



Route Map for the Revised Waste Framework Directive

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Introduction and Rationale

Regulation background

Revisions to the Waste Framework Directive (WFD) require assessments of current waste collection services against the waste hierarchy for all waste streams (regulation 12) and source segregation collection methodologies for glass, metal, paper and plastic, the four key materials types (regulation 13). In the absence of any case law and formal governance guidance, a Waste Regulations Route Map was produced by a working group of members including the Waste and Resources Action Programme (WRAP). The Route Map forms the basis for tackling the recent legislative changes, by offering guidance on assessments in the form of a step by step guide, with 'tests' to determine the likelihood of meeting the regulation requirements. The assessments are required to be undertaken by each local authority, using specific data relating to current services.

Route Map Overview

Steps 1 and 2 are background information to set the scene of the current service. Step 3 covers regulation 12 for the waste hierarchy, and step 4 covers regulation 13 for source segregation tests (necessity and practicability tests). Steps 5 to 7 are post assessment, involving sign off, evidence retention and re-evaluation.

Step 1 – Review what materials are collected and how

The Council collect waste via the kerbside, bring sites and through Household Waste Recycling Centres (HWRCs). As the number of households is constantly changing, the figure used by Waste Data Flow of 111,910 households for 2013/14 is used consistently throughout the assessment, and 2013/14 tonnage, as the most recent full year, has been used for analysis, except where stated.

Waste collection tonnages

Kerbside waste collection is contracted out to Biffa Municipal Ltd, via two contracts for the north and south with dates of 04/10/2004 to 31/03/2019 and 01/04/2007 to 31/03/2019 respectively. Table 1 shows the full complement of waste collected at the kerbside.

The Council commissioned a compositional waste study of the kerbside residual waste stream in November 2011, carried out by Resource Futures, the results of which are shown in Table 2. This data is the most recent and therefore it is being used in preference to generalised national compositional data, which is also shown. It should be noted that there have been some service changes since the composition study was carried out including the introduction of a separate kerbside collection of small waste electrical and electronic equipment (WEEE), batteries and textiles, and the removal of textiles from the co-mingled dry recycling scheme, therefore the tonnages of these materials in the residual waste stream should have decreased. Data from national estimates are included for comparison. The data indicates that Central Bedfordshire is diverting more than the national average of paper, card, plastics, metals and food from the residual waste stream.

Table 3 shows waste collected through the network of glass bring banks by Biffa, textiles and shoes collected by various charities, and the full range of materials collected at Central Bedfordshire's 4 HWRCs. The Council collects container glass through a network of more than 100 bring banks. In addition, there are charity banks collecting textiles and shoes, operating independently of the Council. Bring bank and kerbside glass is collected together, therefore separate tonnages cannot be derived.

A summary of all collected material is provided in Table 4.

Cost of collection

As all services for kerbside waste collection, bring banks and HWRCs are contracted out, it is not possible to break down the cost to individual waste streams, apart from food waste that was added to the kerbside collection contract after it began, and the bring bank service that is itemised. In addition, the glass collection is itemised separately as kerbside collection is only provided to a limited number of households.

2013/14 headline costs of the kerbside collection, street cleansing and fly tipping collection service are provided in Table 5, and costs of bring sites in Table 6. There have not been any significant changes to expenditure and income since this time.

The 4 HWRCs are currently contracted to Viridor, which includes the disposal of paint, hazardous chemicals, tyres, garden waste, wood, plasterboard and rubble. From 1st April 2015, Amey will hold the contract. The cost of managing the HWRCs includes container management, and onward haulage and disposal of all waste streams excluding green waste and residual waste.

Collection Contracts

Dry Recycling

The original orange sack (recycling) scheme was introduced to Mid Bedfordshire residents in 1996/7. Shanks Materials Recycling Facility (MRF) and Waste Transfer Station were built by Bedfordshire County Council under a PFI to handle waste from Bedfordshire.

The Council operates two separate waste collection contracts, with some variation between them, inherited from two legacy collection authorities. It has been a long-term aspiration, since the formation of the unitary council to harmonise them, in order to facilitate cross-border working, and enable financial savings, in addition to maintaining resident satisfaction when comparing the service within the district.

