RECYCLING ACTION YORKSHIRE

Glass Collection from Licensed Retail Establishments (LREs) In Urban Centres of Yorkshire and Humber
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Recycling Action Yorkshire

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Executive Summary

Introduction

The Study

In February 2006 Valpak was commissioned by RAY to undertake a study into the economics of glass recycling by Licensed Retail Establishments (LREs) in urban centres of Yorkshire and Humber. The project was carried out in three phases:

- Assessment of commercial glass arisings and collections through a telephone survey of LREs and in depth interviews with key stakeholders
- Development of business and economic models
- Dissemination through a Stakeholder Workshop and written report.

Research & Analysis

LRE Survey

As part of this research nearly 6,000 LREs were interviewed in April 2006, with over 600 participating (10%). Information was collated on current and potential glass recycling rates, motivations and barriers to recycling, as well as willingness to pay for a glass recycling service. The key conclusions drawn from this work are given below.

Current Availability & Recycling of Glass

- 54% of LREs\(^1\) (2,818) currently recycle glass.
- 52,656 tonnes of Commercial glass is available annually
- 25,250 tonnes is recovered (27,406 still available to recycle)
- Sheffield, Bradford, York and Harrogate recycle the lowest percentage of available glass (see Figure 18 below)
- Leeds has the largest tonnage yet to be recovered (see Figure 18 below)

![Figure 18: Estimation of Cullet Available and Recycled by Conurbation](image)

\(^1\) In the ten major urban areas of Yorkshire and Humber
### Collectors and Collection Services
- No one glass collection service is offered in all ten conurbations.
- 23% of LREs recycle cardboard and paper, however combined collections are unlikely to benefit the economics of glass collection.

### Marketing & Awareness
There is very low level of awareness of glass collection services and many misconceptions as to the services being offered, the companies providing the services and the cost of the services. This suggests LREs view the services as unimportant and undifferentiated. Awareness of, and interest in, glass recycling needs to be raised for LREs attitudes towards paying for glass collection services to change and for profit margins of collection services to increase.

### Barriers to Recycling for LREs
- 67% of LREs considered there to be barriers to glass recycling: lack of time (24%), lack of space (20%) and costs (15%).
- LRE’s are not aware that glass bins replace general waste bins and therefore additional space is not generally required.
- Glass recycling is perceived as an additional cost, rather than a cost saving.

### Stakeholder Depth Interviews
Ten stakeholder interviews were carried out with glass collectors and merchants, providing a comprehensive understanding of the current industry situation. The key conclusions drawn from this work are given below.

### Barriers to Commercial Growth
- Legislation – Local Authorities are focused on domestic recycling.
- Financial – collectors have little budget for marketing or debt collection.
- Time – lack of time/resources for marketing and payment chasing.
- Education – LREs do not understand recycling glass is a lower-cost option.

### Collection Costs
- Current glass collectors charge approximately £1-2 per 240l bin.
- The average general waste collection charge is £5-6 per 240l bin.
- A charge of £1–2 per 240l bin is the most profitable.
- LREs have a very low awareness of the real cost (or cost savings) of recycling their glass and this makes it very difficult to increase charges.

### Potential for Growth
Recruitment of additional LREs by current collectors is most likely to happen through increasing route densities, rather than the costly option of extending routes further a field.
Costings & Economic Models

On average it costs collectors £16.95 per tonne to collect glass colour-mixed from LREs and £16.15 per tonne to collect glass colour-separated.

An economic model for both colour-mixed and colour-separated glass collections has been developed, based on a number of key assumptions. The models suggest the optimum charges for maximum profit are:
- £2.93 per tonne for colour-mixed collections
- £9.45 per tonne for colour-separate collections

Although colour-separated collections are potentially more profitable, it is unlikely sufficient route density would be achieved or that the proportions of glass colours collected will remain constant for collection to be economically viable.

Stakeholder Workshop

The Workshop was held on the 1st August 2006, at the British Glass offices in Sheffield; 20 delegates participated from 14 companies. Findings were well received, with only two amendments to the cost model ensuing.

Recommendations

Increase ‘Willingness to Pay’ and Reduce Debtors

To enable growth of profits, services and sustainability, charges for commercial glass collections and therefore ‘willingness to pay’ by LREs needs to increase. This could be achieved through better marketing.

Improved debt collection could significantly improve profits; invoicing in advance or use of a debt collection agency could be considered.

Implement a Marketing Strategy

A regional marketing campaign should be initiated by RAY to increase awareness amongst LREs as to the benefits of recycling glass and the cost savings that can be made. It would also serve to differentiate the services.

Develop Business Partnerships

A ‘one-stop-shop’ option for both waste disposal and recycling will provide LREs with a reduced-hassle, reduced-cost service. Partnerships should be developed with Local authorities, general waste management companies or commercial glass collectors working in complementary areas.

Expand Service Offering

Additional services may assist in increasing tonnages collected (eg shared commercial bring banks) or improve the economics of collection.
Engage with Business Support Services

In order to address issues such as lack of marketing and poor payment history, commercial glass collectors should engage with business support services that can provide advice and training in these areas.
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1. Introduction

Background
In February 2006 Valpak submitted a successful proposal to Recycling Action Yorkshire (RAY), as part of a competitive tender, to carry out a study into the economics of commercial glass collection. The aim of the study was to provide RAY with robust research and business models, to facilitate the commercialisation of glass collections from Licensed Retail Establishments (LREs) within the major urban areas of Yorkshire and Humber. The study began in March 2006 and was completed in August 2006.

Current Industry Situation
Of the glass packaging produced by LREs, it is estimated that only 16% is currently recycled in the UK. With the revised packaging recovery targets released in 2005, glass has the most challenging target of any material. If the UK is to reach these targets it is important that focus on collection from commercial sources increases.

Yorkshire is currently home to the majority of the UK glass industry, enabling glass to be recycled within the region in which it has arisen. The high percentage of clear glass recoverable from commercial sources also makes colour sorting and recycling of commercial glass attractive to the industry.

In recent years there has been a number of glass recycling schemes for LREs in operation across the UK, including some free services. However, due to economic factors such as increasing logistics costs and cullet price, it has become unfeasible to operate a service to LREs without a charge.

In the Yorkshire and Humber region several glass collection services are currently in operation; RAY are looking to encourage and assist in the expansion of these services, to increase both the tonnages of glass diverted from landfill and the proportion of LREs participating in glass recycling.

Objectives
The following key objectives were set to drive this study and its outputs:

- Establish a baseline tonnage of cullet available in the Yorkshire and Humber region and produce an illustrative map
- Develop an understanding of current stakeholder attitudes and service offerings in order to determine areas where recycling could be increased
- Produce a cost model for commercial glass collection based on the economic information gathered from stakeholders
- Develop a business model for several different collection scenarios and end market prices
- Co-ordinate a stakeholder workshop to disseminate and discuss project findings
- Produce a final report with dissemination plan and PowerPoint presentation that can be used to promote roll-out of project findings and present key conclusions and recommendations for future services

WRAP 2003 – Recycled Glass Market Study and Standards Review
Purpose

The purpose of this report is to feedback the results of the study, including the following:
- LRE survey results
- Summary of Stakeholder Interviews
- Cost of Collections
- Economic Models
- Stakeholder Workshop Feedback
- Conclusions
- Recommendations
2. Methodology

Introduction  This section outlines the methodology used to meet the project’s key objectives. This study was split into three distinctive phases as outlined in the diagram below.

- **Phase 1 – Commercial Glass Arising and Collections**
  - Commercial glass map arisings in Yorkshire and Humber
  - Potential tonnages & collection partners

- **Phase 2 – Business and Economic Model**
  - Cost model for collection types and vehicles
  - Economic model including and market prices and colour sortation costs

- **Phase 3 – Final Report and Dissemination**
  - Final Report
  - Stakeholder options

**Figure 1: Methodology**

**Commercial Glass Arisings and Collections**  The objective of this phase was to establish baseline data for the quantity of glass arisings within the region, establish the willingness of stakeholders to participate in additional collections and understand the expectations of the stakeholder group.

To facilitate the acquisition of this information from LRES a questionnaire was developed in a format suitable to be completed by telephone interview. A representative sample of premises, both from LRE type and geographical region within Yorkshire and Humber, were then contacted to complete the questionnaire.
Local Authorities and regional collectors of glass were contacted separately; face to face meeting were set up with the majority of this stakeholder group. A topic guide was developed for use during the depth interviews, to ensure commonality.

