

Gloucestershire County Council

Waste Management

Gloucestershire Participation Monitoring



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Report No

Date 16 November 2010

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1 Introduction

Hyder Consulting was appointed by Gloucestershire County Council to provide detailed information on the level of participation for the kerbside collection schemes for food waste, garden waste and dry recyclables throughout the six waste collection authority districts in Gloucestershire.

This report details the results from the monitoring work.

2 Area Description

Gloucestershire is located in the south west of England, covering an area of 1,025 square miles. Geographically, the county is split into three distinct areas – the Cotswolds, the Forest of Dean and the Severn Vale – each of which has its own characteristics. The county is largely rural with the main urban focus in Gloucester and Cheltenham, although there are a number of market towns throughout the county, including Stroud, Cirencester, Lydney and Tewkesbury.

Gloucestershire has a population of approximately 565,000, a higher than average proportion of which is above 50 years old and a lower than average proportion is below 35. The County's population grew by 29,000 between 2001 and 2010 (5.63%), which equates to 0.5% per annum.

The more rural districts have greater numbers of detached properties whereas urban districts have a greater number of flats and terraced housing. Housing type has an impact on the provision of collection systems and waste minimisation schemes.

The Gloucestershire Waste Partnership (GWP) comprises seven local authorities in Gloucestershire. These are the six Waste Collection Authorities (WCA's); Cheltenham Borough Council, Cotswold District Council, Forest of Dean District Council, Gloucester City Council, Stroud District Council and Tewkesbury Borough Council, along with Gloucestershire County Council, the Waste Disposal Authority (WDA).

Five of GWP's seven member's (excluding Stroud & Gloucester) agreed in 2010 to develop a joint waste committee to deliver waste services on behalf of their residents. The seven GWP members implement, monitor and review the Joint Municipal Waste Management Strategy (JMWMS), this includes objectives and targets to deliver more sustainable waste management and diversion of waste from landfill. All partners have agreed targets for increasing the county recycling and composting rate to at least 60% by 2020 and reducing residual waste per capita to 228kg (equivalent to 495kg per household) by the same year.

The principal objective of this project was to measure householder participation in door to door (kerbside) recycling schemes in the six WCA areas of Gloucestershire. It was necessary to measure the participation of sufficient households to achieve a sample of 3,300 per area. Three or four areas per district were chosen on the basis of an easily identifiable collection round that was representative of the dominant ACORN group (to reflect different socio-economic types).

2.1 Waste Infrastructure

Six separate kerbside waste collection services are offered within the six waste collection districts of Gloucestershire. The materials collected differ between areas and receptacle type and are collected on differing weekly and fortnightly cycles.

Table 1 – Kerbside collections in Gloucestershire

DISTRICT	FREQUENCY	RECEPTACLE	MATERIALS
Cheltenham Borough Council	Fortnightly	55 litre box	Glass bottles and jars, mixed papers, food and drink cans, lightweight cardboard, plastic bottles
	Fortnightly	Reusable sack	Garden waste
Cotswold District Council	Fortnightly	44ltr box and reusable blue sack	Mixed papers, food and drinks cans, glass bottles and jars, aerosol cans. Cardboard in the blue sack.
	Weekly	10 ltr caddy or 240ltr wheeled bin	Food waste (separately) or mixed with garden waste
Forest of Dean District Council	Fortnightly	55 litre box	Mixed papers, food and drinks cans, glass bottles and jars
	Fortnightly	204ltr wheeled bin	Garden waste
Gloucester City Council	Weekly	55 litre box	Mixed papers and card, food and drinks cans, glass bottles and jars, plastic bottles and batteries.
	Weekly	25ltr Caddy	Food waste
	Fortnightly	240ltr wheeled bin	Garden waste
Stroud District Council	Fortnightly	55 litre box	Mixed papers, food and drinks cans, glass bottles and jars, mixed plastic bottles and batteries.
Tewkesbury Borough Council	Fortnightly	Blue wheeled bin	Mixed papers and card, food and drinks cans, glass bottles and jars, plastic bottles, plastic tubs and trays, liquid cartons and paperback books.
	Weekly	25ltr caddy	Food waste
	Fortnightly	240ltr wheeled bin	Garden waste

3 Methodology

3.1 Background

The protocol used is described below and has been taken from the WRAP guidance document, *Improving the Performance of Waste Diversion Schemes: A Good Practice Guide to Monitoring and Evaluation*.

In order to assess participation rates it is necessary to define the time period over which the monitoring should take place. According to WRAP guidelines, for weekly and fortnightly recycling collections, three collection cycles need to be monitored in order to gain a true reflection of participation rates. Participation should be monitored over a fixed period to allow for the fact that householders may be absent or forget to set out on a particular collection. It is important that the monitoring period does not change over the course of the survey, to allow valid comparison.

If a resident uses the service once or more over the monitoring period they are considered to have participated in the scheme. Participation rate is the proportion of households that take part at least once in the defined period (in this case three collection cycles). Set out rate is the proportion of households that put out a recycling or composting container on one collection opportunity.

3.2 Round Selection

GCC, in conjunction with the six district authorities selected a number of different collection rounds in each area, to ensure that an average of 3,300 properties were monitored per area and 20,000 properties were monitored throughout the county.

The districts were given the choice of whether to select the three rounds based on ACORN classification or to independently choose three areas that they would like monitored. ACORN is classification of residential areas into categories based on the range of census data available, including categories such as occupation, household size and composition, age, and marital status. If ACORN selections were made it was requested that each of the three rounds be taken from low, medium and high ACORN category locations respectively. The results of the selections and the number of properties on each round are recorded below. ACORN classification is noted for districts that were able to provide this detail for the chosen rounds.

Table 2 – ACORN Classifications

ACORN Classification	Description
1	Wealthy Achievers
2	Urban Prosperity
3	Comfortably Off
4	Moderate Means
5	Hard Pressed

Table 3 - Total Number of Properties in each round for each district

Round	District	Recycling Stream Monitored	ACORN Classification	Number of Properties
Longlevens	Gloucester	Dry, Food, Garden	1	554
Hucclecote	Gloucester	Dry, Food, Garden	3	804
Podsmead	Gloucester	Dry, Food, Garden	5	823
Charlton Kings	Cheltenham	Dry, Garden	1	1048
Springbank	Cheltenham	Dry, Garden	3	1314
Whaddon	Cheltenham	Dry, Garden	5	1363
Longhope	Forest of Dean	Dry, Garden	1	1397
Cinderford	Forest of Dean	Dry, Garden	4	1544
Lydney	Forest of Dean	Dry, Garden	3	1424
Round 2 - Hardwicke	Stroud	Dry	N/A	692
Round 4 - Dursley	Stroud	Dry	N/A	1116
Round 3 - Minchinhampton	Stroud	Dry	N/A	780
Zulu 2 – Brockworth	Tewkesbury	Dry, Food	N/A	937
Zulu 4 – Churchdown	Tewkesbury	Dry, Food	N/A	792
Zulu 1 – Wheatpieces	Tewkesbury	Dry, Food	N/A	786
Zulu 3 - Twyning	Tewkesbury	Dry, Food	N/A	671
Zone 3 – Upper Rissington	Cotswold	Dry	N/A	588
Zone 4 - Northleach	Cotswold	Dry	N/A	573
Zone 5 - Eastleach	Cotswold	Dry	N/A	311
Zone 8 - Cirencester	Cotswold	Dry, Food & Garden Combined	N/A	1394
Zone 9 - Stratton	Cotswold	Dry, Food & Garden Combined	N/A	1144
Zone 10 - Tetbury	Cotswold	Dry, Food & Garden Combined	N/A	935

3.3 Monitoring approach

The participation monitoring exercise lasted for a period of seven weeks in order to meet WRAP monitoring guidance to monitor set out rates over three consecutive collections. The exercise began 11th October and ran through to 26th November, utilising seven members of staff.

Five recycling monitors were recruited one week prior to the start of the monitoring exercise using the environmentjob.co.uk recruitment website in order to allow for an interview with the Project Manager and to allow for an afternoon training session supported by GCC. The training session covered waste issues in the UK, background to services in Gloucestershire, Health and Safety, set out rate monitoring technique and how to use the database provided.

The training session also allowed for the issue of the PPE and personal identification badges that are required by recycling monitors in order to operate in a safe manner.

The equipment provided to staff included: High Visibility vest, reflective holdall, identification badges, monitoring sheets, a clipboard, round maps and a letter of authorisation from the GCC.

The monitor met the recycling collection crew at the start of the collection round at an agreed time and location that was pre-arranged the afternoon before, and worked slightly ahead of the crew, following a pre-defined collection route. The collection routes were outlined by the district councils prior to the monitoring exercise. In Gloucester City and Tewkesbury the monitor travelled ahead of the crews in their own vehicles due to a lack of space for them to ride in the cab while undertaking the surveys.

Figure 2 – A surveyor in the field



The monitor recorded whether households had put out their receptacle for the particular recycling stream they were monitoring for collection and entered the data into an MS Excel spreadsheet at the end of each day. This information was provided to the Project Manager on a weekly basis.

During the monitoring exercise it was found that a limited number of households had been omitted from the round list or indeed added since the lists provided by Gloucestershire districts were compiled. The round lists were changed as required to reflect this.

4 Results

For each of the six districts covered during the participation monitoring project, results are presented for set out rate and participation rate for each of the recycling streams collected at kerbside.

Set out rate is defined as the proportion of households that put out their recycling container on one selected opportunity, while participation rate is the proportion of households that take part at least once in the defined period (in this case three collection cycles).

4.1 Headline Results

Over 37,000 monitored occasions took place for kerbside collection materials throughout the project covering dry recycling, garden and food waste streams.

Almost three out of every four residents (74%) within the selected rounds throughout Gloucestershire were presenting dry recycling for collection throughout the monitoring period. This is a fantastic achievement for the county, particularly as where possible a representative sample was taken of rounds in each district, chosen from a broad spectrum of ACORN categories (as presented in Table 3).

All districts recorded a participation rate of over 50% for dry recycling, with both Tewkesbury and Cotswold recording the highest rates with a huge 87% of households placing materials out for collection. Gloucester (78%) and Stroud (77%) both received above average levels of involvement from residents in the kerbside scheme, with Cheltenham (68%) and the more rural Forest of Dean (53%) attaining below average participation rates. (Table 4)

Over half of residents (51%) utilised the garden waste collection during the period. This again is a respectable percentage, however it should be noted that this rate is set against the fact that the monitoring period took place from the second week in October until the end of November. The results for the individual districts that collect garden waste show a marked decline in set out rates over this period due to the onset of winter and corresponding reduction in tonnage of garden waste produced. It would be highly probable that a garden survey that took place in the spring or summer would show a substantial increase in participation, although it would be difficult to speculate on the exact level based on the current results.

In Gloucester almost two in every three residents (66%) participated in the garden waste collection scheme, set against 50% for Cheltenham and 44% for Forest of Dean.

