



NOTE FOR DACORUM BC: TEEP ASSESSMENT

INTRODUCTION

Dacorum BC (DBC) carried out a review of its waste services in 2013 and is now (June 2014) in the process of implementing changes.

The current methodology for collecting waste at DBC is:

- To collect residual household waste fortnightly from wheeled-bins;
- To collect garden waste mixed with food waste and cardboard fortnightly from wheeled-bins; and
- To collect paper, plastics, steel & aluminium cans and glass weekly from boxes.

With regard to the last bullet point, the precise details are 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

DBC does not currently collect food waste as a separate waste stream: in practice it is included in either the compostable waste stream or the residual waste stream. All collection services are delivered in-house: and as part of the current collection services DBC runs a 'mini-MRF' to sort and bale steel & aluminium cans and plastics (i.e. the materials collected co-mingled from the green box).

DBC provides a Commercial Waste service, collecting residual Commercial Waste from sacks and from a variety of containers (six sizes ranging in capacity from 360-litres to 1,280 litres). Recyclable Commercial Waste is also collected, using a separate crew on a flat-bed lorry each Thursday: with cardboard either collected bound in tape or in a container; paper in either sacks or a container; and glass in a container for a few customers. Whilst the main focus of the waste review was on Household Waste, DBC has begun a process for reviewing its Commercial Waste service also.

The practice of collecting cardboard with garden waste (which was general practice within Hertfordshire prior to the time of DBC's waste review) is now longer a tenable option. The amount of the cardboard in the Hertfordshire compostable waste stream is relatively high: and with such a high proportion the composted product would not meet the requirements of PAS100 and had attracted the attention of the Environment Agency who expressed concern. DBC, in



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common with other Hertfordshire waste collection authorities, had to consider how it could collect cardboard as a recyclable material rather than as a compostable material: and this was one of the drivers for the review. At the same time, the review was designed to review collection policies generally to improve recycling/composting performance; and to achieve optimum performance at an optimum cost – in other words to be economic and to achieve a high level of environmental performance.

As part of the review, DBC considered a number of different methodologies for collecting waste in the future; and DBC was, during the review, fully cognisant of the requirements of the EU Waste Framework Directive (WFD) 2008 and the Waste England and Wales Regulations 2011 which flow from it. The Regulations (which were the subject of a judicial review) include Regulation 13 regarding the collection of glass, metal, paper and plastic for recycling.

DBC has also, during the review, been aware that the requirement of Regulation 13 is that these materials (i.e. glass, metal, paper and plastic for recycling) should be collected separately: but may be collected on a different basis in certain circumstances which are where it can be shown that it is not technically, economically or environmentally practicable (TEEP).

Accordingly, through the review, each of the options for collecting recyclables was considered and tested using TEEP criteria: although no official guidance as to how this was to be done was available during the review and before the decision process regarding the preferred collection system.

In late April 2014 (the formal decision regarding the collection system was made by DBC's Cabinet in the summer of 2013) WRAP circulated its Waste Regulations Route Map. WYG was asked by DBC to check the TEEP tests carried out and assess its chosen methodology on the basis of this Route Map.

We are clear in our mind that any local authority may decide to collect dry recyclables in a co-mingled fashion where it is not technically, economically or environmentally practicable to have separate collections. To quote from page 26 of the Waste Regulations Route Map (but inserting our parentheses): "It is (therefore) clear that co-mingled collections can (only) be considered where separate collection does not meet the Necessity and Practicability Tests."

It is worth noting that DBC is a member of the Hertfordshire Waste Partnership (which includes all waste collection authorities in Hertfordshire as well as Hertfordshire CC as waste disposal authority); and that the review was undertaken for waste collection in conjunction with Hertfordshire Waste Partnership officers and considered costs and performance in a total fashion i.e. including avoided disposal costs and the savings and payments through the Alternative Financial Model (AFM) that would arise.



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THE REVIEW PROCESS

The review considered a variety of methodologies for collecting Household Waste: with the aim being, as stated, to find a methodology that would (in a technically, environmentally and economically practicable way) deliver a higher recycling/composting rate, divert more waste from landfill and remove cardboard from the compostable waste stream. All of this was done in the background of DBC (in common with other local authorities) having to find significant budget savings.

During the review DBC were provided with external advice from WRAP and from WYG.

