



Brentwood Borough Council

TEEP Assessment

October 2014

The Pavilion, Botley Grange Office Campus, Hedge End, Southampton, SO30 2AF

Tel: 02382 022 800

Email: waste.enquiries@wyg.com



Contents

1.0 Introduction	1
2.0 The System Design and Outcomes	2
3.0 Using the WRAP Route Map	4
3.1 Step 1	4
3.2 Step 2	6
3.3 Step 3	6
3.4 Step 4	6
3.5 Necessity Test	7
3.6 Practicability Test.....	13
3.7 Step 5	16

Figures

Figure 1 – Kerbside Dry Recycling kg/household/year	8
---	---

Tables

Table 1 – Average Residual Waste Arisings as a Percentage	5
Table 2 – Collection Details for the Top 30 Kerbside Dry Recycling Authorities in 2011/12	10
Table 3 – Capture Rate for Dry Recycling at the Kerbside for Essex Authorities in 2012/13	11



1.0 INTRODUCTION

- 1.1 Brentwood Borough Council (BBC) collects its dry recyclables and other waste in-house. The collected materials remain the property of BBC; and the co-mingled materials are delivered to the transfer station located at Barleylands, Basildon (operated by Basildon Borough Council) from where they are subsequently transported and treated through a contract between Basildon Borough Council and Biffa, under the terms of which Basildon Borough Council provides transfer facilities, while Biffa provides transport to its MRF and treatment of the materials for recycling. Glass is not included in this co-mingled arrangement; but it is also sent to Barleylands transfer station and thence to Berrymans for recycling.
- 1.2 In designing its services and in agreeing to use the contract between Basildon Borough Council and Biffa, BBC was 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.
- 1.3 BBC was therefore 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 where it can be shown that it is not technically, economically or environmentally practicable (TEEP) to collect separately.
- 1.4 Accordingly, as part of the design of its recycling systems, options for collecting recyclables were considered and tested: although no official guidance as to how this was to be done (in terms of TEEP) was available at the time. As far as separating glass was concerned, this decision fits with Lord de Mauley's letter of October 2013, although this was clearly not available at the time that the current system was chosen.
- 1.5 In late April 2014 WRAP published the Waste Regulations Route Map. WYG was asked by BBC to assess its chosen methodology on the basis of this Route Map; and to re-examine in detail alternative options to the current system: i.e. separate collection of materials for recycling.



2.0 THE SYSTEM DESIGN AND OUTCOMES

2.1 The system that BBC uses is designed to maximise the recycling / composting rate at an affordable cost; and part of the process for ensuring the system is economic is playing to the strengths of its in-house organisation, which include:

- The proximity and economies which flow from the shared transfer station at Barleylands; and
- High productivity from its collection rounds, recently tested using software.

2.2 An additional key factor in BBC's design of system is that funding was received from DCLG which contributed to the current configuration.

2.3 In terms of the recycling / composting rate BBC is an upper quartile performer, being the 80th highest-performing authority in England in 2012/13 (the latest league table available at the time of writing) with an overall rate of 49.05%. In terms of dry recycling it performs particularly well, as discussed in more detail below.

2.4 The design is as follows:

- Residual waste collected weekly in sacks;
- Dry mixed recyclables (DMR) collected weekly, co-mingled but excluding glass, in orange sacks;
- Glass collected fortnightly from kerbside boxes;
- Food waste collected weekly from caddies; and
- Garden waste collected fortnightly from a brown 240-litre wheeled-bin or in bio-sacks, on a chargeable basis.

2.5 The choice of an orange sack means that BBC's dry recyclables can be separately analysed, if required, meaning easier management of contamination (discussed later).

2.6 In terms of volumes collected, in 2013/14 these were (from 32,490 households):

- Overall tonnages of household waste: 28,922 tonnes.
- Residual waste at the kerbside: 13,929 tonnes.
- DMR collected at the kerbside: 8,282 tonnes comprising 6,194 tonnes of co-mingled dry recyclables (including subsequent rejects) and 2,088 tonnes of glass collected separately.
- Compostable waste collected at the kerbside: 1,232 tonnes of food waste and 4,057 tonnes of

NOTE FOR BRENTWOOD BC: TEEP ASSESSMENT



garden waste – total 5,289 tonnes.

