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**Household Waste Management Practices in
Charnwood Borough, England**

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[Household Waste Management Practices in Charnwood Borough Council, England]

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Abstract

Household waste recycling rates vary between 20-60% across the UK. Legislative and financial measures introduced to reduce landfill disposal of waste in the UK, have impacted on the way Local Authorities operate their household waste and recycling collection services.

This paper reports on the performance of Charnwood Borough Council (CBC), a Local Authority in England, it is responsible for the collection and recycling of waste from 67,000 households. This service is carried out by a private company, Serco, who operate household waste collections for 15 UK Local Authorities.

To improve recycling performance CBC has changed the collection frequency and increased the number of materials segregated from residual waste for recovery. There have also been actions and campaigns to raise public awareness. Together these have improved recycling and composting rates in the CBC area from 16% in 2002/03 to 46.1% in 2010/11.

This paper is a case study and progress report on the details of how this was achieved. It compares performance with other Local Authorities, explores the impact of local operational and policy issues on the amount of household waste collected for recycling.

The research has concluded that differences in how the household waste services were provided and local policies influenced the amount of recyclates recovered. Local decision making and the ability to tailor services to suit different demographic areas, together with partnerships between neighbouring Authorities supported better sustainable waste management.

Keywords: recycling; local authority; household waste management;

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Introduction

Growing awareness of the importance of sustainability in waste management practices has seen global efforts being made to provide treatment methods that encourage reuse and recycling in preference to landfill disposal. Waste is increasingly seen as a resource rather than a disposal problem.

In England, responsibility for household waste collection and disposal is divided between Waste Collection Authorities (WCA), at the smallest area (the District and Borough Councils) and Waste Disposal Authorities (WDA), the larger County Councils. Traditional weekly collections of household waste for landfill disposal have changed to several collection rounds for different materials; sometimes on different timescales. The most common practice is alternate weekly collection of recyclables and residual waste (Watson and Bulkeley, 2010). Waste Collection Authorities must collect separately at least two materials for recycling unless “costs are unreasonably high or comparable alternative arrangements are available” to comply with the Household Waste Recycling Act, 2003. All English Local Authorities now offer some form of kerbside collection for dry recycling (WRAP, 2009). The frequency and container size, for recycling or bio-treatment can vary, however, reliability, convenience, and cost are determinant factors (Woodward et al, 2005).

In 2009/10 English Local Authorities recycled and composted nearly 40% of household waste collected (Defra, 2010), landfill disposal was 12.5 million tonnes of household waste (Defra, 2010). Waste arisings have decreased in recent years, with 2009/10 down 2.7% from the previous year (Defra, 2010). The amount of waste landfilled and the quantity of resources waste contains is still an issue (York et al., 2004).

The European Union Landfill Directive 1999/31/EC (European Parliament and Council Directive, 1999) introduced phased targets for reducing landfilling of biodegradable municipal waste (BMW), with the ultimate target of landfilling less than 35% of the BMW landfilled in 1995 by 2020. In response, the UK Government imposed recycling and composting targets on individual Local Authorities, with Performance Indicators to monitor their performance and financial drivers, Landfill Tax and Landfill Allowance Trading Scheme (LATs). Landfill Tax, an escalating tax currently £64 per tonne (April 2012), is charged in addition to landfill operator’s disposal fees estimated on average to be a further £50/tonne. LATs expose Local Authorities exceeding landfill disposal allowances to fines of £150 per tonne. These financial measures have provided incentives for Local Authorities to encourage the separation of materials for recycling and composting (Costa et al, 2010).

A case study of the changes in household waste and recycling collections operated by Charnwood Borough Council (CBC) is presented showing the impact of trends in recovery of dry recyclates, organics, bulky waste and waste management practices. This is further developed, comparing CBC’s waste management performance and operational procedures with other English Local Authorities, with an emphasis on those with high performing recycling collections.

Background / context

CBC, in the East Midlands of England, is classified as an “Other Urban” area (Defra, 2005), with a population density of 5.5 persons/hectare (Census, 2001). Waste management responsibility for the 67,000 households is split between CBC, the Waste Collection Authority (WCA) responsible for collection of household waste and

Leicestershire County Council (LCC), the Waste Disposal Authority (WDA) responsible for waste disposal.