The options considered as part of the review were as follows:

- Option 1: the current system.
- Option 2: the current system; but with cardboard collected on a weekly frequency from the same box as paper rather than as part of the compostable waste stream.
- Option 3a: as Option 2; but with food waste collected as a separate waste stream on a weekly basis and with garden waste therefore collected as a separate waste stream on a fortnightly basis.
- Option 3b: as Option 3a, but with garden waste collections suspended during the winter months.
- Option 3c: as Option 3a, but with garden waste collections reduced to a monthly collection as well as being suspended during the winter months.
- Option 4a: to collect residual waste as per the current system; to collect dry recyclables (including cardboard) fully co-mingled on a fortnightly basis from a wheeled-bin (and using the wheeled-bins currently used for collecting compostable waste); to collect food waste as a separate waste stream on a weekly basis; and with garden waste therefore collected as a separate waste stream on a fortnightly basis from reusable hessian sacks but being suspended during the winter months.
- Option 4b: as Option 4a; but with garden waste being collected from a wheeled-bin.
- Option 4c: as Option 4b; but with dry recyclables now on a two-stream basis, with paper as a separate stream and collected from a box and with all other dry recyclables being co-mingled and collected from a wheeled-bin.
- Option 4d: as Option 4b; but with garden waste being a chargeable service.



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Each of these options were assessed using TEEP criteria but with DBC using its own methodology (since no official published guidance was available). Essentially the review considered:

- Was the option technically practicable?
- What was the likely environmental performance (in terms of the recycling/composting rate and the consequent diversion from landfill) for each option?
- What was the estimated cost of each option?

In terms of the last, DBC had, as noted, to consider its overall financial position.

The final decision was to collect as per Option 4b: no decision has yet been taken regarding the design of the Commercial Waste service; but it is expected that this service will continue to collect dry recyclables.

DBC'S REVIEW PROCESS

Technical Practicability

The only option which caused concerns (and which was subsequently discarded) under this criterion was Option 4a.

All of the options considered are being operated somewhere in the UK: but the practice of collecting garden waste from reusable sacks has, in some cases, caused concerns with regard to safe lifting and handling.

Additionally, although chargeable garden waste services are commonly delivered in a number of authorities and areas, garden waste is not now currently charged for by any Hertfordshire waste collection authority. In the past there was a chargeable garden waste service in Dacorum but this was abandoned some years ago. The option of charging for garden waste was therefore considered to contain a good number of technical and political challenges, particularly with regard to its acceptability to residents.

Environmental Practicability

DBC's own modelling estimated that, for both the fully co-mingled option and the two-stream option for dry recyclables there would be an increase in the capture of those materials, even after deducting for contamination and MRF rejects. DBC estimated that the additional tonnage of dry recyclables to be collected under these options was some 2,990 tonnes per annum, the increase being partly due to the shift of cardboard from the compostable waste stream and partly because of an increase in capture rate (for which there is a good deal of evidence to support such an assumption).



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In terms of environmental practicability as regards dry recycling, then, Options 4a, 4b and 4c were seen as being more necessary than Options 2, 3a, 3b and 3c.

Although Option 4d would capture more dry recyclables there would be lower volumes of garden waste collected than with other options.

Options 3a, 3b, 3c, 4a, 4b and 4c all allow for the collection of food waste as a separate waste stream: and as such give greater recycling/composting performance than Option 2.

Overall the highest recycling/composting performance comes from Options 4a, 4b and 4c.

Option 4c requires the greatest number of collection rounds; Options 4a and 4b require the fewest.

Economic Practicability

DBC undertook some extensive financial modelling and the details are included here as Appendix 1. In summary the results show that:

- The costs of the current operation totaled some £1,764,008 per annum net: as stated, this model was no longer tenable, since the cardboard needed to be removed from the compostable waste stream.
- The costs of the options where paper/card and glass were collected as separate waste streams, with plastics and metals collected co-mingled and then separated at DBC's 'mini-MRF' all meant an increase in costs and were as follows:
 - Option 2: cost of £2,001,078 net per annum;
 - Option 3a: cost of £2,450,185 net per annum;
 - Option 3b: cost of £2,294,025 net per annum; and
 - Option 3c: cost of £2,137,865 net per annum.
- The costs of the options for either collecting dry recyclables on a two-stream basis (with paper collected separately) or a fully co-mingled basis all meant a reduction in costs and were as follows:
 - Option 4a: cost of £1,417,905 net per annum;
 - Option 4b: cost of £1,510,705 net per annum;
 - Option 4c: cost of £1,554,325 net per annum; and
 - Option 4d: cost of £907,075 net per annum.



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It should be noted, however, that the main reason for the costs of Option 4d being so low is that it relies upon a transfer of costs so that the public pays for garden waste collections (generating income of £375,000 per annum): and the technical practicability of this option had been questioned, as noted above.