2.7 If measured in terms of kg per household for that year, BBC's figures are as follows:

Total household waste: 890 kg

Residual household waste at the kerbside: 429 kg

Dry recycling at the kerbside: 255 kg

2.8 This gives the following outcomes:

- Recycling rate: 32% (including from bring sites etc.)
- Composting rate: 18.3%
- Combined recycling / composting rate: 50.3%



3.0 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.

3.1 Step 1

- 3.1.1 Here BBC should consider the waste collections covered; and the current waste collection system.
- 3.1.2 The waste collections being covered are household waste. The current waste collection system does collect the four materials (glass, metal, paper and plastic) for recycling; but only glass is collected as a separate waste stream.
- 3.1.3 Bring sites continue to be used to collect additional materials in the form of textiles as well as for collecting glass and collecting other dry recyclables.
- 3.1.4 The published guidance also refers to the collection of food and garden waste: the system collects these on a separate basis.
- 3.1.5 The published guidance also refers to the collection of bulky waste and the system collects this on a weekly, chargeable basis; and applies a waste hierarchy promoting reuse and recycling.
- 3.1.6 Commercial waste is also collected by BBC: and recycling services are offered to commercial customers. In 2013/14 some 418 tonnes (21.3%) of the 1,992 tonnes of commercial waste collected were recycled; and this was collected in two ways:
 - Co-mingled from sacks and from wheeled containers (as per household waste); and
 - Glass collected separately.



3.1.7 Average arisings as a percentage for residual waste – summary extract from a waste composition audit undertaken for the Essex Waste Partnership (July 2012 – July 2014):

	%
Paper & Card	14.0
Plastics	14.9
Textiles	4.0
Misc. Combustible	14.3
Misc. Non Combustible	4.7
Glass	2.6
Ferrous Metals	1.3
Non-Ferrous Metals	1.8
Putrescible	38.4
Misc.	4.0

Table 1 – Average residual waste arisings as a %-attributed to BBC

3.1.8 Analysis of waste collected, and respective tonnages, for 2013/14 can be found in *Appendix 1*. An example of Gravimetric data for DMR is attached for the month of August 2014-see *Appendix 2*.

3.1.9 BBC’s contract, with Basildon Borough Council, for the disposal of its DMR will end 30.04.15. BBC are currently entering into a joint procurement exercise with Basildon Borough Council and two other Local Authorities. See *Appendix 3* for a copy of the current contract.

3.1.10 BBCs contract with Basildon Borough Council for the storage at Barleylands and collection of mixed glass by Berryman’s has been extended until 2017.

3.1.11 BBC are instructed by the WDA as to where food and garden waste is delivered.

3.1.12 See *Appendix 4* for an extract of Members meeting minutes and decisions, with reference to BBC’s waste collection services.

3.1.13 See *Appendix 5* for a summary of the income and expenditure for waste and recycling, 2013/14.



3.2 Step 2

- 3.2.1 Here BBC should consider how each waste stream is managed and what waste is recycled.
- 3.2.2 Residual household waste is not currently recycled: but there will be recovery and some recycling through the new MBT facility at Basildon (run on behalf of Essex County Council, the Waste Disposal Authority for BBC).
- 3.2.3 Dry recycle collected is all recycled, except for fines and contaminants. The documentation which covers the contract between Basildon BC and Biffa sets out detailed processes that are followed to determine the make-up of the recycle and managing contamination. There is a requirement that at least 95% of the material is recycled: and there has never been a problem in achieving this outcome. Refer to *Appendix 6* for the product Destination List for July/August 2014.
- 3.2.4 The collection of glass as a separate stream optimises the amount of glass being sent for re-melt (as opposed to being sent for aggregate). The glass is either colour-separated by Berryman's or exported to Europe as mixed glass.
- 3.2.5 Food waste is treated through in-vessel composting and garden waste is also composted. Bulky waste is also reused where it can be.
- 3.2.6 Materials from bring sites, including glass, are (apart from contaminants) also recycled.

