

Analysis of retailers' front of store plastic film collection



A compositional analysis to identify what is being collected at front of store collection points for plastic film packaging in the UK.

WRAP's vision is a world where resources are used sustainably.

We work with businesses, individuals and communities to help them reap the benefits of reducing waste, developing sustainable products and using resources in an efficient way.

Find out more at www.wrap.org.uk

Document reference: [WRAP, 2014, Banbury, Compositional analysis of retailers' front of store plastic film collection, Prepared by RPS]

Written by: RPS



While we have tried to make sure this report is accurate, we cannot accept responsibility or be held legally responsible for any loss or damage arising out of or in connection with this information being inaccurate, incomplete or misleading. This material is copyrighted. You can copy it free of charge as long as the material is accurate and not used in a misleading context. You must identify the source of the material and acknowledge our copyright. You must not use material to endorse or suggest we have endorsed a commercial product or service. For more details please see our terms and conditions on our website at www.wrap.org.uk

Executive summary

WRAP has funded a UK wide research project to identify what is being collected at front of store collection points for plastic film packaging. The overall aim of the project was to determine the efficiency of the On-Pack Recycling Label (OPRL) in promoting the film recycling message to consumers and to determine, within reasonable bounds of confidence, the typical levels of contamination in retailers' front of store plastic film collections, looking at different retailers across the four UK nations.

Northern Ireland and Wales were identified as having the lowest overall quantity of plastic bags collected when compared to Scotland and England. This could be expected as a result of the introduction of the carrier bag charge and therefore fewer carrier bags in circulation in these countries. However, as result the proportion of contamination/unrequested materials became more evident (40% in Wales and 60% in Northern Ireland) which could significantly reduce the value of this recycling stream and even contribute to the decision to remove the collection points from stores located in those areas.

It was noted that the proportion of polyethylene bag packaging meeting the OPRL criteria was fairly consistent across all four jurisdictions; however the quantities collected overall were slightly lower than material without the OPRL label. This may be due in part to the amount of relevant material still to be labelled which does show that some consumers have the appetite to recycle plastic packaging even without the label, by association.

Despite the fact that the recycling of plastic of this nature offers a potentially valuable way of contributing to future recycling targets, there is very little information available on local authority websites and information on central government websites is often quite cumbersome to find. There is therefore the potential for web portals to be utilised much further to provide easy to access and easy to understand information.

This illustrates the need for further promotion of the OPRL scheme to increase on-pack information, as well as a general awareness of the types of materials that can be collected in the containers. The livery for the collection points should be clear and easy to understand in order to minimise the potential to be used as a general waste container.

Contents

- 1.0 Introduction 3**
 - 1.1 Background to the Project.....3
 - 1.1.1 On-Pack Recycling Label.....3
 - 1.1.2 Film label4
 - 1.1.3 Carrier Bag Charge/Levy.....4
- 2.0 Methodology..... 5**
 - 2.1 Store Liaison.....5
 - 2.2 Sampling5
 - 2.3 Data Analysis.....6
 - 2.4 Message Used at Store Level.....6
 - 2.5 Web Based Research.....6
- 3.0 Project Outcomes 7**
 - 3.1 Store Participation in Compositional Analysis7
 - 3.2 Message at Store Level.....8
 - 3.3 Web-Based Research.....10
- 4.0 Analysis of Results..... 12**
 - 4.1 Plastic Film Compositional Analysis12
 - 4.1.1 Overall Summary12
 - 4.1.2 Statistical Analysis by Region14
 - 4.1.3 Analysis by Retailer17
- 5.0 Conclusions and Recommendations 20**
 - 5.1 Conclusions20
 - 5.2 Recommendations.....21
- Appendix 1 List of Websites 22**
- Appendix 2 Safe Systems of Work and Risk Assessments..... 23**
- Appendix 3 Breakdown of Store Results 24**

1.0 Introduction

WRAP commissioned a UK wide research project to undertake compositional analysis at different retailers to identify what is being collected at front of store collection points for plastic film packaging. The aim of the project was to determine the efficiency of the On-Pack Recycling Label (OPRL) in promoting the recycling message to consumers and to determine the typical levels of contamination in retailers' front of store plastic film collections.

In addition to the compositional analysis, it was recognised that there was also a need to provide contextual information around each of the participating stores location and the collection facilities within the stores themselves. This included; whether the store is located in an area subjected to a levy or charge for carrier bags and also the level of promotion for the front of store collection points by both the retailer and the relevant local authority.

1.1 Background to the Project

1.1.1 On-Pack Recycling Label

The On-Pack Recycling Label was launched in March 2009 by the British Retail Consortium (BRC) with technical support from WRAP, with the ultimate goal being to underpin effective closed loop systems for all major packaging materials within the UK, enabling brands and retailers to minimise their environmental footprint. The scheme, which is voluntary, was designed as an evidence-led standardised label which would tie in with local authority communications using the Recycle Now brand and aimed to deliver a simple, consistent and UK-wide recycling message to the consumer. In addition, the scheme seeks to support the EU Packaging and Packaging Waste Directive. The overall need for the scheme stemmed from the fact that consumers often do not know which packaging can be recycled and showed interest in having a simple clear system for guidance purposes. In addition to this, local authorities continue to come under increasing pressure to increase recycling rates and are thus looking outside those materials considered "easy" to recycle in order to meet increasingly stringent statutory targets.

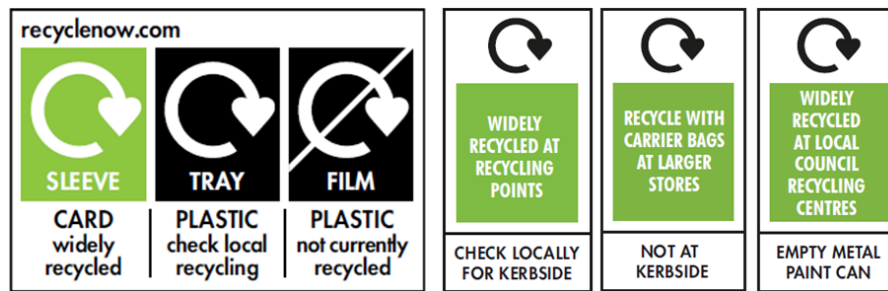
The overall aims of the scheme are:

- Keep the message simple for customers;
- Be practical to apply on packs alongside statutory information;
- Provide clear advice to customers on how they can recycle in their local area, given the widely varying recycling schemes across the UK;
- Ensure local authorities that currently collect materials that are not widely recycled maintain this leadership;
- Ensure that local recycling streams are not contaminated with materials that are not currently recycled; and
- Encourage innovation in technology and processes so that more materials can be recycled or go to some other suitable recovery process.

The labels adopt the Recycle Now iconography and take into account the packaging components (e.g. bottle, tray, carton, film), material types (e.g. glass, card, paper, plastic) and recyclability status. Recyclability is defined by the proportion of local authorities offering recycling services for that material and component at the kerbside.