Conclusions

The cost of collecting dry recyclable materials so that paper/card and glass are collected as separate waste streams, with plastics and metals collected co-mingled and then separated at DBC's 'mini-MRF' was seen as requiring additional expenditure. To simply collect the current recyclables was modelled as requiring an increase in spend of almost £240,000 per annum; whilst expanding the service to also include separate food waste collections was modelled as requiring an increase in spend of from ca. £374,000 per annum to ca. £686,000 per annum, depending upon the option chosen. Given the need for reducing expenditure overall because of the budgetary position, these options were seen as difficult.

On the other hand, the cost of collecting dry recyclable materials on either a fully co-mingled basis or a two stream basis (with paper collected separately) gives a saving of at least £200,000 per annum compared to current costs.

Within the context of the Council's overall financial position, then, the collection of dry recyclables on either a fully co-mingled basis or a two-stream basis becomes an economic necessity. Options 2, 3a, 3b and 3c were therefore discarded.

Of the options that remain, the lowest costs are for Option 4d: but this is largely because the cost of collecting garden waste has been transferred from public sector sources to the resident. Option 4a is next most economic, followed by Option 4b (almost £100,000 per annum more than Option 4a) and then Option 4c (at almost £150,000 per annum more than Option 4a and ca. £44,000 more than Option 4b).

The technical difficulties associated with Options 4a and 4d have been noted above: and in terms of a test as to which is more technically practicable, these options were also discarded.

Looking at environmental performance, the highest levels of recycling/composting performance come from Options 4a, 4b and 4c; but Option 4c requires more collection vehicles.

Taking technical, economic and environmental performance factors together, then, it is easy to see why DBC chose Option 4b.



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USING THE WRAP ROUTE MAP

With the benefit of now having the WRAP Route Map to hand, the following commentary works its way through the various stages (and uses updated information also – even though in some cases this is akin to working ‘with the benefit of hindsight’).

Step 1

Here DBC should consider the waste collections covered; and the current waste collection system.

The waste collections being covered are Household Waste plus Commercial Waste and Clinical Waste. Clinical Waste is currently collected and disposed of according to the relevant legislation. At the time of writing DBC is still considering collection options for its Commercial Waste service: but, as noted above, currently offers a service for collecting glass, paper and cardboard as separate waste streams: and these (as opposed to plastics and metals) will be the predominant recyclable materials in DBC’s Commercial Waste customer base.

The current waste collection system does collect the four materials (glass, metal, paper and plastic) for recycling: but only glass and paper are collected as separate waste streams.

No additional materials are collected at the kerbside under the current system. Some additional materials (textiles, small electrical appliances) are collected using bring sites (of which there is a network of 27 sites); while a number of other materials can be recycled at HWRC sites operated by Hertfordshire CC.

The WRAP guidance also refers to oil: DBC does not currently collect this material and has no current plans to do so.

The WRAP guidance also refers to the collection of food and garden waste: and the DBC current system collects these waste streams, but as co-mingled rather than two separate waste streams.

The WRAP guidance also refers to the collection of bulky waste and DBC’s system collects this and applies a waste hierarchy promoting reuse and recycling. In particular, wood, plastics, metals and mattresses are extracted for recycling; while white goods are delivered to Hertfordshire CC for treatment and recovery.

The costs and waste composition were known at the time of the review.

Step 2

Here DBC should consider how each waste stream is managed and what waste is recycled.



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Residual household waste is not currently recycled. We understand that Hertfordshire CC is likely to use an Energy from Waste solution for DBC's residual household waste in the future, which will recover energy as well as e.g. metals.

Dry recycle collected is all recycled, except for fines and contaminants. By collecting glass separately the amount of glass going to re-melt is optimised.

Collected food and garden waste is treated for composting. As noted, bulky waste is also recycled where it can be.

Materials from bring sites are (apart from contaminants) also recycled.

Step 3

Step 3 relates to the waste hierarchy: which has been applied throughout the process.

Step 4

At this stage a number of questions are asked in relation to the four dry streams of glass, metal, paper and plastic. Working through these questions:

First, in terms of the current system:

- Does DBC collect glass, metal, paper and plastic for recycling? **Yes**
- Are separate collections in place? **For glass and paper, yes (so likely to be compliant); for other streams, no (so necessity and practicability questions to be answered)**
- Are separate collections necessary to ensure that waste is recycled? **No**
- Is there an approach to separate collection that is technically, environmentally and economically practicable?

