

ASSESSMENT OF WILTSHIRE COUNCIL'S RECYCLING COLLECTION SYSTEMS TO CHECK COMPLIANCE WITH THE REQUIREMENTS OF THE WASTE (ENGLAND AND WALES) REGULATIONS 2011 AS AMENDED BY THE WASTE (ENGLAND AND WALES) (AMENDMENT) REGULATIONS 2012

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1. Background

- 1.1 The EU Waste Framework Directive (revised 2008) requires Member States to take the necessary measures to ensure that waste undergoes recovery operations, in accordance with the Waste Hierarchy and to protect human health and the environment.
- 1.2 Within article 10 of the directive it states that where necessary to comply and to facilitate or improve recovery, waste shall be collected separately.
- 1.3 It also recommends that Member States take measures to promote high quality recycling and, to this end, set up separate collections to meet the necessary quality standards for the relevant recycling sectors, where it is technically, environmentally and economically practicable ("TEEP") to do so.
- 1.4 Subject to the application of the necessity test, separate collections must be set up for at least paper, metal, plastic and glass where it is TEEP to do so. This is intended to ensure that waste collected for recycling is suitable as input material for high quality recycling processes.
- 1.5 Guidance from the European Commission implies that "high quality" means the standard that can be achieved by separate collection which in turn is defined as "...collection where a waste stream is kept separately by type and nature so as to facilitate a specific treatment."
- 1.6 The requirements of the EU Waste Framework Directive are transposed into The Waste (England and Wales) Regulations 2011, which were further amended in 2012 as a result of a judicial review.
- 1.7 The judicial review challenged the interpretation of the EU Waste Framework Directive requirements within The Waste (England and Wales) Regulations 2011 as it was stated that co-mingled recycling collections comply with the requirement for separate collections. As a result of the judicial review the regulations were amended in 2012, to closer align the text to that in the EU Waste Framework Directive requirement
- 1.8 The amended regulations state that from 1 January 2015 separate collections of at least paper, metal, plastic and glass are required to meet the necessary quality standards for the relevant recycling sectors, where it is technically, environmentally and economically practicable ("TEEP") to do so.
- 1.9 Whether recycling is collected comingled, separately or by a mixture of both could have a significant impact on the quality and quantity of materials collected.
- 1.10 In a the letter sent to all local authorities in 2013 regarding the implementation of the regulations, Lord de Mauley, Parliamentary Under Secretary, expressed concerns regarding the impact on recycling quality when glass is included within a comingled collection service. Furthermore Lord de Mauley acknowledges that Materials Recycling Facilities struggle to keep glass shards out of paper streams, or produce low quality mixed glass shards which then require further sorting. He stated that local authorities should seek to actively address these

problems, by the effective implementation of the new regulations and by tackling problems with operating practices.

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2. Waste Regulations Route Map

2.1 In the absence of any formal guidance from DEFRA on how local authorities could test their collection systems for compliance with Regulation 13, the local authority waste networks, the London Waste and Recycling Board and WRAP developed a Waste Regulations Route Map to assist councils in completing their assessments.

2.2 The route map has been used to form the structure of Wiltshire Council's response to the requirements of the regulations. The council has completed the assessment following the steps outlined within the route map and is based on local circumstances.



Figure 1. Route Map Overview

3. Step 1 – A review of what materials are collected and how

Background

3.1 Wiltshire is a predominantly rural county covering over 1,250 square miles in the south-west of England. It has a population of 458,890 and over 210,000 domestic households, nearly half of which are in towns or villages with fewer than 5,000 residents.

3.2 The rural nature of the county and the history of some of its settlements mean that access for waste collection vehicles can be challenging, so selecting the right collection systems and vehicles to suit the geography of the county is essential for service continuity.

3.3 Prior to the formation of the unitary authority Wiltshire Council in April 2009, waste collection and waste management functions were carried out by four district councils and a county council respectively. Part of the bid to become one council included a commitment to harmonise the different waste collection systems inherited from the former district councils and this exercise was successfully completed in 2012.

3.4 It is the council's policy to undertake the following waste and recycling collections.

Materials collected	Container type	Size	Frequency of collection	Coverage
Residual waste	Wheeled bin	180 litre	Fortnightly	100%
Plastic bottles and cardboard (co-mingled)	Wheeled bin	240 litre	Fortnightly	100%
Paper, magazines, glass, cans, foil, aerosols, and textiles (separately collected)	Kerbside box	55 litre (2 boxes available per household)	Fortnightly	100%
Garden waste (opt-in, chargeable service)	Wheeled bin	180 litre	Fortnightly	100% Take up – 34%
Clinical waste (non-chargeable)	Sharps boxes and sacks of clinical waste		4 weekly, 12 weekly, and 24 weekly and ad-hoc if required	100% Take up – 1%
Bulky household waste (chargeable)			When required	100% when required

Table 1. Collection Services in Wiltshire.

Waste Strategy

3.5 Wiltshire's Joint Municipal Waste Management Strategy was prepared by the Wiltshire Waste Partnership and adopted by the four district councils and the county council during the spring of 2006. This was then updated in 2012 for Wiltshire Council to reflect emerging legislation, update on the council's landfill diversion progress and put a greater emphasis on waste prevention and saving resources. Key objectives of the Wiltshire Municipal Waste Management Strategy are to:

- divert municipal waste from landfill
- reduce waste arisings by increased waste prevention initiatives
- reduce local and global environmental impact
- in the medium to long term, secure significant cost savings for residents through the reduction in payment of Landfill Tax.

Performance

3.6 The table below outlines the tonnes of waste managed for Wiltshire Council since 2008/09.

3.7 Before the formation of Wiltshire Council on 1 April 2009, garden waste kerbside collection services were provided by the four district councils. West Wiltshire District Council offered a free of charge service and Kennet, North Wiltshire and Salisbury district councils charged for this collection. When Wiltshire Council harmonised waste collection services from 2012, a free of charge collection of garden waste was introduced county wide. Due to ongoing financial pressures the decision was made to introduce a charge for this service from 1 July 2015.