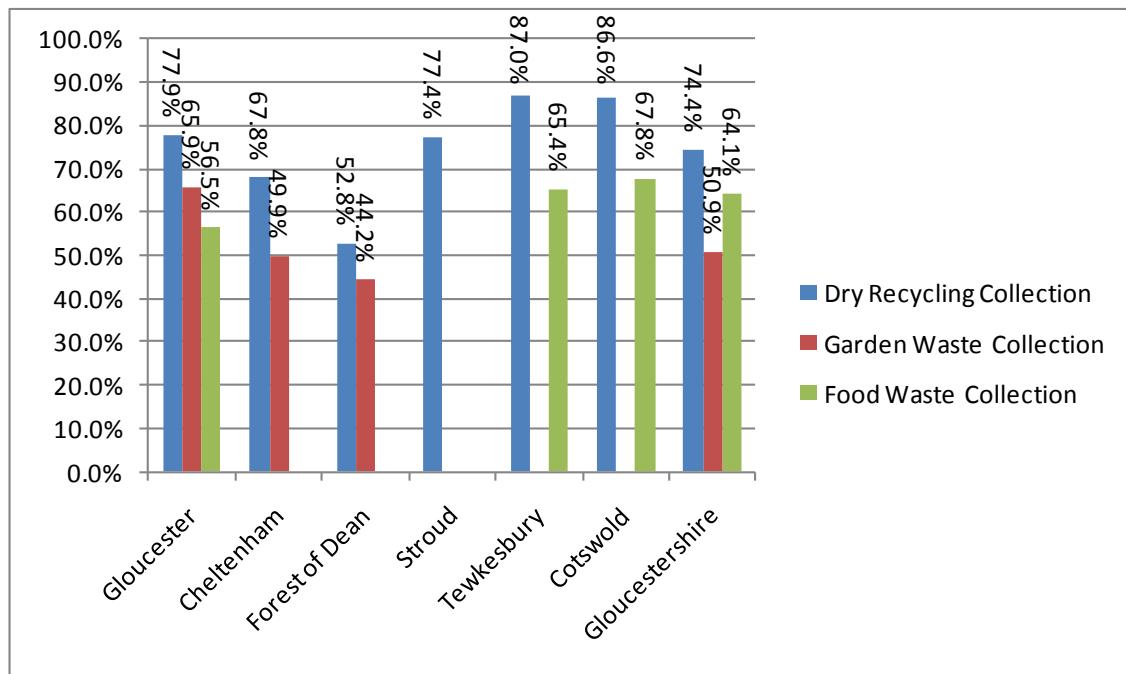
64% of householders across Gloucestershire presented food waste for collection during the survey period; this is a fantastic achievement and really shows that residents have embraced the newly introduced food waste collections over the last few years in the county. Cotswold achieved a 68% participation rate with Tewkesbury at 65% and Gloucester 57%. It should be noted though that Cotswold operate a mixed food and garden waste collection and that therefore the results are not directly comparable to the other districts in this case. The results have been presented alongside the other food waste collections in this report as the majority of material collected through this service appeared to be food waste and not garden waste, as noted by the monitor covering these rounds.

Please note that the headline results for each district within the county have been calculated from the actual number of households participating in the kerbside recycling scheme, rather than an average of the individual collection round participation rates.

Table 4 – Participation rates for all Gloucestershire districts recycling streams

		Dry Recycling Collection	Garden Waste Collection	Food Waste Collection
Gloucester	Households Participating	1698	1437	1232
	Total Households	2181	2181	2181
	District Participation Rate	77.9%	65.9%	56.5%
Cheltenham	Households Participating	1850	1858	
	Total Households	2727	3725	N/A
	District Participation Rate	67.8%	49.9%	
Forest of Dean	Households Participating	2026	1931	
	Total Households	3835	4365	N/A
	District Participation Rate	52.8%	44.2%	
Stroud	Households Participating	2003		
	Total Households	2588	N/A	N/A
	District Participation Rate	77.4%		
Tewkesbury	Households Participating	2773		2083
	Total Households	3186	N/A	3186
	District Participation Rate	87.0%		65.4%
Cotswold	Households Participating	3199		2353
	Total Households	3695	N/A	3473
	District Participation Rate	86.6%		67.8%
Gloucestershire	Households Participating	13549	5226	5668
	Total Households	18212	10271	8840
	County Participation Rate	74.4%	50.9%	64.1%

Figure 3 – Participation rates for all Gloucestershire districts recycling streams



4.2 Gloucester City

In Gloucester City garden waste is collected on a fortnightly basis within a 240 litre wheeled bin. Food waste is collected weekly in a 25 litre caddy and dry recyclables (including mixed paper and card, food and drinks cans, glass bottles, plastic bottles and batteries) are also collected on a weekly timescale in a 55 litre box.

One monitor was required to note set out and participation rates for all three collection streams on the dates below. Due to there being no room in the cab for the monitor they travelled in front of the collection vehicles in their own transport. Table 5 outlines the monitoring timetable for Gloucester.

Table 5 - Monitoring Timetable for Gloucester

	Monday		Tuesday		Wednesday		Thursday		Friday	
wc 11/10/10 (week 1)	L	L	L	H	H	H				
wc 18/10/10 (week 2)							P	P	P	
wc25/10/10 (week 3)	L	L	L	H	H	H				
wc 01/11/10 (week 4)							P	P	P	
wc 08/11/10 (week 5)	L	L	L	H	H	H				
wc 15/11/10 (week 6)							P	P	P	
Longlevens (Mon) = L										
Hucclecote (Tue) = H										
Podsmead (Thur) = P										
Materials to be monitored on that day										
Dry Recyclables										
Food waste										
Garden waste										

Longlevens is a mainly urban round with a mixture of densely populated housing estates and bigger more spaced out houses. Hucclecote is a mixture of semi-rural larger houses and densely populated housing estates, whilst Podsmead is an urban area with more densely populated housing estates fewer bigger houses and a lot of flats.

4.2.1 Set Out Rates

Dry Recycling

The set out rates for dry recycling in Gloucester were highest in Longlevens throughout the monitoring period, with all weeks reaching at least 65%. Podsmead recorded the next highest set out rate (Week One) although over the period of the project levels were very similar when compared with Hucclecote (see Table 6).

The Highest set out rate of 67% was recorded in Longlevens on Week Two, with the lowest set out rate of 53.6% being recorded in Hucclecote on Week One.

The figures overall show that there was little fluctuation in the weekly set out rates, the biggest jump occurring in Podsmead between Week One and Week Three.

Generally the material was set out in the required boxes, some households having more than one. Only very occasionally was the dry recycling set out in bags (this tended to be when the content consisted of paper only).

There were a couple of complaints from householders about the mess left behind when the recycling was collected (generally the Hucclecote area). This may have been caused by a combination of the loading pace and high winds that were experienced at the start of the monitoring exercise.

Table 6 – Set out rates for Gloucester dry recycling

		1st Collection Cycle	2nd Collection Cycle	3rd Collection Cycle	Total Households on Round
Longlevens	Number of households	363	371	366	554
	Set out rate	65.5%	67.0%	66.1%	
Hucclecote	Number of households	431	439	463	804
	Set out rate	53.6%	54.6%	57.6%	
Podsmead	Number of households	515	450	443	823
	Set out rate	62.6%	54.7%	53.8%	

Figure 4 – Set out rates for Gloucester dry recycling

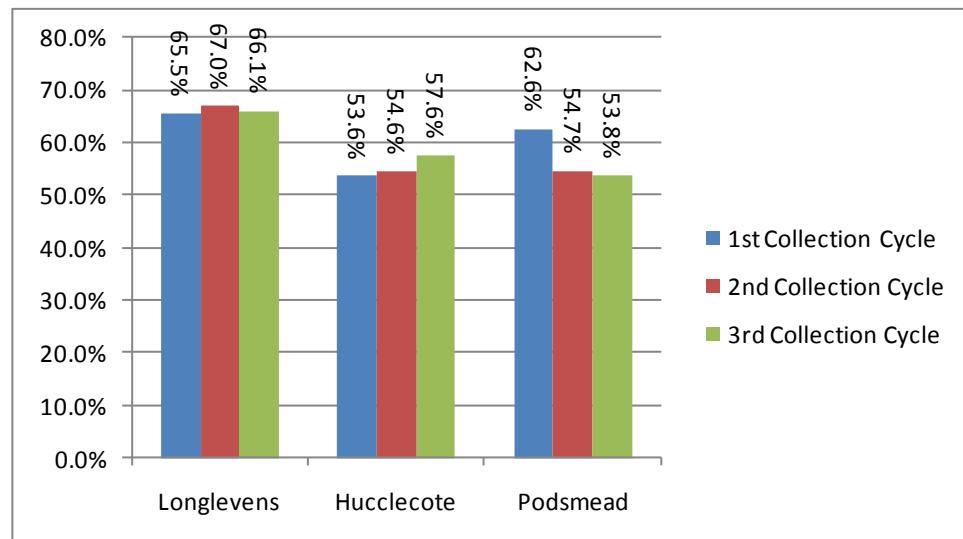


Figure 5 – Dry recycling box presented on the kerbside for collection in Gloucester



Garden Waste

Fortnightly set out rates for garden waste in Gloucester were generally highest in Hucclecote, with this round having the highest set out rates in both Week One and Week Three. In Week Two, Longlevens and Hucclecote had roughly the same rates at 43%. Podsmead consistently experienced the lowest set out rates lowest throughout the monitoring (as presented in Table 7).

Hucclecote had the highest set out rate of 65.8% in Week One and Podsmead the lowest set out rate in Week One at 17.1%.

Longlevens and Hucclecote demonstrated a general decrease in set out between Week One and Week Two, followed by a rough level of stability between Week Two and Three. Podsmeads' set out rates interestingly increased from 17.7% during the first collection cycle to 29.5% in the second, only to drop to 26% in the third collection week.

The monitor observed that confusion over collection weeks did not seem to be a cause of low participation rates. In the majority of cases, if there was no garden waste there was no general waste presented either during that week, which would have been an indication of misinformation.

Table 7 – Set out rates for Gloucester garden waste

		1st Collection Cycle	2nd Collection Cycle	3rd Collection Cycle	Total Households on Round
Longlevens	Number of households	294	236	208	554
	Set out rate	53.1%	42.6%	37.5%	
Hucclecote	Number of households	529	341	361	804
	Set out rate	65.8%	42.4%	44.9%	
Podsmead	Number of households	141	243	217	823
	Set out rate	17.1%	29.5%	26.4%	

Figure 6 – Set out rates for Gloucester garden waste

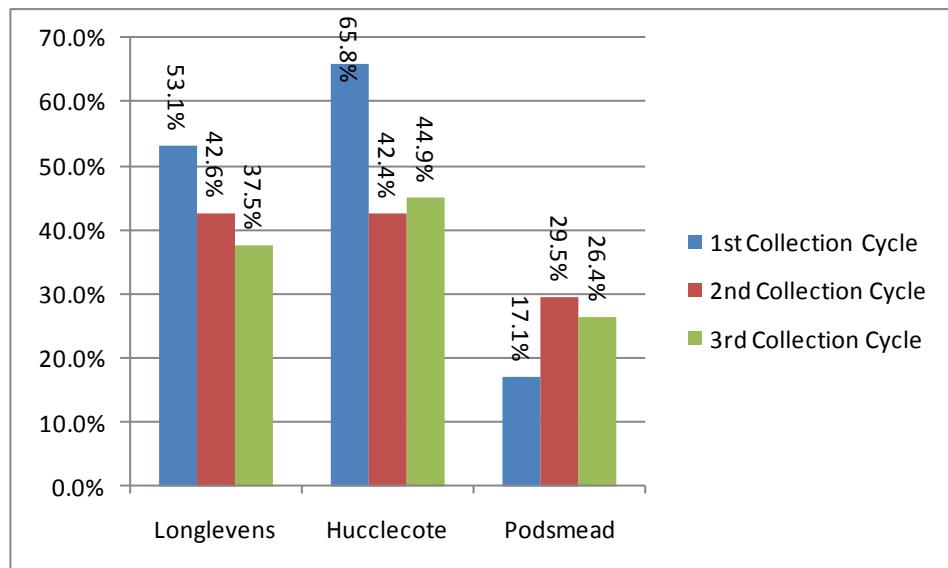


Figure 7 – Garden waste collection week in Gloucester



Food Waste

The set out rates for food waste in Gloucester were highest in Longlevens, with Podsmead again experiencing the lowest levels.

