

**Municipal Household
Waste in Wiltshire: A
Compositional Study**

June Results 2005

Municipal Waste in Wiltshire: A Compositional Study

2005



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Preface

In June 2005, waste analyses were carried out by M•E•L Research Ltd in the four authorities of Wiltshire (Kennet DC, North Wiltshire DC, Salisbury DC and West Wiltshire DC) this was the first season analyses of a two season programme. The second set of analyses are scheduled for the beginning of December 2005.

The purpose of this report is to draw together the information from the four areas to:

- compare the average quantities of residual household waste produced per household per week for different household categories

- compare the results achieved by the different methods used for kerbside recycling.

- compare the amounts of other potentially recyclable material in the household waste stream

- compare the results of collected household waste from four Household Waste Recycling Centres.

- draw conclusions about the way schemes could be improved to recover more recyclables.

In addition to the kerbside collected waste and recycling, samples of trade waste, street sweepings and litter. Data is also being collected for a desk top study that will look at future waste arisings projections.

The authors would like to thank all local authority staff that assisted with the project. It should be noted that any views expressed in this report are those of M-E-L Research only. The results are indicative and should not be used out of context of this report.

Sarah Knapp - Project Manager

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Executive summary

Background

- E.1 This is the first season of this project. Municipal waste analyses were carried out in June in the four constituent authorities of Wiltshire (Kennet DC, North Wiltshire DC, Salisbury DC and West Wiltshire DC) waste streams included in the project were kerbside collected household waste and recycling, trade waste, litter and street sweepings and the waste destined for the residual skips at four civic amenity sites.
- E.2 The aim of each analysis was to determine the material composition of the waste stream. This information can then be used to assess the performance of recycling programmes and suggest possible future improvements. Because all four local authorities had analyses carried out, the performance across the four can also be assessed.

Kerbside collected waste and recycling

Method

- E.3 For each area, samples of waste were collected and analysed over two weeks in June. In each district a representative sample of households was selected. The waste was collected on the normal day and time, and the households were not warned in advance that this would be happening so that biases associated with householders withholding waste could be avoided. Waste put out for recycling was also collected.
- E.4 The waste was analysed into 13 major material types and then further into 51 specific material categories.

Results

- E.5 All four authorities in Wiltshire have above average levels of affluence. Under the ACORN¹ socio economic profiling scheme over 70% of the households in each authority are classified as 'wealthy' or 'comfortably off'.

¹ ACORN is **A Classification Of Residential Neighbourhoods** it is a profiling tool licensed to CACI UK Ltd

Summary ACORN profile

Authority	Most affluent ← → Least affluent				% ACORN 5
	% ACORN 1	% ACORN 2	% ACORN 3	% ACORN 4	
Kennet	48.07	5.14	25.60	4.86	16.33
North Wilts	44.30	3.25	31.10	8.57	12.89
Salisbury	41.64	7.47	30.12	6.03	14.74
West Wilts	35.02	6.10	37.17	10.33	11.38

- E.6 Households in the West Wiltshire sample areas were found to be disposing of the greatest weights of waste at an average of **15.4kg/hh/wk** and households in the Kennet sample areas the least averaging **11.0kg/hh/wk**. The average figure for Wiltshire households is **13.4kg/hh/wk**.
- E.7 For each ACORN category sampled waste figures were greatest for the West Wiltshire households. In West Wiltshire wheeled bins are used for waste containment and sacks in the other three areas. This may have some bearing on the quantities of waste put out for disposal but it is not the sole factor as point E.11 shows.
- E.8 For the ACORN 1 households garden waste was found to be a dominant category at approximately 4kg/hh/wk (less so for the Salisbury households). All other households types were found to be disposing of approximately 1kg/hh/wk apart from the West Wilt ACORN 4 households who disposed of 8kg/hh/wk. This figure is commonly seen across the UK at this time of year but not often for ACORN 4 households. On average households in Wiltshire dispose of 2.2kg/hh/wk of garden waste in their residual waste container.
- E.9 70% of the average Wiltshire residual waste would be classified as biodegradable. This is equivalent to 9.5kg/hh/wk. 1.5kg/hh/wk of the material being collected in the kerbside recycling scheme is biodegradable equivalent to a 9% diversion rate.
- E.10 From the recycling data it has been presumed that households in all four areas are recycling the same types of materials – paper, glass and cans. These materials were used to calculate the potentially recyclable materials remaining in the residual waste and the levels of contamination in the recycling.
- E.11 Households in the West Wilts sample areas were found to be recycling the least - **1.5kg/hh/wk** and households in the Salisbury areas the most at **3.2kg/hh/wk**. The average figure for Wiltshire is **2.3kg/hh/wk**. Although the West Wilts households had a low recycling figure they had very little material left in their residual waste that could have been recycled.

-
- E.12 Very little contamination was found in the recycling.
- E.13 Overall the Salisbury kerbside recycling scheme was found to have the 'best' diversion rate at 21%, West Wiltshire households achieved the lowest diversion rate at only 9%. The Kennet scheme had the 'best' overall capture rate with 69% of all potentially recyclable material being recycled and again West Wilts the lowest with only 48% of the potentially recyclable material being recycled. In all areas glass was the most successfully recycled material.
- E.14 Results for the West Wilts mini area survey are very different to the results from the other areas. Households in this area disposed of 7.0kg/hh/wk of residual waste, recycled 3.9kg/hh/wk of dry recyclables and 6.9kg/hh/wk of compostable putrescibles. 91% of householders participated in the scheme achieving an overall diversion rate of 61% including a biodegradable diversion rate of 53% and an overall capture rate of 82%. Very little contamination was found in the recycling, this is surprising for an alternate week collection scheme.

Civic Amenity site waste

Method

- E.15 Surveys were carried out at four civic amenity sites on a week day and a weekend day. On each day at each site 40 visitors who were about to use the residual waste skips were intercepted, they were asked for their postcode and their waste was taken from them for hand sorting.

Results

- E.16 Over the course of the surveys 318 visitors were surveyed and a total of 5 tonnes of waste was sorted.
- E.17 An average weekday visitor had 14kg of waste dominated by wood, carpet and black sack waste (this is the waste that would normally be put out for the dustmen). The average weekend visitor had 19kg of waste for disposal again dominated by wood, carpet, black sack waste and furniture. These weights are very low compared to figures for other CA sites across the UK.
- E.18 The most commonly brought material was found to be other dense plastic. This includes plastic toys and garden chairs. 65 visitors brought this material on a week day and 68 on a weekend day.
- E.19 91% of the material was a greater size than 200mm. 43% would be classified as biodegradable and 36% potentially recyclable.

Trade waste

Method

- E.20 Samples of trade waste were collected from approximately 15 premises in each of the four authorities. Types of businesses included schools, healthcare, shops, offices, light industrial, social and leisure and food outlets

Results

- E.21 Greatest weights of waste were found for businesses dealing with food, followed by schools.
- E.22 The two dominant materials in each sample were found to be paper and card and putrescibles. Health, retail and offices had fairly equal weights of oversize and undersize materials, the waste from all other businesses were dominated by undersize materials.

Litter and street sweepings

- E.23 Street sweeping samples from three different areas within each authority were visually assessed. Approximately 90% of each sample was made up of grit and dirt. In the rural samples the percentage of grit and dirt was higher the rest of the sample was mainly grass and leaves. The housing estate areas slightly more litter was seen, particularly food and drink packaging. The town centre areas slightly more food and drink packaging was found, particularly in Salisbury.

1. Methods

Household waste and kerbside recycling

Sampling

Two key factors are important when sampling household waste for compositional studies – the socio-economics of an area because this affects what households buy and do, and the type of container they are provided with for waste collection because this affects what they can physically throw away each week (wheeled bin or sack). The way each was taken into account is described below.

Socio-economics

In order to ensure that the sample of waste analysed was representative of all households in Wiltshire, it was necessary to develop a sampling matrix in which all types of household were included. The principle behind this is that, aside from type of container which is also taken into account, a rich household in one part of Wiltshire will be producing waste of a similar composition to a rich household in another part of Wiltshire.

Because the types of waste produced are a result of what a household buys and what its members do, which is primarily affected by affluence, a socio-economic profiling system was used that reflects this – ACORN. ACORN stands for A Classification Of Residential Neighbourhoods.

The ACORN classification system used is based on 2001 census data and is regularly up-dated. The profile it produces sorts households into five broad categories 1 to 5 with 1 the most affluent householders and 5 the least affluent. The table below gives a brief description of each category and provides further information on its associated groups.

Table 1.1: ACORN categories and groups (Based on 2001 census data)

ACORN Categories	ACORN Group
1 - Affluent Achievers	1.A - Wealthy Executives
	1.B - Affluent Greys
	1.C - Flourishing Families
2 - Urban Prosperity	2.D - Prosperous Professionals
	2.E - Educated Urbanites
	2.F - Aspiring Singles
	3.G - Starting Out
3 - Comfortably Off	3.H - Secure Families
	3.I - Settled Suburbia
	3.J - Prudent Pensioners
	4.K – Asian Communities
4 - Modest Means	4.L - Post Industrial Families
	4.M - Blue Collar Roots
	5.N - Struggling Families
5 - Hard Pressed	5.O - Burdened Singles
	5.P - High Rise Hardship
	5.Q - Inner City Adversity

Table 1.2: Profile of the four local authorities

Categories	Kennet (%)	North Wiltshire (%)	Salisbury (%)	West Wiltshire (%)	UK (%)
1 Wealthy Achievers	48.07	44.30	41.64	35.02	22.9
2 Urban Prosperity	5.14	3.25	7.47	6.10	12.7
3 Comfortably off	25.60	31.10	30.12	37.17	27.6
4 Moderate means	4.86	8.57	6.03	10.33	14.0
5 Hard-pressed	16.33	12.89	14.74	11.38	22.5

All four Wiltshire authorities contain a higher percentage of affluent households and a lower percentage of non-affluent households than the UK average. Affluent households tend to produce more waste than non-affluent households, but they also tend to recycle more of this.

Type of waste container

A further factor considered when devising the sampling frame was the type of container provided for refuse collection. Wheeled bins produce a significantly different composition

to sacks because they allow larger and heavier items to be set out. Kennet and Salisbury use black sacks, North Wilts uses small 180L wheeled bins and West Wiltshire large 240L wheeled bins; all four areas have weekly collections for residual waste although in West Wilts a trial for alternate week collection has just started. Because West Wilts households use large wheeled bins more ACORN samples had to be collected for this area. All areas have a fortnightly collection for kerbside recycling.

Wheeled bin households would typically be expected to produce about 16kg per week while households that use plastic sacks would typically be expected to produce about 11kg per week.²

Given the profile of the areas and taking into account 3 of the areas use sacks for residual waste containment whilst the fourth, West Wiltshire uses wheeled bins, the following ACORN categories were sampled in each area:

Kennet	ACORN:	1, 3, 5
North Wiltshire	ACORN:	1, 3, 4
Salisbury	ACORN:	1, 2, 3
West Wiltshire	ACORN:	1, 3, 4, 5 plus a mini survey of households using the alternate week collection system

The results obtained from each area are then weighted according to the ACORN profiles to provide a representative picture of waste production. This means that the results are directly comparable across different areas.

Selecting the streets

Local authority officers from the districts then identified street blocks consisting of approximately 35 households matching the selected ACORN categories as the basis for the sampling campaign.

Collecting the waste

Sampling was carried out in June 2005. A M-E-L Research collection team visited the designated street on the same day and at the same time as the usual collection. Waste from approximately 35 properties was collected using bulk bags and loaded onto a Luton van. All waste, including any side waste and recycling, was collected and deposited into the collection vehicle. Recycling was stored separately to residual waste.

The householders were not warned in advance that the collection would happen as this can influence what is put out. However, any householder that inquired at the time of the

² This 'typical' amount has been calculated by averaging M-E-L Research waste analyses carried out over recent years. It may not be representative of the UK as a whole.

collection was provided factual information about the analysis and what would happen to their waste; and was given the option of withholding it and having the normal collection crew pick it up for disposal.

The amount of waste collected will vary depending on the disposal habits of the households. Past experience has shown that waste collected from approximately 30 households can weigh as little as 150kg or as much as 900kg. Where the weight of the waste exceeds 500kg sub-sampling is necessary before the waste can be hand-sorted.

Analysing the waste

The waste sample was removed from the Luton and weighed on electronic platform scales. It was then tipped onto the floor of the sorting hall and where necessary a sub-sample of approximately 350kg was removed using the 'coning and quartering' method designed to produce a representative sample. The remainder of the waste was disposed of into a skip.

Quantities of this sub-sample were placed on a screen fitted with 200mm apertures to remove the oversize materials and then placed on a screen fitted with 10mm apertures to remove fines oversize and undersize materials were then sorted into the major material categories (e.g. dense plastics, metals, mixed textiles). Sorting at this level of resolution continued until all of the total sub-sample had been screened. All particles falling through the screen were removed, classified as 'fines', weighed and disposed of.

Secondary sorting was then undertaken. This involved separation of materials into 51 sub-categories. Each sub-category was then weighed on electronic platform scales and the data recorded, in kilogrammes, on data sheets.

The 13 primary categories are standard, but the 51 sub-categories were selected from within a 'suite' developed by M.E.L Research. These have been designed to provide data that may be used for a number of different purposes, such as identification of materials suitable for diversion into recycling and reuse programmes. In addition, this level of categorisation enables consideration of the potential effects of legislative targets, such as those laid down in the Landfill Directive, to be considered by providing specific local compositional data.