3.8 The council has experienced an increase in total municipal waste received from 2012/13 to 2014/15. However with the increase in residual waste being diverted from landfill, the total amount of waste sent to landfill has decreased to just over 20%.

3.9 The council's recycling steadily increased from 2008/09 until 2012/13 following the introduction of additional kerbside recycling collections. In 2013/14 however the recycling rate has dropped to 44.1%, rising again to 46.4% in 2014/15. This can be mainly attributed to the changes in how street sweeping waste is managed. The recycling performance from kerbside collections and household recycling centres improved over this period.

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Total Municipal Waste	251,143	244,933	242,876	245,112	242,393	253,894	257,453
Treatment and Disposal							
Energy from waste - HRC wood	448	8,036	7,397	7,868	8,964	10,282	10,536

Energy from waste – Residual waste to Lakeside	0	26,567	50,418	50,609	50,358	44,276	43,332
Residual waste to MBT	0	0	0	0	997	40,039	56,170
Residual waste to Landfill	141,645	115,608	91,079	89,956	76,596	67,790	51,748
Recycling							
Kerbside black box	26,579	24,272	23,568	23,867	24,223	24,633	25,489
Kerbside plastic bottles /card	1,924	3,670	4,366	7,418	12,012	12,766	13,210
Bring bank – Paper, glass, cans and textiles	7,385	7,318	6,575	5,429	3,806	3,031	1,730
HRC – Recyclates	41,442	39,992	39,425	39,942	40,896	43,676	44,503
Overall recycling rate (% of household waste)	40.5%	40.5%	40.9%	42.6%	46.9%	44.1%	46.4%
Composting							
Kerbside – Charged garden waste collections	18,675	19,344	20,248	22,741	32,078	35,910	37,491
HRC – Garden waste	13,424	11,170	11,192	12,210	9,093	9,095	9,790

Table 2. Waste and recycling performance.

- 3.10 The council does not currently separately collect all plastics from the kerbside. Only plastic bottles are collected from the kerbside, with all plastics except black plastic and plastic film accepted for recycling at HRCs. It could therefore be interpreted that the council is not compliant with the regulations to separately collect plastics.
- 3.11 The council is currently in the process of assessing the future delivery of waste and recycling services in Wiltshire from 1 August 2017, when current waste collection and disposal contracts come to an end. The council has included the requirement to collect all plastics from the kerbside in the specification of services for contracts which commence on 1 August 2017.
- 3.12 The council collects commercial residual waste in accordance with a statutory duty, from those organisations that request and pay for the service in all areas in Wiltshire. In 2014/15, the council collected 11,020 tonnes of commercial waste. In addition, the council provides a trial collection of commercial cardboard in the south of the county and a trial collection of commercial recycling from the east of the county. In 2014/15 the council collected 286 tonnes of commercial recycling.

Compositional Analysis

3.13 Compositional analysis of kerbside collected residual waste was undertaken during the summer and winter of 2013. Prior to this the council undertook compositional analyses in 2005 and 2007-2009.

3.14 The compositional analysis in 2013 highlighted that an average of 23% of residual waste presented was potentially recyclable using the existing kerbside recycling collections.

3.15 Since 2005 the weights of kerbside collected residual waste produced by households has significantly reduced. Compared to the 2007-09 data households on average reduced the weight of their residual waste bin by 49%.

3.16 The compositional analysis results are shown below.

	Total materials in residual waste – 2007 - 09 (kg/hh/wk)	Average % material in residual waste – 2007-09	Total material in residual waste – 2013 (kg/hh/wk)	Average % material in residual waste – 2013
Paper and card	1.70	19.00	0.74	15.68
Plastic film	1.01	11.00	0.42	9.86
Dense plastic	0.83	9.00	0.34	8.48
Textiles	0.35	4.00	0.27	5.5
Misc. combustible	0.90	10.00	0.20	8.02
Misc. non-combustible	0.16	2.00	0.09	1.65
Glass	0.28	3.00	0.15	3.83
Ferrous metal	0.18	2.00	0.06	1.7
Non-ferrous metal	0.09	1.00	0.04	1.29
Garden waste and food waste	2.93	33.00	1.70	41.01
Fines	0.45	5.00	0.10	2.36
WEEE	0.09	1.00	0.03	0.038
Total	8.97	100%	4.15	100%

Table 3. Results from waste compositional analysis.

3.17 The highest proportion of waste within the residual waste stream is garden waste and food waste. In 2013 food waste accounted for 38.5% of residual waste presented, with garden waste only 2.6%.

Capture Rate

3.18 The council has monitored the capture rates of dry recyclables for a number of years. The total kerbside capture rate has increased from 35.5% in 2005/06 to 60.8% in 2013/14 as a result of an increase in the range of materials able to be

recycled at the kerbside, and an increase in provision of information and promotion of recycling.

3.19 The data below shows the percentage of each material type which is captured at the kerbside. This shows that the council is capturing a high proportion of glass that is available for recycling whereas the amount of textiles that is captured is very low. The capture rate for cans in 2013/14 is lower than that in 2008/09.

	Paper	Textiles	Cans	Glass	Plastic bottles	Cardboard
2005/06	53.0%	6.3%	0.0%	54.0%	Kerbside collections commenced countywide in 2012	
2007/08	63.5%	14.0%	53.4%	51.0%		
2008/09	65.5%	15.2%	69.6%	65.7%		
2013/14	66.3%	4.6%	48.8%	76.9%	68.1%	74.28%

Table 4. Kerbside capture rate data.

