



Dacorum Borough Council

Review of Recycling Collections

June 2013

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1.0 Introduction

1.1 Background and Brief

1.1.1 Dacorum Borough Council (DBC) commissioned WYG to undertake a review of the Council's kerbside recycling and composting collection scheme. The Council operates an alternate-weekly collection scheme with residual waste collected on the alternate week to food waste, green garden waste and cardboard (collected together in a wheeled bin); and dry recyclables collected weekly from boxes and baskets. This work is undertaken in-house.

1.1.2 The practice of collecting cardboard co-mingled with garden and food waste (which has been a common system amongst the boroughs/districts of Hertfordshire) has resulted in a high proportion of cardboard within the mix, particularly during the winter months. This has attracted the attention of the Environment Agency, which is unhappy with the current arrangements. Subsequently the Council is seeking a solution to this situation and a number of options have been worked through by the Council's 'Task and Finish Group'. The preferred design is as follows

- To arrange for the cardboard to be collected as part of the kerbside collection for dry recycling and as part of this to collect all dry recyclables fully co-mingled on an alternate-weekly basis. This should also allow for a more extended range of dry recyclables to be collected.
- To continue to collect residual waste on an alternate-weekly basis: and to alternate these collections with the collection of mixed dry recyclables (as described above).
- To collect food waste weekly: and to collect this as part of the alternate-weekly collection service described above, by using split-bodied collection vehicles; and
- To collect garden waste separately: here the Council has considered two options, as follows (each of which might involve continuing to use wheeled bins or might involve the use of re-usable sacks):
 - Maintaining a free year-round service; or
 - Reducing or eliminating collections in the winter, e.g. for 16 weeks from mid-November to mid-March (or for up to 20 weeks).



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1.1.3 The Council has commissioned WYG to model the likely level of arisings that each of the alternative options will yield and the net costs of these changes to the collections in comparison to the current arrangements. This report summarises our findings to date; a little more work may be required to finalise the costings, once the basic principles are agreed.

1.2 Methodology

1.2.1 Our methodology for undertaking this review included the following activities:

- Obtaining data from the Council in relation to the current scheme e.g. property numbers per collection service; tonnage data; current and future income for dry recyclate (taking into account any costs for delivery); and operational costs;
- Reviewing the current collection resources deployed and current costs;
- Modelling waste flows for each of the options using benchmarking data obtained from analysis of WasteDataFlow data, so as to determine the likely tonnages for each waste stream;
- Calculating the likely costs and benefits associated with the changed waste flows; and
- Modelling collection resources, so as to obtain a total cost and outcome model for each scenario.

1.2.2 We were asked to produce and deliver a first draft report before Wednesday 8 May with a view to presenting our initial findings on that date, and this we have done.

1.2.3 We would like to thank the officers of DBC who have assisted with this project in providing comprehensive information in a timely fashion.



2.0 Current Operations and Performance

2.1 Waste and Recycling Collection

2.1.1 We have been given access to the Council’s log-in for WasteDataFlow and from this we can see that the Council currently collects refuse and composting in alternate weeks from wheeled bins, with recycling collected weekly from boxes using kerbside sort. The composting collection includes food waste and cardboard in addition to garden waste. The recycling collection includes materials as follows:

Container	Material	Description
Black box	Paper	Newspapers, magazines, junk mail, telephone directories, catalogues and envelopes
Basket	Glass	Mixed coloured glass bottles and jars
Green box	Plastics and cans	Mixed plastics (including bottles, yogurt pots, margarine/ice cream tubs, plastic food trays and sandwich containers), food tins and drinks cans

2.1.2 Out of the 61,080 households, 52,330 have kerbside collections of refuse, recycling and composting and the remaining 8,750 are provided with a communal bin for refuse collections; most of these also have access to a flats recycling point but do not have a composting collection.

2.1.3 The resources deployed for these services comprise:

Residual Waste, Commercial Waste and Compostables

- 10 crews, each comprising a driver plus two loaders; plus a difficult access crew, comprising a driver plus one loader: which cover residual waste and compostables in alternating weeks.
- Four crews, each comprising a driver plus two loaders, collecting from communal properties plus some commercial waste.

Dry Recycling

- 10 crews, each comprising a driver plus two loaders; plus a difficult access crew, comprising a driver and one loader, collecting recyclables on a weekly basis.