The Council has always collected recycling co-mingled, and has gradually added other materials to the existing range as the opportunities have arisen. Decisions were made to extend the range of materials collected, in order to increase recycling rates, instigated by Bedfordshire County Council¹. The service has evolved over the past 10 years, without any dramatic changes or challenges, and therefore other collection methods have not been considered.

The addition of glass to kerbside collection was being discussed by Bedfordshire County Council in 2008², with the assumption that separate collection vehicles would be needed, and by the Council in 2011³, but it was recognised that there were potential issues with co-mingling glass and paper. The discussions were not taken any further. The procurement for treatment and disposal of kerbside recycling in 2013 included co-mingled glass as an option but pricing from tenderers discounted this as an option.

Glass

Separate kerbside glass collections were trialled to some households in the rural villages of South Bedfordshire in 2003. Although these collection rounds have continued, with good yields, the prohibitively high cost has been considered a barrier to rolling it out to all properties across Central Bedfordshire. The Council owns 1 glass vehicle for this purpose.

Food waste

¹ BCC Materials Recycling Options (28.05.08)

² BCC Environmental Services Overview & Scrutiny (15.04.08)

³ CBC Sustainable Communities Overview & Scrutiny (13.09.11)

The food waste collection service began in 2007 as a WRAP-funded trial of 6,000 households, which was extended to the remainder of households in the former Mid-Bedfordshire area by the end of 2008. There are plans to extend food waste collections to the south of the district in 2017/18.

Decision to change vehicles in north, April 2012 - (Evidence – Vehicle Options Executive Paper)

In April 2012⁴, the former split-back collection vehicles used to collect dry recycling garden waste with a 70:30 split, were replaced with separate refuse collection vehicles (RCVs) for collecting each material in separate vehicles. The future treatment of food and garden waste was uncertain, and there were inefficiencies in collecting the 2 materials in the same vehicle as they filled up at different rates due to the seasonality of green waste, and had to be tipped when the other side was not full. There was no change to the waste streams collected, as the treatment contracts (MRF and composting), were already in place, and it allowed for working across both contracts and the potential harmonisation of the two collection schemes in the future. Financial and resource requirement modelling was carried out for the different collection options, using current quotes for required vehicles. Separate collection was not considered as an alternative option because there was already a treatment/MRF contract in place. There was no legal requirement at the time, and no clear guidance about the necessity of changing collections.

Step 2 – Appraise how collected materials are managed

Kerbside dry recycling is bulked at Shanks' Elstow Waste Transfer Station. Some of the recyclate is hand-sorted at the Elstow MRF. The recycling sorted at Shanks is sent onwards to secondary MRFs for further sorting, or direct to re-processors. The majority of dry recycling is bulked at Shanks and taken to Viridor's Milton Keynes MRF, where it is sorted using manual and automated processes, and then sent to reprocessors, or secondary MRFs for further sorting.

Clinical waste is collected by Biffa and bulked at Bedford Borough Council's Waste Transfer Station, where it is combined with their clinical waste, before being incinerated at Veolia incinerator. Kerbside green waste collected from the north and south of Central Bedfordshire is composted using open windrows at Material Change and Heathcote Farms composting facilities. Bulky waste collected from the kerbside is processed through the HWRCs, and so has the same outlets.

Kerbside and bring site glass is collected by Biffa and bulked at a Waste Transfer Station in Houghton Regis, then sent onwards to Viridor's glass processing facility in Sheffield. Table 8 shows that there is no charge for the treatment of both bring site glass and charity textile and shoe collections.

Table 7 shows the full range of material collected at the kerbside and the cost of disposal or treatment. Dry recycling generates a good fixed income. Both Viridor and Shanks MRFs are responsible for selling the Council's recyclate, and end markets vary over time due to demand and income. The collection of small WEEE, batteries and textiles was added to the kerbside waste collection service across Central Bedfordshire in July 2014, and is provided cost-neutral to the Council by Biffa Municipal Ltd, therefore there is no income or gate fee. Textiles were removed from the dry recycling stream in 2014 due to a low quality output and a lack of demand for the material.