Contractual Obligations

3.20 There is a mix of in-house and contracted out service delivery for waste and recycling collection services depending on the geographical area and collection type. The collection contract in the west operated by FCC Environment and the recycling contract which includes kerbside sort collections operated county wide by Hills Waste Solutions both end in 2017. The table below summarises who provides the services in each of the four geographical areas.

Service	Area of Wiltshire			
	East	North	South	West
Residual waste	In-house	In-house	In-house	FCC Environment
Plastic bottles and cardboard	In-house	In-house	In-house	FCC Environment
Recycling box	Hills Waste Solutions	Hills Waste Solutions	Hills Waste Solutions	Hills Waste Solutions
Garden waste	In-house	In-house	In-house	FCC Environment

Table 5. Waste and recycling collection contractual arrangements in Wiltshire.

3.21 There is very little opportunity to vary either of these contracts to facilitate changes to services as both the contracts end in 2017. The council worked with its contractors to review current service delivery to inform the procurement process for replacement contracts.

Costs of service delivery

3.22 The table below shows headline budget figures (operational costs to provide the service, including staff), for waste management and waste collection services and any income (total) for Wiltshire Council's waste services, for 2014/15. Under the council's waste management contract for recycling and landfill, the council pays a blended rate per tonne of waste delivered. The contract includes

waste disposal to landfill, management of recyclable materials, composting of garden waste, kerbside black box recycling collections and operation of household recycling centres.

Cost Category	2014/15 Outturn
Salary - Waste Management and Service Management	
Waste Disposal / Recycling Contract Costs	
Landfill Tax	
Lakeside EFW Landfill Diversion Contract	
MBT Landfill Diversion Contract	
Hazardous Waste Disposal	
Clinical waste Disposal	
Waste Minimisation	
Closed Landfill Site Management	
Waste Collection Management (North, East and South)	
Waste Collection Operations (North, East and South)	
Waste Collection Contract Costs (West)	
Depot costs	
Fleet costs	
Trade Waste-Income	
TOTAL	

Table 6. Waste expenditure 2014/15.

3.23 The table above highlights actual spend on each cost category within the waste management service. Waste collection costs are split between the north, east and south of Wiltshire and west Wiltshire. This is due to the waste collection service being contracted to FCC Environment in west Wiltshire.

4. Step 2 – Appraisal of how collected materials are managed

4.1 Detailed below are the materials in Wiltshire Council's collected municipal waste stream (2013/14 data) and the percentage of each that is reused or recycled. Also shown is the tonnage of each that is reused, recycled, has energy recovered from it or is landfilled. Finally the collection method of each waste stream is also shown.

4.2 A calculation was used to determine how much of each waste type remaining after recycling and reuse was sent for energy recovery and landfill. This calculation was based on the proportion of residual waste sent to each process in 2013/14 and was calculated to be approximately 44% to Northacre Mechanical Biological Treatment, 45% to Lakeside Energy from Waste (combined to give 89% Energy from Waste) and 11% direct to landfill.

Material	% of total MSW reused or recycled	Amount reused (tonnes)	Amount recycled (tonnes)	Amount to EfW (tonnes)	Amount landfilled (tonnes)	Collection Method
Asbestos	0.00%	0.0	1.0	0.0	81.7	HRCs
Bicycles	0.003%	8.4	0.0	0.0	0.0	HRCs
Books	0.04%	89.9	0.0	198.0	24.5	HRCs, residual - kerbside
Cans (ferrous)	0.80%	0.0	2043.3	1380.7	170.7	HRCs, kerbside recycling, kerbside residual
Cans and Foil (Non-ferrous)	0.20%	0.0	510.8	1408.3	174.1	HRCs, kerbside recycling, kerbside residual
Car Batteries	0.06%	0.0	146.9	0.0	0.0	HRCs
Car Tyres	0.07%	174.4	0.0	0.0	0.0	HRCs
Cardboard	4.87%	0.0	12354.0	3960.7	489.5	HRCs, kerbside recycling, kerbside residual
Carpet	0.002%	0.0	0.0	115.5	18.2	HRCs, kerbside residual
CDs and DVDs	0.001%	1.9	0.0	unknown	unknown	HRCs, kerbside residual
Cooking Oil	0.002%	0.0	5.9	0.0	0.0	HRCs
Engine Oil	0.03%	71.9	0.0	0.0	0.0	HRCs
Ferrous Metal	1.06%	0.0	2687.0	500.6	61.9	HRCs, bring, kerbside residual
Fines	0.00%	0.0	0.0	2617.4	323.5	Kerbside residual
Food	0.00%	0.0	0.0	42137.6	5208.0	Kerbside residual
Furniture	0.03%	80.9	0.0	0.0	313.2	HRCs, bulky collections
Garden Waste	17.77%	0.0	45107.9	2002.4	247.5	HRCs, kerbside recycling, kerbside residual
Gas Bottles	0.02%	51.8	0.0	0.0	0.0	HRCs
Glass	5.19%	0.0	13171.6	4290.8	530.3	HRCs, bring sites , kerbside recycling, kerbside residual