Civic amenity waste

The study covered the quantities and composition of materials deposited by the public at four civic amenity sites in Wiltshire. These were:

Kennet	• Devises HWRC
North Wiltshire	• Stanton HWRC
Salisbury	• Churchfield HWRC
West Wiltshire	• Warminster HWRC

At each site, sampling was carried out in the morning on both a weekday and a weekend day in order to catch a wide cross-section of the site users as possible.

Sampling

During the sampling days, at approximately 10-minute intervals visitors approaching the residual waste skips were stopped and asked if they would consent to being included in the survey. If the person agreed they were asked for their postcode, and their waste was put to one side. If they had any materials that they intended to recycle they were asked to continue with this. Once the visitor had left the area their waste was hand sorted and the weights recorded on separate data sheets. Approximately 40 visitors were sampled on the weekday and 40 on the weekend day at each site.

Analysing the waste

Slightly different categories were used for categorising the waste e.g. in misc. combustible furniture was added and the WEEE and Hazardous lists extended.

Trade Waste

This was based on a representative sample of traders included in each District's municipal collection. The collection lists were grouped into business types and from this a selection of businesses were selected to make up a representative sample. Businesses included were: Education; Health; Retail; Offices; Food; Social/Leisure/Club and Other.

Samples were collected over a 5 day period. The waste from each business was collected, hand sorted and reported separately.

Analysis and categorisation

See - kerbside analysis

Litter and sweepings

Samples of litter and street sweepings were collected from three distinct areas of each district – rural area; housing area; town centre. Litter was sorted by hand using the same categories as for collected household waste. Street sweepings were analysed by visual inspection into the 13 primary categories.

CV, moisture and chemical analysis

This type of testing was carried out on 13 of the household samples, 4 trade samples and 4 of the litter/sweeping samples. In each case before the waste is hand sorted a sub sample of approximately 10kg was removed: double bagged and sent to a lab where it was tested for calorific value, moisture, ash, other basic elements and 13 heavy metals.

Recycling bank provision

Recycling bank provision differs across the four authorities:

Table 1.3: Recycling bank provision

Material	Kennet		North Wilts		Salisbury		West Wiltshire	
	Number	People per site	Number	People per site	Number	People per site	Number	People per site
Glass								
Paper								
Plastic								
Cans								
Textiles								
Books								
Foil								
Shoes								
Household waste sites								
TOTAL								

2. Overall results for kerbside collected waste and recycling

Kerbside collected recycling

All four districts operate a fairly similar kerbside recycling collection scheme. Materials are collected on a fortnightly basis and include: paper, glass and cans.

Households in the West Wilts sample areas were found to be recycling the least - **1.5kg/hh/wk**, but the average figures also show that these households had very little potentially recyclable material remaining in their residual waste. To increase recycling in West Wilts additional materials will need to be considered.

Households in the Salisbury areas on average recycled the most at **3.2kg/hh/wk**. These households also showed the highest level of contamination in their recycling crates at 0.3kg/hh/wk the majority of this was made up of non-recyclable paper and garden waste.

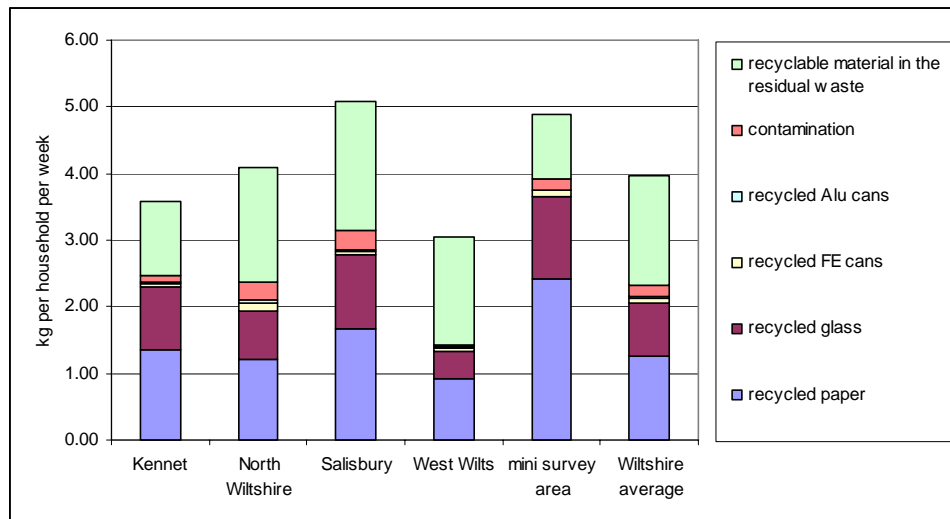
Households in the West Wilts mini survey area achieved a recycling figure of **3.9kg/hh/wk**.

Very little contamination was found in the recycling crates for the other samples. Including the West Wiltshire alternate week trial area, where commonly higher levels of contamination are seen.

Table 2.1: Kerbside collected recycling June 2005

	recycled paper	recycled glass	recycled FE cans	recycled Alu cans	contamination	recyclable material in the residual waste
recycling kg per household per week						
Kennet	1.35	0.95	0.05	0.02	0.09	1.12
North Wiltshire	1.20	0.72	0.14	0.05	0.25	1.74
Salisbury	1.66	1.12	0.05	0.02	0.30	1.93
West Wilts	0.91	0.43	0.04	0.02	0.03	1.61
mini survey area	2.41	1.24	0.09	0.00	0.18	0.95
Wiltshire average	1.26	0.78	0.07	0.03	0.17	1.65

Figure 2.1: Kerbside collected recycling June 2005



Overall the Salisbury kerbside recycling scheme was found to have the 'best' diversion rate at 21%, West Wiltshire households achieved the lowest diversion rate at only 9%.

Table 2.2: Summary of recycling performance and potential

Authority	Kerbside Recycling (kg/hh/wk)	Diversion rate (% total weight)	contamination (kg/hh/wk)	Potentially recyclable (kg/hh/wk)
Kennet	2.50	18%	0.09	1.12
North Wilts	2.38	14%	0.25	1.74
Salisbury	3.16	21%	0.30	1.93
West Wilts	1.47	9%	0.03	1.61
Mini survey area	3.93*	61%	0.28**	0.95
Wiltshire average	2.34	15%	0.17	1.65

*The weight for green waste recycling was found to be 6.9kg/hh/wk this is included in the diversion rate figure.

** includes contamination in the green waste and dry recycling

Aside from the mini survey area, the Kennet scheme had the 'best' overall capture rate with 69% of all potentially recyclable material being recycled. Again, West Wilts had the lowest figure with only 48% of the potentially recyclable material being recycled.

In all areas glass was the most successfully recycled material followed by paper. The capture rates for cans were lower as is often the case. Householders often overlook recycling these materials, particularly if they have to be washed out.

Table 2.3: Summary of recycling capture rates

Authority	Overall capture rate %	Paper capture rate %	Glass capture rate %	FE cans capture rate %	Alu cans capture rate %
Kennet	69%	68%	78%	40%	29%
North Wilts	58%	54%	63%	56%	36%
Salisbury	62%	62%	68%	28%	21%
West Wilts	48%	61%	38%	23%	25%
Mini survey area	82%	84%	82%	62%	0%
Wiltshire average	59%	61%	61%	38%	28%

Residual waste for disposal

Households in West Wilts put out the most residual waste for disposal at 15.4kg per household per week, this figure is typical for households using 240L wheeled bins on weekly collections. Households in Kennet put out the least residual waste for disposal at 11.0kg per week, again this is a typical figure for households using sacks collected weekly. The average figure for Wiltshire in June 2005 was 13.4kg/hh/wk. Households in the mini survey area in West Wilts disposed of 7.0kg/hh/wk.

Table 2.4: Summary of all material

Authority	Residual waste kg/hh/wk	Dry recycling kg/hh/wk	Green waste kg/hh/wk	Total
Kennet	11.02	2.50	-	13.52
North Wilts	14.38	2.38	-	16.75
Salisbury	11.64	3.16	-	14.80
West Wilts	15.35	1.47	-	16.82
Mini survey area	6.99	3.93	6.90	17.82
Wiltshire average	13.38	2.34	-	15.73

The most commonly found waste material in all four areas was putrescible waste. The greatest weight of garden waste was found in the West Wilts average sample at 2.7kg/hh/wk and the least in the Salisbury sample at 1.25kg/hh/wk. Households in the mini survey area were found to be disposing 0.5kg/hh/wk of garden waste in their residual bins. Food waste made up between 25% to 32% of each of the samples.

Paper and card was another significant waste material, despite kerbside collection schemes being in place in every local authority. The average Salisbury household had the greatest weight of potentially recyclable paper in their residual waste at 1kg/hh/wk.

The average Wiltshire household could recycle an additional 0.8kg/hh/wk of paper; 0.5kg/hh/wk of glass and 0.2kg/hh/wk of cans. In addition there is 0.8kg/hh/wk of card that could be included in the dry recycling schemes or composting schemes.

The weights for plastics found in the average Wiltshire bin were quite high particularly for packaging film and carrier bags; other packaging including yoghurt pots and margarine tubs and other dense plastic including any plastic that is not packaging.

Figures for nappies were not particularly high in any of the areas. The highest figures were seen in the mini survey area and the least in the West Wiltshire area.

Table 2.4: Average waste generation rates for the Districts and County of Wiltshire June 2005

	Kennet	N. Wilts	Salisbury	W. Wilts	Wiltshire	mini survey
Paper and card	1.9	1.1	2.4	2.3	2.3	1.44
Plastic film	0.4	0.6	0.5	0.6	0.5	0.52
Dense plastic	0.9	1.3	0.9	1.0	1.0	0.68
Textiles	0.3	0.4	0.4	0.3	0.4	0.14
Misc. combustible	0.8	1.1	0.5	0.6	0.7	0.56
Misc. non-combustible	0.2	0.2	0.3	0.9	0.4	0.04
Glass	0.3	0.5	0.6	0.8	0.6	0.36
Ferrous Metal	0.1	0.3	0.2	0.2	0.2	0.12
Non-ferrous metal	0.1	0.1	0.1	0.1	0.1	0.06
Putrescibles	5.3	6.7	5.0	7.7	6.3	2.79
Fines	0.2	0.3	0.2	0.4	0.3	0.22
WEEE	0.2	0.1	0.2	0.2	0.2	0.06
Hazardous	0.2	0.1	0.4	0.1	0.2	0.01
Total	11.0	12.9	11.6	15.3	13.4	6.98

Figure 2.2: Average waste generation rates for the Districts and County of Wiltshire June 2005

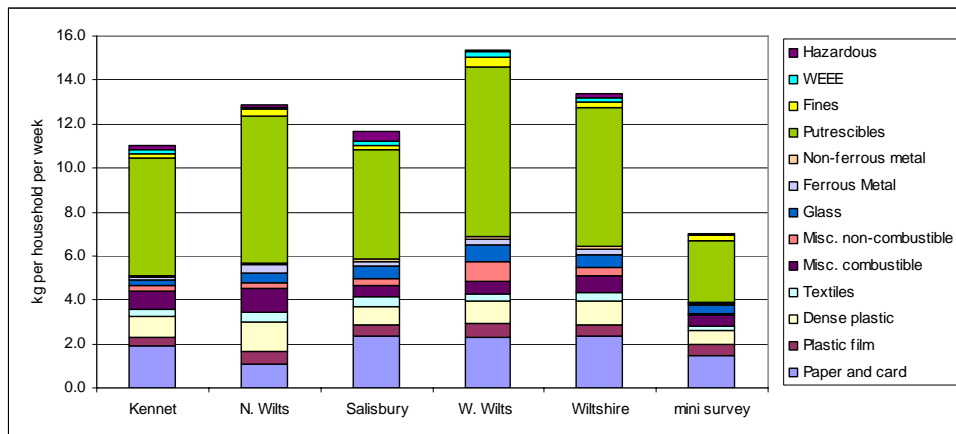
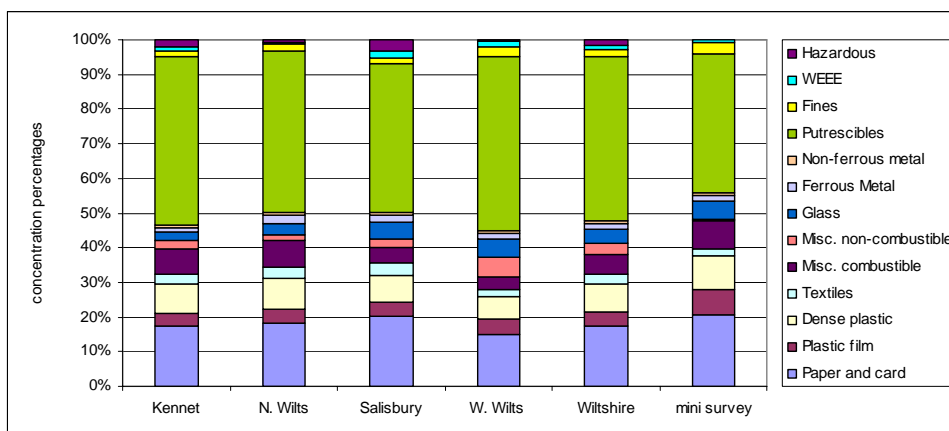


Table 2.5: Average waste composition for the Districts and County of Wiltshire June 2005

	Kennet	N. Wilts	Salisbury	W. Wilts	Wiltshire	mini survey
Paper and card	17.3	18.0	20.2	15.1	17.5	20.5
Plastic film	3.8	4.1	4.2	4.2	4.1	7.5
Dense plastic	8.3	9.2	7.5	6.5	7.8	9.7
Textiles	3.1	3.1	3.9	2.2	3.0	2.1
Misc. combustible	7.3	7.6	4.4	3.7	5.5	8.0
Misc. non-combustible	2.2	1.5	2.5	5.8	3.2	0.5
Glass	2.6	3.3	4.8	5.1	4.2	5.2
Ferrous Metal	1.2	2.4	1.8	1.6	1.8	1.7
Non-ferrous metal	0.7	0.8	1.0	0.7	0.8	0.8
Putrescibles	48.5	46.5	42.6	50.5	47.2	40.0
Fines	1.8	2.1	1.9	2.8	2.2	3.1
WEEE	1.4	0.6	1.8	1.5	1.3	0.8
Hazardous	1.9	0.8	3.4	0.4	1.4	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Figure 2.3: Average waste composition for the Districts and County of Wiltshire June 2005



Biodegradable materials

The EU Landfill Directive (Council Directive 99/31/EC on the landfill of waste) sets targets for the reduction of biodegradable waste disposed of to landfill. Targets are:

By 2010 reduce biodegradable municipal waste landfilled to 75% of that produced in 1995

By 2013 reduce biodegradable municipal waste landfilled to 50% of that produced in 1995

By 2020 reduce biodegradable municipal waste landfilled to 35% of that produced in 1995

It is then, useful to calculate the proportion of biodegradable waste which may be subject to the national provision of the Landfill Directive. The national figures are calculated using the percentages of each waste material designated as biodegradable as outlined by DEFRA and more recently by WRAP (table 2.6).