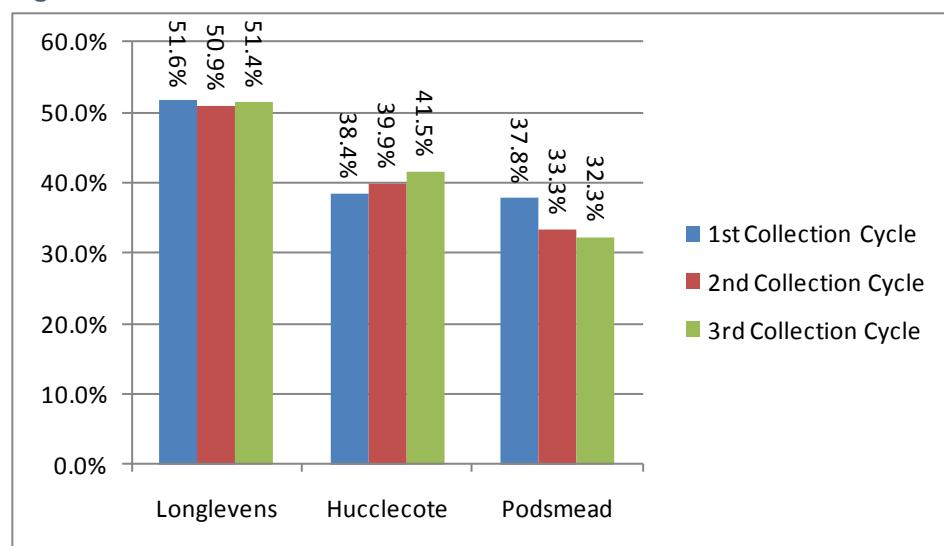
The highest set out rate of 51% was shown to be in Longlevens during Week One and the lowest set out rate of 32.3% in Podsmead on Week Three of the collection cycle. However it should be noted that across the individual rounds set out did not vary markedly in comparison to other districts (Table 8).

Generally the food was set out in the 25 litre caddy, but occasionally the smaller kitchen caddy was presented at the kerbside by mistake. Some households complained that the smaller caddy was not always emptied if set out for collection.

Table 8 – Set out rates for Gloucester food waste

		1st Collection Cycle	2nd Collection Cycle	3rd Collection Cycle	Total Households on Round
Longlevens	Number of households	286	282	285	554
	Set out rate	51.6%	50.9%	51.4%	
Hucclecote	Number of households	309	321	334	804
	Set out rate	38.4%	39.9%	41.5%	
Podsmead	Number of households	311	274	266	823
	Set out rate	37.8%	33.3%	32.3%	

Figure 8 – Set out rates for Gloucester food waste



4.2.2 Participation Rates

Longlevens had the highest participation rate for dry recycling and food waste reaching 82% and 76% respectively, whilst Hucclecote had the highest participation rate for Garden waste at 80% (as shown in Table 9).

It was noted that it tended to be the same households that participated on each collection cycle, particularly with the recycling of food waste, which overall had the lowest participation rate.

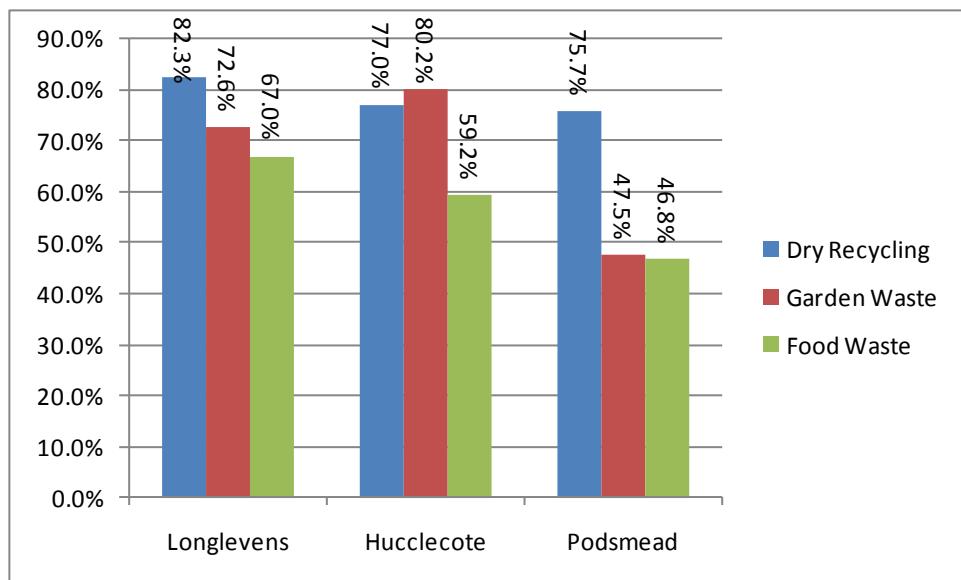
It appeared that overall Longlevens (ACORN 1) and Hucclecote (ACORN 3) had a broadly similar pattern of participation across the three waste streams. Although Podsmead's (ACORN 5) dry recycling participation rate was only 1% less than Hucclecote's, it showed a marked dip in participation for the garden and food waste streams in comparison to the other two areas monitored. This may be due to Podsmead having smaller gardens than the Hucclecote on average.

Participation rates of both garden and food waste were affected by area. Although those in the higher ACRON categories tended to participate at a higher rate, those with bigger gardens often home composted meaning that the waste was not presented at the kerbside.

Table 9 – Participation rates for Gloucester

	Longlevens	Hucclecote	Podsmead
Dry Recycling	82.3%	77.0%	75.7%
Garden Waste	72.6%	80.2%	47.5%
Food Waste	67.0%	59.2%	46.8%

Figure 9 – Participation rates for Gloucester



4.3 Cheltenham

Cheltenham Borough Council collect dry recyclables (glass bottles and jars, mixed papers, food and drinks cans, cardboard and plastic bottles) in a 55 litre box and garden waste from the kerbside in a reusable sack on an alternate fortnightly basis.

One monitor was able to travel in the cab with the collection crews when undertaking the fieldwork for this district in Charlton Kings, Springbank and Whaddon on the dates shown below. Table 10 outlines the monitoring timetable for Cheltenham.

Table 10 - Monitoring Timetable for Cheltenham

	Monday	Tuesday		Wednesday		Thursday		Friday
wc 11/10/10 (week 1)	C			S				W
wc 18/10/10 (week 2)	C			S				W
wc25/10/10 (week 3)	C			S				W
wc 01/11/10 (week 4)	C			S				W
wc 08/11/10 (week 5)	C			S				W
wc 15/11/10 (week 6)	C			S				W
Charlton Kings (Mon) = C								
Springbank (Wed) = S								
Whaddon (Fri) = W								
Materials to be monitored on that day								
Dry Recyclables								
Food waste								
Garden waste								

4.3.1 Set Out Rates

Dry Recycling

The highest set out rates over the three collection cycles, were recorded in Charlton Kings at just over 60%. Set out rates in Springbank were on average 10% lower than Charlton, while Whaddon provided set out rates of below 50% for all three monitoring opportunities (As shown in table 11).

The set of streets covered by the Charlton Kings dry recycling round had around 750 houses in Charlton Kings, and an add-on of over 100 houses at some distance, beside Prestbury. The characteristics of the two areas were not dissimilar, and participation figures showed little difference.

The Springbank round also showed some dramatic contrasts, the smaller homes near Coronation Square had a set out rate of below 50%, whilst Springbank Grove and Henley Road appeared to have much higher rates with a much more settled pattern of households.

The Whaddon collection round also covered two separate areas and were significantly different despite being geographically adjacent. Whaddon itself (approximately 840 properties included in the round) has older housing, with several 'difficult' streets, some of which showed very low participation. In contrast, Redmarley Road and surrounding streets (265 households covered)

had exclusively new-build properties, mostly small, with many starter homes and many buy-to-lets. Most surprisingly, the set out rate was considerably lower in the second area. One contributory factor could be missing boxes, when the monitor asked the residents, several reported that they had never had one, and that they will participate once one is provided.

In each area, an incidental observation was that several communal properties lacked all or some recycling provisions.

Several households in each area clearly did not make use of the kerbside collection scheme because there were communal facilities nearby (for example wheeled bins outside blocks of flats and bring sites).

There was also some reduced set out rates due to missing collection boxes, during the monitoring exercise, seven box requests were made to the monitor and passed on to CBC.

Table 11 – Set out rates for Cheltenham dry recycling

		1st Collection Cycle	2nd Collection Cycle	3rd Collection Cycle	Total Households on Round
Charlton Kings	Number of households	548	525	499	877
	Set out rate	62.5%	59.9%	56.9%	
Springbank	Number of households	380	378	313	743
	Set out rate	51.1%	50.9%	42.1%	
Whaddon	Number of households	465	525	464	1107
	Set out rate	42.0%	47.4%	41.9%	

Figure 10 – Set out rates for Cheltenham dry recycling

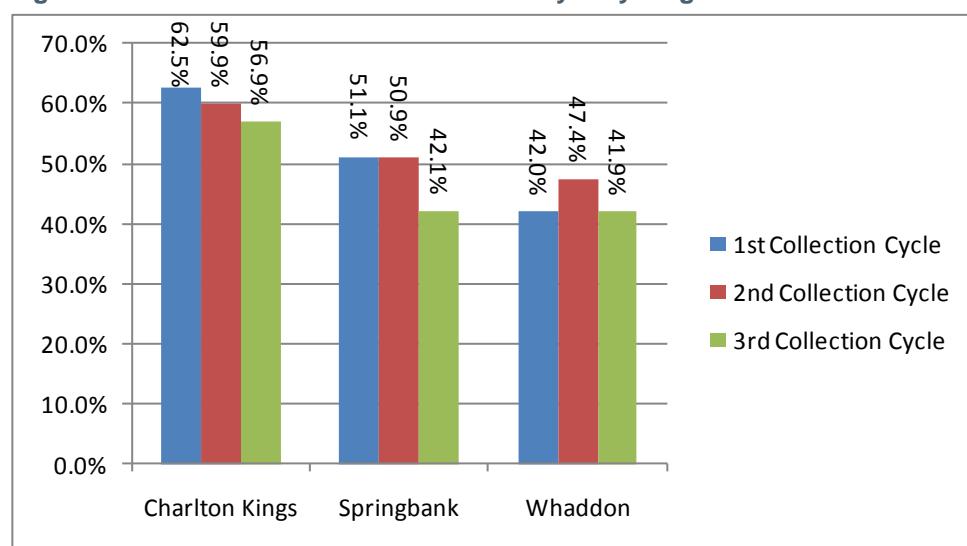


Figure 11 – 55 litre dry recycling containers



Garden Waste

In each of the areas covered, presentation fell as autumn progressed. The collection crews reported that participation is considerably higher during summer months.

