

UNIVERSITY OF SOUTHAMPTON

FACULTY OF ENGINEERING, SCIENCE AND MATHEMATICS

School of Civil Engineering and the Environment

Household Bulky Waste Collection and Re-use in England

Anthony Curran

Thesis for the degree of Doctor of Philosophy

October 2007

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

FACULTY OF ENGINEERING, SCIENCE AND MATHEMATICS
SCHOOL OF CIVIL ENGINEERING AND THE ENVIRONMENT

Doctor of Philosophy

HOUSEHOLD BULKY WASTE COLLECTION AND RE-USE IN ENGLAND

Anthony Curran

Household bulky waste is predominantly furniture, electrical appliances and IT equipment. Householders in England have several options for discarding bulky items they no longer want. The most prevalent of these are provided by local authorities, and tend to focus on disposal, primarily to landfill, rather than recovery, by means of refurbishment and re-use or recycling. Another option if items are salvageable is donation to charitable organisations, which exist throughout England driven by the need to supply low-cost household furniture and appliances to people in hardship. The re-use of items in this way is generally superior, environmentally, to local authority disposal, and creates social benefits to the recipients of recovered bulky items and the volunteers, often the long-term unemployed or socially excluded, who help to run the charities.

This research has made a thorough assessment of current management practices for household bulky waste in England. Local authority collections services for bulky waste were evaluated, and the potential for re-use and recycling assessed. The current and potential role of re-use organisations was then evaluated, and operational changes that would be required to maximise the recovery of household bulky waste in England were identified.

It was found that re-use of local authority-collected bulky items is currently far below capacity, at only 2-3%, whilst re-use organisations reuse approximately 85% of the items they receive. Local authorities tend not to have the infrastructure to enable re-use. Charitable re-use organisations, on the other hand, were established for this very purpose, and establishing good working partnerships between local authorities and re-use organisations will be key to improving recovery in this waste stream. Promoting a better understanding of the social as well as environmental benefits of furniture and appliance re-use would help to bring about the change in attitudes, and then behaviour, of local authority waste managers to enable this to be achieved.

CONTENTS

Abstract.....	ii
Contents.....	iii
Tables.....	iv
Figures.....	vi
Boxes.....	vi
Declaration of authorship.....	vii
Acknowledgements.....	viii
1. Introduction.....	1
2. An evaluation of council bulky waste collection services in England.....	16
3. Collected household bulky waste in England – potential for re-use and recycling..	50
4. Management of household bulky waste in England.....	65
5. The role of furniture and appliance re-use organisations in the UK.....	85
6. Maximising the recovery of household bulky waste in England.....	112
7. General discussion.....	128
8. Conclusions.....	138
Appendix I. EC <i>Science for Environment Policy</i> digest of Chapter 4.....	143
Appendix II. The operation of re-use organisations, in pictures.....	144
Appendix III. Council bulky waste collections – telephone interviews sheet	147
Appendix IV. Bulky item disposal survey.....	148

TABLES

2.1. Available methods of requesting a bulky items collection.....	21
2.2. Bulky items collection charge systems in use in England.....	22
2.3. Accepted methods of payment for bulky items collections.....	25
2.4. Wait time for bulky items collection.....	26
2.5. Bulky items collection systems in operation in England.....	29
2.6. Collected bulky items management.....	36
2.7. Bulky items web-page rating system.....	37
2.8. Demand for bulky items collections.....	41
2.9. Demographic and system differences between district authorities and other authority types.....	44
2.10. Distribution of charges and discounts by population density and deprivation level.....	45
3.1. Previous recovery estimates of collected bulky waste.....	51
3.2. Required sample composition by authority type and charge.....	53
3.3. Current re-use of collected bulky items.....	56
3.4. Current recycling of collected bulky items.....	56
3.5. Average demand by level of charge.....	58
3.6. Composition of council-collected bulky waste.....	59
3.7. Conceptual bulky waste re-use and recycling based on composition.....	60
4.1. Tools employed to improve household waste management in England.....	67
4.2. Household bulky waste categories.....	70
4.3. Estimated throughput of bulky items, by method of disposal.....	72
4.4. Actual and claimed future disposal methods of bulky items.....	73
4.5. Disposal methods for bulky items, by deprivation.....	74
4.6. Claimed re-use potential of bulky waste categories.....	75
4.7. Average charges for bulky items collections.....	76
4.8. Residents' satisfaction ratings of bulky items collections.....	76
5.1. Summary of data sets used in the study.....	88
5.2. Classification of re-use organisations by staff headcount.....	92
5.3. Material throughput of re-use organisations (by supply) in 2006/07.....	93
5.4. Sources of incoming items in re-use organisations.....	96
5.5. Distribution of labour in re-use organisations in 2006/07.....	97
5.6. Final destinations of bulky items collected by re-use organisations.....	106

FIGURES

2.1. Bulky items collection charges and discounts.....	22
2.2. Charge for collecting 3 bulky items.....	23
2.3. Proportion of councils offering free and/or reduced charge collections.....	24
2.4. Separate collection of bulky items.....	30
2.5. Seasonal trends experienced in bulky waste collections.....	32
2.6. Items not accepted on bulky waste collections.....	33
2.7. Types of vehicle used to collect bulky items.....	35
3.1. Vehicles used to collect bulky waste.....	55
3.2. Demand for bulky waste collections.....	58
4.1. Categories of the household bulky waste stream.....	70
4.2. Disposal methods for bulky items.....	71
4.3. Quality of discarded items by deprivation level.....	74
4.4. Length of wait from request to collection of bulky items.....	76
5.1. Schematic representation of the coverage of organisations included in the study.....	89
5.2. Distribution of furniture re-use organisations, England and Wales, 2007.....	90
5.3. Growth of the sector, from FRN Survey 2005 data.....	91
5.4. Re-use in 160 organisations in 2006/07.....	94
5.5. Turnover in 238 re-use organisations in 2006/07.....	94
5.6. Destination of items distributed by re-use organisations by client group.....	103
6.1. Throughput of household bulky waste for each disposal route.....	115
6.2. Contribution of individual disposal routes to re-use rate.....	119

BOXES

2.1. Typical bulky items collection process.....	20
2.2. Bulky items collection process in Bath and North East Somerset Unitary Authority.....	28
2.3. Bulky items collection process in the London Borough of Croydon.....	31
2.4. Recommended content for a council bulky waste collection service web-page...	39
5.1. A “typical” re-use organisation.....	98
5.2. An “advanced” re-use organisation.....	100

ACKNOWLEDGEMENTS

Dr Ian Williams is first and foremost acknowledged for his expert and faithful supervision, and the subtle manner of its delivery.

Also, Dr Sonia Heaven for her encouragement, and willing and incisive guidance as second supervisor; Paul Smith, Craig Anderson and Caroline Lee-Smith of the Furniture Re-use Network, for freely giving of their professional knowledge on the sector which they are such an important part of; Finally, the many local authority waste management officers and re-use organisation managers for providing the data on which this research is based.

1. Introduction

Household bulky waste includes large and heavy items, predominantly furniture and electrical appliances, which are not generally collected in regular refuse or recycling waste collection rounds. Local authorities in England provide a separate collection service for this type of waste, usually for a small charge, and provide Household Waste Recycling Centres (also known as civic amenity, or CA, sites) where householders may take their bulky waste free of charge. Easily separable metal items are usually recycled, and the standard disposal routes for the remaining waste are transport via a transfer station to a landfill site or an incinerator. A large number of charitable organisations (approximately 400) run free collection services in almost all areas of the country and will collect items that are still in good condition or can be repaired. Many of the items collected in this manner will be re-distributed to individuals and families on low income who may otherwise go without basic household effects, some of whom are at high risk of becoming homeless.

This waste stream is of interest from a research perspective because of the social as well as environmental benefits associated with the re-use of bulky items. Other elements of household waste are increasingly being diverted from landfill to be managed using more environmentally sustainable methods including recycling, composting or emerging technologies such as anaerobic digestion. A key distinction between bulky waste and other local authority-collected wastes is that bulky items are products in their own right, and may become waste for reasons other than simply being no longer of any use (such as: purchase of a newer model; when moving home, especially two people deciding to move in together, or people emigrate; and when a property becomes void (occupier dies)). Some discarded bulky items can therefore potentially be passed on for further use, resulting in social benefits to the charitable organisations and their predominantly volunteer workforce, and the recipients of the items. It was established that very little research has been conducted to date to assess the current practice and future potential of this waste stream.

It was identified from the initial forming of this research project that the management of household bulky waste would require more than the relatively straightforward approach of assessing how best to deal with the material from a technical, waste management

view, using quantitative methods; the economic outputs and socio-political implications must also be considered. This issue has been encountered on two levels throughout the project:

- In the bulky waste management sector itself: there is a lack of joined-up thinking across the relevant local authority departments (waste management, social services, housing, homelessness unit), borne of the separated managerial and physical structure of departments and their budgets. This in turn makes it more difficult to establish effective partnerships with other organisations such as third sector furniture re-use charities; and
- In the conduct of the research: the cross-sectorial nature of managing bulky waste best lends itself to a multidisciplinary approach, requiring formation of a research group covering the relevant disciplines.

The term ‘partnership’ is used extensively throughout this thesis; to clarify its use from the outset, previous work in this field is referred to: “*partnership here is simply defined as ‘an arrangement existing between two or more organisations in working towards a commonly defined goal’*” (Davies, 2002, page 191). It can be seen that this definition is equally applicable to joint working of organisations in the delivery of waste services and the multidisciplinary grouping of institutions conducting research in this field.

Petts et al (2008) discussed the challenges of an interdisciplinary approach in the context of research in the urban environment. These included overcoming the epistemological structural differences mentioned above as well as reconciling the physical barriers such as geographical separation and lack of support/cooperation from and between the academic institutions involved. Petts et al identified these barriers in a series of seminars attended by researchers and policy makers between 2003-04, and found that:

“In the urban environmental contexts that grounded the series discussions it was evident that many pressing issues...do indeed require the integration of knowledge from a wide range of disciplines and sources.” (Petts et al, 2008, page 600)

These sentiments were echoed by Davoudi (2006), who reported on the limitations of focusing on a technical-rational approach (that is, a positivist approach; the use of

scientific/technical evidence) to waste planning at the regional level, to the neglect of sufficient attention to the social dimension. Davoudi explains that attempts to improve the evidence base for urban waste policy draw on the “*growing governmental emphasis on more evidence-based policy*” and is reflected in the “*growing pressure on research-funding bodies to...support research which is not just useful but also useable within the short time cycle of policy-making*” (Davoudi, 2006, page 681). The research reported in this thesis is an example of this, as explained further below.

Davoudi argued that the positivist approach favoured by regional waste planning bodies, placing “*the emphasis on the production of a ‘technical’ report...was perceived as an ‘objective’ assessment of alternative waste-management options*” (Davoudi, 2006, page 685). After examining several factors which distinguish the technical-rational model from postpositivist approaches (more favoured in the social sciences), Davoudi comments on the shortcomings of the technical-rational model:

“The perceived distinction between the ‘technical’ and the ‘social’ acted as a barrier to the inclusion of different forms of knowledge and its free flow from one arena to another.” (Davoudi, 2006, page 692)

For this study, the work conducted under this PhD candidature used a science/engineering approach (principally national and quantitative), and was combined with that of researchers from the Anthropology Department of Goldsmiths University, London, who used ethnographic methods. Bringing together the work from the two approaches required a degree of resolution of epistemological differences – contrasting points of view on how to best frame the overall research questions and the relevance of the various research methods employed. This was facilitated by establishing clear delineations between each partner’s role from the outset.

The reader should bear in mind, therefore, that this thesis does not attempt to address the problems of how to best manage household bulky waste in a complete way, but to contribute the technical, quantitative evidence, and discuss this within the context of the bigger picture – including the economic, social and political angles. Upon completion of work at both institutions involved in this study (University of Southampton and Goldsmiths College) the researchers brought together their respective work and produced a joint academic presentation (Williams, 2008) and a joint paper (Alexander et

al, forthcoming), which should be referred to for a broader discussion of the issues surrounding this research. Alexander et al (forthcoming) pointed out the “*complexity in evaluating the success and potential of the furniture re-use organisations’ operations as a whole, as opposed to simply addressing quantities diverted, or profits generated; a complexity that is foregrounded where inter-sector collaborations can highlight different, if not conflicting aims*”. Justifying the multidisciplinary approach used, Alexander et al (forthcoming) states that: “*As a contribution to ameliorating this impasse [of recycling-biased performance targets imposed on local authorities being contradictory to government exhortations to support the third sector], this paper also discusses the different ‘families’ of evaluation methodologies, and the advantages and limitations of each, where a far more nuanced assessment of furniture re-use organisations’ worth is required than that provided by any single methodology*”.

Turning to the second issue of this research falling within the sphere of multiple sectors, the impact in the management of bulky waste itself, some of the barriers to implementing effective recovery schemes through establishing partnership-working between public and third-sector organisations are seen to be common to those identified by Petts et al (2008) in conducting research in this field. These include

- Divergent opinions by different stakeholders as to how the issue is framed and then tackled;
- Selection of the aspects to be prioritised being dependent on the school of thought of the decision-maker; and
- That space and time for meetings to share knowledge and discuss issues is required for successful schemes, but is rarely achieved due to the cost and difficulty involved.

The consultancy Network Recycling, in work commissioned by Defra (Department for the Environment, Food and Rural Affairs) under the *local authority support* stream of the Waste Implementation Programme, looked at the bulky waste collection infrastructure, and reviewed the different management processes being employed and re-use and recycling rates being achieved. Their literature review (Reeve, 2004a) identified the wider issues surrounding sustainable management of household bulky items, which included the need for acknowledgement of the wider benefits of re-use

schemes. Reeve summarised that “*there is significant amounts of bulky items currently being discarded*” and that “*there is a potential market for selling on goods for re-use to people on lower incomes*” (Reeve, 2004a, page 25). Reeve concluded that local authorities would be justified in investigating schemes to divert “*what could potentially be a significant untapped resource of discarded household bulky items*” (Reeve, 2004a, page 25) from landfill/incineration to be reused. Network Recycling’s survey report defined what they regard as a ‘good practice’ bulky items collection service: after compliance with regulations, “*it will also have addressed cross-cutting themes impacting on other policy areas such as socio-economic, for example training for the long term unemployed and the provision of low cost goods to those in need*” (Reeve, 2004b, page 8). In their summary commentary, some of the factors highlighted as restrictive to moving to good practice were:

- The internal culture of local authorities – within the waste department and the political backing by Councillors – in terms of willingness to implement change;
- The vague legal requirements to provide bulky item collections; and
- The need for organisations involved in the bulky item collection process to want to work together and to have clear lines of communication.

Network Recycling’s related Barriers Report (Reeve, 2004c) went on to identify the following barriers which currently limit the implementation and success of recovery-focused systems for household bulky waste:

- The current focus of waste culture by central government – cursory acknowledgement of the waste hierarchy, then vast majority of initiatives and targets directed at recycling over re-use;
- Lack of joined up thinking across authority departments, borne of ignorance of the potential benefits of bulky item re-use to social services departments (provision of employment and training) and housing departments (provision of low cost items to those in need);
- Poorly developed engagement and communication with all involved stakeholders, including re-use organisations, residents and other departments;
- The need to develop an intellectual knowledge base as well as practical experience in delivering a good practice bulky item collection system;

- The perceived financial cost of re-use initiatives (Reeve suggested that it can be cost neutral in reality), together with a lack of recognition of the financial and social benefits to other departments (social services, housing). Suggestion that cross-departmental cost-benefit analysis is required; and
- Lack of confidence in the commercial viability of re-use organisations.

Defra's commissioning of an evaluation of the bulky waste collection infrastructure showed that central government at least is making some effort to review current practice and the prospects for delivering improvements. Network Recycling's findings served to emphasise the need and timeliness for this PhD project in three ways in particular:

- In providing the intellectual knowledge base, backed up by comprehensive evidence and data;
- Identification and some quantification of the potential benefits – including social and economic outputs in addition to service improvements and increased material recovery; and
- Assessing the scope for/requirement of partnerships in delivering these benefits.

It remains to be seen whether the more recent emphasis by central government in acknowledging the value of the third sector and supporting their involvement in managing waste (Davoudi, 2006; Alexander et al, forthcoming; Reeve, 2004a) is successfully transformed into action at the local authority to regional level.

A furniture re-use initiative in the North East of England was investigated in 2005 to determine the role of governance and partnership working in developing sustainable waste management policy (Askins and Bulkeley, 2005). The Haverton Hill Furniture Re-use Scheme was a pilot project involving the local authority, the sub-contracted waste management company and two local furniture re-use charities to enable furniture re-use at Haverton Hill Civic Amenity site. Using semi-structured interviews with key members of staff and the public, the study examined the operation of the scheme, the challenges of partnership working and the 'added benefits' of the scheme as perceived by each partner. It is of interest to note how these added benefits varied for each partner:

- The local authority (waste management department) – the social benefits were the ‘add ons’: providing low cost furniture, training for long term unemployed, local employment and volunteering as social rehabilitation;
- The waste management company – the social benefits, as improving their public image were the extras, but in no way influencing their decision-making; and
- The charities – the social benefits were the key aims, and waste reduction and any environmental benefits were the ‘add ons’.

Localised studies such as this one are valuable in identifying the potential benefits and the issues involved in handling bulky waste; in this case those of partnership working, to the respective partners. From the outset it was the objective of this programme of research to investigate such networks for dealing with bulky items in terms of their operation, their participants and different views of success, including the technical (efficiency of collection, etc) and socio-economic. It was decided that adopting a national perspective would allow a more comprehensive assessment of current collection operations, the potential benefits of improving bulky waste management, and the scale of existing barriers to their achievement. Returning to the multidisciplinary approach of the wider research project, the findings of this study’s national, quantitative work were complemented with the more qualitative and localised focus adopted by Goldsmiths College, which had some advantages in identifying the more subtle social implications of improving bulky waste management practices. Alexander et al (forthcoming) explained that *“this mismatch of objectives and operations [between organisations] can become problematic in the case of funding partnerships where the diffuse benefits generated by Community Waste Sector operations are not fully remunerated by LA departments that are driven by narrowly focused Best Value Performance Indicators”*.

After making recommendations of *“closer co-operation between public/ private sector collection agencies and community furniture re-use schemes”* and *“closer co-ordination over re-use and recycling strategies between Waste Collection Authorities and Waste Disposal Authorities”*, Alexander et al (forthcoming) conclude that *“successful inter-sector co-operation requires mutual understanding of the organisational, duty of care and funding constraints on all parties”*.

The work of Colin Williams on the informal economy (production and sale by paid workers of unregistered/undeclared products and services for tax and welfare purposes, which are otherwise legal) focused on the public policy approaches and initiatives that should be employed to tackle this issue (e.g. Williams, 2005). Some recurring issues in the social economy identified by Williams are also evident in the bulky waste/re-use sector, for example: the lack of recognition and support for the sector's value in public policy guidance; and that more research (evidence) and publicity, together with legitimisation/promotion of the social and economic benefits of the informal sector are required to increase their impact. Williams highlights the current stigma attached to operators in the informal economy, arguing that such self-employed entrepreneurs could contribute significantly to the economy if aided. Another bulky waste-related concept within the realm of the social economy that should be mentioned is that of 'ridding' – of items not seen as waste but for which there is no longer a place in the household. Such objects tend to have a sentimental value for the owner or are in working order and are therefore placed, explicitly, where they might be picked up and reused by someone else. See Gregson (2006, 2007) for discussion of how ridding actions are connected to identity and social relations of family and home.

It has been established above that strategic waste policy initiatives promoting third sector engagement are starting to emerge at the national level. In an assessment of partnership development for sustainable communities, Davies noted that *"Within UK policy circles, multi-sector partnerships...are seen as an important mechanism whereby sustainable development can be operationalised and in particular local governance structures can be strengthened"* (Davies, 2002, page 190). In more recent work on the role of the third sector (labelled 'civil society' therein) in waste management in Ireland, Davies refers to the range of economic, social and environmental contributions brought by community-based organisations, and states that *"despite these benefits, the sector remains small and at the margins of policy-making"* (Davies, 2007, page 64). Further, *"this neglect of civil society is surprising given the pivotal role governments...have accorded to this sphere of governance for attaining sustainable development"...* *"civil society remains the Cinderella of waste governance"* (Davies, 2007, page 53).

The release of Waste Strategy 2007 (Defra, 2007) towards the end of this project typifies one of the major difficulties of conducting policy-related research: the fast turnaround of what is ‘current policy’. Davoudi (2006) comments on the risks of conducting ‘near-policy’ research, noting that *“it is inevitably selective, focusing on those areas of policy which are perceived as having more political leverage”*, and citing that the *“pressure to respond to legislative and regulatory drivers (including stringent targets) has occurred at such a pace that little room has been left for research inputs”* (Davoudi, 2006, page 682). It will be seen, however, that in the case of Waste Strategy 2007 the risk that this entails in making a research project redundant or less important did not occur; rather some of the suggested new policy imperatives were inline with and gave more credibility to the findings and recommendations of the research.

Work by others relating to particular areas of this research have been reviewed, and are discussed in context in the appropriate sections of the following chapters.

This thesis brings together the constituent parts of the research conducted in respect of PhD candidature. Each of Chapters 2 to 6 has been published separately as a journal paper or within peer-reviewed, international conference proceedings (Chapter 5 is in the process of being published at the time of submission). These are set in context below. Chapter 7 provides a general discussion and critical evaluation of the results of the preceding chapters and considers the most important findings further, and Chapter 8 draws out the overall conclusions of the research, and makes some recommendations for further work.

The overall aim of this project was to assess the collection and disposal operations for household bulky waste in order to identify factors that contribute to performance and technical efficiency. Individual objectives were to:

1. Assess bulky waste collections by local authorities, including volumes/types of materials arising and current disposal/recovery routes;
2. Classify and evaluate the operation of furniture recovery schemes nationally; and
3. Use findings from the above to make recommendations to improve the operational effectiveness, and to maximise recovery opportunities of bulky waste collections.

Chapter 2: An evaluation of council bulky waste collection services in England.

Published in the *CIWM Scientific and Technical Review*, September 2006 (ref. on p. iv).

This chapter forms the basis of the work to satisfy objective number 1. A very comprehensive, national assessment of local authority bulky waste collections is made, focusing on operational issues and current collection and disposal methods.

Other issues of note contained in this chapter, that are extra to the original objective, include:

- An assessment of the quality of information provided by local authorities to the public;
- The creation of a rating system which was applied to all local authorities in England; and
- A discussion on the elasticity of demand for local authority bulky waste collection services.

In July 2007, the candidate and supervisors were awarded the James Jackson Award by the Chartered Institution of Waste Management for this paper, for the best formal written research paper in 2006.

Chapter 3: Collected household bulky waste in England – potential for re-use and recycling.

In the *Proceedings of Waste 2006*, September 2006 (ref. on p. iv).

This chapter completes the outstanding requirements of objective 1 by assessing the volume and composition of household bulky waste collected by local authorities. It goes on to consider the potential for re-use and recycling of this disposal route, and identifies the barriers which currently prohibit the potential recovery rates. This serves to form some of the groundwork required for objective 3 to be achieved.

Chapter 4: Management of household bulky waste in England.

Published in *Resources, Conservation and Recycling*, July 2007 (ref on p. iv).

This chapter complements Chapter 2, also therefore contributing to objective 1, by reviewing how household bulky items are discarded from another point of view: that of the householder. This research identified other methods used by householders to discard bulky items, broadening the research boundaries to include the whole bulky waste stream. This enabled the subject of the first two objectives of the overall PhD – each only one of the disposal options for household bulky waste – to be set in the appropriate context, i.e. the actual environment of bulky waste disposal in England, and appraised more accurately. The data collected for this chapter was a direct pre-requisite to Chapter 6 and thereby the achievement of objective 3.

This paper was summarised for the European Commission's *Science for Environment Policy* digest, appearing in the 12th July 2007 edition. This is reproduced at Appendix I.

This paper was also presented at the *Tackling Waste 2006* conference held in Nottingham by the Waste and Resource Management Network (WARMNET) on 6th-7th July 2006. See www.warmnet.org.uk for details of this conference.

Chapter 5: The role of furniture and appliance re-use organisations in the UK.

Yet to be published.

This chapter makes a thorough assessment of furniture recovery schemes across the UK, to fulfil the requirements of objective number 2. In addition, the work completed for this chapter informed Chapter 6 and was thus an essential step towards achieving objective 3 and satisfying the overall aim of the PhD.

It is intended to present the findings of this chapter at the Furniture Re-use Network's annual conference in January 2008. This is attended by the practitioners of furniture and appliance re-use – project managers, and is regarded by the candidate as a key dissemination event in an informal sector unlikely to be reached by academic conference presentations and journal publications.

Chapter 6: Maximising the recovery of household bulky waste in England.

In the proceedings of the *Eleventh International Waste Management and Landfill Symposium*, October 2007 (ref on p. iv).

This chapter builds directly on the work presented in Chapter 4, and to a lesser extent, all of the earlier research, to achieve objective 3. A more in-depth investigation of the disposal methods for household bulky waste and the potential for improving material re-use and recycling in each of these led to recommendations for operational changes that would be required to maximise recovery in the waste stream as a whole.

In addition to the five papers summarised above, this research has been written up as a book chapter for *LONGER LASTING SOLUTIONS: Advancing sustainable development through increased product durability (provisional title)*, edited by Dr Tim Cooper of Sheffield Hallam University. This is expected to be published in the near future; the sole-authored chapter by the candidate has passed through the review stage and is awaiting final acceptance. It was decided not to include this work in the thesis, because the elements of it that are relevant to the objectives of the PhD are contained in the other papers.

This research has contributed to existing knowledge and thinking in this subject area in several ways. The principal of these are stated below, and discussed as appropriate in the general discussion (Chapter 7):

- Determining the overall picture (national level) of how local authority bulky waste collection services operate.
- An assessment of the quality of information provided to the public about bulky waste collections services, including creation and application of a rating system.
- New data on the weight of collected bulky waste, and number of collections and items discarded, annually for England and per person/per household.
- A new data set of weights of individual bulky items, including a composition for collected bulky waste, an indication of potential re-use and recycling rates for collected materials, and a new list of average weights for bulky items.
- An estimation of the volume of household bulky waste discarded in England annually.

- Identification of the disposal routes used, and the throughput for each of these.
- Evidence to support how the level of deprivation is related to the quantity of bulky waste generated, its condition at the time it is discarded, and the disposal methods used to discard it.
- An evaluation of local authority bulky waste collection services in terms of customer satisfaction.
- An assessment of the number and size of furniture and appliance re-use organisations in the UK, including the development of an augmented classification system for the size of organisations, based on the Micro, Small and Medium-sized Enterprises (SME) definition.
- A thorough investigation of the operating methods of re-use organisations, the environmental and social benefits associated with their operation, and their current level of involvement with local authority bulky waste collection services.
- An evaluation of the current and potential levels of re-use and recycling for each disposal method and for household bulky waste as a whole.

Many of the contributions to the research area listed above are tools which can be of use to the researcher, policy maker or practitioner. Equally important is the analysis of these findings, which is discussed in each of the following five chapters, and the resulting formulation of recommendations for how these findings can be applied, and further developed. These are stated in the concluding chapter.

This study was funded by the Engineering and Physical Sciences Research Council (EPSRC), and is part of a wider programme of research by the Sustainable Urban Environment Waste Consortium in the UK (see www.suewaste.soton.ac.uk for further details). The findings from the candidate's work, contained herein, will also be used by the project partners at Goldsmiths University, London, to develop an augmented cost-benefit methodology that takes into account the social, technical and environmental as well as economic costs and benefits associated with charitable and informal re-use initiatives.

The work of furniture and appliance re-use organisations helps to improve the standard of living of several hundred thousand of the most deprived people across the country

each year. The national level, statistics-driven approach maintained throughout this research should not be allowed to overshadow the more qualitative, sociological impacts of this sector, and Appendix II has been created to offer some evidence to support this. On a personal note, I feel fortunate in having had the opportunity to contribute to this worthy subject area, and hope that other researchers may continue from where my work ends, to the ultimate benefit of the wider society.

REFERENCES

Alexander, C., Curran, A., Smaje, C. and Williams, I.D., *forthcoming*. An evaluation of bulky waste and furniture re-use schemes (corresponding author: Catherine Alexander, Department of Anthropology, Goldsmiths College, University of London, London SE14 6NW, UK, Phone: +44 (0)20 7919 7808, E-mail: c.alexander@gold.ac.uk).

Askins, K. and Bulkeley, H. (2005) Governing sustainable waste management: Haverton Hill Furniture Re-use Scheme, available from <http://www.dur.ac.uk/geography/research/researchprojects>, accessed 15 April 2008.

Davies, A. (2002) Power, politics and networks: shaping partnerships for sustainable communities, *Area* (2002), Vol. 34, No. 2, pages 190-203.

Davies, A. (2007) A Wasted Opportunity? Civil Society and Waste Management in Ireland, *Environmental Politics*, Vol. 16, No. 1, pages 52-72.

Davoudi, S. (2006) The evidence-policy interface in strategic waste planning for urban environments: the 'technical' and the 'social' dimensions, *Environment and Planning C: Government and Policy*, 2006, vol. 24, pages 681-700, ISSN 1472-3425.

Defra (2007) Waste strategy for England 2007, available from <http://www.defra.gov.uk/environment/waste/strategy/strategy07/pdf/waste07-strategy.pdf>, last accessed 16 October 2007.

Gregson, N. (2006) *Living with Things*, Sean Kingston Publishing.

Gregson, N., Metcalfe, A., Crewe, L. (2007) Identity, mobility and the throwaway society. *Environment and Planning D: Society and Space*, 2007, Issue 25, No. 4, pages 682-700.

Petts, J., Owens, S. and Bulkeley, H. (2008) Crossing boundaries: Interdisciplinarity in the context of urban environments, *Geoforum*, Vol. 39 (2008), pages 593-601.

Reeve, S. (2004a) Local Authority Good Practice Assessment in the Re-use and Recycling of Household Collection Bulky Item Waste Stream – Literature Review, Network Recycling for Defra.

Reeve, S. (2004b) Local Authority Good Practice Assessment in the Re-use and Recycling of Household Collection Bulky Item Waste Stream – Survey Report, Network Recycling for Defra.

Reeve, S. (2004c) Local Authority Good Practice Assessment in the Re-use and Recycling of Household Collection Bulky Item Waste Stream – Report to Defra on barriers facing local authorities in moving to good practice, Network Recycling for Defra.

Williams, C.C. (2005) Formalising the informal economy: the case for local initiatives, *Local Government Studies*, vol. 31, no.3, pages 337-351.

Williams, I.D. (2008) Waste Benefit and Management Schemes, Strategies and Technologies for Sustainable Urban Waste Management Symposium, 21 April 2008, London, available at www.suewaste.soton.ac.uk/secure%20pdfs/13-SUE-Waste-Williams.pdf, last accessed 4 May 2008.

2. An evaluation of council bulky waste collection services in England

ABSTRACT

Bulky household items of furniture and electrical appliances are either taken by residents to a Household Waste Recycling Centre or collected by the local authority. There are 354 waste collection authorities in England, and for this study the website of each authority was reviewed and evaluated in order to determine the coverage and quality of the bulky household waste collection services in operation. A sub-set of fifty-one councils were selected for follow-up telephone interviews to verify the accuracy of information available on the websites and to gain a deeper understanding of the associated logistical and operational issues.

Information was collected regarding the charging system in use, the collection process and the extent of recycling and reuse of collected items. The set-up and operation of bulky waste collection systems are decided at the discretion of individual councils, and as a result a myriad of different systems exist, with no two being identical.

Approximately 28% of councils do not charge for collection. The remainder make a charge, most usually related to the number of items being collected. The average charge for 3 items to be collected is £18, although 43% of councils that charge will collect items from residents on a low income for free or at a reduced rate. The standard waiting time for collection is 7 to 10 days.

Each council was awarded a score reflecting the content and presentation of its bulky waste web page. Eight councils scored zero for failing to advise residents of how to dispose of their bulky items, whilst 92 councils received the highest score of 3 points. Eighty-six councils recommended the use of a furniture or appliance refurbishment and reuse organisation where practical.

The factors affecting demand for bulky items collections are discussed, and the disposal routes for collected bulky items are identified. Charging for bulky items collections, and the quality of the collection service, are related to population density and deprivation levels. Rural, affluent district councils charge more often for collecting bulky items.

Case studies are provided to illustrate good practice and a recommended content for the provision of information on bulky waste on local authority websites is suggested.

KEYWORDS

Bulky waste, local authorities, websites, collection services, England

INTRODUCTION

Bulky household waste is generally defined by councils as: *'any large items that you would normally take with you when moving house'*. It includes furniture and electrical appliances but usually excludes fixtures and fittings such as doors and bathroom suites. There is no clear guidance from the Government about what is deemed to be 'bulky waste'; only that Waste Collection Authorities have a duty to collect such items and *'may recover a reasonable charge for the collection'* as laid down in the Environmental Protection Act 1990 and Schedule 2 of the Controlled Waste Regulations 1992. As a result there are many variations on what is regarded as a bulky item, and the manner in which such items are collected. Almost all of the 354 councils in England with a responsibility to collect household waste provide a separate service for collection of these items.

Bulky waste collections comprise a relatively small portion of total household waste: the Department for Environment, Food and Rural Affairs (henceforth Defra) classifies bulky waste collections amongst 'other household sources', which also include litter picking and street sweeping services. Together these amounted to 1.2 million tonnes in 2003/04, less than 5% of the 25.4 million tonnes of household waste collected across England (Defra, 2005). The Chartered Institute of Public Finance and Accountancy (CIPFA), in their annual waste collection and disposal statistics for 2000/01, reported that 525 000 tonnes of bulky waste was collected separately in England (CIPFA, 2002). This figure is a grossed estimate, taking account of missing values and non-responding authorities.