In addition three other labels were developed to promote the recycling of specific packaging types for which provisions for collection exist at bring sites or recycling centres (Figure 1.1).

Figure 1.1 On-Pack Recycling Label¹



1.1.2 Film label

Specific to plastic film and plastic bags, the new label, which was introduced in 2011, encouraged customers to recycle these via collection points at front of store locations within retail stores.

With regard to plastic film and bags, the OPRL label is applicable to packaging that meets the following criteria:

- Polyethylene only;
- No paper labels attached;
- No oily food residue;
- Non-metalised;
- Non oxo or biodegradable/compostable; and
- Inking that accounts for no more than 5% by weight of the overall packaging.

1.1.3 Carrier Bag Charge/Levy

A carrier bag charge was introduced in Wales in October 2011 and in Northern Ireland in April 2013 for the purpose of reducing the consumption and associated waste and pollution caused by single use carrier bags. Within this scheme, retailers are required to charge at least 5p for single use carrier bags used to contain purchases such as groceries and clothing. The money raised from the charge is then allocated to good causes (in Northern Ireland it is payable to the Department of the Environment).

The charge started in Scotland in October 2014 and in England will start in October 2015. Retailers within both Wales and Northern Ireland^{2,3,4,5} have reported a massive decrease in single use plastic bag use, with a decrease of up to 80% noted within the major supermarkets.

¹Further information about the OPRL scheme - www.onpackrecyclinglabel.org.uk or www.wrap.org.uk/opt/

² <http://www.walesonline.co.uk/news/wales-news/number-plastic-bags-handed-out-7428682>

³ http://www.doeni.gov.uk/carrier_bag_levy_-_annual_statistics_2013-14.pdf

⁴ UK Voluntary Carrier Bag Monitoring - 2013 Data (2014)
<http://www.wrap.org.uk/sites/files/wrap/Carrier%20Bag%20results%202013.pdf>

⁵ Effect of charging for carrier bags on bin-bag sales in Wales (2013)
<http://www.wrap.org.uk/sites/files/wrap/Effect%20of%20charging%20for%20carrier%20bags%20on%20bin-bag%20sales%20in%20Wales.pdf>

2.0 Methodology

The nature of this study involved a multi-staged approach including both site based work and also web based research. The steps involved in this process are presented below.

2.1 Store Liaison

Initial consultation with WRAP determined that there were six major retailers with front of store collections for plastic bags and film. Of those interested in taking part in the study the final selection of three retailers was based on the following:

- Number of stores;
- Approach to the collection of plastic bags;
- Promotion of the OPRL at front of store level.

For purposes of maintaining anonymity, the stores used within this report will be referred to as **Retailer 1, 2 and 3**.

It was recommended up to 4 supermarkets be sampled in each of the UK jurisdictions where it was believed a plastic film collection service was in operation. Initial contact with the Environmental Manager within each of the nominated stores was made to introduce the project, encourage participation and discuss the project requirements and any concerns that they may have. Participating stores were asked not to change any of their current practices in terms of plastic film collection and to collect a one week sample (from Monday to Sunday) in order to ensure that the project encompassed weekend as well as week day consumers. The mechanism by which the material was collected and stored was also discussed. For information related to Health and Safety and site recruitment, please refer to Appendix 2.

2.2 Sampling

A methodology and sampling plan was devised for each of the stores participating in the project with the aim being to ensure that all parties involved in the project were fully aware of their requirements and hence ensure a representative one-week sample of waste was collected and analysed. The sampling plan was developed in accordance with *EN 14899 Characterisation of Waste- Sampling of Waste Materials*. It included a detailed sampling protocol as well as a detailed methodology for the practical activities required to undertake a compositional analysis of the material collected from a representative sample.

Waste samples, as identified in the sampling plans, were uplifted and transported to the sorting sites in England, Wales and Northern Ireland using a registered waste carrier. Care was taken to ensure the materials were accurately labelled and there was no possibility of cross contamination of samples.

The samples were sorted into the following eight categories:

- Single use plastic carrier bags;
- Other forms of polyethylene bags (e.g. bag for life);
- Polyethylene bags and film packaging that meet the OPRL criteria⁶ with the OPRL;
- Polyethylene bags and film packaging that meet the OPRL criteria without the OPRL;
- Plastic bags and film that do not meet the OPRL criteria - oxo-(bio)degradable;
- Plastic bags and film that do not meet the OPRL criteria - biodegradable/compostable;
- Plastic bags and film that do not meet the OPRL criteria, other; and
- Other contaminants.

⁶ See 1.1.1 - On-Pack Recycling Label

Various mechanisms were utilised to differentiate between the different plastic bags. Following training in different types of plastic packaging, the labelling of each bag was manually checked and the majority identified according to the type of material within the packaging. In addition, and in order to differentiate between different polymer types, a handheld near-infrared material analyser⁷ was used. Photographs were taken during each phase of the sampling procedure to ensure that a visual record was present and also to provide the evidence of any contamination present within the containers.

2.3 Data Analysis

Data on the weights of the different waste stream categories was collected. This information was combined with additional information about the samples, such as the region in which the store was located, the retailer, brand and whether a carrier bag levy was in place in the nation in question. To overcome any discrepancies during the sample collection (e.g. less than a full week sample being collected) the information contained in the spreadsheet was corrected to give universally comparable figures for each of the thirty one stores. This correction was required in three of the samples, as in two of the cases the store only collected three days worth of samples and in another store, only half a day's sample was collected due to in-store errors. A statistical analysis was then carried out which involved getting values for the mean, variance, maximum (largest observation in each category), minimum (smallest observation in each category), standard deviation and 95% confidence intervals relating to the total waste collected and each individual waste stream. The observed results were then analysed and summarised as an overall summary presenting results for all the stores in the study and also broken down into two different groups based upon the store brand and the nation in which the store is located. The aim of this was to identify different patterns in the data.

2.4 Message Used at Store Level

In addition to the physical sampling of materials from each of the stores, consideration was given to the approach adopted both within the individual stores and also within the regional area with regard to the recycling of plastic bags and film. This was achieved through observations in store with regard to promotion of the recycling and placement of the recycling containers.

2.5 Web Based Research

The success of any waste management initiative will be very much dependant on the provision of easy to reach and easy to disseminate information for members of the public. Therefore, a web based study to determine the type of online information available with regard to the OPRL scheme and plastic bags and film recycling was carried out. The web search covered various sources including:

- WRAP website;
- Recycle Now website (postcode locator)
- OPRL website;
- The local authority areas in which the compositional analysis was being undertaken;
- Regulatory authorities within each of the four jurisdictions; and
- Websites associated with participating supermarkets.

In addition, a general web search around the subject of plastic bag recycling for each of the four jurisdictions was undertaken. The aim of this was to ascertain what information was available for general members of the public excluding those who had knowledge of going directly to specialist websites such as WRAP and the OPRL websites. The results of this investigation were compiled and reported on a national basis.