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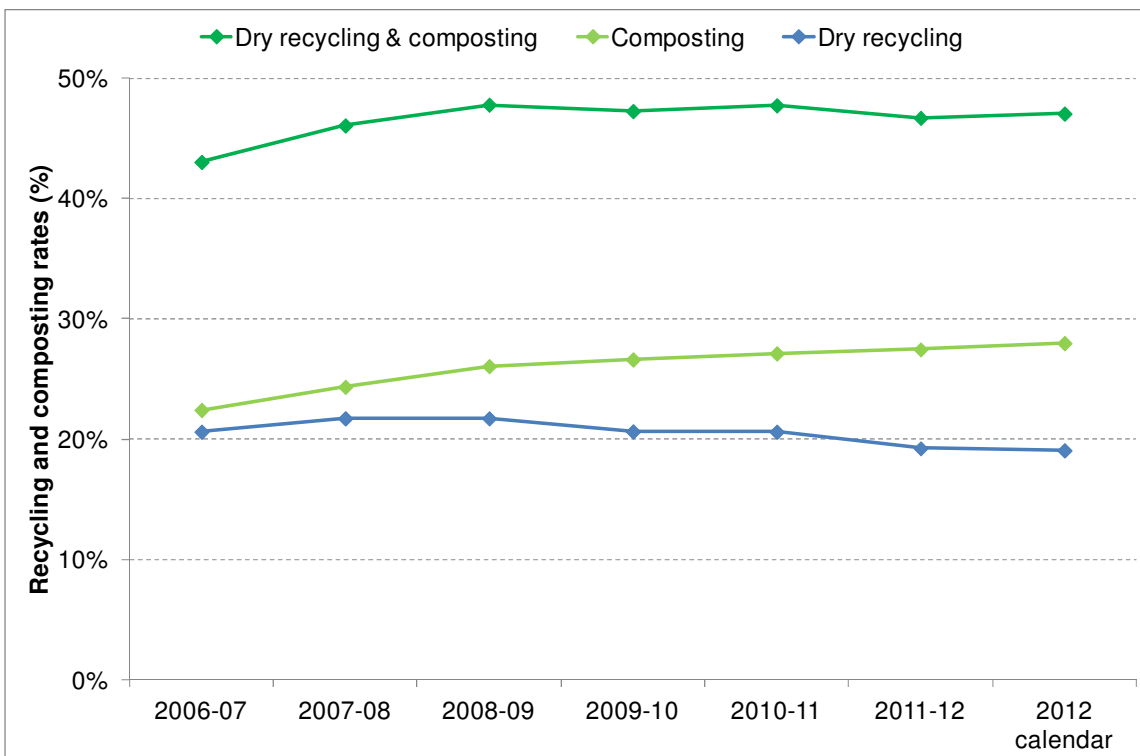
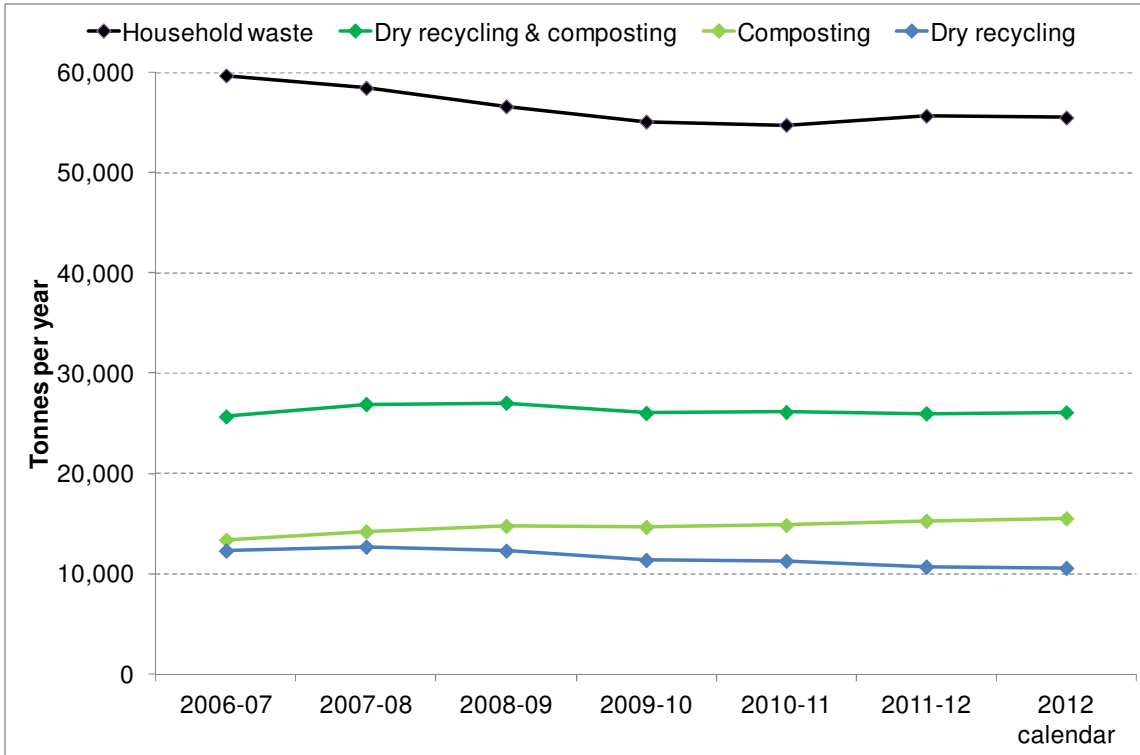
- 2.1.4 The numbers above exclude those engaged on collecting from bring sites, those collecting bulky waste and those engaged on bin deliveries.
- 2.1.5 For materials recycled DBC receives a recycling credit from Hertfordshire County Council which is ca. £40.60 per tonne in 2013/14, a payment level to a prescribed formula. Some of the recyclable materials are sold through a consortium arrangement that covers Hertfordshire; the various prices are considered in Section 2.
- 2.1.6 Additional payments, over and above the recycling credit payments, are payable through a model (the AFM model) for enhanced performance. We are asked in this report not to consider these payments in detail: but to note that they could be considerable.