Material	% of total MSW reused or recycled	Amount reused (tonnes)	Amount recycled (tonnes)	Amount to EfW (tonnes)	Amount landfilled (tonnes)	Collection Method
Hardcore, Rubble & Stones	6.24%	15844.6	0.0	1699.8	210.1	HRCs, kerbside residual
Hazardous	0.03%	0.0	0.0	356.2	34.0	HRCs, kerbside residual, flytipped
Household Batteries	0.01%	0.0	25.5	157.2	19.4	HRCs, kerbside residual
Mattresses	0.00%	0.0	0.0	0.0	54.2	HRCs, bulky collections
Misc Combustible	0.00%	0.0	0.0	2734.0	337.9	Kerbside residual
Misc Non-Combustible	0.00%	0.0	0.0	126.5	15.6	Kerbside residual
Nappies	0.00%	0.0	0.0	4560.3	563.6	Kerbside residual
Non Ferrous Metal (ex. cans and foil)	0.26%	0.0	671.8	27.5	3.4	HRCs, bring sites, kerbside recycling, kerbside residual
Paint	Included within hazardous waste quantities					HRCs
Paper	5.33%	0.0	13523.4	12696.3	1569.2	HRCs, bring sites, kerbside recycling, kerbside residual
Plasterboard	0.37%	0.0	942.6	0.0	0.0	HRCs
Plastic Bottles	1.11%	0.0	2812.1	1468.8	181.5	HRCs, bring sites, kerbside recycling, kerbside residual
Plastic Film	0.00%	0.0	0.0	10066.8	1244.2	Kerbside residual
Printer Cartridges	0.001%	1.9	0.0	0.0	0.0	HRCs, kerbside residual
Rigid Plastics	0.46%	0.0	1170.9	7948.9	982.5	HRCs, residual - kerbside
Sanitary and Clinical	0.00%	0.0	5.0	891.5	108.8	Special collection, kerbside residual
Soil	1.39%	3519.3	0.0	0.0	0.0	HRCs, kerbside residual
Spectacles	0.00004%	0.1	0.0	0.0	0.0	HRCs, kerbside residual
Street Sweepings	1.04%	0.0	2630.8	0.0	5094.6	Streets waste
Tetra Paks	0.01%	0.0	35.5	511.6	63.2	HRCs
Textiles	0.41%	0.0	1036.2	6051.1	747.9	HRCs, bring sites, kerbside recycling, kerbside residual
Video Tapes and Audio Cassettes	unknown	unknown	0.0	unknown	unknown	HRCs
WEEE (A) Large Household Appliances	0.37%	0.0	932.3	0.0	0.0	HRCs
WEEE (B) Fridges and Freezers	0.26%	0.0	671.1	0.0	0.0	HRCs
WEEE C) TVs PC Monitors	0.35%	0.0	884.3	0.0	0.0	HRCs
WEEE (D) Gas Discharge Lamps	0.002%	0.0	5.4	0.0	0.0	HRCs

Material	% of total MSW reused or recycled	Amount reused (tonnes)	Amount recycled (tonnes)	Amount to EfW (tonnes)	Amount landfilled (tonnes)	Collection Method
WEEE (E) Small Domestic Appliances	0.81%	0.0	1580.9	418.1	51.7	HRCs, kerbside residual
Wood	4.02%	0.0	0.0	10851.2	78.2	HRCs, kerbside residual

Terms: HRCs – Household Recycling Centres, WEEE – Waste Electrical and Electronic Equipment

Table 7. Materials in the waste stream and collection/treatment methods.

- 4.3 The materials listed in the table are those that either enter the waste stream through kerbside collections or are taken to household recycling centres (HRCs) or bring sites (bring). Additional material will be recycled, composted or reused directly by residents without entering the waste stream but this material is not quantifiable.
- 4.4 Even when the council offers a recycling or reuse service, a quantity of each material will remain in the residual waste stream and will be landfilled or go to energy from waste.
- 4.5 The council has two landfill diversion contracts currently in place whereby 50,000 tonnes of residual waste per year are sent to the Lakeside energy from waste incinerator in Slough and 60,000 tonnes of residual waste are sent to Northacre mechanical biological treatment (MBT) plant in Westbury.
- 4.6 Each landfill diversion contract specifies certain waste types that are unacceptable for the processing plants for example, they are too big (mattresses, furniture, white goods) or dangerous (asbestos). These items will typically be sent for separate treatment or to landfill.
- 4.7 Table 7 above also identifies some items that are not landfilled and these include items only collected at HRCs due to their size (white goods, gas discharge lamps) or that are banned from landfill for safety reasons (plasterboard, oils and other liquids).
- 4.8 The council has a long term municipal waste contract with its waste management contractor to manage all waste collected in Wiltshire. This includes the collection and management of recyclates, management of household recycling centres, management of residual waste and the management of garden waste composting. The council pays a blended gate fee for each tonne of waste managed through the contract.
- 4.9 In addition to the blended gate fee, the council covers additional costs of separating comingled plastic bottles and cardboard through the Porte Marsh materials recovery facility. As this was introduced towards the end of the period of the current municipal contract the council covers the additional property and electricity costs of operating this facility.

4.10 The Lakeside energy from waste contract and the Northacre mechanical biological treatment contract are separate landfill diversion contracts.

4.11 The table below details the efficiency of each of the processing plants used by Wiltshire Council.

Treatment process	Treatment plant	Materials treated	Total Tonnage in 2013-14	Tonnage to landfill	% of total to landfill	Energy out	Gate fee per tonne (2014-15)	Total Cost to the Council (2014-15 spend)
Energy from waste – incineration	Lakeside	Residual waste	410,000 (council contract = 50,000)	20,500 (council contract 2,500)	5%	37MW (council contract 4.5MW)		
Energy from waste - MBT	Northacre	Residual waste	57,886 (council contract = 60,000)	15,693	27%	26,681t of SRF		
Materials recovery facility	Porte Marsh	Plastic bottles & cardboard	12,766	792	5%	n/a		
Materials recovery facility	Lower Compton	Cans	2,395	24	1%	n/a		

Table 8. Efficiency of processes.

5. Step 3 – Applying the waste hierarchy

5.1 The waste hierarchy ranks waste management options according to what is best for the environment. It gives top priority to preventing waste in the first place. When waste is created, it gives priority to preparing it for re-use, then recycling, then recovery of energy, and last of all disposal (i.e. landfill).