A relatively low proportion of flats and apartments (9.56%) (Census, 2001) means the authority doesn't face the waste collection challenges associated with properties of this type. However, the presence of Loughborough University, with its large student population living in rented accommodation presents other challenges associated with a transient population.

Household Waste Collections

CBC's household waste collection service has evolved over time to increase the proportion of household waste recycled or composted and to reduce the cost of collections. This has included introducing wheeled bins, changing the collection frequency to fortnightly, increasing the number of recyclable materials collected and introducing a charge for a garden waste service.

As shown in Table1, the standard household waste collection service uses 240 litre wheeled bins to collect fortnightly residual waste and five dry recyclates that comprise paper, cardboard, glass, metal cans and plastics. More than a third (36%) of English Local Authorities collected this range of five materials in kerbside schemes (WRAP, 2009). An "opt-in" fortnightly chargeable garden waste collection is currently used by more than 30% of the 67,000 households. Additionally, schemes operated with local charities enable textiles and some bulky waste items from households to be recycled and reused

In 2002/03 CBC recycled and composted 16.81% of household waste, this rose to 42.73% in 2009/10 (Table 2) when the service noted in Table 1 was operating; similar schemes have been adopted by other UK Local Authorities.

Partnership working - Leicestershire Waste Partnership

An attempt to further reduce waste to landfill with the aspiration of a Zero Waste Charnwood has encouraged partnership working with other neighbouring local authorities, other organisations and commercial partners.

In the CBC area, the Leicestershire Waste Partnership (LWP) has been formed (Table 3). This is a partnership between the other Waste Collection Authorities (WCAs), the Waste Disposal Authority (WDA), and the largest city in the area, Leicester City Council (a Unitary Authority responsible for both the waste collection and waste disposal). The partnership operates joint waste reduction, recycling and communications projects, but the responsibility for waste collection (and associated budgets) remains with individual partner councils.

The Partnership's main effort is to divert waste from landfill rather than pay the default penalties of £150 per tonne imposed if Local Authorities exceed the landfill disposal allowance they have under the LATs scheme. Members of Leicestershire Waste Partnership individual recycling and composting performance figures for 2009/10 are shown in Table 3.

The collection schemes operated by Leicestershire Waste Collection Partners all differ, but generally perform above national recycling and composting targets. The joint strategy (Leicestershire Waste Management Partnership, 2010,) sets a joint target for recycling and composting at least 58% of Leicestershire's household waste by 2017.

The Leicestershire Partnership was the highest performing two-tier Local Authority waste partnership in England in 2009/10, with 52.6% of household waste sent for recycling and composting (Defra, 2010). This success is attributed to the efficiency benefits from the large partnership.

Household waste management performance

Local Authorities collect a range of data to report their performance against National Indicators. Best Value Performance Indicators (BVPIs) were introduced in 1999, and listed below. The BVPIs use calculated percentages of total weight of material collected.

- BV82a Household waste – percentage recycled
- BV82b Household waste – percentage composted
- BV84 Kg of household waste collected per head
- BV86 Cost of waste collection per household

Between April 2008 & March 2011, National Indicators (NI's) superseded BVPIs (Audit Commission, 2011). The data is still collated in the same way by Defra (Dept for Communities & Government, 2011). The National Indicators for waste and recycling are:-

- NI 191 - Amount of residual waste per household
- NI 192 - Amount of household waste reused, recycled and composted
- NI 193 - Percentage of municipal waste landfilled

This data is used to calculate recycling performance over time and an annual "league table" is issued by the Department for Environment, Food and Rural Affairs (Defra) showing the performance of individual Local Authorities. The introduction of performance indicators has improved dissemination of best waste management practices, contributing to a reduction in landfilled waste (Tebbutt Adams et al, 2000). Positions at the top of the league table issued annually by Defra are dominated by Local Authorities collecting large amounts of compostable waste, Figure 2.

Four Local Authorities in England achieved recycling and composting rates in excess of 60% in 2009/10. For CBC, the recycling and composting rate was 42.73%. Only one of the top four performers, South Oxfordshire District Council, collects a higher percentage of dry recyclates than CBC.