Second, in terms of Option 4b:

- Does DBC collect glass, metal, paper and plastic for recycling? **Yes**
- Are separate collections in place? **No**
- Are separate collections necessary to ensure that waste is recycled? **No**
- Is there an approach to separate collection that is technically, environmentally and economically practicable?



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Necessity Test:

Here the quality and quantity of recycling is considered. It should be noted that many of the assessments refer to 2011/12 data since that was the most recent data available at the time of DBC's review: coincidentally, it is a period covered in the most recent WYG report regarding Dry Recycling Performance in the UK (available from WYG's website wyg.com).

In terms of quantity:

- 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).
- 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.
- The number of households in DBC at the time of the review was 60,975. This means that the volume of dry recycling per household was ca. 174 kg per annum, of which ca. 160 kg per annum was collected at the kerbside.
- The highest performers (the top 30) for dry recycling in 2011/12 collected between 229 kg and 310 kg per household per annum at the kerbside, a considerable amount more than collected by DBC's system, as set out in Table 1 overleaf.
- 20 of those top 30 performers collected fully co-mingled dry recyclables, whereas only one of this top 30 (North Somerset) collects on a kerbside-sort basis.
- Conversely (not shown in the table below but noted in WYG's report available via the WYG website) among the bottom 30 performers the reverse is true – 25 out of 30 practice a form of kerbside-sort.
- Further a number of these low-performers (e.g. LB Brent, Ashford, Rother, Eastbourne, Isle of Wight) have since abandoned kerbside-sort and either moved to a fully co-mingled service or to one that collects two-stream (with glass separate, all other materials co-mingled) and report significantly higher capture rates.



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Table 1:
Collection Details for the Top 30 Kerbside Dry Recycling Authorities in 2011/12

Rank	Authority	WYG client	Kerbside Recycling kg/hh/yr	Type	% Co-mingled	Recycling				Refuse			
						Freq.	Wheeled Bins	Sacks/ Other	Kerbside Boxes	Freq.	Wheeled Bins	Sacks/ Other	Communal
1	South Oxfordshire	✓	310	C	100%	F	96%	4%		F	90%	4%	5%
2	Surrey Heath	✓	291	C	100%	F	98%	1%		F	89%	2%	8%
3	Vale of White Horse	✓	282	C	100%	F	97%	3%		F	91%	3%	7%
4	Windsor and		276	O	76%	W	100%			W	85%	5%	10%
5	Lichfield		267	C	100%	F	100%		0%	F	96%	1%	3%
6	Elmbridge	✓	263	C	100%	F	96%		4%	F	88%	4%	8%
7	Mole Valley	✓	263	C	100%	F	85%	16%		F	85%	10%	6%
8	Rochford		261	C	99%	F	99%			F	100%		0%
9	South Kesteven		258	C	100%	F	100%			F	100%		
10	North Somerset	✓	255	S	0%	W			92%	F	83%	8%	8%
11	Castle Point	✓	253	C/g	77%	F		100	100	F		100	
12	Epping Forest	✓	253	C/g	78%	F	5%	95%	95%	F	91%	3%	5%
13	Tamworth		252	C	100%	F	100%			F	100%		
14	Cannock Chase		250	C	100%	F	100%			F	100%		0%
15	Rutland		249	C	100%	F	99%	1%		F	96%	1%	3%
16	Stratford-on-Avon		249	C	100%	F	96%		4%	F	94%	4%	2%
17	South Cambridgeshire		249	C/p	66%	F	100%		0%	F	95%	0%	4%
18	West Oxfordshire	✓	245	O	26%	W	5%		95%	F	94%	1%	5%
19	Basildon	✓	244	C/g	78%	F		93%	98%	W		90%	9%
20	Wychavon		241	C	100%	F	90%	10%	7%	F	90%	7%	3%
21	Huntingdonshire	✓	240	C	100%	F	88%	12%		F	92%	4%	5%
22	Woking	✓	239	C	100%	F	93%	7%		F	86%	4%	10%
23	North Kesteven	✓	238	C	100%	F	99%			F	99%		
24	Mid Sussex		237	C	100%	F	99%			F	99%		
25	South Holland		234	C	100%	W		100		W		100	
26	Caerphilly		232	C	100%	W	71%	1%	27%	W	98%	2%	
27	Charnwood		231	C/g	88%	F	98%	2%	98%	F	98%	2%	



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28	Guildford	✓	231	O	17%	W	8%	9%	83%	F	86%	9%	6%
29	Central Bedfordshire		230	C/g	82%	F	72%	16%	12%	F	91%	5%	4%
30	Spelthorne	✓	229	C	100%	F	94%			F	89%	0%	11%

In terms of volume, then, this evidence makes a clear case on environmentally practicable grounds for moving away from kerbside-sort and toward co-mingling.