The information on glass arisings gathered from this exercise was then cross-checked against other findings on glass arisings from commercial premises. This was then assessed by LRE type and conurbation.

### Business and Economic Model

The objective of this phase was to develop a robust cost model that could be used to develop sustainable business plans for the collection of commercial glass.

From the information gained through the primary LRE research, a model was developed of the ‘willingness of LREs to pay’ for a glass collection service. This was then compared to general waste management charges levied and current glass collection charges in the region.

Using the information on price elasticity, and primary research on the operating costs of a collection vehicle, a mathematical model was developed that provides collection costs per tonne of glass collected for a variety of scenarios. The scenarios were based on the collection of colour-mixed or colour-separated glass.

### Final Report and Dissemination

In addition to the research results and economic models, this final report presents conclusions and recommendations for the roll-out of glass collection. Key barriers to the roll out and potential solutions are also described. Part of this process involved a stakeholder workshop where the initial findings were presented to and discussed with key stakeholders.
3. Phase 1 Commercial Glass Collections & Arisings

Phase 1
This initial phase of the Study incorporated two main elements, the first being a survey of LREs in each of Yorkshire and Humber’s ten principal conurbations. The second involved structured interviews with a number of key stakeholders; five glass collectors and five Local Authorities.

These two elements are discussed in turn in this section, followed by a brief summary of findings and the conclusions that can be drawn from them.

3.1 LRE Survey Results and Analysis

Introduction to Survey
In order to collate information from LREs in Yorkshire and Humber’s 10 main conurbations, a questionnaire was developed and telephone surveys carried out. The questionnaire aimed to gather information on current and potential participation in glass recycling, motivations and barriers to recycling, as well as willingness to pay for a glass recycling service. A copy of this questionnaire is available in Appendix I.

This section provides information on the respondents to the survey as well as an overview of each conurbation’s current recycling habits. Following this, the information collated from the survey is analysed and results presented.

The Process
Participants were interviewed as part of a telephone survey, which was considered the quickest, most economic and successful method of achieving a high participation rate. Over 600 LREs took part in an interview, during a two week period in April 2006. This equates to a response rate of 10%.

Accuracy of Results
This level of participation means that where all respondents answered a question, it is 95% certain that the results are accurate to within +/- 4%.

Survey Samples
The survey achieved responses from approximately 10% of premises in each of the 10 conurbations under investigation. It covered all LRE types, but placed emphasis on those LRE types that produce higher glass tonnages, for example Public Houses.

3.1.1 Profile of Respondents

Survey Respondents
This section provides a summary of the LREs that partook in the survey. Information is provided for Yorkshire and Humber as a whole, as well as by individual conurbation and specific LRE type.
Profile of all Conurbations Combined

Number of Respondents by Conurbation

The LRE survey achieved responses from over 600 establishments (10%) in the Yorkshire & Humber region. Approximately 10% of LREs from each conurbation were questioned and as such, the larger regions like Leeds contributed higher numbers of respondents to the results. This is displayed below in Figure 2.

![Figure 2: Survey Respondents by Conurbation](image)

Spread of LRE Types

The survey incorporated responses from all the most common LRE types, but was focused on those that generate the highest tonnages of glass, for example Public Houses. The spread of respondents from each LRE type are displayed in Figure 3 below.

![Figure 3: Survey Respondents by LRE Type](image)

LRE Chains

Of those LREs surveyed, 48% described themselves as ‘Independent Free’. The remainder (52%) provided a chain or group name, or stated they were part of a type of group.

There were two chains that were dominant in the survey responses:
- Enterprise Inns - comprised 19% of group/chains (61% currently recycling)
• Punch Pub Company - comprised 13% of group/chains (65% currently recycling)

Of the 12 chains with 5+ establishments surveyed, all had at least two establishments who stated that they were currently participating in glass recycling, and no more than two outlets of any one chain stated the decision was made at head office. This is shown in the table below:

As all of these larger chains are currently participating in recycling, it is in principle possible that their remaining outlets would be permitted to do so. It also appears that even though decisions to participate may be made at head office, they are not consistent from one chain outlet to another or being implemented simultaneously.

<table>
<thead>
<tr>
<th>Owner, Group or Chain</th>
<th>No of Outlets Surveyed</th>
<th>Outlets Currently Recycling</th>
<th>Participate in recycling in the future?</th>
<th>Decision made at Head Office</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Barracuda Group</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Brook Leisure</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Enterprise Inns</td>
<td>59</td>
<td>34</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>Greene King</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Laurel Pub Company</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Mitchells &amp; Butlers</td>
<td>18</td>
<td>13</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Other Small Retail Groups</td>
<td>22</td>
<td>8</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Punch Pub Company</td>
<td>40</td>
<td>25</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Sam Smith</td>
<td>7</td>
<td>7</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Spirit Group</td>
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<td>4</td>
</tr>
<tr>
<td>Wolverhampton &amp; Dudley Brewery</td>
<td>19</td>
<td>9</td>
<td>2</td>
<td>1</td>
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<tr>
<td>Grand Total</td>
<td>312</td>
<td>180</td>
<td>14</td>
<td>84</td>
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</table>

Figure 4: Larger LRE Groups/Chains Glass Recycling Habits

A member of each LRE’s management was requested to answer the survey, as they were considered to be the most knowledgeable staff members with regards to recycling activities. This was not always possible and may have had some influence over the responses given. The employee types spoken to are displayed below and reveal that in most cases a manager, owner or tenant was questioned.
Individual Conurbation Profiles

Barnsley
The region’s LREs are predominantly seen to be Public Houses (51%) and Sports/Social Clubs (28%), with 53% of the total population being independently owned. The proportion of LREs currently undertaking glass recycling is 63%, which is just above the survey average of 59%. From those surveyed it is perceived that the total potential recycling rate in this district is 87%.

When asked to state the perceived barriers to recycling, the most common response was that there were no barriers, with cost also being commonly mentioned. Cost savings were also seen to be the key motivator to recycling in the area.

Bradford
Public Houses dominate the LRE population in Bradford (51%), with half of all LREs surveyed being chains. Of those LREs surveyed, Bradford showed the lowest current recycling participation rate of only 31%, but the highest rate of interest in future participation at 41%. In spite of this, the area still has one of the lowest potential recycling rates of 72%.

A large number of premises (18% of those not recycling) have previously recycled glass but have stopped, principally due to the service ceasing or costs. This is not surprising as costs are seen to be the key barrier and motivator for recycling here.

Doncaster
Doncaster’s LREs are dominated by Public Houses (46%), with 52% of the total LRE population being independently owned. Of those LREs surveyed, 80% currently recycle glass, considerably higher than the sample average of 59%. In addition to this, a further 16% are interested in future participation.

Not surprisingly, when asked about barriers to recycling the most common response given was that there were none.

Harrogate
Harrogate has the smallest LRE population of those areas included in the study (262 establishments) and unlike some of the other conurbations, Harrogate has a more even spread of LRE types, with a relatively high number of Hotels and Restaurants. The area has a lower than average sample recycling rate of 52%, however a further 37% indicated an interest in recycling in the future.

Harrogate respondents indicated lack of space as being the main barrier to recycling and environmental pressure as the key motivator.
Hull
Hull is dominated by Public Houses (49%), with a slight majority (54%) of all the LREs being owned by chain organisations. Current participation rates of LRE recycling are slightly below average for those sampled at 49%, with a further 30% interested for the future. Surprisingly, this conurbation has the highest level of domestic recycling at 200-250 kg/hh/yr\(^3\), suggesting that awareness levels of recycling should be higher.

Respondents see lack of space and time as the key barriers to recycling and costs as the key motivator. Kingston upon Hull Council were interviewed as part of this study and considered Council resource to be the biggest constraint to them initiating a commercial recycling service.

Leeds
Leeds is a large conurbation, considered to have the highest number of LREs out of those areas studied (1,119 establishments) and once again is dominated by Public Houses (38%). The current recycling rate is slightly above average for those sampled, at 62%, with a potential rate of 88%.

When asked about barriers to recycling, the most common response in Leeds was that there were none, with lack of time and space also being commonly mentioned. However, Leeds City Council saw perceived costs as the key barrier to commercial glass recycling.