The authorities included in this study can be sub-divided into 273 Waste Collection Authorities (WCAs) and 81 Unitary Authorities (UAs); the distinction being that UAs

are also responsible for disposal of waste whereas WCAs hand over the waste to their parent Waste Disposal Authority (WDA), usually the county council, for disposal. Councils may be further sub-divided by region and to allow comparison between urban and rural areas:

- 239 district councils
- 36 metropolitan boroughs
- 33 London boroughs
- 46 other unitary authorities

The collected bulky waste stream lags behind other household wastes in terms of being targeted by local authorities for recycling or reduction. Metals are often scrapped (recycled), but authorities still regard the collection of bulky items as a service they are required to provide rather than an opportunity for reuse, recycling and reduction of materials disposed of to landfill or via incineration.

A larger number of bulky items are disposed of by residents at Household Waste Recycling Centres (HWRCs; note: use of this term encompasses Civic Amenity (CA) sites) than are collected by councils. The waste consultancy organisation Network Recycling was commissioned by Defra to assess local authority good practice in the reuse and recycling of collected household bulky items; as part of this work they reviewed the literature on the current management of the bulky waste stream (Reeve, 2004a). One report estimated that 35% of HWRC waste arisings are bulky items; this would amount to 2.2 million tonnes based on Defra (2005) figures. Two analyses comparing HWRC and collected bulky items concluded that council-collected items are in poorer condition than items discarded at HWRCs. One of these reports suggested that 19% of collected bulky items were assessed as being easily reusable compared to 59% of the items discarded at HWRCs. In Liverpool the social enterprise 'Bulky Bobs' collects all bulky waste on behalf of the council; thirty-five percent of items collected in 2003/04 were reused or recycled (Rankin, 2005).

There are around 300 organisations in operation that will collect and pass on large household items to those who may not be able to afford to buy them new. These

enterprises are united under the national Furniture Reuse Network (FRN), whose members pass on 1.5 million household items per year, diverting 63 000 tonnes of waste from landfill (FRN, 2005). The way in which collection authorities run their bulky waste service can greatly help or hinder the success of these organisations. To an overstretched council waste department the bulky collection service may be a burden of compliance and no more, but the reuse of items has economic and social benefits in addition to improving the sustainable management of resources. Members of the FRN employ around 5000 workers and supply household effects to hundreds of thousands of low income families annually. In most areas of England it would not be difficult for a council to refer residents with reusable items to a reuse organisation. This study has assessed to what extent this happens at the present time.

Network Recycling's good practice assessment included a survey to establish current bulky items collection practice and identify the drivers and barriers in managing bulky items (Reeve, 2004b). The study is informative but limited in data; it is based on surveys from only 30 WCAs (and 17 reuse organisations and 4 county councils). An output from the study was a 'toolkit and good practice guide' (Reeve and Cunningham, 2004). This presents a good practice scenario for bulky items collections that council waste officers may follow, and a method to self-assess their current performance and potential to improve the different aspects of their collection service delivery.

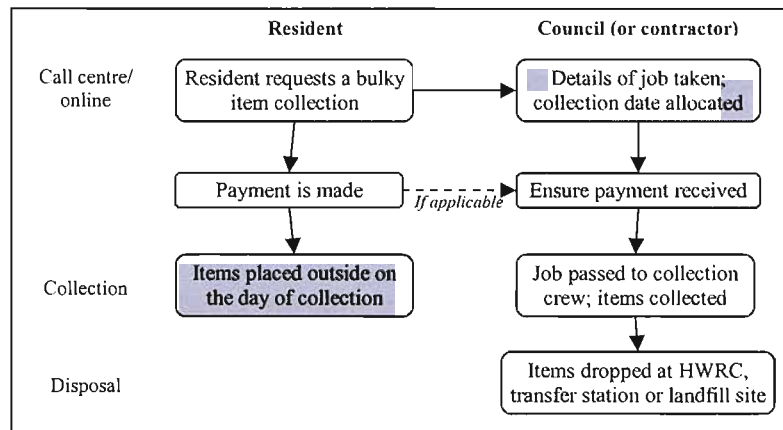
In order to provide a picture of local authority bulky waste collection services in England, this snapshot study aimed to evaluate:

- Current systems in place for collecting bulky waste across the country;
- Information provided about bulky waste collections by local authorities to the public; and
- Current and potential future recycling and reuse of discarded bulky items.

The collection system

Household bulky waste is collected from residents on request. Often called a 'special collection service' by councils, its operation is more similar to hazardous and clinical

waste collections than to regular domestic refuse collections. Box 2.1 outlines a typical process for arranging and carrying out the collection of bulky items. A more detailed breakdown of the component elements of the system is contained in Network Recycling’s survey report (Reeve, 2004b).



Box 2.1. Typical bulky items collection process.

METHODOLOGY

The websites of all waste collection authorities in England were accessed for information on their bulky waste collection systems. This information was compiled to create a national database of bulky waste collection service provision. Fifty-one authorities were subsequently telephoned as a validity check on the content of information presented on council websites, and to determine how the operation of the services varies and how collected bulky items are disposed of. The telephone interviews included speaking to the call centre (the public face of the service) and to the waste management officer or operations supervisor in charge of running the service.

Population and population density figures were taken from Census 2001, available online from the Office of National Statistics website (ONS, 2005a). Indices of deprivation were obtained from the Neighbourhood Statistics section of the same site (ONS, 2005b). The ‘DirectGov’ website (DirectGov, 2005) was used as the definitive listing of councils after checking against the Census 2001 listing, and individual websites were accessed via this site.

RESULTS AND DISCUSSION

Requesting a bulky items collection

The methods used to request a bulky items collection are summarised in Table 2.1. Most councils prefer collections to be arranged by telephone, with over three-quarters allowing this approach. The use of a telephone involves a two-way passage of information, ensuring the council receives all necessary details of the request, and enabling the costs and collection date to be confirmed to the resident. The alternative is for the resident to send written details to the council – more councils now advocate using electronic means, either completing a form on the council’s website or sending an email, than the more time-consuming method of a paper form sent by conventional mail.

Table 2.1. Available methods of requesting a bulky items collection (n=234).

Method of request	Number of councils (%)
By telephone	181 (77%)
Complete a paper form	80 (34%)
Complete a form online	59 (25%)
By email	34 (15%)

Collection charges

The majority of councils make a charge for collecting bulky items, as shown in Figure 2.1. The charges made for bulky items collections were provided on councils’ websites more often than any other variable concerning the bulky items collection service, with 272 councils reporting this information – 77% of the total. Each council decides on its own charging system. As a result there are many different systems in place, as summarised in Table 2.2. The most usual system is a graduated charge based on the number of items requiring collection. It is possible that charging a fixed price (or not charging) for collecting bulky items can lead to abuse of the service, with residents disposing of bags of refuse or small items that could be taken on the regular refuse round or to the local HWRC.

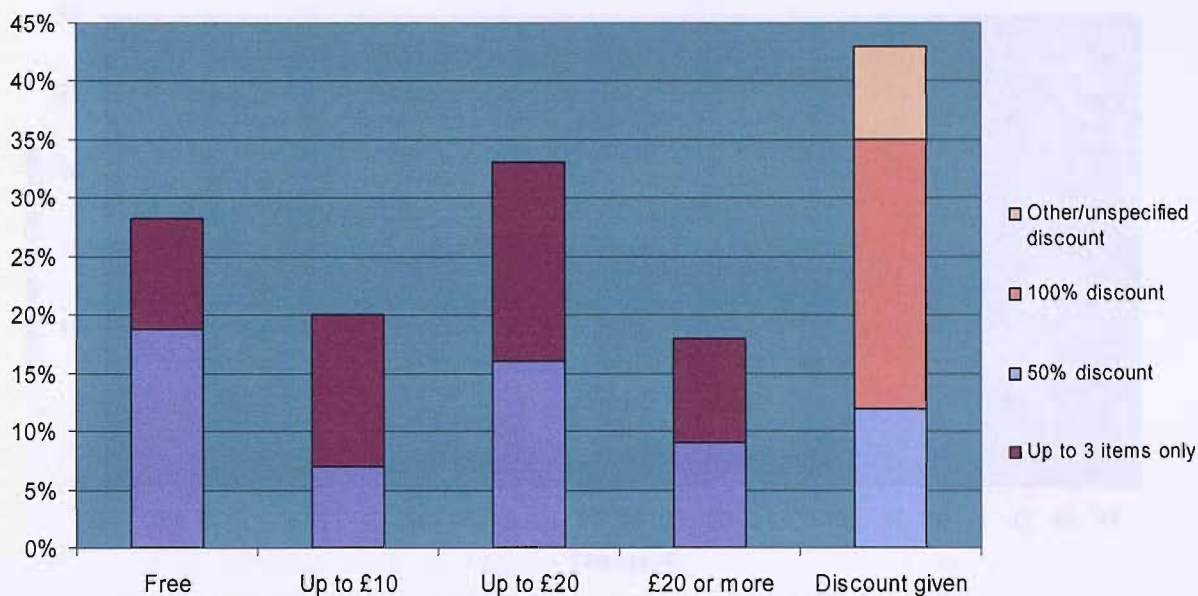


Figure 2.1. Bulky items collection charges and discounts (based on 272 WCAs).

Table 2.2. Bulky items collection charge systems in use in England.

Type of charge	Freq.	Examples
Centrally funded (to an extent)	77	<i>No charge, no limits</i> (Manchester CC, Durham CC, <i>inter alia</i>) <i>Up to 8 items, three collections per year</i> (Sunderland CC)
Charge related to number of items	168	<i>£10 for up to 3 items</i> (Eden DC, Cumbria, London Borough of Sutton, <i>inter alia</i>) <i>£15 for up to 5 items, then £2 per additional item</i> (Nuneaton and Bedworth DC)
Fixed charge	61	<i>£10 per visit</i> (Bolton Metropolitan Borough Council) <i>£35 per load</i> (Christchurch BC, Dorset)
Time	5	<i>£5 per 10 minutes at the property</i> (Barrow-in-Furness BC, Cumbria)
Price list	3	<i>Bicycle - £10.05, Table - £10.50, Wardrobe - £21.00, etc</i> (East Hampshire DC)
Other	9	Charge based on weight or volume of items, or items assigned 'unit' values.

Of the 72% of councils that make a charge, almost half charge more than £10 and less than £20. Half of the councils will only collect up to 3 items for this price. Looking at the charge for collecting a fixed number of items allows for comparison across councils, as illustrated in Figure 2.2. The charge for collecting 3 items was used because this is the most commonly used by councils – allowing for a 3 piece suite, a table and chairs, or up to 3 white goods or pieces of furniture to be collected together. Figure 2.2 shows that the most commonly applied charges are £10 and £15, each adopted by 25 councils of the 188 included in this statistic. With the next most popular charge being £20, it seems that the price set by many councils is influenced by wanting a 'tidy' figure rather than being the most accurate assessment of operating costs or other factors. The average charge for collecting 3 items is £18.

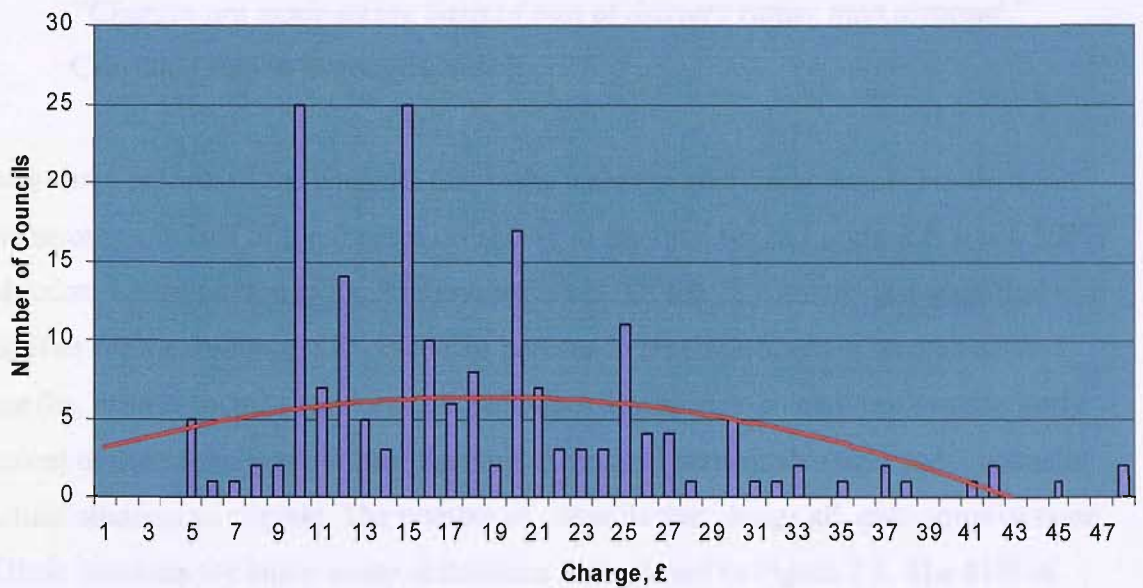


Figure 2.2. Charge for collecting 3 bulky items (188 WCAs).

There has been a widespread shift from free collections of bulky items to charging in recent years. In 1998/9, 56% of WCAs (in England and Wales) collected bulky items free of charge (CIPFA, 2000). This study found the number to have halved to 28% in the first half of 2005, and of the 19 councils apparently offering a free service that were then included in the telephone interviews, 2 had since introduced charging. This implies that over a period of approximately 6 months, 10% of councils that used to offer a free service now charge for collection, reducing the proportion of non-charging councils to 25%. Charging for collection is both an economic tool to reduce demand for the service and a fiscal instrument to recoup costs of service provision. The principal arguments for free collections are a lower incidence of fly-tipping and social equality – the service being centrally funded rather than based on an ability to pay. The views of council waste managers provide evidence to back these explanations:

“It is current council policy not to charge [i.e. the decision is outside the control of the waste department]. We used to charge but it was more expensive to deal with the resulting fly-tipping than just collect bulky items free.” Kirklees Metropolitan Borough Council

“We introduced charges to get money – it wasn’t paying.” Bedford Borough Council

“Charges are made on the basis of cost of delivery rather than disposal.”

Croydon London Borough Council

Forty-three percent of the councils that make a charge give a discount to residents on low incomes. In half of these cases, as shown in the final bar in Figure 2.1, it is a 100% reduction, i.e. collection is free to these residents. Of the 78 councils that specified who qualifies for the discount, 87% included persons in receipt of certain income-related benefits, usually income support, Job Seekers Allowance or council tax benefit. Forty percent of the councils award the discount to those of pensionable age, and 3 councils include students as eligible. The number of councils that charge all, only some or none of their residents for bulky waste collections is displayed in Figure 2.3. The 41% of councils that charge for collecting bulky items and give no discounts could be considered to be excluding low income residents from using the service. This social inequality is compounded when service-user statistics are incorporated: separate unpublished research by Southampton University has found that the council service was used by 23% of residents in areas of high deprivation who had disposed of bulky items compared to only 14% of residents in areas of low deprivation. The lower car ownership in high deprivation areas makes some residents dependent on the council for disposing of bulky items, rather than having the choice to take items to the local HWRC themselves.

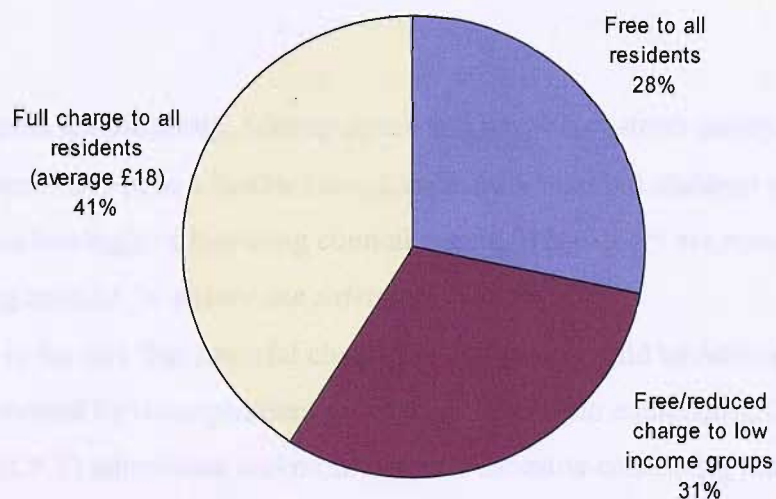


Figure 2.3. Proportion of councils offering free and/or reduced charge collections (272 WCAs).

Where a charge is levied, payment is generally required before the collection takes place. As shown in Table 2.3, councils generally provide more than one option for making payment, with cheques being the most commonly accepted method. Payment can often be made in cash at council offices such as the town hall. The use of credit or debit cards has increased in line with the means to arrange collection online (a similar number of councils accept card payment as allow online requests, as in Table 2.1).

Table 2.3. Accepted methods of payment for bulky items collections (n=106).

Payment method	Number of councils (%)
Cash	61 (58%)
Cheque	96 (91%)
Debit/credit card	63 (59%)

Collection point

Once the details of the items requiring collection have been taken, and any payment settled, the call centre staff or online system will tell the resident where to put their items, and when. Based on 155 specifications of this information on council websites, 94% of councils require items to be placed outside, '*on the curtilage of the property*' or '*in the front garden*'.

A requirement to place large, heavy items outside has negative consequences on four fronts:

- The items are unsightly, take up space and may be obstruct pavement/road users;
- The items may pose a health hazard, especially to small children and animals – London Borough of Havering council insists fridge doors are removed before placing outside '*to ensure the safety of children*';
- There is the risk that harmful chemicals and gases could be released into the environment by damaged items such as refrigeration equipment, Cathode-Ray Tube (CRT) televisions and monitors, and asbestos-containing materials; and
- The reuse potential of items may be significantly reduced in moving them, by the weather, and possibly through vandalism (although this only becomes an issue if a system is in place for collected items to be identified and diverted for reuse).

These risks will be reduced where residents are advised to place the items out only the night before or on the morning of collection, and will be avoided if they are collected from inside the home. It is generally more costly to run a collection service where a set date of collection is guaranteed, and more time-consuming for the collection crew to enter residents' homes. Of the 51 councils telephoned, three-quarters specified a collection day. Twenty of these councils claimed that they will collect bulky items from inside a resident's home. In 11 of these cases this was treated as a social inclusion mechanism – only those with no means to get the items outside themselves (signified by being elderly or registered disabled) are offered an inside-the-home collection. The telephone interviews indicate that councils, on their bulky waste web-pages, tend to be reticent about the existence of this option: the 94% of the 155 councils, as quoted above, that only collect items from outside is an unrepresentative statistic – those that do collect inside do not advertise this on their website and so are not included in the result. Based on the subset of councils telephoned, around 42% will in fact collect items from inside residents' homes (23% from elderly or disabled residents only).

Wait time for collection

The time interval between the request for collection and the collection taking place varied *within* collection areas, based on the demand for the service at the time and the sub-area in which the resident lived, and *across* collection areas. Based on the 114 councils advertising the wait time as included in Table 2.4, the time interval varied between a few days and two weeks or more, with a 7-10 day wait being typical. The telephone interviews with call centres largely confirmed this timeframe, but suggested that the quoted time-lag may be cautious – councils prefer to collect sooner than they officially state rather than commit to a shorter collection time and then fail to achieve it.

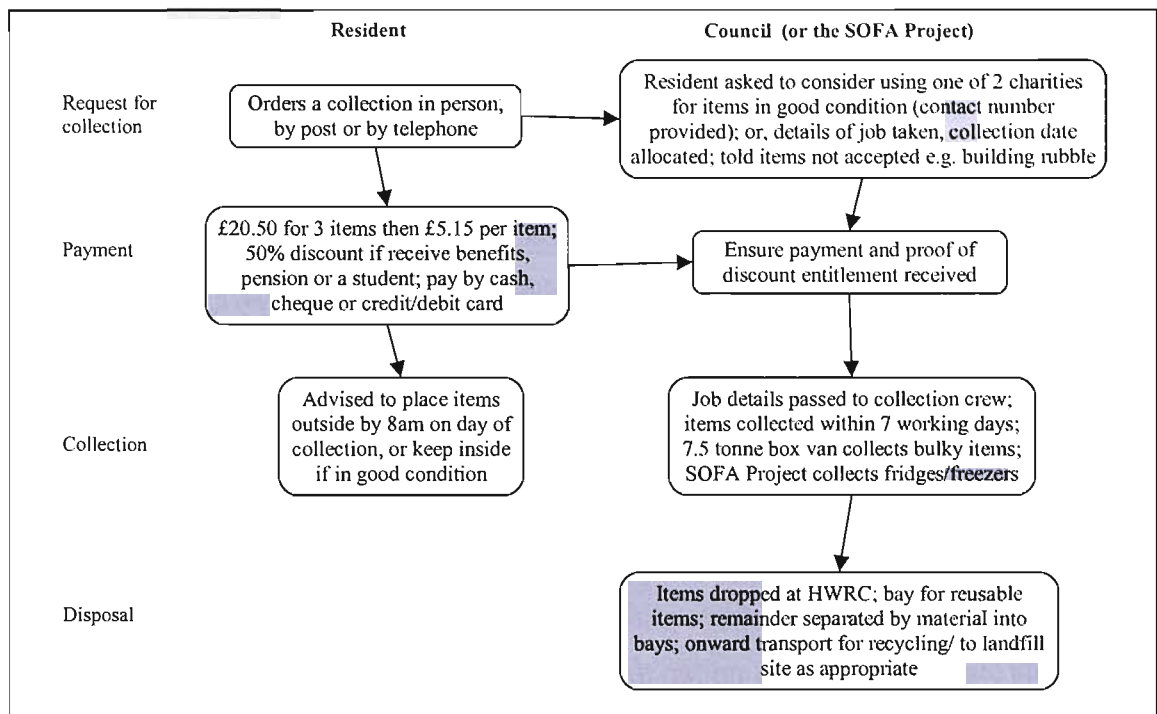
Table 2.4. Wait time for bulky items collection (n=114).

Number of days	Number of councils (%)
Less than 7 days	20 (18%)
7-10 days	71 (62%)
More than 10 days	23 (20%)

Reuse of collected items

The survey investigated to what extent councils attempted to determine the quality of the items to be collected and salvage furniture and electrical appliances of value. This is typically achieved by councils' call centres or web-pages referring residents to a local organisation that will collect, repair/ refurbish, and then pass on items to be used again, usually by people of low income. Eighty-six councils were found to nominate a reuse organisation on their website. This is a low figure given that 300 organisations are in the FRN, as noted above. The telephone interviews answered the question of whether this discrepancy represents ignorance of the existence of reuse organisations or simply apathy in advocating residents' use of them on council websites. It is the latter: one-third of the councils telephoned had recommended a reuse organisation on their website but 37 councils, 73%, did on the telephone. This is encouraging in that if extrapolated it equates to approximately 257 councils referring residents to a local reuse enterprise when appropriate; yet it is of concern that this information will not reach more people as the increasing public use of computers and confidence in using the Internet securely will lead to more online arrangement of and payment for bulky waste collections.

Bulky items of value could also be identified at the point of collection, but very few councils were found to be willing to invest the time required to segregate items and deliver them to a reuse organisation. A simpler alternative but still rarely found in practice is for such items to be placed in a 'reuse' bay at the HWRC, where reuse organisations, charities and sometimes the general public are allowed to 'cherry pick' them as desired. In Bath & North East Somerset (see Box 2.2), the collection crew drop items they know will be accepted by the SOFA (Shifting Old Furniture Around) project at their premises in the centre of Bath, and they segregate other items that could be of further use at the HWRC. Damaged bicycles are stockpiled and then taken to a local prison where they are repaired.



Box 2.2. Bulky items collection process in Bath and North East Somerset Unitary Authority.

The collection of bulky items

Collection requests are collated at the call centre or by the operations team and sent daily to the collections team. The work-ticket will give a contact name and address (and possibly phone number) for each job, the number of items to be collected and a brief description of each, and where the items are to be found on the property. In most cases the driver will determine the order of the jobs from his knowledge of the area, congestion hotspots, etc, with reference to a street map of the area if necessary.

Collection system

The collections allocated to any particular day will depend on the collection system in place. Three common options are explained in Table 2.5, along with the frequency of each type of system found for the 51 councils telephoned. Almost 8 in 10 councils collect bulky items by appointment (36 of the 47 in total). Districts are generally sub-divided so that each area will be serviced on a particular weekday each week.

Table 2.5. Bulky items collection systems in operation in England (n=51).

Type of collection	Freq.	Description
Special collection by appointment	36	Request allocated to next available slot for the particular area – residents place items out the night before or morning of the collection day
Special collection, no appointment	11	Items to be placed outside for the whole duration between arrangement and collection
Items collected with regular refuse	4	No 'special collection' for bulky items

A service that gives each resident a collection appointment day has two benefits. It is a higher level of service – giving appointments allows residents to plan around their collection causing less disruption, or to select a different day if necessary; secondly, it reduces the likelihood of bulky items being left outside for long periods, with the negative implications listed above. Collecting bulky items on the regular refuse collection round is usually the worst management option for the bulky waste stream, for without segregation all items are destined for landfill, automatically by-passing options for reuse and recycling. Four (8%) of the councils telephoned collected bulky items along with the bin waste.

Separate collections by material type

Most councils do not collect all household bulky items together. Refrigeration equipment in particular tends to be collected by a separate vehicle, or with other white goods. Forty-four per cent of the 216 councils reporting this on their website collect fridge and freezer units separately from the main bulky waste collection service. Figure 2.4 summarises how those councils that were telephoned run separate collections for different bulky waste streams. Based on this sample, one third of councils run a separate collection service for white goods. Of the other two-thirds of councils that collect white goods and other bulky items together, 73%, or 48% of councils overall, collect fridges/freezers with a different vehicle. These two alternative systems are illustrated by the case studies in Box 2.2 and Box 2.3.

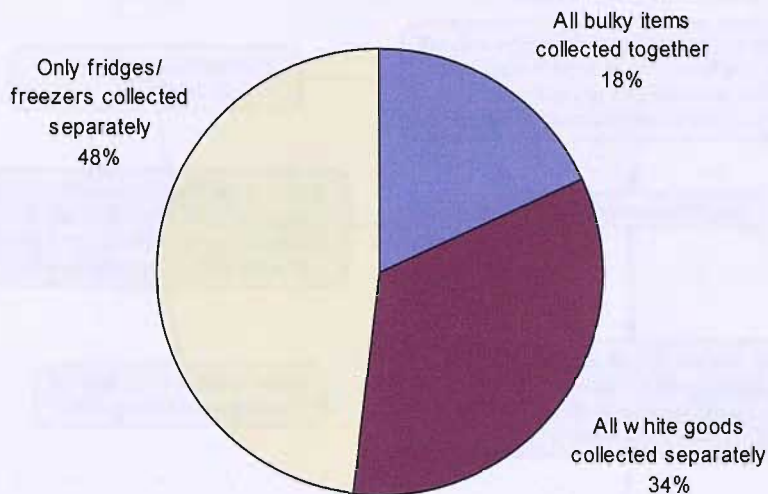
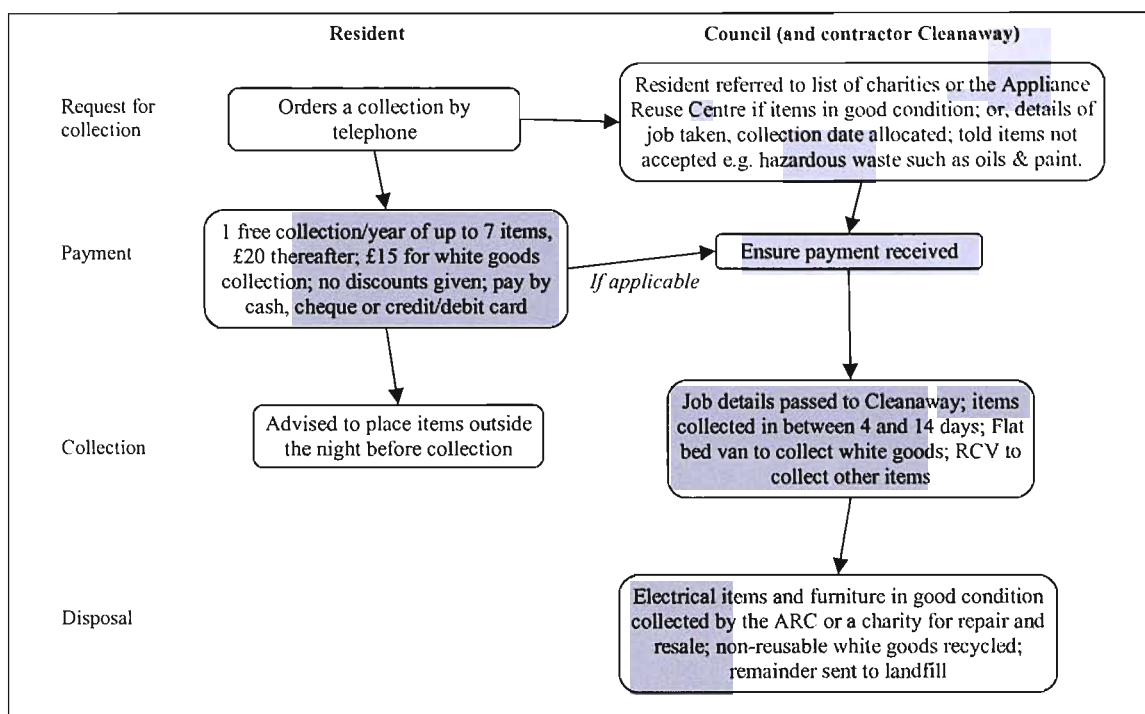


Figure 2.4. Separate collection of bulky items (50 WCAs).

Sub-contracting

The household bulky waste collection service is contracted out by just over one third of councils, based on the sample of 51 councils telephoned. In most cases the request is still made to the council, which then passes on the arranged jobs to the contractor on a daily basis. Box 2.3 provides an illustration of how this type of system operates in the London Borough of Croydon. The four large waste management companies Biffa, Cleanaway, Onyx and Sita were responsible for around half of the sub-contracted collections. A listing of councils collecting bulky waste in-house and through a contractor features in CIPFA's annual *Waste Collection and Disposal Statistics* (e.g. CIPFA, 2000).



Box 2.3. Bulky items collection process in the London Borough of Croydon.

Seasonal trends

The councils selected for telephone interviews were asked whether there are any seasonal trends in household bulky waste collections. Two-thirds of responding councils claimed to experience seasonality. Periods of increased demand for the service were reported for each season of the year, as shown in Figure 2.5. Standard explanations were offered for each period of increased demand, and are often linked to the range of materials accepted by the bulky waste collection service. Those who accept green waste linked seasonality to ‘the gardener’s year’ – increased disposal in spring and autumn. Purchases in the January & mid-year sales are accompanied by increased disposal of the items being replaced; the traditional ‘spring clear-out’ was often quoted; and more requests in summer are attributed to waste created by residents renovating their homes. Sunderland City Council accepts Christmas trees as bulky items – between January and March 2005 they received 19 000 requests from residents wishing for their tree to be collected. In such cases these short-term fluctuations in demand for the service have a significant impact, requiring extra vehicles to be committed to, and available for, collecting bulky items. More often increased demand will be offset by a longer wait time for collections or by overtime work of the vehicle and crew on a Saturday.

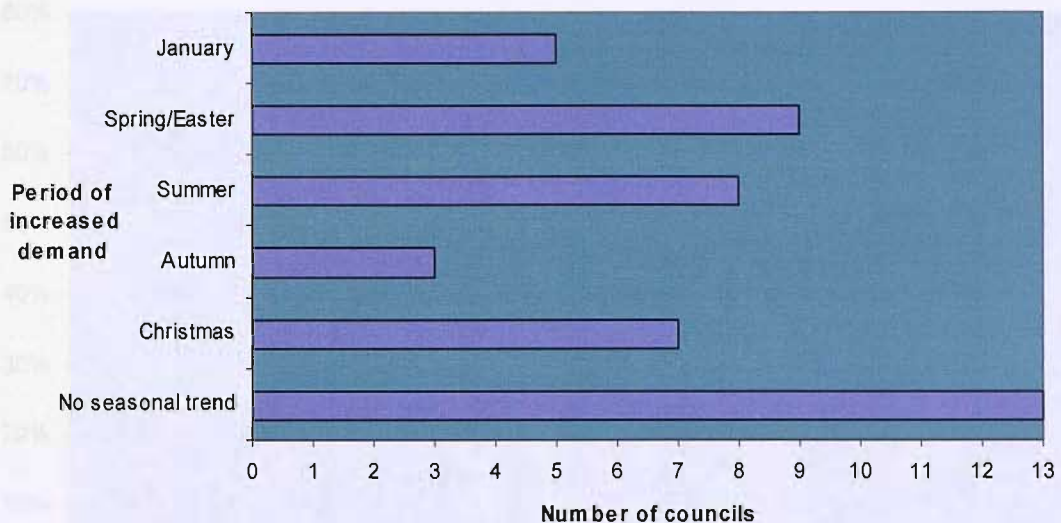


Figure 2.5. Seasonal trends experienced in bulky waste collections (38 WCAs).

Excluded items

Just over 50% of councils listed the items they will and/or will not accept on the bulky collection service. Councils tended to nominate 3 or 4 bulky items or categories of items that they do not accept. The principal items not accepted are shown in Figure 2.6. Hazardous items may include asbestos, batteries, certain chemicals, petrol and oil, and tyres. Some councils provide a separate service for items not accepted on the bulky collection; others will make an additional charge to collect the items. This is most often applied to ‘Rubble/DIY materials’ and ‘fixtures and fittings’ – disposal of these materials is regarded as the responsibility of the contractor for the building/repair work carried out, or of the residents if they did the work themselves.