The Charlton Kings round had 939 households in Charlton Kings and out into the semi-rural roads towards Ham, with 109 on the other side of town, in Arle. Set out rates decreased each collection week, with the highest overall rate recorded in Week One. Charlton Kings continued to be highest overall in each consecutive week (Table 12).

The Springbank round also had contrasting areas. In Springbank there were 845 properties, across town around Hales Road there were 469 properties. The former appeared to have higher set out rates than the latter. Over the course of the monitoring, set out rates on this round, decreased from 30.9% to 18.8% and then climbed back to 23.3%.

The Whaddon round was based around 'old' Whaddon, but included some much more prosperous homes in nearby streets, and over 100 households at some distance, in Leckhampton, again a much more affluent with large dwellings. The properties in Leckhampton recorded higher set out rates than the properties in old Whaddon. Part of the reason for this may be that many homes there have smaller gardens. Set out rates decreased in Week Two from 30.1% to 18.2% and then slightly improved in Week Three to 21.2%.

It should be noted that none of the rounds exactly match the streets covered by corresponding dry recycling collections.

Table 12 – Set out rates for Cheltenham garden waste

		1st Collection Cycle	2nd Collection Cycle	3rd Collection Cycle	Total Households on Round
Charlton Kings	Number of households	509	413	363	1048
	Set out rate	48.6%	39.4%	34.6%	
Springbank	Number of households	406	247	306	1314
	Set out rate	30.9%	18.8%	23.3%	
Whaddon	Number of households	410	248	289	1363
	Set out rate	30.1%	18.2%	21.2%	

Figure 12 – Set out rates for Cheltenham garden waste

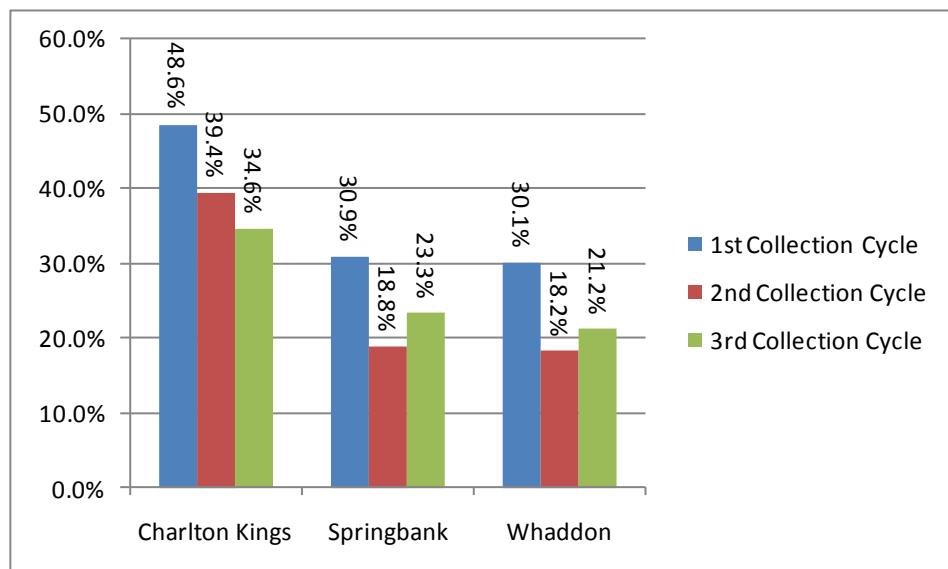


Figure 13 – Garden waste wheeled bins set out for collection



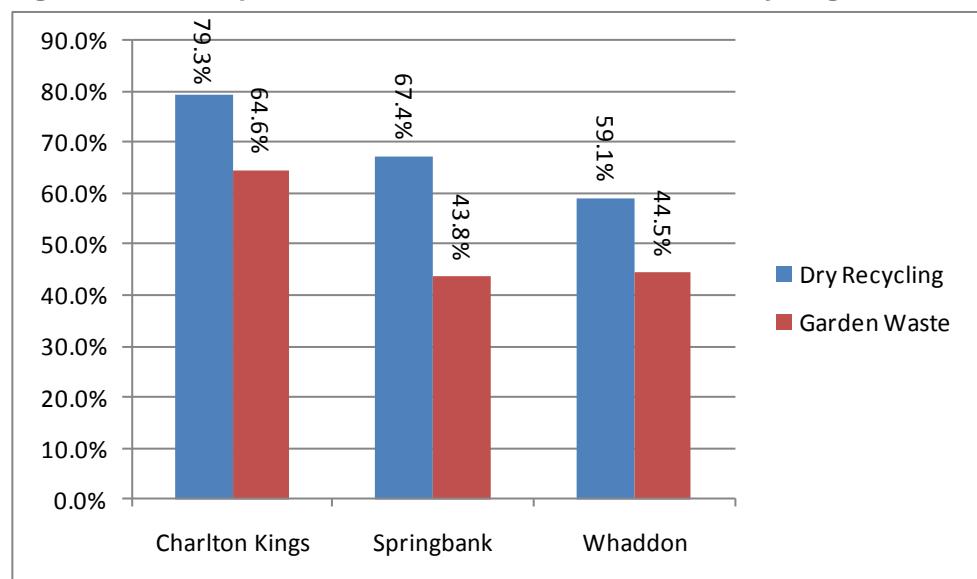
4.3.2 Participation Rate

Charlton Kings had the highest participation rates for both dry recycling and garden waste. Charlton Kings (ACORN 1) recorded a participation rate of 80% overall for the dry recycling and 65% for the garden waste. Springbank (ACORN 3) achieved a participation rate that was 12% lower than Charlton Kings over the course of the monitoring for dry recycling and Whaddon (ACORN 5) achieved a participation rate that was 20% lower than Charlton Kings. Garden waste recycling rates were roughly the same in Springbank and Whaddon at approximately 44% (As detailed below in Table 13).

Table 13 – Participation rates for Cheltenham materials recycling

	Charlton Kings	Springbank	Whaddon
Dry Recycling	79.3%	67.4%	59.1%
Garden Waste	64.6%	43.8%	44.5%

Figure 14 – Participation rates for Cheltenham materials recycling



4.4 Forest of Dean

The Forest of Dean District Council collect dry recycling (mixed papers, food and drinks cans and glass bottles) in a 55 litre box and garden waste in a 240 litre wheeled bin on an alternate fortnightly basis.

One monitor was able to travel in the cab with the collection crews when undertaking the fieldwork for this district in Longhope, Cinderford and Lydney on the dates shown below. Table 14 outlines the monitoring timetable for Forest of Dean.

Table 14 - Monitoring Timetable for Forest of Dean

	Monday	Tuesday	Wednesday	Thursday	Friday
wc 11/10/10 (week 1)			Lo		
wc 18/10/10 (week 2)			Lo	C	
wc25/10/10 (week 3)		Lo	C		Ly
wc 01/11/10 (week 4)		Lo	C		Ly
wc 08/11/10 (week 5)		Lo	C		Ly
wc 15/11/10 (week 6)		Lo	C		Ly
Longhope (Mon) = Lo					
Cinderford (Thur) = C					
Lydney (Fri) = Ly					
Materials to be monitored on that day					
Dry Recyclables					
Food waste					
Garden waste					

4.4.1 Set Out Rates

Dry Recycling

Longhope and Lydney recorded strikingly similar set out rates for dry recycling, while Cinderford's figures were roughly 10% less in comparison across all collection cycles (Table 15).

On the Longhope round, the set out rates in the High Street were comparably low. This may have been due to higher number of flats, commercial properties or houses next to roadside (where boxes go missing). Glenmore Caravan Park and Springfield Drive recorded the highest participation rates. It seemed that on average set rates were relatively consistent over the three weeks in comparison to other districts, with the same properties setting out boxes. This area included a new housing estate with vacant houses and others possible had not yet received recycling receptacles.

Within the housing estate in Huntley, on the Longhope round, set out rates appeared higher than the rest of the round. Maybe due to larger numbers of elderly people living in bungalows and the 'neighbourhood' feel to the area, compared with dispersed, detached rural properties on the other half of the round. This may have contributed to Longhope obtaining the highest dry recycling rates over the three weeks.

Comparing the round of Cinderford to the other two rounds, the results show that overall the set out rates in Cinderford were lower than on the more rural round of Longhope and lower than Lydney, with set out rates around 25%. This cannot be accounted for by higher numbers of flats, farm houses or detached properties on country roads, although it was noted that certain roads contained particularly low participation which would have dragged down overall rates.

Finally, set out rates for the dry kerbside collections in Lydney appeared to be uniform over the whole round. There were roughly equal amounts between houses on the estates and houses on the main roads, with some notable exceptions where participation appeared to be quite low compared with the number of houses (e.g. Queen Street, Albert Road, and some of the smaller cul-de-sacs in the larger estates). Over the three week period however, set out rates increased from 32% to 37%. This was the only round to demonstrate evidence of an increase over the period.

Table 15 – Set out rates for Forest of Dean dry recycling

		1st Collection Cycle	2nd Collection Cycle	3rd Collection Cycle	Total Households on Round
Longhope	Number of households	523	488	457	1391
	Set out rate	37.6%	35.1%	32.9%	
Cinderford	Number of households	374	363	327	1347
	Set out rate	27.8%	26.9%	24.3%	
Lydney	Number of households	351	389	406	1097
	Set out rate	32.0%	35.5%	37.0%	

Figure 15 – Set out rates for Forest of Dean dry recycling

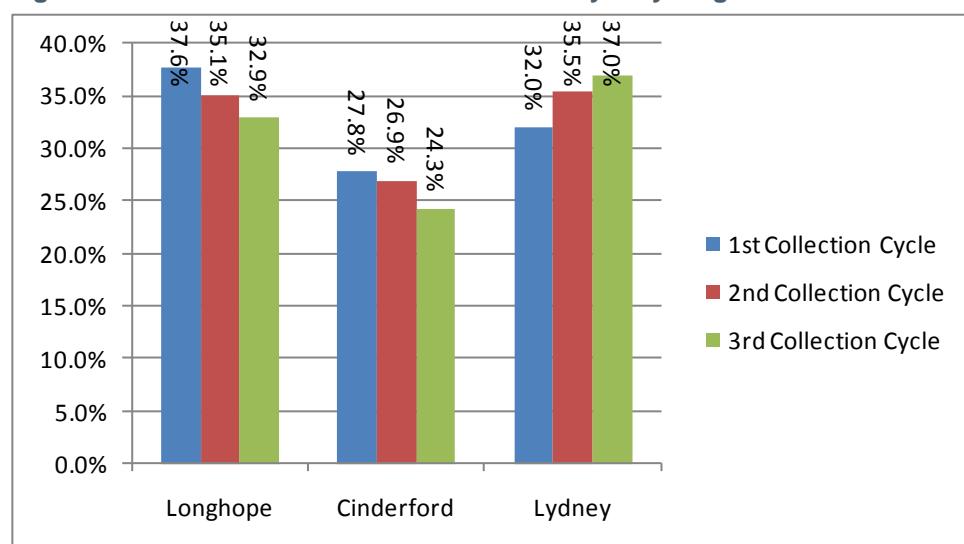


Figure 16 – Forest of Dean recycling box and basket for mixed papers



Garden Waste

Again Longhope and Lydney showed similar set out results, with Cinderford on average providing results of 10%-12% less throughout the project. There was a linear reduction across the three areas in terms of set out during the length of the project through October and November (see Table 16).