Rotherham
The majority of LREs in Rotherham are Public Houses (56%), with over half of the total population being owned by chain organisations. Of those LREs surveyed 82% were currently recycling; high compared to the sample average of 59%.

Respondents stated costs as the largest barrier to recycling, which was echoed by Rotherham Council who also saw this as the largest deterrent.

Sheffield
Sheffield has the second largest LRE population out of those areas studied (1,101 establishments,) once again being dominated by Public Houses (50%). This conurbation has one of the lowest current recycling rates of those sampled, with only 34% currently recycling glass. Although a further 37% of respondents were interested in recycling, Sheffield still has the lowest potential recycling rate out of those areas under investigation (71%).

Considering this low current and potential recycling rate, it is surprising that when asked about barriers to recycling the most common response given was that their were none. However, lack of space and time were also commonly mentioned. Respondents stated costs as the key motivator to recycling.

Wakefield
Wakefield has a high number of Public Houses (45%) within its LRE population, which is one of smaller populations being considered (374 establishments). This conurbation has the highest current recycling rate amongst respondents of 87% and is the only area to have a potential rate of 100%.

\(^3\) WRAP 2003/2004
This high level and interest in recycling is likely to be linked to 71% of those surveyed stating that there were no barriers to recycling, which again is much higher than the other areas studied. Wakefield Council saw costs and a lack of awareness of them to be a key barrier to recycling, however only 8% of respondents saw this as a barrier.

York

York is dominated by Public Houses (42%), but as well as this has a higher than average proportion of Guest Houses (11%) and Hotels (3%). This area has a lower than sample average recycling rate at 49%, however York does have a potential rate of 89%; slightly higher than average.

When asked about the key barriers to recycling, York had the smallest proportion of respondents stating there were none (12%). Key barriers in this area were seen as a lack of space, awareness and time.

3.1.2 Current and Potential Recycling Levels

A principal objective of the survey was to identify the proportion of LREs currently participating in glass recycling. For those who don’t use a glass recycling service, their willingness to participate in the future was assessed.

The study identified that a slight majority of LREs surveyed (54%) currently recycle their waste glass, as displayed in Figure 6. Furthermore, an additional 68% of those who do not currently recycle said they would participate in the future if a suitable service was available, offering a potential total participation of 85%.

The current levels of glass recycling were analysed by conurbation. It was found that Wakefield (87%), Rotherham (82%) and Doncaster (80%) currently have the largest percentage of LREs recycling glass, as displayed in Figure 7 below.

Bradford (31%) and Sheffield (34%) showed the lowest levels of recycling participation. A possible reason for this may be both conurbations being in the
lowest band of domestic recycling (100-150 kg/yr<sup>4</sup>) found in the survey and as such environmental awareness may be low in these regions. Also, for Bradford particularly there is a high number (18%) of LREs who used to recycle but no longer do, due to services ceasing and escalating costs. This may have lead to establishments being deterred from partaking in a new service.

Of the LREs not currently participating in glass recycling, those located in Bradford (41%) and York (40%) indicted the most interest in participation, should a suitable service be available. LREs in Wakefield (13%), Rotherham (12%) and Doncaster (16%) indicated the least interest. These are the three conurbations with the highest current recycling levels in the survey, which suggests that the majority of those who are interested in recycling are already participating, as displayed in Figure 7.

From the survey responses it appeared that the most cited reasons for a lack of interest in recycling were a lack of space, particularly behind the bar, a lack of time and that the volumes of glass produced are not sufficient to warrant the service.

By combining the information collected on current participation and future interest in recycling, it is possible to establish the total potential participation in each conurbation, as displayed in the table below. Out of the ten conurbations surveyed, it is seen that Wakefield is most likely to achieve the highest coverage.

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Figure 7: Current and Future Glass Recycling Participation by Conurbation

<table>
<thead>
<tr>
<th>Conurbation</th>
<th>Currently recycle</th>
<th>Don’t recycle but interested for the future</th>
<th>Don’t recycle and not interested in future</th>
<th>Don’t recycle and decision made at head office</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wakefield</td>
<td>87%</td>
<td>12%</td>
<td>3%</td>
<td>4%</td>
<td>13%</td>
</tr>
<tr>
<td>Rotherham</td>
<td>82%</td>
<td>16%</td>
<td>4%</td>
<td>3%</td>
<td>12%</td>
</tr>
<tr>
<td>Doncaster</td>
<td>63%</td>
<td>16%</td>
<td>4%</td>
<td>3%</td>
<td>24%</td>
</tr>
<tr>
<td>Barnsley</td>
<td>62%</td>
<td>8%</td>
<td>8%</td>
<td>4%</td>
<td>24%</td>
</tr>
<tr>
<td>Leeds</td>
<td>62%</td>
<td>6%</td>
<td>8%</td>
<td>4%</td>
<td>16%</td>
</tr>
<tr>
<td>Harrogate</td>
<td>52%</td>
<td>26%</td>
<td>8%</td>
<td>4%</td>
<td>24%</td>
</tr>
<tr>
<td>York</td>
<td>49%</td>
<td>20%</td>
<td>12%</td>
<td>5%</td>
<td>20%</td>
</tr>
<tr>
<td>Hull</td>
<td>49%</td>
<td>19%</td>
<td>6%</td>
<td>2%</td>
<td>20%</td>
</tr>
<tr>
<td>Sheffield</td>
<td>34%</td>
<td>20%</td>
<td>8%</td>
<td>1%</td>
<td>30%</td>
</tr>
<tr>
<td>Bradford</td>
<td>31%</td>
<td>26%</td>
<td>8%</td>
<td>2%</td>
<td>30%</td>
</tr>
</tbody>
</table>

---

4 WRAP 2003/04
Sheffield and Bradford are seen to have the lowest achievable participation of LREs, at 71% and 72% respectively. These two conurbations also have the lowest current levels of glass recycling, as discussed above.

<table>
<thead>
<tr>
<th>Conurbation</th>
<th>Current Participation</th>
<th>Interested in Participation</th>
<th>Potential Total Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wakefield</td>
<td>87%</td>
<td>13%</td>
<td>100%</td>
</tr>
<tr>
<td>Doncaster</td>
<td>80%</td>
<td>16%</td>
<td>96%</td>
</tr>
<tr>
<td>Rotherham</td>
<td>82%</td>
<td>12%</td>
<td>94%</td>
</tr>
<tr>
<td>Harrogate</td>
<td>52%</td>
<td>37%</td>
<td>89%</td>
</tr>
<tr>
<td>York</td>
<td>49%</td>
<td>40%</td>
<td>89%</td>
</tr>
<tr>
<td>Leeds</td>
<td>62%</td>
<td>26%</td>
<td>88%</td>
</tr>
<tr>
<td>Barnsley</td>
<td>63%</td>
<td>24%</td>
<td>87%</td>
</tr>
<tr>
<td>Hull</td>
<td>49%</td>
<td>30%</td>
<td>79%</td>
</tr>
<tr>
<td>Bradford</td>
<td>31%</td>
<td>41%</td>
<td>72%</td>
</tr>
<tr>
<td>Sheffield</td>
<td>34%</td>
<td>37%</td>
<td>71%</td>
</tr>
</tbody>
</table>

Figure 8: Potential Total Glass Recycling Levels, by Conurbation

Out of those establishments surveyed, public houses and hotels showed the highest level of participation in glass recycling and restaurants the least, as shown in Figure 9.

Figure 9: Participation in Glass Recycling by LRE Type

The LREs not currently recycling their glass were questioned as to what factors would motivate them to participate in a glass recycling service. The most commonly selected response was ‘Environmental Pressure’ followed by ‘Cost Savings’. The percentage of responses given for each factor is illustrated in Figure 10 below. ‘Other’ commonly given reasons of motivation included a convenient and reliable service being available.
Figure 10: Motivations for Participation in Glass Recycling

In a previous study\(^5\) carried out by WRAP (Waste & Resources Action Programme,) ‘pressure to be environmentally friendly’ was also one of the most noted reasons given for recycling by LREs. However, ‘cost saving’ was identified as the strongest motivator.