Staffordshire Moorlands District Council headed the 2009/10 "recycling performance league table", recycling and composting 61.84% of the household waste it collected. The lowest performing council in 2009/10 was Ashford Borough Council, recycling and composting only 15.29% of its household waste. CBC achieved 121st place out of 325 English Local Authorities.

Figure 2 shows CBC's 2009/2010 performance for recycling and composting compared to the top five performing Local Authorities, this highlights the influence of organic waste.

The combined total percentage for recycling, reuse and composting of 42.73% in 2009/10 for CBC places them in 121st position out of the 325 English Waste Collection Authorities in the "league table" (Defra, 2010). When compared by dry recyclates collected, as expected because of the organics, CBC performs significantly better, being placed in 28th position out of 325 Authorities, with 29.94% of the household waste collected being recycled. The highest performing dry recycling collection service is Leicester City Council, recycling 38.26% of household waste collected.

Dry recycling performance

The 30 top performing recycling Authorities were identified and the type of Local Authority, location, size of population and demographic makeup of each Local Authority was established to investigate if patterns or relationships existed to explain why these areas achieved higher yields of dry recyclates from household waste collections.

Defra classifies Local Authorities according to the urban / rural mix of the area. The six categories are major urban, large urban, other urban, significant rural, rural 50 and rural 80. Each category is represented in the top 30 performing councils, but the dominant category is Rural 80 districts where at least 80 per cent of the population live in rural settlements. The distribution of the sample Local Authorities across these categories is shown in Figure 3.

A diverse range of Local Authorities achieve high yields of recyclates, with there appearing to be no common socio-economic or other demographic factors. For example Stratford on Avon and Rochford are relatively affluent, rural areas and the Metropolitan Boroughs of Newcastle Upon Tyne and Walsall are densely populated, less affluent urban areas. The Local Authorities are also spread geographically across the UK and do not cluster in specific areas.

Local Authorities' organisational differences

Another possibility was organisational differences and the following questions were researched to establish procedures in waste collections among high performing Local Authorities across the UK:-

- Is the household waste collection service operated by the Local Authority (in house) or an external contractor?
- Are there any charges for bulky waste collections?
- Are there any charges for garden waste collections?

Of the 30 Local Authorities in the sample, 19 are Waste Collection Authorities; responsible only for the collection of household waste and 11 are Unitary Authorities, responsible for the collection and disposal of household waste.

CBC's Household waste collections services are operated by a private contractor, Serco. Of the 354 English Local Authorities 43% have external operators collecting household waste and 36% operate services with their own employees, with 21% having unknown arrangements (WRAP, 2009). Of the 30 top performing Local Authorities for dry recycling collections, 20 have an external service provider and the remaining 10 operate collection services with their own employees.

Bulky waste collections

The term "bulky waste" refers to items too large for standard household waste collections and includes furniture and white goods. Local Authorities can, if they wish, charge for the separate collection of these items. Around 77% of Local Authorities charge a collection fee for removing bulky waste items (APSE, 2009); CBC operates a free of charge bulky waste collection, limited to 9 items (3 x 3 items) per year for each household. Charging for this service could reduce demand for the service encouraging households to seek the retailers to recycle these items.

The bulky waste stream offers valuable opportunities to reduce and recycle waste (Chung et al, 2010). Many household items are discarded before the end of their

useful lives; some of these could be used or repaired for reuse (CBC, 2010). Approximately 400 reuse organisations providing a collection and distribution service for second hand furniture and household goods operate in the UK, diverting 90,000 tonnes of waste from landfill annually (Furniture Reuse Network, 2011). Supporting these reuse activities provides additional performance benefits to Local Authorities.

The reuse of bulky waste is often difficult to audit or identify due to lack of knowledge about available donation and reuse schemes. There is a reluctance to use second hand goods; because of “rules” imposed regarding the safe condition of donated materials including meeting the latest fire retardant regulations (Shaw, 2010).

Recognising the benefits of reusing bulky waste items and the limited opportunities there are to capture reusable items CBC have a telephone booking system to organise collection of bulky waste items. A series of questions establish if items are reusable, in working order and pass current Fire Regulations. If suitable, items are collected by SOFA, one of the furniture reuse organisations CBC works with.

The number of items and corresponding weight of bulky waste collected for reuse through SOFA has varied between 1.3 tonnes and 3.2 tonnes per month, the monthly breakdown of items and weights collected in 2010 are shown in Table 4.