The Longhope round contained very few residents who appeared to participate in the garden waste recycling, even though there were around 200 or more properties listed. The reason for this was because the high street was mostly either houses without gardens or flats above commercial properties, meaning there was little need for garden waste collections. Within the round only Springfield drive and Glenmore Caravan Park appeared to have residents who made use of the garden waste collections. This was consistent over the three collection cycles.

The later parts of the Longhope round were largely made up of rural detached properties and farm houses with a number of smaller cul-de-sacs and 'closes'. Set out rates seemed higher here as residents had large gardens. However, on the main roads (e.g. Ross Road, Monmouth Road) set out rates appeared much lower, where properties were predominantly detached or farm houses. The Huntley area was made up of semi-detached housing or bungalows, and most if not all, had gardens. It appeared that set out was highest in this area compared with the rest of the round. Set out rates decreased over the three monitoring periods from 31.9% to 24.6%.

On the Cinderford round, properties generally had front and rear gardens, although these varied in size. Some of the terraced streets such as Woodside, Abbey and Flaxley had small gardens. The streets where set out rates appeared higher were ones in which residents had larger gardens such as Victoria Street, Buckshaft Road, Woodside Avenue and Abbotts View.

On the Lydney round, properties generally had front and rear gardens. The Springs, Watermead and Springfield Meadow appeared to have the lowest set out rates due to the fact that these were flats or OAP bungalows with smaller gardens. Within the more urban areas to this round, the housing estates made up of Tiberius Avenue, Sabrina way, Claudius Way, Augustus Way and Livia Way, gardens were smaller and set out rates did not appear to be consistent. Set out rates were higher when properties had larger gardens, such as Allaston Road, Primrose Way, Primrose Hill and Berkley Crescent. For the three collection cycles, Lydney had the highest set out rates for garden waste.

Over the three collection cycles, garden waste set out rates notably decreased. This was likely due to the fact that weather was getting colder and fewer residents were engaging in gardening activities. Anecdotal evidence from the collection crew confirmed this, they said that they were getting less and less garden waste each week, and the loads were becoming lighter. In Week One set out rates were at 20.9%, these dropped to 12.0% in Week Three.

Table 16 – Set out rates for Forest of Dry garden waste

		1st Collection Cycle	2nd Collection Cycle	3rd Collection Cycle	Total Households on Round
Longhope	Number of households	446	374	344	1397
	Set out rate	31.9%	26.8%	24.6%	
Cinderford	Number of households	323	234	185	1544
	Set out rate	20.9%	15.2%	12.0%	
Lydney	Number of households	490	401	377	1424
	Set out rate	34.4%	28.2%	26.5%	

Figure 17 – Set out rates for Forest of Dry garden waste

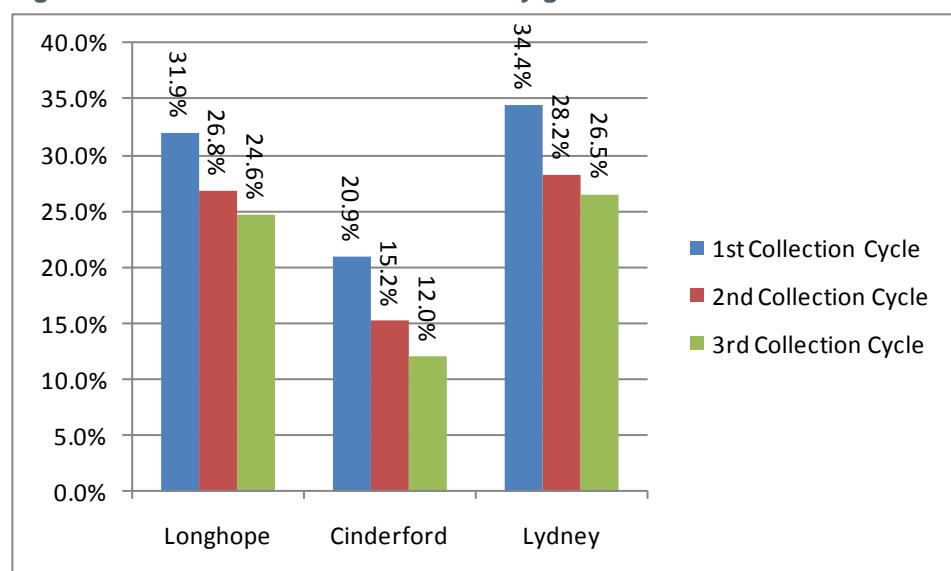


Figure 18 – Full garden waste wheeled bins in the Forest of Dean



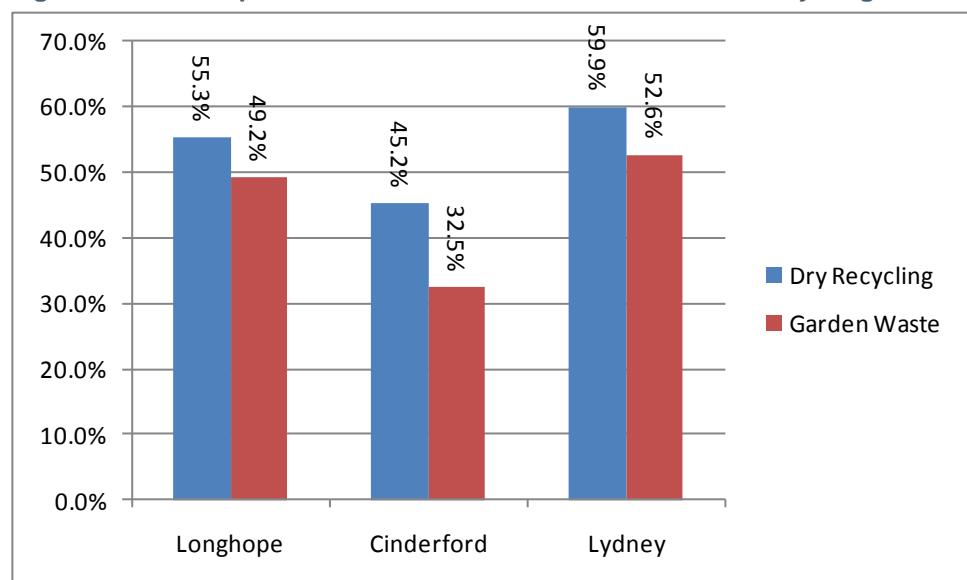
4.4.2 Participation Rates

In summary, the Lydney collection round (ACORN 3) achieved the highest participation rates for both dry recycling and garden waste. It was the only round within the Forest of Dean where both levels were above 50%. Longhope (ACORN 1) had slightly lower participation rates than Lydney with 53.0% for dry recycling and 49.2% for garden waste. Cinderford (ACORN 4) recorded the lower participation rates for both dry recycling, with 45.2% and garden waste, with 32.5%. It is interesting to note that this is the only area in which the highest ACORN category designated round in a district did not have the highest participation rates for all of the waste streams surveyed.

Table 17 – Participation rates for Forest of Dean materials recycling

	Longhope	Cinderford	Lydney
Dry Recycling	55.3%	45.2%	59.9%
Garden Waste	49.2%	32.5%	52.6%

Figure 19 – Participation rates for Forest of Dean materials recycling



4.5 Stroud

Stroud District Council only collect dry recycling (mixed papers, food and drinks cans, glass bottles, plastic bottles and batteries) from the kerbside on a fortnightly basis in a 55 litre box.

One monitor was able to travel in the cab with the collection crews when undertaking the data collection throughout the three rounds selected for this district on the dates shown below. Table 18 outlines the monitoring timetable for Stroud.

Table 18 - Monitoring Timetable for Stroud

	Monday	Tuesday	Wednesday	Thursday	Friday
wc 11/10/10 (week 1)		2			
wc 18/10/10 (week 2)			4		3
wc25/10/10 (week 3)		2			
wc 01/11/10 (week 4)			4		3
wc 08/11/10 (week 5)		2			
wc 15/11/10 (week 6)			4		3
Round 2 (Tue) = 2					
Round 4 (Wed) = 4					
Round 3 (Fri) = 3					
Materials to be monitored on that day					
Dry Recyclables					
Food waste					
Garden waste					

4.5.1 Set Out Rates

Dry Recycling

The three rounds showed a high degree of similarity. Hardwicke appeared to be the most consistent, providing set out rates of between 57% - 65% across the three collection cycles (as detailed in Table 19).

Minchinhampton was a very rural round and had the highest set out rate of 68.6% in the first collection cycle, while having the lowest participation rate overall. It is likely that the same households were placing their boxes out each week and households who did not participate in the first week continued to not participate in the following surveys.

Dursley was an urban round and had the lowest set out rate of all three rounds of 53.8% in the third collection cycle and had a participation rate of 77.0%. The much higher participation rate compared to the set out rate could be due to households placing their boxes out monthly instead of fortnightly.

A large number of households set out more than one box, while some did not use a box and set out the recyclable material in carrier bags. There were also a number of instances where cardboard was set out for collection, however it is not a material collected from the kerbside in Stroud.