2.2 Recycling/Composting Performance

- 2.2.1 In 2011/12 DBC collected a total of 55,715 tonnes of household waste and achieved a combined recycling / composting rate of 46.7% (19.3% recycling, 27.4% composting). The tonnages collected as dry recycling/ reuse and for composting were 10,751 and 15,286 respectively (all figures net from WasteDataFlow).
- 2.2.2 The unaudited figures from WasteDataFlow show that in the calendar 2012 DBC collected a total of 55,547 tonnes of household waste and achieved a combined recycling / composting rate of 47.1% (19.1% recycling, 28% composting). The tonnages collected as dry recycling/ reuse and for composting were 10,631 and 15,529 respectively.
- 2.2.3 The trends in performance since 2006-07 are illustrated in the figures on the next page, which show the tonnage collected each year (with the final data point being for calendar year 2012) and the derived recycling and composting rates. These illustrate the current plateau in performance.



Trends in Recycling and Composting Performance: Tonnes and Percentage Rates (%)





3.0 Analysis of Likely Tonnages

3.1 Nearest Neighbour Analysis

3.1.1 In considering the alternative options for collecting cardboard at the kerbside in Dacorum, it is useful to compare the level of performance achieved by councils that are of a similar socio-economic profile and have adopted kerbside schemes that would be adopted by the Council.

3.1.2 To obtain yield estimates for Dacorum under the proposed arrangements, yields were obtained for suitable benchmark authorities: those in the ONS Prospering Southern England group that have fortnightly refuse and fortnightly dry recycling collections that are fully co-mingled including glass and card. Benchmark yields were obtained for 2011-12, the latest full benchmarking year. The yields obtained include:

- Kerbside dry recycling, by material, and in total, including rejects from collection or MRF processing
- Other dry recycling (such as from bring sites), by material, and in total, including rejects from MRF processing
- Other recycling or composting:
 - Bulky recycling
 - Food waste and
 - Garden or mixed organic waste collections
- Household residual waste:
 - Regular collection
 - Bulky waste (not recycled)
 - Other (including street cleansing waste and other 'household' sources of residual waste)

3.1.3 A household recycling and composting rate is derived, net of rejects. The subscription charge for garden waste collections is shown, if applicable. In addition, the percentage of households provided with collections of garden waste only, mixed garden and food waste, or food waste only is found.

3.1.4 An average is shown for the benchmark authorities, excluding from the average for food (and dependent items) authorities that do not collect separate food waste (Rochford and Mid Sussex) or provide less than half of households with food waste collections (Spelthorne). Similarly, as only



one authority provides a free combined garden and food waste collection (Rochford), this is excluded from the garden waste and dependent averages.

3.1.5 Note that figures in tables are rounded so may not add exactly to the totals shown. Notes are provided on the next page (with footnotes also provided below for points 1 and 2).

Benchmarks (Yields in kg/ household/ year)

Yield kg/ household/ year	Rochford	Elmbridge	Mid Sussex	Mole Valley	South Oxfordshire	Spelthorne	Surrey Heath	Vale of White Horse	Woking	Authorities with relevant collections
Kerbside Dry:										
Paper/ Card	148	176	168	176	165	153	183	143	160	164
Cans	12	13	9	13	15	11	14	14	12	13
Plastics	32	13	19	13	31	11	31	29	12	21
Glass	67	60	40	60	100	53	63	95	55	66
Total	259	263	237	263	310	229	291	282	239	264
Total inc. rejects	278	268	246	268	325	241	307	295	244	275
Other Dry (Bring etc):										
Paper/ Card	4	0	2	4	2	1	6		4	3
Cans	0	0	0	1	0	0	0	0	0	0
Plastics	0	0	0	1	0	0	0	0	0	0
Glass	3	0	0	3	2	0	8		5	2
Other	5	1	1	2	5	3	6	4	3	3
Total	13	1	3	10	9	4	21	4	12	9
Total inc. rejects	13	1	3	10	9	4	21	4	12	9
Other Kerbside Recycling/ Composting:										
Bulky/ Other	0	0	0	0	0	0	1	0	2	1
Food	0 ¹	63	0 ¹	56	95	26 ¹	92	102	76	81
Garden/Mixed	355 ²	127	91	138	168	63	53	134	129	114
Total	355^{1,2}	191	92¹	194	262	89¹	146	237	207	195
Total inc. rejects	355^{1,2}	191	92¹	194	263	89¹	146	237	207	195

¹ Excluded from average (food waste collections < 75% of households).

² Excluded from average (garden waste collection is free and includes food waste).