Table 2.6: Estimates of overall proportion of household waste biodegradable: Strategy Unit Study WRAP December 2002

Household waste portion of components	Average household waste stream	Biodegradable content (1=all, 0.5=half, 0=none)	Biodegradable household waste stream (column 2 x column 3)
Paper/card	19%	1	19%
Putrescibles	42%	1	42%
Textiles	3%	0.5	2%
Fines	35	0.5	2%
Misc. combustible	8%	0.5	4%
Misc. non-combustible	4%	0	0
Metals	7%	0	0
Glass	7%	0	0
Plastics	7%	0	0
Total	100%		68%

Using this formula the quantities and percentages of biodegradable material that are already being diverted into green waste recycling schemes and dry recycling kerbside schemes can be calculated and measures put in place to increase this diversion.

Table 2.7: Biodegradable materials

		biodegradables in the waste		biodegradables in the recycling		diversion via recycling scheme
		%	kg/hh/wk	%	kg/hh/wk	%
Acorn 1	Kennet	78.28	9.18	58.64	2.13	14%
	North Wilts	77.41	11.05	75.38	1.54	9%
	Salisbury	71.65	6.54	62.24	2.63	20%
	West Wilts	84.54	11.90	72.42	1.76	11%
Acorn 2	Salisbury	52.68	7.14	-	-	-
Acorn 3	Kennet	69.61	5.57	49.47	0.68	7%
	North Wilts	66.82	10.67	49.51	1.93	10%
	Salisbury	69.71	9.83	61.34	1.79	11%
	West Wilts	60.33	9.93	11.47	0.04	0.2%
Acorn 4	North Wilts	71.13	8.73	32.53	0.22	2%
	West Wilts	78.22	13.57	58.80	1.19	6%
Acorn 5	Kennet	62.95	7.85	69.69	0.77	6%
	West Wilts	61.39	9.11	77.74	0.88	6%
Mini area		67.08	4.69	65.72	2.58	53%

Table 2.7 shows that the more affluent households are diverting more of their biodegradable material into the kerbside recycling schemes than the less affluent households. But the most effective scheme for diverting this material is operated in the West Wilts alternate week collection scheme.

Hazardous materials and WEEE

Very little electrical, electronic and hazardous materials were found. The most common items were batteries and excrement. The average figures for Wiltshire show that approximately 0.2kg of each material is thrown away each week in the kerbside collected residual waste.

Acorn 1	Kennet	North Wilts	Salisbury	West Wilts
WEEE	iron	-	-	-
Hazardous	batteries, chemicals, excrement	batteries	-	batteries, metal polish

Acorn 2	Salisbury
WEEE	Vacuum cleaner x2, TV, speakers, Hi-Fi, batteries, IT Equipment, phone, mobile, charger, calculators
Hazardous	pills, excrement

Acorn 3	Kennet	North Wilts	Salisbury	West Wilts
WEEE	radio	-	calculator, shaver	DVD player, charger
Hazardous	batteries, excrement, paint stripper, chemicals	batteries, oil filter, syringes, chemicals	batteries, excrement, engine oil	batteries

Acorn 4	North Wilts	West Wilts
WEEE	charger x 2, phone, plug	VCR
Hazardous	batteries, syringes, excrement	engine oil, excrement

Acorn 5	Kennet	West Wilts
WEEE	phone x 2, toy	TV, cable
Hazardous	batteries, excrement, dead bird	batteries, excrement

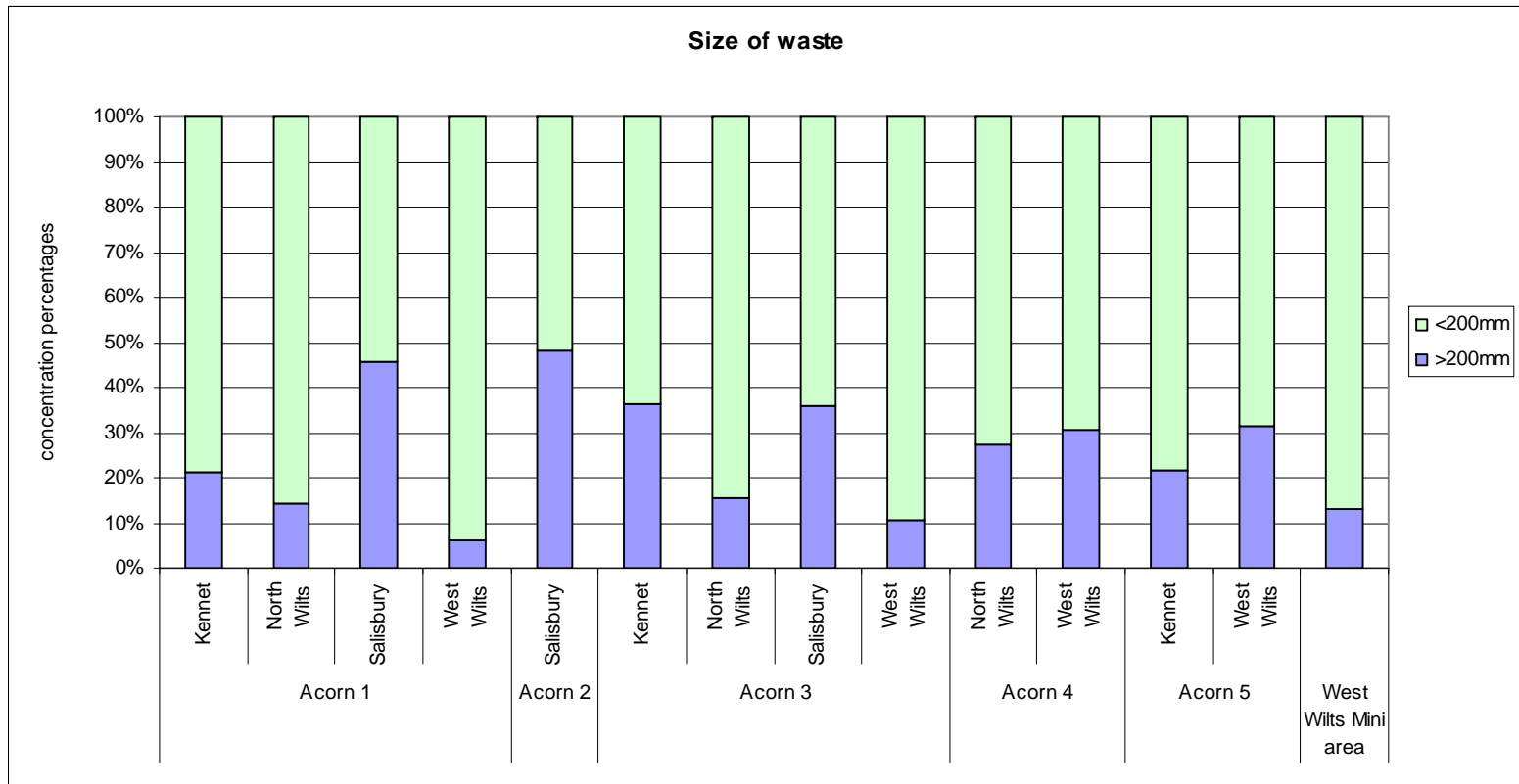
Size of materials

Each sample of waste was sorted into three size categories >200mm; <200mm but >10mm and <10mm. The Salisbury waste samples consistently contained fairly equal proportions of oversize and undersize materials, all other samples contained greater quantities of undersize materials. The oversize category was dominated by newspapers and magazines, cardboard, bin liners, large plastic bottles, large other dense plastic items, textiles and WEEE.

Table 2.8: Oversize and undersize materials

		waste		recycling	
		>200mm	<200mm	>200mm	<200mm
Acorn 1	Kennet	21.17	78.83	56.44	43.56
	North Wilts	14.44	85.56	62.97	37.03
	Salisbury	45.89	54.11	55.13	44.87
	West Wilts	6.19	93.81	72.47	27.53
Acorn 2	Salisbury	48.33	51.67	-	-
Acorn 3	Kennet	36.22	63.78	46.59	53.41
	North Wilts	15.47	84.53	47.36	52.64
	Salisbury	35.72	64.28	59.69	40.31
	West Wilts	10.64	89.36	11.47	88.53
Acorn 4	North Wilts	27.43	72.57	31.89	68.11
	West Wilts	30.53	69.47	55.23	44.77
Acorn 5	Kennet	21.58	78.42	61.52	38.48
	West Wilts	31.46	68.54	73.73	26.27
West Wilts Mini area		12.93	87.07	61.39	38.61

Figure 2.4: Oversize and undersize materials



Chapter 3.

Overall results for the Wiltshire CA sites

Introduction

Four of Wiltshire's civic amenity sites were surveyed in June. All sites were surveyed over a week day and a weekend day. At each site approximately 40 visitors who intended to use the residual waste skips were intercepted, asked for their postcode and their waste was taken to one side for hand sorting.

Visitors

In total, 318 people were included in the survey. They came from three dominant postcode areas – SN10, SN15 and SP2. Visitors from these areas were not necessarily using the civic amenity site closest to them. Nine visitors were unable to give their postcode, a further 80 were not asked.

Table 3.1: Number of visitors by area of origin (postcode)

unknown	89	CF31	1
SN5	1	SN10	62 (19%)
SN11	5	SN4	1
SN13	6	SN5	1
SN14	26	SN8	5
SN15	33 (10%)	SN9	2
SN16	10	SN12	1
BA1	1	SP1	26
SP17	1	SP2	28 (9%)
SP3	2	SP4	7
SP5	9	SP6	1

Analysis of materials brought to sites

The tables below provide combined information for all sites sampled. The tables show the number of visitors disposing of each material type and the weight and concentration of that material.

Weight of waste

Overall 318 visitors brought approximately 5 tonnes of waste intended for the residual skips to the sites, this equates to approximately 16kg per visitor. This figure is very low compared to weights seen at other civic amenity sites across the UK.

Approximately 52% of the visitors were disposing less than 10kg of material. Visitors with the heavier weights had wood, carpet and black sack waste.

Table 3.2: Weight of waste per visitor 2005

Weight	Number of visitors	%
75kg +	4	1%
51 – 75kg	19	6%
21 – 50kg	52	16%
10 – 20kg	77	24%
<10kg	166	52%

Waste materials

Overall, 35% percent of the sampled visitors brought their mixed household waste that would normally be collected at the kerbside by the dustmen. A greater number of visitors (42%) brought in dense plastic.