To provide a more detailed analysis WYG has also looked at some comparator authorities from the ONS Prospering Southern England group with high recycling performance and who collect on a fully co-mingled basis. The results are set out in Table 2 below.

**Table 2:
Comparators**

Authority	Kg / household 2011/12 net of rejects	Notes
Elmbridge	263	Uses DBC Option 4b for food / dry
Mid Sussex	237	Uses DBC option for dry
Mole Valley	263	Uses DBC Option 4b for food / dry
Rochford	259	Uses DBC option for dry
South Oxfordshire	310	Uses DBC Option 4b for food / dry
Spelthorne	229	Uses DBC Option 4b for food / dry
Surrey Heath	291	Uses DBC Option 4b for food / dry
Vale of White Horse	282	Uses DBC Option 4b for food / dry
Woking	239	Uses DBC Option 4b for food / dry
Average	264	
Dacorum	160	

It should be clear from this analysis that DBC has considered carefully the quantity of dry recycling that would be collected from different systems.

DBC has also considered the quality of the materials recycled: and has arranged for the co-mingled dry recyclables to be processed by Viridor. The documentation for the contract with Viridor states that:

- Viridor will accept all materials which are compliant with an extensive list included in the Specification, including all materials currently collected: and in addition TetraPak and foiled cartons; plastic bags and sacks; plastic laminates; plastic film; and hard plastics.



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- Viridor will carry out quality checks and analysis in accordance with the MRF Code of Practice requirements.
- Viridor would reject materials that are unprocessable, including wet or fire-damaged loads.
- Viridor will provide regular reports to DBC regarding a breakdown of materials received and including an input analysis so that residue levels can be managed.
- Contract performance will comply with DBC's Corporate Environmental Policy.

All of these factors will improve the quantity and quality of the recyclables.

It should be clear that DBC has considered the quality and quantity of recycled material arising most carefully.

Practicability Test:

Here the three areas to be addressed are: is the separate collection of each material stream economically, environmentally or technically impracticable?

Fundamentally, DBC has undertaken the review so as to collect recyclables in the most economic, environmental and technically practical fashion that it can. Indeed, the review was carried out with no fixed ideas as to how recyclables were to be collected – save that the Council wished to:

- In economic terms, use a system which collects waste in a manner which is as economical as possible, while also maintaining high quality.
- Also in economic terms, use a system whereby recycling could be increased in terms of the overall recycling rate and in the range of materials that could be collected at the kerbside and recycled, but at least within the current cost envelope and preferably (given the Council's financial position) at a lower cost than current.
- In environmental terms, increase the recycling rate and reduce the volume of waste going to landfill (working in conjunction with Hertfordshire Waste Partnership).
- In environmental terms, to reduce the number of vehicle passes if possible.
- In terms of technical practicability, to take into account the views of its in-house operators plus advisors and to consider these, taking into account cost and performance as described above.
- In terms of technical practicability, to seek the views of Members and Officers, as well as considering data from other authorities, so that the collection system is practical for residents to use and to participate in as much as possible.



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The results of this process have led to the chosen system being chosen because it is seen as more technically practicable, environmental and economic than other systems.

Clearly, DBC's assessment was carried out almost a year ago. The chosen system has yet to be fully rolled out (this is anticipated for late November 2014); and naturally there have been some changes in costs etc. as the scheme reaches fruition. For the avoidance of doubt regarding the economic necessity of implementing the chosen system, we note the following points:

1. To date the cost of acquiring vehicles for the new system is (marginally) cheaper than budgeted for.
2. To date the cost of containers (wheeled-bins, food waste containers and sacks) is (marginally) cheaper than budgeted for.
3. The cost of treatment of dry recyclables has changed; and this has happened because of changes in the value of recyclable materials which affect all of the options considered. Although these changes have an adverse effect on the chosen option, Option 4b, they also have an adverse effect on the other options.

With regard to point 3 above, we show below that, although these changes affect the figures in Appendix 1, revised figures still show that Option 4b is still more economic than other options which are considered technically practicable as well as delivering higher performance.

In setting out our revised calculations, we note that the Route Map published by WRAP refers to costs and includes a reference to treatment costs: we believe that it is therefore necessary to look at total costs (i.e. waste collection authority costs and waste disposal authority costs) as well as just the costs to DBC.