Yield kg/ household/ year	Rochford	Elmbridge	Mid Sussex	Mole Valley	South Oxfordshire	Spelthorne	Surrey Heath	Vale of White Horse	Woking	Authorities with relevant collections
Household Residual Waste:										
Regular Collection	287 ^{1,2}	394	397 ¹	330	241	435 ¹	261	210	346	297
Bulky Waste	0	0	2	3	3	0	1	1	0	1
Other	0	47	27	27	15	26	1	13	20	19
Total	287^{1,2}	440	425¹	359	259	462¹	262	224	365	317
Rejects	17	5	9	5	16	12	16	14	5	11
Household Waste:										
Total	933^{1,2}	901	766¹	832	856	795¹	737	760	828	796
Recycling/ Composting	627 ^{1,2}	455	332 ¹	467	582	321 ¹	458	523	458	468
Rate	67%^{1,2}	50%	43%¹	56%	68%	40%¹	62%	69%	55%	59%
Composting collections: charge										
Garden waste charge	N/A ²	£33	£60	£49.50	£34	£47	£50	£37	£40	£44
Composting collections: % of households										
Garden waste	²	27%	22%	31%	35%	18%	9%	28%	29%	25%
Mixed	98%									98%
Food waste	¹	91%	¹	79%	100%	48% ¹	94%	100%	96%	93%
Composting collections: kg per household with service										
Garden waste	²	462	411	444	473	352	590	488	450	459
Mixed	361									361
Food waste	¹	69	¹	71	95	54 ¹	97	102	79	86

3.1.6 Benchmark averages and estimates for Dacorum were obtained as follows:

1. Authorities providing food waste collections to fewer than 75% of households were excluded from the benchmark average for food waste and residual waste (as indicated by ¹ in the table above) but these benchmarks were not used to make estimates for Dacorum.
2. Authorities providing combined food waste and free garden waste collections were excluded from the benchmark average for garden waste and residual waste (as indicated by ² in the table above) but these benchmarks were not used to make estimates for Dacorum.
3. Dacorum is assumed to achieve the same kerbside and bring dry recycling as the



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benchmark average.

4. Bulky recycling, bulky residual waste and other residual waste (including street cleansing) are assumed unchanged from the Dacorum amount for 2011-12.
5. Food waste for households provided with the service is estimated to be 93 kg/household/year, based on the WRAP ready reckoner for weekly food waste and fortnightly refuse collections, using the deprivation figure for Dacorum, and this is then multiplied by 85%, the percentage of households receiving organics collections (52,330 households), to obtain the overall average of 80 kg/ household/ year.
6. It is assumed that 50 kg of food waste and 20 kg of card was collected mixed with compost for the 85% of households that received the mixed organics service, an overall average of 60 kg (= 70 kg x 85%), which has moved to separate food waste and dry recycling collections respectively (based on findings in similar authorities), leaving an average of 190 kg/ household/ year of garden waste in the free collection service.
7. For the fully co-mingled service with free garden waste, it is assumed that the total household waste is unchanged for Dacorum, so the household residual waste collections are decreased by the increase in recycling and composting.

3.1.7 The results are shown in the table on the next page. The superscripts in this table refer to the notes above.


Estimates for Dacorum Fully Co-mingled Collections (Yields in kg/ household/ year)

	A	B	C	B – C
Yield kg/household/ year	Benchmark	Dacorum Estimate	Dacorum 2011-12	Difference for Dacorum
Kerbside Dry:				
Paper/ Card	164	164 ³	76	+88
Cans	13	13 ³	8	+5
Plastics	21	21 ³	17	+4
Glass	66	66 ³	58	+8
Total	264	264³	160	+104
Total inc. rejects	274	274³	160	+114
Other Dry (Bring etc):				
Paper/ Card	3	3 ³	8	-5
Cans	0	0 ³	0	
Plastics	0	0 ³	0	
Glass	2	2 ³	8	-6
Other	3	3 ³	1	+2
Total	9	9³	16	-7
Total inc. rejects	9	9³	16	-7
Other Kerbside Recycling/ Composting:				
Bulky/ Other	1	1 ⁴	1	
Food	81	80 ⁵	0	+80
Garden/ Mixed	114	190 ⁶	250	-60
Total	195	271	251	+20
Total inc. rejects	196	271	251	+20
Household Residual Waste:				
Regular Collection	297	321 ⁷	448	-127
Bulky Waste	1	5 ⁴	5	
Other	19	33 ⁴	33	
Total	317	359	486	-127
Rejects from rec/comp.	11	11 ³	0	+11
Household Waste:				
Total	796	914⁷	914	
Recycling/ Composting	468	543	428	+115
Rate	59%	59%	47%	+13%
Composting collections: % of households				
Garden waste	25%	85%		+85%
Mixed	98%		85%	-85%
Food waste	93%	85%		+85%
Composting collections: kg per household with service				
Garden waste	459	223 ⁶		+223
Mixed			293	-293
Food waste	86	93		+93



3.1.8 The table below provides estimates of tonnages for Dacorum, based on the yield estimates in the table above (tonnes/ year = yield in kg/ household/ year x number of households / 1000 kg/tonne). For all columns except column C, the actuals for Dacorum, estimated tonnages are rounded to the nearest 100 tonnes.

