WLWA have sent over 5,000 tonnes of carpet, previously sent to landfill, to CRG for reprocessing. The figures show that the volume of carpet recycled by WLWA has increased year on year, with the overall **recycling rate increasing by approximately 1%**.

WLWA have also **saved 14% on costs** by recycling carpet compared to landfill disposal. In a time of austerity cuts, economic savings for local authorities are of huge importance.

Furthermore, the boroughs have provided an **improved service to their residents** by recycling the carpet received at their HRRCs and this is of increasing importance to residents interested in the environmental impact of their waste.

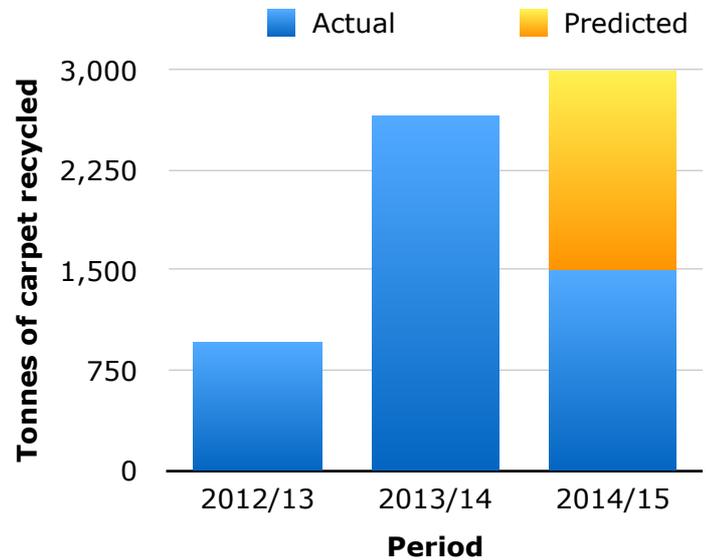
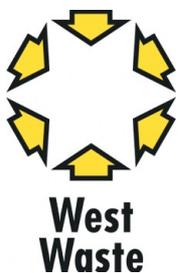


Figure 4 - Tonnes of carpet recycled by WLWA

### Conclusion

WLWA has demonstrated that carpet recycling from London HRRCs is achievable and can save costs as well as contribute to increased recycling rates. It is important to work with the individual HRRCs within the boroughs to establish a system which works for them. It is unlikely that one system will fit all; working on a case-by-case basis is essential.

One of the keys to successful implementation is compaction and bulking for the carpets to reduce transport costs. Although space on site is clearly a challenge, the example of WLWA has shown that this can be overcome if the boroughs work together to bulk up the material.



West London Waste Authority,  
Civic Centre, Lampton Road,  
Hounslow, TW3 4DN  
tel: 020 8825 9468  
email: [info@westlondonwaste.gov.uk](mailto:info@westlondonwaste.gov.uk)  
web: [www.westlondonwaste.gov.uk](http://www.westlondonwaste.gov.uk)  
twitter: @WestLondonWaste



Carpet Recycling UK, c/o Axion Consulting, Unit  
2, Tudor House, Bramhall, Cheshire, SK7 2DG  
tel: 0161 440 8325  
email: [info@carpetrecyclinguk.com](mailto:info@carpetrecyclinguk.com)  
web: [www.carpetrecyclinguk.com](http://www.carpetrecyclinguk.com)