⁴ 120418 Vehicle Options Paper April 2012

The most up to date end processors and total annual cost are provided in Table 9 for all HWRC material.

Current treatment and disposal contracts

The Council has contracts for treatment and disposal of the waste it collects.

- Dry recycling
The current recycling disposal contract commenced in January 2013, and secured outlets for material already being collected, which had a value, and was known to be generated by households. Options including and excluding glass were submitted, and the option excluding glass was chosen due to a better income. The length of contract was to achieve best value at a time when the recycling market was buoyant whilst allowing opportunity to change in the future if required⁵. It also took into account treating the waste in the best way by pushing it as high up the hierarchy as was financially and practically feasible. It secured an income for recycle, an improvement on the gate fee that the Council was paying on the previous contract.
- Garden waste
The free of charge garden waste collection service started in 2001 in the former Mid Bedfordshire district and 2007 in the former South Bedfordshire district. Garden waste is composted in open windrows, and utilises two local on farm composting sites to minimise time, expense and environmental impact of haulage. New contracts are due to begin 1st April 2015, using the same process, and similar local sites.
- Residual
Residual waste in the north is sent via Shanks' Elstow waste transfer station to Shanks' Mechanical Biological Treatment (MBT) plant in Frog Island. The resulting RDF is used by cement kilns in the UK where possible but otherwise sent to energy from waste (EfW) in Rotterdam. Contractually, the Council must send a minimum of 31,200 combined of residual waste and recycling to Shanks to be bulked. Residual waste in the south is sent to FCC's dirty MRF in Bletchley, achieving additional recycling, with solid recovered fuel (SRF) sent to EfW in Rotterdam.

Step 3 – Apply the waste hierarchy to materials to assess options (Regulation 12)

Regulation 12 (the requirements of which are already law) places no restriction on the types of waste to which the hierarchy should be applied, therefore the waste hierarchy is applied to each type of material collected, whether it is currently separated for recycling, or collected as part of the residual waste stream.

Although compliance with the hierarchy is not optional, departure from it is allowed when the measures that would be required would not be “reasonable in the circumstances”, or where departure will “achieve the best overall environmental outcome where this is justified by life-cycle thinking on the overall impacts of the generation and management of the waste”. Table 10 indicates how materials are currently treated in line with the waste hierarchy, actions already taken in an attempt to further move materials up the hierarchy, and highlights any areas with potential for moving materials up the hierarchy in the future. Some materials such as flat glass have potential to move up the waste hierarchy, by collecting it separately at the HWRCs, although it is not currently due to available space at the sites. Some materials have actions to investigate or implement.

⁵ Central Bedfordshire Council Executive Report: Recycling. (03.07.12)

Communications campaigns

During 2013/14 waste collection services were supported by communications campaigns to push waste up the hierarchy, totalling more than £7,000. These campaigns included:

- Waste Prevention – promoting real nappies, Love Food Hate Waste, and residual waste over Christmas;
- Increasing recycling – promoting home composting, and the use of the garden waste, food waste and dry recycling collection schemes.

In 2014/15 communications campaigns have so far targeted recycling food waste, and decreasing dry recycling contamination, to increase the diversion of waste from landfill and recovery. Communications were sent out in March 2014 to promote textiles being removed from the co-mingled recycling. Further communications followed in July 2014 in the form of separate kerbside collections of WEEE, textiles and batteries. There have been further communications regarding dry recycling contamination in September 2014 and March 2015.

Step 4 – Apply the Necessity and TEEP tests to paper, plastic, glass and metal collections (Regulation 13)

Regulation 13 places requirements to separately collect glass, metal, paper and plastic (the 4 materials) unless doing so fails to meet the Necessity and Practicability tests. The law now states that separate collections is the default option, and co-mingling is only permissible if separate collection is either not necessary or not practicable.

The Necessity Test

This test will determine if it is necessary to collect the glass, metal, and plastic separately, in order to ‘facilitate or improve recovery’ (as written in the WFD, although not defined). It is suggested that this is to achieve the aim of increasing recycling and accomplishing ‘high quality’.