The Waste Hierarchy

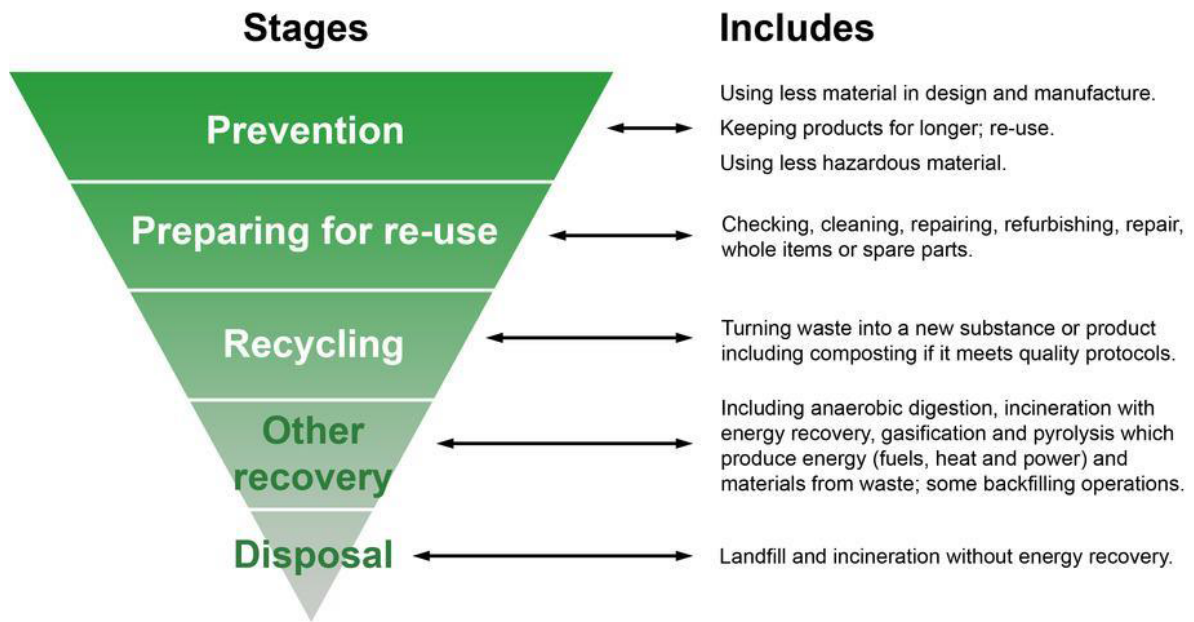


Figure 2. Waste hierarchy.

Prevention

5.2 In efforts to reduce the amount of waste generated by Wiltshire residents, Wiltshire Council has imposed limits on the amount of non-recyclable waste that residents can present for collection. Wiltshire Council's standard wheeled bin is 180 litres in size, and we do not collect any side waste (additional bags which do not fit in the wheeled bin). Previously, residents in the west of the county were provided with 240 litre bins as standard but in an effort to reduce the amount of waste that these residents produce, any damaged or missing bins are now replaced with a 180 litre bin.

5.3 Larger bins are only provided in extenuating circumstances such as for a household with a large number of residents (six or more), a family of five including one or more in nappies, or someone with a medical condition which results in them creating large volumes of non-recyclable waste. If any other resident requests a larger bin for non-recyclable waste, they are subject to a waste audit from our technical team who examine the waste to ensure there are no further reasonable measures that could be taken to reduce the amount of waste being created by the residents.

5.4 Residents who are unable to store a bin on their property have their residual waste collected in sacks and are also subject to an upper limit of non-recyclable waste that they may put out. Residents who receive a fortnightly collection of

bagged waste are entitled to put out up to three black sacks per fortnight, which is the approximate capacity of a 180 litre bin. Residents who receive a weekly collection are entitled to up to two black sacks per week. The majority of residents, however, have their waste collected once a fortnight and the only residents who receive a weekly collection are ones who are unable to store waste for longer than one week (for example, those who live in flats with no outside storage).

- 5.5 We have found that implementing a limit on the volume of waste that residents can present has encouraged them to be mindful of what they are buying and disposing of and to recycle as much as possible.

Preparing for Re-use

- 5.6 Wiltshire Council works closely in partnership with the Wiltshire Wildlife Trust; an organisation that aims to inform residents of how many of their items can be reused, rather than disposed of. They tackle many common items within the waste stream, including some which are commonly recycled, in an effort to move treatment of these up the waste hierarchy.
- 5.7 Wiltshire Wildlife Trust's work includes 'give and take' events across the county, work within schools to educate our residents from a young age, community repair events where items that would otherwise be disposed of or recycled can continue to be used for their intended purpose, promotion of reuse networks such as freegle and freecycle and more.
- 5.8 Wiltshire Council advertises the work of some local furniture reuse charities within Wiltshire so that residents can have their furniture, which is often still serviceable, collected from their home. The items are then sold to other residents, rather than being disposed of.
- 5.9 Wiltshire Council works in partnership with Hills Waste Solutions, Wiltshire Wildlife Trust, Community First, Kennet Furniture Refurbiz, Waste Not Want Not, Wiltshire College and Swindon College to run the 'Repair Academy'. The Repair Academy aims to create social, economic and environmental value by transforming unwanted household products into desirable goods whilst also supporting people in need by helping them gain skills for employment and life and encouraging people to foster an attitude of re-use and repair of materials. Suitable furniture, white goods and bric-a-brac are identified by staff at some of our HRCs for donation to the Repair Academy. These items are then repaired and refurbished so that they can be redistributed by local charities Waste Not Want Not and Kennet Furniture Refurbiz.

Assessment of materials

- 5.10 The council has developed a new contract and specification for the retendering of both the waste collection and waste management service in which the sustainable waste management principles of the waste hierarchy is integral. The council has stipulated that the provider shall manage any wastes in accordance with the waste hierarchy, where practicable, and shall prioritise waste prevention and reuse. In addition it is specified that where a material is collected for recycling that the provider shall use reasonable endeavours to secure reprocessors which maximise closed loop recycling. This occurs where, for example, glass bottles and jars are recycled into new glass bottles and jars

rather than into aggregate for use in construction materials. These obligations will be monitored and enforced through a robust performance framework which includes key performance indicators on reuse and closed loop recycling.