CA site	% of visitors bringing mixed household sacks	% of visitors bringing dense plastic
Stanton	50%	48%
Devizes	38%	39%
Warminster	23%	53%
Churchfields	29%	28%
Wiltshire average	35%	42%

Table 3.3: Average for all 4 sites at the weekday

Primary category	Sub-category	No. visitors bringing material	Average figures for a Wiltshire HRC week day June 2005				
			Weight	Concentration %	kg per visitor		
Paper and card	Newspapers and magazines	15	23.79	1.07	7.72	1.07	0.15
	Other recyclable paper	17	16.23	0.73			0.10
	Non-recyclable paper e.g. tissue	24	34.67	1.56			0.22
	Non recyclable liquid cartons	3	0.13	0.01			0.00
	Corrugated cardboard	24	45.31	2.05			0.28
	Other card packaging	18	8.75	0.39			0.05
	Other card	9	7.51	0.34			0.05
	Books	10	34.57	1.56			0.22
Plastic film	Refuse sacks other Film	28	13.67	0.62	0.91	0.13	0.09
	Packaging film and carrier bags	23	6.50	0.29			0.04
Dense plastic	PET clear bottles	12	6.04	0.27	12.62	1.75	0.04
	PET coloured bottles	2	0.42	0.02			0.00
	HDPE clear bottles	5	1.33	0.06			0.01
	HDPE coloured bottles	3	0.48	0.02			0.00
	PVC clear bottles	0	0.00	0.00			0.00
	PVC colour bottles	0	0.00	0.00			0.00
	Polystyrene	22	31.15	1.41			0.19
	Other packaging	14	23.20	1.05			0.15
	Other dense plastic	65	216.88	9.79			1.36
Textiles	Natural fibres	11	9.27	0.42	4.41	0.61	0.06
	Man-made fibres	27	80.42	3.63			0.50
	Shoes	7	8.02	0.36			0.05
Misc. combustible	Disposable nappies	2	6.53	0.29	34.95	4.84	0.04
	Sanitary	0	0.00	0.00			0.00
	Wood	30	236.35	10.67			1.48
	Furniture	13	198.45	8.96			1.24
	Carpet	16	282.18	12.74			1.76
	Unclassified	14	50.87	2.30			0.32
Misc. non-combustible	Ceramics	12	23.66	1.07	2.57	0.36	0.15
	Hardcore	1	5.82	0.26			0.04
	Unclassified	11	27.43	1.24			0.17
Glass	Clear bottles and jars	7	6.92	0.31	1.66	0.23	0.04
	Green bottles and jars	2	0.71	0.03			0.00
	Brown bottles and jars	1	0.13	0.01			0.00
	Other glass	10	29.03	1.31			0.18
Ferrous Metal	Food and beverage cans	3	3.25	0.15	3.45	0.48	0.02
	Aerosols	2	0.26	0.01			0.00
	Other ferrous packaging	1	0.15	0.01			0.00
	Other ferrous	26	72.80	3.29			0.46
Non-ferrous metal	Food and beverage cans	6	1.25	0.06	0.94	0.13	0.01
	Aerosols	0	0.00	0.00			0.00
	Aluminium foil	0	0.00	0.00			0.00
	Other non-ferrous packaging	2	0.52	0.02			0.00
	Other non-ferrous	13	19.09	0.86			0.12
Putrescibles	Garden waste soft	2	6.65	0.30	1.10	0.15	0.04
	Garden waste woody	0	0.00	0.00			0.00
	Raw fruit and vegetable matter	1	0.23	0.01			0.00
	Cooked, prepared food inc meat/fish	7	13.21	0.60			0.08
	Unidentified	1	4.28	0.19			0.03
Fines	Particles passing a 10mm screen.	1	0.86	0.04	0.04	0.01	0.01
	Cigarette butts	0	0.00	0.00			0.00
WEEE	Large Household appliances	1	6.87	0.31	1.75	0.24	0.04
	Small Household appliances	6	11.67	0.53			0.07
	IT and telecommunications eqt.	8	5.54	0.25			0.03
	Consumer equipment	2	3.14	0.14			0.02
	Lighting equipment	4	3.61	0.16			0.02
	Electrical and electronic equipment	6	7.92	0.36			0.05
	Toys, leisure and sports equipment	0	0.00	0.00			0.00
	Medical devices	0	0.00	0.00			0.00
	Monitoring and control instruments	0	0.00	0.00			0.00
	Automatic dispensers	0	0.00	0.00			0.00
Hazardous	Oil (engine)	0	0.00	0.00	1.20	0.17	0.00
	Lead Acid batteries (e.g. car batteries)	0	0.00	0.00			0.00
	Other batteries	1	0.14	0.01			0.00
	Asbestos	0	0.00	0.00			0.00
	Other	10	26.45	1.19			0.17
Mixed household, unsorted black sacks		53	591.09	26.68	26.68	3.69	3.69
Total			2215.40	100.00	100.00	13.85	13.85

Table 3.4: Average for all 4 sites at the weekend

Primary cats	Sub-category	No. of visitors with material	Average for a Wiltshire HRC weekend June 2005				
			weight	Concentration %	kg per visitor		
Paper and card	Newspapers and magazines	3	2.90	0.10	2.36	0.44	0.02
	Other recyclable paper	5	9.10	0.31			0.06
	Non-recyclable paper e.g. tissue	6	10.60	0.36			0.07
	Non recyclable liquid cartons	1	2.44	0.08			0.02
	Corrugated cardboard	14	25.96	0.87			0.16
	Other card packaging	10	6.17	0.21			0.04
	Other card	2	0.56	0.02			0.00
	Books	6	12.43	0.42			0.08
Plastic film	Refuse sacks other Film	23	15.74	0.53	0.55	0.10	0.10
	Packaging film and carrier bags	6	0.70	0.02			0.00
Dense plastic	PET clear bottles	2	0.07	0.00	12.05	2.27	0.00
	PET coloured bottles	0	0.00	0.00			0.00
	HDPE clear bottles	2	0.45	0.02			0.00
	HDPE coloured bottles	0	0.00	0.00			0.00
	PVC clear bottles	0	0.00	0.00			0.00
	PVC colour bottles	0	0.00	0.00			0.00
	Polystyrene	24	14.15	0.48			0.09
	Other packaging	10	65.99	2.22			0.42
	Other dense plastic	68	277.60	9.34			1.76
Textiles	Natural fibres	12	40.10	1.35	2.89	0.54	0.25
	Man-made fibres	19	33.44	1.12			0.21
	Shoes	4	12.28	0.41			0.08
Misc. combustible	Disposable nappies	0	0.00	0.00	46.13	8.68	0.00
	Sanitary	1	0.46	0.02			0.00
	Wood	27	270.55	9.10			1.71
	Furniture	28	599.43	20.16			3.79
	Carpet	20	284.93	9.58			1.80
	Unclassified	13	216.16	7.27			1.37
Misc. non-combustible	Ceramics	6	18.90	0.64	9.75	1.83	0.12
	Hardcore	3	47.80	1.61			0.30
	Unclassified	9	223.07	7.50			1.41
Glass	Clear bottles and jars	1	5.37	0.18	1.63	0.31	0.03
	Green bottles and jars	0	0.00	0.00			0.00
	Brown bottles and jars	0	0.00	0.00			0.00
	Other glass	8	43.09	1.45			0.27
Ferrous Metal	Food and beverage cans	1	7.41	0.25	2.48	0.47	0.05
	Aerosols	0	0.00	0.00			0.00
	Other ferrous packaging	1	0.31	0.01			0.00
	Other ferrous	16	66.11	2.22			0.42
Non-ferrous metal	Food and beverage cans	0	0.00	0.00	0.10	0.02	0.00
	Aerosols	1	0.11	0.00			0.00
	Aluminium foil	0	0.00	0.00			0.00
	Other non-ferrous packaging	0	0.00	0.00			0.00
	Other non-ferrous	4	2.77	0.09			0.02
Putrescibles	Garden waste soft	3	10.65	0.36	0.65	0.12	0.07
	Garden waste woody	0	0.00	0.00			0.00
	Raw fruit and vegetable matter	1	2.58	0.09			0.02
	Cooked, prepared food inc meat /fish	1	6.07	0.20			0.04
	Unidentified	0	0.00	0.00			0.00
Fines	Particles passing a 10mm screen.	2	7.68	0.26	0.26	0.05	0.05
	Cigarette butts	0	0.00	0.00			0.00
WEEE	Large Household appliances	1	1.06	0.04	1.85	0.35	0.01
	Small Household appliances	10	44.35	1.49			0.28
	IT and telecommunications eqt.	0	0.00	0.00			0.00
	Consumer equipment	0	0.00	0.00			0.00
	Lighting equipment	4	6.70	0.23			0.04
	Electrical and electronic equipment	0	0.00	0.00			0.00
	Toys, leisure and sports equipment	3	2.90	0.10			0.02
	Medical devices	0	0.00	0.00			0.00
	Monitoring and control instruments	0	0.00	0.00			0.00
	Automatic dispensers	0	0.00	0.00			0.00
Hazardous	Oil (engine)	0	0.00	0.00	0.40	0.08	0.00
	Lead Acid batteries (e.g. car batteries)	0	0.00	0.00			0.00
	Other batteries	0	0.00	0.00			0.00
	Asbestos	0	0.00	0.00			0.00
	Other potentially hazardous materials	4	11.85	0.40			0.08
Mixed household, unsorted black sacks		59	562.43	18.92	18.92	3.56	3.56
Total			2973.42	100.00	100.00	18.8	18.82

Table 3.5: Average per annum for 4 sites

Primary cats.	Sub-category	AverageTonnes per annum for 4 sites June 2005				
		Total weight	>220mm	<220mm	Concentration %	
Paper and card	Newspapers and magazines	343.17	228.40	5.78	1.07	7.72
	Other recyclable paper	234.11	89.90	96.60	0.73	
	Non-recyclable paper e.g. tissue	500.11	125.11	240.09	1.56	
	Non recyclable liquid cartons	1.88	0.56	9.82	0.01	
	Corrugated cardboard	653.59	508.98	13.76	2.05	
	Other card packaging	126.22	60.84	44.45	0.39	
	Other card	108.33	68.52	4.07	0.34	
Plastic film	Books	498.67	288.47	82.67	1.56	0.91
	Refuse sacks other Film	197.19	162.83	24.57	0.62	
Dense plastic	Packaging film and carrier bags	93.76	41.04	22.60	0.29	12.62
	PET clear bottles	87.13	44.81	12.15	0.27	
	PET coloured bottles	6.06	3.57	0.38	0.02	
	HDPE clear bottles	19.18	3.29	10.89	0.06	
	HDPE coloured bottles	6.92	2.53	1.97	0.02	
	PVC clear bottles	0.00	0.00	0.00	0.00	
	PVC colour bottles	0.00	0.00	0.00	0.00	
	Polystyrene	449.33	320.56	24.93	1.41	
Textiles	Other packaging	334.66	383.77	81.73	1.05	4.41
	Other dense plastic	3128.45	2652.54	425.27	9.79	
	Natural fibres	133.72	209.08	28.48	0.42	
	Man-made fibres	1160.04	860.21	20.14	3.63	
Misc. combustible	Shoes	115.69	80.10	41.28	0.36	34.95
	Disposable nappies	94.19	0.00	61.29	0.29	
	Sanitary	0.00	0.00	1.73	0.00	
	Wood	3409.30	3123.71	110.38	10.67	
	Furniture	2862.64	4113.12	0.00	8.96	
	Carpet	4070.39	3704.04	14.19	12.74	
Misc. non-combustible	Unclassified	733.79	1153.24	135.76	2.30	2.57
	Ceramics	341.29	200.03	93.00	1.07	
	Hardcore	83.95	234.08	0.00	0.26	
Glass	Unclassified	395.67	891.81	203.13	1.24	1.66
	Clear bottles and jars	99.82	23.65	61.46	0.31	
	Green bottles and jars	10.24	6.10	0.56	0.03	
	Brown bottles and jars	1.88	0.00	1.22	0.01	
Ferrous Metal	Other glass	418.75	370.95	63.30	1.31	3.45
	Food and beverage cans	46.88	29.60	28.72	0.15	
	Aerosols	3.75	0.00	2.44	0.01	
	Other ferrous packaging	2.16	0.00	2.57	0.01	
Non-ferrous metal	Other ferrous	1050.12	671.78	259.71	3.29	0.94
	Food and beverage cans	18.03	6.85	4.88	0.06	
	Aerosols	0.00	0.00	0.41	0.00	
	Aluminium foil	0.00	0.00	0.00	0.00	
	Other non-ferrous packaging	7.50	0.00	4.88	0.02	
Putrescibles	Other non-ferrous	275.37	172.72	16.86	0.86	1.10
	Garden waste soft	95.92	39.98	62.42	0.30	
	Garden waste woody	0.00	0.00	0.00	0.00	
	Raw fruit and vegetable matter	3.32	0.00	11.84	0.01	
	Cooked, prepared food inc meat/fish	190.55	0.00	146.78	0.60	
Fines	Unidentified	61.74	0.00	40.17	0.19	0.04
	Particles passing a 10mm screen.	12.41	31.76	5.14	0.04	
WEEE	Cigarette butts	0.00	0.00	0.00	0.00	1.75
	Large Household appliances	99.10	64.48	3.98	0.31	
	Small Household appliances	168.34	251.67	24.37	0.53	
	IT and telecommunications equipment	79.91	34.35	17.65	0.25	
	Consumer equipment	45.29	25.53	3.94	0.14	
	Lighting equipment	52.07	51.51	7.53	0.16	
	Electrical and electronic equipment	114.24	60.16	14.17	0.36	
	Toys, leisure and sports equipment	0.00	10.89	0.00	0.00	
	Medical devices	0.00	0.00	0.00	0.00	
	Monitoring and control instruments	0.00	0.00	0.00	0.00	
Hazardous	Automatic dispensers	0.00	0.00	0.00	0.00	1.20
	Oil (engine)	0.00	0.00	0.00	0.00	
	Lead Acid batteries (e.g. car batteries)	0.00	0.00	0.00	0.00	
	Other batteries	2.02	0.00	1.31	0.01	
	Asbestos	0.00	0.00	0.00	0.00	
Other potentially hazardous materials		381.54	277.30	15.45	1.19	26.68
Mixed household, unsorted black sacks		8526.35	7575.69	83.76	26.68	
Total		31956.73	29260.11	2696.62	100.00	100.00

Key overall results

- On average visitors to the Wiltshire CA sites brought in more residual waste for disposal on a weekend (19kg per visitor) than a weekday (14kg per visitor).
- The majority of visitors – 52% brought less than 10kg of waste for disposal. A very small number of visitors (1%) brought more than 75kg of waste
- On average the most common item brought on a weekday (41% of visitors) and a weekend (43% of visitors) is dense plastic
- Mixed household waste that would normally be put out for the dustmen was brought in by 53 visitors on the weekday with a concentration of 27% of the weight; and by 57 visitors on a weekend day equivalent to a concentration of 19%.
- Wood, furniture and carpet were seen in significant quantities of both week days and weekends.
- 43% of the waste brought to the average Wiltshire site is classified as biodegradable.
- 91% of the material brought to the site was recorded as >200mm. The undersize fraction of the waste was dominated by non- recyclable paper and dense plastic.
- In 2003/04 31.9 tonnes of waste was collected from the four sites; of this 24% will be mixed household, unsorted black sacks weighing 7.5 tonnes
- Dense plastic and wood will each make up approximately 3 tonnes and furniture and carpet each 4 tonnes per year.