In order to assess the necessity of collecting the 4 materials separately, it is necessary to compare the quantity of recycling yields from current collections with those from separate collections and the potential yields (i.e. material available in the residual waste stream to divert to the recycling stream), and the quality of recycling against a benchmark of ‘high quality’. The only recycling collection that the Council, and its legacy authorities, has operated is co-mingled. It is therefore not possible to compare the recycling from the current co-mingled recycling with actual data for a previous source-separated system, and so proxy data from other local authorities is used for recycling yields.

Quantity

Local authorities with common characteristics with Central Bedfordshire were selected based on their categorisation as ‘Prospering Smaller Towns’, their Office of National Statistics (ONS) classification, and their rural/deprivation index, ‘Predominantly Rural, lower deprivation’, operating fortnightly residual and recycling collections, and collecting a similar range of materials. The yields of glass, metal cans, paper, card, plastic bottles and mixed plastics for two different collection methods: two-stream with glass collected separately and kerbside sort were collated using WRAP’s Local Authority Waste and Recycling Information Portal.

The highest performing authorities for all collection methods of the similar ONS classification and rural/deprivation index are displayed in Table 11, indicating that Central Bedfordshire is performing well, in all material categories, with scope for improvement for glass collection.

(NB These figures are for 2012/13, the most recent year available and show gross weight before any rejects are removed).

The average net yield (minus process rejects and losses) for each material and each collection method was used to derive potential yields for Central Bedfordshire for each collection methods. It has been assumed that the yield of each constituent part (e.g. high density polyethylene (HDPE), plastic bottles) of a category will change by the same amount. The potential yields are displayed in Table 12, and demonstrate that the current co-mingled collection yields higher tonnages for every material category than either two-stream or kerbside sort systems, except glass. To start collecting glass from the kerbside would inevitably increase the yield, either by separate collection or co-mingled with other materials. Kerbside collections yield higher tonnages than bring sites in general. Collecting glass from the bring sites only is unlikely to meet the obligations of the Waste Framework Directive as the yield would be too low.

Quality

'High quality' recycling can be defined as meeting the desired/required quality of end markets, with the majority of material going to closed loop processes. Closed loop recycling is where materials are put back into the same or equivalent application substituting for virgin materials⁶. The reject rate of MRFs can be used as an indicator of the quality of input material, but the quality of output material may be more of an indicator of the quality of the MRF and its processes. The Route Map states that a low MRF reject rate cannot be used alone as a measure of quality. The quality of output material and its suitability for end markets provides a better indication of 'high quality'.

The output reject rate of material at any of the MRFs used by the Council represents all materials together, and it is not possible to derive a separate reject rate for each material type. It is therefore assumed that the reject rate is the same for all materials. Central Bedfordshire Council's co-mingled recycling is mixed with that of Bedford Borough, Milton Keynes and other sources, and the sorting is carried out altogether, therefore the quality of the material at the end of the sorting process represents all those who input to the process. The average output reject rate at Viridor's MRF of 10.88% is higher than the average total process losses for two-stream (5.19%) and kerbside sort (2.10%) collections, reflecting the lower quality. It is assumed that Shanks has a similar reject rate. Although all material from Shanks' and Viridor's MRFs are further sorted before being used by reprocessors, it is unlikely that the quality of all the material would ever be as high as source separated materials. There is therefore scope to improve the quality with separate collections.

As sampling at Viridor's MRF indicates that glass is one of the most frequent and prolific contaminants, it can be assumed that when this is collected from all households in Central Bedfordshire, the presence of it in the other material streams will decrease, thereby decreasing the overall contamination of input materials, and increasing its quality. Other options available for collection include co-mingling glass with other recyclates, but this is likely to decrease the quality of other materials sorted at the MRF and reduce the proportion being sent to closed loop recycling. Glass could also lead to damage of equipment. The MRFs currently contracted do not accept glass because they do not have adequate equipment to sort it. There would also be cost-implications, with a large reduction in income from Viridor, which reflects the cost of retro-fitting the MRF, the decreased quality of all materials and the reduction in quality markets for the material. Glass currently sent to Viridor's processing facility in Sheffield achieves 99% recycling, and 80% closed loop recycling. Material not going to cullet is used as aggregate (particles <10mm) and to be made into fibre glass insulation.