Estimates for Dacorum Fully Co-mingled Collections (Tonnes)

	A	B	C	B – C
Yield tonnes	Benchmark	Dacorum Estimate	Dacorum 2011-12	Difference for Dacorum
Kerbside Dry:				
Paper/ Card	10,000	10,000	4,655	+5,300
Cans	800	800	484	+300
Plastics	1,300	1,300	1,043	+300
Glass	4,000	4,000	3,571	+400
Total	16,100	16,100	9,753	+6,300
Total inc. rejects	16,800	16,800	9,762	+7,000
Other Dry (Bring etc):				
Paper/ Card	200	200	464	-300
Cans	0	0	0	
Plastics	0	0	6	
Glass	100	100	472	-400
Other	200	200	63	+100
Total	500	500	1,005	-500
Total inc. rejects	500	500	1,005	-500
Other Kerbside Recycling/ Composting:				
Bulky/ Other	0	100	74	
Food	4,900	4,900	0	+4,900
Garden/ Mixed	7,000	11,600	15,286	-3,700
Total	11,900	16,600	15,360	+1,200
Total inc. rejects	11,900	16,600	15,360	+1,200
Household Residual Waste:				
Regular Collection	18,100	19,600	27,370	-7,800
Bulky Waste	100	300	288	+0
Other	1,200	2,000	2,012	+0
Total	19,400	21,900	29,670	-7,800
Rejects	700	700	9	+700
Household Waste				
Total	48,600	55,800	55,797	
Recycling/ Composting	28,500	33,200	26,118	+7,100
Rate	59%	59%	47%	+13%



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3.1.9 In order to obtain estimates of rounds required for the garden waste collection service, maximum daily tonnages are required. A typical monthly profile (as shown in column A in the table below) was used to estimate monthly tonnages for a year-round collection service for free garden waste collections, based on estimated annual tonnages of 11,600.

3.1.10 We note the proposal to suspend garden waste collections for 16 to 20 weeks: but benchmarking data suggests that such a long closedown is unpopular; and it is worth noting that the trend is to extend the period of collections, with collections only suspended from December to January/February. Benchmarking data also suggests that if the service were suspended for up to three months during the winter (December, January, February), the overall amounts collected would be unchanged; and the amounts that would have been collected in these months is shared between November, March and April (i.e. winter garden waste clearance is done one month earlier or two months later, to match service availability). This assumption is used to obtain estimates for a collection suspended in the winter (columns B, D and F). In reality, the amounts collected could be lower due to diversion to HWRCs, home composting or lower waste generation. The monthly tonnage estimates are used to derive average tonnes per day in each month, for a collection service provided 5 days per week (columns E and F). The maximum and minimum monthly amounts are also obtained.

Estimates for of Monthly and Daily Garden Waste Collections for Dacorum (Tonnes)

	A	B	C	D	E	F
	Monthly profile % per month		Free garden waste Tonnes per month		Free garden waste Tonnes per day	
	Year-round	Winter break	Year-round	Winter break	Year-round	Winter break
Apr	10.7%	14.3%	1,247	1,662	58	78
May	12.2%	12.2%	1,420	1,420	64	64
Jun	11.3%	11.3%	1,316	1,316	61	61
Jul	10.4%	10.4%	1,212	1,212	55	55
Aug	10.7%	10.7%	1,247	1,247	56	56
Sep	9.6%	9.6%	1,108	1,108	52	52
Oct	9.3%	9.3%	1,073	1,073	48	48
Nov	7.8%	11.3%	900	1,316	42	61
Dec	3.9%		450		20	
Jan	3.6%		416		19	
Feb	3.3%		381		19	
Mar	7.2%	10.7%	831	1,247	38	56
Total	100%	100%	11,600	11,600		
Max	12.2%	14.3%	1,420	1,662	64	78
Min	3.3%	9.3%	381	1,073	19	48



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3.1.11 As discussed above, when the service is suspended for up to three months during the winter, we have assumed that the total amounts collected annually are unchanged and the amounts that would have been collected in these months is shared between November, March and April, to match garden waste clearance activity with service availability. The effect is that this creates a surge in garden waste production in March and April (which is often seen with Easter gardening activity) resulting in April having the highest monthly arisings. For year-round services, the peak is found to be in May. In reality, the surge in waste clearance after winter could be lower or more spread out, or garden waste could be diverted from the kerbside collection system to HWRCs, home composting or lower waste generation.

3.1.12 The maximum tonnes per collection day are thus estimated to be:

- Year-round service: 64 tpd
- With 3 month break: 78 tpd (higher due to diversion from the winter months)

There will, of course, be some additional weekly/ daily/ round variation.

3.1.13 It is interesting to note that in February/ March 2013 York undertook a survey of attitudes to service changes, which showed that 71% of respondents (and 65% of respondents who used the service) fully or potentially supported withdrawing the garden waste service in the winter months (source: <http://democracy.york.gov.uk/documents/s80264/Final%20Appendix%20A.pdf>).