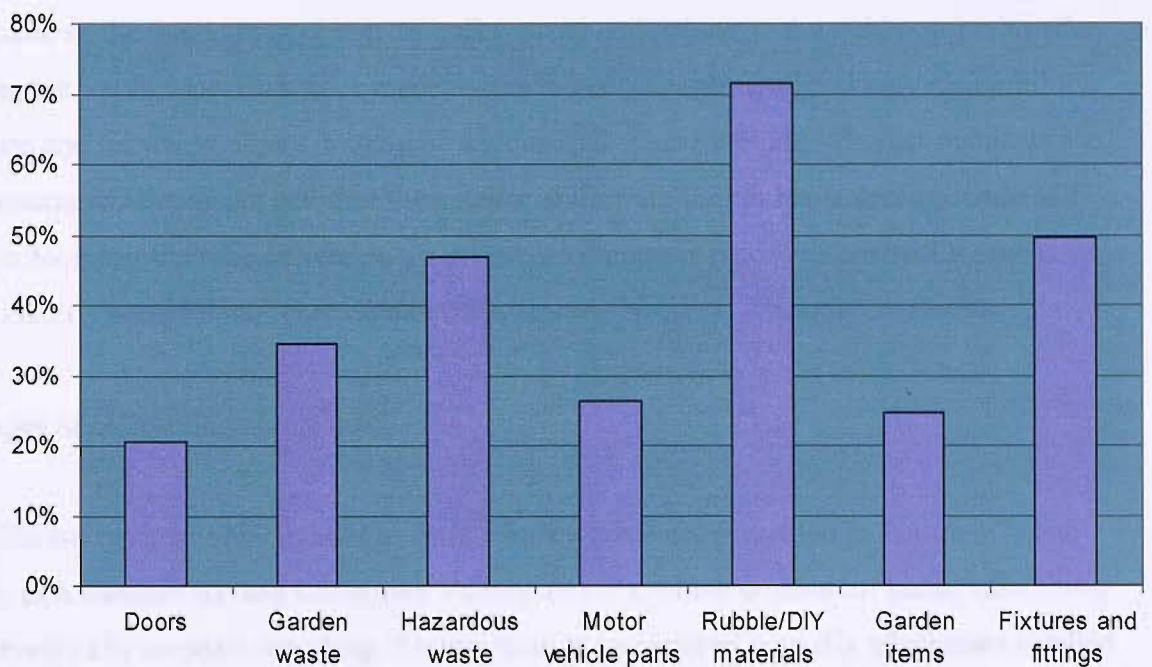


Figure 2.6. Items not accepted on bulky waste collections (179 WCAs).

In addition to listing specific items, the following phrases imposing limits on the items accepted were repeatedly quoted on council websites and by call centre staff:

“Bulky items are those which are too big to fit into your wheeled bin.”

“If an item cannot be lifted by two men it will not be taken.”

“Items accepted are those which you would take with you if you were moving home.”

Disposal of items

The way each council disposes of collected bulky items is determined by a number of factors. The council ethos and attitude towards environmental issues will shape how resources and capital are made available to increase the reuse and recycling of waste. Local conditions will contribute – if landfill space is plentiful and close it is more likely to be used; if the HWRC is small and congested then less is likely to be recycled; if a reuse enterprise or a wood and scrap metal merchant is active in the region then more items can be reused and recycled respectively. These factors are generally outside of the

control of the manager in charge of bulky waste collections, and would require broader, long-term solutions. Decisions made at this lower management level may also inhibit reuse and recycling where it could be encouraged. These include: whether residents are encouraged to consider reuse of their items; if they are told to leave items outside and how long for; the type of vehicle used; and the emphasis placed on instructing the crew to identify and protect items with reuse potential.

Types of collection vehicle used

Different types of vehicle used to collect bulky items are presented in Figure 2.7. The use of a standard Refuse Collection Vehicle (RCV), which crushes all items, effectively prevents any reuse or recycling. Results from the sample of councils telephoned implied that this is the case in 19% of councils. The majority of materials for recycling are metal white goods, due to current reprocessing capacity and economic viability; an estimated 81% of councils collect these items with non-compaction vehicles. Non-white goods, including household furniture, are collected in non-compaction vehicles by only 57% of councils. This is a potential barrier to the ability of councils and their local reuse organisations to divert items of value for reuse.

The type of van used also has implications for the condition of the items when they reach the point of disposal/recovery. Open flat bed vehicles and uncovered caged vehicles leave items more exposed to the elements than Luton box-vans. Only just over one-quarter of the 25 councils in the telephone councils that employ non-compaction vehicles use the covered, box-type vehicle. A tail-lift fitted to the van is also helpful in minimising handling damage.

In 9 out of 10 cases bulky items collection services are operated by a 2-man crew. Variations are: one man using a sack-truck trolley to move heavy items; and for a third man to join the crew, often when the service is busy or a particularly awkward item needs to be collected such as a grand piano.

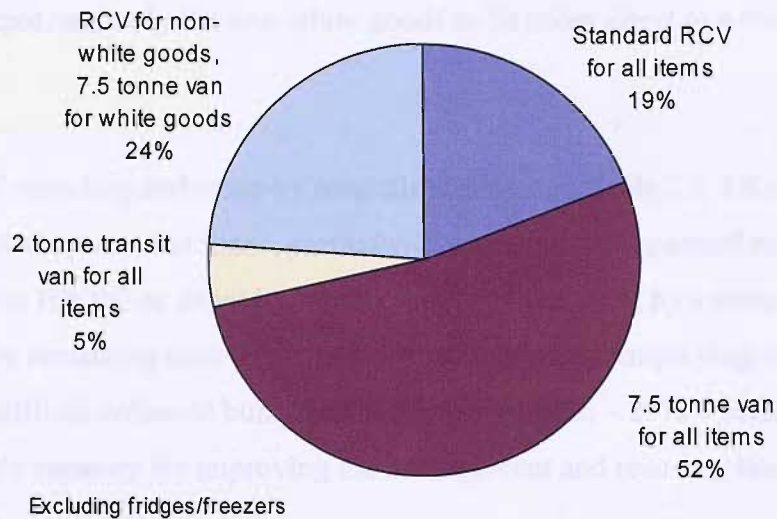


Figure 2.7. Types of vehicle used to collect bulky items (42 WCAs).

Disposal routes

The use of a non-compaction vehicle means only that reuse and recycling of items is not precluded; the ultimate destination of the items depends on the ensuing disposal route. The standard disposal route for collected bulky items is via the local HWRC. At this point items are either added to the waste stream for onward transport to landfill, or they are separated by material type into bays to be recycled, or possibly identified for repair/refurbishment and subsequent reuse. This is partly dependent on the factors outlined above – if items are left outside in bad weather, collected in a compaction vehicle or an uncovered vehicle, or roughly handled by the collection crew, they will not be suitable for reuse, and possibly not for recycling. Some councils might benefit from guidance in this area: for example waste managers could be told about the effect of vehicle selection and collection point, and collection crews educated in the identification and careful handling of reusable items.

Three other disposal routes were found to be used by a significant minority of councils. A council depot may be used similarly to the public HWRC. Alternatively the collection vehicle may tip at the waste transfer station, or directly at the landfill site. These two options are dependent on the proximity of the site to the collection area, and their use results in few or no items being recycled. An alternative where councils collect white

goods separately from other bulky items is for the white goods to be taken to the HWRC or depot, and only the non-white goods to be taken direct to a transfer station or landfill site.

The extent of recycling and reuse by councils is shown in Table 2.6. Of responding councils, 71% recycle some items, particularly white goods: separated metals are collected at the HWRC or depot by reprocessing companies or by a scrap metal merchant. The remaining nine councils in the sample (those employing compaction vehicles) landfill all collected bulky items. This proportion – 29% – indicates that there is considerable capacity for improving the management and recovery rate of the bulky waste stream.

Table 2.6. Collected bulky items management (n=31).

Final Destination of collected bulky items	Number of councils (%)
All items landfilled	9 (29%)
Some items recycled	22 (71%)
Some items reused	8 (26%)

In addition to the 76% of telephoned councils who refer residents to a reuse organisation at the request stage (i.e. at the call centre or on the council website), a further 8 councils (26% of those responding) pass on collected items to a reuse organisation or separate them at the HWRC if they are deemed to be in good enough condition. This would seem to indicate a significant level of organised reuse of bulky items. However, many of the councils recommending a reuse organisation commented that the organisation is very selective about the items they will accept, due to internal constraints on their capacity to repair items, the type of items that are in demand, and requirements to comply with fire safety regulations. Similar limitations apply to the items collected by the council and passed on for reuse, meaning this is likely to be a very small proportion of collected items. It is the experience of some of the interviewed waste management officers that by the time requested items reach the council they are beyond use and disposal is the only remaining option. The council service is the option of last resort to some – items that are in good condition may be given to friends or family members, a church or charity, sold via the local newspaper, on the Internet marketplace eBay, at a car-boot sale or local 2nd hand shop, or collected by a reuse enterprise in the region.

Council bulky waste web-pages

Much of the data for this research was drawn from the websites of the WCAs in England. A number of checks were performed in order to establish how up-to-date and reliable the website information is. Firstly the “*page last updated*” date was monitored for each site. In total 110 councils indicated when the bulky waste web-page was last updated, and 71% of these had modified the information within the 6 months prior to the survey date.

A web page rating system was created and applied to each council’s bulky waste web-page as per Table 2.7. This indicator reflects the quality of the information presented, and how clear and easy it is to find. It does not indicate how good or poor the collection service itself is. Integral to the indicator is the extent to which a council suggests that residents consider the reuse potential of the items they are discarding. So for example, a page would receive a score of 1 if it contained little information, on a website that was easy to navigate, or if there was a fair amount of information but poorly presented. If the page recommended a local furniture reuse scheme the score would be 2.

A score of 0 was awarded only 8 times – in several cases no information could be found about a council’s bulky waste collection service. Seventy councils scored 1 point – generally this signifies that the web page has not given the fundamental information required to allow a resident to decide whether to use the collection service, such as how much it would cost them and how they arrange for collection; and that there was no recommendation to consider reuse of the items.

Table 2.7. Bulky items web-page rating system.

<i>Residents asked to consider reuse, or a reuse organisation recommended, adds 1 point</i>		Presentation/ease of finding information	
		Poor	Good
Amount of information presented	None/very little	0	1
	Fair amount, several variables omitted	1	2
	Good, all important points included	2	3

One-hundred-and-eighty-four councils or 52% of the total scored 2 points: the overall mean score was 2.02. This score was given where several of the standard pieces of

information are not provided, possibly including the collection point on the property, the means of payment, and the items that are accepted, or not accepted, on the service.

The remaining 92 councils were awarded the highest score of 3 points. Excluding 13 web-pages that were elevated from level 2 only because a reuse organisation was recommended, less than one quarter of councils remain that have taken the time and effort to create a good quality web-page for their bulky waste collection service.

Overall there is a great deal of room for improvement in the content of the web-pages, and this is in some way a reflection of the low priority of bulky waste collections. There is considerable inconsistency in the information that individual councils decide to advertise on their websites, to the extent that the conclusions drawn about each element of the system are based on a different group of WCAs. A recommended-content guide for the provision of information about the bulky waste collection service on council websites is presented in Box 2.4. Most councils already provide much of the information suggested, but the low proportion of web-pages awarded 3 points reflects how few include the full set of details required for residents to make an informed decision about whether the service is appropriate for them. This could be offset against the fact that not many residents are expected to access this information on councils' websites – arrangements are still predominantly by telephone and all information can be given at the time of request. However the use of the Internet to find information about and arrange a bulky items collection online will increase over time, and therefore the quality of web-pages needs to improve too.

Typical information	
Service charges & discounts	<i>£15 for 3 items. 1 free collection per year to residents in receipt of means tested benefits or state pension.</i>
Arranging collection	<i>Request can be made by completing the online form or by calling waste services on the telephone number below.</i>
Payment	<i>Debit/credit card can be use online or over the phone. Alternatively a cheque may be sent in or cash payment made at the address below. If claiming a free collection, have your NI number to hand.</i>
Reuse	<i>Have you considered passing on your unwanted items to others who could benefit from them? If you have items in good condition there is a local charity/organisation that may collect them at no charge. Call 'Reuse Org' on 0123 456 789.</i>
Collection	<i>You will be given a collection date, usually within 7 days of payment.</i>
Collection point	<i>Items should be placed at the front of your property the night before or by 7am on the morning of collection. Only the pre-arranged items can be collected. We will collect items from inside only if you have no means to take them outside yourself. [If council passes on items for reuse – please keep items that are in good condition covered; alternatively we can collect these items inside...]</i>
Items not accepted	<i>We do not take builders rubble or hazardous materials on this service.</i>
Contact details	<i>Link to online form Telephone and address details of council</i>
Page last updated:	<i>1st November 2005</i>
<i>Note: the 'typical information' is presented for illustration only; it is based on current practice, however the specific content is not necessarily being advocated.</i>	

Box 2.4. Recommended content for a council bulky waste collection service web-page.

Telephone interviews

A final check and value-adding measure was to telephone a sample of councils for detailed and current information about the bulky waste collection services they provide. This was deemed necessary as 13%, equivalent to a significant minority of some 45 councils, had not updated the information on their bulky waste collections web-pages for more than 1 year.

A sub-set of fifty-one councils was selected for follow-up telephone interviews to verify the accuracy of information presented on their websites and gain a deeper understanding of the logistical issues behind the provision of this public service. The sample covered the bulky waste collection services provided to some 10 million UK residents. Councils

were selected to ensure a proportionate sample, geographically and by authority-type. Other controlled variables were the charges applied and discounts given to service users, in order to test the hypothesis that council website information is accurate.

The telephone interviews confirmed that the information on council websites is usually reliable. For 86% of councils in the sample the information given about bulky waste collections by the call centre was the same as that on the website. In a small number of cases there were minor discrepancies. This tended to be a small increase in the charge of collection, of between 50 pence and £2, reflecting changes introduced since the web-page was accessed rather than errors. In only 3 cases out of 51 was a significant system change found to have occurred in the interval between conducting the web-page survey and the telephone interviews. Two of these cases involved a move from free collections to a charge system, following the general trend described earlier.

The second aim of the in-depth telephone interviews was to obtain operational data on bulky waste collections that are not provided to residents. This includes the variables discussed above: the types of vehicles used and the number of crew; separate collections of different materials; disposal routes and the extent of recycling and reuse of collected items; whether services are contracted out or conducted in-house; and seasonal trends experienced in bulky waste collections.

Demand and capacity of bulky items collection services

The final set of data produced from telephoning councils were figures that give an insight into the level of demand for council bulky items collections. There is great variation in the number of collection requests across districts. This is most often recorded by councils as the number of requests made or the number of jobs carried out per day, week or month. Councils do not always hold weight data for the collected bulky waste stream, because it is collected with household refuse or combined with other materials at the HWRC to which it is taken. The most basic indicator of demand for bulky waste collections is vehicle usage. This varies from one vehicle operating only 1 or 2 days per week in small districts to 8 or 9 vehicles working 5 or 6 days of the week in large conurbations. Many councils are able to satisfy the demand for bulky items requests with one dedicated vehicle operating as necessary, which is in many

cases continuously from Monday to Friday, or more (Saturday overtime) or less often as required.

The number of collections made is a stronger measure of demand for the service, allowing comparison across councils. Table 2.8 shows the demand at selected WCAs in 3 formats: total number of jobs per year, number of jobs per 1000 residents, and vehicle usage. As the table illustrates, demand for bulky items collections like all normal goods and services shows an inverse correlation with the price, that is the charge made for collection. Compared to the WCAs that charge all residents, the number of collection requests per 1000 residents is two to three-fold higher for those that give some reduced rate or free collections, and in the order of ten-fold higher in areas where all collections are made free of charge.

When bulky items collections are funded centrally by council taxes rather than an individual collection charge, there is a disincentive for residents to take their own waste to the local HWRC. Although public use of HWRCs is free of charge, in terms of time spent and the cost of making the journey by private vehicle, such action would essentially constitute paying twice. In this way bulky items collection charges are akin to those of private health care and schooling. This is demonstrated by the demand as price falls following a positive and curved rather than linear trend.

Table 2.8. Demand for bulky items collections (2004/05).

WCA	Population	Number of bulky collections per year		Type/ number of vehicles in use
		Total	Per 1000 Residents	
Charge for all collections, no discount given				
Solihull MBC	200,000	3,120*	16*	1 x 7.5 tonne van
Huntingdonshire	157,000	3,120*	20*	1 x 7.5 tonne van
Free collection to some, charge to others				
Salford MBC	216,000	9,620**	45**	RCV (with refuse)
Wandsworth LB	260,000	13,758	53	RCV (with refuse)
Free collections to all				
Craven	54,000	6,500**	120**	RCV & 7.5 tonne
Leeds MBC	715,000	114,000**	159**	9 x 7.5 tonne vans
Sunderland MBC	280,000	87,000	311	8 x 7.5 tonne vans

* Estimated, from vehicle usage; ** Approximate, from average requests per week

The demand for a particular council collection service will also be affected by other aspects of the service and by local factors:

- The quality of the service and value for money – what the resident gets for the price, including: number of items that will be taken; time they have to wait; whether they are given an appointment or not; if the crew will collect the items from in the home (although some residents will not want this)
- The distance to the nearest HWRC and the affluence of the area, in terms of car ownership: those without cars are usually dependent on the council service
- The existence and collection capacity of local reuse organisations and charities that will take bulky items

Effect on demand of introducing charges

The rationale for charging for bulky waste collections, as discussed above, includes reducing demand for the service and recouping costs. The following councils recorded the number of bulky items requests before and after the introduction of charges for collection:

- Bedford District Council – reduction from 350 jobs/week to around 80 jobs/week;
- Salisbury District Council – reduction from 12 000 requests to 3 500 annually (estimated); and
- Derby Unitary Authority – reduction from 15 000 requests to 6 000 annually.

The fall in demand experienced by these 3 councils is between 60% and 77% - a significant proportion in terms of annual cost of service provision. Such a basic service as waste disposal would not be expected to be so price sensitive – the collection charge (on average £18) is not sufficient to affect residents' original purchasing decisions, so the waste will be generated regardless of the charge. The fact that introducing a charge eliminates the 'paying twice' phenomenon mentioned above may explain why this figure is high.

An alternative approach to introducing a charge is to limit or reduce the number of items accepted at no cost, and/or the number of free collections allowed per year. In 2003 Sunderland City Council capped the number of items they accept at 8, and the

number of free collections to 3 per year. The number of collections made dropped by 40%, from 145 000 in 2002/03 to 87 000 in 2004/05.

The fall in council collections of bulky items must be offset by increases in alternative means of disposal. As quoted above, Kirklees MBC found such an increase in fly-tipping when they introduced charging that the service reverted to free collections. An increase in the public use of HWRCs for disposing of their items must be expected when charges are introduced. For the example of Derby above, up to 9 000 extra vehicles per year, or 170 per week, could be visiting the local HWRC, adding pressure on already congested facilities. For the 273 WCA areas, where the HWRCs are operated by the parent disposal authority, this is not their concern and they will see a reduction in total waste collected.

Demographic factors

The district councils were consistently identified throughout the analysis of the data as lagging behind the unitary authorities, metropolitan boroughs and London boroughs in the provision of bulky waste collection services. A comparison of the key differences is presented in Table 2.9. More than half of districts charge all residents for collection and only 16% give free collections to all; these proportions are reversed for the group of non-district councils. Of the councils that charge, 50% more non-district councils give discounts to low income groups than district councils (57% compared to 38%). The table also indicates how district councils offer appointments, and recommend a reuse organisation to residents, less often than other authority types. Districts are also less up to date in incorporating new technology into their collection systems: a lower proportion are set up for online requests and payment by credit or debit card. This is reflected in the quality and currency of information on the websites – a higher proportion of districts scored 1 point, and a lower proportion scored 3 points, than non-districts; and districts update their bulky waste web-pages less often.

Table 2.9. Demographic and system differences between district authorities and other authority types (n varies between 86 and 354).

Variable	District Authorities 239 WCAs	Other Authority types 115 WCAs
Proportion of total	68%	32%
Average population per authority	96,120	227,559
Rural (last third, population density)	95%	5%
Affluent (last third, deprivation level)	92%	8%
Charge all residents	52%	21%
Free collection	16%	52%
If charge, discount to some residents	38%	57%
Can apply online	17%	39%
Accept payment by credit/debit card	53%	74%
Recommend a reuse organisation	19%	36%
Appointment given	42%	72%
Web-page updated in past 6 months	66%	79%
Web-page score of 1	23%	14%
Web-page score of 3	23%	32%

Upon inspection it was found that districts are highly correlated with 2 factors: they tend to be rural and affluent. The 354 councils were ranked by population density and separately by Index of Multiple Deprivation (IMD) scores and then split into high, middle and low thirds. As reported in Table 2.9, 68% of councils are districts; however 95% of the least-densely populated (i.e. rural) third of WCAs, and 92% of the least deprived (i.e. affluent) third of WCAs, are districts. Table 2.10 provides further evidence that it is the underlying rural, affluent nature of non-metropolitan districts that is correlated with a higher degree of charging for bulky items collection services. Only 16% of rural WCAs collect bulky items free of charge, and 63% charge residents regardless of their income level. In areas of low deprivation only 10% of WCAs run free collections, compared to 48% of WCAs in the more deprived areas.

Table 2.10. Distribution of charges and discounts by population density and deprivation level
(n=307).

Charging structure	Population Density		Deprivation level	
	Urban (1 st third)	Rural (last third)	High (1 st third)	Low (last third)
Charge all residents	30%	63%	36%	49%
Discount to some residents	35%	22%	17%	41%
Free to all residents	34%	16%	48%	10%

Four partial explanations are offered for these differences between the rural, relatively affluent district councils and urban authorities with higher deprivation levels:

1. Small, rural districts are less challenged to be dynamic; they have not kept pace with technological advancements including online ordering, payment and provision of information on council services (fewer allowing residents to arrange and pay for collection online or with a card over the phone; fewer with an up-to-date website; lower average web-page score);
2. Waste collection services are more expensive to operate in rural areas where distance travelled per property is higher; residents in districts have a higher ability to pay (lower deprivation); the principal alternative to a council collection, use of the local HWRC, is more expensive and time-consuming and therefore less appealing, as the average distance to it will be greater;
3. Districts are much smaller than other authorities (average populations reported in Table 2.9) – the size of the waste management department will be correspondingly smaller, and the effect on human resources and facilities may be greater than proportionate. For example a waste management officer responsible for all waste collection and recycling for a small district will devote less time to bulky waste collections than a dedicated manager for the service; and
4. For reuse enterprises to be viable they require a large population base; it is more difficult in less populated and less densely populated areas (lower incidence of reuse organisations).

Another way to view the differences in charging is by region. Using Census 2001 divisions, 46% of WCAs in the North (including the North East, North West and Yorkshire) offer free bulky items collections, compared with 14% in the Midlands (East

and West Midlands and East Anglia) and 9% in the South (South East and South West). London is an entity in itself: 44% of the London Boroughs provide free collections. This accords with the above analysis: the densely populated, less affluent metropolitan areas of the North, and London, charge far less often than affluent, rural areas. The proximity and long term availability of space for landfill sites may also affect the decision of some WCAs of whether to charge for collection – reflected here by charges being least applied in the North where landfill space is still abundant.

CONCLUSIONS

The study investigated the charging structures and operation of council bulky waste collections. Many collection services around the country cater for the needs of residents, by offering free collections or discounts to low income groups; specifying the day on which items will be collected, to avoid the need to leave them outside for a long waiting period; and collecting items from inside the home if residents are unable to place them at the kerb. Collection services that do not offer these options may have negative environmental implications in addition to the social costs: low income groups are more inclined to fly-tip items, and items left outside will need to be landfilled regardless of their condition at the time collection was arranged. Councils are often constrained in the collection system they operate by the number and type of vehicles they have and the disposal routes available to them.

Charging for bulky items collections is becoming standard. Rural, district councils charge more often than urban authorities, perhaps due to the higher affluence of their residents, and the higher cost of service provision – they have to travel further per household to collect and then dispose of the bulky items. Charging reflects this higher cost of provision more than quality of service: non-district councils overall have been shown to run better bulky items collection services than district councils.

This survey suggests that the reuse of bulky items is currently far below capacity, although further research is required into the quality of collected items, in terms of potential for reuse. An increased diversion of bulky items, via reuse organisations, will be dependent on councils being aware of and correctly valuing the associated social benefits in addition to the relatively minor reduction in waste sent to landfill. The lack

of coordination between council departments (waste, housing, social services), borne of separate management, budgets and targets, is a disincentive for waste collection managers to devote time and energy to diverting bulky items that would help unemployed and low income residents. Reuse organisations themselves need to rejuvenate their current image of being unnecessarily selective about the items they will accept.

The Waste Electrical and Electronic Equipment (WEEE) Regulations will enforce producer responsibility from either late 2006 or sometime in 2007, onwards. This is likely to reduce the burden on local councils to collect electrical appliances, as retailers will have an obligation to take-back these items at no cost to householders. Any WEEE that is collected by councils may have to be taken separately to other materials, and this study has found that only an estimated 1 in 3 councils currently do this.

The Gershon efficiency review (Gershon, 2004) and associated spending review of 2004 estimated that savings of £6.45 billion could be made by 2007/08 by local government departments including waste management. These 'efficiency savings' could lead to actual cuts in budgets and services, and the proposed measures below to improve the quality of bulky waste collections may be offset by a reduction in resources for this service.

Recommendations for improved performance

- Consideration of the implications of the collection system on recycling and reuse potential of items: whether appointments are given (items outside for a shorter time); collection from inside if items in good condition; use of compaction vehicles;
- Increased coordination between council departments and reuse organisations; and more emphasis on identifying and diverting reusable items at the point of collection;
- Use of the toolkit and good practice guide (Reeve and Cunningham, 2004); and
- Provision of detailed information about bulky items collections on council websites (Box 2.4).

This research has highlighted several areas where further work is required, including a deeper understanding of the factors that determine the demand for bulky items collections, a more substantial investigation into the effect of introducing charges on demand for collections, and the appropriate role for reuse organisations and the required framework for optimum cooperation with councils.

ACKNOWLEDGEMENTS

The authors would like to thank the Waste Collection Authorities included in the telephone survey, particularly the waste management officers of Bath and North East Somerset council and Croydon council who provided case study material to reinforce the research.

REFERENCES

CIPFA, Statistical Information Service (2000) *Waste Collection and Disposal Statistics 1998-99 Actuals*, London.

CIPFA, Statistical Information Service (2002) *Waste Collection and Disposal Statistics 2000-01 Actuals*, London.

Defra (2005) *Municipal Waste Management Survey 2003/04*, London.

DirectGov (2005) *A to Z of local councils*, www.direct.gov.uk, accessed throughout March-September 2005.

Environmental Protection Act 1990, The Stationery Office Limited, London, ISBN 0105443905.

FRN (2005) www.frn.org.uk, accessed 08 November 2005.

Gershon, Sir P (2004) *Releasing resources to the front line: Independent Review of Public Sector Efficiency*, available from www.hm-treasury.gov.uk, accessed 16 November 2005, ISBN 1-84532-032-8.

ONS (2005a) *Census 2001*, www.statistics.gov.uk, accessed throughout March-October 2005.

ONS (2005b) *Indices of Deprivation*, www.neighbourhood.statistics.gov.uk, accessed throughout September 2005.

Rankin, H (2005) *Proving It? Our Social Accounts 2003/04*, available from www.frcgroup.co.uk, accessed 13 August 2005.

Reeve, S (2004a) *Local Authority Good Practice Assessment in the Re-use and Recycling of Household Collection Bulky Item Waste Stream – Literature Review*, Network Recycling for Defra.

Reeve, S (2004b) *Local Authority Good Practice Assessment in the Re-use and Recycling of Household Collection Bulky Item Waste Stream – Survey Report*, Network Recycling for Defra.

Reeve, S and Cunningham, A (2004) *Local Authority Good Practice Assessment in the Re-use and Recycling of Household Collection Bulky Item Waste Stream – Content for a toolkit and good practice guide for use by local authority officers*, Network Recycling for Defra.

The Controlled Waste Regulations 1992, The Stationery Office Limited, London, ISBN 0110235886.

3. Collected household bulky waste in England – potential for re-use and recycling

SUMMARY: This study estimates that the 354 Waste Collection Authorities in England made 3.89 million collections of household bulky items of furniture and electrical appliances last year, weighing 434,650 tonnes. Collections weighed on average 112kgs each. The recovery of bulky items for reuse or recycling is very limited at present by the collection systems – most are set up to simply transport the waste in the most economical manner from doorstep to landfill. The composition of collected bulky waste was inspected in order to estimate the potential for reuse and recycling, and the system changes that are required to bring about these improvements were identified. In particular, it was noted that council waste management services do not have the means to divert items for reuse; they must set up collaborative agreements with 3rd party organisations that are in touch with families on low income in order for the reuse potential of this waste stream to be achieved.

1. INTRODUCTION

Almost all Waste Collection Authorities (WCAs)/Unitary Authorities in England operate a special collection service for large, heavy household items such as furniture and electrical appliances. At present, many authorities landfill all collected bulky items, even though this waste stream contains significant amounts of easily recyclable wood and metal fractions. Further, there are numerous charitable organisations and social enterprises that would appreciate receiving furniture and appliances to refurbish and repair, often employing volunteers or long-term unemployed people. These items would then be passed on for reuse by families on low income.

Increasing recovery from bulky waste is often not a priority for under-resourced councils, who can usually achieve much bigger improvements in their recycling rate by investing in kerbside recycling schemes for the refuse stream. Household bulky waste falls under ‘other household sources’ in the Department for Environment, Food and Rural Affairs’ (henceforth Defra) annual municipal waste management survey, which also includes litter picking and street sweeping services. Together these amounted to 1.2

million tonnes in 2003/04, less than 5% of the 25.4 million tonnes of household waste collected across England (Defra, 2005).

Table 3.1. Previous recovery estimates of collected bulky waste.

Category	Reuse	Recycling	Reuse & Recycling
Furniture	51% ⁽¹⁾	25% ⁽¹⁾	57% ⁽¹⁾ /69% ⁽²⁾
Appliances	30% ⁽¹⁾	82% ⁽¹⁾	65% ⁽²⁾ /83% ⁽¹⁾
All bulky waste	-	-	70% ⁽²⁾
⁽¹⁾ = (Cameron-Beaumont and Lee-Smith, 2005); ⁽²⁾ = (Anderson, 1999)			

Previous work by Curran *et al.* (2006a) estimated that local authority collections account for only 15% of total bulky waste arisings. Other methods of discarding bulky items are:

- Household Waste Recycling Centres (HWRCs); alternatively called the Civic Amenity site or the local tip;
- commercial collection from the household, possibly via the hire of a skip;
- fly-tipping; that is, illegal dumping of waste in an inappropriate place; or
- directly passing on items between householders, for free (e.g. to friends or family) or for a charge (via a car boot sale, press advertisement e.g. *loot*, or on *eBay*TM).

There are some 300 organisations in England that collect and pass on bulky items for reuse. Many of these are united under the banner of the Furniture Reuse Network (FRN), which estimates that its members reuse around 63,000 tonnes of bulky items per year (FRN, 2006).

The aim of this study was to assess the potential for reuse and recycling of collected bulky waste. Several objectives were identified within this; to:

- establish current collection and disposal procedures, including current reuse and recycling;
- determine the volume of bulky waste collected annually, and how the demand for bulky waste collections is related to the charge made and the affluence of residents; and

- estimate the composition of collected bulky waste.

Potential diversion rates of bulky items for reuse and recycling have been estimated by two previous studies. These are presented in Table 3.1. An assessment of current bulky waste management practices and the barriers facing local authorities in improving recovery from this waste stream was carried out by Network Recycling for Defra in 2004 (Reeve, 2004). This report concluded that the presence of an established reuse organisation was an important factor in maximising reuse of bulky items, and that this can justify arranging a working partnership with such an organisation.

2. METHODOLOGY

For this study, 48 local authorities were interviewed by telephone during April-May 2006. A set list of open questions was used to standardise responses as far as possible, which are reproduced at Appendix III. The survey covered the bulky waste collection service provided to 8.6 million residents – 17.5% of the population of England.

The selection of councils for inclusion in the study followed a strict process to ensure the sample is representative of England as a whole. Previous research by the authors (Curran *et al.*, 2006b) compiled a database of the bulky waste collection system of all 354 authorities in England with a responsibility for collection of household waste. This was used as a starting point to establish the required composition of the sample with respect to the type of authority and the charge levied for collection (known from the previous study to be a principal determinant of demand for the service). This is presented in Table 3.2.

In accordance with the composition of Table 3.2, councils were then selected to achieve an even distribution across the country. All regions are represented in the study, in line with the relative population of each: 30% of the sample population reside in the north, 31% in the midlands and 39% in the south of England. Census 2001 (ONS, 2006a)

Table 3.2. Required sample composition by authority type and charge.

Charge	Type of Authority			
	District Council	Metropolitan Borough Council	Unitary Authority	London Borough Council
No charge	11%	6%	6%	5%
Up to £10	17%	1%	2%	-
£10.01-£19.99	26%	3%	2%	2%
£20 or more	13%	-	3%	3%

figures were used throughout for ease of comparison. The Index of Multiple Deprivation (IMD) average scores for each district were also referred to in the selection process, to ensure an even distribution of the sample by deprivation (ODPM, 2004). The IMD provides a broad indicator of how deprived each district in England is, incorporating indices of income and employment levels amongst others.

The high level of selection criteria applied to the sample allows findings to be applied with confidence to the parent population – bulky waste collections across England. Non-controlled variables such as the types of vehicles used, whether the service is contracted out or carried out in-house, and the reported level of reuse and recycling of bulky items, are assumed to be random and those observed in the sample can also therefore be generalised to the country as a whole.

The composition of collected bulky waste was drawn from a sample of 12.6 tonnes from a larger waste audit that is ongoing at the University of Southampton. The sample is composed of collected bulky waste from 3 separate areas, allowing for the effect of different system designs, charge levels and deprivation levels on composition – Sefton MBC, Bath and North East Somerset UA and Southampton UA.