3.1.2 Materials Collected

Within the population of LREs sampled, 24% of those having their glass collected by a commercial collector currently claim to colour-sort their glass for recycling. However, this statistic is unrealistically high considering that five out of the seven glass collectors interviewed as part of this Study only collect colour-mixed glass. The collectors most named as picking-up colour separated glass were Yorkshire Glass/Yorkshire Glass Ltd\(^6\) and GA & M Schuller. All three Collectors were interviewed and none currently collect colour-separated glass, although Yorkshire Glass Ltd has in the past. It may be that their long-term customers still perceive the service to be a colour-sorted collection.

Approximately one quarter of LREs who stated they were currently recycling glass reported to be doing so through a local authority collector or local bring banks. However, none of the Local Authorities covering the ten conurbations currently collect glass from commercial premises, highlighting a low level of awareness of collections. Of these LREs, just over half colour-separate their waste glass.

Of those LREs recycling, but not currently colour separating their glass, 32% would be willing to do so in the future. Combining those who currently are, with those who potentially would collect their glass colour separated, indicates that 56% of LREs across the 10 conurbations would colour separate their glass.

\(^5\) WRAP, 2004. Study of Glass Collection from Urban Licensed Retail Premises

\(^6\) These are two independent collectors, however survey respondents did not distinguish between the two
Licensed premises usually have a preference for mixed glass collection, principally due to the space and time required to colour-sort\(^7\).

When considering colour separation by conurbation, York has the largest number of LREs who state they are participating, followed by Doncaster. These areas do not however correspond with the areas covered by the two collectors currently accepting colour separated glass, Kerbside (Calderdale) and Creation Recycling. Yorkshire Glass Ltd covers the City of York in its collections and as stated above has collected colour-separated glass in the past.

Of those LREs currently colour-separating their glass, 45% are Public Houses and a further 32% are Bars or Sports/Social Clubs. It is therefore the LREs that are generating the lower quantities of glass arisings that are prepared to, or are currently, colour separating their glass. In these types of premises space constraints may not be a significant issue for the LRE.

In order to improve the profitability of glass collections from LREs it may be beneficial to collect other materials alongside glass. Respondents were therefore asked to name other materials they are currently recycling. The results are illustrated in Figure 11 below.

![Figure 11: Additional Materials Recycled by LREs](chart)

As the most commonly cited materials, cardboard and paper should potentially be considered as additional collection materials. However, there are other factors that are important in assessing which material, if any, are feasible to collect: additional collection costs, vehicle space filled, end market value, storage space required, contamination issues, etc..

\(^7\) WRAP, 2004. Glass Goes Green
During the in depth interviews carried out a current collector stated that they had previously trialled the collection of cans from LREs, in addition to glass. However, the trial was not rolled-out because it proved to be uneconomic. The quantity of cans arising from the LREs and the end market value of the material was not sufficient to offset the additional costs of operating a two-compartment vehicle, or to offset the volume of space lost for glass collection.

### 3.1.2 Collectors and Collection Costs

LREs were asked to select the type of collector they used; Commercial Collectors, Council/Local Authority, Bottle Banks or Other. The majority of respondents indicated they used a Commercial Collector (64%) as illustrated in Figure 12.

![Figure 12: Collectors of Glass Recycling](image)

From the stakeholder interviews carried out it was established that Local Authority glass collections do not exist, however 24% were under the impression their glass was being uplifted by a Local Authority. Furthermore, a significant number (12%) of recyclers indicated that they use domestic bring banks for the disposal of their commercial glass.

When assessed on an individual level, a similar trend was identified for each conurbation; commercial collectors were the most common type of collector for all areas, except Hull where Local Authorities were found to collect the most. Commercial collections were also the most common collectors for each establishment type, except private clubs, where Local Authorities were reported as more common.

Where respondents indicated that a commercial collector was used, they were asked to provide details of the collector. The most frequently cited collectors are shown in Figure 13 below, along with the conurbations they were recorded to operate in. It can be seen that 77 respondents cited a Local Authority as their collector however, from the depth interviews carried out, no Authorities were found to offer a recycling collection service, therefore bringing into question the accuracy of these responses.

<table>
<thead>
<tr>
<th>Commercial Collector</th>
<th>Count</th>
<th>Barnsley</th>
<th>Bradford</th>
<th>Doncaster</th>
<th>Harrogate</th>
<th>Hull</th>
<th>Leeds</th>
<th>ShearmanRo</th>
<th>Sheffield</th>
<th>Wakefield</th>
<th>York</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yorkshire Glass</td>
<td>35</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>GA &amp; M Schuller</td>
<td>18</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
In order to establish the current cost of glass recycling, participants were asked whether they paid for their glass recycling service, and if so, how much it cost. This information is of particular importance due to the identification of costs as a key motivator and perceived barrier to recycling.

Of those LREs surveyed, 40% reported that they were charged for their glass recycling service, 39% stated they were not and the remaining 21% did not know whether they were charged for the service. This could be due to the interviewee not being privy to the information, or to recycling and waste management being handled at a head office (61% of those that responded ‘don’t know’ were part of a chain).

Participants were asked to provide the cost of their current service; responses varied in format and included cost per bin, uplift, week, quarter and year. Initial analysis of these figures revealed huge variances in perceived costs, principally due to unreliable data provision on bin capacities and numbers, and confusion with general waste bins and collections. This suggests a lack of awareness of glass recycling and associated costs within participating LREs.

Due to the unreliability of the data, no further analysis on charges was carried out from figures provided by the LREs. Further information on collection charges can be found in Section 4 of this report.

Establishments separating glass for recycling have a potential cost saving in the form of reduced general waste costs. It has been found in a previous study that LREs are not opposed to paying for a glass recycling service, providing it is efficient, reliable and offers financial savings in comparison to their general waste disposal.

Each participant was asked if they would be prepared to pay certain fees ranging from £1 to £15 per uplift, supposing their general waste bill was £15 per uplift. The results of this are displayed in Figure 14 below. When asked whether they would participate in a free service, 94% of respondents said ‘yes’ and 6% said ‘possibly’.

---

**Figure 13: Commercial Collectors & Conurbations**

**Table:**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Possibly</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIFFA</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Brewery</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3B</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pick up skips</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Cleanaway</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Berryman</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Local Authority</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Other</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Don’t remember</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Based on LRE survey responses, Based on stakeholder interviews.

---

8 WRAP, 2004. Study of Glass Collection from Urban Licensed Retail Premises
From figure 14 it appears that 52% of LREs aren't or wouldn't be prepared to pay for a glass recycling service. This is a significant finding, as it is not viable to run a break-even or profitable collection service without a certain level of collection fee, unless, for example, a local authority were to run a service using existing vehicles, where only the costs of additional staffing need to be covered by the revenue from the glass.

When comparing the willingness to pay for current and potential recyclers, it is apparent that more potential recyclers are prepared to pay for recycling than current recyclers, as shown in the graphs below.
3.1.3 Tonnages Collected

In order to gain an estimation of the current tonnage recycled by the survey participants, they were asked to provide details of the size and number of bins they filled each week. However, following some initial analysis of this data its accuracy was put into question. It was believed that answers assumed all bins to be full, when in fact it is likely they often were not. The data was compared to information provided by WRAP and previous primary research conducted\(^9\) and found to have been well over-estimated.

WRAP Data

Due to the unreliability of the data collected, it was decided that information on establishments and their glass tonnage generation provided by WRAP would be used to assess each conurbation. This data split each LRE into types as used in this report, and assigned an average glass tonnage to each type, as shown in the table below.

<table>
<thead>
<tr>
<th>Establishment Type</th>
<th>Average Tonnage per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bar/Wine Bar/Café</td>
<td>0.272 tonnes</td>
</tr>
<tr>
<td>Casino</td>
<td>0.075 tonnes</td>
</tr>
<tr>
<td>Guest House</td>
<td>0.020 tonnes</td>
</tr>
<tr>
<td>Hotel</td>
<td>0.571 tonnes</td>
</tr>
<tr>
<td>Night Club</td>
<td>0.419 tonnes</td>
</tr>
<tr>
<td>Private Club</td>
<td>0.143 tonnes</td>
</tr>
<tr>
<td>Public House</td>
<td>0.138 tonnes</td>
</tr>
<tr>
<td>Restaurant</td>
<td>0.208 tonnes</td>
</tr>
<tr>
<td>Sports or Social Club</td>
<td>0.089 tonnes</td>
</tr>
</tbody>
</table>

Using the information above, and the recycling participation results per establishment type and conurbation, it has been possible to estimate the total glass tonnage available by conurbation, and the volume currently being recycled. These are displayed in Figures 18 and 19 below:
Figure 19: Map of Cullet Available (not currently recycled) and Recycling Rates by Conurbation

Figure 18 and 19 illustrate a number of key points. Firstly that Sheffield, followed by Leeds and York, have the largest tonnages of glass not currently collected for recycling. Secondly, Leeds has the highest tonnage of glass available and the highest tonnage currently estimated to be recycled. This is likely to be as a result of it being the largest and most densely LRE populated conurbation.