⁷ *microPHAZIR PC*

3.0 Project Outcomes

The outcomes resulting from each of the stages are discussed in further detail below.

3.1 Store Participation in Compositional Analysis

A total of 31 stores throughout England, Scotland, Wales and Northern Ireland were indicated by each supermarket headquarters for taking part in the trial. Table 3.1 illustrates the number of stores in each UK jurisdiction and from each retailer who took part. Full details of each of the stores involved in the project are contained within **Appendix 3**.

Table 3.1 Number of stores included in the project in each UK jurisdiction

| | Samples Completed | | | |
|-------------------------|-------------------|------------|------------|-----------|
| | Retailer 1 | Retailer 2 | Retailer 3 | Total |
| England | 2 | 4 | 3 | 9 |
| Wales | 4 | 2 | 4 | 10 |
| Scotland | 2 | 2 | 5 | 9 |
| N. Ireland ⁸ | 1 | 1 | 1 | 3 |
| Total | 9 | 9 | 13 | 31 |

The total weight of material collected from each of the participating stores is illustrated in Table 3.2. A full statistical analysis of this data is contained within Section 4 of this report.

Table 3.2 Total weight of material collected

| | Weight (kg) | | | |
|--------------|-------------|--------------|--------------|--------------|
| | Retailer 1 | Retailer 2 | Retailer 3 | Total |
| England | 2.5 | 30.8 | 57.4 | 90.6 |
| Wales | 4.4 | 27.8 | 43.7 | 76.0 |
| Scotland | 0.6 | 62.1 | 37.9 | 100.5 |
| N. Ireland | 0.6 | 1.5 | 3.8 | 5.8 |
| Total | 8.1 | 122.2 | 142.8 | 273.0 |

In terms of recruitment of sites, the "buy in" to the recycling of plastic film at senior management level was excellent and all three retailers chosen to participate in the study provided valuable assistance in the identification and recruiting of stores. Although at a store level co-operation was good and generally the stores were content to be involved in the process, our initial investigation showed that there was a varying degree of importance placed on the recycling schemes. In some instances, there was some uncertainty as to where the containers were and what materials could be placed within them.

⁸ Several stores in Northern Ireland that were believed to have a collection point for plastic bags have removed it since the introduction of the levy.

3.2 Message at Store Level

Information was collected on the way in which the OPRL and the mechanisms for plastic bag and film recycling were being promoted and encouraged within the stores.

The amount of promotion varied, both at an individual supermarket level and also at a national level. A number of the stores had excellent facilities in good public view for plastic bag and film recycling. The majority of these were either in the foyer of the stores or behind the checkouts. These containers offered bright attractive colours and a clear and easy to understand message.

The containers adopted by one of the retailers were usually big and visible from the distance. The message in the container focused on the recycling of 'carrier bag' with some also including the OPRL film label with added explanation (Figure 3.1).

Figure 3.1 Example of message at store level



The bins in the majority of the facilities from another retailer were clear and visible although none of the bins within the locations visited displayed the OPRL film label. The message focused on the recycling of 'plastic bags' with added iconography depicting a carrier bag (Figure 3.2).

Figure 3.2 Example of message at store level



The containers for the collection of plastic film provided by the other retailer were bright and colourful and in around half of the stores sampled were in an easy to see and reach location. There were however a number of stores where the containers were in positions that were difficult to see and / or reach (Figure 3.3). No containers displayed any clear information on the OPRL system and the recycling message focused on 'ordinary plastic bags' with graphics showing carrier bags.

It should be noted that, with the exception of a small number of containers presented by one of the retailers, the overall message adopted by all three retailers referred to the collection of plastic/carrier bags on their containers, which has the potential to offer a confusing message to consumers in that they may be unaware of the ability to collect other forms of plastic film packaging.

Figure 3.3 Example of message at store level for one of the retailers



The types of collection system also varied throughout the stores. One of the stores contacted did not have a specific container for collection but instead offered a plastic bag take back service at the checkouts. This was not widely promoted though and the store informed it was only utilised by a small number of local customers, although they did not have any further information available as to how many people in total used the collection service. This store did have a front of store collection point in the past, but decided to remove it as it was not being used properly by customers. It should be noted that, within this store, no plastic bag or plastic film was collected using the take back service during the sampling week.

The impact of the location of the message being portrayed at store level compared to the amount of material collected at the stores is discussed in further detail in Section 5.0 of this report.

3.3 Web-Based Research

The final stage of the project was to carry out a web-based study into the availability of consumer information on the OPRL scheme, in particular in relation to the film label, as well as front of store plastic bag and film recycling in general.

In terms of the OPRL, a review of both the WRAP and OPRL websites provided comprehensive information on the history of the scheme, the purpose and the retailers taking part. There is also useful information contained within these portals for retailers who wish to participate in the scheme.

Consideration was also given to the message being portrayed at both a local authority and a regulatory agency level. The results of this search demonstrated that none of the sites visited contained information on plastic film recycling points within retailers. A list of the sites consulted has been included in Appendix 1.

In addition, the message being portrayed within the retailers' websites with regard to recycling of plastic bags and film was considered. The help section of the website from one of the retailers answers the question "do you recycle carrier bags?" whilst in another retailer's website, plastic film recycling points are mentioned under the ethics section. The third retailer did not provide information on their website.

Finally, a general web search throughout the four UK jurisdictions found mixed results in terms of the amount of information readily available to general consumers. Within England, a general search directs the user to the Recycle Now website which provides useful information on the recycling of plastic film. In addition, there were a number of links displayed that directed the user towards plastic film recycling points. There is a similar situation within Scotland where the user is directed straight to useful information held on both the Zero Waste Scotland website and also on Recycle Now. Within Wales and Northern Ireland, it appeared to be more difficult to find a clear link to plastic film recycling, with the majority of articles appearing to be linked to the charge/levy for carrier bags.

4.0 Analysis of Results

4.1 Plastic Film Compositional Analysis

4.1.1 Overall Summary

A summary of the data for all of the samples collected is presented below (Table 4.1). The data are presented by film type, the range of values obtained and the range of confidence in the data. The arithmetic mean is used to measure central tendency (average) and is calculated by adding the group of values and then dividing by the count of those values. The two confidence intervals (CI), upper and lower, which are calculated at 95% confidence, refer to the 95% probability that the true value of the parameter is contained between these two values.