3. RESULTS AND DISCUSSION

3.1 Collection and disposal procedures for bulky waste in England

The typical method for arranging a collection of bulky items was found to be as follows: a resident telephones the call centre of their local council. The service and charges are then explained to them, and once payment is made the request is logged and a collection day is allocated. Residents are told to place the items at the front of their property the

night before or morning of their collection day. Some items are not accepted by the normal household service – councils often use the phrase ‘only things you would take with you if moving house’; so building rubble, fixtures and fittings such as bathroom suites, radiators, and often garden waste are either excluded or collected at a premium rate.

Councils collected bulky items under the heading *special collections*, similarly to hazardous and clinical wastes, in 87.5% of cases. The main characteristics of these types of services are that they operate on request only, rather than following a regular collection schedule; and a charge is often levied, specific to the items being collected. The other 12.5% of interviewed councils collected bulky items together with the refuse, although residents still had to request the surplus collection and make payment before the items would be taken.

The councils were contacted to comply with the distribution of charges listed in Table 3.2, for example 14 (29%) of the interviewed councils did not charge for collection. The number of bulky items accepted for the basic collection charge was found to vary considerably across councils, including £35 for up to 4 items, a £12.50 charge per unit, and up to 10 items free of charge, with many different systems in between. The average was a £10 charge for 3 items. Half of the councils who charge offered a discounted rate or a free service to certain low-income groups, such as those in receipt of means-tested benefits or living on a state pension.

Many councils reported that the district they operate in is broken down into sub-areas, so that a particular collection crew will collect bulky items from a set area each day of the week. Waste collection managers know from experience how many collections can be made each day, and so the call centre allocates residents an appointment slot for their collection sub-area subject to availability. Depending on demand at the time, residents may have to wait from a couple of days to several weeks for their collection, with 7 to 10 days being typical.

The collection date was also found to be dependent on the items that are being collected. The majority of councils interviewed collect fridges/freezers separately from other bulky items; 23% collect all electrical items separately and a further 9% collect TVs or

washing machines separately (along with the fridges/freezers). If a resident discards an electrical item and a piece of furniture, the two collection vehicles may not arrive on the same day.

The vehicles used to collect bulky items partly determines both the capacity and so number of collections that can be made per day, and the potential for subsequent reuse and recycling of the collected items. Figure 3.1 provides the usage of vehicles by the sample group of councils. Refuse Collection Vehicles (RCVs) have an internal compaction machine which enables collection of more items, but renders the items no longer reusable nor recyclable. Just under half of collecting councils used 7.5 tonne non-compaction vehicles of various description.

Interviewed councils were asked to describe the current reuse and recycling of the bulky items they collect, and the disposal routes of the remaining waste. The first 2 options listed in Table 3.3 mean that no items are reused by the council; this was true in 3 out of 4 interviewed councils. The options are listed in ascending order of reuse potential: the later options are under-represented at present.

The organisation of public waste management in England prevents the quantification of bulky waste sent for recycling in most areas. Where the Waste Disposal Authority (WDA) assumes control of WCA-collected bulky waste at a HWRC or transfer station, it is commingled with waste from other sources, and the WDA has no reason to trace back any subsequent recycling rate to the original source of the materials. A general insight was possible with this survey, as expressed in Table 3.4. The most frequent form of recycling is large metal items being separated at the HWRC/transfer station and sent

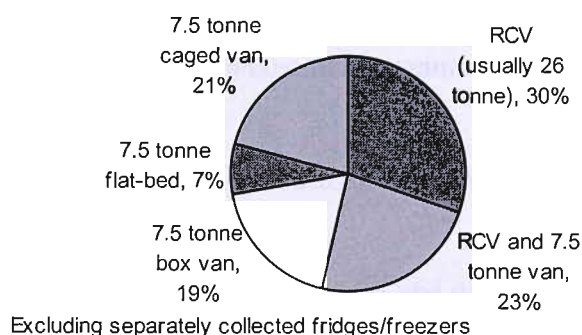


Figure 3.1. Vehicles used to collect bulky waste.

Table 3.3. Current reuse of collected bulky items.

Level of reuse	Number	Proportion
None	5	12%
Passive – refer residents with reusable items to a reuse organisation at the time of request only	27	63%
Active, limited – items identified and diverted for reuse on individual basis	7	16%
Active, organised – all white goods/ all bulky items considered for reuse	4	9%
43 of the 48 interviewed councils provided this information		

Table 3.4. Current recycling of collected bulky items.

Level of recycling	Number	Proportion
None	6	14%
Separately collected fridges/freezers, TVs, washing machines only	9	21%
All metals	20	47%
Metals and wood	8	19%
43 of the 48 interviewed councils provided this information		

to a scrap metal merchant. Any wood recycling tended to be limited by the local reprocessor being very prescriptive about the quality – wood that has been treated (varnished, painted, etc) or containing nails is often unacceptable. The capture rate of wood and metals will vary across districts: from first-hand observation by the authors of collection vehicles unloading, it is known that some collection crews are less thorough than others when it comes to taking the time and effort to separate particular materials from the commingled load.

The disposal route of non-recovered bulky waste was the local HWRC or waste transfer station, where the Waste Disposal Authority assumed responsibility, in 61% of cases. The remaining 39% of collection authorities delivered the waste directly to the final disposal location – a landfill or incinerator. The bulky waste collection service was sub-contracted to a commercial waste management organisation in 40% of cases.

3.2 Volume of council-collected bulky waste in England

From the sample of 48 areas, approximately 680,864 collections of bulky waste were made during the past year (some councils' data were for 2005, others were for the financial year April 05 to March 06). This equates to 79 collections per 1000 people. A

typical collection includes 3 large household items. This translates to 3.89 million collections of 11.67 million household bulky items per year across England.

The number of collections is the most useful method of expressing the demand for bulky waste collections because it is comparable across space and time, and this is how councils apply the charges. There are two other ways to evaluate the collected bulky waste stream: by weight and by vehicle usage.

A sub-set of 7 of the interviewed councils provided weight data in addition to the number of collections made over the course of 1 year. Weight data is useful in comparing bulky waste arisings with other waste flows, as the traditional and universally adopted measurement for waste. The 68,339 collections made from these 7 areas, covering 1,131,899 residents, weighed 7,636 tonnes. This equates to 16.3kgs per household per year (based on 2.422 people per household in the UK; ONS, 2006b). The average weight per collection was 112kgs. Applying this average weight to England (79 collections per 1000 people) produces an estimated council-collected bulky waste arising of 434,650 tonnes per annum.

Looking at the number of vehicles employed in the day-to-day collection of bulky items is appropriate for operational, service-cost considerations, and it provides a practical, 'real-world' expression of the size of the sector. Within the survey, vehicle use ranged from one small van operating 2 days per week to 9 large vehicles working 6 days per week. A crude estimation for the council-collection of all bulky waste in England is: *700-800 vehicles operating all day, every working day of the year.*

The number of bulky items collections varied immensely between councils, from under 10 to over 300 collections per 1000 residents per year. There is an inverse relationship between the charge for the service and demand. This is clearly illustrated in Figure 3.2, and Table 3.5 summarises how the most severe jump in demand is from the low charge to the free service. Overall, 5 times more collections are requested when the service is free of charge compared with when a charge is applied. When there is no charge for a collection service (it is funded by council taxes), there is an active disincentive for people to take their own waste to the HWRC, which would take time and require private vehicle use and fuel consumption.

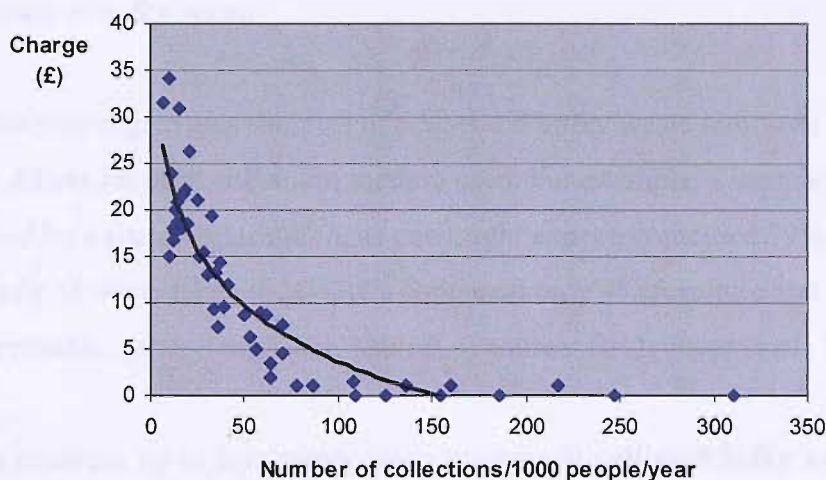


Figure 3.2. Demand for bulky waste collections.

Table 3.5. Average demand by level of charge.

Charge	Number of collections per 1000 people per year
No charge	153
Up to £10	47
Between £10-£20	32
£20 or more	17

The level of deprivation was also found to be related with demand for the service.

Districts with higher IMD scores, indicative of lower affluence and standard of living, tended to have higher demand for council bulky waste collections. This can be due to less affluent people having a lower rate of car ownership, and hence ability to take their own waste to the local HWRC, and also owning low quality goods which need replacing often.

This raises a social equality issue – the one-third of councils found to charge for collection and not offer income-related discounts are effectively excluding some of those most in need of the service from using it. This is likely to have an effect on fly-tipping experienced in these areas.

3.3 Composition of bulky waste

A detailed analysis of previous samples of household bulky waste indicated that the composition differs for each collection method used. For example, a sample of bulky items collected by a reuse organisation, as one might expect, contained 79% furniture, whereas a study of waste taken to HWRCs contained only 4% furniture and 87% of largely non-reusable 'other items' (see Table 3.6; source: Bridgwater *et al.*, 2004).

To ensure an accurate, up to date composition for council-collected bulky waste, a new waste analysis was conducted, as described in section 2. A detailed breakdown of the composition is provided in Table 3.6.

Table 3.6. Composition of council-collected bulky waste (total 12 625 kgs).

Furniture	Weight (Kgs)	%	Appliances	Weight (Kgs)	%	Other items	Weight (Kgs)	%
Bed base	928	7	Fridge-freezer	1332	11	Carpet/lino/underlay	593	5
Mattress	695	6	Freezer	546	4	Fixtures and fittings	323	3
Wardrobe	111	1	Fridge	618	5	Garden item	160	1
Chest of drawers	254	2	Washing machine	947	8	Wood	203	2
Other bedroom furniture	122	1	Tumble dryer	123	1	Bags of small items	124	1
Sofa, 2 seater	812	6	Cooker	563	4	Other item	538	4
Sofa, 3 seater	852	7	TV	356	3			
Armchair	1316	10	Dishwasher	224	2			
Table	147	1	Other electrical	136	1			
Chair	126	1						
Other 'unit'	476	4						
Total	5839	46	Total	4845	38	Total	1941	15

3.4 Potential reuse and recycling of bulky waste

An inspection of Table 3.6 allows conceptual reuse and recycling rates to be generated. These are presented in Table 3.7. It is possible for reuse to exceed recycling in the furniture category, because upholstered items (sofas, armchairs) are sometimes re-upholstered and reused, but it is not economical to recycle them at present.

Compared with an estimated maximum of 135,000 tonnes of current recycling, based on the figures reported in Table 3.4, there is capacity to increase recycling by 117,000 tonnes to reach the recycling rate of 58% in Table 3.7.

Table 3.7. Conceptual bulky waste reuse and recycling based on composition.

Category	Reuse		Recycling	
	Items	Total	Items	Total
Furniture	Bed base, wardrobe, chest of drawers, bedroom furniture, sofa, armchair, table, chairs, other units	88%	Bed base, wardrobe, chest of drawers, bedroom furniture, table, chairs, other units	37%
Appliances	All	100%	All	100%
Other items	None	-	Some garden items, wood	19%
All bulky waste		79%		58%

The simple, material-based potential recovery rates cited in Tables 3.1 and 3.7 are theoretical maximum rates only and are not applicable to the current waste management environment. For example, only a portion of sofas and armchairs are discarded in good condition (e.g. when people redecorate and refurnish, or move home), and these are only reusable if they comply with current Fire Regulations *and* there is an organisation in the area that has the resources to refurbish the items, and there is a local demand for these items. The following case studies offer a more useful insight into achievable recovery rates:

Case Study 1 – Recycling: Carrick DC, Cornwall

The small, rural nature of this area allows the sub-contractor to collect all bulky items with a box van. Last year 32% of metals were recycled. The sub-contractor commented, *“we’re lucky in the Carrick area in that scrap metal dealers are only ¼ mile from the landfill, so we can drop metals there then landfill only the remainder.”*

Case Study 2 – Reuse: Bolton MBC, Greater Manchester

The local community group *Community Transport* collects all white goods on behalf of the council. Approximately 15% are reused. Their present limitation has been recognised as using an RCV to collect non-white goods: *“[Bolton MBC is] looking at collecting all waste in non-compaction vehicles to maximise recycling and reuse potential.”*

Case Study 3 – Pushing the limits of recovery: Bulky Bobs, Liverpool MBC, Merseyside

Bulky Bobs is sub-contracted for the whole bulky waste collection service in Liverpool, which is the most deprived district in England. In 2003/04, 35% of the waste stream was

either reused or recycled, and the future target is to recover 40% (Rankin, 2005). Early in 2006 Bulky Bobs conducted a 'deconstruction' feasibility trial, whereby almost all collected items were disassembled to their constituent materials in order to maximise the reuse of parts such as springs from mattresses, and the recycling of the remainder.

Many elements of current bulky waste collection systems are very prohibitive to reuse and, to a lesser extent, recycling:

- collection with the household refuse (12.5% of those sampled);
- collection by compaction vehicle (30%; up to 53% for some bulky items);
- items are taken directly to the final disposal location (39% of those sampled);
- residents told to place items outside from arrangement to collection i.e. for 7 to 10 days on average, eliminating any value in them (this was the case with a minority of councils);
- when the attitude of councillors/direction from managers is that they have a 'duty to collect' only and no environmental or social concern (e.g. they do not guide the collection crew in careful handling, or have a recovery route for separated items); and
- when facilities in the area preclude recovery (e.g. no reuse organisation and no reprocessors in the area) or make disposal the Best Practical Environmental Option (e.g. a landfill site is close by).

Waste Collection Authorities that fall under any of the factors above will require system or attitudinal changes before improvements can be made. Reusable and recyclable items must be segregated before it becomes even possible that they are recovered.

4. FINAL DISCUSSION

Charging for bulky waste collection is likely to be positive in terms of reuse and recycling – it creates an incentive for residents to use reuse organisations (which usually collect for free) and take items to the HWRC (where they are more likely to be separated for recycling). This does not necessarily equate to improved sustainability overall however, as it is likely to mean more trips made/vehicles used.

Aside from changing the price structure of the service, there are broadly 2 ways that Waste Collection Authorities can try to recover more from their bulky waste collection:

- eliminate the system constraints. This is guided by the need to identify and then separate items that can be reuse or recycled. An open, non-compacting vehicle must be used, preferably that also offers protection from bad weather – the box-van is best; and all involved - management down to collection crews, must be motivated to recover items where possible, changing work patterns and disposal routes as necessary; or
- work around the system constraints. It may be too expensive for some districts to set up these changes. A partnership with a local reuse organisation, or the housing/social services department could work on whatever level is appropriate. This could be simple measures such as advertising the reuse organisation on the council waste collection service web-pages, or forwarding on all collected items that have reuse potential, to sub-contracting to the organisation the collection of all such items, or the sub-stream (all furniture, or all white goods), or ultimately the whole bulky waste collection service.

In practice WCAs may need to adopt measures from both of these options to suit the needs of their individual circumstances. A guide-book, *Bulky Basics* (Lee-Smith, 2006), was released in June 2006 by the FRN to facilitate the setting up a partnership between a local authority and reuse organisation and maximising reuse from the bulky waste stream.

5. CONCLUSIONS

This study has found that current collection and disposal operations for household bulky waste in England are often not conducive to the recovery of items that could be reused or recycled. The annual volume and the composition of collected bulky waste are such that substantial improvements in reuse and, to a lesser extent, recycling, are possible. The changes required to achieve these improvements can be constrained by those in control at present – local authority councillors and waste managers. Increasing their

awareness of the potential for improving reuse, and their understanding of the social as well as environmental benefits that would result from this, will go some way to solving the problem.

ACKNOWLEDGEMENTS

The authors would like to thank each of the 48 Waste Collection Authorities who provided information about their bulky waste collection services. Without their help this study, and the findings made, would not have been possible.

REFERENCES

- Anderson, C., 1999. *Recycle, reuse, bury or burn? Towards a new agenda for bulky household waste management*. From a furniture reuse and recycling research project for The SOFA Project, Bristol, 1999.
- Bridgwater, E., Cameron-Beaumont, C., and Seabrook, G., 2004, for Future West and Network Recycling. *National Assessment of Civic Amenity Sites – maximising recycling rates at civic amenity sites*.
- Cameron-Beaumont, C., and Lee-Smith, C., 2005. *Bulky Waste Collections – Maximising Re-use & Recycling, a step-by-step guide*, Network Recycling, in association with the Furniture Reuse Network.
- Curran, A., Heaven, S. and Williams, I.D., 2006a. *Management of household bulky waste in England*. In Press.
- Curran, A., Heaven, S. and Williams, I.D., 2006b. *An evaluation of council bulky waste collection services in England*. In Press.
- Defra, 2005. *Municipal Waste Management Survey 2003/04*, London.
- FRN, 2006. FRN Home-page, see www.frn.org.uk. Accessed 06 June 2006.
- Lee-Smith, C., 2006. *Bulky Basics – A guide to partnerships, policies and procedures to maximise re-use from bulky household waste*. Available from the FRN, www.frn.org.uk.
- ODPM, 2004. *The English Indices of Deprivation 2004*. Crown copyright, ODPM Publications, 2004. ISBN 1 85112 708 9.
- ONS, 2006a. *Census 2001*, Office for National Statistics, www.statistics.gov.uk, accessed 24 April 2006.
- ONS, 2006b. Office for National Statistics, www.statistics.gov.uk, website search, 26 May 2006.

Rankin, H., 2005. *Proving It? Our Social Accounts 2003/04*, available from www.frcgroup.co.uk, accessed 13 August 2005.

Reeve, S., 2004. *Local Authority Good Practice Assessment in the Re-use and Recycling of Household Collection Bulky Item Waste Stream – Survey Report*, Network Recycling for Defra.

4. Management of household bulky waste in England

ABSTRACT

Household bulky waste includes large and heavy items such as furniture and electrical appliances. Local authorities in England provide two options for disposing of these items: a special collection service, often involving a collection charge, and Household Waste Recycling Centres (HWRCs), where residents can take their waste free of charge. Local private companies and community or charitable organisations may also collect certain bulky items.

In this study, 1450 householders in three cities across England were surveyed about a range of issues relating to the disposal of bulky items. Questionnaires were hand delivered to households pre-selected using the national Index of Multiple Deprivation in order to compare how disposal of bulky items differs with level of affluence.

Sixty-five percent of householders had discarded bulky items in the 12 months prior to the survey. The principal disposal route was found to be the HWRC, with almost 60% of residents that had discarded items using this method. Only 19% of the householders had used the special collection services. In low-affluence areas, lower car ownership made residents more reliant on council collections of bulky items, and HWRCs were used less frequently. Householders were found to be satisfied with the collection service they had received.

The study demonstrates that there is significant capacity for reuse and recycling of bulky items at a national level. Using the Waste Hierarchy, these management options are environmentally preferable to landfill, which is the widely-used disposal method at present. Where items are reused there are also social benefits for the community or charity groups involved, volunteers employed, and recipients of the items. Only the current bulky waste handlers - local authorities, can implement the logistical, and in some cases financial, solutions that are required to increase recovery in this waste stream.

Keywords: Bulky waste; Reuse; Local authorities; HWRC; England

1. INTRODUCTION

Household bulky waste includes large and heavy items such as furniture and electrical appliances. The Controlled Waste Regulations 1992 (Schedule 2) is often taken as the basis for defining what is bulky waste: “1. Any article of waste which exceeds 25 kilograms in weight; 2. Any article of waste which cannot be fitted into a receptacle of 750 mm diameter and 1 metre length” (TSO, 1992).

Waste Management in England takes a two-tier approach. Waste Collection Authorities (WCAs) are responsible for providing day-to-day collections of household wastes. At agreed locations, usually called Transfer Stations, Waste Disposal Authorities (WDAs) take over the control of the wastes and see to its disposal. Some urban areas of England are governed by Unitary Authorities, which take responsibility for the collection and disposal of the waste generated within their boundaries. This two-tier system has resulted in there being two standard options provided by authorities for disposing of bulky items. Each WCA operates a special collection service for bulky items, often involving a collection charge. WDAs provide Household Waste Recycling Centres (HWRCs, also known as Civic Amenity sites), to fulfil requirements originally invoked under the Civic Amenities Act 1967, to provide places where residents can take their bulky waste free of charge, primarily as a means to prevent fly-tipping. Both of these means of disposal are now licensed under the Environmental Protection Act 1990. Local private companies and community or charitable organisations may also collect certain bulky items, and residents may pass on items that are still of use to friends or family. They may also sell on bulky items via informal exchange networks such as car boot sales.

Compared to many countries, England has been slow to engage in the shift to more environmentally sustainable management of household wastes. The Government has now established measures to improve the performance in household refuse management. The various tools that have been adopted are listed in Table 4.1. The Department for environment, food and rural affairs (Defra) released a consultation document (Defra, 2006) early in 2006 which summarises progress made in

implementing the Government’s waste policies set out in Waste Strategy 2000, and called for external input to help shape the revised waste strategy document, expected to be released late in 2006.

Table 4.1. Tools employed to improve household waste management in England.

Tool	Area affected	Specific measures
Legislation	(In particular, biodegradable) landfilled waste	Landfill Regulations 2002; Waste and Emissions Trading Act 2003; Clean Neighbourhoods and Environment Act 2005
Taxation	Landfilled waste	Finance Act 1996 – annual landfill tax increases
Statutory standards for recycling	Collected household waste	Waste Strategy 2000 Waste Strategy Review (ongoing through 2006)
Investment	New technologies Public awareness, demand for recyclates	Waste Implementation Programme Funding of the Waste and Resources Action Programme, WRAP

The operational management of bulky household waste, however, has remained largely unaffected by these initiatives. This is partly because bulky waste accounts for a relatively small proportion of total waste arisings – less than 5% of the 25.4 million tonnes of household waste collected across England in 2003/04 (Defra, 2005); local authorities have focused their resources where they can have best effect with regard to reaching their recycling targets – kerbside recycling schemes. Although the Government’s Waste Strategy 2000 policy document included the Waste Hierarchy, which states that reuse and then recycling of waste should be considered before disposal, very little provision is made for reuse in the ensuing targets and standards imposed on local authorities (DETR, 2000). Indeed, Curran et al. (2006a) found that with collected bulky waste this is often reversed – landfill/ incineration is standard, only large, easily separable metals tend to be recycled and very few items are reused.

Potential reuse rates of 59% have been suggested for household bulky waste from HWRCs (Reeve, 2004), and for council-collected items of up to 51% for furniture and 36% for electrical appliances (Cameron-Beaumont & Lee-Smith, 2005). Reuse of bulky items, in addition to being environmentally preferable, has social benefits for the community or charity groups involved, volunteers employed, and recipients of the items (See for example, Toyne, 2005 and Sharp and Luckin, 2006).

The current study is part of a broader research project with the aim of assessing the collection and reuse of household bulky items in England. One element of the research has been completed (Curran et al., 2006b); this focused on how local authorities promote and operate their bulky waste collection services. The research reported here complements the previous work by assessing how bulky items are dealt with from another point of view: that of the service user.

Surveys were performed across the cities of Bath and Swindon during April 2005, and Portsmouth during November 2005. The objectives of this study were to:

- (1) Identify and evaluate the quantity and methods of disposal of household bulky items;
- (2) Compare the variation in (1) for areas of differing affluence;
- (3) Assess the potential level of reuse in the household bulky waste stream; and
- (4) Determine residents' level of satisfaction with bulky items collection services.

2. METHODOLOGY

Questionnaires were delivered to two areas of 225 households in Bath (South-West England, population 169,000) and Swindon (South-West England, population 180,000). See Appendix IV. A further 1000 householders in Portsmouth (South-East England, population 187,000) were given a shortened version of the questionnaire in order to obtain a higher number of responses for the principal survey questions. A prize-draw was conducted to encourage a high response rate.

The selection criteria required the areas to be similar (comparable) in terms of demographic characteristics, council type (all are Unitary Authorities) and the council collection service operated – all three councils charge for collection, give discounts to low income groups, and limit the number of items accepted in one collection. A test variable was the presence of reuse organisations: Bath was cited as a City with a 'good' presence of social organisations that collect and reuse bulky items, Swindon was determined to be correspondingly 'poor'; in Portsmouth there are charitable organisations that may accept bulky items for resale.

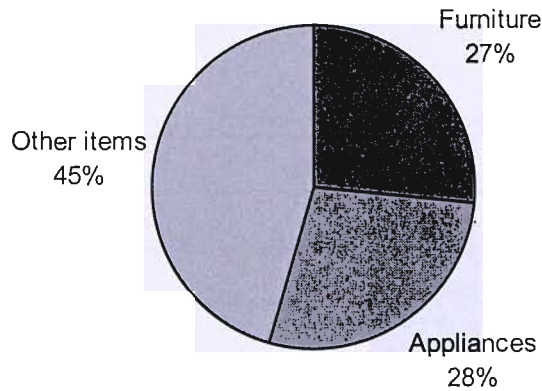
The second-level test variable was affluence of householders. In Bath and Swindon three sub-areas of 75 households were selected to compare responses between householders of low, average and high deprivation, using the national Index of Multiple Deprivation (IMD; ONS, 2006). The IMD provides a broad indicator of how deprived each area in England is, incorporating indices of income and employment levels amongst others. IMD scores for Super Output Areas (SOAs) were used, each covering on average 600 households. Of 32,482 SOAs in England, one SOA in Bath and one in Swindon were identified that were closest to each other *and* the median value of the top, middle and bottom third of all ranked SOAs. This was achieved whilst holding strict control of housing types and distance to the nearest HWRC for each pair of sub-areas. For example, the selected 'average' deprivation areas were ranked 15,563rd and 15,619th and were 2.8 km and 2.7 km from the nearest HWRC respectively. The 75 households chosen in each SOA were controlled to include similar numbers of detached, semi-detached and terraced properties and flats. The surveys delivered to each sub-area of the study were coded with a version number to allow identification of anonymously returned questionnaires.

In the study areas, the recycling officers and bulky waste collections managers were interviewed, and the HWRCs and council depots visited, to gain a deeper understanding of local factors affecting the provision of bulky waste collection services. This provided the background detail required to correctly interpret the survey responses and apply them to bulky waste management operations nationally.

3. RESULTS

3.1 Disposal of bulky items

The overall response rate across the three survey areas was 32%. Of the 466 participants, 65% had discarded bulky items in the 12 months prior to the survey. A total of 1191 bulky items were disposed of within the study period. Using Furniture Reuse Network (FRN) average weights (FRN, 2005), this equates to 39.5 tonnes (estimated), or 33 kg per item. Residents discarded an average of 4 items in the year. Figure 4.1 presents the breakdown of the bulky waste stream. The items included in each category are listed in Table 4.2.



By weight, based on a sample of 1191 bulky items, 40 tonnes

Figure 4.1. Categories of the household bulky waste stream.

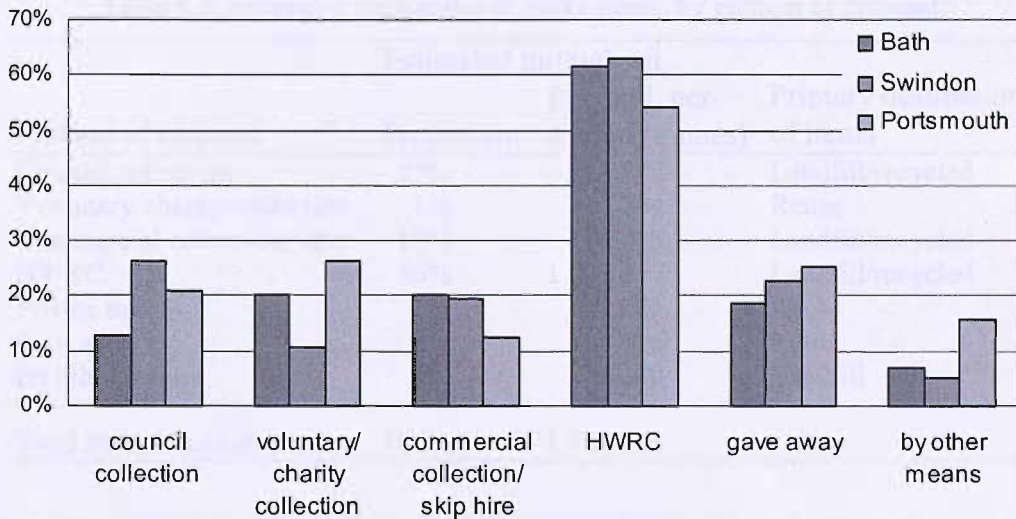
The composition of bulky waste varies for individual collection methods. Relative to the proportion of the overall bulky waste stream in each category (Figure 4.1), collected bulky waste (by councils or voluntary/charity organisations) contains a higher proportion of furniture (up to 79%) and appliances (up to 36%; from unpublished research of the authors); conversely, waste taken to HWRCs is predominantly ‘other items’ (around 80%; Bridgwater et al., 2004). The differences will be more pronounced in areas where the Waste Collection Authority does not accept ‘other items’ such as green waste, fixtures and fittings and DIY/building waste on the collection service.

Table 4.2. Household bulky waste categories.

Category	Items
Furniture	Bed base, mattress, sofa, armchair, table, chair, bedroom furniture (wardrobe, chest of drawers, etc), other unit (TV stand, cabinet, etc)
Appliances	Fridge, freezer, fridge-freezer, cooker, washing machine, dryer, TV, video player, computer unit, monitor, microwave
Other items	Carpet, lino, underlay, fixtures and fittings (radiators, bathroom or kitchen units, etc), DIY/building waste (rubble, off-cuts, etc), bagged garden waste, other garden item (e.g. lawnmower), wood, bags of small items, bicycle

Figure 4.2 shows that only 1 in 5 householders reported using the council collection service, and almost 60% reported taking their items to a HWRC. The values are consistent across survey areas: this gives some confidence in the reported use of these methods of disposal for bulky items. The discreet option ‘*by other means*’ was used in the survey as a means of capturing fly-tipped items, by elimination, as all other disposal

options were already stated. Fly-tipping is the illegal act of discarding waste in an unauthorised place.



Note that some householders used more than one disposal method

Figure 4.2. Disposal methods for bulky items (of 304 residents discarding items).

Table 4.3 reports the estimated proportion, by weight, of the bulky waste stream managed via each disposal method, and the corresponding annual tonnage throughput for England. This is based on assumptions made from first hand observation and accounts of interviewed bulky waste managers of the average number of items discarded *per use* of a particular disposal method. Council collections incur a fee for collection of up to three items, therefore residents typically discard three items at a time; when householders use a reuse organisation, sell on or give away their items, this tends to involve only one item as it must be in good condition; when a skip is hired, the HWRC used or items are fly-tipped there is no limit on the number of items, so a higher number per use is found.

Over half of household bulky wastes (by mass) are taken to HWRCs, and council collections are the second most used disposal method. Given that local authorities also collect fly-tipped waste ('by other means'), some three-quarters of the bulky waste stream is managed by Waste Collection and Disposal Authorities combined. It is not the purpose of this paper to explain the details of individual collection methods. For dedicated investigations of waste taken to HWRCs see Bridgwater et al. (2004) and work by Professor Coggins (Coggins et al., 1991, Coggins, 2002), and for WCA-

collected bulky items see Cameron-Beaumont & Lee-Smith (2005) and Curran et al. (2006b).

Table 4.3. Estimated throughput of bulky items, by method of disposal.

Method of disposal	Estimated throughput		Primary destination of items
	Proportion	England, per annum (tonnes)	
Council collection	15%	274 772	Landfill/recycled
Voluntary/charity collection	7%	123 234	Reuse
Commercial collection/ skip	10%	176 425	Landfill/recycled
HWRC	56%	1 005 057	Landfill/recycled
Private sale	1%	21 021	Reuse
Give away	6%	106 606	Reuse
By other means	5%	81 080	Landfill
Total bulky waste stream	100%	1 788 195	

Table 4.3 is provided to allow comparison between disposal methods; estimates for individual methods and the total stream may be subject to error because of the survey method used (qualitative responses; as *claimed* by survey respondents). When applying the reported throughput proportions to a specific area there may be some deviation due to local factors; in particular:

- Whether there is a charge for the council bulky items collection, the level of the charge, and the number of items accepted (this is three items in the three survey areas);
- The average travel distance and time (affected by congestion levels) to the HWRC;
- The presence of a reuse organisation, and extent of its integration with council-run services;
- Deprivation level of the area (see below); and
- Scale of fly-tipping, and measures in place to prevent it.

Responses to other questions in the survey provide a deeper insight into residents' knowledge of the options available for disposing of bulky items. Seventy-seven percent of residents knew of the council collection service for bulky items. The most common way residents had heard about the service was by word of mouth (46%), followed by a council leaflet or advertisement (39%). Only 5% of residents had been on their council's

website to find information about the bulky waste collection service, although 39% said they were likely to use it in future. Seventy-four percent of residents requested their collection by telephone, and the remaining 26% did so in person. The facility to book a bulky waste collection online is now available in some areas (Curran et al., 2006b); this was not so in any of the survey areas at the time of the survey.