Table 19 – Set out rates for Stroud dry recycling

		1st Collection Cycle	2nd Collection Cycle	3rd Collection Cycle	Total Households on Round
Round 2 Hardwicke	Number of households	435	394	454	692
	Set out rate	62.9%	56.9%	65.6%	
Round 4 Dursley	Number of households	658	638	600	1116
	Set out rate	59.0%	57.2%	53.8%	
Round 3 Minchinhampton	Number of households	535	512	426	780
	Set out rate	68.6%	65.6%	54.6%	

Figure 20 – Set out rates for Stroud dry recycling

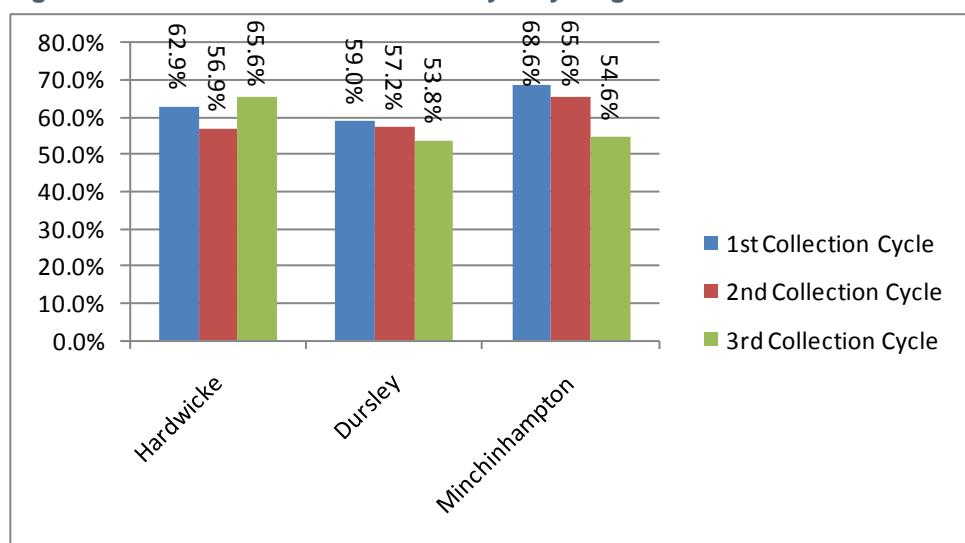


Figure 21– Mixed paper collection on the kerbside during Stroud monitoring



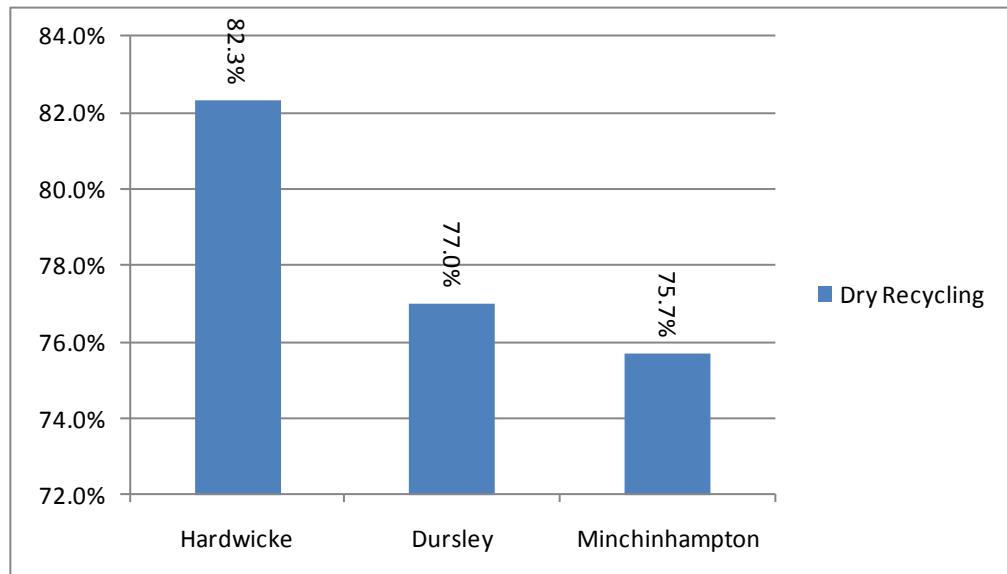
4.5.2 Participation Rates

Participation rates for the dry recycling in Stroud, were all above 75%. Hardwicke had the highest rate at 82%, followed by Dursley with 77% and Minchinhampton with 76% (Table 20).

Table 20 – Participation rates for Stroud dry recycling

	Hardwicke	Dursley	Minchinhampton
Dry Recycling	82.3%	77.0%	75.7%

Figure 22 – Participation rates for Stroud dry recycling



4.6 Tewkesbury

Within Tewkesbury Borough Council garden waste is collected on a fortnightly basis in a 240 litre wheeled bin. Dry recycling (mixed papers and card, food and drinks cans, glass bottles, plastic bottles, plastic trays, liquid cartons and paperback books) are collected fortnightly in a blue wheeled bin and food waste is collected weekly in a 25 litre caddy.

One monitor was required to note set out and participation rates for all three collection streams on the dates below. Due to there being no room in the cab for the monitor they travelled in front of the collection vehicles in their own transport. It should also be noted that four rounds were selected for monitoring in order to reach the 1,100 household threshold for a statistically significant sample specified by WRAP. Table 21 outlines the monitoring timetable for Tewkesbury.

Table 21 -Monitoring Timetable for Tewkesbury

	Monday		Tuesday		Wednesday		Thursday		Friday	
wc 11/10/10 (week 1)	2	2			4	4	1	1	3	3
wc 18/10/10 (week 2)										
wc 25/10/10 (week 3)	2	2			4	4	1	1	3	3
wc 01/11/10 (week 4)										
wc 08/11/10 (week 5)	2	2			4	4	1	1	3	3
wc 15/11/10 (week 6)										
Zulu 2 (Mon) = 2										
Zulu 4 (Wed) = 4										
Zulu 1 (Thur) = 1										
Zulu 3 (Fri) = 3										
Materials to be monitored on that day										
Dry Recyclables										
Food waste										
Garden waste										

The four rounds monitored in the Tewkesbury District provided a good sample range of rural and urban households, with Tewkesbury being widely rural, Churchdown having a mix of both urban and rural, while Brockworth and Wheatpieces were more urban focused.

As part of the dry recycling monitoring, Tewkesbury Borough Council requested that any properties that presented side waste for collection were recorded. This is summarised in Table 22.

4.6.1 Set Out Rates

Dry Recycling

The set out rate for the Tewkesbury dry recycling were generally higher in the Churchdown and Tewkesbury areas with Brockworth having the lowest rates. The highest set out rate was in Churchdown in the third collection cycle with 79.5%. Brockworth had the lowest set out rate in the second collection cycle at 59.1% (Table 22).

One possible reason for the difference in set out rate could be that the Churchdown and Twynning area generally had a higher degree of affluence in comparison to Wheatpieces and Brockworth.

Three out of the four rounds had the lowest set out rate in the second collection cycle. This could be attributed to smaller households not producing enough recyclable material to fill the 240 litre blue wheeled bin every fortnight and so decide to only set out their bin on a monthly basis.

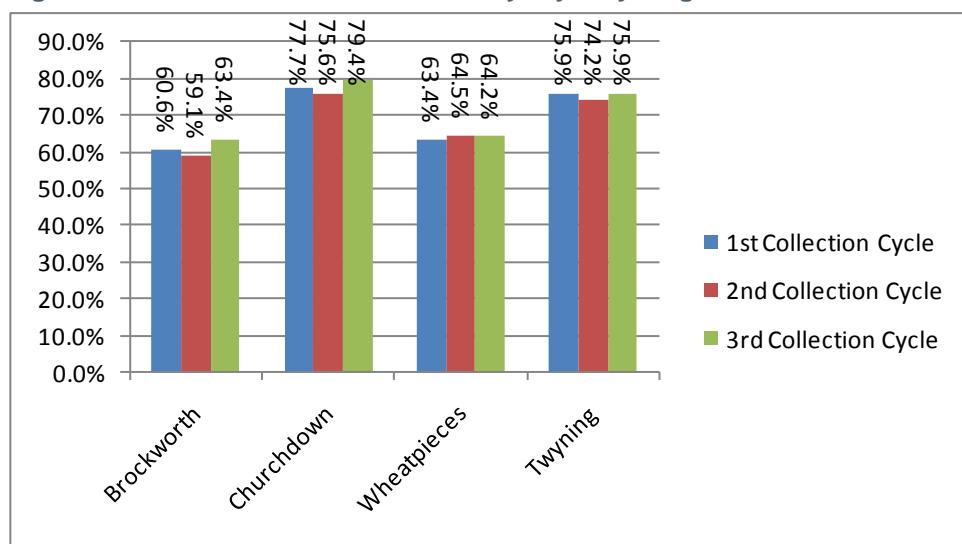
Side waste was observed across all four of the rounds surveyed. The highest amount of side waste was found in Twynning at 2.2% and the lowest amount of side waste was found in the Wheatpieces and Brockworth rounds measuring 1.3% each. Side waste included material that was too large to fit into the waste reciprocal e.g. cardboard boxes from electrical items, there were also instances of mixed bagged side waste. It should be noted however that with only 1 in 50 households presenting side waste, it does not appear to be a significant issue within Tewkesbury.

Overall, the blue wheeled bins for dry recycling were well presented and easily accessible for operatives to collect, a very small number of bins were not collected due to contamination or the wrong bin (general waste or garden waste) would be placed out for collection.

Table 22 – Set out rates for Tewkesbury dry recycling

		1st Collection Cycle	2nd Collection Cycle	3rd Collection Cycle	Side Waste	Total Households on Round
Brockworth	Number of households	568	554	594	12	937
	Set out rate	60.6%	59.1%	63.4%	1.3%	
Churchdown	Number of households	615	599	629	16	792
	Set out rate	77.7%	75.6%	79.4%	2.0%	
Wheatpieces	Number of households	498	507	505	10	786
	Set out rate	63.4%	64.5%	64.2%	1.3%	
Twynning	Number of households	509	498	509	15	671
	Set out rate	75.9%	74.2%	75.9%	2.2%	

Figure 23 – Set out rates for Tewkesbury dry recycling



Food Waste

The set out rates for Tewkesbury food waste were shown to be at their highest in the Churchdown rounds at 59.7% in the third collection cycle while the round with the lowest set out rate was the Brockworth round with 34.5% in the second collection cycle (detailed in Table 23).

Most households who set out food waste to be collected utilised the 25 litre caddy provided by the council. There were however, several occasions where the smaller kitchen caddy was set out for collection instead of the larger 25 litre caddy. A few households also placed extra food waste out in biodegradable bags for collection. All were emptied by the crews.

Table 23 – Set out rates for Tewkesbury food waste

		1st Collection Cycle	2nd Collection Cycle	3rd Collection Cycle	Total Households on Round
Brockworth	Number of households	349	323	339	937
	Set out rate	37.2%	34.5%	36.2%	
Churchdown	Number of households	464	442	473	792
	Set out rate	58.6%	55.8%	59.7%	
Wheatpieces	Number of households	340	348	325	786
	Set out rate	43.3%	44.3%	41.3%	
Twyning	Number of households	358	329	327	671
	Set out rate	53.4%	49.0%	48.7%	