Finally they illustrate that Wakefield has the highest proportion of glass being recycled, followed by Barnsley, Doncaster and Rotherham. Harrogate is seen to be recycling the lowest proportion of cullet available.

3.1.4 Barriers to Glass Recycling by LREs

In the development of a new or improved service offering it is important to establish what the current barriers are to potential customers taking up the service. Respondents were therefore asked to provide reasons for not recycling.

As can be seen from the graph above, the largest proportion of LREs did not perceive there to be any barriers to glass recycling. In fact of those participants that are not currently recycling, 15% perceived there to be no barriers.

It was found that Wakefield and Rotherham had the highest number of participants who perceived no barriers to recycling. This is not surprising as both these conurbations had the highest current participation rates. York was found to have the least and this area currently has a low recycling participation.
rate.

Public Houses represented 36% of those respondents perceiving no barriers to recycling; the highest establishment type responding this way.

**Lack of Time**
The main constraint, selected by 24% of respondents, was ‘Lack of Time’ for recycling.

It was established that 49% of people who do not currently recycle reported lack of time to be prohibitive to recycling.

Public houses find time a constraint more than any other establishment type, with 42% of this response being from them.

**Cost**
Cost was also identified as a principle barrier to using a glass recycling service. In previous studies\(^\text{10}\), it has been identified that LREs who have participated in a free glass recycling service (perhaps as part of a trial) often feel aggrieved if a fee for the service is subsequently introduced. Of those who selected cost as a key barrier, 35% are known to have used the Recycle More Glass free collection service.

It is therefore critical to inform LREs of the potential cost-savings available by recycling their glass and reducing the quantities of their general waste.

---

**3.2 Collector and Local Authority Interviews**

**Background**
In order to gain information about the current glass collection services in operation and the current industry situation, key stakeholders in the region were interviewed, either face-to-face or by telephone.

**The Supply Chain**
The supply chain for LRE glass recycling can be split into three main stages; the production and sorting of waste glass by the LREs themselves, the collection of this glass by a suitable party and the delivery of the glass to the end market. This chain and the principle stakeholders involved at each key stage are illustrated in the diagram below.

---

\(^{10}\) WRAP 2004, Glass Goes Green
The Stakeholders

Representatives of the middle and end stages of the supply chain were asked to participate in this phase of the research and included five Local Authorities, four glass collectors, two recycling businesses and one glass merchant.

Between them, these stakeholders provide comprehensive coverage of the glass market and were able to discuss the barriers to future growth. A full list of respondents and their contact details is available in Appendix III.

Interviews and Results

The interviews aimed to gain information about the current industry situation and the perceived barriers to future growth. This information included:

- Area serviced
- General service offering information
- Vehicle information and capacity
- Pricing
- Materials collected and possibility for expansion
- Perceived barriers to growth
- Expectations for the future

The remainder of this section outlines the key points discussed in the interviews. A summary table of information provided by Collectors can be found in Appendix IV.

3.2.1 Local Authorities

Coverage

It was found that of the Local Authorities contacted, none currently offered a specific commercial waste collection for recyclables. This is due to them not having a remit to collect from licensed premises and not receiving recycling credits for doing so. Therefore, they are focused on domestic collections and the Landfill Directive.

In a small number of cases councils have placed public bring sites adjacent to
LRE premises, turning a blind eye to the commercial waste being recycled. All local authorities contacted provide collections for commercial trade waste.

**Costs**

On average it was found that Local Authorities offer a commercial trade waste collection at a cost of £5-£6 per uplift, as approximately £2 is charged per bag filled, although various charging policies were in operation (these are provided in Appendix II).

Where public bring sites are permitted to be located on LRE premises, the collection of commercial glass from the premises can be considered as free.

**Barriers**

As stated above, legislation is considered to be a key barrier to running a glass recycling service for commercial premises. Due to the nature of recycling credits and associated legislation it is necessary for Authorities to focus their resources on domestic recycling collections and services.

In addition to this, Authorities stated financial barriers to be important, for example the cost of setting up a service was seen as a significant barrier as well as availability of council resource.

**Future**

All the councils contacted were very keen to be kept updated with project progress and offered their services in promoting and marketing reliable glass collection services in their areas.

One Authority contacted was interested in being a potential collector.

### 3.2.2 Commercial Glass Collectors/Merchants

**Coverage**

In general, each collector interviewed offered a service in and around the large conurbations within close proximity to their base. This is due to the relatively high cost of collection, particularly fuel. It is simply not economic for them to operate outside a certain radius. However some services, such as that run by Berryman’s, have third party collectors acting on their behalf in order to extend their regional coverage.

More detail on the specific areas covered by the collectors interviewed is shown in Appendix IV.

**Costs**

Collectors charging by 240l bins operate at a charge of between £1 and £1.25, with 1100l bins costing around £6 per uplift. Other collectors charge quarterly for the service with costs varying from £65-£195. The value gained from this glass by collectors was found to be between £10 and £12 per tonne per bin.

**Colour-Separated Glass**

Of the collectors and merchants interviewed, only those which also operate household kerbside collections offer a colour-separated glass collection to LREs. It appeared that this offering is successful; however both companies had comparatively fewer LRE customers, due to commercial collections not
currently being the main focus of their business.

Collectors of colour-mixed glass felt that although a higher value could be gained for colour-separated glass, and therefore potentially a cheaper price charged to customers, it was envisaged that custom would be lost due to the time and space required by LREs to collect in this way.

---

**Additional Materials**

Once again only the collectors carrying out domestic kerbside collections currently accept additional materials to glass, predominantly metal and cardboard. As this service is offered to only a small number of premises its success is difficult to gauge.

Berryman’s have previously collected additional materials, but found they lost weight on the vehicle due to the space taken up by these. Approximately two tonnes of glass was being displaced per load collected and as such a reduction in profit was noted.

Collecting additional materials requires the use of a split compartment vehicle, causing a shift in the economics of collection, which essentially renders the collection less profitable.

From a waste analysis carried out in a previous study by WRAP, it has been found that in terms of weight of mixed materials collected, glass accounts for over 70% and materials such as metals and card account for less than 5% each. However, when analysed by volume the spread was much more, even with card and plastic being particularly high contributors. It was therefore concluded that collecting these additional materials is not a profitable exercise, particularly when further issues of non-compaction and contamination are considered.

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**Barriers**

A commonly mentioned barrier to expanding glass collection services was the difficulty in collecting payments from customers, one collector commented:

“50% of establishments pay on time, 20% have to be chased for payment and the remaining 30% just won’t pay.”

It was evident that collectors were operating to tight margins and as such did not have the resources or budgets to facilitate debt collectors to chase missing payments. The same is true for marketing and promotion, and as such recruiting new establishments to the service appears limited.

A further barrier to expansion was the fuel and travel costs associated with servicing a wider geographical area. As such, custom has to be turned away if it is not economically feasible to collect due to high diesel costs.

Lastly, ‘understanding/education’ of LREs is seen as a barrier to service expansion. LREs do not fully understand the possible cost reductions in their general waste collections if they recycle the glass element. This was highlighted by the running of a free glass collection by Recycle More Glass in the past.

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**Future**

Most collectors contacted were very keen to expand their services, predominantly through increasing route densities. Expanding collection areas, due to the associated increase in collection costs, was not preferable.

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**3.2.3 Summary**

**Key Findings**

Through the use of stakeholder interviews a comprehensive understanding of the current industry situation has been gained. It appears that the key barriers identified to future growth of commercial glass collections are:

- **Legislation** – encourages Local Authorities to focus on domestic recycling rather than commercial collections.
- **Financial** – available funds are required to operate an efficient business, leaving little for marketing or debt collection.
- **Time** – small businesses do not have the time or resources available for marketing and promotion or payment chasing.
- **Education** – LREs do not fully understand that there are cost savings to be made on their waste bill through recycling glass.