4. Trade waste

Introduction

Trade waste is somewhat of a dilemma to local authorities at the moment. It counts as municipal waste and most of it is biodegradable, so it is significant in terms of the WET Act's requirements to divert waste from landfill. One option would be to collect as little trade waste as possible, thereby reducing the overall quantity of waste sent to landfill. Although local authorities have an obligation to collect trade waste if asked, they could effectively price themselves out of the market. Another approach would be to encourage as much recycling of trade waste as possible, increasing the amount of biodegradable waste diverted from landfill. What is clear is that a different approach to trade waste management will be needed in the future and local authorities are just starting to think about what they might be able to do.

All four authorities in Wiltshire collect trade waste, mainly from small service sector premises such as shops, offices, voluntary groups, doctors' surgeries and restaurants.

Table 4.1: Trade waste collected by Wiltshire local authorities

Authority	Tonnes collected 2003/4
Kennet	1,800
North Wilts	4,800
Salisbury	5,327
West Wilts	3,120
Total excluding tonnage data from Wiltshire County Council CA sites	15,047

Sampling

Samples of trade waste were collected over a one week period in June 2005. In total 62 businesses were included in the sampling:

Table 4.2: Number and type of businesses sampled in each District

	Kennet	North Wilts	Salisbury	West Wilts
Education	2	2	2	2
Health	1	1	1	2
Retail	2	2	1	3
Office	1	2	2	2
Public service	1	2	2	2
Food	1	2	2	2
Leisure	3	3	3	3
Other	3	2	2	1

Results by Business type

The greatest quantity of waste came from food outlets. A weight of 248kg per week was recorded for one West Wiltshire restaurant and 194kg for another. The lowest weight was recorded for a fire station at 2.14kg per week.

Table 4.3: Average weights for each business type

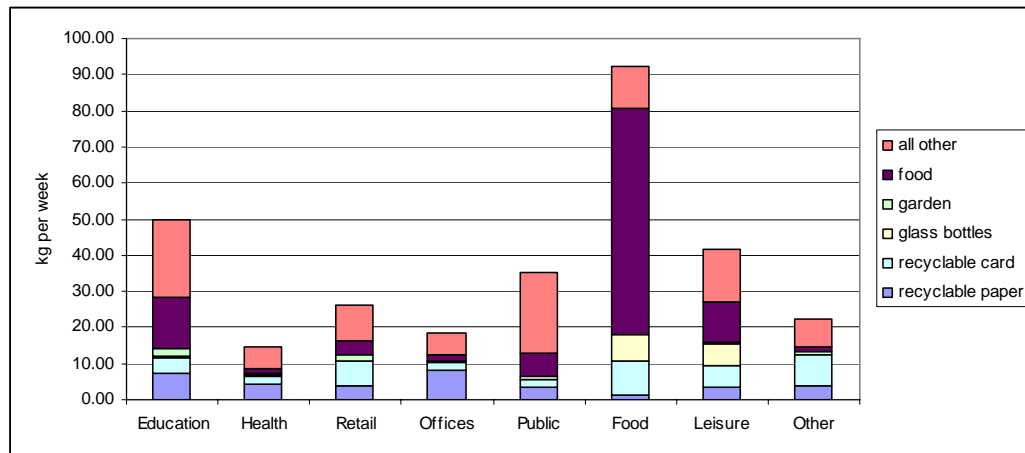
Average weight per week	
Education	49.83
Health	14.57
Retail	26.26
Offices	18.33
Public	35.40
Food	92.12
Leisure	41.67
Other	22.28

If recycling is to be offered to businesses it may be advantageous to target specific materials. Recyclable paper is produced in significant quantities per week by schools and offices, in fact only food outlets produce little of this material. Recyclable cardboard is produced in large weights per week by five of the eight sectors. Garden waste was only found, to any great extent in school waste. For educational value schools might be encouraged to compost their garden waste. If appropriate management options were available food waste is another significant material for diverting. Different management options could also be considered for the glass bottles produced by the food and leisure sectors. This information is provided in table 4.4 below and figure 4.1.

Table 4.4: Kg weights for specific materials

	recyclable paper	recyclable card	glass bottles	garden	food	all other
Education	7.11	4.35	0.37	2.46	14.03	21.51
Health	4.23	2.34	0.21	0.30	1.42	6.06
Retail	3.76	6.79	0.18	1.57	3.82	10.14
Offices	8.11	2.02	0.19	0.36	1.76	5.88
Public	3.22	2.30	0.79	0.20	6.57	22.32
Food	1.30	9.27	7.57	0.00	62.46	11.51
Leisure	3.50	6.05	5.87	0.35	11.19	14.72
Other	3.79	8.61	0.19	0.84	1.11	7.75

Figure 4.1: Kg weights for specific materials



Concentrations of biodegradable materials were high for all sectors. The majority of the weight is from paper, card and putrescibles.

Table 4.5: Concentration percentage of biodegradable material

	biodegradables
Education	79.72
Health	82.25
Retail	74.32
Offices	81.05
Public	65.48
Food	83.67
Leisure	61.40
Other	75.68

Generally the waste produced by each sector was <200mm in dimension. The exceptions were the retail outlets and other businesses, both contained large quantities of cardboard.

Table 4.6: Under and over size material

	>200mm	<200mm
Education	27.36	72.64
Health	45.15	54.85
Retail	58.15	41.85
Offices	48.82	51.18
Public	15.07	84.93
Food	12.37	87.63
Leisure	21.99	78.01
Other	62.80	37.20

Figure 4.2: Under and over size material by sector

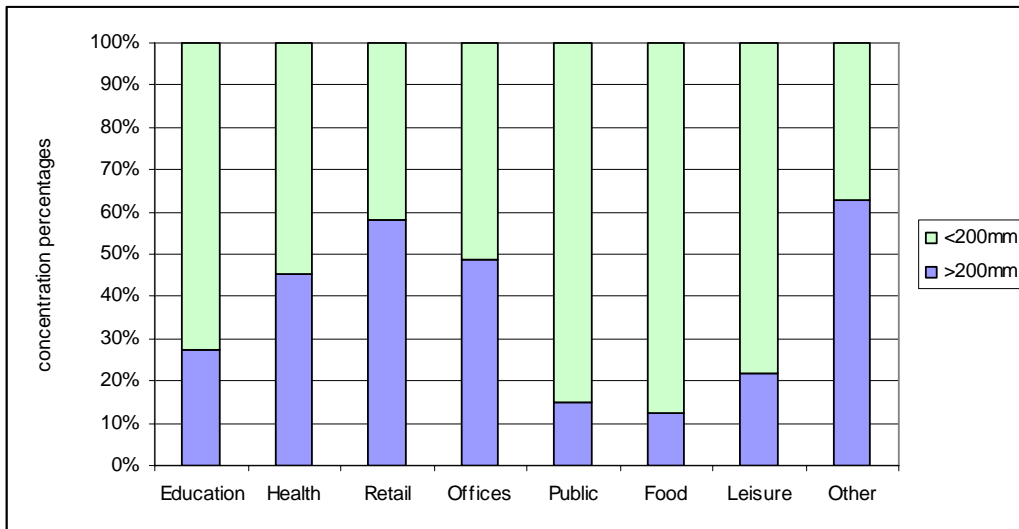
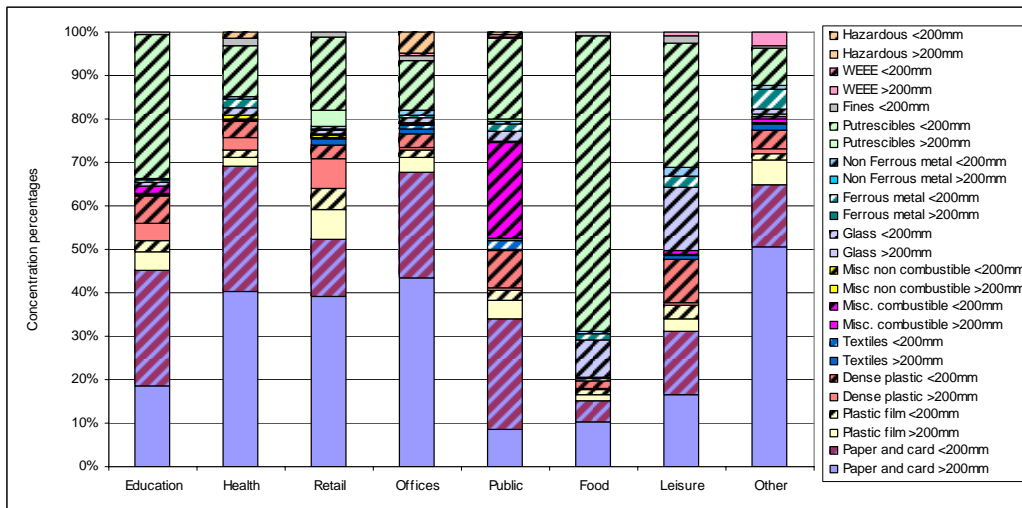


Figure 4.3: Under and over size material by sector for the primary categories



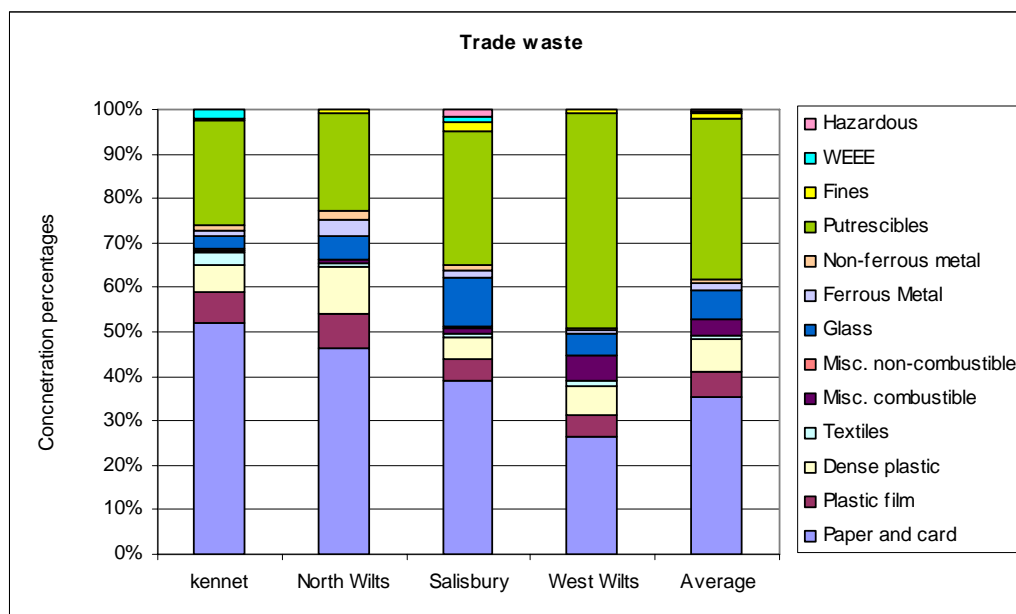
Results by District

The businesses selected for the West Wilts sample produced a considerably larger overall quantity of waste compared to businesses from other districts; the 17 businesses produced a little over 1 tonne of waste. The Salisbury and North Wilts businesses produced fairly equal weights at 0.5tonnes, although the North Wilts sample contained one extra business. The lowest weight of waste came from the Kennet businesses – 0.3 tonnes from 14 businesses.

Table 4.7: Trade waste by District

	Kennet	North Wilts	Salisbury	West Wilts	Average
Paper and card	52.0	46.4	38.9	26.5	35.4
Plastic film	7.1	7.5	5.2	4.8	5.8
Dense plastic	5.9	10.8	4.7	6.6	7.2
Textiles	2.9	0.6	0.6	1.0	0.9
Misc. combustible	0.5	0.7	1.3	5.7	3.3
Misc. non-combustible	0.1	0.2	0.4	0.2	0.2
Glass	3.2	5.4	11.1	4.9	6.3
Ferrous Metal	1.2	3.8	1.6	0.7	1.7
Non-ferrous metal	0.9	1.7	1.3	0.3	0.9
Putrescibles	23.6	22.1	29.8	48.5	36.2
Fines	0.7	0.8	2.1	0.7	1.0
WEEE	1.8	0.0	1.2	0.0	0.5
Hazardous	0.0	0.0	1.7	0.0	0.4
Total	100.0	100.0	100.0	100.0	100.0

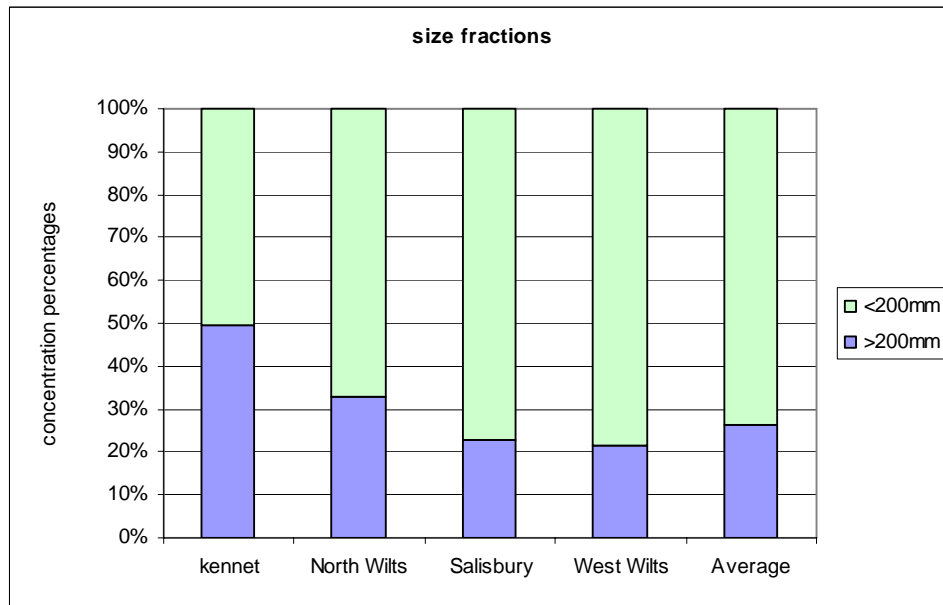
Figure 4.4: Trade waste by District



Presuming that the samples from each area were representative of the overall businesses, on average 74% of Wiltshire's trade waste would be classified as biodegradable. The majority of weight is from paper and card and putrescibles. These two primary categories make up approximately 72% of the total weight of waste.