5.11 Shown below are details of where the materials go for processing once collected and, if recycled, whether the process is closed loop. A closed loop system is where materials are reprocessed into the same product rather than into a different product. The table also shows how we currently manage each material in our waste stream and the options and practicalities of what we could do in the future.

5.12 Large amounts of both ferrous and non-ferrous metal items are recycled but it is difficult to ascertain if they are recycled in a closed loop. Once collected the metals are cleaned and melted down into material that is supplied to a variety of industries, some of which may be recycled back into household items.

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Assessment of how materials are managed in Wiltshire and potential to move waste up the hierarchy

Material	Current Main Reprocessing/ Treatment Route	Where does this go?	Is there potential for this material to move up the Waste Hierarchy?	What are the practicalities of moving this up the Waste Hierarchy?	If recycled, is it closed loop?
Asbestos	Specialist landfill	Purton, Wiltshire	No		
Bicycles	Reused/recycled	Given to JoLe Rider reuse scheme or reprocessed as FE metals.	Yes - quantity of reuse could be greater.	Better education and promotion amongst residents and site staff about the reuse scheme.	Yes
Books	Reused/recycled	Reuse by Ruthies Reading Rooms Recycled as cardboard by DS Smith Recycling	Yes - quantity of reuse could be greater.	This is difficult as many books are not suitable for reuse. Books collected from HRCs are currently sent to Recycled Reading if suitable but this volume could be increased with more careful separation at HRCs.	Yes
Cans (ferrous metals)	Recycled	Recycled by Novelis UK	Yes	Increase the amount of cans recycled.	Yes
Cans and Foil (non-ferrous metals)	Recycled	Recycled by Novelis UK	Yes	Increase the amount of cans recycled.	Yes
Car Batteries	Recycled	Sent to H J Enthoven and lead is recycled	Yes - reused.	It is possible to have batteries reconditioned. Arranging this ourselves would be impractical but this option could be advertised on site at HRCs for little cost.	No
Car Tyres	Recycled	Sent to B&G Tyre Rubber Recycling for reprocessing	No	It is possible to re-tread worn tyres. Arranging this ourselves would be impractical but this option could be advertised on site at HRCs for little cost.	No
Cardboard	Recycled	Sent to DS Smith Recycling	Yes	Work with businesses to promote cardboard reduction/ recycling	Yes
Carpet	Landfill	Landfill - Wiltshire	Yes - reused.	Suitable carpet could be taken from HRCs and bulky household waste collections to be reused in a Repair Academy type scheme.	N/A

Material	Current Main Reprocessing/ Treatment Route	Where does this go?	Is there potential for this material to move up the Waste Hierarchy?	What are the practicalities of moving this up the Waste Hierarchy?	If recycled, is it closed loop?
CDs and DVDs	Reused / recycling	Reuse by Ruthies Reading Rooms Recycled as plastics by Wiltshire Plastics	Yes - quantity of reuse could be greater.	Better education and promotion amongst residents and site staff about the reuse scheme.	No
Cooking Oil	Energy from Waste	Sent to Living Fuels for reprocessing into biofuel for electricity generation in the UK	Yes - quantity of reuse could be greater.	Better education and promotion amongst residents and site staff about the scheme.	N/A
Engine Oil	Reprocessed	Sent to Malary Waste Management Solutions for reprocessing.	No		N/A
Ferrous Metal	Recycled	Sent to Tata Steel for recycling	Yes - reused.	Some items that come to HRCs and from Bulky Waste Collections could be reused. Promotion and expansion of Repair Academy scheme. Creation of on-site shops for HRC items is a possibility but would be costly and there is generally a lack of a suitable space.	Yes
Food	Energy from waste /landfilled	MBT - Wiltshire, Lakeside energy from waste - Slough or landfill - Wiltshire	Yes – further prevention, composted	Better education and promotion amongst residents about prevention and home composting of food waste. Offering weekly food caddy collections from households to collect this waste separately would be hugely costly for Wiltshire as a large rural council and food in residual is currently being sent to energy from waste /MBT.	N/A
Furniture	Energy from waste /landfilled	Energy from waste as wood to Boomeco etc. Small items are found in residual bins and are sent to MBT - Wiltshire, Lakeside Energy from waste - Slough or landfill - Wiltshire	Yes - reused.	Some items that come to HRCs and from Bulky Waste Collections could be reused. Promotion and expansion of Repair Academy scheme. Creation of on-site shops for HRC items is a possibility but would be costly and there is generally a lack of a suitable space.	N/A

Material	Current Main Reprocessing/ Treatment Route	Where does this go?	Is there potential for this material to move up the Waste Hierarchy?	What are the practicalities of moving this up the Waste Hierarchy?	If recycled, is it closed loop?
Garden Waste	Composted	Hills Waste Solutions - Purton, Wiltshire	Yes - composting	Extension and better promotion of existing food waste digesters or the council could promote composting using traditional methods. Many of Wiltshire residents currently compost at home already - the amount composted could increase.	N/A
Gas Bottles	Reused/recycled	Branded bottles returned to owner for reuse, orphaned bottles sent to RJ King and Son for recycling.	No	All suitable gas bottles are reused; recycling is already the second option for these.	Yes
Glass	Recycled	Sent to T Berryman and Son for reprocessing	Yes	Promotion and education to increase the capture rates of glass.	Yes 85%
Hardcore, Rubble and Stones	Reused	Used at Lower Compton for land restoration/landfill covering. Used for land restoration at Valley Farm Landfill, Warminster.	No		N/A
Hazardous	Specialist treatment	Sent to Viridor Waste Management for treatment	No		N/A
Household Batteries	Recycled	Sent to CCR UK ltd for reprocessing	Yes - quantity of reuse and recycling could be greater.	Promote reusable batteries. Volumes could be increased if collected kerbside which could be done fairly cheaply and easily. This would avoid them ending up in the general waste stream.	No
Mattresses	Landfilled	Landfill – Wiltshire	Yes – reused, recycled.	Promote reuse however seemingly low demand. Component parts can be recycled but this is a costly exercise.	N/A
Mobile Phones	Reused	Reused by - ShP Limited	Yes – increase quantity	Better education and promotion amongst residents and site staff about the reuse scheme.	N/A
Nappies	Energy from waste /landfilled	MBT - Wiltshire, Lakeside energy from waste - Slough or landfill - Wiltshire	Yes – prevention and recycled.	Wider promotion of real nappies. There are specialist services for nappies/sanitary recycling into component parts but this would be hugely costly for both collections and the reprocessing so very impractical. Demand low.	N/A