Our calculations, which re-examine the options involving separate collections for dry recyclables (i.e. Options 2, 3a, 3b and 3c) with the chosen option 4b (effectively with the benefit of hindsight!), are as set out in Table 3: it should be noted that whether one looks at the costs incurred by DBC; the net costs to DBC after contributions from Hertfordshire CC; or our assessment as to total costs, then Option 4a is the lowest cost option.

We are entirely aware that the Route Map states that this assessment should not simply be looking at the cheapest option but should consider costs proportionate to benefits. A key point is that Option 4b offers additional services (food waste collections) to Option 2; and offers a higher diversion rate than all other options. If one looks at the cost of Option 4b compared to Option 3c which is the next lowest cost which offers food waste collection services, the differential in percentage terms is very significant.



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Table 3:
Re-calculation of Costs with Updated Information

Detail	Option 2 £	Option 3a £	Option 3b £	Option 3c £	Option 4b £	Note
Collection Costs	3,398,580	3,827,680	3,671,520	3,515,360	2,351,250	1
Containers	87,125	107,132	107,132	107,132	203,125	2
Recycling income	(574,234)	(574,234)	(574,234)	(574,234)	0	3
Delivery	0	0	0	0	204,160	4
Sub-total	2,911,471	3,360,578	3,204,418	3,048,258	2,758,535	5
Recycling credits	(497,415)	(497,415)	(497,415)	(497,415)	(643,880)	6
AFM model	(285,000)	(285,000)	(285,000)	(285,000)	(285,000)	7
Sub-total	2,129,056	2,578,163	2,422,003	2,265,843	1,829,655	8
HCC savings	24,805	(130,990)	(130,990)	(130,990)	(24,187)	9
Sub-total	2,153,861	2,447,173	2,291,013	2,134,853	1,805,468	

Notes:

1. As per original calculations (although, as noted, vehicle costs for 4b marginally lower than original estimates).
2. As per original calculations (although, as noted, container costs for 4b marginally lower than original estimates).
3. For Options 2, 3a, 3b and 3c this reflects the income received in 2013/14 (£708,498) minus the costs of the mini-MRF (£169,264) plus an additional allowance for the recent increase in glass prices (£35,000 based on an increase of £10 per tonne for 3,500 tonnes). For Option 4b this reflects the actual MRF gate fee of zero cost (Viridor contract).
4. Under Option 4b it is necessary for DBC to deliver the co-mingled dry recyclate to Viridor. We have used WYG's assessment of 274 kg per household (which includes estimated contaminants which would have to be transported) meaning 16,707 tonnes at a rate of £12.22 per tonne.
5. Cost to DBC excluding payments from Hertfordshire CC.



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6. Based upon £40 per tonne and using WYG's assessment for co-mingled collections net of contamination (16,097 tonnes).
7. As per original calculations.
8. Net cost to DBC.
9. Based upon estimated savings over and above the payments made to DBC: we assume a saving of £100 / tonne for dry recycling, £75 / tonne for garden waste and £55 / tonne for either food waste or food waste mixed with garden waste. We have used the following estimates for tonnages (based on kg / household estimates in our 2013 report:
 - a. Dry recycling: 12,435 tonnes for Options 2, 3a, 3b and 3c; 16,097 tonnes for Option 4b.
 - b. Garden waste: 6,951 tonnes for Options 3a, 3b, 3c and 4b.
 - c. Food waste: 4,939 tonnes for Options 3a, 3b, 3c and 4b.
 - d. Food waste mixed with garden waste: 11,585 tonnes for Option 2.

We have then deducted the payments already made under notes 6 and 7 above. The detailed calculation is as follows:

Detail	Option 2	Option 3a	Option 3b	Option 3c	Option 4b
Dry recycling tonnages	12,435	12,435	12,435	12,435	16,097
Saving per tonne £	100	100	100	100	100
Dry recycling saving £	120,435	120,435	120,435	120,435	160,097
Garden waste tonnages		6,951	6,951	6,951	6,951
Saving per tonne £		75	75	75	75
Garden waste saving £		521,325	521,325	521,325	521,325
Food or Food / Garden waste tonnages	11,585	4,939	4,939	4,939	4,939
Saving per tonne £	55	55	55	55	55
Food or Food / Garden waste saving £	637,175	271,645	271,645	271,645	271,645
Total saving £	757,610	913,405	913,405	913,405	953,067
Less payments made £	782,415	782,415	782,415	782,415	928,880
Additional saving £	(24,805)	130,990	130,990	130,990	



NOTE FOR DACORUM BC: TEEP ASSESSMENT

Step 5

At this stage sign-off is required.