Householders were found to be over-optimistic about their future use of the environmentally and socially preferable means of discarding bulky items. Asking residents how they might discard bulky items in the future was expected to, and did, yield higher positive responses than for asking their actual use over a 12 month period. However, as Table 4.4 shows, the most divergent results were in the two routes that result in reuse rather than disposal of the items; almost 60% of residents claimed they might give their items to friends or family, or an organisation that will pass on the items to others, yet only 16-20% reported doing so in practice.

Table 4.4. Actual and claimed future disposal methods of bulky items.

Method of disposal	Actual use of this method	Claimed future use of this method
Council collection	19%	42%
HWRC	62%	75%
Voluntary/charity collection	16%	61%
Give items away to friend/family/church group	20%	58%

3.2 Differences in disposal of bulky items by level of affluence

Of all respondents from the affluent areas of Swindon and Bath, 60% claimed to have discarded bulky items. This compares with 80% and 81% of respondents from areas of average and high deprivation, respectively. The average affluent householder also reported discarding 50% fewer items than their average or high deprivation counterparts. Figure 4.3 indicates that the quality of discarded items (as claimed by the residents) is lower from affluent areas compared to average and high deprivation areas.

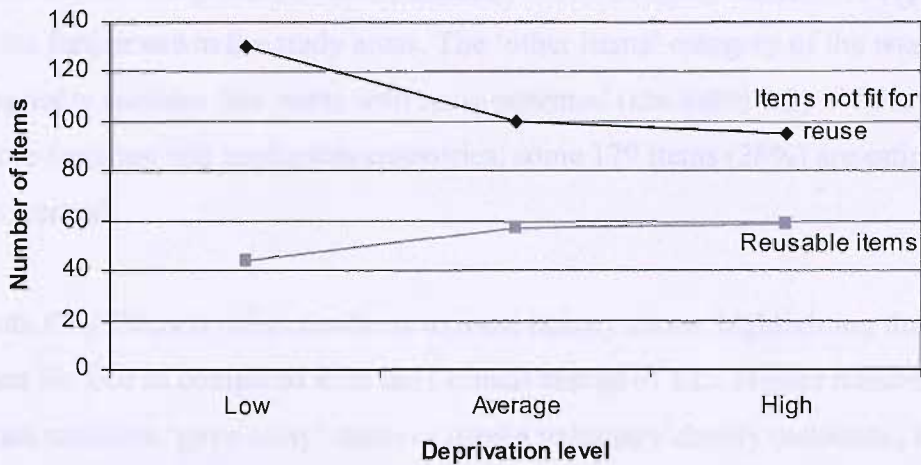


Figure 4.3. Quality of discarded items by deprivation level (127 households, 485 items).

Table 4.5 illustrates how less-affluent people are more reliant on the council collection service, and are less likely to take their bulky waste to the HWRC themselves than more-affluent residents. Of affluent respondents, 95% had access to a car, compared with only 75% across average-high deprivation respondents. Poorer residents also report donating items to a charity or church or giving them to friends/family more often.

Table 4.5. Disposal methods for bulky items, by deprivation (n=127).

Method of disposal	Level of deprivation		
	Low	Average	High
Council collection	14%	21%	23%
HWRC	71%	62%	51%
Gave items away	16%	21%	26%

3.3 Reuse of bulky items

Twenty-two percent of the 304 residents in the survey who had discarded bulky items had (at least some of) them collected by a voluntary/charity organisation.

Approximately 82 items of furniture and appliances (equivalent to 2.8 tonnes) are estimated to have been collected for reuse.

A further 7% of bulky items that are privately sold on or given away (as shown in Table 4.3) are also then reused, as are a small number of items taken to HWRCs. In Bath the HWRC has a reuse bay which the SOFA (Shifting Old Furniture Around) Project checks regularly, and discarded bicycles are separated for repair in a workshop

programme in the local prison. Overall, around 15% of all bulky items were reported as diverted for further use in the study areas. The ‘other items’ category of the waste stream typically contains few items with reuse potential (see Table 4.2). Of the 632 items in the furniture and appliances categories, some 179 items (28%) are estimated to have been reused.

Portsmouth City Council refers residents to local charity shops, highlighting that they will collect for free as compared with the Council charge of £25. Higher numbers of Portsmouth residents ‘gave away’ items or used a voluntary/charity collection, than in Bath or Swindon (see Figure 4.2). In Bath the SOFA Project collects, repairs/refurbishes and passes on items of furniture and electrical appliances to people on low income. No such organisation is known to be operating in Swindon. Twenty percent of residents who had discarded items in Bath used a reuse organisation or charity collection; in Swindon this figure was only 11%.

Residents claimed that almost 60% of their discarded furniture and 50% of their appliances were in a condition to be reused, as reported in Table 4.6. Also, 15% of residents who discarded items, when asked, stated that the requirement to leave them outside awaiting collection affected the condition of the items.

Table 4.6. Claimed reuse potential of bulky waste categories.

Category	Fit for reuse?		
	Not at all	Readily reusable	After repair/refurbishment
Furniture	41%	53%	6%
Appliances	51%	34%	15%
Other items	91%	8%	1%
Total	69%	25%	6%

3.4 Resident satisfaction with bulky waste collection services

In this part of the survey householders were asked how much they were charged and how long they had to wait for their bulky items collection. Their responses are reported in Table 4.7 and Figure 4.4. Residents in Bath and Swindon reported paying £31 on average to have bulky items removed, and waiting on average 6 days for collection

(median value). A substantial proportion of residents (21%) had to wait more than 10 days for their items to be collected.

Table 4.7. Average charges for bulky items collections (n=26).

Collection organisation	Average charge
Voluntary/charity – for reuse	£5.00
Council (WCA)	£14.20
Commercial (includes collection and skip-hire)	£59.60

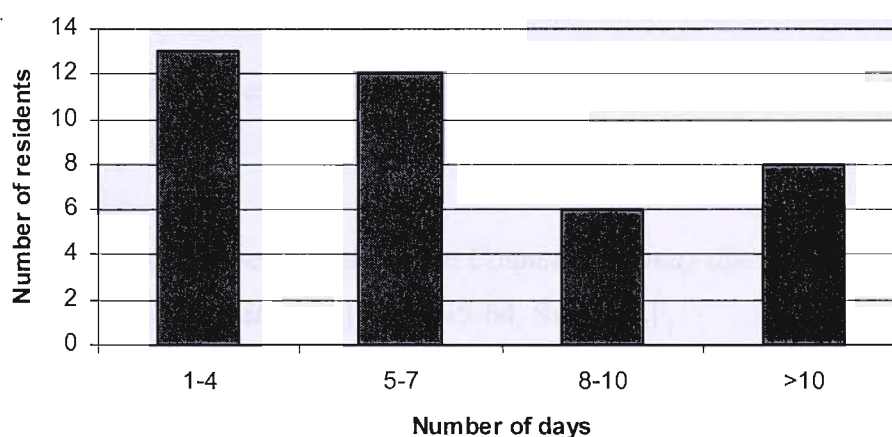


Figure 4.4. Length of wait from request to collection of bulky items (n=39).

Residents were asked to rate various aspects of the collection service they received, and to make other relevant comments. In general respondents were satisfied with their bulky waste collection service overall – as shown in Table 4.8, eight in ten were ‘reasonably’ satisfied or better.

Table 4.8. Residents’ satisfaction ratings of bulky items collections.

Attribute	Not satisfied		Satisfied		
	Not at all	Not very	Reasonably	Very	Extremely
Ease of requesting the service (n=107)	10%	13%	28%	28%	21%
Collection point (n=99)	10%	16%	27%	24%	22%
Length of wait (n=105)	16%	14%	39%	20%	10%
Value for money (n=77)	22%	18%	26%	14%	19%
The service overall (n=111)	11%	11%	34%	26%	18%

Residents were least satisfied with the value for money of the service and the length of wait for collection of their items. This is reflected more in the number of comments made relating to these two factors than in the relatively evenly-distributed satisfaction

scores of Table 4.8. Of 46 comments received, the most common complaint, made by 12 residents, was that the service should be free of charge, and a further 11 comments concerned the waiting time. Several residents related increased fly-tipping to the collection charge:

“They wanted paying so had to fly-tip. [Collection should be] free for people on benefits. Saves my committing an offence and saves council money.” [Female, 25-44, Swindon]

“There should be no charge. Charges are one excuse for fly-tipping.” [Male, 25-44, Swindon]

“Perhaps a free service (costed in the Council Tax) may discourage people from ‘dumping’ unwanted items.” [Male, 45-64, Swindon]

“Items can stop outside your home for too long. UNSATISFACTORY.”
(respondent’s capitals) [Female, 65+, Swindon]

4. DISCUSSION

This survey suggests that the household bulky waste stream involves 65% of the country’s householders each discarding an average of 132 kg of bulky items per year, equating to almost 1.8 million tonnes. Householders use a variety of means to dispose of their items. These are dominated by the HWRC, where bulky items can be taken without delay and free of charge. It has been estimated (see first 3 rows of Table 4.3) that almost one third of bulky items are collected from the householder, while small numbers of bulky items are discarded or passed on by other means, including an element of fly-tipping.

The exaggeration of self-reported participation rates of environmentally sustainable activities such as recycling and reuse (Table 4.4) has been reported in previous studies of this nature. Perrin and Barton (2001) found that 98% of surveyed residents in the city of Leeds claimed they would use a kerbside recycling scheme if it were introduced, and only 49% actually then did so; similarly Carroll (2000) found that 83% of surveyed

householders in the district of South Bedfordshire claimed to be recycling, whilst regular participation of the kerbside recycling scheme was only 40-50%. Likewise, Chan (1998) reported a low correlation between professed intentions to recycle and actual behaviour of residents in Hong Kong.

Both the reported quantity of bulky items and methods of disposal were found to differ according to the level of affluence of the respondents. In both Bath and Swindon, fewer affluent residents reported discarding bulky items than those in average or high deprivation areas. Two explanations for this are that less well-off people buy items of a lower initial quality, which are less durable and need replacing more often (cheaper goods, or bought second hand); and affluent people are more inclined to take care of their possessions, or be thrifty in nature.

With regard to disposal methods used, it was found that those in high deprivation areas had lower car ownership, and often could not take items to the HWRC themselves, so were more reliant on the council collection service. It is likely that a higher proportion of affluent residents used the HWRC in order to ensure their bulky items were recycled. The relation between affluence and propensity to recycle has already been investigated to some extent: Martin et al. (2006) reviewed previous surveys on recycling participation in Britain and reported that affluent people were more likely to participate in recycling, and that non-recyclers tended to be less affluent.

People who are less affluent claimed to be more willing to pass on items to friends or family members than those living in areas of low-deprivation (Table 4.5). This could be, in addition to avoiding the council charge, because they appreciate the value of used household essentials more, and have a network of fellow less-affluent people who are willing to accept the items. Figure 4.3 supports the hypothesis that less-affluent residents see the value in their 'waste' more than the affluent, however in reality the higher initial quality of items in affluent homes is likely to result in higher average residual quality remaining at the time of disposal: the *claimed* condition of discarded items in Figure 4.3 may be misleading. It is likely that affluent residents under-estimate the potential for reuse of their discarded items, perhaps because they are not as aware of the market for second hand, repaired items as poorer people are.

The means of disposal used has consequences for potential reuse of bulky items. The estimated 56% of items taken to HWRCs are predominantly non-reusable ‘other items’. As local authorities in England are under increasing pressure to make cost (termed ‘efficiency’) savings (Gershon, 2004), they may have to introduce or increase charges for services such as refuse collection, meaning that HWRCs will be used more by the public, and must therefore feature centrally in plans to increase the diversion of items for reuse. Improving recycling and reuse rates at HWRCs will be determined by the facilities at individual sites, including the number and layout of bays available for separation of materials, the quality of signage and the employment of site attendants, as discussed by Hogg *et al.* (2003) and Williams and Taylor (2004). Managers responsible for council and commercial bulky waste collections have little incentive to consider reuse at present: they tend to focus on providing the service in the most cost-effective manner, which remains collecting items *en masse* and taking them to the local transfer station, where their responsibility ends.

Comparing the use of voluntary/community organisations that reuse bulky items across the three survey areas, the presence of these services is seen to be an important and effective means for recovery. A recent report produced for Defra, after finding that “refurbishment and reuse of furniture and white goods is the most commonly undertaken activity”, makes the headline summary that “the voluntary and community waste sector in England makes a significant contribution to the achievement of waste reduction, reuse and recycling” (Williams *et al.*, 2005). Such organisations are also a prerequisite for the reuse of council-collected bulky items, as councils usually do not have the capability to repair items or deliver them to those who need them. These organisations, many of whom are united under the banner of the FRN, are often reliant in turn on cooperation from the local authority as a prime source of reusable items. The ensuing social benefits accrue to the organisation and the families receiving the items, in addition to the environmental benefit of diverting items from landfill. The organisations are not able to reuse all of the items they receive – they often have limited storage space, and changing fashions mean that some items have no market regardless of their condition: although still being discarded, there is very little demand for items such as TV cabinets and sideboards in the modern home.

A high proportion of residents (20%, from Figure 4.2) claimed to give away their bulky items themselves. Whilst this is estimated to translate to only 6% of bulky waste by weight (Table 4.3), it remains a major route for reuse. As with the sale of bulky items the private, informal nature of these transactions has restricted previous measurement of their throughput. The dynamics of informal exchange networks for second-hand items, such as car boot sales and jumble sales, have been investigated by Gregson and Crewe (2003). The Internet as an emerging marketplace for all goods including used bulky items, also requires mention, in particular *eBay*TM. It is acknowledged that these types of network and interaction have not been considered within this study, but are another component of the research currently under investigation by other members of the Sustainable Urban Environment Waste Consortium in England.

Bulky items that are fly-tipped and later collected by the local authority are invariably landfilled as, having been broken up, vandalised and often soaked by rain, they are usually beyond repair. Reducing the incidence of fly-tipping is the only possible means to recover items currently discarded in this way. One way to achieve this is to increase awareness of the council bulky collection scheme and any reuse organisations operating in the area – 23% of the surveyed residents did not know of the council collection service. Table 4.4 reported how 61% of residents said they might use a ‘voluntary/charity collection’ and 58% might pass items on themselves in the future – proportions far higher than the current means of disposal reported in Figure 4.2. This indicates that some respondents may not have been aware these schemes exist, and that if it were made more convenient for residents to pass on bulky items for reuse, more people would likely do so.

Survey respondents reported that over half of their furniture and household appliances were reusable. The fact that the residents admitted that 91% of their ‘other items’ were of no further use indicates that on the whole they understood the question, because, as found by Curran et al. (2006a), the ‘other items’ category of bulky waste does not include items that could be reused. It is suspected, however, that some people misinterpreted ‘fit for further use’ to include recycling of some items, hence the claimed figures may be over-estimates. This was apparent with green waste – residents hear how their composted waste goes on to be sold and used again. The composting process results in a new ‘product’ and so is formally classified as recycling not reuse. The

claimed potential reuse rates do compare well with the estimates by Reeve (2004) and Cameron-Beaumont & Lee-Smith (2005) quoted above.

Bulky items collection service users were found to be generally happy with the service they received. Residents were most frequently negative about the charge for collection. This is reflected in both the satisfaction ratings and the written comments. English people have a tendency to be quite critical of the performance of local government, particularly when it relates to financial outlay for them personally, and so the responses received were expected.

The related study by Curran et al. (2006b) found the average charge for bulky items collections by local authorities to be £18, and the standard wait time to be 7-10 days. The average charge of £14.20 and wait time of 6 days reported here by residents is slightly favourable in comparison. The council collection charge varies around the country depending on council policy and budget constraints. Comments from several residents linked charging for bulky waste collections with the incidence of fly-tipping. Some councils that do not charge for collection have explained that their decision is partly related to the negative public perception of charges being a cause of fly-tipping, as well as the cost of dealing with the fly-tipped items.

5. CONCLUSIONS

This study has made a detailed inspection of household bulky waste management in selected parts of England. The decision of householders of which disposal route to use to discard their bulky items is related to their affluence, and has consequences for potential reuse. The proximity of a Household Waste Recycling Centre will also affect residents' disposal method decision, although the sample areas for the study were selected to hold the distance to the HWRC constant to test the other factors. When the HWRC is close by – it was on average 2.5 kilometres from the survey areas – it is likely to be the dominant disposal route for bulky items where there is a charge for the council collection.

The study has shown that a charity or social enterprise that collects bulky items for reuse will be used by residents if it is present and active. From interviewing some of these organisations, such as the SOFA Project in Bath, it is known that they are often poorly funded and reliant on volunteers, government grants and donations of items to survive. Although they are part of the private/community sector and not in the control of the local authority, it is important for their success that they receive cooperation and support from the authority, whether financial or simply in the passing on of, or at least referral of collection requests for, bulky items in good condition.

Local authority waste management officers have traditionally been concerned only with meeting their obligations to collect waste. Some councils recognise the environmental benefits of reuse organisations' work in reducing the number of items sent to landfill. If they also took into account the social merits of furniture and appliance reuse – helping low income families to get the items they need, and providing volunteers with valuable work experience – they may be more inclined to commit time and resources to working with reuse organisations to maximise the diversion of bulky items. In April 2006 the Recycling Credits Scheme came into force. The parent legislation (the Clean Neighbourhoods and Environment Act 2005) included provision to allow third party payments to be made to organisations for reuse activities. This may provide the required funding to allow these organisations to expand their operations and increase the reuse of bulky items, and the incentive for councils to recognise and contribute to their work.

A reflection of this study highlights two immediate limitations, which future work on the subject could address: firstly, there is a need to assess the environmental impacts of the various routes for handling bulky items, taking a Life Cycle Assessment (LCA) or cost-benefit approach; secondly, the household survey-based methodology, whilst convenient for establishing current practice, cannot offer the insights required to determine how bulky waste management should be changed to increase efficiency and/or material recovery, such as economic and operational barriers faced by collection agencies and community organisations. A broader investigation including consultation of all the organisations involved would go some way to bridging this information gap. Further work has been identified, and is underway by the Sustainable Urban Environment Waste Consortium in England, to determine the appropriate role for reuse

organisations and the framework required for their optimum integration with local authority collections of bulky waste.

REFERENCES

Bridgwater E, Cameron-Beaumont C, Seabrook G. National Assessment of Civic Amenity Sites – maximising recycling rates at civic amenity sites. Future West and Network Recycling, Bristol, UK; 2004.

Cameron-Beaumont C, Lee-Smith C. Bulky Waste Collections – Maximising Re-use & Recycling: A step-by-step guide. Network Recycling, in association with the Furniture Reuse Network, Bristol, UK; December 2005.

Carroll S. Recycling, composting and street cleanliness study. Consultancy report, commissioned by South Bedfordshire District Council, UK; 2000.

Chan K. Mass communication and pro-environmental behaviour: waste recycling in Hong Kong. *Journal of Environmental Management* 1998;52(4):317–325.

Coggins C, Cooper AD, Brown R. Civic Amenity Sites and Recycling Centres: Public Awareness and Use. Final report for the Department of the Environment, CWM/024/91; 1991.

Coggins PC. Civic amenity sites – Cinderella at last being invited to the ball? Making Better Use of CA Sites Conference, organised by MEL Research, speaker's notes. MEL Research Ltd, Aston Science Park, Birmingham, B7 4AX, UK; March 2002.

Curran A, Heaven S, Williams ID. Collected household bulky waste in England – potential for reuse and recycling. From conference proceedings of Waste 2006, held 19–21 September 2006, Stratford-upon-Avon, Warwickshire, UK; 2006a.

Curran A, Heaven S, Williams ID. An evaluation of council bulky waste collection services in England. *CIWM Scientific & Technical Review*, September 2006, pp. 12-25; 2006b.

DETR. Waste Strategy for England and Wales. Department of the Environment, Transport, and the Regions (DETR). London, UK; 2000.

Defra. Municipal Waste Management Survey 2003/04; 2005, available from www.defra.gov.uk/environment/statistics/wastats/archive/mwb200304.pdf, accessed 05 August 2005.

Defra. Review of England's Waste Strategy: A Consultation Document; February 2006, available from www.defra.gov.uk/corporate/consult/wastestratereview/review-consult.pdf, accessed 19 July 2006.

FRN. Set of average weights for furniture, appliances and other items, available from www.frn.org.uk/pdfs/average_weights_aug_2005.pdf; accessed 18 October 2005.

Gershon Sir P. Releasing resources to the front line: Independent Review of Public Sector Efficiency. ISBN 1-84532-032-8; 2004, available from www.hm-treasury.gov.uk, accessed 16 November 2005.

Gregson N, Crewe L. Second-hand cultures, Oxford, UK: Berg; 2003.

Hogg D, Mansell D. Maximising Recycling Rates, tackling residuals. For the Community Recycling Network, Bristol; 2002, summary report available at www.crn.org.uk/publications/research/main.shtml.

Martin M, Williams ID, Clark M. Social, cultural and structural influences on household waste recycling: a case study. *Resour Conserv Recycl* 2006;48:357-395.

ONS. Indices of Deprivation 2004, available from www.neighbourhood.statistics.gov.uk, accessed 28 March 2006.

Perrin D, Barton J. Issues associated with transforming household attitudes and opinions into materials recovery: a review of two kerbside recycling schemes. *Resour Conserv Recycl* 2001;33:61-74.

Reeve S. Local Authority Good Practice in the Re-use and Recycling of Household Collection Bulky Item Waste Stream – Literature Review. Network Recycling for Defra, Bristol, UK; 2004.

Sharp L, Luckin D. The community waste sector and waste services in the UK: Current state and future prospects. *Resour Conserv Recycl* 2006;47:277-294.

TSO. Clean Neighbourhoods and Environment Act 2005. The Stationery Office Limited, ISBN 0105415057, London, UK; 2005.

TSO. The Controlled Waste Regulations 1992. The Stationery Office Limited, ISBN 0110235886, London, UK; 1992.

Toynbee P. Vital services need funding. *Resource*. September 2005;40.

Williams ID, Taylor C. Maximising household waste recycling at civic amenity sites in Lancashire, England. *Waste Management* 2004;24(9):861-874.

Williams N, Croker M, Barrett D. Review of the Voluntary and Community Waste Sector in England – Final Report. The InHouse Policy Consultancy for Defra; December 2005, available from www.defra.gov.uk/environment/waste/strategy/review/index.htm, accessed 13 June 2006.

5. The role of furniture and appliance re-use organisations in the UK

ABSTRACT

There have been approximately 400 charitable organisations and social enterprises set up across the UK in the past 35 years with the primary function of collecting used furniture and electrical appliances and re-distributing them for the relief of hardship. In addition to the resulting socio-economic outputs of these organisations, their role in diverting waste from landfill and increasing re-use and recycling rates raises their standing in the current political climate of high emphasis on improving waste management practices.

This chapter reports on the current size of the furniture and appliance re-use sector, how re-use organisations operate, and the level of re-use and recycling associated with their activities. It was found that significant improvements in the re-use rate of local authority bulky waste collection services may be obtained if a third sector re-use organisation takes over the service. In general, this kind of partnership working should be pursued by local authority waste managers where practicable. A current barrier is the under-appreciation of the cross-sector benefits, predominantly social in nature. If added to the environmental improvements and high quality of service provided by third sector-run services, the effort involved in setting up such partnerships may be regarded more favourably.

KEYWORDS: Re-use; Recycling; Furniture; Electrical appliances; United Kingdom.

1. INTRODUCTION

Over the past 35 years charitable organisations have been set-up in many areas of the UK to collect household furniture and appliances and re-distribute them to those in need. This development has been driven by the social economy, independent of government intervention¹. Each of the several hundred organisations is privately

¹ Community and voluntary organisations are referred to in the UK as The Third Sector, i.e. distinct from the Public Sector and the Private Sector. See Williams et al. (2005) for an account of Third Sector activities in England.

operated – there are no chains of a single company across multiple locations, nor brand names, unlike in the private sector and other high-street charitable enterprises. Further, there is little competition between organisations, with each operating within geographical boundaries and respecting those of others. Each organisation was established when an individual or small group of people recognised the inherent need for such a service and had the means and the passion to act on it.

Labelled Furniture Re-use Organisations within the sector to reflect the original and primary type of household item dealt with (see Glossary, Lee-Smith, 2006), other types of items now commonly collected include electrical appliances and IT equipment. These are classified as household bulky items in the waste management industry. Curran and Williams (2007) described the choices open to householders with bulky items they wish to discard: if the items are in good condition they may be sold or donated directly, to family members/friends or to strangers, or indirectly via a re-use organisation; if the items are not in a condition to be reused (and sometimes even if they are) they will be treated as waste. In this case they may be collected by the local authority or a waste collection company, for a fee, or they may be taken by householders to local authority-provided Household Waste Recycling Centres (HWRCs²) free of charge, or illegally dumped, which is known as fly-tipping in the UK.

Current household waste management strategies in the UK³, in line with EU Directives, are aimed at reducing dependence on landfill. These are being achieved primarily by establishing effective kerbside recycling services. As collected bulky items represent less than 5% of total household waste⁴, and often contain several different material types that are difficult to separate, they have been largely overlooked to date in favour of ‘easy win’ mass recycling of common materials – paper, glass, metal cans and sometimes plastics. Curran and Williams (2007) estimated that local authorities recycle approximately 30% of the bulky waste they receive (collected from households and at HWRCs), but only reuse 2-3%. Earlier work estimated potential re-use rates for household bulky waste of up to 51% for collected items (Cameron-Beaumont and Lee-Smith, 2005) and 59% for those delivered to HWRCs (Reeve, 2004). Curran and

² Also referred to as Civic Amenity sites, and known colloquially as the ‘dump’ or ‘tip’.

³ Set out in Waste strategy 2000 for England and Wales (DETR, 2000), and recently updated by the Department for Environment, Food and Rural Affairs, henceforth Defra (2007).

⁴ Less than 1.2 million tonnes of 25.4 million tonnes collected in England in 2003/04 (Defra, 2005).

Williams' (2007) assessment of the whole bulky waste stream made a more conservative conclusion: 15% is currently reused; halfway to the estimated potential rate of around 30%. They argued that local authorities, who handle over three-quarters of all bulky items, do not have the infrastructure to process and return items to the public for further use, and need to work in concert with re-use organisations that exist for this very purpose.

A recent report on the voluntary and community waste sector in England found that the refurbishment and re-use of furniture and appliances was the most commonly undertaken activity (Williams et al., 2005). Redirecting these household items from the waste stream back into use combats increased waste generation and offsets virgin resource consumption. Other research went on to describe the *additional advantage* the voluntary sector can offer over a basic waste collection service (Sharp and Luckin, 2006):

- provision of furniture to low-income families;
- promotion of citizen participation and volunteering opportunities;
- training for the long-term unemployed;
- work placements for people with learning disabilities; and
- a community building role, encouraging interaction between diverse groups in society.

A note of concern for the sector is the current dependence on short-term grant funding, found to be the case in the majority of re-use organisations. In many instances this government-awarded funding for charitable organisations was intended to cover only start-up costs, and this puts into question the financial sustainability of these organisations for the future.

The aim of this study was to evaluate the role of charitable re-use organisations in managing discarded household furniture and appliances in the UK. Individual objectives, which will be discussed in turn, were to:

- (1) Establish the number and size of re-use organisations;

- (2) Explain in detail how re-use organisations operate; and
- (3) Quantify the extent of re-use and recycling associated with these organisations.

2. METHODOLOGY

This study draws upon an extensive volume of data, the breadth and depth of which are illustrated in Figure 5.1. The three levels of data used are explained in Table 5.1, and for brevity are coded as A, B and C throughout the paper as in this table.

Table 5.1. Summary of data sets used in the study.

Data set	Title	Depth of information	Breadth of information	Description
A	FRN membership form data 2007/08	Basic	249 organisations	Required by the FRN upon renewal of membership; headline statistics for 2006 or 2006/07.
	FRN membership form data 2006/07	Basic	130 organisations	As above, for 2005 or 2005/06. Used as a check on the accuracy of the 2007/08 data.
B	FRN Survey 2005	Fairly detailed	90 organisations	These 20 page questionnaires were completed in late 2005 and so pertain to the 04/05 year. Respondents were spread across the UK.
C	Site visits and interviews	Detailed	20 organisations	Conducted February-June 2007. Rigorous selection procedure to ensure sample was representative of re-use organisations in England in terms of size (by turnover) and geographical spread (see Figure 5.2).

From Figure 5.1 and Table 5.1, it can be seen that the three distinct data sets combine to provide excellent coverage of the nature and variety of re-use organisations' activities in the UK. In addition, they served to validate each other and improve the confidence of interpretation of the data and subsequent conclusions. The 20 in-depth visits to re-use organisations across England, together with attendance at the previous two sector-specific conferences, organised annually by the FRN, enriched the data with case study examples and anecdotal evidence.

Sector experts were consulted in the selection of re-use organisations to be visited and as a check on the final data used to ensure it is 'sensible'. This included the management staff of the FRN and the development officer of London Community Recycling Network (LCRN).

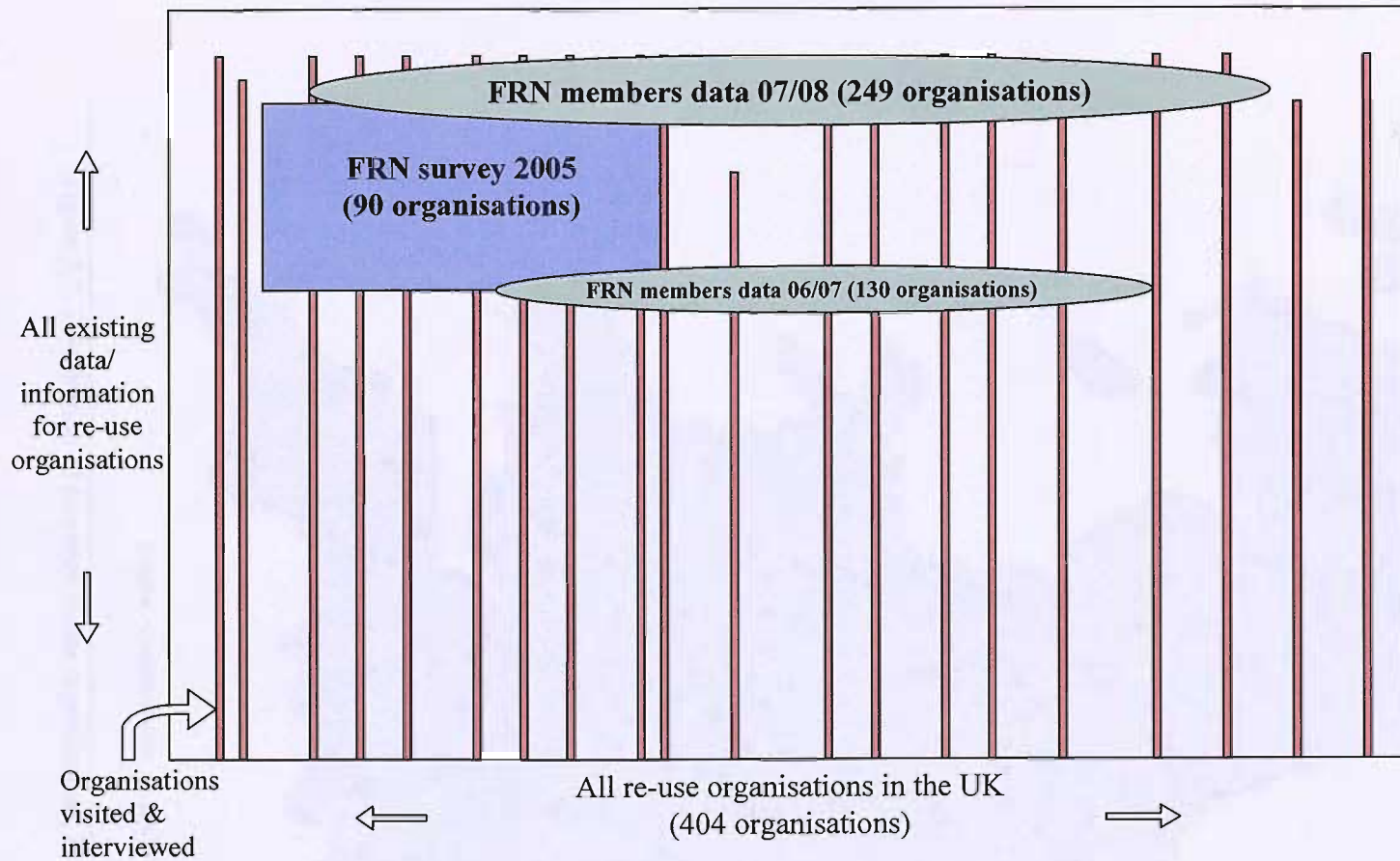
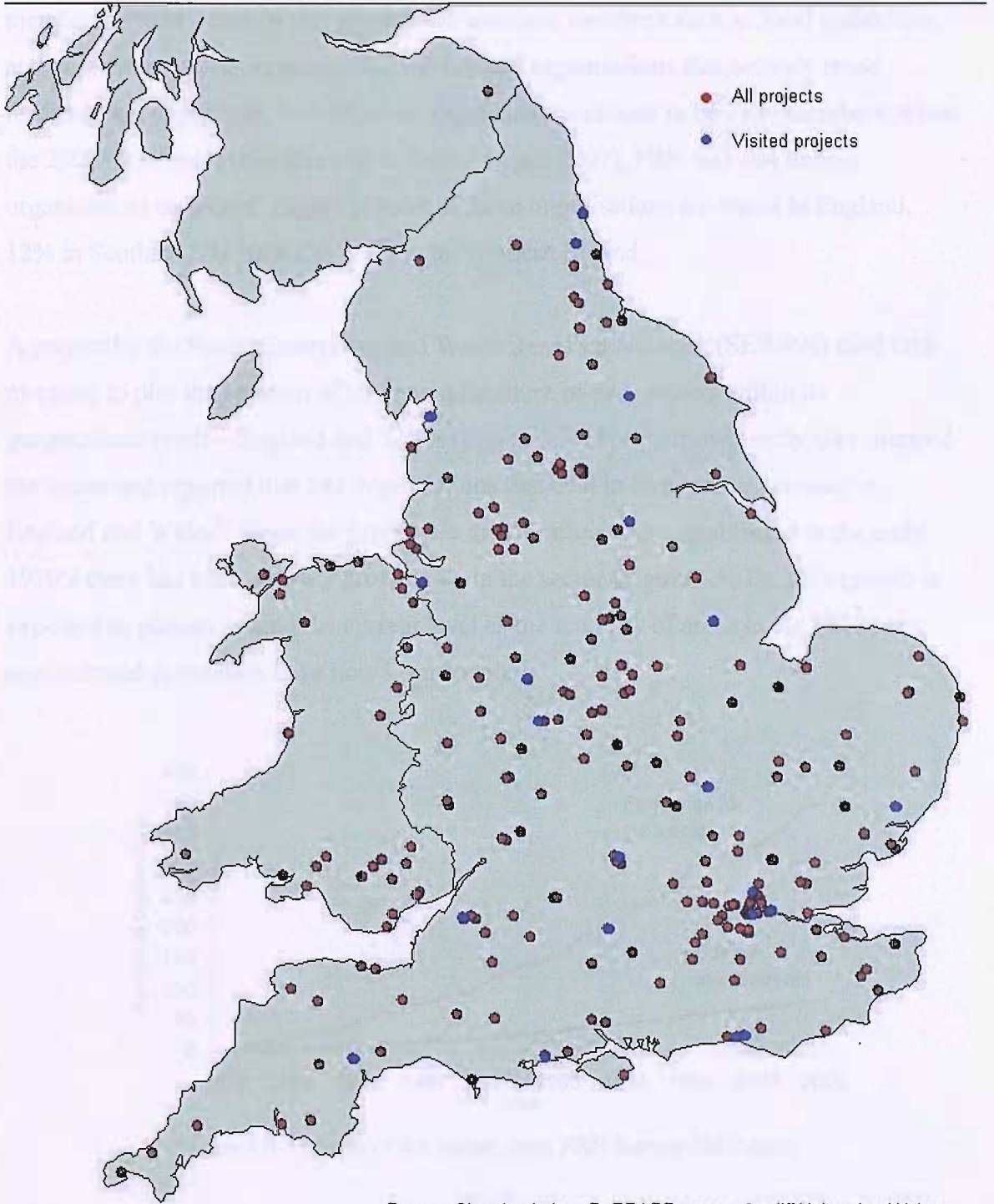


Figure 5.1. Schematic representation of the coverage of organisations included in the study.