In addition, recruitment of additional LREs by current collectors is most likely to happen through increasing route densities, rather than the costly option of extending routes further a field.
4. Phase 2 - Economic Models

Introduction From the results of the stakeholder interviews and a review of collection costs associated with the WRAP funded projects of LREs, it has been possible to establish estimates of the cost per tonne for the collection of glass from commercial premises, as well as the estimated income generated from the services.

An economic model for both colour-mixed and colour-separated glass collections has been developed and is outlined below. The model suggests the optimum level for charges for maximum profit to be made.

4.1 Costs of Collection (Colour-mixed Glass)

Introduction From the results of the stakeholder interviews, workshop and a review of collection costs associated with WRAP projects on LREs, it has been possible to establish estimates of the cost per tonne for the collection of glass from commercial premises, as well as the estimated income generated from the services.

An economic model for both colour-mixed and colour-separated glass collections has been developed and is outlined below. The model suggests the optimum level for charges in order to maximise profits.

Assumptions For the purpose of developing an economic model (see 4.2 below), a number of assumptions and estimations have been made. These are as follows:

- The average LRE produces 280kg of glass each week (Estimated through information provided by WRAP and previous work on LRE glass collections carried out in Glasgow\textsuperscript{12})
- A Rear End Loader (REL) vehicle would be used, with a maximum payload of 12 tonnes
- The REL would service approximately 60 LREs per day, with the vehicle having one drop-off per round
- The REL would operate at a maximum efficiency where no charge is made for collection
- The cost of collection is therefore £16.95 per tonne

The table below illustrates some further assumptions that have been made with regard to the collection costs incurred.

\textsuperscript{12} WRAP 2005, Glass Collection from Licensed Premises. Glasgow.
Colour-mixed Model

From the willingness to pay graphs (Figures 14-16), an estimate of the price elasticity of collection charges can be made. The graphs show that as the collection charge is increased, demand for the service drops away.

The table below shows the effect of increasing the collection charge on profit per tonne and collection costs.

<table>
<thead>
<tr>
<th>Collection Costs</th>
<th>End Market Value</th>
<th>Collection Charge per Bin</th>
<th>Collection Charges per Tonne</th>
<th>Spare Capacity on Vehicle</th>
<th>Profit/Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>£16.95</td>
<td>£13.00</td>
<td>£0</td>
<td>0</td>
<td>0%</td>
<td>-£3.95</td>
</tr>
<tr>
<td>£23.54</td>
<td>£13.00</td>
<td>£1</td>
<td>£13.00</td>
<td>28%</td>
<td>£2.45</td>
</tr>
<tr>
<td>£36.06</td>
<td>£13.00</td>
<td>£2</td>
<td>£26.00</td>
<td>53%</td>
<td>£2.93</td>
</tr>
<tr>
<td>£60.54</td>
<td>£13.00</td>
<td>£3</td>
<td>£39.00</td>
<td>72%</td>
<td>-£8.54</td>
</tr>
<tr>
<td>£113.01</td>
<td>£13.00</td>
<td>£4</td>
<td>£52.00</td>
<td>85%</td>
<td>-£48.01</td>
</tr>
<tr>
<td>£242.17</td>
<td>£13.00</td>
<td>£5</td>
<td>£65.00</td>
<td>93%</td>
<td>-£164.17</td>
</tr>
</tbody>
</table>

Figure 23: Estimated weekly costs for colour-mixed glass collections

As can be seen from Figure 23, the profit per tonne is maximised when a charge of £13 per tonne is levied; this equates to a charge of between £1 - 2 per 240l bin. As the charge is increased there is a drop-off in profit until £39 per tonne is charged (approximately £3 per 240l bin), when a loss is incurred.

4.2 Costs of Collection (Colour-separated Glass)

Assumptions and Costs

For the purpose of developing a profit per tonne figure for colour-separate collections, a number of estimations and assumptions have been made. These are as follows:

<table>
<thead>
<tr>
<th>Driver Costs</th>
<th>Vehicle Lease</th>
<th>Insurance and Tax</th>
<th>Vehicle Fuel</th>
<th>Bin Costs</th>
<th>No of Premises</th>
<th>Weekly Tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>£420</td>
<td>£550</td>
<td>£55</td>
<td>£266</td>
<td>£66</td>
<td>300</td>
<td>84</td>
</tr>
</tbody>
</table>

Figure 24: Estimated weekly costs for colour-separated glass collections

- The average LRE produces 280kg of glass each week (Estimated through information provided by WRAP and previous work on LRE glass collections carried out in Glasgow\textsuperscript{13})

\textsuperscript{13} WRAP 2005, Glass Collection from Licensed Premises. Glasgow.
The split between flint and other colours is 70/30 (although this is highly variable due to changes in public taste, special promotions etc.)

The total collected from the LREs would be 58.8 tonnes of flint per week.

A total of 25.2 tonnes of other colours would be collected per week.

The cost of collection is therefore £16.15 per tonne.

The end market value of flint is £31 per tonne (£1,822.80 per week.)

The end market value for ‘other mixed colours’ is £13 per tonne (£327.60 per week.)

The average end market price for the glass is therefore £25.60.

Profit per Tonne

The profit per tonne for colour-separate collections can therefore be estimated at £9.45 per tonne. This appears to be the more attractive option for collectors, however, due to the following it remains a scarcely offered service:

- Lack of willingness by LREs to participate in colour-separated collections (due to time and space limitations) makes achieving sufficient route density extremely difficult and collectors’ costs would escalate with increasing the length/coverage of routes.

- This would imply that collectors would be running partially full vehicles, which would significantly affect the costs of supply of such a service.

- Collection costs would be affected by changes in the colour split of glass (drinks promotions, changing tastes, etc) due to the space available for particular colours in the vehicle.
5. Phase 3 – Stakeholder Workshop and Dissemination

Introduction
The Stakeholder Workshop was held on the 1st August 2006, at the British Glass offices in Sheffield. All those invited to participate in the stakeholder interviews were also invited to attend this workshop. Attendance was good on the day, with 20 delegates participating from 14 companies. The attendee list can be found in Appendix V.

Purpose
The purpose of the Workshop was to present the results of the project, as detailed in this report. It also provided an opportunity for collectors, merchants and local authority representatives to discuss the project results; particularly the economic modelling and recommendations.

Presentations
The Workshop was lead by RAY, with Valpak presenting the project-specific information. Both organisations gave a number of presentations as detailed below. A copy of the day’s agenda can be found in Appendix VI.

- Introduction to the organisation and purpose of the project (RAY.)
- Topline results and findings from the LRE telephone survey, including: current and future glass recycling rates, collectors used and tonnage availability by conurbation (Valpak.)
- A summary of stakeholder interviews carried out including Local Authority, glass collector and glass merchant opinions (Valpak.)
- Economic appraisal, conclusions and recommendations, including: economic models for colour separate and colour mixed collections and report conclusions and industry recommendations (Valpak.)
- Summary of funding and support available to collectors in Yorkshire and Humber (RAY.)

All presentations were well received. Copies of the slides are downloadable from the RAY website and were to be emailed to all participants. They can be found in Appendix V of this report.

Stakeholder Discussion
Delegates were invited to ask questions throughout the presentations or afterwards in a discussion period. The main points of interest were as follows:

- Some concerns were raised about figures used in the economic model, particularly over fuel and labour costs. Both figures have since been adjusted to reflect these comments.
- A discussion took place on the selection criteria that will be used by RAY in choosing the proposals to be funded. Overall those proposals offering best value and largest potential collection tonnages would be favoured; smaller collection companies were advised to submit joint bids (e.g. with a local authority), to increase their weighting.
- Attendees agreed that a regional marketing campaign for commercial glass collections would be welcomed and that they would be happy to support RAY as required.
# 6. Conclusions

## Introduction
Following the analysis and interpretation of all the information collated throughout this study, the following conclusions can be drawn:

## Collectors
There are approximately ten principal glass collection companies operating in the urban areas of Yorkshire and Humber, however none of these companies operate across the whole of the area and some even have gentleman’s agreements as to which areas they will collect in.

## Collection Charges
Current glass collectors charge approximately £1-2 per 240l bin. This is well below the average general waste collection charge of £5-6 per 240l bin.

In accordance with the assumptions made in Section 4 and the price elasticity graphs in Section 3 of this report, the profit per tonne for collectors is maximised when a charge of £1 – 2 per 240l bin is levied.