Although the original decision made was approved by the Cabinet, and had involved the Head of service and legal representative (as recommended in the guidance published by WRAP) it is felt that this updated assessment should also be formally approved by Cabinet.

Step 6

This note, together with supporting evidence plus relevant detail as the scheme is rolled out, should be retained.

Step 7

DBC should remember that a re-assessment at a suitable point in time should be done, as detailed in the Route Map.

LA/WYG/6.14



Appendix A – Waste Services Task & Finish Group Modelling

Service	1. Current Operation		2. Removal of Cardboard (Alternate weekly collection, food waste in with garden waste, cardboard collected with paper in same containers)		3a. Weekly Food Waste (cardboard collected with paper in same containers)		3b. Weekly Food Waste + suspension of Garden Waste in Winter Months		3c. Weekly Food Waste + monthly collection of Garden Waste + suspension in Winter Months	
	Recycling	Refuse	Recycling	Refuse	Recycling	Refuse	Recycling	Refuse	Recycling	Refuse
Vehicle Type	Recycling Vehicle	RCV	Recycling Vehicle	RCV	Recycling Vehicle with food pod	RCV	Recycling Vehicle with food pod	RCV	Recycling Vehicle with food pod	RCV
Number of rounds	12	12	14	12	14	12	14	12	14	12
Loaders per vehicle	2	2	2	2	3	2	3	2	3	2
Drivers	12	12	14	12	14	12	14	12	14	12
Loaders	24	24	28	24	42	24	42	24	42	24
Cost per vehicle per year (note 1)	£48,250	£57,750	£48,250	£57,750	£55,750	£57,750	£55,750	£57,750	£55,750	£57,750
Average driver costs including on-costs	£31,780	£31,780	£31,780	£31,780	£31,780	£31,780	£31,780	£31,780	£31,780	£31,780
Average loader costs including on-costs	£23,150	£23,150	£23,150	£23,150	£23,150	£23,150	£23,150	£23,150	£23,150	£23,150
Vehicles cost per year	£579,000	£693,000	£675,500	£693,000	£780,500	£693,000	£780,500	£693,000	£780,500	£693,000
Drivers cost per year	£381,360	£381,360	£444,920	£381,360	£444,920	£381,360	£444,920	£381,360	£444,920	£381,360
Loaders cost per year	£555,600	£555,600	£648,200	£555,600	£972,300	£555,600	£972,300	£555,600	£972,300	£555,600
Note 2								(£156,160)		(£312,320)
Total cost per year	£1,515,960	£1,629,960	£1,768,620	£1,629,960	£2,197,720	£1,629,960	£2,197,720	£1,473,800	£2,197,720	£1,317,640
Cost per collection system per year	£3,145,920		£3,398,580		£3,827,680		£3,671,520		£3,515,360	
Containers Note 4	£87,125		£87,125		£107,132		£107,132		£107,132	
Recycling Income Note 3	(£764,942)		(£702,212)		(£702,212)		(£702,212)		(£702,212)	
Recycling Credits	(£419,095)		(£497,415)		(£497,415)		(£497,415)		(£497,415)	
Alternative Financial Model (AFM)	(£285,000)		(£285,000)		(£285,000)		(£285,000)		(£285,000)	
Charged Garden										
Income per collection system per year	(£1,469,037)		(£1,484,627)		(£1,484,627)		(£1,484,627)		(£1,484,627)	
Total per collection system per year	£1,764,008		£2,001,078		£2,450,185		£2,294,025		£2,137,865	
FINANCIAL RANKING	5		6		9		8		7	