⁶ Choosing the right recycling system, WRAP (2009)

Currently a large proportion of paper is re-processed in India and China. This may be an indication that it is of low quality, and does not meet UK reprocessor specifications. A large proportion of Central Bedfordshire's co-mingled material collected is paper and card, therefore this category has a large impact.

Closed loop recycling

Unfortunately, it has not been possible to obtain data that demonstrates the proportion of kerbside recycling collected that goes to closed loop recycling, as a demonstration of 'high quality'. However, it is known that in the past 12 months, none of the loads of recyclate sent to selected reprocessors from the Viridor MRF and further brokers have been rejected to landfill, therefore the output quality is good enough for them to process material. There have been incidents where material has been sorted a second time at the Viridor MRF to improve its quality. It is possible that this recyclate could be of an improved grade and therefore achieve more closed loop recycling.

The Resource Association has created a Recycling Quality Specification with the tolerated contamination for each material (Table 13). Unfortunately, contamination levels of Central Bedfordshire's recycling from reprocessors is not available, so these cannot be compared, although reject rates are in the region of 1.5 – 2%.

Neither the Regulations nor the Route Map dictate if quantity or quality must take priority if separate collections would decrease quality but increase quantity or vice versa. As a result the Practicability Test was applied if an increase in either the quantity or the quality of a material could be improved with separate collections. The results of the Necessity test indicate that a TEEP assessment is required for all materials to increase quality, and for glass to increase quantity.

The Practicability Test

This test, commonly referred to as the TEEP test, will determine if separate collection is **T**echnically, **E**nvironmentally, and **E**conomically **P**racticable.

Two different collection options have been modelled to compare with the current co-mingled collections. Here the two collection methods are described.

Two-stream methodology

Two-stream collections would separate glass from the remaining co-mingled materials. As glass causes, and paper is affected by, the most contamination which affects their quality, two-stream collections with glass separated out have been modelled. It is known that there is little benefit to separating metals or plastics from other materials. To separate out any other material than glass would necessitate co-mingling the glass with other materials, potentially leading to decreased quality, and increasing the mixing of materials. As the default is to collect materials separately, options that involve adding glass to the co-mingled materials have not been modelled.

- **Receptacles**

Separating one material could be done either by using a caddy (44l or 55l) inside existing recycling bins, or using an additional 55l box to be emptied by additional 26t RCVs (the same as the current fleet). Using additional boxes is the current method used to collect glass from households that are in Central Bedfordshire. It can be assumed that current recycling collections are operating at full capacity; therefore additional capacity will be required for the addition of glass to the collection. It is assumed that residents do not require more than an additional 55l capacity per fortnight for the additional material. The associated decrease in

yield of the other materials, as modelled, would compensate for the change in capacity requirements. For this reason, additional boxes are proposed instead of internal caddies. More assisted collections may be required as full boxes are harder to lift than manoeuvring wheeling bins. Communal properties would be provided with 240l bins to collect the material separately.

- Vehicles

Currently 3 glass vehicles are used to empty all glass bring banks and collect glass fortnightly from 13,106 properties, with the equivalent of one vehicle being used for fortnightly kerbside collection. Using current collection round sizes it is therefore assumed that an additional 8 vehicles would be required to collect glass, with 1 driver and 2 loaders, as is currently used for co-mingled collections. These would be added to the existing fleet of 9 recycling vehicles.

- Sorting and bulking facilities

As the co-mingled materials would continue to be sorted at the same MRFs as currently, there would be no need to change the accepted materials in the scheme, or vary the contracts. Glass would be bulked at Shanks or Viridor waste transfer station.

- Communications campaign

A comprehensive communications campaign would be needed to inform residents of a change to their kerbside collections. WRAP recommend a minimum of £1 per household for ongoing communications and £2 per household to advise of a major change⁷. The Council would spend the advised amount, a total of £111,910. Central Bedfordshire Council currently make use of as many free of charge communication methods as possible, and would continue to use this approach.