LREs have a very low awareness of the real cost (or cost savings) of recycling their glass and this makes it very difficult to increase charges.

## Colour-separated Collections
Although colour-separated collections are potentially a more profitable form of collection (£9.45 per tonne versus £2.93 per tonne colour-mixed) is highly unlikely that an efficient route density would be achieved due to lack of willingness to participate in glass separation by LREs.

## Collection Tonnages
Using the figures provided by WRAP in conjunction with the participation percentages drawn from the LRE Survey, it can be estimated that in the urban conurbations of Yorkshire and Humber a total of:

- 52,656 tonnes of Commercial glass is available annually.
- 25,250 tonnes is being recovered.
- 27,406 tonnes remains to be recovered.
- 2,818 LREs participate in glass recycling.

There is currently not sufficient vehicle capacity to cope with this additional material, however if sufficient demand existed, the majority of the stakeholders would increase their capacity.

## Conurbation Profiles
Minimal difference in profile between various conurbations limits any benefit of considering collection of commercial glass on a conurbation by conurbation basis. However, Sheffield, Bradford, York and Harrogate are the conurbations were the lowest percentage of available glass is being recovered, and Leeds is the conurbation with the largest actual tonnage still to be recovered.

## Potential
The potential participation level for glass recycling amongst LREs is good –
### Participation Levels

84% in Yorkshire and Humber as a whole (range 71-100% by conurbation).

### Additional Materials

Although cardboard and paper are currently collected from 23% percent of LREs (23% recycle one or both of these), information gathered in the Stakeholder interviews and in previous research by Valpak suggests that the additional cost of collection of these materials does not benefit the economics of glass collection.

### Barriers to Glass Collection

Only 33% of LREs considered there to be no barriers to participating in glass collections. Lack of time (24%), space (20%) and costs (15%) were cited as the principle barriers. This highlights a number of problems:

- LRE’s are not aware that glass bins should, on the whole, replace general waste bins, minimising the additional space required for glass recycling.
- The collection of glass is perceived as an additional cost, rather than a cost saving.

Furthermore, 9% of LREs reported a lack of awareness of any glass recycling services in their area.

### Local Authority Services

Bar one or two, Local Authorities in the area are not interested in setting-up commercial glass collection services. However all offer some form of collection of commercial trade waste.

### Marketing and Awareness

There is generally a very low level of awareness of glass collection services amongst LREs. There are many misconceptions as to the services being offered, the companies providing the services and the cost of the services. This suggests LREs view the services offered as unimportant to their business and the service providers undifferentiated.

Until the levels of awareness and interest can be raised, it will be difficult to change LREs attitudes towards paying for glass collection services and to increase the profitability of running a collection service. This financial restriction potentially limits expansion opportunities for current collectors.
7. Recommendations

**Introduction**

In order to increase the levels of commercial glass collected from the urban areas of Yorkshire and Humber, Valpak propose the recommendations given below. They are made in response to the conclusions drawn earlier in this report and discussions held at the Stakeholder Workshop.

**Optimise Collection Charges**

To enable profits to increase, services to grow and sustainability within companies, the charges made for commercial glass collections and therefore ‘willingness to pay’ by LREs needs to increase. This will primarily be achieved through marketing activities (see below) focused on spreading the message that recycling the glass element of general waste will reduce their overall waste bill.

Furthermore, improving and minimising debt collection could significantly improve profits, improve cashflow within a business and free-up operational staff. Invoicing in advance or use of a debt collection agency could be considered.

For growth to be sustainable, collectors should look to increase their profit margin in this way, before increasing route density.

**Increase & Co-ordinate Marketing Activities**

In order to facilitate a change in the willingness to pay of LREs, a regional marketing campaign should be initiated by RAY. This would increase awareness amongst current and potential recyclers as to the benefits of recycling glass and the cost savings that can be made. It would also serve to differentiate the service.

**Develop Business Partnerships**

A ‘one-stop-shop’ option for both waste disposal and recycling will provide LREs with a reduced-hassle, reduced-cost service.

Such an option could be developed in partnership with a local authority or general waste management company operating in the area. The benefits to collectors of this type of partnership would be:

- Recycling not seen as an additional cost.
- Payment becomes part of a larger process – more routine and reliable.
- Co-ordinated replacement of general waste bins and recycling bins.
- Access to a wider target market.

An alternative would be to develop partnerships with other commercial glass collectors working in complementary areas. This way economies of scale can be gained, experience and knowledge pooled and a larger brand exploited.

**Expand Service Offering**

The provision of additional services may assist in increasing tonnages collected (eg shared commercial bring banks) or improve the economics of collection.
In order to address issues such as lack of marketing and poor payment history, commercial glass collectors should engage with business support services that can provide advice and training in these areas.

For example, WRAP’s Senior Management Training scheme offers recycling businesses financial support to train senior executives in all areas of business management. Successful applicants can claim up to £5,000 towards costs for training courses, long-distance learning, attending seminars/workshops and mentoring/coaching.
Appendix I

Copy of LRE Questionnaire

This survey is being conducted for Recycling Action Yorkshire, and other partnership organisations, to establish attitudes towards glass recycling within licensed premises. The results from the survey will be used to develop an improved service offering to licensed premises. All responses will be treated in confidence and results will only be reported in aggregated form.

---

**Background Information - please check details and amend where necessary**

1. Establishment Name: __________________________________________________________
2. Establishment Postcode: ________________________________________________________
3. Telephone Number: __________________________________________________________
4. Your establishment is part of the ______________________ ___________________________ group/chain
5. Business Type: ______________________

6. Your Name: ______________________

7. Your Position: ______________________

---

**Glass Waste**

8. Do you currently get a glass recycling service?
   Yes ☐ No ☐ go to Q14

9. Who collects your glass?
   Council ☐ Commercial ☐ Collect ☐
   Please give name ____________________________

   Take to a bottle bank ☐

10. Is there a cost for this collection?
    Yes ☐ No ☐ Please specify charges (for each material) ____________________________

11. Which container(s) do you use to collect/store your glass in and how many do you fill per week?

    No of bins filled per week Type of Bin

     ________ 120 litre wheeled bin(s)
     ________ 240 litre wheeled bin(s)
     ________ 360 litre wheeled bin(s)
     ________ 660 litre wheeled bin(s)
     ________ 1100 litre wheeled bin(s)
     ________ 1280 litre wheeled bin(s)
     ________ Other, please detail ________________________________________

12. Do you separate the glass by colour?
    Yes ☐ No ☐ No, but willing to collect separated ☐

13. Are there any issues/disadvantages with your current glass collection service?
    No ☐ Yes ☐ Please give details ________________________________________________
14. Have you previously collected glass for recycling?
Yes ☐    No ☐ please go to Q17

15. Who was your previous collector? ________________________________

16. Why did collections stop?
_________________________________________________________________
_________________________________________________________________

17. Would you be interested in participating in glass recycling if an appropriate service was available?
Yes ☐    No ☐ please give details ________________________________

18. What would motivate you to recycle glass?
Cost Savings ☐   environmental Pressure ☐
Staff Pressure ☐   Company Policy ☐
Consumer Pressure ☐   Other, please detail ☐
Costs ☐

19. What would prevent you from recycling glass?
Lack of Space ☐   Lack of Training ☐
Health and Safety ☐   Time Constraint ☐
Insufficient Demand ☐   Other ☐

20. If separating and recycling glass from your general waste saved the establishment approximately £5 per uplift on the waste bill, how much would you be willing to pay for a glass collection service? Please indicate your willingness to pay on each of the scales below.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>£1 per uplift</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>£2 per uplift</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>£3 per uplift</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>£4 per uplift</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>£5 per uplift</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>£6 per uplift</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

21. Who collects your general waste?
Council ☐    Private ☐  Company ☐ please give name

42
22. Do you separate anything else for recycling?
No ☐ Yes ☐ please specify materials:

<table>
<thead>
<tr>
<th>Material</th>
<th>Selection</th>
<th>Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminium cans</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Steel cans</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Cardboard</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Do you have any further comments about glass collection services/recycling?
## Appendix II – Conurbation Profiles