Many items collected fail safety and fire regulations, are beyond their useful life or are unattractive to the current market for reuse. The metal items (mostly white goods unsuitable for reuse) are removed and sent to a scrap metal dealer for recycling, the weight of these items is shown in Figure 4. Any remaining items unsuitable for reuse are sent to landfill for disposal.

More items are sent for landfill disposal than are reused. For example, in June 2010, 383 tonnes of bulky waste was collected; of this 26 tonnes (69 items) was diverted for reuse via SOFA furniture reuse project and 1.5 tonnes was recycled as scrap metal. Only 7% of the bulky waste collected in June 2010 was therefore recycled or reused, the remaining items were landfilled.

Recycling options for some of these remaining items exist; for example wood in furniture and bookcases and wardrobes can be recycled and specialist recycling centres exist for carpets and mattresses and Waste Electrical and Electronic Equipment (WEEE). The cost and logistics of separating these items from the bulky waste destined for landfill will be explored by CBC in an attempt to recycle more of this waste stream.

Of the 30 Local Authorities in the sample, 27 Authorities charge to collect bulky waste items, only three Authorities operate a free of charge collection service. These are CBC, Leicester City Council and Milton Keynes Council.

The free service was introduced to control the level of fly-tipping in the Borough, however fly-tipped waste has risen in CBC since the free collection service commenced, compared to a reduction in fly-tipping nationally. Thus a review of this policy to look at alternatives for this waste could direct more through approved reuse and recycling schemes.

Garden waste

Separate garden waste collections remove significant amounts of organic waste from the residual waste stream collected by Local Authorities, and assist in meeting Landfill Directive targets.

CBC operates an “opt-in” garden waste collection service, costing householders £26 per year. The yield of garden waste collected for composting has increased from 1381.86 tonnes per year in 2004/05 to 6828.68 tonnes per year in 2009/10 (Defra,

2010). This helped CBC's to improve its composting performance from less than 1% of household waste collected in 2002/03 to 12.79 % of the household waste collected in 2009/10, as shown in Table 5.

The increase in organic material collected is due to the steady growth in the number of households using this service; rising from 12,500 in March 2008 to 26,300 in April 2011, Figure 5.

Of the 30 Local Authorities in the sample, 18 Authorities charge for the collection of garden waste, nine Authorities operate a free of charge collection service and three Authorities do not operate a garden waste collection service, Table 6.

The three Authorities not operating garden waste collections were City of London, where there is no demand for this service because of the property types in the area; Leicester City Council, who pre-treat all their residual waste to reduce the biodegradable element and recover recyclates before disposing at landfill, rather than removing this waste at source. The other, Uttlesford District Council, was a Rural 80 District with 80% of the population living in rural areas. Uttlesford offers an alternative to kerbside collections with Household Waste Recycling Centres and mobile weekend drop-off points in parish areas for householders to deliver garden waste to.

The two Local Authorities separately collecting the highest percentage of garden waste were South Oxfordshire with 25% and Rutland District Council with 24%. Both of these Authorities charge for this collection service and collect significantly less garden waste than the top performing local Authority in England, Staffordshire Moorlands with a 42% composting rate from the free garden waste collection service they operate in a large rural area where most properties have gardens.

The local decision to implement a charge for these collections, which are offered free of charge in other areas, may have impacted on recycling and composting performance with some residents unwilling to pay an additional charge continuing to use the residual waste container for the disposal of organic material.

To encourage home composting of garden waste rather than using the garden waste or residual waste collections, CBC offers a variety of equipment at subsidised rates through the SWITCH project (Saving Waste in The Charnwood Home). The aim is to further reduce the amount of biodegradable waste landfilled. Households actively using home compost bins divert 4.5 tonnes of organic waste per year from general waste (Leicestershire Municipal Waste Management Strategy: 2010).

Food waste collections

With local investigations into the composition of household waste showing that 42% of residual waste was food waste (WastesWork, 2009) a successful separate food waste collection would significantly reduce the amount of household waste being sent to landfill for disposal. Food waste requires treatment in a State Veterinary Service approved facility to comply with Animal By-Products Regulations, 2005. These Regulations control the composting process ensuring pathogens are inactivated. The process is consequently more expensive than composting garden waste alone, ranging from £26 to £104 per tonne compared to £20 to £36 per tonne for garden waste composting (WRAP, 2010). Many Local Authorities are currently exploring and introducing separate food waste collections utilizing additional financial incentives for renewable energy, CBC do not operate separate collections for food waste and have no immediate plans to do so; food waste is currently collected as a component of residual waste and is landfilled.