In terms of size distribution generally there were larger weights for the <200mm size band, except the Kennet sample which showed fairly equal quantities.

Figure 4.5: Under and over size material by District



The final set of tables uses the overall tonnage data with the average concentration percentage breakdown for each district.

Table 4.8: Kennet trade waste

Primary category	Sub-category	Kennet Trade waste/annum June 2005			
		>220mm	<200mm	Weight	%
Paper and card	Newspapers and magazines	65.61	0.00	149.86	8.33
	Other recyclable paper	199.62	0.00	134.62	7.48
	Non-recyclable paper e.g. tissue	0.00	166.20	186.85	10.38
	Non recyclable liquid cartons	0.00	1.86	2.85	0.16
	Corrugated cardboard	537.59	0.00	377.43	20.97
	Other card packaging	76.44	3.71	73.92	4.11
	Other card	0.00	7.12	6.76	0.38
	Books	0.00	0.00	3.68	0.20
Plastic film	Refuse sacks other Film	212.31	0.00	73.27	4.07
	Packaging film and carrier bags	0.00	41.47	55.07	3.06
Dense plastic	PET clear bottles	0.00	1.86	16.01	0.89
	PET coloured bottles	0.00	0.00	2.02	0.11
	HDPE clear bottles	8.67	0.00	14.29	0.79
	HDPE coloured bottles	0.00	0.00	2.67	0.15
	PVC clear bottles	0.00	0.00	0.00	0.00
	PVC colour bottles	0.00	0.00	0.00	0.00
	Polystyrene	0.00	2.79	2.02	0.11
	Other packaging	0.00	13.00	44.40	2.47
	Other dense plastic	25.69	4.64	24.84	1.38
Textiles	Natural fibres	37.76	0.00	23.06	1.28
	Man-made fibres	52.92	1.55	29.52	1.64
	Shoes	0.00	0.00	0.00	0.00
Misc. combustible	Disposable nappies	0.00	0.00	0.00	0.00
	Sanitary	0.00	0.00	0.00	0.00
	Wood	44.88	0.00	8.71	0.48
	Carpet	0.00	0.00	0.00	0.00
	Unclassified	0.00	0.00	0.06	0.00
Misc. non-combustible	Ceramics	0.00	0.00	1.96	0.11
	Hardcore	0.00	0.00	0.00	0.00
	Unclassified	0.00	0.00	0.00	0.00
Glass	Clear bottles and jars	0.00	0.00	37.88	2.10
	Green bottles and jars	0.00	0.00	12.57	0.70
	Brown bottles and jars	0.00	0.00	1.36	0.08
	Other glass	0.00	0.00	5.28	0.29
Ferrous Metal	Food and beverage cans	0.00	0.00	11.86	0.66
	Aerosols	0.00	3.09	2.61	0.14
	Other ferrous packaging	0.00	0.00	0.00	0.00
	Other ferrous	0.00	0.00	7.11	0.40
Non-ferrous metal	Food and beverage cans	0.00	0.93	11.32	0.63
	Aerosols	0.00	0.00	1.96	0.11
	Aluminium foil	0.00	0.93	1.19	0.07
	Other non-ferrous packaging	0.00	0.00	0.30	0.02
	Other non-ferrous	0.00	10.21	2.02	0.11
Putrescibles	Garden waste	0.00	10.52	149.80	8.32
	Raw fruit and vegetable matter	0.00	52.61	97.22	5.40
	Cooked, prepared food inc meat/fish	0.00	28.47	177.30	9.85
	Unidentified	0.00	0.00	0.00	0.00
Fines	Particles passing a 10mm screen.	0.00	14.86	11.62	0.65
	Cigarette butts	0.00	2.48	1.72	0.10
WEEE	Separately listed	170.22	0.00	32.60	1.81
Hazardous	Separately listed	0.00	0.00	0.47	0.03
Total		1431.71	368.29	1800.00	100.00

Table 4.9: North Wilts trade waste

Primary category	Sub-category	North Wiltshire Trade waste/annum June 2005			
		>220mm	<200mm	Weight	%
Paper and card	Newspapers and magazines	211.21	68.79	280.00	5.83
	Other recyclable paper	217.76	144.48	362.24	7.55
	Non-recyclable paper e.g. tissue	85.00	362.33	447.33	9.32
	Non recyclable liquid cartons	0.00	25.78	25.78	0.54
	Corrugated cardboard	768.53	115.43	883.97	18.42
	Other card packaging	0.00	189.22	189.22	3.94
	Other card	0.00	5.00	5.00	0.10
	Books	24.66	9.48	34.14	0.71
Plastic film	Refuse sacks other Film	135.78	4.91	140.69	2.93
	Packaging film and carrier bags	97.24	122.76	220.00	4.58
Dense plastic	PET clear bottles	0.00	101.90	101.90	2.12
	PET coloured bottles	0.00	23.79	23.79	0.50
	HDPE clear bottles	0.00	80.43	80.43	1.68
	HDPE coloured bottles	1.47	8.79	10.26	0.21
	PVC clear bottles	0.00	4.14	4.14	0.09
	PVC colour bottles	0.00	0.00	0.00	0.00
	Polystyrene	28.36	21.38	49.74	1.04
	Other packaging	0.00	177.76	177.76	3.70
	Other dense plastic	0.00	71.55	71.55	1.49
Textiles	Natural fibres	11.55	4.83	16.38	0.34
	Man-made fibres	0.00	1.72	1.72	0.04
	Shoes	0.00	11.64	11.64	0.24
Misc. combustible	Disposable nappies	0.00	7.76	7.76	0.16
	Sanitary	0.00	16.12	16.12	0.34
	Wood	0.00	5.43	5.43	0.11
	Carpet	3.28	0.00	3.28	0.07
	Unclassified	0.00	0.78	0.78	0.02
Misc. non-combustible	Ceramics	0.00	7.50	7.50	0.16
	Hardcore	0.00	0.00	0.00	0.00
	Unclassified	0.00	0.00	0.00	0.00
Glass	Clear bottles and jars	0.00	106.81	106.81	2.23
	Green bottles and jars	0.00	111.12	111.12	2.32
	Brown bottles and jars	0.00	13.02	13.02	0.27
	Other glass	0.00	28.02	28.02	0.58
Ferrous Metal	Food and beverage cans	0.00	115.86	115.86	2.41
	Aerosols	0.00	4.05	4.05	0.08
	Other ferrous packaging	0.00	11.21	11.21	0.23
	Other ferrous	0.00	50.60	50.60	1.05
Non-ferrous metal	Food and beverage cans	0.00	57.67	57.67	1.20
	Aerosols	0.00	0.69	0.69	0.01
	Aluminium foil	0.00	18.97	18.97	0.40
	Other non-ferrous packaging	0.00	4.05	4.05	0.08
	Other non-ferrous	0.00	0.00	0.00	0.00
Putrescibles	Garden waste	0.00	24.66	24.66	0.51
	Raw fruit and vegetable matter	0.00	230.43	230.43	4.80
	Cooked, prepared food inc meat/fish	0.00	797.76	797.76	16.62
	Unidentified	0.00	7.41	7.41	0.15
Fines	Particles passing a 10mm screen.	0.00	29.31	29.31	0.61
	Cigarette butts	0.00	9.57	9.57	0.20
WEEE	Separately listed	0.00	0.00	0.00	0.00
Hazardous	Separately listed	0.00	0.26	0.26	0.01
Total		1584.83	3215.17	4800.00	100.00

Table 4.10: Salisbury trade waste

Primary category	Sub-category	Salisbury trade waste/annum June 2005			
		>220mm	<200mm	Weight	%
Paper and card	Newspapers and magazines	297.92	20.36	318.28	5.98
	Other recyclable paper	94.84	333.33	428.18	8.04
	Non-recyclable paper e.g. tissue	144.98	463.81	608.79	11.43
	Non recyclable liquid cartons	0.00	12.06	12.06	0.23
	Corrugated cardboard	264.72	6.20	270.92	5.09
	Other card packaging	5.53	97.94	103.47	1.94
	Other card	1.88	104.80	106.68	2.00
Plastic film	Books	117.53	105.91	223.44	4.19
	Refuse sacks other Film	86.54	3.65	90.19	1.69
Dense plastic	Packaging film and carrier bags	87.76	99.49	187.25	3.52
	PET clear bottles	0.00	42.50	42.50	0.80
	PET coloured bottles	0.00	17.04	17.04	0.32
	HDPE clear bottles	3.32	10.51	13.83	0.26
	HDPE coloured bottles	0.00	14.17	14.17	0.27
	PVC clear bottles	0.00	1.55	1.55	0.03
	PVC colour bottles	0.00	0.55	0.55	0.01
	Polystyrene	0.77	9.96	10.73	0.20
	Other packaging	0.00	68.50	68.50	1.29
Textiles	Other dense plastic	12.06	72.04	84.11	1.58
	Natural fibres	0.66	8.19	8.85	0.17
	Man-made fibres	3.76	12.17	15.94	0.30
Misc. combustible	Shoes	0.00	7.86	7.86	0.15
	Disposable nappies	0.00	10.73	10.73	0.20
	Sanitary	0.00	0.77	0.77	0.01
	Wood	10.62	19.48	30.10	0.57
	Carpet	0.00	0.00	0.00	0.00
Misc. non-combustible	Unclassified	0.00	25.68	25.68	0.48
	Ceramics	0.00	22.13	22.13	0.42
	Hardcore	0.00	1.33	1.33	0.02
Glass	Unclassified	0.00	0.11	0.11	0.00
	Clear bottles and jars	0.00	267.15	267.15	5.02
	Green bottles and jars	0.00	187.36	187.36	3.52
	Brown bottles and jars	0.00	128.26	128.26	2.41
Ferrous Metal	Other glass	0.00	5.87	5.87	0.11
	Food and beverage cans	11.29	30.66	41.94	0.79
	Aerosols	0.00	12.06	12.06	0.23
	Other ferrous packaging	0.00	2.43	2.43	0.05
Non-ferrous metal	Other ferrous	1.00	28.00	29.00	0.54
	Food and beverage cans	0.00	50.35	50.35	0.95
	Aerosols	0.00	0.00	0.00	0.00
	Aluminium foil	0.00	13.17	13.17	0.25
	Other non-ferrous packaging	1.33	1.22	2.55	0.05
Putrescibles	Other non-ferrous	0.00	1.66	1.66	0.03
	Garden waste	13.17	74.04	87.21	1.64
	Raw fruit and vegetable matter	0.00	642.10	642.10	12.05
	Cooked, prepared food inc meat/fish	0.00	816.84	816.84	15.33
Fines	Unidentified	0.00	42.94	42.94	0.81
	Particles passing a 10mm screen.	0.00	84.77	84.77	1.59
WEEE	Cigarette butts	0.00	27.78	27.78	0.52
	Separately listed	43.94	22.47	66.40	1.25
Hazardous	Separately listed	0.00	91.08	91.08	1.71
	Total	1203.63	4123.05	5326.68	100.00