3.3 Step 3

- 3.3.1 Step 3 relates to the waste hierarchy: which has been applied throughout the decision-making process regarding the selection of recycling methodology.

3.4 Step 4

- 3.4.1 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:
- Does BBC collect glass, metal, paper and plastic for recycling? Yes
 - Are separate collections in place? Yes for glass (so likely to be compliant). No for other materials (so necessity and practicability questions to be answered)



- Are separate collections necessary to ensure that waste is recycled and to facilitate or improve recovery? No – waste collected for recycling is (apart from contaminants etc.) recycled
- Is there an approach to separate collection that is technically, environmentally and economically practicable? Addressed in the following tests.

3.5 Necessity test

Here the quality and quantity of recycling is considered.

3.5.1 In terms of quality, the contract documentation requires that at least 98% of collected material shall be recycled: and as stated this has never been a problem throughout the duration of the contract. Further, the contractor is required to set out in their tender the methodology to be used so that good quality recyclables result from the process; and this information is then incorporated into the contract.

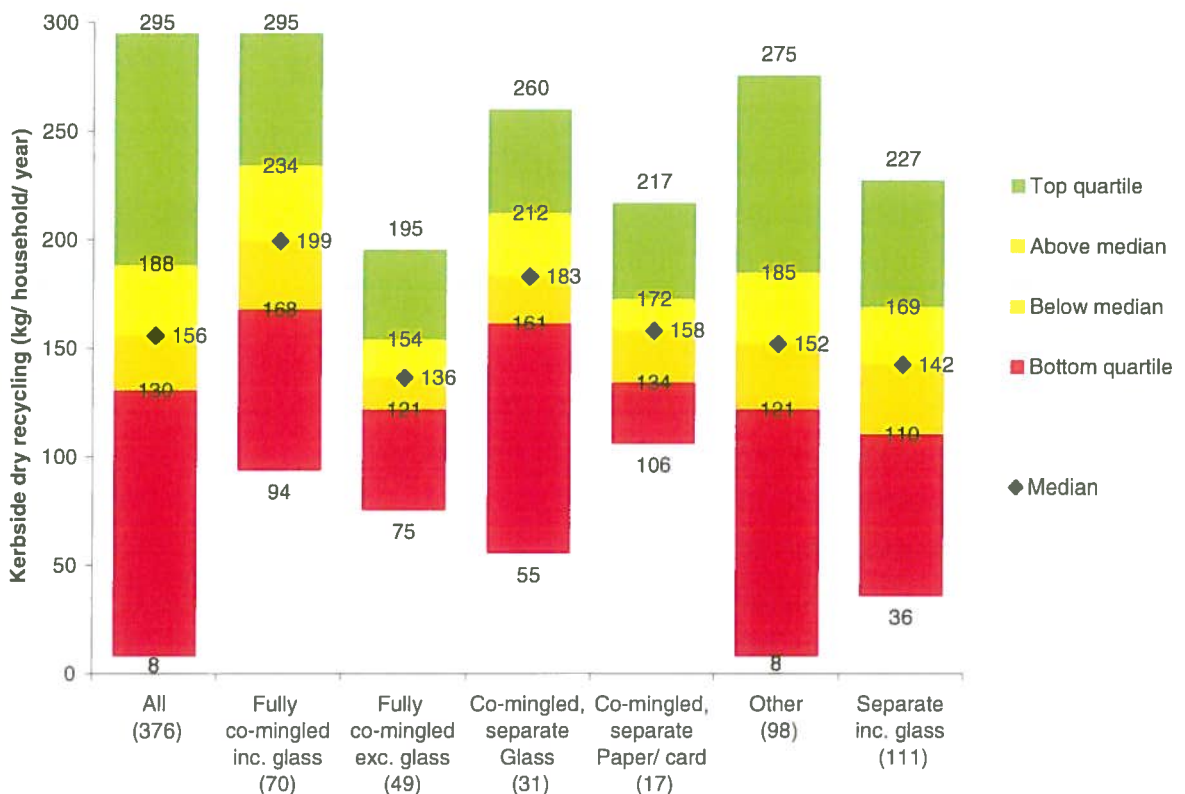
3.5.2 The minimum range of materials required to be accepted through the treatment contract is as per the following list:

- Newspaper, magazines, (EWC 20 01 01)
- Shredded paper (EWC 20 01 01)
- Office paper, white and coloured (EWC 20 01 01)
- Other paper including clean paper bags (EWC 20 01 01)
- Greeting cards (EWC 20 01 01)
- Envelopes including window type (EWC 20 01 01)
- Telephone directories inc. Yellow Pages and other catalogues (EWC 20 01 01)
- Wrapping paper (EWC 20 01 01)
- Junk mail (EWC 20 01 01)
- Cardboard (EWC 20 01 01)
- Egg boxes card based (EWC 20 01 01)
- Cans (steel and aluminium) (EWC 20 01 40)
- Aluminium foil (EWC 20 01 40)
- Aerosols (EWC 20 01 40)
- Plastic Bottles (EWC 20 01 39)
- Mixed Plastics (EWC 20 01 39)



- 3.5.3 This is an extensive range: but in addition to these minimum requirements the system actually also accepts such items as: hard and soft-back books; Tetrapak cartons; bubble/heat shrink wrap packaging; and metal screw tops / beer bottle tops. This is a very wide range of materials and it would be difficult to collect such a range without some degree of co-mingling and subsequent treatment through a facility with advanced sorting processes.
- 3.5.4 Finally, in terms of quality (but also in relation to quantity) it should be noted that of the co-mingled collected recycle only 164 tonnes (2.7%) was not recycled.
- 3.5.5 In terms of quantity, there is a good deal of evidence which shows that the chosen methodology recycles much more than could be achieved with separate collections.
- 3.5.6 Nationally, if one looks at the higher performers, then the highest performer is for a fully co-mingled service (295 kg per household per annum) with a two-stream service collecting glass separately achieving 260 kg per household per annum. This position does not just hold for the highest performers: it is also true at all quartiles, as shown in Figure 1 below (showing 2010/11 figures):

Figure 1





3.5.7 The 2011/12 figures tell a similar story which supports BBC's choice of system. Table 2 overleaf shows that 20 of the top 30 performers collect fully co-mingled dry recyclables, and five collect on a two-stream basis collecting glass separately: whereas only one of this top 30 (North Somerset) collects on a kerbside-sort basis. See *Appendix 7* for the full WYG report: Review of Kerbside Recycling Collection Schemes in the UK in 2011/12.

NOTE FOR BRENTWOOD BC: TEEP ASSESSMENT



Table 2: 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 Maidenhead		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%	
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%

NOTE FOR BRENTWOOD BC: TEEP ASSESSMENT



- 3.5.8 Conversely (as noted in WYG's report – *Appendix 5*) among the bottom 30 performers the reverse is true – 25 out of 30 practice a form of kerbside-sort. It is worth noting also that a number of these bottom performers have since moved to either a two-stream or fully co-mingled system (e.g. Ashford, LB Brent, Eastbourne, Isle of Wight, Rother and Wealden) have since abandoned kerbside-sort and report significantly higher capture rates.
- 3.5.9 In terms of volume, then, the argument runs in favour of moving away from kerbside-sort and toward some degree of co-mingling, either as a two-stream service or a fully co-mingled service.
- 3.5.10 Additionally, a pattern whereby higher capture results from either fully co-mingled or two-stream systems can be seen in Table 3 below, which looks at the capture rate at the kerbside for Essex authorities in 2012/13, net of contamination and rejects.