Kerbside sort

Central Bedfordshire's waste collection contractor, Biffa have provided information on source-separated collections, based on current collections for other local authorities.

- Receptacles and vehicles

Residents would separate recycling into 2 55l plastic boxes in the following way:

Box 1	Box 2
Paper, card and cartons	Aluminium and steel cans, aerosol cans Glass bottles and jars Plastic bottles, pots, tubs and trays, and plastic film.

Although lids or covers have not been considered for the boxes, it is possible that these could increase the quality of recycle by keeping the paper dry.

Materials would be sorted at the kerbside by waste collection staff, with glass being separated by colour, and other materials sub-sorted. Romaquip kerbside vehicles would be used, enabling separation of materials.

- Frequency of collections

Due to the reduced capacity available to households of 110l, compared to the current 240l capacity of bins with co-mingled collections, kerbside sort collections would need to be weekly.

⁷ Improving recycling through effective communications – Planning your Activities, WRAP

- Communications campaign

£2 per household⁸ would be allocated to inform residents of a major change to their waste collections, totalling £223,820.

- Sorting and bulking facilities

All materials would be bulked at either the Shanks or Viridor facilities, according to contractual obligations. There are no clauses in these contracts that allow for compensation following termination; therefore they would need to be varied to allow for bulking the separated material and sorting the remainder of the material. It is likely that some financial compensation would still be required by the MRFs for the loss of income for the material that is bulked and sold by the Council. These costs have not been included in the model. A cost of £5 per tonne has been used for bulking, based on current costs at other facilities.

- End markets

If quality is improved sufficiently, different/more end markets may be identified to accept the material, potentially negating the need to send recyclate overseas, and having more opportunities for local markets. It has been assumed that end markets would be on average 10% closer than currently. One reprocessor has been selected for each material type for simplicity in the environmental modelling. This would reduce the mileage of the vehicles and the carbon emissions. Collection vehicles could direct deliver to the Waste Transfer Station, where recyclate is bulked and delivered to reprocessors.

Effect on residual waste stream

Where separate collections yield lower tonnages than current co-mingled collections, it is assumed that the displaced tonnage is found in the kerbside residual collection, with associated environmental impacts. It is assumed that this quantity will not be large enough to warrant additional residual collection rounds. However, additional residual tonnage will incur an increased cost in disposal via MBT, compared to the current income received for recycling.

Technical Practicability

Rural characteristics

Although Central Bedfordshire is relatively rural, with an ONS urban-rural classification of 5 (defined as 50-80% properties are in rural settlements and larger towns, 61% of Central Bedfordshire residents live in areas classified as rural), there are no technical barriers to separate collections. All local authorities, those with similar geographical characteristics to Central Bedfordshire, used for benchmarking recycling yields operate either two-stream or kerbside sort collections.

Vehicles

The Council currently uses some restricted access vehicles to collect waste and recycling from properties from which it would be impractical to use an RCV for collection. As kerbside/stillage vehicles are more compact than regular RCVs, there is no reason why separate collections would not be technically practicable, than current co-mingled collections which are technically practicable themselves.

Receptacles

Central Bedfordshire has a smaller than average number of households comprising of flats (see the table below), therefore communal collections are less common and storage of collection receptacles inside a property is not a significant issue.

⁸ Ibid.

Central Bedfordshire Council Housing stock⁹

	CBC		England
Detached House	30700	28.2%	22.3
Semi-detached house	36800	33.8%	30.7
Terraced house	27500	25.3%	24.5
Flat/apartment/maisonette	12800	11.7%	22.1
Caravan/mobile/temporary structure	1000	1.0%	0.4

As Central Bedfordshire currently collect from only a small number of communal properties dispersed throughout the district, there is not a suitable separate collection method. In addition, it would not be practical to procure a contract for the processing of a small amount of tonnage.

Although the Council has not operated kerbside sort collections before, there are no reasons why they are not possible. Separate collections therefore pass the technical practicability test for all materials.