4.0 Analysis of Resources

4.1 Destinations for materials

- 4.1.1 Residual waste is directed to be delivered to a Hertfordshire CC site near Watford; there seems no likelihood of this situation changing; but it should be noted that DBC receives a compensatory 'tipping away' payment for tipping at this location.
- 4.1.2 Currently compostable waste is tipped at DBC's depot; from where it is transferred to the treatment facility. As noted, at present the compostable material includes three distinct parts (cardboard, garden waste and food waste) which will, under the new service design be split into three fractions (with the cardboard being collected as part of the co-mingled dry recycling service).
- 4.1.3 Currently dry recyclables are tipped at DBC's depot; and DBC has a 'mini-MRF' for separating and baling some of the materials (although paper is stored loose in a covered facility elsewhere in the depot).
- 4.1.4 There is a considerable advantage in continuing to tip as much as possible at the depot: it is, of course, necessary for each collection vehicle to return to the depot at the end of the day; which means that the final tip run for vehicles that can use the depot to tip is the same as the return run to the depot. In addition, where food waste is collected as a separate waste stream then it is almost always the case that tipping is only required once per day (because of the relatively small volumes of waste per household collected, meaning that the round for that fraction is determined by properties passed rather than vehicle capacity); which means that is particularly advantageous to retain a food waste tipping facility at the depot.
- 4.1.5 The Council has, as would be expected, a permit for the tipping of wastes at the depot: the current licence dates from 2008 and covers the storage and treatment of inert waste and general and biodegradable household, commercial and industrial waste (as well as the storage of clinical waste and special waste). The licence states that waste storage shall be on an impermeable pavement with a sealed drainage system. Notwithstanding the current licence and our belief that this covers the proposed change in collection regime, we recommend an urgent review of the current permit with the EA, which will probably mean a requirement for a new, enhanced EMS for the site. (We would be delighted to assist with this work, which we recommend is started as soon as possible).



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4.1.6 As far as dry recyclables are concerned, the Hertfordshire contract states that Pearce's MRF at St Albans is the preferred destination: and an enhanced gate fee is paid for materials delivered to that MRF as opposed to materials that Pearce's are required to collect. Financially speaking, therefore, there is an advantage in tipping (at least some of) the dry recyclable material at Pearce's: provided the additional income is not outweighed by additional costs in tipping there (in terms of longer travel and waiting times and fuel / labour costs related to these). It might be possible to design a collection routeing which would enable those rounds collecting closest to Pearce's to tip (at least their first load) there; while continuing to tip some of the material at the depot. We note (in 4.4.15) that Hertfordshire Waste Partnership has access to route optimisation software: and it would therefore be possible to model various scenarios (including allowances for travelling, tipping, weighing etc.) to determine the optimum solution.

4.1.7 On the basis that the depot continues to be used for some / much / all of the tipping excluding residual waste, we believe, after discussion with DBC staff, that the suggested yard operation should be:

- To use one of the current compostables bays for food waste; and
- To use the current garden waste bay plus the open bay currently used for glass for garden waste.

This would leave the two current paper bays and one of the current compostable bays for storage of recyclables: although some work would be required to the paper bays (in the form of reinforced push walls); and there might be a need for one more operative in the transfer area.

4.2 Collection design

4.2.1 Having examined the waste streams (as per Section 3) we believe that the most appropriate design for collection would be to:

- Collect on an alternate-weekly basis with recycling and food waste collected one week and residual waste and food waste collected on the alternate week;
- Use a split-bodied vehicle for the service described above, so that for this service each household receives one vehicle pass per week; and



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- Collect garden waste entirely separately: thus giving maximum flexibility as to service design in terms e.g. of not operating the service for part of the year and of which parts of the year.

4.2.2 This design for collection is used by a good number of authorities that use the waste collection methodology proposed for DBC: including several operated by the private sector (including at Ashford, Elmbridge, Maidstone, South Oxfordshire, Surrey Heath, Swale, Vale of White Horse, Waverley and Woking); as well as by those delivering services in-house (including Oxford, Spelthorne and Uttlesford: and soon to be adopted at Guildford). The table below provides the total recycling and composting performance and rank for the authorities that had established collections in 2011/12.

Authority	Rate %	Rank
Vale of White Horse	68.7%	1
South Oxfordshire	67.9%	2
Surrey Heath	65.0%	4
Mole Valley	57.9%	17
Woking	57.0%	23
Uttlesford	54.5%	34
Elmbridge	50.5%	63

4.2.3 As regards the precise choice of vehicles for the alternate-weekly part of this design, we have considered two choices of vehicle: a Twinpack vehicle; and a Duo vehicle which uses a pod. The first would have a 70:30 split and could be operated by a driver and two loaders; while the second would require a driver and three loaders but has a much greater capacity, utilising a pod. Pictures of these vehicles are included as Appendices.

4.2.4 With regard to the garden waste collections we understand that as yet no decision has been taken as to whether these shall be made using wheeled-bins, biodegradable sacks or re-usable sacks. We would not recommend using biodegradable sacks, since our experience is that the revenue costs are, over a 10-year period) more than double that of the other options (because of the need for regular delivery). There are arguments in favour of each of the remaining options, which can be summarised as follows:



In favour of wheeled bins:	In favour of reusable sacks:
Once purchased and delivered, the on-going revenue costs for replacement are very low	Lower initial capital outlay
Collection process from wheeled-bins is safer and much easier than for bags	Several properties may not be able to store three wheeled-bins
Customers may find it difficult to present heavy bags	Probably more customer-friendly in the garden
Once emptied, bags can become windborne	

4.2.4 If we were to give a recommendation, we believe wheeled-bins are better; although some properties may have to be given re-usable sacks because of storage / presentation difficulties. We note that some 2,500 properties already have storage problems: and it may be that, as well as using re-usable sacks for garden waste at these properties, dry recycling will have to be collected from plastic sacks (which could either be delivered, say, once every six months or delivered at the time of collection).

4.3 Modelling of collection resources

4.3.1 In terms of the collection resource, the number of rounds needs to allow for a reasonable pass-rate of properties per day per round; but also needs to have sufficient capacity to collect the predicted arisings.