Table 3: Capture rate for dry recycling at the kerbside for Essex authorities in 2012/13

Authority	Kg / household	Collection system for Dry Recyclables	Notes
Epping Forest	250	Two-stream: glass separate	Sack for DMR, fortnightly
Castle Point	249	Two-stream: glass separate	Sack for DMR, fortnightly
Rochford	243	Co-mingled	W/bin for DMR, fortnightly
Uttlesford	243	Co-mingled	W/bin for DMR, fortnightly
Basildon	233	Two-stream: glass separate	Sack for DMR, weekly
Brentwood	231	Two-stream: glass separate	Sack for DMR, weekly
Harlow	210	Co-mingled	W/bin for DMR, fortnightly
Chelmsford	178	Kerbside sort	Weekly
Maldon	176	Three-stream	Weekly
Colchester	165	Kerbside sort	Weekly
Braintree	162	Co-mingled but glass not collected	Sack collection fortnightly*
Tendring	100	Kerbside sort but glass not collected	Weekly*

* We do not have full figures for Tendring; but in the case of Braintree, if glass collected at bring sites is added, the figure rises to ca. 210 kg / household / year.



3.5.11 There is a lot of evidence to show that the key factors in determining the volumes of dry recyclables collected are:

- (a) choice of system for collecting dry recyclables,
- (b) type of residual waste service and
- (c) the degree of affluence.

3.5.12 In Essex the highest performers collect recyclables on either two-stream or fully co-mingled basis, with more affluent districts as well as those with fortnightly residual waste collections at the higher end of the spectrum for weight of recyclables collected per household. In 2012/13 BBC collected some 231 kg / household at the kerbside net of contamination and rejects (245 kg / household in 2013/14) and this is significantly more than any other Essex authority collecting on a kerbside-sort basis.

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



3.6 Practicability test

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

- 3.6.1 It should be clear from the analysis above that the chosen system is more environmentally practicable: it recycles significantly more than a system which collects material streams separately.
- 3.6.2 There is also an economic benefit to recycling at this level: both to BBC in terms of recycling credits and additional payments in terms of the overall recycling / composting rate; as well as to the disposal authority Essex CC over and above the payments made to BBC.
- 3.6.3 As part of this TEEP assessment WYG has undertaken an assessment of what costs might be if the materials were collected separately. Under such a scenario, we assume glass will be collected as present; and that residents would separate out paper and card as one stream and cans & plastic as the other.
- 3.6.4 In such a scenario the volume of dry recyclables collected at the kerbside would drop sharply (as can be seen from the table above); and to maintain any sort of volume we are sure that weekly collections of dry recyclables would continue (which is the case at e.g. Maldon and Chelmsford).
- 3.6.5 As stated BBC collected 231 kg per household in 2012/13 (and 245 kg / household in 2013/14) but Chelmsford collected just 178 kg per household per annum in 2012/13; and Chelmsford (like Brentwood) collects residual waste weekly. Maldon collected just 176 kg per household per annum: and Maldon (like Brentwood) collects residual waste weekly from sacks, collects food waste separately on a weekly basis and collects garden waste fortnightly on a chargeable basis.
- 3.6.6 Looking at other characteristics, Brentwood is in the 'Prospering Southern England' group with an Index of Multiple Deprivation score (IMD) of 9.62. Chelmsford is also in the 'Prospering Southern England' group with an IMD of 9.57 (very similar to Brentwood). Maldon is a 'Prospering Smaller Town with an IMD' of 12.66. On that basis Brentwood is more similar to Chelmsford.
- 3.6.7 Looking at 'Prospering' UK authorities with weekly residual waste and weekly dry recycling collections which collect the dry materials as separate streams, we can find only two other examples: Bath & North East Somerset (capture rate of 180 kg per household per annum in 2012/13) and Oadby & Wigston (capture rate of 186 kg per household per annum in 2012/13).