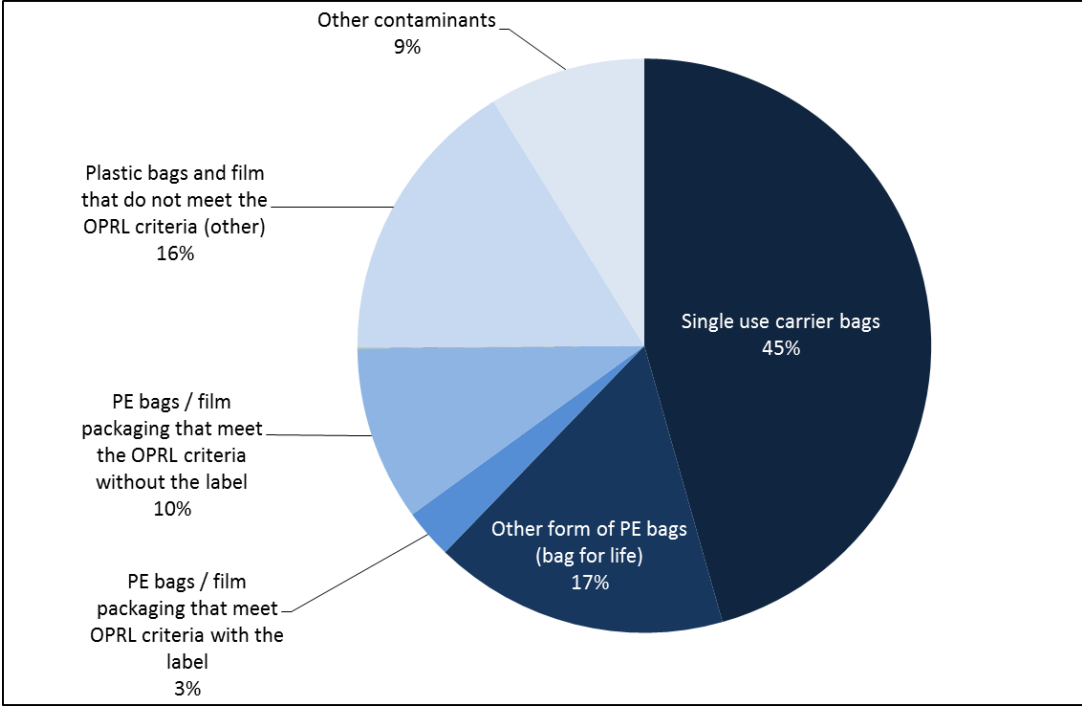
Table 4.1 Summary of Statistics

| | Minimum | Maximum | Arithmetic Mean |
|--|---------|---------|-----------------|
| Weekly collection all film types (kg) | 0 | 34.3 | 9.2 |
| Film Type Breakdown (kg) | | | |
| Single use carrier bags | - | 21.6 | 4.2 |
| Other form of PE bags (e.g. heavy duty plastic bags and bag for life) | - | 8.8 | 1.5 |
| PE bags/film packaging that meet OPRL criteria with the label | - | 1.4 | 0.3 |
| PE bags and film packaging that meet the OPRL criteria without the label | - | 4.2 | 0.9 |
| Plastic bags and film that don't meet the OPRL criteria (oxo-(bio)degradable) | - | 0.1 | - |
| Plastic bags and film that do not meet the OPRL criteria (biodegradable / compostable) | - | - | - |
| Plastic bags and film that do not meet the OPRL criteria (other) | - | 7.9 | 1.5 |
| Other contaminants | - | 7.0 | 0.8 |

An average of 9.2 kg of plastic film was collected in a week in the thirty one stores. The most common category collected in a week was single use carrier bags accounting for 4.2 kg collected or 45.6% of the materials collected by the stores.

This was followed by other forms of polyethylene bags and other plastic bags and film that do not meet the OPRL criteria with 16.6% and 16.3% respectively. Polyethylene bags and film packaging that meet the OPRL criteria without the label and other contaminants were the fourth and fifth category accounting for 9.8% and 8.8% respectively. Quantities of Oxo-(bio)degradable and biodegradable/compostable plastic bags and film that do not meet the OPRL criteria were negligible. These results are illustrated in Figure 4.1.

Figure 4.1 Summary of Statistics



4.1.2 Statistical Analysis by Region

Table 4.2 provides a summary of the statistical analysis undertaken by UK jurisdiction. This is further illustrated in Figure 4.2.

Table 4.2 Statistical Analysis by Nation (average values)

| | England | | N. Ireland | | Scotland | | Wales | |
|--|-------------|-------------|------------|-------------|-------------|-------------|------------|-------------|
| Number of stores analysed | 9 | | 3 | | 9 | | 10 | |
| Average weekly collection all film types (kg) | 10.1 | | 1.9 | | 12.7 | | 7.6 | |
| Film Type Breakdown | kg | % | kg | % | kg | % | kg | % |
| (1) Single use carrier bags | 6.1 | 60.2 | 0.5 | 23.8 | 6.9 | 54.6 | 1.2 | 16.2 |
| (2) Other form of PE bags (bag for life, heavy duty plastic bags) | 1.5 | 14.5 | 0.3 | 15.8 | 2.8 | 21.8 | 0.9 | 11.4 |
| (3) PE bags and film packaging that meet OPRL criteria with the label | 0.3 | 3.0 | 0.1 | 4.3 | 0.3 | 2.7 | 0.19 | 2.5 |
| (4) PE bags and film packaging that meet the OPRL criteria without the label | 0.7 | 6.8 | 0.3 | 16.3 | 1.5 | 11.6 | 0.79 | 10.4 |
| (5) Plastic bags and film that do not meet the OPRL criteria - oxo-(bio)degradable | 0 | 0 | <0.1 | <1 | 0 | 0 | <0.1 | <1 |
| (6) Plastic bags and film that do not meet the OPRL criteria - biodegradable / compostable | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (7) Plastic bags and film that do not meet the OPRL criteria - other | 1.2 | 11.4 | 0.4 | 19.6 | 0.9 | 7.2 | 2.7 | 35.7 |
| (8) Other contaminants | 0.4 | 4.2 | 0.4 | 20.0 | 0.3 | 2.1 | 1.8 | 23.7 |
| (9) Subtotal of unrequested material = (5)+(6)+(7)+(8) | 1.6 | 15.5 | 0.8 | 39.8 | 1.2 | 9.3 | 4.5 | 59.5 |
| (10) Subtotal of PE packaging excl. carrier bags and bags for life = (3)+(4) | 1.0 | 9.8 | 0.4 | 20.7 | 1.8 | 14.3 | 1.0 | 12.9 |
| (11) Subtotal of requested material = (1)+(2)+(3)+(4) | 8.5 | 84.5 | 1.2 | 60.2 | 11.5 | 90.7 | 3.1 | 40.5 |
| Total = (9)+(11) | 10.1 | 100 | 2.0 | 100 | 12.7 | 100 | 7.6 | 100 |

Table 4.2 show that Northern Ireland had a much lower collection average of plastic film compared to the other three jurisdictions. An average of 1.9 kg of plastic film was collected from Northern Ireland, whereas 7.6 kg was collected from Wales, 10.1 kg from England and 12.7 kg from Scotland.