Table 4.11: West Wilts trade waste

Primary category	Sub-category	West Wilts trade waste/annum June 2005			
		>220mm	<220mm	Weight	%
Paper and card	Newspapers and magazines	133.39	1.41	134.80	4.32
	Other recyclable paper	30.45	71.74	102.19	3.28
	Non-recyclable paper e.g. tissue	54.62	224.05	278.67	8.93
	Non recyclable liquid cartons	0.15	30.54	30.69	0.98
	Corrugated cardboard	217.23	0.30	217.53	6.97
	Other card packaging	4.74	36.79	41.53	1.33
	Other card	6.22	9.73	15.95	0.51
	Books	6.43	0.00	6.43	0.21
Plastic film	Refuse sacks other Film	57.48	0.00	57.48	1.84
	Packaging film and carrier bags	27.84	63.03	90.87	2.91
Dense plastic	PET clear bottles	1.62	26.16	27.78	0.89
	PET coloured bottles	0.45	6.85	7.30	0.23
	HDPE clear bottles	19.94	12.88	32.82	1.05
	HDPE coloured bottles	1.23	2.82	4.05	0.13
	PVC clear bottles	0.00	1.08	1.08	0.03
	PVC colour bottles	0.00	0.00	0.00	0.00
	Polystyrene	0.00	6.28	6.28	0.20
	Other packaging	0.15	31.35	31.50	1.01
Textiles	Other dense plastic	67.53	28.38	95.91	3.07
	Natural fibres	0.00	13.72	13.72	0.44
	Man-made fibres	7.06	5.44	12.49	0.40
	Shoes	0.00	6.07	6.07	0.19
Misc. combustible	Disposable nappies	0.00	156.84	156.84	5.03
	Sanitary	0.00	0.33	0.33	0.01
	Wood	0.00	15.01	15.01	0.48
	Carpet	5.92	0.00	5.92	0.19
	Unclassified	0.00	0.90	0.90	0.03
Misc. non-combustible	Ceramics	2.40	1.20	3.60	0.12
	Hardcore	0.00	0.21	0.21	0.01
	Unclassified	0.00	2.88	2.88	0.09
Glass	Clear bottles and jars	0.00	55.70	55.70	1.79
	Green bottles and jars	0.00	74.14	74.14	2.38
	Brown bottles and jars	0.00	17.57	17.57	0.56
	Other glass	0.00	4.38	4.38	0.14
Ferrous Metal	Food and beverage cans	0.00	11.32	11.32	0.36
	Aerosols	0.00	1.17	1.17	0.04
	Other ferrous packaging	0.00	0.00	0.00	0.00
	Other ferrous	0.00	10.21	10.21	0.33
Non-ferrous metal	Food and beverage cans	0.00	4.62	4.62	0.15
	Aerosols	0.00	0.63	0.63	0.02
	Aluminium foil	0.00	4.62	4.62	0.15
	Other non-ferrous packaging	0.00	0.00	0.00	0.00
	Other non-ferrous	0.00	0.24	0.24	0.01
Putrescibles	Garden waste	23.33	14.26	37.60	1.21
	Raw fruit and vegetable matter	0.00	760.78	760.78	24.38
	Cooked, prepared food inc meat/fish	0.00	714.36	714.36	22.90
	Unidentified	0.00	0.09	0.09	0.00
Fines	Particles passing a 10mm screen.	0.00	19.16	19.16	0.61
	Cigarette butts	0.00	1.29	1.29	0.04
WEEE	Separately listed	0.00	0.00	0.00	0.00
Hazardous	Separately listed	0.00	1.29	1.29	0.04
Total		668.17	2451.83	3120.00	100.00

Table 4.12: Wiltshire trade waste

Primary category	Sub-category	Wiltshire Trade waste/annum June 2005			
		>220mm	<200mm	Weight	%
Paper and card	Newspapers and magazines	690.29	72.51	762.81	5.07
	Other recyclable paper	355.29	498.70	853.99	5.68
	Non-recyclable paper e.g. tissue	289.97	1155.10	1445.07	9.60
	Non recyclable liquid cartons	0.35	100.84	101.19	0.67
	Corrugated cardboard	1428.93	99.01	1527.94	10.15
	Other card packaging	32.06	304.21	336.27	2.23
	Other card	15.78	95.27	111.06	0.74
	Books	110.07	75.19	185.26	1.23
Plastic film	Refuse sacks other Film	349.30	6.34	355.65	2.36
	Packaging film and carrier bags	200.69	321.05	521.74	3.47
Dense plastic	PET clear bottles	3.81	172.15	175.96	1.17
	PET coloured bottles	1.06	46.37	47.42	0.32
	HDPE clear bottles	50.88	102.67	153.55	1.02
	HDPE coloured bottles	4.09	22.83	26.92	0.18
	PVC clear bottles	0.00	6.91	6.91	0.05
	PVC colour bottles	0.00	0.35	0.35	0.00
	Polystyrene	23.68	39.18	62.86	0.42
	Other packaging	0.35	265.45	265.80	1.77
	Other dense plastic	172.01	172.01	344.02	2.29
Textiles	Natural fibres	18.46	41.36	59.83	0.40
	Man-made fibres	31.01	22.27	53.27	0.35
	Shoes	0.00	28.75	28.75	0.19
Misc. combustible	Disposable nappies	0.00	381.23	381.23	2.53
	Sanitary	0.00	14.45	14.45	0.10
	Wood	16.98	52.08	69.06	0.46
	Carpet	16.56	0.00	16.56	0.11
	Unclassified	0.00	19.10	19.10	0.13
Misc. non-combustible	Ceramics	5.64	23.04	28.68	0.19
	Hardcore	0.00	1.34	1.34	0.01
	Unclassified	0.00	6.84	6.84	0.05
Glass	Clear bottles and jars	0.00	388.13	388.13	2.58
	Green bottles and jars	0.00	384.12	384.12	2.55
	Brown bottles and jars	0.00	133.53	133.53	0.89
	Other glass	0.00	36.92	36.92	0.25
Ferrous Metal	Food and beverage cans	7.19	140.79	147.98	0.98
	Aerosols	0.00	14.45	14.45	0.10
	Other ferrous packaging	0.00	10.71	10.71	0.07
	Other ferrous	0.63	83.15	83.79	0.56
Non-ferrous metal	Food and beverage cans	0.00	90.27	90.27	0.60
	Aerosols	0.00	2.04	2.04	0.01
	Aluminium foil	0.00	34.95	34.95	0.23
	Other non-ferrous packaging	0.85	4.09	4.93	0.03
	Other non-ferrous	0.00	3.95	3.95	0.03
Putrescibles	Garden waste	63.14	103.16	166.30	1.11
	Raw fruit and vegetable matter	0.00	2394.47	2394.47	15.91
	Cooked, prepared food inc meat/fish	0.00	2855.04	2855.04	18.97
	Unidentified	0.00	33.61	33.61	0.22
Fines	Particles passing a 10mm screen.	0.00	126.28	126.28	0.84
	Cigarette butts	0.00	29.10	29.10	0.19
WEEE	Separately listed	66.73	14.30	81.04	0.54
Hazardous	Separately listed	0.00	61.24	61.24	0.41
Total		3955.81	11090.87	15046.68	100.00

5. Litter and sweepings

Introduction

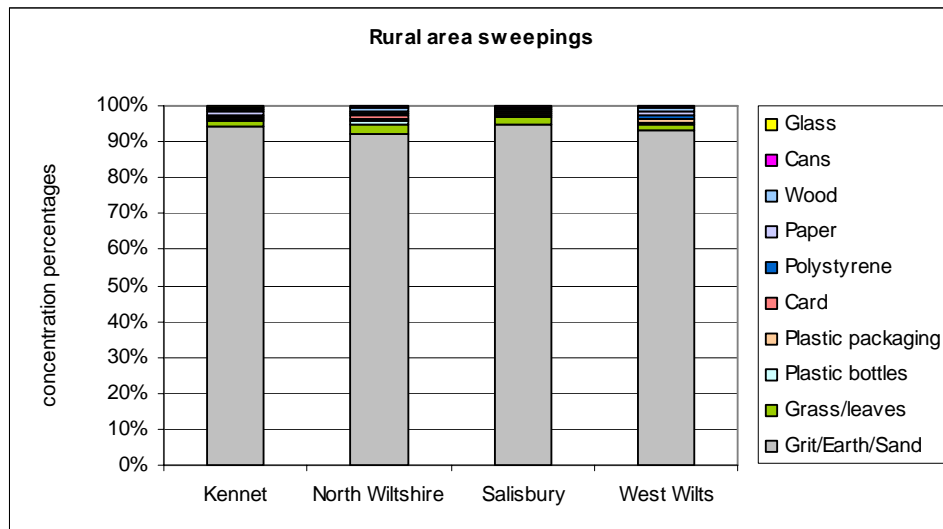
All local authorities have a duty to collect litter and to sweep the streets. The manner in which street sweepings and litter are collected differs by local authority; sometimes litter bins are emptied and collected with street sweeping activities, sometimes they are collected with household waste, for example.

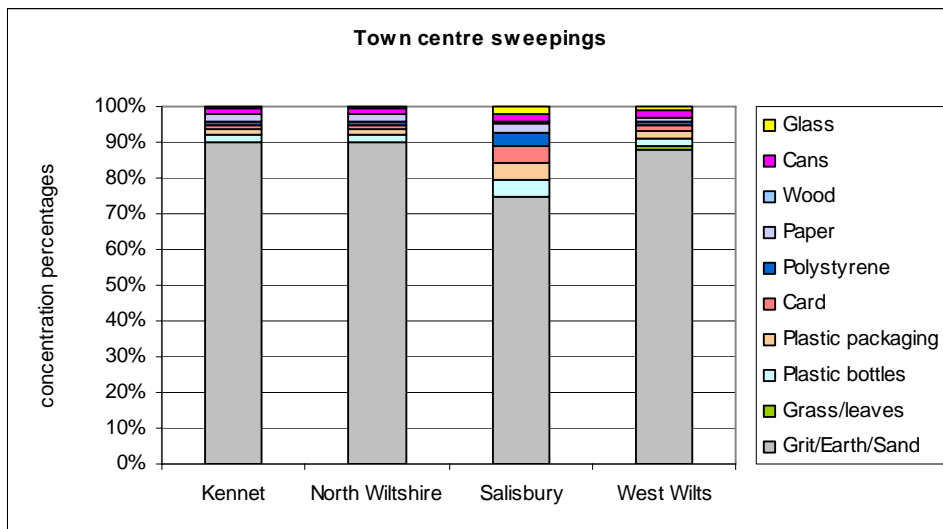
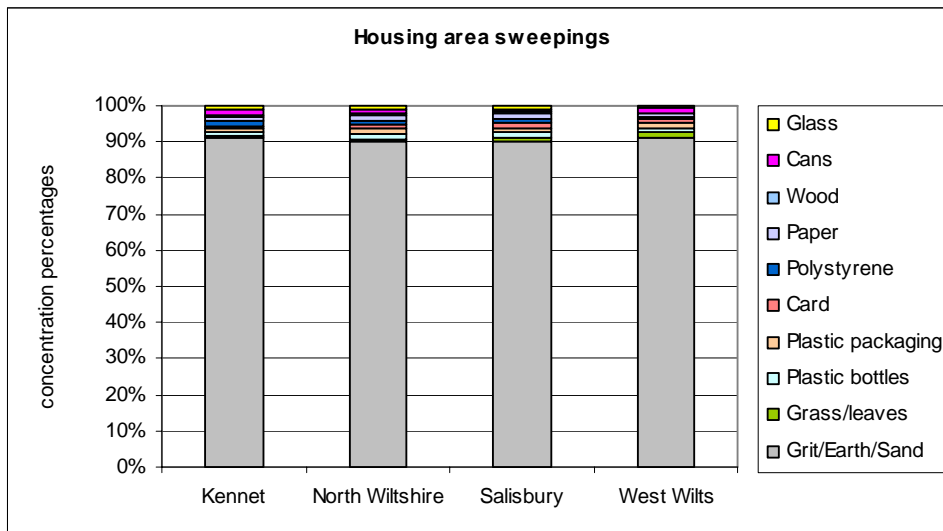
Table 5.1: Street sweepings and litter waste collected by Wiltshire local authorities

Authority	Tonnes collected 2003/4	
	Street sweeping	Litter
Kennet		
North Wilts		
Salisbury		
West Wilts		
Total		

Results for street sweepings

As would be expected the majority of street sweepings was made up of grit. Litter appeared in varying concentrations across the samples, with the most found in the town centre samples and the least in the rural areas. The Salisbury town centre sample contained a great deal of litter, common materials in all samples were drink containers and food wrappers.





Results for litter

As the figure in table 5.4 show results for the litter samples are all quite different. Three of the town centre samples bear similarities but the West Wilts town centre sample is completely different containing a large weight of fines.