- 3.6.8 The average across the three benchmarks (i.e. excluding Maldon) is 181 kg per household per annum.
- 3.6.9 We believe, therefore, that a reasonable assumption would be that if BBC collected on a separate stream basis then BBC's capture at the kerbside would be 181 kg for dry recyclables.
- 3.6.10 In BBC, DMR which is co-mingled in orange sacks is currently co-collected with food waste using a Duo RCV (i.e. with a pod for the food waste); whilst glass is collected as a separate stream using a RCV and utilizing a slave bin.
- 3.6.11 The DMR and food are collected with four rounds, each comprising a driver with two loaders: this is a pass-rate of almost 1,605 properties per day, which is good productivity. Glass is collected with just one round: meaning a pass-rate of over 3,200 properties per day which is very high productivity. In terms of tonnages collected and based upon figures from the first quarter of 2014/15, the DMR / food rounds collect (on average) some tonnes of 6.12 DMR and 0.98 tonnes of food per day; whilst the glass round collects (on average) some 7.78 tonnes of glass per day. High productivity is facilitated by the tipping arrangements which flow from these tonnages and the location of the tipping facilities.
- 3.6.12 Interestingly Maldon (which uses a private contractor) collects at a significantly lower productivity rate (1,082 properties per day) when collecting dry recycling and collecting the streams separately: and they have three loaders per round to deal with the glass. On the basis of this benchmark it is not unreasonable to assume that, to collect a decent volume of dry recyclables on a source separated basis as described would require six rounds in Brentwood, each with a driver and three loaders; plus a separate resource of four rounds (driver plus two) collecting food waste using a smaller (e.g. 7.5 tonne) vehicle.



3.6.13 The Basildon contract with Biffa is extremely financially advantageous to the Council currently: but not at a sustainable price level. We have therefore used current market prices.

Cost for current system (2015/16): collect dry recycling on a co-mingled basis plus food waste using current methodology

	£	£
• 5 drivers @ £30,303		151,515
• 10 loaders @ £26,667		266,670
• 5 x RCVs @ £73,000		365,000
• Basildon gate fee/Haulage		<u>173,000</u>
• Sub-total		956,185
• Income:		
• Glass @ £20/t	42,000	
• IAA funding	364,896	
• Recycling Credit @ £62.51	<u>486,015</u>	<u>892,911</u>
Net Cost		63,274

Cost for new system, collect dry recycling keeping streams separate plus food waste

• 9 drivers @ £30,303		272,727
• 18 loaders @ £26,667		480,006
• 9 x RCVs @ £73,000		<u>657,000</u>
• Sub-total		1,409,733
• Income:		
• Glass @ £20/t	42,000	
• Paper @ £50/t	160,000	
• Card @ £50/t	25,000	
• Cans/Plastics @ £35/t	35,000	
• IAA funding	364,896	
• Recycling Credit @ £62.51	<u>425,068</u>	<u>1,051,964</u>
Net Cost		357,769



3.6.14 This differential in cost is high in percentage terms: but is significant in just absolute terms. To change systems would cost BBC over £400,000 more per annum in revenue costs: and our assessment above does not take into account:

- Any one-off costs of change in terms of publicity etc.
- Any one-off or on-going costs in terms of different containers
- The cost of constructing a storage facility for the separately collected recyclables
- Any running cost for this storage facility including for loading etc.
- Any management overheads (which would typically be pro rata).

3.6.15 NB these costs are just net costs to BBC: there are further savings to Essex CC over and above the recycling credits for the additional volumes diverted from residual waste: we estimate those further savings at ca. £60,000 per annum

3.6.16 Taking into account the higher level of recycling and the relative costs as noted above, it should be clear that the current system has been chosen by BBC because it would not be technically practicable, environmentally practicable and economically practicable to undertake separate collections of metal, paper and plastic.

3.7 Step 5

At this stage sign-off is required: the Route Map recommends this involves sign-off by both the service head and legal services.

3.7.1 We recommend that this assessment should be formally approved by those Officers and the appropriate Council Committee; and retained as a formal record.

3.7.2 In terms of a review (Step 6 in the Route Map), we believe that this TEEP test is appropriate for the new treatment contract BBC is entering into (a framework contract, facilitated by Basildon BC, starting in May 2015); but a review should take place just prior to the end of that contract (expected to be May 2019) or whenever waste services are generally reviewed, whichever is the earlier.

LA/WYG/10.14