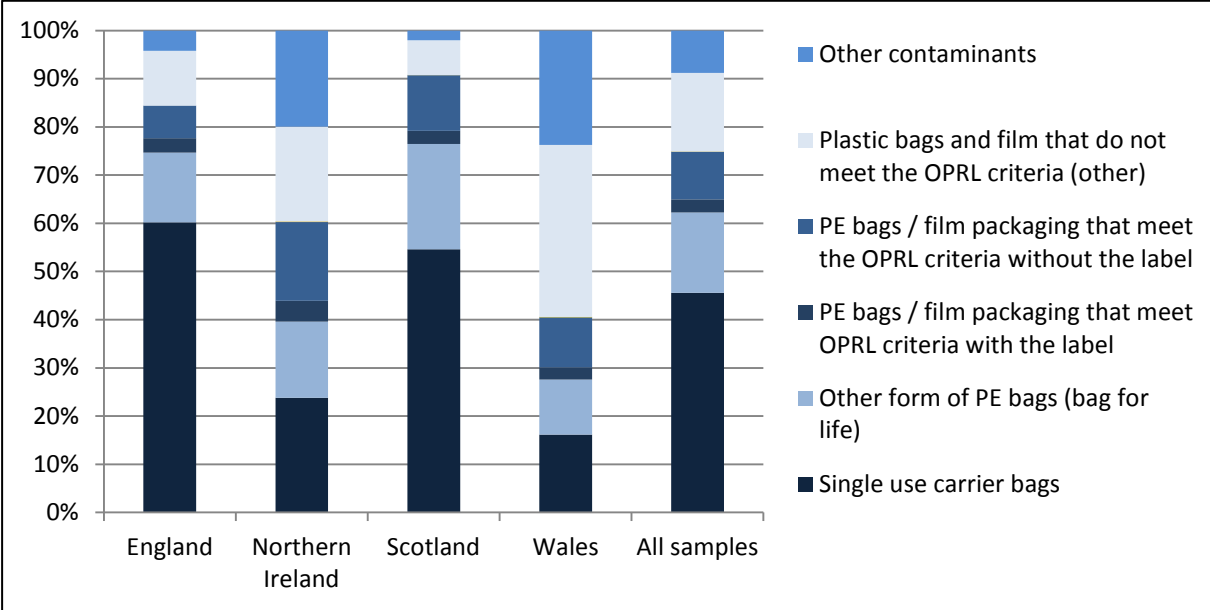
The film type breakdown also suggests that a cause for this low weight is related to the low percentage of single use carrier bags which made up the samples. Northern Ireland and Wales had the lowest percentages of single use carrier bags with 23.8% and 16.2% respectively and this could be attributed to the presence of a carrier bag levy in these countries. England and Scotland, who did not have a charge/levy in place at the time of the project⁹, had percentages of 60.2% and 54.6% respectively. These high percentages result in lower shares of the other bag and film types, as well as other contaminants. It is interesting to note that for the non-carrier bag proportion of the polyethylene; Northern Ireland were found to have the highest percentage at 36.5%, followed by Scotland with 36.1%. This indicates that this category is not being directly affected by the carrier bag levy. No direct correlation can be observed between the weights collected and either Council or front of store promotion although it does seem that those containers which are placed in a hidden location generally collect less.

England and Scotland had lower contaminant percentages of 4.2% and 2.0% respectively, compared to 23.7% and 20.0% for Wales and Northern Ireland. Wales' high share of other plastic bags and film that do not meet OPRL criteria of 35.7% compared to 19.6% for Northern Ireland, 11.4% for England and 7.20% for Scotland. Polyethylene bags and film packaging meeting OPRL criteria had a fairly consistent share in each of the countries. However, those bags and packaging which did not contain the OPRL label averaged slightly higher collection weights in each of the four countries. This is a surprising result but may simply reflect the quantity of bags and packaging which is yet to be labelled. Oxo- (bio)degradable and biodegradable/compostable plastic bags and film that do not meet the OPRL criteria are negligible in each of the countries.

While the carrier bag levy in Northern Ireland and Wales has helped to reduce the amount of polyethylene, and in particular single use carrier bags being disposed of, there is no evidence of it reducing the amount of unrequested materials being collected. Wales had the highest amount of unrequested materials collected with 4.5 kg, followed by England with 1.6 kg, Scotland with 1.2 kg and Northern Ireland with 0.8 kg. When this is taken as a percentage of their total collections, it is clear that the unrequested material is a very significant portion of the collected material in the two countries with the carrier bag levy and this may adversely affect the recycling potential. These percentages equate to 39.8% in Northern Ireland and 59.5% in Wales. In comparison, the percentages in England and Scotland equate to 15.5 and 9.3% respectively. The average composition by UK jurisdiction is presented in Figure 4.2.

⁹ Scotland introduced the carrier bag charge in October 2014

Figure 4.2 Average Composition by Jurisdiction



4.1.3 Analysis by Retailer

Table 4.3 provides a summary of the data for each of the three participating retailers.

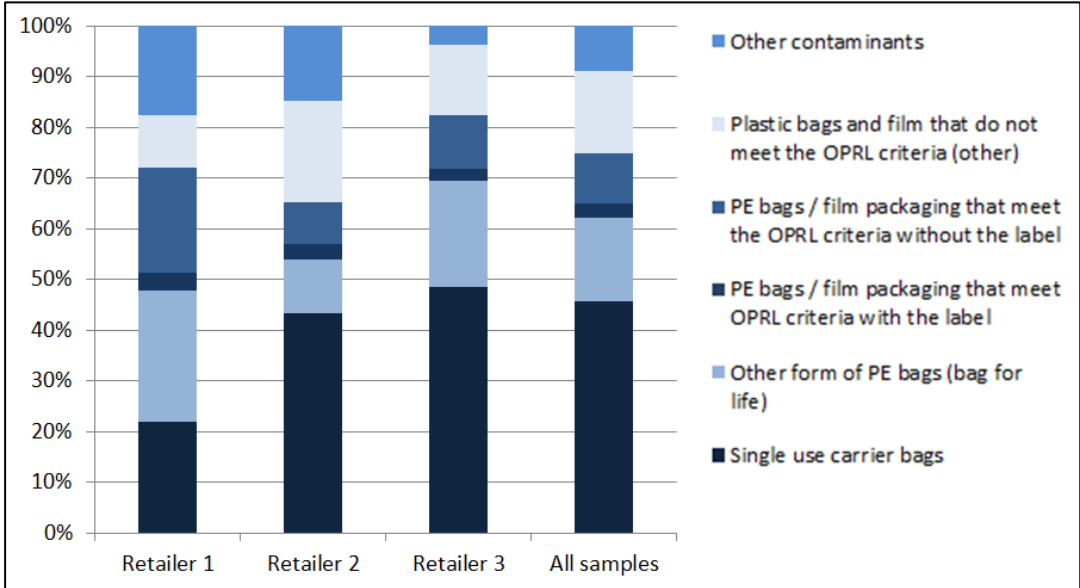
Table 4.3 Analysis by Retailer (average values)