Conclusion

The research has found differences in household waste services and policies across the UK; and that these had the potential to impact on recycling performance. The research has confirmed the need for local decision and therefore the ability to tailor services to suit different demographic areas, however, some of the locally originating policies, for example charging householders for the separate collection of garden waste and operating free collections of bulky waste may be restricting performance. Partnership working between Waste Collection and Waste Disposal Authorities such as the Leicestershire Waste Partnership Authorities in the same geographical area provides efficiency gains and improves sustainable waste management.

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Tables

Table 1. Refuse and recycling collections operated in Charnwood Borough Council (Charnwood Borough Council, 2012)

Service	Materials	Container	Collection frequency
Recycling	Glass bottles and jars Steel and aluminium cans, plastic bottles, paper and cardboard	Green 240 litre wheeled bin	Fortnightly
Organic waste	Garden waste only Charged for service	Brown 240 litre wheeled bin	Fortnightly
Residual waste	Non recyclable waste	Black 240 litre wheeled bin	Fortnightly

Table 2. Percentage of household waste reused, recycled & composted in Charnwood Borough (WasteDataFlow online, 2012).

Year	Dry recycling (%)	Organic waste Composted (%)	Total household waste recycled or composted (%)
2002/03	16.52	0.29	16.81
2003/04	17	0	17
2004/05	21.23	2.75	23.98
2005/06	28.83	6.96	35.79
2006/07	27.95	7.94	35.89
2007/08	30.32	8.92	39.24
2008/09	30.39	11.14	41.53
2009/10	29.94	12.79	42.73
2010/11	26.67	19.43	46.1

Table 3. Recycling and composting performance figures (2009/10) for the member councils of the Leicestershire Waste Partnership (Defra, 2010).

Local Authority	% of household waste reused, recycled or composted, 2009/10
Harborough District Council	53.27
Melton Borough Council	50.05
Hinckley & Bosworth Borough Council	49.78
Blaby District Council	44.77
North West Leicestershire	44.18
Oadby & Wigston Borough Council	44.01
Charnwood Borough Council	42.73
Leicester City Council	39.83

Table 4. Bulky waste items collected for reuse, 2010 (Collated from a series of unpublished CBC internal records)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Yr
Weight/Kg	1382	2082	2797	2196	2277	2682	3275	1706	2522	2255	2405	1457	2703
Quantity	38	55	68	60	58	69	98	42	63	58	69	37	715

Table 5. Organic waste collected from households in Charnwood Borough 2004/05 to 2009/10 (Defra, 2010).

Year	Composting (tonnes)
2004/05	1381.86
2005/06	3531.10
2006/07	4282.06
2007/08	4810.72
2008/09	6110.52
2009/10	6828.68

Table 6. Charging policy for household collection of garden waste.

No household collection of garden waste	Charge made for household garden waste collection	No charge made for household waste collection
3	18	9

Figures

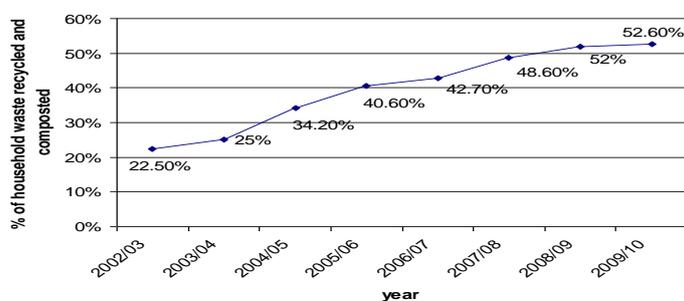


Figure 1. Leicestershire Waste Partnership joint recycling and composting performance 2002- 2010 (Defra, 2010).