Source: Chandrashekar, S. BRASS centre, Cardiff University, Wales.

Figure 5.2. Distribution of furniture re-use organisations, England and Wales, 2007.

3. RESULTS

3.1 The number and size of re-use organisations in the UK

From returned membership forms for 2007/08 the FRN reported that they have 311 members. Twenty-four of this number are associate members such as local authorities and regional network organisations, leaving 287 organisations that actively reuse furniture and appliances. Not all re-use organisations choose to be FRN members; when the 2007/08 membership data was collected (April 2007), FRN had 404 known organisations on record. Eighty percent of these organisations are based in England, 12% in Scotland, 7% in Wales and 1% in Northern Ireland.

A project by the Social Enterprises and Waste Research Network (SEWRN) used GIS mapping to plot the location of all known furniture re-use projects within its geographical remit – England and Wales (Figure 5.2). For their own study they mapped the sector and reported that 242 organisations that deal in furniture are present in England and Wales⁵. Since the first re-use organisations were established in the early 1970's there has been a steady growth rate in the sector (Figure 5.3, B). This growth is expected to plateau around the current level as the majority of areas in the UK of any concentrated population have now been covered.

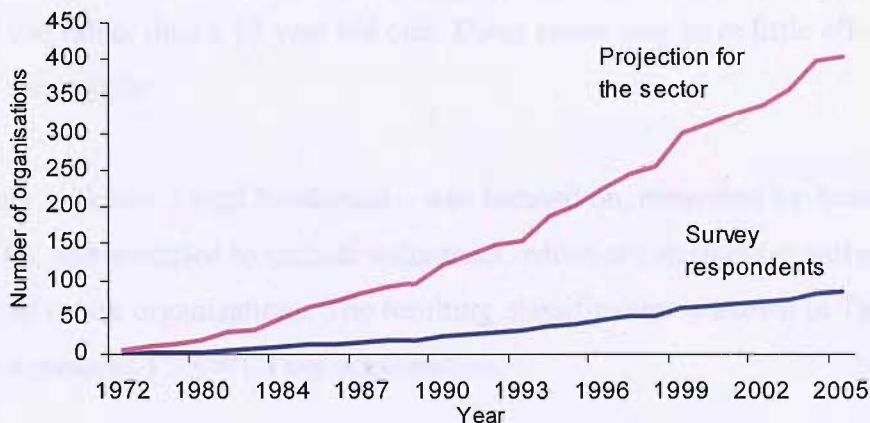


Figure 5.3. Growth of the sector, from FRN Survey 2005 data.

The charitable nature of re-use organisations makes it difficult to apply the established European categorisation of businesses into Micro, Small and Medium-sized Enterprises (SMEs). The constituent characteristics, staff headcount and turnover (or alternatively annual balance sheet total), do not reflect the true economic activity of re-use

⁵ This is in comparison with the 351 known to exist by FRN. This can be partly explained by the SEWRN study only having counted those involved in furniture re-use (not exclusively electricals, IT equipment or office furniture), and also by the fact that their work was carried out approximately 1 year before FRN's estimation.

organisations, because they rely heavily on volunteers rather than paid staff, and their income is lower than entrepreneurial businesses due to the way they operate, i.e. selling furniture at a price below its true value, or giving it away free of charge. To capture the size of re-use organisations in the UK two measures have been used – an augmented definition for SMEs, and physical output in terms of furniture and appliance re-use.

An augmented classification system was established to take into account the specific structure and operating conditions found in re-use organisations. Turnover was rejected as a factor for two reasons:

- using the European limits (annual turnover of less than 2 million Euros) some 98% of organisations would be consigned to the ‘micro’ category; and
- perhaps more pertinent, the relation between turnover and other indicators of activity in re-use organisations (number of staff, volunteers, vehicles, premises, and amount of material collected and reused) is spurious, in part because *ad hoc* grant funding is often a considerable portion of total income, and may only determine for example how much floor space can be afforded, or whether an organisation uses a 2 year old van rather than a 15 year old one. These assets may have little effect on material throughput.

The remaining indicator – staff headcount – was focused on, measured by Annual Work Units (AWUs), and modified to include volunteers, which are an integral part of the labour force of re-use organisations. The resulting classification is shown in Table 5.2, which gives a mean of 15 AWUs per organisation.

Table 5.2. Classification of re-use organisations by staff headcount.

Size	Definition	Number of organisations	Proportion, %
Micro	<10 AWUs	112	48
Small	<50 AWUs	113	48
Medium	<250 AWUs	9	4

Note: Employed for one year, 1xFT staff = 1 AWU, 1xPT staff = 1/2 AWU, 1 volunteer = 1/4 AWU

The physical output of re-use organisations is measured by the number of items distributed, across six different categories (Table 5.3). Over one million items were reported to be sold or donated, two-thirds of which (by weight) came under the heading

of household furniture (A). Only 61% (on average) of the organisations were able to provide data on the number and weight of their throughput, therefore the reported figures have been scaled up in the final two columns of Table 5.3 to represent, respectively: all 249 re-use organisations included in this study; and the 404 re-use organisations known to exist in the UK⁶.

Table 5.3. Material throughput of re-use organisations (by supply) in 2006/07.

Category	Number of items		Tonnage		% (by weight)	Number of items scaled up	
	Total	Mean per organisation	Total	Mean per organisation		249 organisations	404 organisations
Household Furniture	705,595	4,704	19,995	132	68.5%	1,091,320	1,770,656
Electrical appliances	142,154	1,269	6,018	52	20.6%	248,770	403,626
Office furniture	28,428	768	958	25	3.3%	49,173	79,782
IT equipment	178,999	4,838	1,925	52	6.6%	411,214	667,190
Starter packs	3,834	240	179	11	0.6%	6,710	10,886
Paint (in litres)	90,489	4,309	100	5	0.3%	163,742	265,670
Total	1,149,499		29,175			1,970,928	3,197,811

Further calculations reveal that the overall mean level of re-use per organisation was 6,619 items in 2006/07, or 132 items per week. The median value is 3,670 items re-used (73 per week), which better reflects organisations of typical size; the mean is upwardly skewed by a small number of very large organisations. The size of organisations, as indicated by the volume of re-use, varies considerably (Figure 5.4).

⁶ This assumes that the re-use organisations that are FRN members and provided data on number and weight of items sold/donated are representative of all re-use organisations. It may be that non-FRN members and non-reporting organisations are typically smaller than those who are members and did provide data, and so the scaled-up figures may be over-estimates. Nevertheless, these figures are the best available estimates for the scale of operations of the sector.

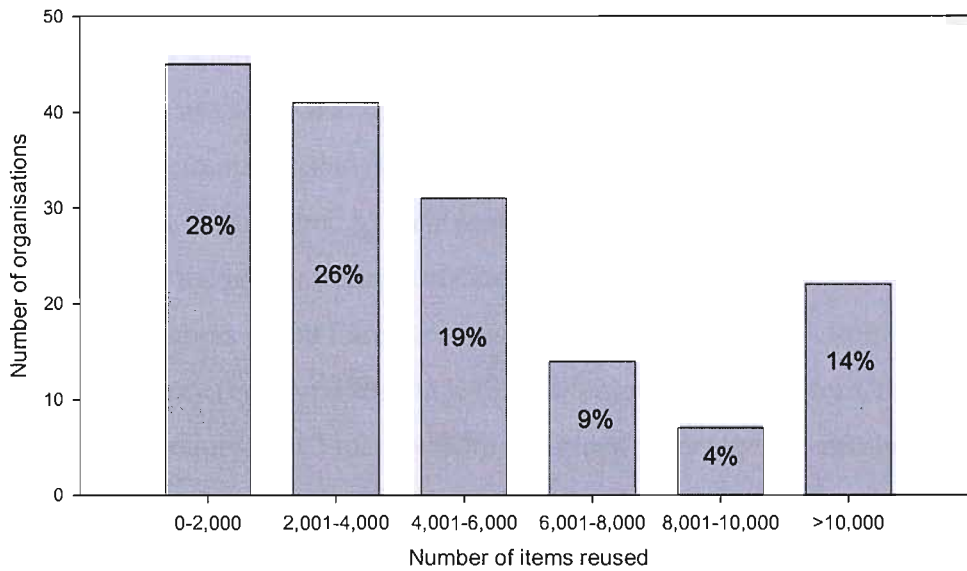


Figure 5.4. Re-use in 160 organisations in 2006/07 (1,059,010 items, paint not included).

The problems with using turnover as an indicator of size for re-use organisations have been highlighted, however as a commonly used statistic for this purpose, the turnover for 238 reporting organisations is presented (Figure 5.5, A). Although turnover ranged from just £600 to over £3 million in 2006/07, Figure 5.5 shows that £100-200,000 per year is typical. The mean value is £228,000 and the median, which better represents the typical organisation, is £117,000. These figures are validated by those from the FRN survey (mean turnover £216,000; median £140,000, 47 responding organisations, B).

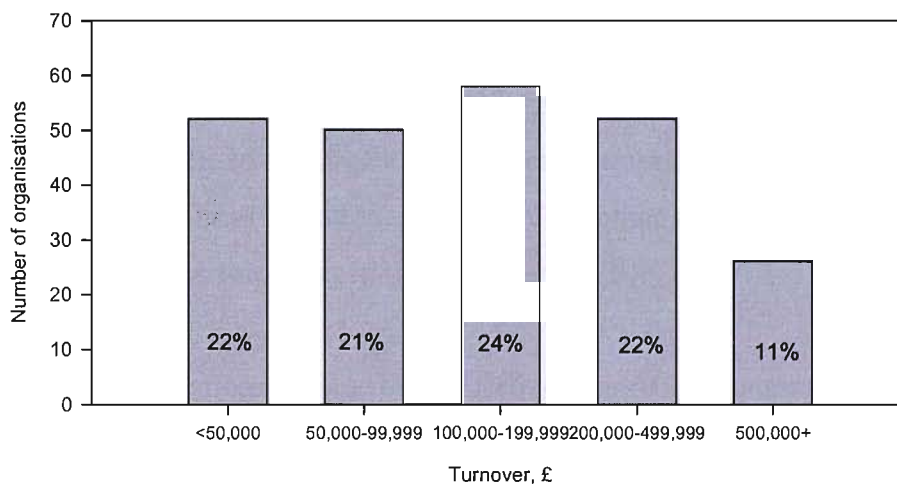


Figure 5.5. Turnover in 238 re-use organisations in 2006/07 (Total £54.3 million).

3.2 The operation of re-use organisations

Furniture and appliance re-use organisations are predominantly charitable organisations (93%) which are often also (or exclusively) social enterprises, registered as a company limited by guarantee (63%), as indicated by the FRN survey (B). Ten respondents of this survey (11%) referred to their project as a ‘voluntary organisation’, whilst six preferred the name ‘community business/group’. Data from the FRN (A) indicates that 71% are members of the Furniture Re-use Network (287/404 – from section 3.1), and the FRN survey (B) found that 48% (also/alternatively) opted for Community Recycling Network (or equivalent⁷) membership. Fourteen percent were members of the National Council for Voluntary Organisations.

The basic operation of re-use organisations can be summarised in simple terms: labour, vehicles and premises are used to collect donated household furniture and appliances and re-distribute them, possibly after some repair, to others, predominantly those of low income. There are a number of complications to this model, and some innovative variations, which will be reported in this section along with explanation of the primary resources involved.

3.2.1 *Collection of unwanted items*

The process begins when a householder contacts their local re-use organisation to arrange for the collection of unwanted items that are still in good condition, usually by means of telephone call direct to the organisation. Another common method is for the waste collection service call centre of local authorities to re-direct requests for a bulky waste collection to the re-use organisation when appropriate; this was found to occur in 73% of local authorities (Curran et al., 2006). Two other sources of items are known to be prevalent from the responses in the FRN survey (B):

- 28% of organisations obtained items free of charge from commercial enterprises, usually entailing end-of-line products or ‘seconds’ – items that still fully function but have been cosmetically damaged so can no longer be retailed; and

⁷ The equivalent for Wales is Cylch; also stated were Community Recycling Network Scotland and London CRN.

- 24% of organisations claimed to visit a local HWRC at regular intervals, which may have a re-use bay or a container on-site⁸.

Twelve of the interviewed re-use organisations were able to provide data on their sources of items (C). The main source in all cases was donations from the general public, and this was supplemented in all but one of these organisations by other sources, as indicated in Table 5.4.

Table 5.4. Sources of incoming items in re-use organisations.

Source of items	Proportion of organisations %	Proportion of items from this source %
Public donations	100	86
Commercial organisations	75	9
Bulky waste collection service	42	2
HWRC	25	3

Collection requests are organised into a schedule, which can take into account the geographical layout of the area covered by the organisation, and the availability of its resources, in terms of time and space, as explained in 3.2.2 to 3.2.4. This will determine whether specific requests are accepted, and if so, the length of wait until collection. The typical scheduling practices of a small number of sampled re-use organisations (from C) indicates that donors often only have to wait one or two days for collection of their items; this can extend to over a week if the organisation visits a different sub-area of their catchment area each week-day, when the donor's sub-area has already been visited in the week they make their request. All but two of the organisations visited collect items free of charge (of those that do, one makes a £5 charge and the other £10, per collection).

3.2.2 Labour

Re-use organisations tend to employ a small number of paid staff, supported by a larger complement of volunteers. Exceptions to this rule occur where an organisation is contracted to carry out a bulky waste collection service on behalf of a local authority;

⁸ In August 2007, 25 local authorities had formal agreements for a re-use organisation to collect reusable items discarded at their HWRCs. Other re-use organisations have informal arrangements (FRN, 2007).

volunteers cannot always be relied upon to attend, and along with contracted work comes revenue to cover expenses including labour costs.

Across 245 reporting organisations (A), 2,255 paid staff were employed, and over three times this number of volunteers were accommodated (Table 5.5). Allowing that the median values (in Table 5.5) better represent the mid-sized re-use organisations, and that volunteers and trainees are highly transient, many having an estimated turnover rate of three to six months, a typical headcount of labour at re-use organisations at any time is 10 staff/volunteers, plus for those that take them, four or five trainees. The variation across all organisations should be appreciated: a small proportion of organisations, 5%, each employed more than 20 full time staff, whereas 36% of organisations employed zero, one or two full time staff only. The 15 organisations employing the highest number of volunteers accounted for 36% of all volunteers (2,480).

Table 5.5. Distribution of labour in re-use organisations in 2006/07.

	Number of organisations	Number of staff (% of total)	AWUs	Mean ¹	Median ¹	Maximum
FT staff	215	1,606 (12%)	1,594	6.6 (7.5)	4 (4)	86
PT staff	176	649 (5%)	324	2.7 (3.7)	2 (3)	30
Volunteers	231	6,970 (49%)	1,589	29.0 (30)	15 (16)	434
Trainees	154	4,708 (34%)	0	19.0 (31)	5 (15)	230
Total	245	13,933	3,507	56.0	35	434

¹Note: figures in parentheses denote the value when only counting the number of organisations with that labour type.

The contribution to the total number of Annual Work Units in the sector gives an approximation to each type of labour's productivity: of 3,507 AWUs 55% were contributed by paid staff (five in six of whom were full time staff) with the remaining 45% of AWUs being volunteered.

Some 4,708 people were taken on as trainees, with an average of 31 trainees present at each of the 64% of organisations that deliver training. Trainees must also be included under the 'labour' heading, because in the furniture and appliance re-use sector training is usually delivered in a practical, 'on the job' manner. The FRN survey data (B) reveal that many placements, which often include training, are catered for by re-use

organisations: 55% of organisations accepted people on the New Deal⁹ programme – an average of nine per organisation; 36% of organisations took on offenders serving Community Service placements¹⁰ (515 individuals across 90 organisations, or six per organisation); almost one-third of organisations provided specific training programmes – NVQs, Open College Network courses and college placements.

These figures suggest that overall some 23,100 people work, volunteer or receive training at the 404 re-use organisations in the UK.

3.2.3 Vehicles

The collection and delivery of large household items is a vehicle intensive process. This is just as true for labour, but given that re-use organisations tend to have access to volunteer workers, the number of vehicles that can be afforded is sometimes cited as the limiting factor of throughput. From 2007/08 membership data 649 vehicles were in use by 240 organisations. This varies from one vehicle per organisation (the modal value) to a fleet of 10 or more vehicles in the largest organisations, which run bulky waste collection services for the local authority. The organisation *Turntable Furniture* uses two vehicles (the median value) to service the city of Exeter (Box 5.1). This organisation follows a fairly common operating model and so is reasonably representative of the sector.

TURNTABLE FURNITURE, EXETER, SW ENGLAND

- Turntable began in 1993 and still operates to its original principles: supplying furniture and appliances only to people referred as being in real need.
- Turnover in 2005/06: £101,000 (plus the value of donated items).
- In 2006/07 Turntable collected just over 4,000 items; 88% were re-distributed for re-use, and 6% were recycled via a recycling centre (wood) and scrap merchant (metals).
- Turntable operates from four co-located buildings and uses two 3.5 tonne box vans to service a different area of Exeter each week day.
- Approximately 19 volunteers across the year, mostly long-term unemployed, received practical work experience and learned new skills to help them back into work.
- A small workshop operated by volunteers allows very basic repair of items.

Box 5.1. A “typical” re-use organisation.

⁹ A government initiative to create training opportunities as a means of helping the long-term unemployed to return to work.

¹⁰ Individuals ordered by court ruling to serve a number of hours of community work, as punishment for minor offences.

Scaling up for the 404 known projects across the UK, up to 1,075 vans are in operation typically five days per week in the business of collecting and re-distributing used furniture, electrical appliances and IT equipment. From the more detailed FRN survey data (B), it can be estimated that half of all vehicles in use are 3.5 tonne (Gross Vehicle Weight) box vans, while 36% are smaller transit vans and 13% are 7.5 tonne box vans.

3.2.4 Premises

The final basic resource required for re-use organisations to operate is physical space in which to store, process and display collected furniture and appliances. FRN data (A) reported that 515 separate premises were in use by 248 organisations, which suggests that 840 premises are in use by all re-use organisations across the UK. This equates to a median of two each, although it is more common for an organisation to have only one facility (modal value), such as with *Turntable* (Box 5.1). Where more facilities are used, this often reflects the concentration of urban areas within a single organisation's boundaries, for example, coverage of two neighbouring but distinct towns. This is the case with *Furniture Matters* (Box 5.2), which is presented here to represent the larger and more advanced organisations that are starting to emerge in the sector. Some organisations hire a storage facility in addition to their primary facility. Just over a quarter of premises were specified as retail shops, with the remaining facilities listed as warehouses (many of which are open to the public). This is indicative of the low funding associated with the sector: most organisations are compelled to locate in out-of-town industrial estate units or high street premises with low rent charges. In some cases this is a conscious choice, where locating in an area of high deprivation in close proximity to residential estates better serves the organisation's clientele.

FURNITURE MATTERS, LANCASTER AND MORECAMBE, NW ENGLAND

- Furniture Matters is a pro-active social enterprise with roots in traditional furniture re-use. The company tests and repairs electrical items and IT equipment, and operates 9 premises in total, including substantial retail space.
- Turnover in 2005/06: £580,000 (expected to exceed £1 million in 2006/07).
- In 2005/06, Furniture Matters collected 20,480 items in total; 73% of items were delivered to 8,765 local people for re-use, and a further 12% were recycled.
- 143 volunteers served in 2005/06 and 46 training placements were provided.
- Furniture Matters receives items from commercial sources such as end of line surpluses.
- In 2006, Furniture Matters took on the bulky waste collection service on behalf of the local authority. During the first six months of operation the service achieved a 40% re-use rate, with a further 25% of items recycled.

Box 5.2. An “advanced” re-use organisation.

The size of premises is also important – although it may be desirable to offer a professional-looking retail front to customers, the floor space requirement that comes with storing and displaying large quantities of furniture and appliances often makes the non-retail, warehouse unit much more practical, and allows more space to be purchased for a given expenditure. The facilities contained within re-use organisation premises will usually include: an area for displaying items available for purchase, sometimes with a reception area; a staff-only storage area; a loading/unloading bay; office space for manager, administrative and call centre staff; an area for assessing, cleaning and conducting repairs on collected items; outside space for vehicles and waste skips. Some organisations have diversified to attract additional income streams or more custom, and may have dedicated training facilities or a café/bistro. Re-use organisations tend to operate a 30-35 hour week, 6 or 7 hours per day Monday to Friday (B).

3.2.5 Processing incoming items

Organisations were observed to have two screening stages for incoming items before they reach the depot, in order to minimise the collection of items which cannot be passed on and would require disposal: when arranging a collection and at the point of collection. Both call centre staff (including local authority staff where customers are re-directed from the bulky waste collection service) and collection crew are aware of what items should not be accepted. There are two reasons that items are refused:

- Their condition is too poor for the re-use organisation to be able to salvage them;
and

- There is no demand for that particular item, either because the organisation already stocks a surplus of that item (short term, localised effect), or trends have changed (longer term, nationwide effect) – it was found during the project visits that certain items of furniture, such as functional but dated sideboards and tallboys, are often refused because there is little demand for them today.

On return from a collection round the vehicle is unloaded and items are assessed and sorted. Those fit to be placed out for sale are usually valued and displayed immediately. This process is carried out by the staff and volunteers manning the vehicle and shop/warehouse, and overseen by the project manager, or where funding permits the position, the retail/warehouse manager or coordinator. Some projects will include a cursory cleaning stage in this routine. Some items may be placed in storage or transferred to another location depending on current stock levels. In the 80% of organisations that deal in electrical items, Portable Appliance Testing (PAT) is conducted on all incoming items in-line with health and safety regulations. This tests the earth continuity and ensures that the wiring and cabling within the appliance is intact. Visual checks (e.g. that nothing is loose; there is no rust) and functional checks (e.g. that fridge/freezers get cold; cookers get hot; washing machines complete a full cycle) are also carried out prior to display.

Sixty-two percent of the organisations that returned the FRN membership form in 2006/07 recorded that they were involved in the repair or reprocessing of furniture or appliances. The 2005 FRN survey found that 54% of organisations '*repair or replace parts of electrical equipment*', and 35% '*run a wood repair shop*' (B). Upon further investigation, it is apparent that almost all projects conduct repairs to one extent or another, even those who initially claim not to, as illustrated by typical comments from interviewed managers (C):

- “Well, we’ll fix knobs on doors, for example, but we don’t have a workshop.”
- “We’ll give something a light sand and varnish, but nothing more.”
- “We do only minor repairs...would like to do more but can’t get a [volunteer] carpenter.”

- “We can do basic repairs as necessary...might replace a belt on a washing machine.”
- “We do ‘running repairs’ – springs in a bed, a new chair leg, cooker rings, nothing huge.”

3.2.6 Re-distribution of items

When items are ready for sale they are displayed in the shop or warehouse. The layout of items is restricted by space, but where possible they are co-located by room of use – lounge, kitchen, dining room, bedroom. The presentation of items ranges from very poor in some organisations – stacks of mattresses lined up *en masse*, furniture side-by-side with no space to view it, etc; to a high standard in others, approaching that of high street retailers – rooms laid out *perfectus*, for example a made-up bed, wardrobe and bedside cabinet complete with vase of flowers. Each item is labelled with the price¹¹, which is determined by the ethos of the organisation. Whilst some have a set range of prices, and choose the appropriate price for each item based on its quality, and related to its market value, others see this as contrary to their duty to provide basic items to those in need, and sell them at a set price on a first-come first-served basis, irrespective of their actual value.

Another decision individual organisations must make, and which the sector as a whole is divided on, is whether to provide items exclusively to those on low income or sell to the general public. Of those organisations visited for this study (C), two in three chose to offer their goods to the general public. Across these projects, 45% of all items were sold to the general public and 55% to those on low income. These organisations tend to offer a two-tier pricing system or have a set mark-up value, often 50%, to distinguish between those on low income and not. The rationale of organisations that sell to the general public is that the extra revenue generated can be used to further their charitable objectives. Across 13 of the organisations that provided breakdown data, 24% of items were sold to the general public and 76% to those on low income. The FRN surveys (B) obtained more detailed client breakdown data from 42 organisations, as shown in Figure 5.6.

¹¹ This is consciously set a level below the market value; the typical price charged for basic items such as a sofa or bed is £20-50 (C).

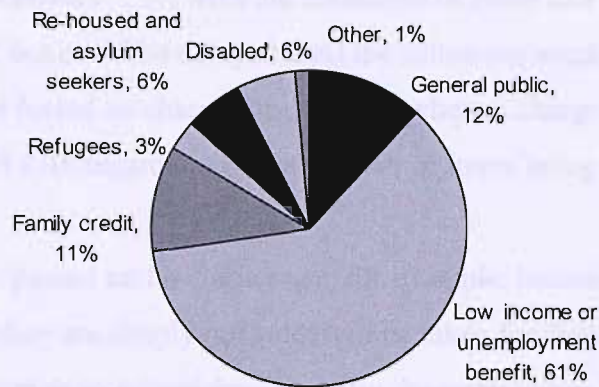


Figure 5.6. Destination of items distributed by re-use organisations by client group.

Organisations that deal with low income groups such as those included in Figure 5.6 play an important role in bringing together those in need of low-cost household items and the local re-use organisation. These are termed *referral agencies* within the sector, reflecting how some re-use organisations require their clients to be referred by an official institution as proof of their low income status, or simply because such agencies direct people to them. Some of the re-use organisations visited had a network of several hundred local agencies¹² in contact with people on low income, and for charitable organisations with little or no resources available for employing traditional advertising methods, referral agencies are the key to reaching their client group. Along with what is likely to be the second-most effective means of raising awareness of the existence of the re-use organisation, word of mouth, however, it is difficult to assess the impact of referral agencies. Ten of the visited re-use organisations (C) were able to provide information on their use of referral agencies: 68% of the items that went to people on low income were via referrals; the remaining 32% of items were sold to ‘self-referred’ individuals, i.e. those who showed proof of low income.

A number of organisations give away items free of charge in cases of particular hardship. Nine (45%) of the organisations visited admitted doing so, in what tended to be a regular but infrequent manner (C).

¹² Some of the agencies most often cited in interviews with re-use organisation managers were local council departments, including Social Services, housing, unemployment and homelessness units.

Once a customer has chosen and paid for (where applicable) the items they need, they will be released for delivery¹³. As with the collection of items this is often carried out within a day or two, but could be delayed until the following week. Half of the organisations visited levied no charge for delivery; where a charge was made this was typically a flat fee of £10, regardless of the number of items being delivered (C).

Items that cannot be passed on for further use, for example, because they do not pass electrical testing or they are simply not sold, will be taken for disposal. Some organisations send metals to a local dealer to gain the scrap value. Items for disposal will be accumulated in a storage area until it becomes practical to make a trip to the HWRC (or scrap yard). The extent of recycling at the HWRC, and the final disposal destination, incineration or landfill, is determined by the Waste Disposal Authority operating the centre. Disposal is generally free of charge – for both the surveyed organisations (B) and those visited (C) only 10% were not allowed access or charged at commercial rates. The Disposal Authority paid re-use credits to 20% of the surveyed organisations in 2005 (B); 18 months later this figure had increased to 34% (A), reflecting recent efforts in lobbying authorities to pay credits to third party organisations rather than only Waste Collection Authorities, and indicating a wider recognition of the work of re-use organisations. Some Disposal Authorities that do not pay re-use credits for the items passed on for further use, will at least pay recycling credits for the weight successfully recovered at the HWRC.

3.2.7 Bulky waste

A new way that re-use organisations have diversified in recent years is involvement in the management of household bulky waste, including its collection from households, which is traditionally carried out by local authorities, and the processing of bulky items deposited at HWRCs by householders. There are two reasons why re-use organisations might want to do this:

- To increase supply of re-usable items of furniture and appliances; and
- To secure a guaranteed income stream.

¹³ Where items are small and/or lightweight or a customer has a large private vehicle they may not require delivery, but this is uncommon.

There are counterpoints to the arguments in favour of involvement in bulky waste collections: a hot debate at the FRN annual conference 2006 was the decision between staying true to the core charitable objectives of one's organisation – helping those in need – and what is regarded by some as *selling one's soul to the devil* by taking on formal waste management contracts, which often preclude the use of volunteers and may require fundamental changes in the structure of the organisation. Some organisations therefore choose not to seek out such work; and others do not have the necessary skills (e.g. managerial experience) or resources to make a viable bid to run a local authority waste management service under sub-contract.

The FRN are in favour of re-use organisations establishing bulky waste collection agreements with local authorities where appropriate. Their guide for this maps out five levels of partnership for both the local authority bulky waste collection service and HWRC activities (Lee-Smith, 2006). These range from simple agreements to refer householders with items in good condition to the re-use organisation, to formal contracts for all bulky waste to be collected by the re-use organisation, or to have staff and retail outlets on the sites of HWRCs. In August 2007, thirty-four re-use organisations across the UK were involved in bulky waste collections on behalf of local authorities and twenty-five were active in HWRCs, and the FRN are assisting re-use organisations in other areas to set up such partnerships (FRN, 2007). Seven of the organisations visited (C) carried out bulky waste collections; the general consensus was that such contracted work will always be a secondary operation to the principal objectives of collecting donated furniture and re-distributing it to those in hardship. The bulky waste collections tended to occupy up to 50% of the organisations' resources, although this roughly equates to the growth experienced from the extra revenue generated from the local authority contract. *Furniture Matters* (Box 5.2) offers a good illustration of the superior recovery rates that can be achieved when a re-use organisation runs the bulky waste collection compared to the typical local authority service (2-3% re-use – see the introduction section).

3.3 Re-use and recycling

This section returns to the consideration of re-use organisations from a waste management perspective. As the environmental outputs from their activities are secondary to the main concern of providing items to those in need, re-use organisations do not always record the weight of their material throughput, nor its final destination, and this makes it difficult to quantify recovery rates. Curran and Williams (2007) estimated that re-use organisations, whilst handling only 7% of all household bulky waste, accounted for 40% of the reused portion in 2004/05. The re-use of bulky items via these charitable organisations has been noted above as approximately 3.2 million items (Table 5.3), or 76,000 tonnes, across the UK. It is fair to say that if re-use organisations did not operate, the majority of the items they reuse would instead be disposed of¹⁴.

The managers of the visited re-use organisations (C) were asked to estimate what proportion of incoming items were re-used, recycled and disposed of as waste. Twelve managers were able to provide these data with reasonable confidence of accuracy. Across these organisations, on average, 85.5% was reused, with just under half of the remainder recycled and just over half disposed of (Table 5.6).

Table 5.6. Final destinations of bulky items collected by re-use organisations.

Final destination	Mean, %	Minimum, %	Maximum, %	Weight, Tonnes
Reused	85.5	60.0	96.0	76,460
Recycled	6.3	0.0	30.0	5,665
Disposed of	8.2	4.0	15.0	7,305

Note: weights based on Table 5.2 (29,175 tonnes reused by 150 organisations) scaled up for 404 organisations

A small number of organisations have diversified by undertaking kerbside recycling collections on behalf of the local authority. Of the 249 organisations included in the study (B) just over 6,000 tonnes was reported to be recycled in 2006/07. Much of this¹⁵ was materials commonly collected for recycling, including paper, glass and metal cans, rather than wood and metals from bulky items. For example, *Furniture Now!* in

¹⁴ Curran and Williams (2007) reported that 81% of bulky waste is collected by local authority or commercial sources or taken to HWRCs, and in these disposal routes re-use is only 1-3% and the recycling rate is up to 31%.