| Film Type | Retailer 1 | | Retailer 2 | | Retailer 3 | |
|--|------------|-------------|-------------|-------------|-------------|-------------|
| Number of stores surveyed | 9 | | 9 | | 13 | |
| Weekly collection all film types (kg) | 1.0 | | 13.4 | | 12.1 | |
| Lower CI (kg) | 0.4 | | 6.4 | | 9.0 | |
| Upper CI (kg) | 1.5 | | 20.4 | | 15.2 | |
| Film Type Breakdown | kg | % | kg | % | kg | % |
| (1) Single use carrier bags | 0.2 | 21.9 | 5.8 | 43.5 | 5.9 | 48.5 |
| (2) Other form of polyethylene bags (heavy duty plastic bags and bag for life) | 0.2 | 25.9 | 1.4 | 10.5 | 2.5 | 20.8 |
| (3) PE bags and film packaging that meet OPRL criteria with the label | 0 | 3.6 | 0.4 | 3.1 | 0.3 | 2.5 |
| (4) PE bags and film packaging that meet the OPRL criteria without the label | 0.2 | 20.8 | 1.1 | 8.1 | 1.3 | 10.6 |
| (5) Plastic bags and film that do not meet the OPRL criteria (oxo-(bio)degradable) | 0 | 0 | 0 | 0 | <0.1 | <1 |
| (6) Plastic bags and film that do not meet the OPRL criteria (biodegradable / compostable) | 0 | 0 | 0 | 0 | 0 | 0 |
| (7) Plastic bags and film that do not meet the OPRL criteria (other) | 0.1 | 10.3 | 2.7 | 20.0 | 1.7 | 13.8 |
| (8) Other contaminants | 0.2 | 17.6 | 2.0 | 14.9 | 0.4 | 3.7 |
| (9) Subtotal of unrequested material = (5)+(6)+(7)+(8) | 0.3 | 27.9 | 4.7 | 34.9 | 2.1 | 17.6 |
| (10) Subtotal of All PE packaging excl. carrier bags and bags for life = (3)+(4) | 0.2 | 24.4 | 1.5 | 11.2 | 1.6 | 13.1 |
| (11) Subtotal of requested material = (1)+(2)+ (3)+(4) | 0.7 | 72.1 | 8.7 | 65.1 | 10.0 | 82.4 |
| Total = (9) +(11) | 1.0 | 100 | 13.4 | 100 | 12.1 | 100 |

Retailer 1 had a considerably lower collection weight in relation to the other retailers with an average of 1.0 kg plastic film collected from nine stores in a week. This compares with Retailer 3 and Retailer 2 who had an average of 12.1 kg and 13.41 kg respectively. Retailer 1 was the only brand which had a higher share of other forms of polyethylene bags compared to single use carrier bags; 25.9% to 21.9%. Retailer 3 had the largest share of single use carrier bags with 48.5% of the total plastic film coming from this stream and 20.8% coming from other forms of polyethylene bags. Retailer 2 also had a high share of single use carrier bags of 43.5% and a relatively low share of other forms of polyethylene bags of 10.5%.

These figures may be biased due to the fact that four of the nine Retailer 1 stores surveyed were in Wales, which has a carrier bag levy enforced, whereas four of the Retailer 2 stores were in England, which currently does not. Retailer 3 can be said to have the most representative sample with its thirteen stores spread between the four countries. Retailer 1 had the highest share of other contaminants out of the three stores, with 17.6% compared to 14.9% and 3.7% for Retailer 2 and Retailer 3 respectively. Retailer 2 also had 20.0% of its collection weight made up of other plastic bags and films that do not meet the OPRL criteria and this compared to 13.8% for Retailer 3 and 10.3% for Retailer 1. Further illustration of this data is presented in Figure 4.3.

Figure 4.3 Average Composition by Retailer



In terms of contamination, the following items were collected (see Figure 4.4):

- Expanded polystyrene;
- Tissue paper;
- Rigid plastic packaging;
- Flexible plastic packaging;
- Plastic bottles;
- Paper (incl. receipts)
- Food waste;
- Cardboard
- Coins;
- Batteries;
- Drinks cans;
- Glass bottles;
- Tin foil;
- Cleaning products (incl. cloth and sponge)

Figure 4.4 Examples of contamination



5.0 Conclusions and Recommendations

5.1 Conclusions

As can be seen from the compositional results, Northern Ireland and Wales had the lowest overall quantity of plastic bags and film collected when compared to Scotland and England. A cause for the low weight has been attributed to the low percentage of single use carrier bags contained within the samples, which is assumed to have a direct relation with the introduction of the levy.

Single use carrier bags amounted to 23.8% in Northern Ireland and 16.2% in Wales. England and Scotland by comparison had percentages of 60.2% and 54.6%, respectively. It was also noted that the polyethylene film and packaging meeting the OPRL criteria was fairly consistent across all four jurisdictions however the quantities collected overall were slightly lower than material without the OPRL label. This may be due in part to the amount of material still to be labelled but does show that some consumers have the appetite to recycle plastic packaging, with or without the presence of a label.

In terms of contamination, Wales and Northern Ireland had the highest proportions with 40% and 60%, respectively, compared to 15.5% in England and 9% in Scotland. The list of materials collected as contamination would suggest that a number of customers are treating these containers as general waste containers.

It would appear therefore the amount of single use carrier bags collected was much less in Wales and Northern Ireland than in Scotland and England, and that the carrier bag levy is having the desired effect in reducing the quantity of this material in the waste stream. However, taking the single use carrier bags out of the equation, the fact that higher percentages of other types of PE, with and without the OPRL label, would suggest that there is still a similar uptake of the recycling facilities in Wales as there is in England and Scotland.

On average, Northern Ireland did have the lowest rate of overall collected material and coupled with this the highest contamination level. There are a number of reasons which could be attributed to this. A number of stores contacted within Northern Ireland no longer offer this collection service, following the introduction of the carrier bag levy. As these are not widely present in this region, customers may be less aware of their existence and this, combined with a general lack of front of store and website promotion may have contributed to the low quantities collected. There is therefore a need, especially in Northern Ireland, for consumers to be made more aware of the fact that these receptacles collect more than single use carrier bags. There is also the need in all areas, but especially in Wales and Northern Ireland, for clear signage to be added to the containers to state that they should not be used for general waste as this, depending on the contaminants, has the potential to reduce the marketability of the collected recycle.

In terms of the message at store level, this varied between the retailers with the majority of containers being in clear and easy to reach areas. There was however a general lack of information relating to the OPRL labelling with the majority of the containers relating to "plastic bag" recycling. This has the potential to be confusing for customers as, without easy to see guidance, it is difficult to know all the types of materials acceptable in these bins.