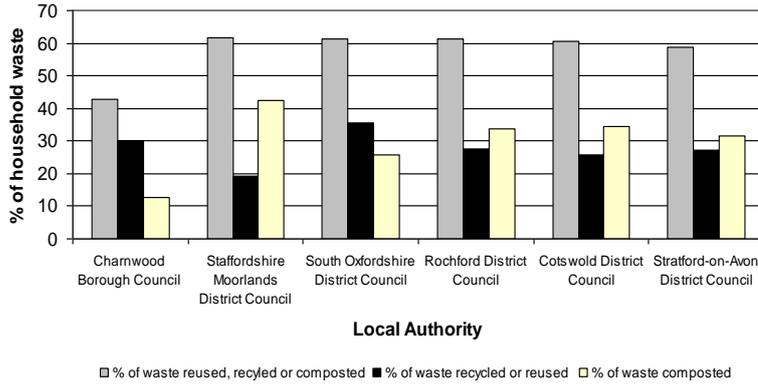


Figure 2. Percentage of household waste recycled and composted by the top five performing Local Authorities 2009/10 and Charnwood Borough Council (Defra, 2010).

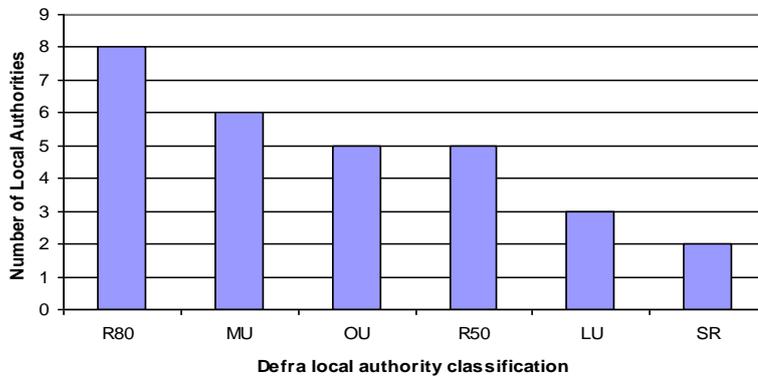


Figure 3. Distribution of Local Authorities across the Defra classification groups (Defra online, 2012)

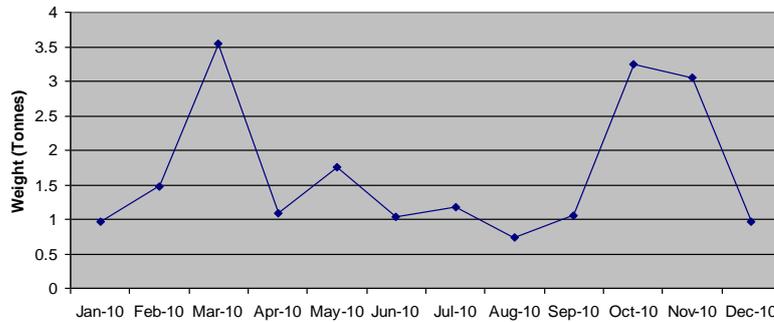


Figure 4. Monthly weight of scrap metal recovered from bulky waste collections (Collated from a series of unpublished CBC internal records)

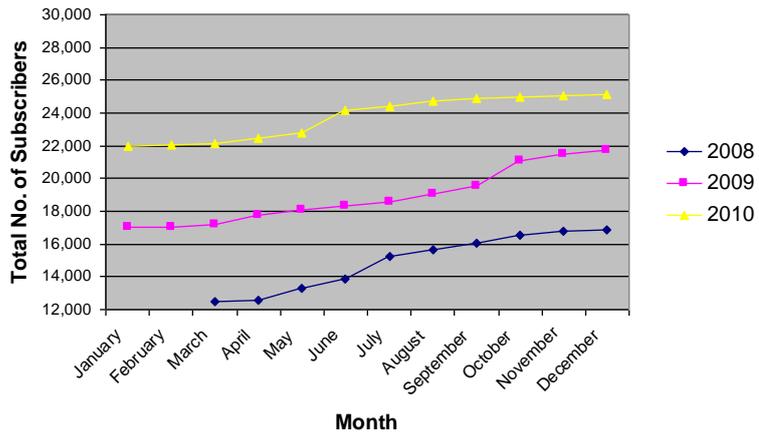


Figure 5. Number of residents subscribing to the garden waste collections operated by Charnwood Borough Council, 2008-2010 (Collated from a series of unpublished CBC internal records)