4.3.2 We believe that it would be appropriate to leave the current resources for collecting from flats etc. alone (four rounds, including some commercial waste collections). We understand that some of the flats still use Paladin containers (which require special lifts; and we have not, as part of this review, examined the commercial waste service at all. Further, it is likely that much of the future property growth in Dacorum will include flats. Doing this, we would expect some 2,800 tonnes of residual household waste to be collected by these crews: leaving some 16,800 tonnes to be collected by the balance of the crews.

4.3.3 If the service were to use Twinpack vehicles, then we believe that we would require:

- Five rounds of driver plus two loaders for the residual waste plus food waste rounds: on the basis of a capacity per vehicle per day of 13 tonnes of residual waste (two tips) plus three tonnes of food waste, this gives capacity for some 16,900 tonnes of residual waste and 4,680 tonnes of food waste; and the property pass rate is approximately 1,047 properties per day.



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- Seven rounds of driver plus two loaders for the recycling plus food waste rounds: on the basis of a capacity per vehicle per day of 10 tonnes of recyclables (two tips but soft compaction) plus three tonnes of food waste, this gives capacity for some 18,200 tonnes of recyclables and 5,460 tonnes of food waste; and the property pass rate is approximately 750 properties per day. The higher number of vehicles is required because of the estimated tonnage and the low capacity; but this low pass rate (in terms of properties per round) allows for some of the material to be tipped at St Albans, generating a higher income.

We accept that, particularly for residual waste / food waste rounds, this design is quite tight (whereas for recycling / food waste rounds there is a good deal of capacity to deal with delays, breakdown etc.): but introducing a further round reduces the workload so that the working week is never fully utilised.

We also note that this 'optimum' design means that Dacorum would have to revert to a situation whereby in any one week half of the Borough had residual waste being collected and half recyclables, which is not current practice. If Dacorum were to wish to continue with current practice then there would be additional costs, since two vehicles would be idle for half of the year: and the required workforce in each week would be unequal.

- 4.3.4 In examining the possibility of podded vehicles, we believe that it would not be possible to reduce the number of crews for the residual waste / food waste collections: since to do so would mean a pass rate in excess of 1,300 properties per day (which, with tipping at the current location, is untenable: although pass rates of this level can be achieved for some services where presentation rates are lower it should be noted that this would not be the case for residual waste. Podded vehicles could certainly mean one round fewer for the recyclable / food waste collections: but the total number of operatives required would increase (six rounds of driver plus three compared to seven rounds of driver plus two); and although there would be one vehicle fewer required, this saving is negated by the higher unit costs of the vehicles and the higher staffing levels.
- 4.3.5 The garden waste service needs to be designed so as to collect a maximum of 78 tonnes per day; and so as to be able to pass all properties in the Borough receiving this service. We believe that four garden waste rounds would be required: this gives sufficient capacity to carry the maximum expected daily tonnage of 78 tonnes: and would mean passing approximately 1,350 properties per day. We would recommend the service to operate for ca. 40 weeks of the year, with a break from,



say, the start of December until the end of February. This optimum design allows for garden waste collection days to be aligned with other collection days: but for half of the residents this collection day will be as for recycling and for the other half as for residual waste. We have ruled out monthly collections, since we believe the capture rate would suffer, meaning higher volumes of residual waste (with consequences on costs as well as performance).

4.3.6 There would be a need for special vehicles to collect from properties with difficult access: clearly, there might be more such properties if podded vehicles were chosen; which is another reason to reject this option. The Council needs to be clear, as it rolls out the new service, as to how it defines such properties and what services it will deliver to them.

4.3.7 Excluding the service for flats and commercial waste and the difficult access resources, the resources for the current service are 20 crews of a driver plus two loaders; whereas the new service will have resources of 16 crews of a driver plus two loaders (albeit using vehicles that are often more expensive).

4.4 Financial estimates

4.4.1 The first point to be considered is that with the new scheme there will be a reduction in the income derived from the sale of materials. Our modelling suggests that some 16,800 tonnes of dry recyclables would be collected: and our resource modelling is such that some of this could be delivered direct to the MRF. We believe that it is possible, therefore, that an income of ca. £290,000 could be achieved (at £17 per tonne for material to be tipped at the depot and at £25 per tonne for material delivered to the MRF, which might be ca. 25% of the total). However, this is a significantly lower figure than the £765,000 in the current budget – an adverse variance of £475,000 per annum.

4.4.2 On the other hand, the recycling credit on this tonnage would be some £682,080 per annum compared to the £419,000 in the current budget – a favourable variance of £263,080 per annum.

4.4.3 If the collection resources for properties with difficult access can be maintained at the current level, then the labour requirement for collections reduces by four drivers and eight loaders: using the supplied figures of £31,780 for a driver and £23,150 for a loader this means savings of £312,320 per annum: and the savings may be more than this in terms of the costs of cover (noting, as part of this calculation, that this system of collection should reduce absenteeism).