Environmental Practicality

Two stream and kerbside sort collection options were modelled, with their associated environmental impacts, measured using CO₂ emissions and CO₂ equivalent.

Methodology

The potential recycling yield tonnages from the Necessity Test were used in the modelling.

Collection

Recycling collection was based on the current weekly mileage accrued. A tool provided by the Council's Corporate Policy Advisor (Climate Change), previously used to calculate CO₂ emissions for NI185 reporting. The tool accounted for the vehicle usage, size and type, as the kerbside sort option uses smaller vehicles. It was assumed that, due to their reduced capacity, kerbside sort vehicles would tip more frequently and the rounds would be smaller, with associated altered mileage. It was assumed that the diversion of recycling to the residual waste stream was not sufficient to require any additional residual vehicles. With both modelled options kerbside glass collection would be provided, therefore the network of bring banks would be removed. The environmental impact of these collections has been subtracted from the modelling.

New containers

The embodied carbon¹⁰ of the new boxes to be provided to each household and, for two stream collections, the embodied carbon of additional 140l bins for communal collection, has also been added.

Haulage

The same NI185 carbon dioxide (CO₂) emissions tool used for collection was also used for haulage.

Due to the large number of secondary MRFs, brokers and reproducers currently used by Viridor and Shanks, and the fact that these change over time, the locations of those used in quarter 1 2014/15 have been used. When modelling the other collection options, it has been

⁹ Central Bedfordshire Council Key Facts and Figures December 2014

¹⁰ From Straight Ltd: <http://www.straight.co.uk/products/kerbside-recycling/ergo-kerbside-box/>

assumed that one reprocessor would be used for each material, and that with an increase in quality, a reprocessor 10% nearer to the MRF could be used. One-way journeys were used for the mileage; vehicle capacity was 15t, based on current haulage, with the required number of trips to a reprocessor with a full load.

Reprocessing

Emission factors¹¹ provided CO₂ equivalent (CO₂e) for recycling. It was assumed that any decrease in recycling tonnage diverted recycling to the residual waste stream, therefore emission factors for MBT with refuse derived fuel were also used. These took into account the energy use of facilities, and the carbon saving by recycling rather than extracting raw materials. It was assumed that bulking material had one third of the CO₂ impact of the full MRF sorting.

Results

Table 14 provides a summary of environmental impacts. The net benefit of recycling is shown by negative numbers. Year 1 has a smaller net CO₂e positive impact due to requirement of receptacles. Both two stream and kerbside sort have high CO₂e emissions due to the number of vehicles and the additional receptacles required. The reduced recycling yields have a smaller net CO₂e benefit, but also associated smaller CO₂e for haulage. Although not modelled, the increase in collection vehicles with the two stream and kerbside sort options would have associated increases in particulate matter (PM10) and NO_x, which would decrease the local air quality, and have negative health impacts on the local population.

The current collection has a net benefit of more than 2.7 million and 2.1 million CO₂e compared to the two stream and kerbside sort options. Separate collections are therefore not considered to be environmentally practicable.

Economic Practicability

Methodology

Vehicles, staff and fuel

The modelling includes replacement of the 9 current collection vehicles in year 5 in the current collection option. The current cost of glass collections via the bring sites has been removed from modelling for both options. The cost of kerbside sort vehicles is offset by the scrap value of the current 9 RCVs used for recycling collection. Kerbside sort vehicles have a higher mpg than current RCVs, therefore the fuel costs are reduced, even though there are more vehicles.

Receptacles

Current ESPO framework costs were used for box costs, and an additional charge added for delivery of boxes by Biffa. In addition, for the kerbside sort option a charge was added for the collecting in of redundant existing bins currently used for co-mingled collection. A cost for disposal has not been added as it is assumed to be cost-neutral. The replacement rate of receptacles has been included for future years, based on other local authorities operating the kerbside sort and two stream systems.

Sorting, processing and haulage

In order to avoid termination costs for both the Viridor and Shanks MRF contracts, these would be varied to accommodate sorting where necessary, and bulking of all other materials. It has not been possible to obtain a cost for this, but it is expected that the Council would

¹¹ Impact of Energy from Waste and Recycling Policy on UK Greenhouse Gas Emissions – DEFRA, January 2006

compensate both Shanks and Viridor for any loss of profit. This cost has not been included when comparing the collection options. The bulking cost is based on current costs. Current income per tonne has been used for any co-mingled material still processed by both MRFs, and recent market information for income for individual materials has been used.