In addition to the message portrayed at front of store, the web based investigation undertaken has highlighted the fact that information on both the OPRL scheme and also the front of store recycling points is relatively difficult to find for those who do not have previous experience of either waste management or retailing. Despite the fact that this is a valuable way of contributing to recycling targets, there is very little information available on local authority websites and information on central government websites is often quite

cumbersome to find. There is therefore the potential for web portals to be utilised much further to provide easy to access and easy to understand information.

In conclusion, although the containers are being used for a wide range of materials, single use carrier bags accounts for the largest percentage of requested material. The results showed that, although quantities of materials with the OPRL label were found, these were smaller than the amount without the label. This illustrates the need for further promotion of the OPRL scheme to increase recycling uptake, as well as a general awareness of the types of materials that can be collected in the containers. The livery used should be clear and easy to understand in order to minimise the potential to be used as a general waste container.

5.2 Recommendations

There are a number of recommendations emanating from the results of this work which may aid in the promotion of the OPRL scheme and in the recycling of plastic film at front of store. These are listed as follows:

- Although "buy in" to front of store recycling was excellent from a senior management point of view, there may be benefit in ensuring that this is translated further to a store level. Further buy in from individual store managers of the importance of the scheme may improve up take levels and ensure that the material collected within the bins does not get discarded.
- Linked to above, retailers should be encouraged to ensure that recycling containers are placed in easy to access areas and that any branding is clear and attractive to consumers.
- It could be beneficial for retailers to provide information close to the containers to allow consumers, and retail staff, to know exactly what can go into the containers and minimise the level of unrequested material. In addition to this, adequate signage may increase quantities collected in areas where the carrier bag charge/levy is currently in place as consumers would know that it is not just plastic carrier bags that are accepted. This would provide the opportunity for further promotion of the OPRL scheme within the stores themselves which would be an extremely effective way of passing information through to general consumers.
- Consideration should be afforded to ensuring that recycling facilities continue to be placed in areas where the carrier bag charge/levy is in operation in order to encourage the collection of additional plastic film categories.
- Further information on local authority websites and store websites regarding the OPRL scheme and plastic film recycling points would be beneficial. It would appear that, without prior knowledge in the management of these materials, it is relatively time consuming to find the necessary information. This could be aided by ensuring that valuable information on the WRAP, Recycle Now and OPRL schemes are more visible within web search engines.
- There could be a benefit in repeating this study at different times of the year in order to determine, as with other forms of recycling, the impact that seasonality and holiday periods have on this collection regime.

Appendix 1 List of Websites

Belfast - <http://www.belfastcity.gov.uk/>
Cardiff - <https://www.cardiff.gov.uk/ENG/Home/Pages/default.aspx#&panel1-1>
Doeni - <http://www.doeni.gov.uk/niea/>
Dundee - <http://www.dundee.gov.uk/>
Dungannon - <http://www.dungannon.gov.uk/index.cfm>
Edinburgh - <http://www.edinburgh.gov.uk/>
Environment Agency - <https://www.gov.uk/government/organisations/environment-agency>
Glasgow - <https://www.glasgow.gov.uk/>
Larne - <http://www.larne.gov.uk/welcome.asp>
Liverpool - <https://www.liverpool.gov.uk/>
Manchester - <http://www.manchester.gov.uk/>
Newport - <http://www.newport.gov.uk/en/Home.aspx>
Oldham - <http://www.oldham.gov.uk/>
SEPA - <http://www.sepa.org.uk>
Stirling - <http://my.stirling.gov.uk/home?theme=MyStirling>
Swansea - <http://www.swansea.gov.uk/>
Wrexham - <http://www.wrexham.gov.uk/english/index.cfm>

Appendix 2 Safe Systems of Work and Risk Assessments

Sorting Site Recruitment and Health and Safety

The following was taken into consideration during the sourcing of suitable sites:

- Evidence that the necessary permits and consents were in place to allow waste compositional analysis of all relevant categories of municipal waste to be undertaken;
- Assurance that the necessary insurances for the building were in place prior to the sorting programme being undertaken;
- A sufficiently sized area for working and storage of waste materials in an enclosed permitted part of the facility;
- The ability to cordon off the area for Health and Safety purposes if heavy vehicles or machinery are working in the area at the time of the sorting programme;
- Access to a power source; and
- Adequate lighting in a well ventilated area.

Coupled with this was the need to ensure that samples were transported to the respective sites by means of a registered waste carrier. Sites in Cardiff, Manchester and Newry were selected for sorting the material collected in Wales, England and Scotland / Northern Ireland, respectively.

As part of the Health and Safety procedures, ensuring a safe working environment during the waste compositional analysis was priority. In this regard, all staff were provided with the appropriate PPE and were appropriately supervised at all times; waste analysts underwent full training and health and safety inductions both on and off site.

A project specific risk assessment and Safe Systems of Work was devised specifically for this project and all staff were required to read and sign a copy of this prior to the commencement of the sampling and analysis.