Figure 24 – Set out rates for Tewkesbury food waste

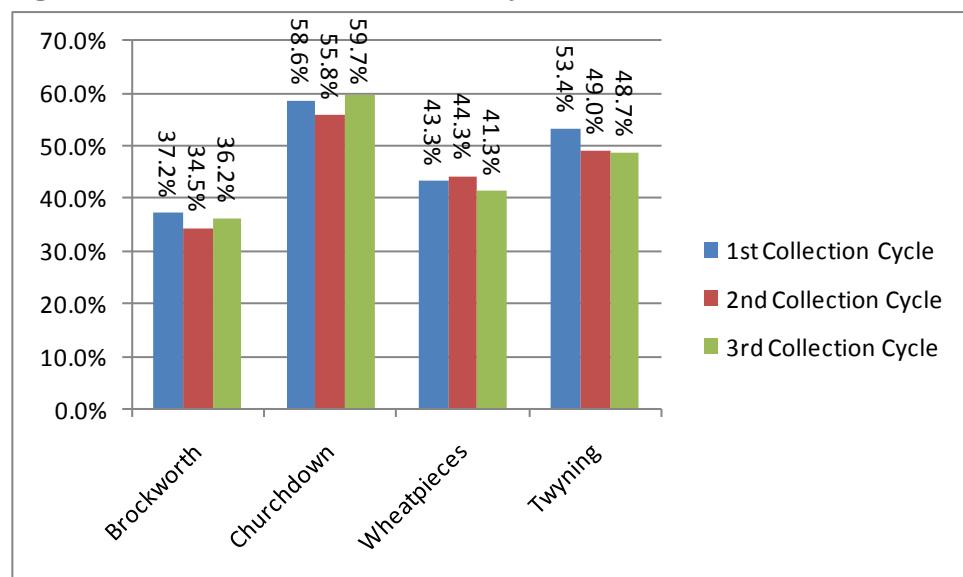


Figure 25 – Food waste caddy set out for collection



4.6.2 Participation Rates

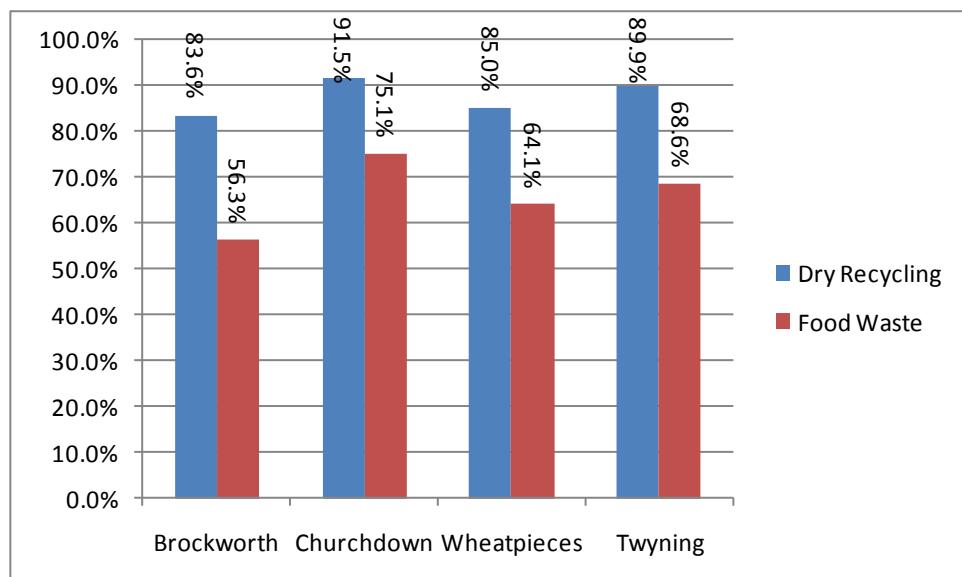
The dry recycling scheme consistently recorded a higher participation rate than the food waste scheme across all rounds.

Residents that engaged the monitor while the monitoring was being undertaken were largely impressed with the variety of items that could be recycled and enthusiastic about the newly introduced food waste service; although a few did indicate they preferred to compost their own food waste. This could explain why some households were not participating in the food waste scheme.

Table 24 – Participation rates for Tewkesbury materials recycling

	Brockworth	Churchdown	Wheatpieces	Twyning
Dry Recycling	83.6%	91.5%	85.0%	89.9%
Food Waste	56.3%	75.1%	64.1%	68.6%

Figure 26 – Participation rates for Tewkesbury materials recycling



4.7 Cotswold

Within Cotswold District Council mixed dry recyclables (paper, food and drinks cans, glass bottles and aerosol cans) are collected on a fortnightly basis within a 44 litre box and cardboard in a blue sack. Food waste mixed with garden waste is collected weekly in a 240 litre wheeled bin and a 10 litre caddy.

Due to differing collection systems within this district, two monitors were required to undertake the monitoring for dry and organic waste collection. This was due to smaller village vehicles being employed for dry recycling throughout the more rural areas which could only collect from around 600 properties per round. Therefore two collection areas in Cotswold were required for dry recycling to be covered in order to reach the 1,100 statistically significant sample specified by WRAP. Presentation of cardboard within the blue sacks was also requested to be noted in differentiation to overall dry recycling by the monitors. Table 25 outlines the monitoring timetable for Cotswold.

Table 25 - Monitoring Timetable for Cotswold

	Monday	Tuesday	Wednesday	Thursday	Friday
wc 11/10/10 (week 1)					
wc 18/10/10 (week 2)		8	8	9	9
wc 25/10/10 (week 3)		5	8	4	9
wc 01/11/10 (week 4)		8	8	9	9
wc 08/11/10 (week 5)		5		4	3
wc 15/11/10 (week 6)		8		9	10
wc 22/11/10 (week 7)		5		4	3
2 people required					
Zone 8 (Wed) = 8					
Zone 9 (Thur) = 9					
Zone 10 (Fri) = 10					
Zone 5 (Wed) = 5					
Zone 4 (Thur) = 4					
Zone 3 (Fri) = 3					
Materials to be monitored on that day					
Dry Recyclables					
Food waste / Garden waste combined					

As part of the dry recycling monitoring Cotswold District council requested that any properties that presented cardboard for collection were separately recorded. This is outlined in Table 26.

4.7.1 Set Out Rates

Dry Recycling

The highest set out rate was recorded in Stratton in the second collection cycle with 78.1% whilst the lowest level was recorded in Rissington in the first collection cycle with 61.6% (as shown in Table 26). There appears no obvious correlation between set out rates across the collection cycles, although the similarity of the Cirencester and Stratton data across the collection cycles may be worthy of note as basically these are just two different parts of the same town, Cirencester.

Cirencester saw a spike in set out rates in the second cycle (74.3%) compared with the first and third cycles (both approximately 69%). This was a fairly urban area with houses very close together in a small geographical area.

Stratton saw a similar spike in the second cycle with a 78.1% set out rate compared with around 69% in cycles one and three. As with Cirencester this was a fairly urban area again with a high number of households across a small area.

Tetbury produced fairly similar set out rates across the three collection cycles, ranging from 63.4% to 66%. The Tetbury round was slightly less urban than Cirencester and Stratton and was characterised by a larger number of households on the round.

Rissington saw a greater range of set out rates from 61.1% in collection cycle one, up to 69.4% in cycle three. Two distinct areas here, Rissington being a large housing estate, albeit fairly affluent, and Bourton, also affluent, but more spread out.

Northleach also recorded a spread in the set out rates, ranging from as low as 59% to a high of 67%. This round covered the whole town of Northleach split between a tight housing area, a quaint Cotswold High Street area and more spread out housing estates.

Eastleach saw very little change in set out rates across the cycles ranging from 62.7% - 65.6%. This area encapsulated three small Cotswold villages, Eastleach, Bibury and Barnsley, all of these being very affluent places.

In terms of the card recycling bags the highest overall set out was seen in Cirencester with 72.8% of households involved, whilst the Eastleach round saw the lowest set out rates with 46.9%.

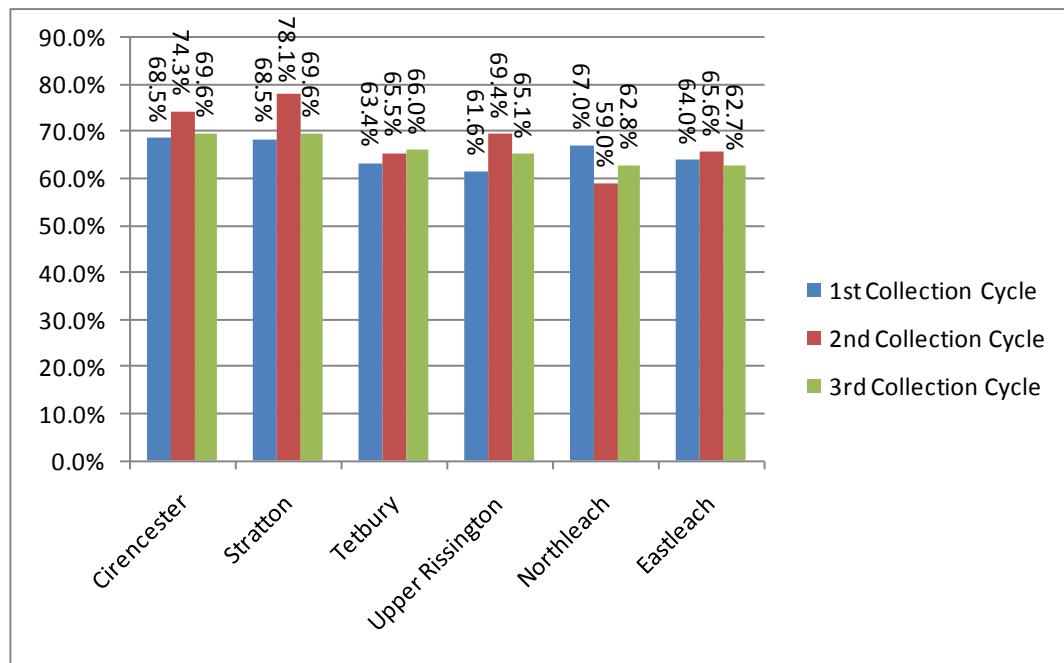
The Cirencester, Stratton and Tetbury areas are characterised by being more urban routes, as they are set in the two biggest conurbations in the Cotswold district, whilst Rissington (including Bourton), Northleach and Eastleach are far more rural routes and characterised by far bigger distances between properties. This is especially true for the Eastleach round which incorporated three villages yet had by far the fewest householder numbers.

The Rissington, Northleach and Eastleach rounds appeared to cover more affluent areas than the Cirencester, Stratton and Tetbury rounds.

Table 26 – Set out rates for Cotswold dry recycling

		1st Collection Cycle	2nd Collection Cycle	3rd Collection Cycle	Cardboard Sack Collection	Total Households on Round
Cirencester	Number of households	453	491	460	481	661
	Set out rate	68.5%	74.3%	69.6%	72.8%	
Stratton	Number of households	484	552	492	485	707
	Set out rate	68.5%	78.1%	69.6%	68.6%	
Tetbury	Number of households	542	560	564	496	855
	Set out rate	63.4%	65.5%	66.0%	58.0%	
Upper Rissington	Number of households	362	408	383	330	588
	Set out rate	61.6%	69.4%	65.1%	56.1%	
Northleach	Number of households	384	338	360	345	573
	Set out rate	67.0%	59.0%	62.8%	60.2%	
Eastleach	Number of households	199	204	195	146	311
	Set out rate	64.0%	65.6%	62.7%	46.9%	

Figure 27 – Set out rates for Cotswold dry recycling



Mixed Food and Garden Waste

Generally, the set out rates week by week for Stratton (Zone 9) and Tetbury (Zone 10) were higher than that of Cirencester (Zone 8)

Tetbury had the highest set out rates for two out of the three collection cycles that the organic collection was observed. This was on Weeks One and Three. Stratton had the highest set out rate on Week Two (see table 27).

The highest set out rate was 53.3% recorded in Tetbury during the first collection cycle. The lowest set out rate was 32.5% recorded on the Stratton round during the second collection cycle.

The second collection cycle had the lowest set out rate across all three monitoring rounds. This could be attributed to the fact that the organic collection took place during the second cycle. Weeks One and Three had both organic waste and dry recyclables collected, causing a higher general set out rate.

Across the three collection rounds, set out rates for the kitchen caddy was higher than that of the green wheel bin. It would appear that green wheeled bins are used less frequently and often seasonally.