Table 5.2: Concentration of biodegradable material in the litter samples

		Biodegradables %
Kennet	rural	62.77
	housing area	50.90
	town centre	64.06
North Wilts	rural	62.47
	housing area	51.85
	town centre	60.37
Salisbury	rural	47.40
	housing area	43.32
	town centre	50.35
West Wilts	rural	67.86
	housing area	31.37
	town centre	52.86

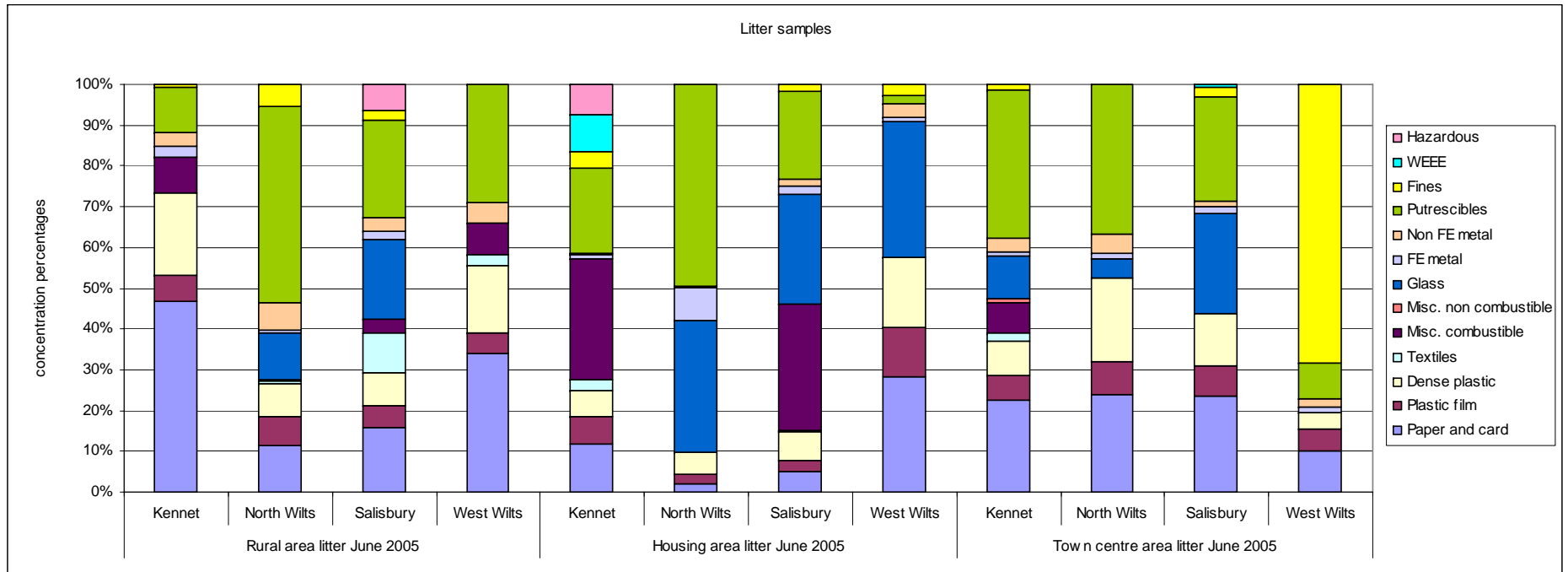
Concentrations of biodegradable materials were found to be highest in the rural areas and the town centre areas. There was no visible pattern of more paper and card in some areas and more putrescibles in others.

In general litter materials fell into the <200mm size band.

Table 5.3: Under size and oversize fractions of the litter samples

		>200mm	<200mm
Kennet	rural	38.69	61.31
	housing area	22.65	77.35
	town centre	16.06	83.94
North Wilts	rural	7.05	92.95
	housing area	1.67	98.33
	town centre	10.37	89.63
Salisbury	rural	19.12	80.88
	housing area	18.93	81.07
	town centre	24.87	75.13
West Wilts	rural	20.74	79.26
	housing area	4.18	95.82
	town centre	6.42	93.58

Table 5.2: Rural, housing area and town centre litter samples for the 4 districts of Wiltshire



6. Per annum figures 2003 - 2004

7. Future Arisings

8. CV, Moisture and Chemical testing

CV, moisture and chemical testing was carried out on 13 household waste samples, four mixed trade samples and four mixed litter samples.

It is beyond the remit of this report to interpret the results to any degree of certainty. The author will respond to any specific questions by contacting the lab for additional information.

The three columns at the end of the following set of tables provide information on the highest and lowest values observed and the average figures.

Sampling

Sub samples of approximate 10kg were removed from the selected samples. The sub-samples were as representative as possible of the overall sample. Each was double bagged and labelled. The sub-samples were collected mid way through the project and transported to a lab where the CV and moisture testing was carried out, they were then sent on to a further lab where the chemical testing was carried out.

Results for the household waste samples

7.1: CV, moisture and chemical test results for the household waste samples June 2005

Sample Reference		Kennet Acorn 1 Waste	Kennet Acorn 3 Waste	Kennet Acorn 5 Waste	N. Wilts Acorn 2 Waste	N. Wilts Acorn 3 Waste	N. Wilts Acorn 4 Waste	Salisbury Acorn 1 Waste	Salisbury Acorn 2 Waste	Salisbury Acorn 3 Waste	W. Wilts Acorn 1 Waste	W. Wilts Acorn 3 Waste	W. Wilts Acorn 4 Waste	W. Wilts mini survey	High	Low	Average
Moisture	%	30.36	30.34	28.81	16.78	34.79	25.69	22.12	31.23	29.73	65.13	51.54	18.08	31.55	65.13	16.78	29.58
Ash	%	19.57	15.36	15.50	30.89	12.94	21.23	25.57	20.17	20.31	5.38	17.64	28.87	13.47	30.89	5.38	17.96
Gross CV	MJ/kg	11.98	13.45	14.01	11.62	12.34	12.34	14.87	13.11	12.43	6.86	8.21	14.46	13.58	14.87	6.86	11.21
Fixed Carbon*	%	8.75	7.45	7.85	13.42	5.41	9.12	1.75	4.20	2.29	5.61	2.07	3.44	7.54	13.42	2.07	5.49
Volatile Matter	%	41.20	46.62	47.59	37.68	46.49	42.73	50.28	44.06	47.37	23.79	28.38	49.42	46.98	50.28	23.79	38.89
Carbon	%	27.86	29.95	34.08	29.44	27.93	29.04	34.58	32.12	31.82	16.33	20.58	38.67	32.94	38.67	16.33	27.11
Hydrogen	%	3.42	3.79	4.19	3.71	3.48	3.57	4.73	4.39	3.33	2.22	2.84	5.56	4.66	5.56	2.22	3.48
Nitrogen	%	0.75	0.63	0.49	1.95	0.61	0.54	0.98	1.17	0.33	0.58	0.75	0.83	1.05	1.95	0.54	0.74
Sulphur	%	0.16	0.15	0.40	0.33	0.12	0.10	0.11	0.11	0.16	0.07	0.07	0.25	0.15	0.40	0.07	0.16
Chlorine	%	0.42	0.13	0.12	0.24	0.14	0.07	0.10	0.29	0.08	0.12	0.26	0.16	0.19	0.42	0.07	0.16
Net CV*	MJ/kg	10.53	11.94	12.45	10.40	10.79	10.97	13.33	11.44	11.01	4.89	6.40	12.83	11.86	13.33	4.89	9.77
Oxygen*	%	17.88	19.79	16.53	16.90	20.12	19.83	11.91	10.82	14.32	10.28	6.57	7.74	16.18	20.12	6.57	13.28
Mercury	mg/kg	<.01	<.01	0.01	<.01	<.01	<.01	<.01	<.01	<.01	0.00	<.01	<.01	<.01	0.01	0.00	0.00
Cadmium	mg/kg	3.20	0.98	5.44	0.27	0.12	0.11	0.47	0.73	0.23	0.06	11.45	2.95	0.11	11.45	0.06	2.00
Titanium	mg/kg	0.00	39.38	0.00	67.84	37.99	29.54	54.93	77.28	97.93	0.00	20.24	71.19	81.39	97.93	0.00	38.18
Arsenic	mg/kg	0.28	0.49	0.28	0.52	0.06	0.07	0.23	0.20	1.53	0.14	0.23	0.49	0.33	1.53	0.06	0.35
Chromium	mg/kg	30.17	15.33	21.64	34.29	28.59	14.38	30.29	63.72	14.52	4.24	19.46	479.51	11.45	479.51	4.24	58.16
Cobalt	mg/kg	2.13	12.30	2.05	1.77	3.22	1.97	1.91	1.76	4.38	0.71	1.10	1.72	1.85	12.30	0.71	2.69
Copper	mg/kg	22.77	35.16	49.57	24.33	12.04	13.13	36.39	36.33	15.21	5.89	12.05	18.00	9.20	49.57	5.89	21.61
Manganese	mg/kg	20.71	26.44	30.76	23.60	13.59	22.97	15.03	32.27	75.70	16.55	19.78	33.06	15.15	33.06	13.59	25.42
Nickel	mg/kg	5.91	10.90	17.32	14.01	8.18	5.71	16.40	15.66	97.93	2.26	8.10	11.95	6.15	97.93	2.26	16.49
Lead	mg/kg	94.63	15.82	109.60	34.36	21.06	3.22	10.22	10.37	12.71	2.82	7.87	18.66	11.38	109.60	2.82	26.26
Antimony	mg/kg	1.92	4.78	42.14	87.02	5.09	6.10	4.27	5.02	26.25	0.53	2.39	4.58	6.95	87.02	0.53	14.62
Vanadium	mg/kg	1.57	1.41	0.92	1.77	0.64	1.31	0.99	0.47	2.64	0.60	0.74	<0.08	0.99	2.64	<0.08	1.00
Zinc	mg/kg	38.71	135.00	48.86	67.70	300.72	31.38	97.66	193.87	77.09	14.22	40.48	308.49	50.09	308.49	14.22	104.17

Analysis Basis : As Received

* Calculated using determined values

Results for the trade waste samples

Sample Reference		Kennet Trade	N. Wilts Trade	Salisbury Trade	W. Wilts Trade	Highest	Lowest	Average
Moisture	%	32.70	30.73	24.37	36.51	36.51	24.37	31.08
Ash	%	11.09	11.11	16.09	8.41	16.09	8.41	11.68
Gross CV	MJ/kg	13.75	14.39	12.94	12.35	14.39	12.35	13.36
Fixed Carbon*	%	6.98	7.19	7.43	9.35	9.35	6.98	7.74
Volatile Matter	%	49.00	50.29	51.80	45.60	51.80	45.60	49.17
Carbon	%	32.59	33.20	32.00	27.66	33.20	27.66	31.36
Hydrogen	%	3.61	4.75	3.91	3.56	4.75	3.56	3.96
Nitrogen	%	1.39	0.73	0.47	1.47	1.47	0.47	1.01
Sulphur	%	0.11	0.12	0.13	0.10	0.13	0.10	0.11
Chlorine	%	0.52	0.26	0.34	0.17	0.52	0.17	0.32
Net CV*	MJ/kg	12.23	12.68	11.54	10.76	12.68	10.76	11.80
Oxygen*	%	18.51	19.37	23.03	22.29	23.03	18.51	20.80
Mercury	mg/kg	<.01	<.01	0.01	<.01	0.01	<.01	<.01
Cadmium	mg/kg	0.05	0.16	0.31	0.10	0.31	0.05	0.15
Titanium	mg/kg	40.28	17.34	26.82	38.05	40.28	17.34	30.62
Arsenic	mg/kg	0.27	0.13	0.23	0.13	0.27	0.13	0.19
Chromium	mg/kg	22.96	3.98	14.18	107.71	107.71	3.98	37.21
Cobalt	mg/kg	3.29	0.64	5.13	19.35	19.35	0.64	7.10
Copper	mg/kg	22.15	13.81	29.73	14.19	29.73	13.81	19.97
Manganese	mg/kg	26.05	12.20	21.69	17.29	26.05	12.20	19.31
Nickel	mg/kg	12.75	3.08	10.04	4.71	12.75	3.08	7.65
Lead	mg/kg	17.99	3.53	102.68	31.93	102.68	3.53	39.03
Antimony	mg/kg	27.72	1.41	3.52	2.64	27.72	1.41	8.83
Vanadium	mg/kg	1.07	0.71	1.46	<0.08	1.46	<0.08	0.81
Zinc	mg/kg	78.54	168.29	103.45	43.54	168.29	43.54	98.45
Analysis Basis : As Received		*Calculated using determined values						

Results for the litter samples

Sample Reference		Kennet Litter	N. Wilts Litter	Salisbury Litter	W. Wilts Litter	Highest	Lowest	Average
Moisture	%	24.36	17.71	15.44	30.54	30.54	15.44	22.01
Ash	%	37.10	42.18	32.87	24.92	42.18	24.92	34.27
Gross CV	MJ/kg	9.09	9.41	10.60	11.31	11.31	9.09	10.10
Fixed Carbon*	%	10.27	0.00	10.67	1.61	10.67	0.00	5.64
Volatile Matter	%	27.84	43.37	40.61	42.51	43.37	27.84	38.58
Carbon	%	32.93	26.70	32.26	26.38	32.93	26.70	29.57
Hydrogen	%	4.08	3.23	3.90	3.38	4.08	3.23	3.65
Nitrogen	%	0.49	0.79	0.63	0.24	0.79	0.24	0.54
Sulphur	%	0.11	0.21	0.11	0.11	0.21	0.11	0.14
Chlorine	%	0.08	0.17	0.26	0.08	0.26	0.08	0.15
Net CV*	MJ/kg	7.61	8.24	9.36	9.86	9.86	7.61	8.77
Oxygen*	%	0.92	9.17	14.79	14.43	14.79	0.92	9.83
Mercury	mg/kg	<.01	<.01	<.01	<.01	<.01	<.01	<.01
Cadmium	mg/kg	0.26	1.40	0.12	0.14	1.40	0.12	0.48
Titanium	mg/kg	69.42	19.79	38.04	28.25	69.42	19.79	38.87
Arsenic	mg/kg	1.70	0.41	0.25	0.40	1.70	0.25	0.69
Chromium	mg/kg	22.82	51.94	251.41	19.57	251.41	19.57	86.44
Cobalt	mg/kg	1.62	0.58	2.98	1.95	2.98	0.58	1.78
Copper	mg/kg	33.97	50.29	17.62	14.33	50.29	14.33	29.05
Manganese	mg/kg	54.95	8.99	25.47	20.98	54.95	8.99	27.60
Nickel	mg/kg	4.80	3.63	23.90	9.62	23.90	3.63	10.49
Lead	mg/kg	65.43	83.27	43.75	47.35	83.27	43.75	59.95
Antimony	mg/kg	1.99	9.07	7.36	8.61	9.07	1.99	6.76
Vanadium	mg/kg	7.09	0.91	<0.08	2.02	7.09	<0.08	2.50
Zinc	mg/kg	115.21	383.36	151.34	56.83	383.36	56.83	176.69
Analysis Basis : As Received					*Calculated using determined values			