The bulking cost is based on current market knowledge, and haulage per tonne is based on current contractual costs. Haulage is included in the current MRF contracts.

No additional cost has been added on to the costs for additional vehicle maintenance, although it is acknowledged that this would contribute to the costs for both options as they have more vehicles. No indexation has been applied to any costs.

Results

Table 15 shows that two stream and kerbside sort are on average between £1,283,773 and £1,568,820 more expensive per year than the current co-mingled collection. We currently have a £200,000 pressure in 2015/16 and a £386,000 pressure in 2016/17, which although a better position than in previous versions of our Medium Term Financial Plan, still puts pressure on the Council's finances at a time when the government grant is decreasing year on year. In order to finance either separate collection option, there would be a deficit in another service area.

Summary

Technically Practicable

Due to the nature of Central Bedfordshire's housing stock and rural nature, there is no reason that separate collection of the 4 materials is not technically practicable for regular properties. It is not technically practicable for kerbside sort for communal properties, but two stream with glass separate would be technically practicable.

Environmentally Practicable

Two stream and kerbside sort collection options have overall lower yields than the current co-mingled collection. Even with decreased haulage mileage, both options still have a smaller net CO₂e benefit. Separate collection is therefore not considered to be environmentally practicable.

Economically Practicable

All separate collection options have 'excessive costs' in comparison with current costs. The additional revenue from increased recycle tonnages, as a result of improved quality, would not compensate for the other additional costs.

Step 5 – Propose and agree a future approach to all materials

- **Head of Service**

The assessment has been prepared by the Waste Services Research & Information Manager, and approved by the Head of Service and Director of Community Services.

- **Head of Legal Services**

Committee Approval

The TEEP Assessment is not considered to be a Key Decision as defined in Central Bedfordshire Council's Constitution as it does not result in expenditure or savings stated in Part C 2.1.2. (Also Part I 4. Legal Proceedings)

The assessment has been endorsed by the Council's legal, financial, risk, and sustainability teams. It was submitted to the Council's Executive for approval on 31st

March 2015. The Executive Report and minutes from the meeting are retained as evidence and form part of the appendices of the assessment.

In future, TEEP Assessment will be included in the consideration of future waste collection services, and therefore if it necessitates a change to the service involving increased expenditure or that which will *'have an impact, for better or worse, on the amenity of the community of quality of service provided by the Authority to a substantial number of people living or working in the wards affected.'* (C2. 1.4), the report will be subject to the approval of the Council's Executive. If subsequent reviews of the assessment at a point in time that allows and recommends a change in service that necessitate increased expenditure, this may also require approval by the Council's Executive Committee.

Step 6 – Retain evidence

The accompanying document containing corresponding tables, and additional documents containing supporting workings and evidence will be retained and reviewed as necessary. In addition, supporting documents of the sign-off process will be retained.

Step 7 – Re-evaluation process

Should there be any substantial changes to the following factors, it may be necessary to repeat this full assessment process;

- Availability of accessible facilities and improved technology etc.,
- Cost of vehicles / staff,
- Recyclate values / cost of energy recovery or disposal,
- End of any contracts (collection service, vehicle hire, treatment / reprocessing etc.).

If minor changes to the above factors occur, it will be necessary to conduct a limited review of this process, offering a one page summary that despite the minor changes, the full assessment is still applicable, providing reasoning for reaching this conclusion.

Both the north and south waste collection contracts end in March 2019, therefore a full assessment will be carried out when beginning the procurement process in 2017. The recycling disposal contract has a fixed income per tonne, so the value of recyclate will not affect the practicability of separate collections for the duration of the contract. Contracts with Viridor and Shanks end in September 2016 and March 2021 respectively. It would be prudent to assess the options for end markets at this stage, and update the TEEP assessment.

Appendices list

Tables referred to in the document

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