¹⁵ The FRN's membership form 2007/08 did not ask what materials were recycled, only for the total tonnage.

Eastbourne and Lewes, Southern England, collected 1,271 tonnes from their kerbside collection service in 2006 on behalf of Lewes District Council. This compares with a mean recycling rate for bulky items, equivalent to 6% of throughput (Table 5.6), of only approximately 14 tonnes.

4. DISCUSSION

This study has reported that there are approximately 400 furniture and appliance re-use organisations in the UK, providing most of the population with an alternative means of discarding their bulky items to waste disposal (subject to a minimum residual condition of the items). A ‘typical’ organisation has the following characteristics, by median values (or frequency in parentheses):

- Registered charity (also likely to be a company limited by guarantee);
- Member of the Furniture Re-use Network (and maybe the Community Recycling Network);
- Turnover of £117,000 per annum;
- Passes on 3,670 items for re-use per annum, or 73 per week;
- Sources of items: public donations (~86%), most of remainder manufacturer/retailer seconds;
- Management route for items: re-use (85%), recycling (7.5%), landfill/incineration (7.5%);
- Destination of reused items: low income groups (76%), general public (24%);
- 4 full-time staff, 1-2 part-time staff and 4-5 volunteers working at any one time;
- Training delivered (informal ‘soft skills’ in all cases; formal courses: 64%); and
- 2x3.5 tonne box vans in operation 5 days per week.

It was found that there is great variation in the size of re-use organisations; most notably, a small number of enterprises have diversified by taking on responsibilities for managing bulky waste on behalf of their local authority, and have grown considerably (annual turnover approaching £1 million). In general, the size (actual and potential) of re-use organisations can be attributed to a number of factors. Some of these are outside of the control of the organisation, such as:

- the size of the population within the catchment area of the organisation;
- the concentration of other re-use organisations in the area;
- the price and convenience of alternative methods for discarding household bulky items, such as whether the local authority bulky waste collection service is free of charge or not, and the proximity of HWRCs; and
- the price and convenience of obtaining low-cost household items by alternative means, dependent on the existence and effectiveness of similar services, such as local charity shops, car boot sales, and social services/housing departments, and the ability to access the Internet-based resources of *Freecycle*TM and *eBay*TM.

Other factors may be within the control of the organisation. These are related to the competencies of the organisation and the project manager in particular, and include: business and negotiation skills, marketing and networking skills. These will affect the ability of the organisation to:

- procure funding;
- source good quality household items;
- attract clients (primarily low income groups); and
- attract sufficient staff and volunteers.

The size of a project may also be related to the length of time it has existed (local awareness and the reputation of the project can only be developed over time). Finally, the prevailing level of deprivation in the area may be a limiting factor in potential size. A balance of deprivation levels is required, just as is a balance of supply and demand of items – in a highly deprived area there may be a shortfall in supply of items in good condition, and in an exclusively affluent area there will be low demand for them.

Where demand is the constraining factor on an organisation's operations, it can increase efforts to ensure that the target audience is sufficiently reached. Referral agencies were highlighted as playing an important role in this for many organisations. Aside from this there is nothing more for an organisation to do. Amid concerns from most re-use organisation managers of how best to expand their business, one manager holds a quite

radical opinion: ‘*My ideal scenario is one where we close down...it means we’re no longer needed.*’ (Kelvin Hughes, CEO, Community Resource Centre, Newbury, England).

Where supply is the constraining factor, an organisation may seek to make arrangements with local or national furniture/appliance manufacturers or retailers for supply of end-of-line surpluses or items that failed quality control for retail but are functional and meet health and safety requirements (for example due to cosmetic damage only). Another alternative, explored in section 3.2.7, is involvement in local authority bulky waste collection services. The example of *Furniture Matters* was presented (Box 5.2), where 40% of the materials collected under the bulky waste service on behalf of the local authority were reused, and a further 25% recycled – much higher than any local authority-run service achieves.

The possibility of establishing partnerships with local authorities is being regarded as the potential saviour at present, in a sector highly dependent on grant funding which may not be renewed in the near future. It was seen that 34 re-use organisations have made agreements to manage some or all bulky items for the local authority, and it is known from discussion with other managers and FRN staff that many more organisations are interested in following this path.

5. CONCLUSIONS

The role of furniture and appliance re-use organisations, from their own view, is to collect used household items so that they can be re-distributed to those in need, for the relief of hardship. From the waste management perspective, these organisations fulfil a key function in bulky waste management, by providing an option for the re-use of items that can be salvaged.

It was found that over 85% of items collected by these organisations are passed on for re-use. Where re-use organisations collect household bulky waste on behalf of the local authority, a 40% re-use rate was achieved, compared to the 2-3% average of waste collection departments. In most areas of the UK these two sectors are not well integrated at present, and this results in potentially reusable items being disposed of to

landfill or incinerated. Establishing partnerships between the two sectors has the potential to benefit both – another source of items and financial security for re-use organisations, and a more sustainable waste management choice for local authorities, environmentally and socially. A current barrier is that local authority managers with the power to implement such partnerships – those in the waste department – generally do not appreciate the value of re-use of bulky items, which are principally social in nature. Promoting a better understanding of the social benefits, to the recipients of the furniture and appliances and the volunteers working at re-use organisations, would increase the likelihood that partnerships are established.

Further research that would be of use in this area includes development of a model to express the value of the social impacts of re-use organisations, in a clear and comparable format; and an assessment of current working partnerships for the re-use of bulky items, including at HWRCs as well as local authority bulky waste collections, and the potential for their replication elsewhere.

REFERENCES

- Cameron-Beaumont C, Lee-Smith C. Bulky Waste Collections – Maximising Re-use & Recycling: A step-by-step guide. Network Recycling, in association with the Furniture Reuse Network, Bristol, UK; December 2005.
- Curran A, Heaven S, Williams ID. An evaluation of council bulky waste collection services in England. CIWM Scientific & Technical Review 2006;12-25.
- Curran A and Williams ID. Maximising the Recovery of Household Bulky Wastes in England. Proceedings of the Eleventh International Waste Management and Landfill Symposium. S. Margherita di Pula, Cagliari, Sardinia, Italy, October 1/5. Paper No. 147; 2007.
- DETR. Waste Strategy for England and Wales. Department of the Environment, Transport, and the Regions (DETR). London, UK; 2000.
- Defra – Waste strategy for England 2007; 2007, available from <http://www.defra.gov.uk/environment/waste/strategy/strategy07/pdf/waste07-strategy.pdf>, accessed 16 October 2007.
- Defra. Municipal Waste Management Survey 2003/04; 2005, available from <http://www.defra.gov.uk/environment/statistics/wastats/archive/mwb200304.pdf>, accessed 16 October 2007.

FRN, Bristol, UK. Personal communication, 23 August 2007.

Lee-Smith C. Bulky Basics – A guide to partnerships, policies and procedures to maximise re-use from bulky household waste. Available from the FRN, www.frn.org.uk; 2006.

Reeve S. Local Authority Good Practice in the Re-use and Recycling of Household Collection Bulky Item Waste Stream – Literature Review. Network Recycling for Defra, Bristol, UK; 2004.

Sharp L, Luckin D. The community waste sector and waste services in the UK: Current state and future prospects. *Resour Conserv Recycl* 2006;47:277–294.

Williams N, Croker M, Barrett D. Review of the Voluntary and Community Waste Sector in England – Final Report. The InHouse Policy Consultancy for Defra; December 2005, available from www.defra.gov.uk/environment/waste/strategy/review/index.htm, accessed 13 June 2006.

1. INTRODUCTION

Waste management in England relies on a complex system of local authorities, voluntary organisations and the private sector. The system is designed to ensure that waste is collected, transported, and disposed of in a safe and environmentally sound manner. This report provides an overview of the current state of the waste sector and identifies key challenges and opportunities for improvement.

One of the main challenges facing the waste sector is the need to reduce the amount of waste generated in the first place. This can be achieved through a combination of measures, including improved recycling, reuse, and repair. Another key challenge is the need to ensure that waste is disposed of in a safe and environmentally sound manner.

6. Maximising the recovery of household bulky waste in England

SUMMARY: Household bulky waste is predominantly furniture and electrical appliances. This study evaluates current and potential reuse and recycling of this waste stream in England. Findings are based on postal surveys received from 466 householders which asked about the bulky items they had discarded over a 12 month period, and subsequent investigation of the disposal routes used to discard bulky items. It is estimated that 15% of all bulky items are currently reused, and a further 24-25% are recycled. A variety of measures to increase reuse of bulky waste are identified, and resulting reuse rates of up to 27.3% are forecasted. Although currently reused bulky items are passed on by private individuals and the charitable sector for the most part, the potential to increase reuse lies primarily in the hands of local authorities, in improving their own bulky waste management practices, and improving their working partnerships with local organisations, to redirect used household items from the waste stream to those in need.

1. INTRODUCTION

Waste Management in England takes a two-tier approach. Waste Collection Authorities (WCAs) are responsible for providing day-to-day collections of household wastes. At agreed locations, called Transfer Stations, Waste Disposal Authorities (WDAs) take control of the wastes and arrange for disposal. Some urban areas of England are governed by Unitary Authorities, which are responsible for both the collection and disposal of the waste generated within their boundaries. This two-tier system has resulted in there being two standard options provided by authorities for disposing of household bulky waste, which includes furniture, electrical appliances and other large and heavy items not accepted on regular refuse or recycling collections (e.g. carpets, bicycles, household construction wastes).

Each WCA operates a special collection service for bulky items, often involving a collection charge, while WDAs provide Household Waste Recycling Centres (HWRCs, also known as Civic Amenity sites), where residents can take their bulky waste if they

do not want to arrange a collection. Local private companies and charitable organisations may also collect certain bulky items, and residents may pass on items that are still of use to friends or family. They may also sell on bulky items by a variety of means. Some bulky items are dumped illegally, a process known as fly-tipping.

Local authority bulky waste management services have remained largely unaffected by recent initiatives to increase recovery from the household waste stream. This is partly because bulky waste accounts for a relatively small proportion of total waste arisings – less than 5% of the 25.4 million tonnes of household waste collected across England in 2003/04 (Defra, 2005). Other factors which are prohibitive to recycling are that bulky items are usually made up of multiple materials which are not easily separable, and that they are discarded at infrequent and irregular intervals. Local authorities have focused their resources where they perceive they can have best effect in terms of reaching their recycling targets – kerbside recycling schemes. However, the UK Government's waste strategy, based upon the Waste Hierarchy, makes very little provision for reuse in the targets and standards imposed on local authorities (DETR, 2000). In fact, previous research has suggested that landfill/ incineration is the standard disposal method for collected bulky waste, with only large, easily-separable metals being recycled and very few items reused (Curran et al., 2006a).

A substantial review of the voluntary and community waste sector in England found that the refurbishment and reuse of furniture and appliances was the most commonly undertaken activity of the sector (Williams et al., 2005). Furniture and appliance reuse organisations operate across England with the principal aim of reducing hardship by providing low cost household items to people on low income. The reuse of these items is a significant environmental outcome of their activity. Other research described the “additional advantage” the voluntary sector can offer over a basic waste collection service: provision of furniture to low-income families; promoting citizen participation and offering volunteering opportunities; training to the long-term unemployed; work placements for people with learning disabilities; and a community building role, for example encouraging interaction between diverse groups in society (Sharp and Luckin, 2006).

The WEEE (Waste Electrical and Electronic Equipment) Directive is to enforce

producer responsibility for collecting WEEE in England from July 2007. This will impact on how this part of the bulky waste stream is managed, and it is an opportunity to improve recovery rates. Consideration of the implications of WEEE Directive enforcement was not an objective of this study, although it is acknowledged that it will play a role in future strategies to increase the recovery of electrical and electronic bulky waste in England, and throughout Europe.

The aim of this study was to identify the operational changes that would be required to maximise the recovery of household bulky waste in England. The underlying objectives were to:

- Identify and quantify the disposal methods for household bulky waste;
- Assess the current reuse and recycling practices for household bulky waste;
- Estimate the potential for improving reuse and recycling; and
- Make recommendations for the optimal management of this waste stream.

2. METHODOLOGY

This study is based primarily on postal questionnaire surveys that were sent to 1,450 householders across three cities in England during 2005. Respondents were asked to describe what bulky items they had discarded over the previous 12 month period, the condition of the items at the time, and the disposal routes used.

The individual disposal routes were investigated as necessary to determine the current and potential reuse and recycling rates associated with each: a series of telephone interviews were conducted with local authority waste management officers responsible for the collection of bulky waste; previous studies that considered the activities at Household Waste Recycling Centres were reviewed; a number of furniture reuse organisations throughout England were visited and interviewed in detail; and Government data on fly-tipping was assessed. A waste audit of bulky waste collected over seven days during 2005/06 in three local authority areas was also conducted. This involved an observer weighing and recording the condition of every item collected.

3. RESULTS AND DISCUSSION

3.1 Methods used to discard household bulky waste

The postal survey was completed by 466 householders, a response rate of 32%. This established that bulky items are discarded by a variety of methods. Figure 6.1 indicates the proportion of bulky items discarded by each route. In the 12 month period from the date of the survey, 65% of respondents had discarded bulky items. Applying the nationally recognised Furniture Reuse Network's average weights (FRN, 2005) to the 1191 items discarded over the period produces an overall sample weight of 39.5 tonnes. This equates to a national figure of almost 1.8 million tonnes per annum, although it is emphasised that this is based on self-reporting by householders.

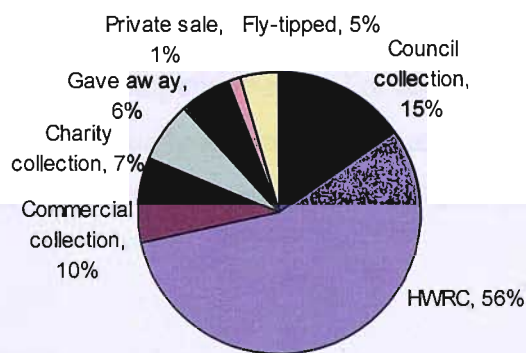


Figure 6.1. Throughput of household bulky waste for each disposal route.

3.1.1 Council collection

Waste Collection Authorities and Unitary Authorities across England operate bulky waste collection services for householders, and from Figure 6.1 it can be seen that council collections are the second most used disposal method. Upon collection, the waste is deposited either at the nearest HWRC or waste transfer site, or in some cases directly to a landfill. Councils often refer residents to a charity organisation for collection of items in good condition. For detailed investigations of this disposal route, see Cameron-Beaumont & Lee-Smith (2005) and Curran et al. (2006b). Note that because local authorities are also responsible for HWRCs and fly-tipped waste, some three-quarters of the bulky waste stream is managed by Waste Collection and Disposal Authorities combined.

3.1.2 Household Waste Recycling Centre

Over half of household bulky wastes (by mass) are taken to HWRCs. Waste Disposal Authorities operate these specially-designed sites where residents can take their waste free of charge. There are 714 HWRCs in England, which collectively had a throughput of approximately 6.5 million tonnes of household waste in 2002/03 (Bridgwater et al., 2004). They accept all household wastes including refuse, recyclables, garden waste, bulky items and textiles. For further details on HWRCs see Bridgwater et al. (2004) and Coggins (2002).

3.1.3 Commercial collection

Household bulky waste collections comparable to the local authority service are offered by the private sector, often at competitive rates. For removal of large amounts of waste, a skip may be rented. This is usually associated with renovation work, when a large volume of garden waste or construction rubble and off-cuts are generated, little of which is suitable for reuse.

3.1.4 Charity collection

Approximately 425 furniture and appliance reuse organisations operate across England, collecting and redistributing bulky items that are discarded in good condition. From the sample, these organisations handle 7% of all household bulky waste. The majority of these organisations are registered charities and are part of the Furniture Reuse Network – see www.frn.org.uk for further details.

3.1.5 Gave away

This route requires no intervention and results in continued use of products. Post-World War 2, built-to-last heavy wood furniture used to be the traditional items in this group, passed down through generations. Low income groups in particular continue to pass on household items in this way within their network of friends and family members: 26% of survey respondents from high deprivation areas gave items away, compared to only

16% of respondents living in affluent areas.

Other networks for exchange or donation of items exist on varying scales, and include traditional charity shops and the Internet-based *Freecycle*TM movement, which consists of thousands of localised groups covering most countries (see <http://freecycle.org>). At the end of 2006 there were 441,000 *Freecycle*TM members in the UK and 2.8 million worldwide.

3.1.6 Private sale

This route also requires no intervention by a charity or local authority and all items will be used further, otherwise they would not have been purchased by the new owner. Traditional methods include jumble sales, car boot sales, shops dealing in second-hand or antique goods, auctions and newspaper advertisements. More modern methods include Internet marketplaces such as *eBay*TM.

3.1.7 Fly-tipped

Fly-tipping is the illegal act of discarding waste in an unauthorised place. This occurs when a householder cannot or chooses not to use one of the legitimate routes for disposal. This proportion was derived from asking survey respondents if they had discarded bulky items 'by any other means' than those listed above; it is assumed that this equates to fly-tipped items by elimination, as all other routes were already stated. Even so it is likely that this value is an under-estimate, as people will be circumspect in admitting to an illegal act. WCAs collect fly-tipped items when they are reported, and the government collates incidence of fly-tipping – see Defra (2006) for the results for 2005/06.

3.2 Current reuse and recycling of household bulky waste

Investigation of each disposal route allows estimation of current recovery rates. These are presented in Table 6.1 and explained in turn below. Factoring in the throughput breakdown (Figure 6.1) produces an estimate of the national reuse rate of discarded bulky items of 15%, or 269,000 tonnes in 2004/05. A further 24-25% (422,000-445,000 tonnes) is estimated to be recycled, although limitations in the recording of data for some disposal routes prevent assertion of a high degree of accuracy of this figure. The remaining 61% (1,086,000 tonnes) is disposed of as waste, either by incineration or to landfill.

Table 6.1. Estimated current reuse and recycling by disposal route.

Disposal route	Estimated reuse rate %	Estimated recycling rate %
Council collection	2	31
HWRC	3	31
Commercial collection	1	10-20
Charity collection	85	7.5
Gave away	100	0
Private sale	100	0
Fly-tipped	0	5-10
All bulky items	15	24-25

The contribution of each disposal route to the reuse rate is presented in Figure 6.2. The category 'passed on privately' includes the 6% donated and the 1% privately sold. Despite waste recovery targets for local authorities, only 13% of reused bulky items are collected by local authority sources.

3.2.1 Recovery via council collections

Local authority bulky waste collection services are operated to fulfil a duty to collect and dispose of household waste, and the majority have no means to reuse any items. Many authorities collect bulky items in compacting vehicles, and require residents to place the items outside, in all weather conditions, for ease of collection. Such collection procedures eliminate any value in the items being discarded, preventing reuse (Curran et al., 2006b).

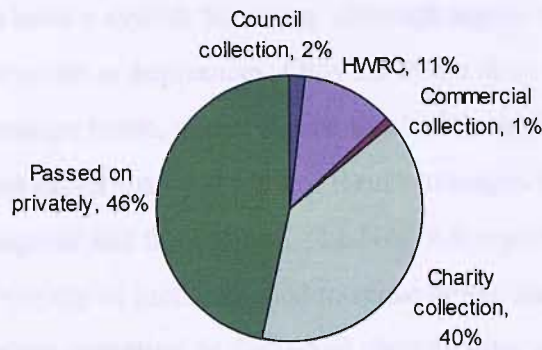


Figure 6.2. Contribution of individual disposal routes to reuse rate.

From a waste audit of 12.1 tonnes of collected bulky waste, it was determined that 2% was reused and 32% recycled over the period. These figures were corroborated by data provided by 48 local authority waste management officers during telephone interviews, who confirmed that reuse is unusual and *ad hoc*, and estimated that recycling of collected bulky waste is 31% (see Curran et al., 2006a for further details).

3.2.2 Recovery via Household Waste Recycling Centres

The principal aim of HWRCs is to maximise recycling by separating wastes by material-type; the recycling rate for HWRCs in England (excluding inert waste) was 31% in 2002/03. HWRCs do not record recycling rates of individual waste streams, so it is assumed that recycling of bulky items is in line with the overall recycling rate.

Williams and Alsop (2005) investigated current practice at HWRCs across England and Wales by surveying the local authorities who operate them. It was found that HWRCs in 73% of authority areas separated materials for reuse, although for bulky items in particular this figure ranged from 34% to 45%. These proportions also belie the true level of reuse, which is likely to be very low, because an authority may have stated that they collect materials for reuse if one site (out of up to 15 in their area) separates a small number of that material, and even then it does not necessarily follow that the items were reused.

A comprehensive National Assessment of Civic Amenity Sites (NACAS) identified having a system for reuse as one of the most influential factors in affecting HWRC diversion rates (Bridgwater et al., 2004). Of 130 site visits conducted for this study,

56.7% were found to have a system for reuse, although again, only a portion of the items reused were furniture or appliances. Only 28 of the sites engaged in reuse had a system in place to measure reuse, and only one third of these (9) involved actually weighing reused items rather than estimating. Reuse tonnages ranged from negligible amounts to 4.6% of annual site throughput. The NACAS report provided six case studies covering the variety of methods used to reuse items, including selling them to the public from a storage container or dedicated shop on site, and redistributing them off site for sale by independent contractors or the voluntary/charity sector. A national average of 3% reuse was calculated from these figures.

3.2.3 Recovery via commercial collections

Commercial services operate similarly to council collections in terms of prioritising economy and efficiency of collection over product/material recovery. The skip-hire aspect of commercial services leads to a high collection of actual waste such as building rubble, resulting in a lower recovery level than council collections. Any items diverted for reuse will be opportunistic in nature, for example by employees for personal gain. Both reuse and recycling for this disposal route is estimated to be approximately 50% less than for council-collected items.

3.2.4 Recovery via charity collections

Furniture and appliance reuse organisations generally apply set criteria for collecting bulky items from householders – this includes being in sufficiently good condition to be reused following whatever level of repair/ refurbishment that organisation can offer. This varies from no repair to dedicated woodwork and electrical workshops. Staff and volunteers apply their experience to only accept items that are likely to be bought relatively quickly – storage and display space within the budget of charities is often very limited.

The careful selection process of incoming items allows for a high level of reuse. Of 12 organisations visited in 2006/07, reuse varied from 73% to 95%, with an average of 85%. Of the portion not sold, which is disposed of via HWRCs, half is estimated to be recycled, 7.5% – items easily separable into wood such as hard furniture, and metal,

including most white goods; items of mixed material are not currently recyclable, including mattresses, sofas and chairs.

3.2.5 Recovery via other routes

It is reasonable to infer that items donated to family and friends will only be accepted if the recipient intends to make use of them: all donated items are thus assumed to be reused. Similarly, it is reasonable to expect that individuals will only purchase items they intend to use: all privately sold items are also assumed to be reused. Items that have been fly-tipped are typically not reusable – they will have been roughly handled, vandalised and exposed to the weather for a number of days. There is no data available to suggest that any recycling of fly-tipped items occurs; the terminology used in the government's annual reporting of fly-tipping (e.g. Defra, 2006) implies 'clearance and disposal'; there is no mention of recycling. A nominal estimate of 5-10% recycled is made in Table 6.1, based on the reported incidence of white goods fly-tipped, which are likely to be scrapped by the collecting authority. This includes refrigeration equipment, which authorities are legally required to discard in a safe manner, a process which results in the recovered metal being recycled.

3.3 Potential for improving reuse and recycling

Survey respondents reported the reuse potential of the items they had discarded (Table 6.2). The 'other items' category is made up of materials such as construction off-cuts, building rubble, bagged garden waste and old carpet, and is correctly reported as having low reuse potential. Estimated current reuse, at 15%, is only halfway to reaching the suggested potential rate of 31%. This can be taken as the maximum potential reuse rate, because it is based on the condition of the items prior to being discarded. Actual reuse is dependent on two criteria being satisfied: there must be a demand for the items, and they must be discarded by a disposal route which allows them to reach that demand.

From the sample of bulky items discarded in the study period the composition of this waste stream by category is estimated as 27% furniture, 28% electrical appliances and 45% other items. By multiplying these proportions by those in Table 6.2, the distribution of the reusable element of bulky waste by category is found to be 47%

furniture, 41% electrical appliances and 12% other items.

Estimates for potential reuse of bulky items for each disposal route are presented in Table 6.3, along with their contribution to the overall reuse rate. This suggests a modest overall potential reuse rate of 21.4%, of which the 6.4 percentage points not already being reused are predominantly drawn from local authority sources. These estimates can be aspired to, and would be realised if all council, commercial and charity collections and HWRCs achieved the same reuse rate as their high performing contemporaries currently are.

There is undoubtedly some potential to improve recycling rates of bulky items, although it is likely that since Waste Strategy 2000 was released, with its emphasis on increasing recycling rates, much of this potential has already been achieved. Estimating potential reuse rather than recycling was made a priority for this study because reuse has superior environmental benefits – indicated by reuse being placed above recycling in the waste hierarchy (DETR, 2000), and social benefits, as described in the introduction. For these reasons it is important that organisations do not favour recycling bulky items, to further their recycling rates, when they could be reused.

It is clear that potential (and current) reuse and recycling rates are very much related to, and in some cases limited by, the disposal route chosen by the householder. It therefore becomes apparent that there are two methods by which recovery can be increased: by improving reuse and recycling in the currently used disposal routes, as indicated in Table 6.3, or by diverting items away from disposal routes with low recovery to those with high recovery.

Table 6.2. Claimed reuse potential of bulky waste categories.

Category	Reusable %	Not reusable %
Furniture	59	41
Electrical appliances	49	51
Other items	9	91
Bulky waste overall	31	69

Table 6.3. Estimates of potential reuse by disposal route.

Disposal route	Individual disposal route		Percentage points contributed to total reuse rate	
	Potential reuse %	Currently not reused %	Potential reuse	Currently not reused
Council collection	11.0	9.0	1.7	1.4
HWRC	10.5	7.5	5.9	4.2
Commercial collection	5.5	4.5	0.6	0.5
Charity collection	90.0	5.0	6.3	0.4
Passed on privately	100.0	0.0	7.0	0.0
Fly-tipped	0.0	0.0	0.0	0.0
All bulky items			21.4	6.4

Modelling two scenarios based on these options for improving reuse allows forecasting of resulting reuse rates. In scenario 1 the reuse rates currently achieved for each disposal route are maintained, and some diversion from low to high reuse disposal routes has been achieved (councils collect 11%, HWRCs no change, commercial collections account for 8%, charities collect 12%, 9% are donated or sold privately, 4% fly-tipped). This would result in 21.2% reuse; this shows that making modest changes to how bulky items are disposed of, as suggested here, are as important for increasing reuse as improving the recovery of each individual disposal route (as per Table 6.3). In scenario 2 the use of each disposal route is as stated in scenario 1 and the potential reuse rates of Table 6.3 have been achieved. This would result in 27.3% reuse.

3.4 Recommendations for the optimal management of bulky waste

In order to optimise the recovery of bulky waste within individual disposal routes, to achieve the reuse rates suggested in Table 6.3 and to increase recycling, managers at all organisations that handle bulky waste – in the public, private and charitable sectors – will need to eliminate current barriers and look to the good practice of their respective peers already achieving these recovery rates. This will require:

- Council collections to use box vans rather than compacting vehicles for collecting bulky waste; removal of a requirement on householders to place their bulky items outside in poor weather; service arrangements with organisations with the means to reuse and recycle items, and depositing of collected items at these locations e.g. the HWRC or reuse charity rather than direct transport to transfer site or landfill.

- HWRCs to establish reuse systems where they are currently absent, and to increase the types of bulky items separated for reuse and recycling and the capture rate of these materials, by good guidance from managers, site layout and signage and dedicated on site staff.
- Commercial collections to adopt good practice used by council collections; where this is not practicable, such as with skip-hire services, commercial operators should aim to ensure that a recovery stage is built into their procedure to enable separation of constituent materials for recycling such as metal and wood.
- Charity collections – managers should liaise across the sector to learn from good practice; this can include localised network groups and national level information sharing events such as the annual conference organised by the Furniture Reuse Network.

Effecting a shift towards use of high recovery routes for bulky items can be achieved by two means: convincing householders to choose a different disposal route, or by the collection service providers changing the way they offer their services. Working towards the recovery rates forecast in scenarios 1 and 2 above would include the following measures:

- Reducing council collections – a small number of local authorities have sub-contracted their bulky waste collection service to reuse organisations; from visits to reuse organisations it is clear that this could be extended to other areas of the country. This may be promoted by improving joined-up thinking in local authorities – higher costs to the waste management department from sub-contracting to a reuse organisation may become acceptable if the benefits in other departments are factored in, including those responsible for reducing homelessness and providing affordable housing options to those on low income, and tackling long-term unemployment for example by creating volunteering opportunities and training. The trend in establishing and increasing charges for collecting bulky waste, identified in previous work (Curran et al., 2006b), is likely to make some householders choose routes that are free of charge – HWRCs and charity collections – routes that are more conducive to recycling and reuse.
- Increasing charity collections – in addition to securing service agreements to have

access to bulky items currently collected by local authorities, reuse organisations will need to develop awareness of their service to the local population, and their relationship with referral agencies who act as a vital link between the charity and the people in need of furniture and appliances. Many of these charitable organisations will be dependent on continued funding from external sources, including grants and receipt of recycling/reuse credits for the materials they remove from the waste stream.

- Reducing commercial collections and fly-tipping, and increasing private disposal – this may happen over time as part of a general change in culture from waste to recovery, and due to the increasing popularity and security of the Internet – leading to higher use of *eBay*TM and *Freecycle*TM. This can be assisted by government intervention, for example by a continued commitment to reduce environmental crimes such as fly-tipping, and raising awareness of the general public of the legitimate means of disposal of bulky waste, and the social and environmental benefits of those resulting in recovery.

Of course, making environmental improvements to how waste is managed is not free of financial cost; this is likely to limit the number of improvements made. It is less efficient to collect waste in box vans than compaction vehicles, for example, as less waste can be collected per vehicle load and so more vehicles or more time is required. However the reuse and recycling resulting from use of box vans has environmental benefits in terms of reducing from landfill use and associated greenhouse gas emissions and lower consumption of virgin resources; and social benefits associated with the charitable activity of reuse organisations, and the provision of low-cost furniture and appliances to those in need. Some improvements can be made with little cost and effort, for example instructing employees involved with handling bulky items to identify and take extra care with items in good condition; and advising local authority call centre staff to refer householders with bulky items in good condition to the local reuse organisation. Cost-Benefit Assessment methodology may be useful to help inform decisions by individual organisations, or policy change by national companies and government, as to the feasibility of measures to improve the recovery of household bulky waste.

4. CONCLUSIONS

Current reuse of household bulky waste is estimated to be 15%. This is predominantly achieved by private individuals selling or donating their unwanted items, sometimes via a reuse charity. Despite handling some three-quarters of all bulky waste, low recovery rates amongst local authority collection services means that they only account for 13% of total reuse. Part of this discrepancy can be explained by the fact that local authorities, unlike private citizens and charities, have a responsibility to accept bulky items in any condition. Much of the material they collect will descend from the 69% of bulky waste that householders regarded as not reusable. Council collection services and household waste recycling centres performed better at recycling – an average of 31% of bulky waste was estimated to be recycled across England.

It was determined that similar increases in the reuse of bulky waste could be obtained by improving reuse practices of existing disposal routes in line with current good practice, and by efforts to divert bulky item disposal from low to high recovery routes. Development of both measures could result in a national reuse rate of up to 27.3%. It is suggested that promoting a better understanding of the wider social benefits resulting from the reuse of bulky items would help to bring about the change in attitudes towards a recovery-focused model of household bulky waste management. Establishing good working partnerships between local authorities and reuse organisations is likely to be key to achieving the forecasted potential recovery rates.

Work is ongoing by a consortium of universities in the UK into appropriate strategies and technologies for sustainable urban waste management. Within this the role of charitable organisations and the social outputs of their involvement in waste management practices will be considered further.

REFERENCES

Bridgwater E., Cameron-Beaumont C. and Seabrook G. (2004) National Assessment of Civic Amenity Sites – maximising recycling rates at civic amenity sites. Future West and Network Recycling, Bristol, UK.

Cameron-Beaumont C. and Lee-Smith C. (2005) Bulky Waste Collections – Maximising Re-use & Recycling: A step-by-step guide. Network Recycling, in association with the Furniture Reuse Network, Bristol, UK.

Coggins P.C. (2002) Civic amenity sites – Cinderella at last being invited to the ball? Making Better Use of CA Sites Conference, organised by MEL Research, speaker's notes. MEL Research Ltd, Aston Science Park, Birmingham, B7 4AX, UK; March 2002.

Curran A., Heaven S. and Williams I.D. (2006a) Collected household bulky waste in England – potential for reuse and recycling. From conference proceedings of Waste 2006, held 19–21 September 2006, Stratford-upon-Avon, Warwickshire, UK.

Curran A., Heaven S. and Williams I.D. (2006b) An evaluation of council bulky waste collection services in England. CIWM Scientific & Technical Review 2006;7(1):12-25.

Defra (2005) Municipal Waste Management Survey 2003/04. Available from www.defra.gov.uk/environment/statistics/wastats/archive/mwb200304.pdf, accessed 05 August 2005.

Defra (2006) Flycapture Results, April 2005 to March 2006. Available from www.defra.gov.uk/environment/localenv/flytipping/flycapture.htm, accessed 13 April 2007.

DETR (2000) Waste Strategy for England and Wales. Department of the Environment, Transport, and the Regions (DETR). London, UK.

FRN (2005) Set of average weights for furniture, appliances and other items, available from www.frn.org.uk/pdfs/average_weights_aug_2005.pdf; accessed 29 March 2007.

Sharp L. and Luckin D. (2006) The community waste sector and waste services in the UK: Current state and future prospects. *Resour Conserv Recycl* 2006;47:277–294.