Service	4a. Co-mingled (Alternate weekly collection Residual + Food Waste/Recycling + Food Waste, Garden collected fortnightly by 4 crews 8 months a year)		4b. Co-mingled + provision of 3rd wheelie bin		4c. Co-mingled + paper collected separately		4d. Co-mingled + charged Garden Waste	
	Alternate Refuse & Recycling	Garden	Alternate Refuse & Recycling	Garden	Alternate Refuse & Recycling	Garden	Alternate Refuse & Recycling	Garden
Vehicle Type	RCV with food pod	RCV	RCV with food pod	RCV	Twin Pack RCV with food pod	RCV	RCV with food pod	RCV
Number of rounds	12	3	12	3	15	3	12	2
Loaders per vehicle	3	2	3	2	3	2	3	2
Drivers	12	3	12	3	15	3	12	2
Loaders	36	6	36	6	45	6	36	4
Cost per vehicle per year (note 1)	£60,750	£57,750	£60,750	£57,750	£60,750	£57,750	£60,750	£57,750
Average driver costs including on-costs	£31,780	£31,780	£31,780	£31,780	£31,780	£31,780	£31,780	£31,780
Average loader costs including on-costs	£23,150	£23,150	£23,150	£23,150	£23,150	£23,150	£23,150	£23,150
Vehicles cost per year	£729,000	£173,250	£729,000	£173,250	£911,250	£173,250	£729,000	£115,500
Drivers cost per year	£381,360	£95,340	£381,360	£95,340	£476,700	£95,340	£381,360	£63,560
Loaders cost per year	£833,400	£138,900	£833,400	£138,900	£1,041,750	£138,900	£833,400	£92,600
Total cost per year	£1,943,760	£407,490	£1,943,760	£407,490	£2,429,700	£407,490	£1,943,760	£271,660
Cost per collection system per year	£2,351,250		£2,351,250		£2,837,190		£2,215,420	
Containers Note 4	£110,325		£203,125		£110,325		£110,325	
Recycling Income Note 5	(£226,270)		(£226,270)		(£575,790)		(£226,270)	
Recycling Credits Note 5	(£532,400)		(£532,400)		(£532,400)		(£532,400)	
Alternative Financial Model (AFM)	(£285,000)		(£285,000)		(£285,000)		(£285,000)	
Charged Garden Note 6								(£375,000)
Income per collection system per year	(£1,043,670)		(£1,043,670)		(£1,393,190)		(£1,418,670)	
Total per collection system per year	£1,417,905		£1,510,705		£1,554,325		£907,075	
FINANCIAL RANKING	2		3		4		1	

Note 1: Vehicle costs	Capital cost	Annual equiv over 5 year	Repairs	Fuel	Road tax	Insurance	Total annual cost
Refuse Collection Vehicle (RCV)	£150,000	£30,000	£11,000	£14,000	£650	£2,100	£57,750
Recycling Vehicle	£145,000	£29,000	£7,500	£9,000	£650	£2,100	£48,250
Recycling Vehicle with compactor and food pod	£175,000	£35,000	£9,000	£9,000	£650	£2,100	£55,750
Refuse Collection Vehicle (RCV) with food pod	£160,000	£32,000	£12,000	£14,000	£650	£2,100	£60,750

Note 2: Savings in Option 3a from suspending Garden Waste collections in Winter			
Loaders (6 rounds x 2 loaders x 4/12)	4.0	£23,150	£92,600
Drivers (6 rounds x 1 driver x 4/12)	2.0	£31,780	£63,560
TOTAL			£156,160
Note 2: Savings in Option 3c from monthly collection of Garden Waste 8 months a year			
Loaders (6 rounds x 2 loaders x 8/12)/2	4.0	£23,150	£92,600
Drivers (6 rounds x 1 driver x 8/12)/2	2.0	£31,780	£63,560
TOTAL			£156,160

Note 3: Income with Cardboard mixed with Paper	tonnes	£/t	
Income foregone on paper 4,750 tonnes at £105/t	4,750	£105	£498,750
Income generated paper and card mixed at £65/t	6,708	(£65)	(£436,020)
TOTAL RECYCLING INCOME			£62,730
Recycling credits on additional tonnage	1,958	(£40)	(£78,320)
TOTAL RECYCLING CREDITS			(£78,320)

Note 4: Containers	Capital cost	Annual equiv	Annual cost
Current Operation			£87,125
Option 3a: Kerbside and kitchen kaddies (10 years)	£200,075	£20,007	£107,132
Option 4a: Hessian sacks (5 years)	£116,000	£23,200	£110,325
Option 4b: Provision of 3rd wheeled bin (10 years)	£1,160,000	£116,000	£203,125

Note 5: Co-mingled Recycling Income	Option 4a	Option 4c
Current tonnage dry recyclates	10,320	10,320
Improved participation rate	10%	10%
Expected tonnage	11,352	11,352
Cardboard tonnage	1,958	1,958
Total tonnage	13,310	13,310
Paper tonnage		4,750
Total after paper		8,560
Price per tonne	£17	£9
Price per tonne paper		£105
Recycling Income	<u>£226,270</u>	<u>£575,790</u>
Recycling Credit rate	£40	£40
Recycling Credits	<u>£532,400</u>	<u>£532,400</u>

Note 6: Charged Garden Waste	
25% participation on 60,000 households	15,000
£25 per household	£25
	£375,000