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4.4.5 At this stage, more work is required in terms of calculating the costs of the different vehicle fleet: we have calculated a rough estimate using contract hire with maintenance costs plus replacement costs for the two front-line fleets (excluding difficult access rounds and communal / commercial rounds) as a means of comparison; the figures are from recent tenders for in-house municipal operations in a county adjacent to Hertfordshire:

Existing fleet:	Total
10 RCVs @ £37,525	£375,250
10 kerbsiders @ £30,000	£300,000
Total	£675,250
New fleet:	
12 split-bodied RCVs @ £41,850	£502,200
4 RCVs @ £37,525	£150,100
Total	£652,300

In broad-brush terms, then, we would expect the capital and maintenance costs for the new fleet to be in line with, or marginally below, the current costs. The same should apply for insurance costs; but any saving is likely to be negated by fuel costs.

4.4.6 There will be savings in the depot operations since the MRF will no longer be required: in terms of staff costs, even if one member has to be redeployed for general tipping arrangements (as described in 4.1.7 above) there should be savings of ca. £70,000 per annum; and there would be other savings too in terms of the running costs.

4.4.7 Taking all of these points together, we believe that, in revenue terms, the new service will compare with the old as follows (all costs / savings per annum):

Cost or saving	Costs	- Savings	Net Costs
Loss of income from sale of recyclables	£475,000		£475,000
Additional recycling credits		-£263,080	-£263,080
Savings from collection costs, labour		-£312,320	-£312,320
Savings from MRF operation		-£70,000	-£70,000
Total	£475,000	-£645,400	-£170,400



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4.4.8 On this basis, overall the new system could save ca. £170,400 per annum: This ignores the additional AFM payments that will be made to DBC by Hertfordshire CC (noted in 2.1.5; which help to reflect the fact that the new system will save treatment costs very significantly indeed). However, we reiterate that this is only a broad-brush estimate and there is no contingency, particularly for difficult access properties: and we believe it would be prudent to assume, excluding the additional payments over and above the recycling credits made by Hertfordshire CC, the new system will cost about the same as the old (but will achieve a much higher performance level in terms of the recycling/composting rate).

4.4.9 There will, of course, be one-off costs for introducing the new service. We have noted that some improvements to the depot infrastructure will be needed (for push walls and for decommissioning the MRF). But the sheer costs of transformation will be significant also.

4.4.10 Given that the Council chooses to use a wheeled-bin for garden waste collections, then expenditure of ca. £1.2 million will be required for their purchase. For food waste containers (assuming that each household receives one kitchen caddy and one collection container, plus an introductory pack of liners) then expenditure of ca. £300,000 will be required. There may also be one-off costs since the number of front-line staff reduces by 11 staff (the actual numbers will be slightly different to this, depending upon cover arrangements).

4.4.11 The costs of transformation will need to cover the following matters:

- Residents will need to receive a comprehensive message regarding dry recyclables:
 - Not to use the current bags and baskets (this is, on the whole, likely to be a popular move: but some residents may complain about receiving a further wheeled-bin; different sizes of wheeled-bin will have to be considered; and some residents may require their boxes / baskets to be collected).
 - A different (wider) range of materials can be collected.
 - A new wheeled-bin is required.
 - The collection frequency will be different.
- Residents will need to receive a comprehensive message regarding compostables:



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- New food waste collections will be introduced: containers will be required and some instruction as to their use will be needed. We recommend issuing liners for the initial stages: but long term advising residents to either not use them; for them to use e.g. newspaper; or to purchase their own. This is a methodology opted by many of the highest-performing authorities for food waste capture (including those delivering this service in-house).
 - Cardboard should be collected as part of the dry recycling service, not as a compostable.
 - Garden waste collections mean just that: garden waste only.
 - Home composting is still a viable, environment-friendly option.
 - The garden waste service will not be all year.
- It is highly likely that some residents will experience a change in collection day.
 - Processes for side waste / contamination need to be developed and explained.

4.4.12 Slightly different messages will be required for customers using communal containers; and for commercial waste customers. We recommend that this is done as a 'second phase' of the change, which might commence, say, four months following the introduction of the other changes. If this is accepted, we believe that the Council should seriously consider making the changes to 'standard' properties on a 'big bang' basis (or as a maximum, changing half of the Borough swiftly followed by the other half). We have seen similar changes introduced successfully on a 'big bang' basis in councils of similar size to Dacorum (e.g. Ashford, Swale); and have seen more comprehensive changes on a 'big bang' basis in councils around half the size of Dacorum (e.g. Tewkesbury). On the other hand, we have seen roll-outs that are phased in slowly develop into a sort of 'war of attrition' that is difficult to resolve (e.g. Waverley some years ago).

4.4.13 One of the more important factors to consider is that residents currently use wheeled-bins for residual waste and have it collected on an alternate-weekly basis. This aids a shorter roll-out programme.

4.4.14 The Council currently has two members of staff involved in waste promotions. We would recommend the recruitment of at least three additional staff for a roll-out period of six months; and



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some additional resource for answering telephones (at least two staff for four months). Benchmark figures suggest a minimum spend in the range of £2 to £2.50 per household (so between £120,000 and £150,000); but it may be that the Council chooses to invest a little more, given its track record of thorough consultation.

4.4.15 In terms of re-routeing the rounds, we understand that the Hertfordshire Waste Partnership has access to specialist software, which will mitigate the one-off costs.



Appendices



Appendix A – Twin Pack Vehicle





Appendix B – Duo Vehicle