Williams I.D. and Alsop C. (2005) From the tip to the recycling centre: local authorities' views on current practice and future challenges for civic amenity sites. *CIWM Scientific & Technical Review* 2005;6(1):32-40.

Williams N., Croker M. and Barrett D. (2006) Review of the Voluntary and Community Waste Sector in England – Final Report. The InHouse Policy Consultancy for Defra. Available from www.defra.gov.uk/environment/waste/strategy/review/index.htm, accessed 13 June 2006.

7. General discussion

This thesis has brought together three distinct areas that have been investigated by the candidate in respect of the PhD award. Whilst these can be considered in isolation (and have been in their published forms), it is for this chapter to take an holistic view of the research and evaluate the key outcomes that may be drawn from it.

In Chapters 2 and 3, local authority bulky waste collection practices were reported in detail. The lack of national guidance or control on how these services are operated means that there is great variation across the country. It was identified that a higher quality bulky waste collection service was generally provided in areas of high population, that are urban and of lower average affluence, than in more rural, affluent areas. An explanation for this was presented. At local authority level, waste managers can only deal with the situation they are presented with; however if regional or national managers were to consider how bulky waste management services could be improved, these findings would be of value and may justify further investigation. For example, would it be more effective to target rural areas, where service provision is typically of a lower standard, or would small improvements in densely populated urban areas have greater overall impact?

A strong relation between service charge and demand for collections was observed. This suggests that the service charge is a potentially effective tool for controlling the use of the collection service, or alternative methods of disposal. This could be used to re-direct items to more environmentally and socially preferable disposal routes, such as re-use organisations or HWRCs. Local authorities considering this, however, would need to weigh the benefits against the potential negative implications: introducing a collection charge or raising the price of it carries a social exclusion issue – those most in need of the service may no longer be able to use it, and this would be likely to exacerbate another waste issue: fly-tipping. These findings may be of interest to policy-makers at the national and local level involved in consideration of the introduction of charges or ‘Pay As You Throw’ systems for household refuse. On the one hand is the positive observation that introducing/raising charges for bulky waste collections is an effective tool for reducing the volume of waste presented; however, compared to bulky items, household refuse has fewer alternative disposal routes of equal or higher environmental/

social preference (possibly increased home composting or use of green waste collections, and effort to separate dry recyclables, or transport waste to HWRCs privately). To avoid the social exclusion issue raised above, such charging systems would have to consider a balance between disincentivising waste generation and taking account of ability to pay.

As a relatively small proportion of total household waste, bulky waste cannot contribute very much to achieving landfill diversion or recycling targets, and many local authorities therefore view it more as another waste stream they have a duty to provide a collection and disposal service for, rather than as a resource with the potential to be managed in an environmentally sound manner that results in positive social outcomes. There were found to be more examples of bad practice that preclude re-use, such as co-collection with refuse, use of compaction vehicles or a requirement to place items outside for extended periods, than of authorities that have inserted a recovery element into their service, whether use of a HWRC or a local re-use organisation. This means that there is high potential for improvements to be made, and further study of how best to achieve this may be warranted.

A common finding of these two chapters, which were based on separate data, is that re-use of collected bulky items is far below what it potentially could be. This is because local authority waste collection services do not usually have the means by which to re-use collected bulky items, therefore disposal with limited recycling is their only option, regardless of whether the items are in good condition. Improvements at present are dependent on the right person in individual local authority waste departments being sufficiently motivated to make an effort to remove system barriers to re-use and to set up collaborative agreements with 3rd party re-use organisations. In the present climate of limited funding and higher priorities to reach recycling and landfill diversion targets, and with no pressure from superiors to improve bulky waste management practices, this is unlikely to occur.

Chapter 5 reported on the collection and re-distribution operations of furniture and appliance re-use organisations. At the time of study (first half of 2007), the sector had been enjoying a period of growth, with approximately 400 such organisations providing a high level of coverage of the UK. From the interviews with organisation managers and

discussion with the staff of the sector's national body, the FRN, a positive future is by no means secure. Most organisations are dependent on short-term grant funding. A method by which the sector is diversifying, whilst trying to stay true to its charitable objectives to relieve those in hardship by the provision of affordable household items, is involvement in local authority bulky waste collections. Such partnerships were found to be in place between 34 re-use organisations and local authorities in August 2007. From the data collected and observations made of some of these organisations, which were included in this study, re-use organisations appear better able to provide this service than the in-house local authority alternative. Whilst maintaining or exceeding customer service, a bulky waste collection contract contributes to the re-use organisations own objectives, via an increased source of incoming items and often increased financial security, as the authority pays the organisation an equivalent of its cost saving of no longer running an in-house service or paying a commercial contractor. The service then results in much higher rates of re-use, and the associated environmental and social benefits are reaped.

In Chapters 4 and 6 a broader view of the management of household bulky waste was taken, incorporating the whole waste stream rather than individual disposal routes. These routes encompass the public, private and voluntary sectors and include informal means of passing on items between individuals, and it has not previously been attempted to quantify the total number of bulky items discarded. Estimation of this then produced breakdown figures on the relative usage and throughput of each disposal route. This knowledge is of use in itself, but it also made possible two immediate applications of the findings:

- Firstly, it increases awareness of the interconnected nature of individual bulky waste disposal options and allows forecasting of the likely wider effects on changes in one option. For example, if local authority collections, as a disposal option with low recovery rates, are dis-incentivised by introducing/raising collection charges, the diversion of items to other disposal routes could be estimated. Another factor which should be taken into account here, as highlighted in chapter 4, is how the prevailing level of deprivation in an area may affect the use of different disposal routes, and therefore the success of such measures.

- Secondly, it paved the way for estimation of the potential for re-use and recycling of household bulky items, and suggestions for how this potential may be achieved.

Chapter 6 presented the findings of a more detailed evaluation of the current and potential re-use and recycling rates for each of the disposal routes. This resulted in more realistic estimates of potential recovery than those previously available (of up to 70% recovery), which were purely hypothetical, being based only on observations of material composition and condition prior to disposal, independently of the practical limitations in the collection and re-distribution process.

In this chapter scenarios were developed that would increase the re-use of household bulky waste from the 2004/05 rate of approximately 15% up to 27%, based on potentially achievable changes in the management practices for bulky items. These changes were based on two key outcomes of this study:

- A large proportion of bulky waste is currently discarded using disposal options that achieve little re-use – 71% of items are collected by local authorities or taken to HWRCs, with only 2-3% reused; and
- Evidence was found of good practice already being achieved in some areas of the country.

Recommendations were then made that would bring about improvements in the recovery of bulky items, based on three approaches:

- Eliminating the barriers currently present in some disposal routes, that result in low recovery potential;
- Learning from the current good practice of peers; and
- The potential to re-direct public use of low recovery routes to those already achieving high recovery.

An overall finding of this research, observed and commented on in each of the different approaches adopted, is that there is potential to make service improvements and

increase the recovery of household bulky waste in the UK, and a principal way to achieve this is through partnership working between local authorities and third sector organisations. Williams (2003) highlights the general consensus in peer literature that encouraging community development is a worthwhile venture, referring to such effects as bolstering community spirit and delivering support to those in need. The favoured approach to achieving this in UK government policy (thought not fully in line with Williams' own opinions) is through the development of community based groups (i.e. such as furniture and appliance re-use charities). Williams re-iterates how fostering community engagement is near the top of UK public policy, and that the nature of community involvement in the UK varies spatially and by level of deprivation (Williams, 2004, Williams, 2005). This has implications for how public policy should be directed across different regions: for example, Williams found that less formal approaches to volunteering and community involvement tend to be more prevalent in deprived areas, and current public policy in supporting only formal approaches and neglecting others is biased and counter-productive.

This seems to hold true in the bulky waste/re-use sector: it was noted in the previous chapter that low income groups passed on items informally to friends or family members more frequently than those in affluent areas. Future researchers, policymakers and practitioners in this field should bear this in mind when considering measures to improve re-use, and not focus exclusively on the formal, local authority-based collection systems. The reader is reminded here that the work of the wider project partners at Goldsmiths College included consideration of informal exchange networks and the social interactions involved in their use.

Returning to the role of government policy as a driver for greater cohesion between local authorities and the third sector, it can be seen that guidance documents if not legislative measures are beginning to emerge, in answer to criticism by some:

“Activities such as partnership building...should be valued by local authorities as much as monitored outcomes, with the recognition that these processes lead to longer term sustainable waste management. It is also important that central government actively support authorities endeavouring to put such mechanisms in place.” (Askins and Bulkeley, 2005, page 15)

A more positive view is presented by Davies, who, after pointing out that the value of partnership working is already well developed, makes the comment on local environmental partnerships that:

“Government institutions, advisory bodies such as the Local Government Association and Non Governmental Organisations have all called for partnerships to move development towards a more sustainable future. The partnerships envisaged by these institutions...seek to include community-based organisations.”
(Davies, 2002, page 192)

A recent joint HM Treasury-Cabinet Office report commented that *“The Government wants to ensure that the third sector remains at the heart of measures to improve public services”* (HM Treasury, 2007, page 49). This report went on to highlight the potential benefits of local government working with third sector organisations, including improved service delivery and efficiency benefits by using more cost effective and less duplicative ways of working.

The eagerly awaited update to the government’s waste strategy, released in 2007, did increase the emphasis on the need for local managers to incorporate third sector partners in their service delivery where possible.

“The Government is encouraging local authorities to use their role as local community leaders in partnership with businesses, other local, sub-regional and regional public sector organisations and third sector organisations to achieve a more integrated approach to resources and waste in their area.” (Defra, 2007, page 89)

One of the ‘key new policies and actions’ of the new strategy document advocated:

“Measures to increase the share of local authority contract work won by the third sector and to make greater use of third sector expertise, particularly to prevent waste, raise awareness, segregate waste at source, and increase re-use and recycling of bulky waste through capacity-building support.” (Defra, 2007, page 93)

The document went on to acknowledge that:

“Third sector organisations have particular strengths in a number of key areas of waste management and resource efficiency, including: waste prevention and re-use – e.g. through provision of household appliances and furniture to those in need.”

And that:

“These strengths, together with their ability to offer social benefits alongside supporting environmental objectives, make third sector organisations increasingly attractive potential delivery partners for local authorities.” (Defra, 2007, page 96)

This is inline with Askins and Bulkeley’s conclusion:

“Re-considering the social and economic benefits of re-use and reduction will enable authorities and other bodies to bring waste issues into other areas of policy and practice, and address waste more coherently and effectively.” (Askins and Bulkeley, 2005, page 15)

The wood portion of waste has been targeted recently as a ‘priority material for action’ (Defra, 2007). Following research showing the significant carbon benefits of using waste wood for energy production (ERM, 2007), the government has produced a report (Defra, 2008) to help develop energy markets for waste wood, highlighted as *“key to realising the carbon benefits for wood waste that cannot be readily re-used or recycled”* (Defra, 2007, page 80). This report states that over half of the waste wood in Municipal Solid Waste is discarded via bulky collections and CA sites, and calls for the development of more Waste Incineration Directive compliant combustion facilities. In time, given the European Union targets to increase renewable energy production, this may bring about a change in local authority segregation and collection facilities for household bulky waste, to divert more waste wood into renewable energy markets. Whilst waste wood use as a biomass fuel may be clearly superior to current practice of disposal to landfill, this raises a concern that, once again, UK-wide, target-driven policies may overshadow the un-quantified socio-economic benefits of bulky waste re-use activities, and the government should take care to see that this does not occur.

The new performance framework for local government was outlined by the Department for Communities and Local Government (DCLG) in 2006 (DCLG, 2006). More recently the government announced the new set of 198 national indicators (NIs), (185 of) which are effective from 1st April 2008. These streamline reporting requirements for

local authorities, replacing previous targets including Best Value Performance Indicators (BVPIs). The Furniture Re-use Network has long called for re-use tonnages to count alongside recycling rates towards local authorities' targets, and be eligible for payment of landfill-avoiding credits. The relevant BVPI did not allow this, effectively rewarding authorities to recycle rather than re-use items, contrary to the waste hierarchy. This has been detrimental to partnership working with re-use organisations. When put out for consultation in 2007, the relevant indicator, NI192, was a copy of the BVPI it would replace, counting recycling and composting but not re-use. It has been a victory for the re-use sector that the government acted on advice to include re-use. Thus NI192 is:

“Percentage of household waste sent for reuse, recycling and composting” (DCLG, 2008, page 51).

It is likely that this promotion of bulky waste re-use in political terms, now contributing to measured performance, in addition to current valuation of the social, environmental and economic outputs, will be the swinging point for some local authority managers to take action and introduce re-use-focused partnerships.

It is apparent that central government has done much to resolve its previous lack of support for waste re-use and third-sector engagement. It is now for local authority managers and third sector organisations themselves to communicate and engage in action to deliver improvements in how household bulky items are managed at the local level.

It is worth appreciating the place of ‘household bulky waste’ for each stakeholder, to obtain an insight into their own view of its importance:

- Local authority waste collection departments: of marginal importance – recently increased. Bulky waste collections have traditionally been regarded as a service authorities have a duty to provide, which offer little contribution to meeting recycling targets. Given the recent change in philosophy from central government on valuing the social benefits/economy, and the inclusion of re-use in the waste-related national indicators, bulky waste collections will be seen as an attractive option, particularly for those authorities that have already made the

relatively ‘easy-wins’ that mass kerbside recycling schemes can bring to meeting increasing recovery targets.

- Re-use charities: variable – important to many, unwanted by some. They already exist and collect re-usable items from the general public. The bulky waste flow is a potential second source of items (only valuable if demand exceeds supply) and of income (always valuable to charities short on funding); it can also be an unknown risk, viewed as moving the charity further from its core values. Sourcing unwanted products from commercial sources, and liaison with referral agencies to reach those in need can be of equal or greater importance than the local authority partnership.
- General public – discarding items: unimportant impact. A re-use facility through the local authority collection can offer more convenience, however those committed to ensuring items they discard that are in good condition are reused will find the charitable organisation directly or use alternative routes for passing on items; those that simply want to get rid of their waste already have little concern for what is done with it.
- General public – receiving items: important (though little power to influence). For some the service re-use charities provide amounts to simply obtaining the items they need at lower cost than commercial alternatives; for others it is the difference between having and not having basic household effects. This brings real standard of living differences to the recipients (and their dependents – see the final picture in Appendix II), and could prevent a return to homelessness for some.

The Furniture Re-use Network, representing the collective voice of furniture and appliance re-use charities, and their beneficiaries, has been the principal vehicle for bringing about improvements in the sector, and increasing bulky waste re-use in doing so. In addition to unifying its UK-wide members, to enable knowledge sharing and learning from good practice, the FRN works with individual organisations and regional groups to assist in setting up partnership working and at the national level to lobby government and liaise with other relevant bodies, including the National Housing Federation and commercial furniture and appliance manufacturers and retailers. These roles that the FRN fulfil will continue to be fundamental to the positive evolution of the

charitable re-use sector and its connection to local authority waste management services.

REFERENCES

Askins, K. and Bulkeley, H. (2005) Governing sustainable waste management: Haverton Hill Furniture Re-use Scheme, available from <http://www.dur.ac.uk/geography/research/researchprojects>, last accessed 15 April 2008.

Davies, A. (2002) Power, politics and networks: shaping partnerships for sustainable communities, *Area* (2002), Vol. 34, No. 2, pages 190-203.

DCLG (2006) *Strong and Prosperous Communities: The Local Government White Paper*, Department for Communities and Local Government: London, October 2006, available online at www.communities.gov.uk.

DCLG (2008) *National Indicators for Local Authorities and Local Authority Partnerships: Handbook of Definitions*, Department for Communities and Local Government: London, March 2008, available online at www.communities.gov.uk.

Defra (2007) *Waste strategy for England 2007*, available from <http://www.defra.gov.uk/environment/waste/strategy/strategy07/pdf/waste07-strategy.pdf>, last accessed 16 October 2007.

Defra (2008) *Waste Wood as a Biomass Fuel*, available from <http://www.defra.gov.uk/environment/waste/topics/pdf/wastewood-biomass.pdf>, last accessed 5 May 2008.

ERM (2007) *Carbon Balances and Energy Impacts of the Management of UK Wastes*, report by ERM (with Golder Associates) for Defra, Final Report, March 2007, available from www.wrap.org.uk/biowaste.

HM Treasury (2007) *The future role of the third sector in social and economic regeneration: final report*, ISBN 978-0-10-171892-9, July 2007, from http://www.hm-treasury.gov.uk/media/2/B/thirdsectorreview_finalreport.pdf, last accessed 26 February 2008.

Williams, C.C. (2003) Developing community involvement: contrasting local and regional participatory cultures in Britain and their implications for policy, *Regional Studies*, vol. 37, no. 5, pages 531 – 541.

Williams, C.C. (2004) Harnessing informal volunteering: some lessons from the United Kingdom, *Journal of Policy Analysis and Management*, vol. 23, no.3, pages 613- 616.

Williams, C.C. (2005) Fostering community engagement and tackling undeclared work: the case for an evidence-based 'joined up' public policy approach, *Regional Studies*, vol. 39, no.8, pages 1145-55.

8. Conclusions

As may be expected in any extensive and prolonged research programme, the original plan and methodology have evolved somewhat along the way, yet the aim of the research has been maintained: the collection and disposal operations for household bulky waste have been thoroughly assessed. In terms of environmental and social performance, local authority collections services tend to be inferior to those of re-use organisations. The requirement to handle items that are intended to be reused with care, however, means that the efficiency of re-use organisations, by number of items collected per vehicle load and per unit of time, is generally lower than the local authority alternative. The methodological approach maintained throughout this research, combining national-level data collection and analysis with more informal, qualitative observations, has afforded a balanced assessment of this complex sector, taking into account the statistical nature of waste material collections and the sociological impacts of their subsequent re-use.

Many local authority collection services for bulky waste are prohibitive to preserving the condition of collected items, and they usually do not have the infrastructure for repairing items and returning them to those in need, for further use. It was estimated that only 2% of items collected by local authorities are passed on for re-use. Re-use organisations, on the other hand, exist for this very purpose. They currently successfully divert in the region of 75,000 tonnes of bulky items for re-use annually, approximately 85% of all they collect.

Overall, it was estimated that almost 1.8 million tonnes of household bulky items are discarded annually in England. There is potential to increase the re-use of these items to approximately double the current rate (15% in 2004/05). The principal means to achieve this lies in diverting items from disposal routes with low associated recovery rates to re-use organisations. Although the re-use sector has enjoyed a period of growth in the past few years, grant funding on which many organisations are dependent expires in 2007/08 and their ability to continue operating is uncertain.

A solution that addresses the issues of both sectors – the barriers and lack of infrastructure of local authorities to reuse items, and the financial sustainability of re-

use organisations – is working partnerships between authorities and re-use organisations. These co-operative arrangements are now starting to emerge in increasing numbers, in a somewhat *ad hoc* manner. It is likely that such partnerships could be more effectively co-ordinated and promoted at the regional or national level. The Furniture Re-use Network is actively assisting re-use organisations to engage with local authorities to establish such partnerships, although there is currently no equivalent action on the part of local or national government. A greater awareness of the social benefits associated with the re-use of bulky items would improve how re-use-focused partnerships are perceived, increasing the likelihood of their creation.

A number of distinct branches of work have been conceived of during the course of this research, which would either extend current knowledge in this research area further or be of value in their own right:

- Bulky waste management facilities study. This study would investigate the transport and storage/workshop facilities involved in the processing of bulky items in terms of their operational efficiency, and to assess the present and future potential capacity nationally for re-use of bulky items.
- Life Cycle Assessment of bulky waste collection options. This would help to inform decisions as to which options for dealing with bulky waste should be advocated. The environmental costs, primarily the emissions from collection vehicles and those associated with the final disposal route (re-use, recycling, incineration or landfill) have not been assessed to date. An introductory project of limited scope was undertaken as an MSc Project by a candidate of the Sustainable Waste Management course at the University of Southampton in 2007. This did not produce any significant findings, although it served to show that such an approach is possible, but would require an extended period of research (more than an MSc project allows) to produce positive outcomes. The framework for Life Cycle Assessments incorporating social impacts are now starting to be developed, and this may lead to much more applicable techniques for comparing the merits of different disposal options for household bulky items.
- Review of local authority bulky waste collection services in England. It was identified upon completion of this study (Chapter 2), that some of the key

aspects in the collection procedures of bulky waste services were in a transitory state, most notably the decision of whether to charge for collection and the level of involvement of re-use organisations. It would therefore be of benefit to make a review of this study, to collect up-to-date data on the collection procedures and determine the reasons for the changing service provision, and consequences of this in terms of efficiency of operations and environmental and social impact.

- Valuing of social benefits. It would be easier to promote a better understanding and appreciation of the social benefits of furniture and appliance re-use if they could be quantified, most likely in monetary terms. This process is known as social auditing or accounting, or triple-bottom-line accounting – reporting on social and environmental impacts as well as the traditional economic ones. Development of a model tailored to furniture and appliance re-use organisations would be a useful tool for the sector. Specific impacts that would need to be valued include: the benefit of different levels of furniture provision to an individual or a family; prevention of failed tenancies and associated care and re-housing of those becoming homeless due to lack of basic furnishings such as a cooker, fridge and bed; benefits to volunteers of spending regular time productively in an inclusive environment, including new social and technical skills learned, work experience leading to gaining paid employment, and more subtle effects such as feelings of acceptance and belonging.
- Partnerships for maximising re-use of bulky waste. It has been established that setting up partnerships between local authority waste collection services and re-use organisations is a key method in improving re-use rates. An investigation of the potential of such partnerships and how they may best be implemented is now required, based on the variety of examples currently in operation in over 30 locations around the country. Re-use organisation involvement in bulky waste collection will not be appropriate in all areas – to what extent is this determined by current operating practice (by the local authority), the size of the re-use organisation, and other set factors such as the level of affluence or population density of the area?
- A study modelling the factors that affect the use of, or demand for bulky waste collections. Initial findings indicate that the charge applied for the council collection of bulky items, and the affluence level of residents are related to the

demand for the service. This research would be particularly timely, as many Waste Collection Authorities around England are currently considering introducing charges for their bulky waste collection service, and they would benefit from this guide to how such a decision would affect its operation. As mentioned in the discussion, there are wider repercussions associated with charging for bulky waste collections, in terms of social equality and fly-tipping. These negative outputs could be assessed within the remit of this study.

- Research devoted to the management of bulky items at HWRCs. This was found to be the primary route for disposal of household bulky items, and to have almost as much potential for improving the level of re-use of bulky items as re-use organisations. There is also considerable scope for the involvement of re-use organisations at HWRCs, as there is with local authority collections. This study could replicate much of the work done here for local authority collections and re-use organisations, including the objectives and methodology.
- Tackling fly-tipping of household bulky waste. From data on the government's fly-tipping database, *Flycapture*, it is now known that household bulky items constitute a substantial proportion, up to half, of total incidence of fly-tips in England. As one of several viable disposal options for many people in discarding their bulky items, it must be accepted that the problem of fly-tipping is interconnected with bulky waste management in general. For example, it was identified in Chapter 2 that there is a current national trend for local authorities to introduce charging for their bulky waste collection service, and that this is linked to greater incidence of fly-tipping. The extent to which this can be generalised is unknown: how would improved provision of other free disposal options such as HWRCs and charitable re-use organisations reduce fly-tipping? Another currently unknown factor of interest when considering the value of efforts to tackle fly-tipping is the proportion of items that could have been passed on for further use had they not been fly-tipped. Fly-tipped waste is landfilled as standard by local authorities – the social and environmental benefits of diverting these items for re-use would apply here just as with diversion of items from local authority bulky waste collections.
- Implementing the WEEE Directive. The requirements of the EU WEEE Directive came into force in England in July 2007. These include separate

collection of electrical and electronic items, and that producers/retailers make provision for their disposal at end-of-life, either directly or, more likely, via a Producer Compliance Scheme. The research reported on in this thesis has maintained a wide focus throughout, on the whole household bulky waste stream. It was considered that an assessment of the new legal requirements for handling WEEE, and the opportunities these hold for improving its re-use, is worthy of a devoted study. A small number of charitable re-use organisations have registered as official 'Approved Authorised Treatment Facilities' for WEEE in the hope of realising these opportunities. Many others are wary of the financial risk of taking on such a role and are awaiting further evidence and guidance; an academic study of sound methodological approach, making use of the emerging experiences of the initial implementation arrangements for the new regulations, would be timely and informative.



12 July 2007

Public Perceptions of Household Waste Disposal

British researchers have recently interviewed residents in England about the ways they recycle and re-use bulky items. The results show that 71% of the items are discarded via national waste management routes and 5% via illegal dumping. Although residents are globally satisfied with national waste management schemes, they report that this service should be free of charge. The researchers conclude that for effective and efficient waste management, it is important to understand the public perception of convenience.

Bulky household waste includes large and heavy items such as furniture and electrical equipment. In England, local authorities provide two options for discarding this type of waste. The first option is provided by local Waste Collection Authorities, which are responsible for the day-to-day collection of household waste and often charge a fee for this service. The second option is by the Waste Disposal Authorities, which provide household waste recycling centres which can be used free of charge. Alternative routes used to discard bulky items include donation to charities or friends/family members, onward sale and illegal dumping.

Recently, British researchers performed a survey of 1450 households in 3 areas of England, in order to assess the collection and reuse rate of bulky items in England. A secondary objective was to understand how the management of these items are perceived from the point of view of service users.

This survey reveals that:

- Over one year, 65% of respondents discarded bulky items, with on average 4 bulky items discarded by each resident.
- The level of affluence of the households appears to influence the quality of discarded items.
- Less-wealthy people state that they are more reliant on the collection service than on the recycling centres. More affluent people have a car and are thus able to drive to the recycling centres and use this disposal option.
- 14% of bulky items are reused through charity collection (7%), or private donation (6%), or sale (1%).
- At least 78% of the residents are reasonably satisfied with the bulky item collection system. Among the non-satisfied users, the major complaint concerns the fee that residents have to pay to use the collection system. Some residents also complain about the waiting time for the collection.

The principal conclusion of this study was that local charities that collect and pass on furniture and electrical appliances for re-use will be used by residents where available. Unlike waste collection and disposal services, this results in the social benefits of providing those on low income with basic household items, and giving volunteers valuable work experience, in addition to the environmental benefit from avoiding landfill and reducing manufacture of new products.

The authors note that proximity to a recycling centre also influences the disposal system used by households. The closer they are to a recycling centre, the more they are likely to choose this system. In addition, the survey reveals that households perceive the collection fee as a disincentive for fly-tipping.

It is important to understand how residents perceive the waste disposal schemes for the waste they generate. On a broader scale, this survey suggests the importance of public perception for effective and efficient waste management schemes.

Source: Curran A., Williams I. and Heaven S. (2007) "Management of household bulky waste in England", *Resources Conservation & Recycling* 51:78-82.

Contact: tcu@soton.ac.uk

Theme(s): Waste.

Opinions expressed in this News Alert do not necessarily reflect those of the European Commission

To cite this article/service: "Science for Environment Policy"; European Commission DG Environment News Alert Service, edited by BIO Intelligence Service.

Appendix II: The operation of re-use organisations, in pictures



A volunteer in a re-use organisation call centre takes calls from people donating items and arranges for their collection.

Homestore, London.

Volunteers unload items collected from donors into a storage area, where they will be cleaned and repaired as necessary then put on display for sale.

St Vincent de Paul Furniture Unit, Ellesmere Port.



Volunteers working in a wood and electrical workshop.

Furniture Now!, Eastbourne.



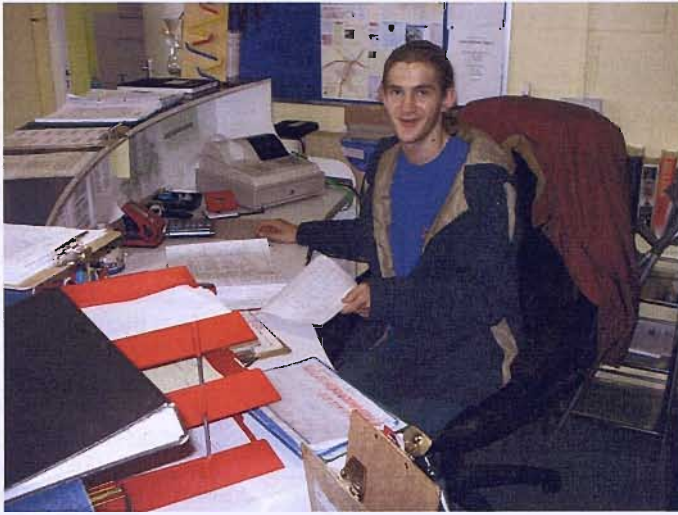
A cooker and a washing machine being tested for functionality and safety.

Furniture Aid South Thames, London.

Furniture (right) and electrical items (below) on display in the 'retail warehouse'.

Dorset Reclaim, Poole.





A volunteer learning administrative and people skills by manning the customer reception desk.

Community Furniture Project, Newbury.

A volunteer and driver (paid staff) load items onto the van for delivery.

Ipswich Furniture Project.



Julie and her son Harry spot the delivery van bringing their much needed furniture.

South Shropshire Furniture Scheme.



Picture courtesy of Jean Jarvis, CEO SSFS.

Appendix III: Council bulky waste collections – telephone interviews sheet

Council	
---------	--

Part 1: collection and disposal procedure

1	Size of operation No of vehicles x hrs,days/wk Av. no of jobs/day (per truck) Vehicle size/type	
2	Collection charges Max. no. of items	
3	Discount given (to whom/ % who get them)	
4	Any reuse – means Nature of co-op w/ reuse org (what items?)	
5	Any recycling – means (what materials?)	
6	Disposal route of remainder (e.g. Tfr strn, HWRC, Depot)	
7	Jobs grouped by area or material or purely app.ment (e.g. fridges/freezers, metal)	
8	Contracted out or in-house	
9	Additional comments e.g. plan to int./inc. charge e.g. how WEEE will affect e.g. sig problem with HWRC	

Part 2: volume of bulky waste collected

10	Number of collections last year (all together/metals/fr-freezers)	
11	Other data? - Weight - Av. no of items/job Possibly monthly figures?	

Appendix IV: Bulky item disposal survey

Version: 1.1

Bulky items are: those too large to fit into your wheelie bin, such as: furniture e.g. a bed, table or sofa; appliances e.g. a TV, washing machine or fridge; and other large and/or heavy items from your home or garden.

1. Did you know that the council will collect bulky items that you want to get rid of?

Yes

No *go to Q.3*

2. How did you hear about this service?

Tick ALL that apply

Council leaflet/advertisement

From a friend/family

Local newspaper

Council website

Other (*please state*) _____

3. Are you likely to use the council's website in the future to find information about disposing of bulky items?

Yes

No

4. If you have to get rid of bulky items in the future, how might you do it?

Tick ALL that apply

Pay the council to collect the items

Take them to a tip/recycling centre

Have them collected free for re-use

Give away (friends/family/church)

Commercial collection or skip hire

Other (*please state*) _____

5. In the LAST 12 MONTHS, have you discarded any bulky items?

Yes

No go to Q.16

6. How many bulky items in total did you get rid of? (*circle ONE NUMBER*)

1 2 3 4 5 6 7 8 9+

7. Were the items fit for further use? *Tick ONE box for each item you got rid of:*

	Not at all	In present condition	After repair or refurbishment
Furniture			
Bed base			
Mattress			
Bedroom furniture			
Sofa or armchair			
Table and/or chair(s)			
Other 'unit' <i>e.g. TV stand, cabinet</i>			
Appliances			
Fridge/freezer			
Washer/dryer			
Cooker			
TV or video player			
Other <i>(please state)</i>			
Other item			
Carpet			
Fixtures and fittings <i>e.g. radiator, bath-room or kitchen unit</i>			
DIY/building waste <i>e.g. rubble or off-cuts</i>			
Bagged garden waste			
Other garden item			
Wood			
Bags of small items			
Other item <i>(please state)</i>			
Other item <i>(please state)</i>			

8. Was the condition of the items affected by a requirement to leave them outside? (*e.g. they were rained on/damaged by moving/vandalised*)

Yes

No

None were fit for further use

9. How did you get rid of the items?

Tick ALL that apply

- Council collection } *continue with Q.10*
- Voluntary/charity collection }
- Commercial collection or skip hire } *go to Q.16*
- Waste Recycling Centre (tip) }
- Private sale }
- Gave away (friends/family/church) }
- By other means }

10. How did you request the bulky item collection(s)?

Tick ALL that apply

- By telephone
- Online or by email
- In person
- By post

11. Approximately how long did you wait for the items to be collected?

_____ days

12. How much were you charged to use the service?

13. Please rate your satisfaction with the following aspects of the service:

Circle one number for each aspect

	Not at all satisfied	Not very satisfied	Reasonably satisfied	Very satisfied	Extremely satisfied
Ease of requesting the service	1	2	3	4	5
Collection point	1	2	3	4	5
Length of wait	1	2	3	4	5
Value for money	1	2	3	4	5
The service overall	1	2	3	4	5

14. Did you have any specific problems with the collection(s)? *(please state)*

15. Are there any changes you would like to see made to the bulky item collection service provided? *(please state)*

16. How many people of each age group live in your household?
Tick once for each age group:

	0	1	2	3	4 or more
0-17					
18-24					
25-44					
45-64					
65+					

17. Do people in this household have access to a car?

Yes

No *go to Q.19*

18. What type(s) of car(s) do people in this household have access to?

Tick ALL that apply

Small, 3 doors

Medium-sized

Large car, or a van

19. How long have you lived at your current address?

Tick ONE box

Under 6 months

6 - 12 months

1 - 3 years

Over 3 years

Would you be prepared to complete a follow up survey later this year?

Yes *Please complete contact details below*

No

Thank you for taking the time to complete this questionnaire. Please provide your name and the first line of your address for your chance to win £50 cash in the prize draw.

Name: _____ Address: _____