The kitchen caddies and green wheeled bins were generally well presented for collection and usually at pre-designated positions on the street. Occasionally in more rural areas collection would be made from back doors. Very few householders used non Cotswolds Council branded caddies although on several occasions the bio degradable bags of waste were placed directly on the street without a caddy.

A very small number of householders' bins were not collected due to overloading or the incorrect material being placed into the unit.

Table 27 – Set out rates for Cotswold mixed food and garden waste

		1st Collection Cycle	2nd Collection Cycle	3rd Collection Cycle	Total Households on Round
Cirencester	Number of households	533	453	608	1394
	Set out rate	38.2%	32.5%	43.6%	
Stratton	Number of households	594	493	515	1144
	Set out rate	51.9%	43.1%	45.0%	
Tetbury	Number of households	498	383	429	935
	Set out rate	53.3%	41.0%	45.9%	

Figure 28 – Set out rates for Cotswold mixed food and garden waste

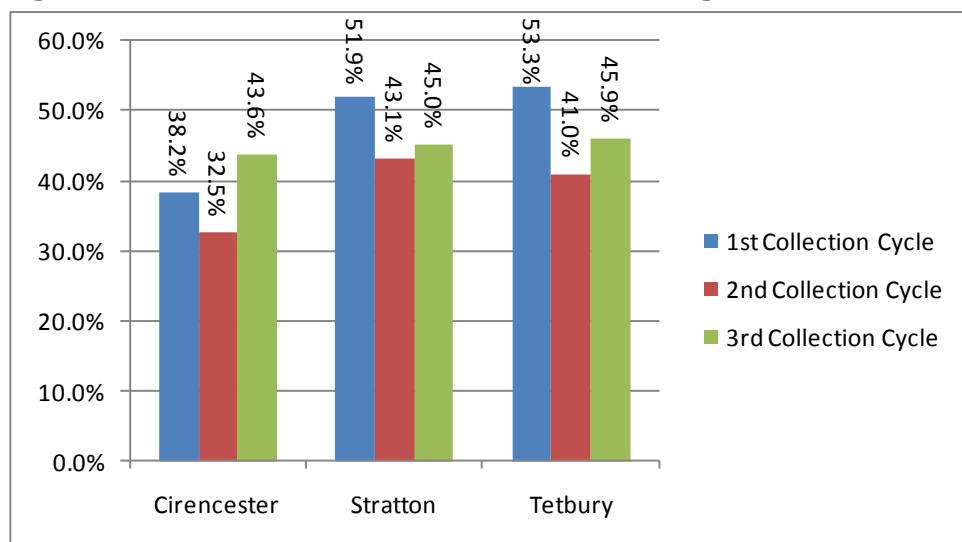


Figure 29 – Mixed food and garden waste wheeled bins in Cotswold



4.7.2 Participation Rates

The highest participation rates for dry recycling were seen in Stratton, whilst the lowest was seen in Eastleach (including Bibury and Barnsley).

Similar participation rates were seen in Cirencester, Stratton and Tetbury, with rates ranging from 87% to 90%, whilst the group of Rissington, Northleach and Eastleach, saw collectively lower participation rates ranging from 82.7% to 83.5%. However it should be noted how linear the results were across the six rounds monitored in comparison to other districts (see table 28).

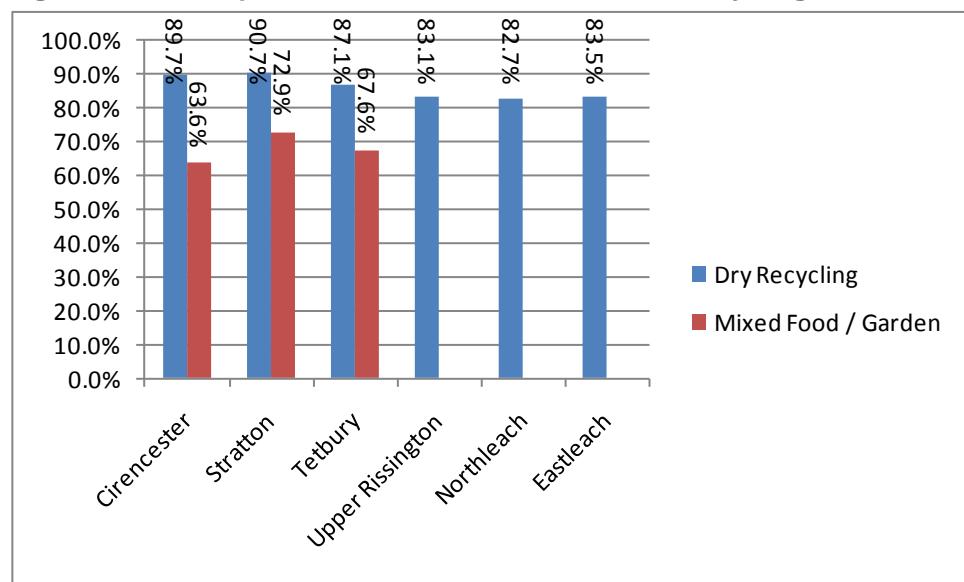
The participation rate for the mixed food and garden waste collection was the highest in Stratton at 73%. Whilst Stratton was semi rural, most streets were densely populated allowing quicker collection times. Some streets were of a higher affluence seeming to lead to higher observed set out rates.

The participation for the mixed organics collection was the lowest in Cirencester at 64%. This area had the highest number of householders on the round. The round was quite spread out and was a mixture of new build housing estates and semi rural areas.

Table 28 – Participation rates for Cotswold materials recycling

	Cirencester	Stratton	Tetbury	Upper Rissington	Northleach	Eastleach
Dry Recycling	89.7%	90.7%	87.1%	83.1%	82.7%	83.5%
Mixed Food / Garden	63.6%	72.9%	67.6%			

Figure 30 – Participation rates for Cotswold materials recycling



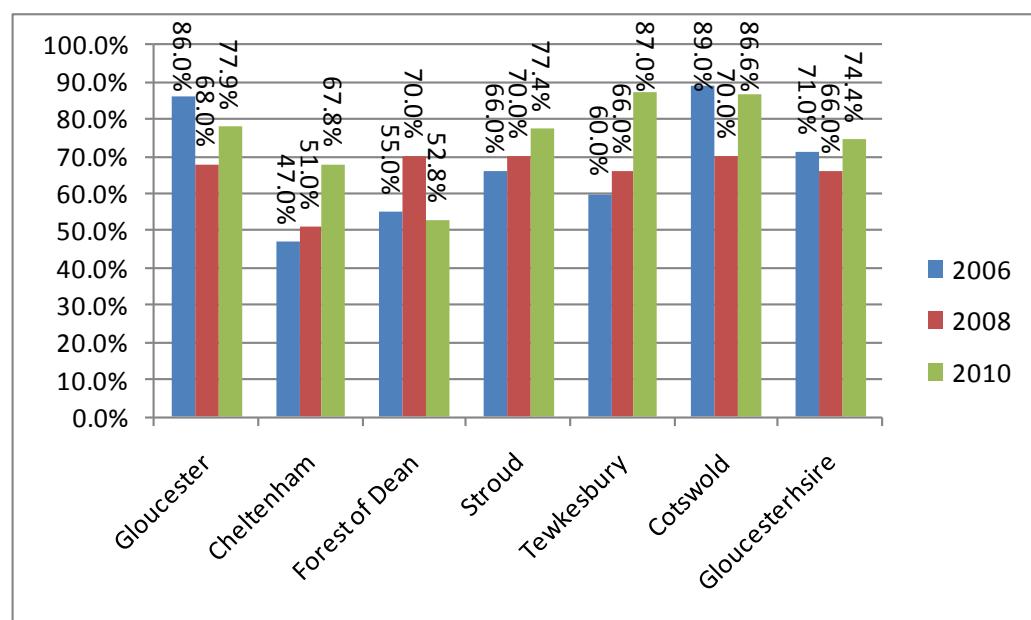
5 Comparative Performance

A participation monitoring exercise was carried out across the six districts in 2006 and 2008. Not all districts in that period had either garden or food waste collections; therefore this section only compares the dry recycling data. It should be noted that the results are not directly comparable as the rounds chosen for both the 2006 and 2008 monitoring and the time of the year that the monitoring took place are different from the 2010 areas. It will however give a broad outline of the success of the scheme in the different districts and provide a county wide participation rate with which to compare previous year's results (as shown in Table 29).

Table 29 – Comparable participation rates for all Gloucestershire districts dry recycling waste streams 2006-2010

	Gloucester	Cheltenham	Forest of Dean	Stroud	Tewkesbury	Cotswold	Gloucestershire
2006	86.0%	47.0%	55.0%	66.0%	60.0%	89.0%	71.0%
2008	68.0%	51.0%	70.0%	70.0%	66.0%	70.0%	66.0%
2010	77.9%	67.8%	52.8%	77.4%	87.0%	86.6%	74.4%

Figure 31 – Comparable participation rates for all Gloucestershire districts dry recycling waste streams 2006-2010



Overall the participation rate for dry recycling in Gloucestershire has increased from 66% in 2008 to 74% in 2010. This is an increase of 8% over a two years period which is extremely encouraging. It is also 3% higher than the monitored rate of 71% found in 2006.

Five of the six districts across Gloucestershire have seen an increase in participation between 2008 and 2010. Tewkesbury experienced a huge 21% rise in participation over this period, Cheltenham and Cotswold 17%, Gloucester 10% and Stroud 8%. Only Forest of Dean has shown a reduction in participation, declining from 70% to 53% throughout the timeframe 2008 to 2010.

When comparing results across the four years, a more complicated picture emerges. Tewkesbury (27%), Cheltenham (21%) and Stroud (11%) show substantial increases through

the period, while the other three districts show smaller decreases, Forest of Dean and Cotswold show a 2% reduction respectively and Gloucester an 8% reduction. Although it could be argued that a trend may be appearing amongst those districts on an increasing upward trend over the four years, it would be extremely difficult to pull out any reliable statistically significant trends from the results for any area, due to the widely differing variables between the data sets from 2006, 2008 and 2010.

6 Conclusions

The results show that recycling has increased markedly since the most previous participation monitoring survey in 2008.

The countywide participation rate has increased by 8% from 2008 levels to 74% across for dry recycling. Five out of six districts showed an increase in participation of between 8% to 21% over this two year period. Forest of Dean was the only district to show a decrease in participation during this timescale.

Useful baseline data has also been collected for garden waste and food waste during the monitoring, (countywide participation stood at 51% for garden waste and 64% for food waste), these results can be used for comparison in the case of future projects.

On many of the collection rounds throughout the districts, the 'participation rate to set out rate ratio' indicates that there is scope for improvement through further communications targeting the need for residents to participate on a more regular basis. This is because in many cases the set out rates are often 10%-15% less than overall participation rates, pointing to the fact that residents are often not continuous with their participation week to week, particularly when viewing figures for food and garden waste.

It was noted that throughout the monitoring period that the set out rates for garden waste suffered greatly due to the monitoring taking place throughout October and November. The set out rates for this waste stream clearly show a sharp decline between the first and third collection cycles in most districts. It would be extremely beneficial for the same rounds to be monitored during the spring or summer in the future to gauge the seasonal affect on participation for dry recycling, garden and food waste.