<table>
<thead>
<tr>
<th>Region</th>
<th>Recyclers</th>
<th>Reclaimers</th>
<th>Dealers</th>
<th>Bankers</th>
<th>Brokers</th>
<th>Scrapyard</th>
<th>Councils</th>
<th>Private</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yorkshire</td>
<td>105</td>
<td>120</td>
<td>150</td>
<td>200</td>
<td>250</td>
<td>300</td>
<td>400</td>
<td>500</td>
<td>1000</td>
</tr>
<tr>
<td>Humber</td>
<td>110</td>
<td>130</td>
<td>160</td>
<td>210</td>
<td>260</td>
<td>320</td>
<td>430</td>
<td>540</td>
<td>1080</td>
</tr>
</tbody>
</table>

### Data Table

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass Collection from LREs in Urban Centres of Yorkshire and Humber August 2006</td>
<td></td>
</tr>
<tr>
<td>Glass Collection from LREs in Urban Centres of Yorkshire and Humber August 2006</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix III – Interviewed Stakeholder List and Contact Sheet

<table>
<thead>
<tr>
<th>Local Authority / Company</th>
<th>Contact Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leeds</td>
<td>David Bailey</td>
</tr>
<tr>
<td>Wakefield</td>
<td>Jay Smith</td>
</tr>
<tr>
<td>Kingston-upon-Hull</td>
<td>Doug Sharp</td>
</tr>
<tr>
<td>Rotherham</td>
<td>Dale Otter</td>
</tr>
<tr>
<td>York</td>
<td>Sara Goodhead</td>
</tr>
<tr>
<td>GA &amp; M Schuller</td>
<td>David Schuller</td>
</tr>
<tr>
<td>Yorkshire Glass Recycling Limited</td>
<td>Mick Christlow</td>
</tr>
<tr>
<td>Yorkshire Glass Recycling</td>
<td>Nick Cosworth</td>
</tr>
<tr>
<td>Kerbside Calderdale</td>
<td>Paul Brannigan</td>
</tr>
<tr>
<td>GRUK</td>
<td>Michael Durr</td>
</tr>
<tr>
<td>Berryman</td>
<td>Mick Keogh</td>
</tr>
<tr>
<td>Creation Recycling</td>
<td>Richard Penycate</td>
</tr>
<tr>
<td>Yorwaste</td>
<td>Norman Bowstead</td>
</tr>
</tbody>
</table>
## Appendix IV – Collector Profiles Table

<table>
<thead>
<tr>
<th>Service Offered</th>
<th>Berrymede Recycle</th>
<th>Kirkdale (Calderdale)</th>
<th>GA &amp; M Schillers</th>
<th>Yorkshire Glass Ltd - Selby</th>
<th>Yorkshire Glass Ltd - Beverley</th>
<th>YouWaste</th>
<th>Creation Recycling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Work with subcontractors who collect the glass and pay the value of it. They work with Schillers, Yellowbook and Yorkshire Glass. Recycling.</td>
<td>Primarily offers kerbside recycling to households, but is currently participating in a WRAP project to offer a recycling service to local businesses.</td>
<td>Offers a mixed glass collection service to around 1000 LREs from a base in Doncaster. This is passed to Berrymede.</td>
<td>Offers a mixed glass collection service to over 6000 LREs from a base in Selby. This is passed to Beverley.</td>
<td>Offers a mixed glass collection to around 3000 LREs in the West Yorkshire area. This is passed to Beverley.</td>
<td>Private waste collects company operating in the Yorkshire County Council area. 77% owned by York County Council and 23% owned by York City Council. Are not currently collecting glass.</td>
<td>Offers a household kerbside collection as well as a service to a small number of commercial premises.</td>
</tr>
<tr>
<td>Service Area</td>
<td>Covers the major concentrations in Yorkshire &amp; Humber including Leeds, Sheffield, Doncaster, Wakefield and York.</td>
<td>Covers the Calderdale area.</td>
<td>Covers the following concentrations: Doncaster, Redditch, Walsall, Chesterfield, Sheffield, Barnsley, Castleton, Wetherby, Tadcaster, Sherburn, Knottingley and Thorn.</td>
<td>Covers the following concentrations: Selby, Bradford, Haxby, Harrogate, Ripon, York, Ryedale, Bingley, Scarborough, Wharfedale, Knaresborough, Otley.</td>
<td>Based in Wakefield and serves West Yorkshire.</td>
<td>Operates in Rotherham and just over the border on the edge of Sheffield (generally within 10 mile radius of main city).</td>
<td></td>
</tr>
<tr>
<td>Colour Separated</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Service Offered</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Additional Materials</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Metals have been added to the collection previously but it was found that they lost weight on the load of up to 2 tonnes. Therefore separate vehicles would be required to run clear additional materials.</td>
<td>Currently collect cardboard and metals in addition to colour separated glass.</td>
<td>How linked into cardboard collection, but LREs don’t process it and anticipate problems with contamination and payment collection.</td>
<td>Interested in collecting cardboard in addition to mixed glass, seven examples.</td>
<td>Would not collect additional materials due to problems of contamination. However, is interested in colour separated glass and would charge less for this, although feels they would have to increase as LREs prefer to recycle as mixed.</td>
<td>Would not collect commercial waste and have focused on card and office papers for recycling.</td>
<td>Glass collected colour separated and also cans and cardboard.</td>
<td></td>
</tr>
<tr>
<td>Personnel Barriers to Growth</td>
<td>Lack of differentiation between commercial waste and glass.</td>
<td>People don’t like paying.</td>
<td>Unable to collect.</td>
<td>Cost operate profitable, fairly high when due to fuel costs. Therefore had to cut customers further out away.</td>
<td>Competition from WRAP, although they offer a lower service if appears they are cheaper as offer a full waste service.</td>
<td>Effective waste and initial capital required to set up service.</td>
<td>Businesses are switched to pay Staff turnover in LREs. Fuel costs and need more vehicles.</td>
</tr>
<tr>
<td>Future</td>
<td>Will only expand collection service through third parties.</td>
<td>Will be interested in expanding their service and providing collection for RAY in the Calderdale and Ring area.</td>
<td>Would be interested in increasing route density in existing area, rather than expanding further out.</td>
<td>Would like to increase route density and collect cardboard.</td>
<td>Would be interested in increasing route density rather than expanding further out due to fuel costs.</td>
<td>Interested in increasing route density in the Yorkshire County Council region.</td>
<td>Interested in increasing route density in the Rotherham region.</td>
</tr>
</tbody>
</table>
## Appendix V – Stakeholder Workshop Attendee List

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthur Ready</td>
<td>GreenStar</td>
<td>Group Commercial Manager</td>
</tr>
<tr>
<td>M Miles</td>
<td>3B</td>
<td>Managing Director</td>
</tr>
<tr>
<td>E Dooth</td>
<td>3B</td>
<td>Sales</td>
</tr>
<tr>
<td>A Widdisow</td>
<td>Rotherham Borough Council</td>
<td>Recycling Support Technician</td>
</tr>
<tr>
<td>S Singleton</td>
<td>Salford University</td>
<td>Student</td>
</tr>
<tr>
<td>M Keogh</td>
<td>Berryman</td>
<td>General Manager</td>
</tr>
<tr>
<td>S Hope</td>
<td>Berryman</td>
<td>Recycling Manager</td>
</tr>
<tr>
<td>D Schuller</td>
<td>GA &amp; M Schuller</td>
<td>Partner</td>
</tr>
<tr>
<td>N Cosworth</td>
<td>Yorkshire Glass Recycling</td>
<td>Director</td>
</tr>
<tr>
<td>B Topham</td>
<td>Aire Valley Recycling</td>
<td>General Manager</td>
</tr>
<tr>
<td>C Mackins</td>
<td>Kerbside (Calderdale)</td>
<td>Admin/Development</td>
</tr>
<tr>
<td>G Williams</td>
<td>Biffa Waste Services</td>
<td>Regional Manager</td>
</tr>
<tr>
<td>P Clayson</td>
<td>Biffa Waste Services</td>
<td>Development Manager</td>
</tr>
<tr>
<td>A Gittins</td>
<td>Pacter Environmental Services</td>
<td>Product Development</td>
</tr>
<tr>
<td>Frank Nicholson</td>
<td>Yorkshire Glass Recycling Ltd</td>
<td></td>
</tr>
<tr>
<td>Michael Christlow</td>
<td>Yorkshire Glass Recycling Ltd</td>
<td>Director</td>
</tr>
</tbody>
</table>
Appendix VI – Stakeholder Workshop Presentations