Material	Current Main Reprocessing/ Treatment Route	Where does this go?	Is there potential for this material to move up the Waste Hierarchy?	What are the practicalities of moving this up the Waste Hierarchy?	If recycled, is it closed loop?
Non-ferrous Metal	Recycled	Sent to Novelis for recycling	No		Yes
Paint	Treatment	Sent for treatment to Viridor Waste Management	Yes	A community repaint scheme could be introduced into Wiltshire HRCs.	N/A
Paper	Recycled	Sent to Newport Paper for recycling	Yes	Promotion and education to increase the capture rates of paper.	Yes
Plasterboard	Recycled	Sent to Miduk for recycling	Yes - reused.	Very unlikely that the plasterboard would be reusable from the HRCs so holding in these instances for reuse would be impractical.	No
Plastic Bottles	Recycled	Sent to J & A Young Ltd	Yes - reused	Low level craft projects can be introduced easily, potentially by charities.	Yes
Plastic Film	Energy from waste /landfilled	MBT - Wiltshire, Lakeside energy from waste - Slough or landfill - Wiltshire	Yes - recycled.	Film and plastic bags collected from HRCs are currently sent to energy from waste or landfill but they could be collected separately if a suitable reprocessor could be found.	N/A
Printer Cartridges	Reused	Sent to Easy Recycling	Yes – increase quantity	Increase the amount of suitable cartridges for reuse.	N/A
Rigid Plastics	Recycled	Sent to Wiltshire Plastics for reprocessing.	Yes - reused.	Potential for a small amount of these items to be reused with promotion and expansion of Repair Academy scheme. Creation of on-site shops for HRC items is a possibility but would be costly and there is generally a lack of a suitable space.	No
Sanitary and Clinical	Specialist incineration/ energy from waste /landfilled	Separately collected by SRCL for incineration; non-hazardous waste in the domestic stream goes to MBT - Wiltshire, Lakeside energy from waste - Slough or landfill – Wiltshire	No		N/A

Material	Current Main Reprocessing/ Treatment Route	Where does this go?	Is there potential for this material to move up the Waste Hierarchy?	What are the practicalities of moving this up the Waste Hierarchy?	If recycled, is it closed loop?
Soil	Reused	Used at Lower Compton for land restoration/landfill covering. Used for land restoration at Valley Farm Landfill, Warminster.	No		N/A
Spectacles	Reused	Sent for reuse by the Lions Club	Yes – increase quantity	Better education and promotion amongst residents and site staff about the reuse scheme.	N/A
Street Sweepings	Treatment/landfilled	In 2013/14 street sweepings were landfilled. Plans in place for 2014/5 for this to be diverted from landfill.	No		N/A
Tetra Pak	Recycled	Sent to Orebro Kartongbruk in Sweden	No		No
Textiles	Reused/recycled	Sent to Devizes Textiles. Reuse 35% of garments in their current state, 33% are reprocessed as fibres (filler in vehicle seats, upholstery and insulation, etc), 25% is recycled to cloth wipes, with only 7% ending up in landfill.	No	All suitable textiles are reused; recycling is already the second option for these.	35%.
Video Tapes and Audio Cassettes	Energy from waste /landfilled	MBT - Wiltshire, Lakeside energy from waste - Slough or landfill - Wiltshire	Yes - reused.	Limited interest in reuse of these items so unlikely to be a viable option for collection – could offer advice for residents on organisations.	N/A
WEEE (A) Large Household Appliances	Reused/recycled	Sent to Sims Group UK Ltd for reprocessing; Kennet Furniture Refurbiz or Repair Academy for reuse	Yes - quantity of reuse could be greater.	Increase the number of items that come to HRCs and from Bulky Waste Collections that are reused. Promotion and expansion of Repair Academy scheme. Creation of on-site shops for HRC items is a possibility but would be costly and there is generally a lack of a suitable space.	Some component parts