Appendix 3 - Breakdown of Store Results

| Store | Local Authority | Country | Single use carrier bags | | Other form of polyethylene bags (for example bag for life) | | Polyethylene bags and film packaging that meet OPRL criteria with the label | | Polyethylene bags and film packaging that meet the OPRL criteria without the label | | Plastic bags and film that do not meet the OPRL criteria - Oxo - degradable | | Plastic bags and film that do not meet the OPRL criteria - Biodegradable | | Plastic bags and film that do not meet the OPRL criteria - other | | Other contaminants | | Total | | | |
|---------|--------------------|------------------|-------------------------|----|--|-----|---|----|--|----|---|----|--|---|--|----|--------------------|----|-------|-----|-----|-----|
| | | | kg | % | kg | % | kg | % | kg | % | kg | % | kg | % | kg | % | kg | % | kg | % | kg | % |
| Store 1 | Cutgate | England | 0.4 | 88 | 0.0 | 0 | 0.1 | 12 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.4 | 100 |
| Store 1 | Royton | England | 0.5 | 24 | 0.3 | 15 | 0.1 | 4 | 0.4 | 22 | 0.0 | 0 | 0.0 | 0 | 0.3 | 13 | 0.4 | 22 | 2.0 | 100 | 100 | |
| Store 2 | Cheadle | England | 6.4 | 62 | 1.4 | 14 | 0.4 | 4 | 0.9 | 9 | 0.0 | 0 | 0.0 | 0 | 0.3 | 3 | 0.9 | 9 | 10.2 | 100 | 100 | |
| Store 2 | Heaton Park | England | 4.3 | 50 | 0.9 | 10 | 0.2 | 3 | 0.6 | 7 | 0.0 | 0 | 0.0 | 0 | 1.3 | 15 | 1.3 | 15 | 8.6 | 100 | 100 | |
| Store 2 | Leigh | England | 6.0 | 67 | 0.9 | 10 | 0.5 | 5 | 0.6 | 7 | 0.0 | 0 | 0.0 | 0 | 0.8 | 9 | 0.1 | 2 | 8.9 | 100 | 100 | |
| Store 2 | Salford | England | 1.7 | 60 | 0.5 | 16 | 0.0 | 0 | 0.0 | 1 | 0.0 | 0 | 0.0 | 0 | 0.6 | 20 | 0.1 | 2 | 2.9 | 100 | 100 | |
| Store 3 | Liverpool | England | 11.7 | 62 | 2.0 | 11 | 0.4 | 2 | 0.9 | 5 | 0.0 | 0 | 0.0 | 0 | 3.2 | 17 | 0.5 | 3 | 18.8 | 100 | 100 | |
| Store 3 | Prestwich | England | 8.6 | 63 | 2.1 | 15 | 0.0 | 0 | 1.3 | 10 | 0.0 | 0 | 0.0 | 0 | 1.6 | 12 | 0.1 | 0 | 13.7 | 100 | 100 | |
| Store 3 | Wilmslow | England | 15.3 | 60 | 5.2 | 20 | 1.1 | 4 | 1.4 | 5 | 0.0 | 0 | 0.0 | 0 | 2.3 | 9 | 0.4 | 2 | 25.7 | 100 | 100 | |
| Store 1 | Larne | Northern Ireland | 0.1 | 21 | 0.1 | 12 | 0.0 | 7 | 0.1 | 18 | 0.0 | 0 | 0.0 | 0 | 0.0 | 7 | 0.2 | 35 | 0.6 | 100 | 100 | |
| Store 2 | Dungannon | Northern Ireland | 0.1 | 6 | 0.1 | 9 | 0.0 | 3 | 0.0 | 1 | 0.0 | 0 | 0.0 | 0 | 0.2 | 16 | 0.9 | 64 | 1.4 | 100 | 100 | |
| Store 3 | Knocknagoney Road | Northern Ireland | 1.2 | 31 | 0.7 | 19 | 0.2 | 4 | 0.8 | 22 | <0.1 | <1 | 0.0 | 0 | 0.9 | 23 | 0.1 | 2 | 3.8 | 100 | 100 | |
| Store 1 | Baillieston Road | Scotland | 0.5 | 43 | 0.3 | 23 | 0.0 | 0 | 0.1 | 11 | 0.0 | 0 | 0.0 | 0 | 0.0 | 2 | 0.3 | 21 | 1.2 | 100 | 100 | |
| Store 1 | Carmunnock Road | Scotland | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 |
| Store 2 | Carmeron Toll | Scotland | 12.4 | 47 | 3.4 | 13 | 1.4 | 5 | 4.2 | 16 | 0.0 | 0 | 0.0 | 0 | 3.8 | 14 | 1.4 | 5 | 26.6 | 100 | 100 | |
| Store 2 | Stirling | Scotland | 21.6 | 63 | 5.5 | 16 | 1.1 | 3 | 3.4 | 10 | 0.0 | 0 | 0.0 | 0 | 2.2 | 6 | 0.4 | 1 | 34.3 | 100 | 100 | |
| Store 3 | Coatbridge | Scotland | 6.2 | 79 | 1.3 | 16 | 0.0 | 0 | 0.2 | 2 | 0.0 | 0 | 0.0 | 0 | 0.1 | 1 | 0.1 | 1 | 7.8 | 100 | 100 | |
| Store 3 | Edinburgh Colinton | Scotland | 2.7 | 42 | 1.1 | 17 | 0.2 | 3 | 2.3 | 36 | 0.0 | 0 | 0.0 | 0 | 0.1 | 2 | 0.0 | 0 | 6.4 | 100 | 100 | |
| Store 3 | Edinburgh | Scotland | 10.8 | 64 | 2.5 | 15 | 0.3 | 2 | 1.9 | 11 | 0.0 | 0 | 0.0 | 0 | 1.4 | 8 | 0.0 | 0 | 16.9 | 100 | 100 | |
| Store 3 | Silverburn | Scotland | 2.7 | 23 | 8.8 | 77 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 11.5 | 100 | 100 | |
| Store 3 | St. Rolox | Scotland | 5.4 | 59 | 2.0 | 22 | 0.1 | 1 | 1.1 | 11 | 0.0 | 0 | 0.0 | 0 | 0.5 | 6 | 0.1 | 1 | 9.1 | 100 | 100 | |
| Store 1 | Llandovery | Wales | 0.0 | 0 | 0.2 | 89 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 6 | 0.0 | 6 | 0.2 | 100 | 100 | |
| Store 1 | Pontarddulais | Wales | 0.1 | 5 | 0.3 | 16 | 0.1 | 6 | 0.7 | 32 | 0.0 | 0 | 0.0 | 0 | 0.3 | 14 | 0.6 | 27 | 2.1 | 100 | 100 | |
| Store 1 | Swansea | Wales | 0.0 | 0 | 0.3 | 100 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.3 | 100 | 100 | |
| Store 1 | Whitchurch | Wales | 0.3 | 15 | 0.9 | 44 | 0.0 | 1 | 0.5 | 24 | 0.0 | 0 | 0.0 | 0 | 0.3 | 13 | 0.1 | 3 | 1.9 | 100 | 100 | |
| Store 2 | Cardiff | Wales | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 7.9 | 53 | 7.0 | 47 | 14.8 | 100 | 100 | |
| Store 2 | Colchester Avenue | Wales | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 7.1 | 54 | 5.9 | 46 | 13.0 | 100 | 100 | |
| Store 3 | Newport | Wales | 2.4 | 22 | 3.3 | 30 | 0.3 | 3 | 2.0 | 18 | 0.0 | 0 | 0.0 | 0 | 2.7 | 24 | 0.4 | 4 | 11.2 | 100 | 100 | |
| Store 3 | Swansea | Wales | 3.3 | 33 | 1.1 | 11 | 0.6 | 6 | 1.5 | 15 | <0.1 | <1 | 0.0 | 0 | 2.9 | 29 | 0.5 | 5 | 9.9 | 100 | 100 | |
| Store 3 | Talbot Green | Wales | 5.0 | 48 | 1.9 | 19 | 0.3 | 3 | 1.7 | 16 | <0.1 | <1 | 0.0 | 0 | 1.0 | 10 | 0.4 | 4 | 10.4 | 100 | 100 | |
| Store 3 | Wrexham | Wales | 1.1 | 9 | 0.7 | 6 | 0.6 | 5 | 1.6 | 13 | 0.0 | 0 | 0.0 | 0 | 5.0 | 41 | 3.1 | 26 | 12.0 | 100 | 100 | |

**Waste & Resources
Action Programme**

The Old Academy
21 Horse Fair
Banbury, Oxon
OX16 0AH

Tel: 01295 819 900
Fax: 01295 819 911
E-mail: info@wrap.org.uk

Helpline freephone
0808 100 2040

www.wrap.org.uk/plastics