Material	Current Main Reprocessing/ Treatment Route	Where does this go?	Is there potential for this material to move up the Waste Hierarchy?	What are the practicalities of moving this up the Waste Hierarchy?	If recycled, is it closed loop?
WEEE (B) Fridges and Freezers	Reused/recycled	Sent to Sims Group UK Ltd for reprocessing; Kennet Furniture Refurbiz or Repair Academy for reuse	Yes - quantity of reuse could be greater.	Increase the number of items that come to HRCs and from Bulky Waste Collections that are reused. Promotion and expansion of Repair Academy scheme. Creation of on-site shops for HRC items is a possibility but would be costly and there is generally a lack of a suitable space.	Some component parts
WEEE C) TVs PC Monitors	Reused/recycled	Sent to Computer Salvage Specialists for reprocessing; Repair Academy for reuse.	Yes - quantity of reuse could be greater.	Increase the number of items that come to HRCs and from Bulky Waste Collections that are reused. Promotion and expansion of Repair Academy scheme. Creation of on-site shops for HRC items is a possibility but would be costly and there is generally a lack of a suitable space.	Some component parts
WEEE (D) Gas Discharge Lamps	Recycled	Sent to Wiser Recycling Ltd	No		No
WEEE E) Sm Domestic Appliances	Reused/recycled	Sent to Kennet Furniture Refurbiz for refurbishing to be reused or to Computer Salvage Specialists for reprocessing.	Yes - quantity of reuse could be greater.	Increase the number of items that come to HRCs and from Bulky Waste Collections that are reused. Promotion and expansion of Repair Academy scheme. Creation of on-site shops for HRC items is a possibility but would be costly and there is generally a lack of a suitable space.	Some component parts
Wood	Energy from waste	HRC collections are sent to Boomeco	Yes - recycled or reused.	Some items of wooden furniture that come in through the HRCs or Bulky Waste Collections could be reused or resold with the expansion of the Repair Academy scheme or the creation of on-site shops for HRC items. Possibility of developing a partnership with a local wood reuse charity (Wiltshire Wood Recycling). This would only be viable for large/good quality items to be recycled into something else.	

Table 9. Assessment of how materials are managed in Wiltshire and potential to move waste up the hierarchy

6. Step 4 – Is separate collection of the four materials required?

Necessity test

- 6.1 The aim of the necessity test is to ascertain whether separate collections are required to facilitate or improve the quantity and quality of recycling collected. This test consists of comparing the yield expected when collecting material via separate collections, comingled collections excluding glass and comingled collections including glass. This test will be applied to the four materials identified in the legislation – paper, glass, metal and plastic.
- 6.2 The route map suggests that once completed the necessity test should provide evidence which details for each collection system: the amount of materials collected for recycling and disposal; the quality of materials collected and reprocessed; and the end destinations of the material collected which demonstrates whether high quality recycling has been achieved. The regulations route map also suggests that an indicator for good quality recycling is whether the material can be recycled into the same product that it was originally used for. This is known as closed loop recycling.
- 6.3 This view is also supported within guidance produced by the Welsh Government in 2014 which presents the following examples of potential uses of recycle from a good separate collection system:
- The use of recovered glass in re-melt applications to produce new glass bottles and jars;
 - The separation of recovered plastic into individual polymers to produce, for example, new food and drinks containers;
 - The use of recovered paper for the production of new paper products.
- 6.4 In order to help bridge the knowledge gap between local authorities and reprocessors the Resource Association has produced a series of quality specifications which detail the acceptable level of contamination for the recyclable material if it is to be reprocessed. In addition the quality specifications highlight any contaminants which fundamentally affect the ability of that material to be reprocessed. These will be used to inform the council's necessity assessment.
- 6.5 In order to test if it is necessary to collect paper, glass, metal and plastic separately to facilitate or improve recovery the council has invited tenders and will test three collection systems:
- Separate collections using a kerbside sort system
 - Comingled collections with separate glass collections
 - Comingled collections including glass.
- 6.6 The council's necessity test will focus on modelling the tonnages of paper, glass, metal and plastic collected through the kerbside collection systems. The majority of these wastes are collected at the kerbside rather than through household recycling centres. Equally, these materials are all separately collected at the household recycling centres in accordance with the regulatory requirements.

6.7 As previously stated, the council collects commercial waste in accordance with the statutory duty and the council does not currently offer a commercial recycling collection of paper, glass, metal and plastic. The council has however included a requirement for its waste collection provider to offer a commercial recycling collection from 1 August 2017, when new contracts will commence.

Separate Collections

- 6.8 Wiltshire Council has invited tenders for a fully separate collection system whereby the four materials are sorted at the kerbside using black boxes for collection (kerbside sort collection service).
- 6.9 Table 10 below shows the amount of materials expected to be collected in a kerbside sort service, using tendered data from the most economically advantageous tender submitted for a kerbside sort collection. This yield data is tendered data based on 2013/14 actual collected tonnage.
- 6.10 As stated previously, the council does not currently collect all plastic from the kerbside and therefore assumed yield data was calculated. The calculation used yield data for plastic pots, tubs and trays provided by research from WRAP which stated that 8.5kg per household per year would be collected (WRAP 2012). This was added to the tendered plastic bottles collection yield.
- 6.11 The necessity test (table 10) shows glass and paper collected through a kerbside sorted collection system requires no further sorting therefore no material recovery facility (MRF) reject rate is recorded. Any non-target materials presented by residents are left by the collectors in the container for the resident to dispose of. Metals however are sorted at the MRF into ferrous and non-ferrous metals therefore a reject rate of 2% has been tendered. It was also tendered that plastics would be separated into different polymer types at a MRF therefore a 6% reject rate through sorting was tendered.
- 6.12 Each of the materials delivered to the relevant reprocessor as a single stream has been bulked up at a transfer and bulking station, including separated plastics, ferrous and non-ferrous metals.
- 6.13 The reprocessor reject rates shown are submitted by the successful tenderer for Lot 1 (management of recyclable materials) and the values applied to the quantity of material delivered.
- 6.14 The data shows that the quality of kerbside sort collected glass and metal is very good, with reject rates at reprocessing of 1%, ensuring a high proportion of collected materials are recycled. The quality of paper and plastic is also high with 2% and 5% reject rates respectively.
- 6.15 It has been assumed for these tests that any materials which are rejected through sorting or reprocessing are sent to energy from waste, although in reality research has found that practices vary considerably by reprocessor.

6.16 The quantity of each material recycled in a closed-loop process and therefore classified as high quality recycling is identified and has been tendered by the Lot 1 contractor. The majority of metal (98%) and plastic (95%) collected is reprocessed using closed loop methods, whereas a smaller percentage of glass (85%) and paper (80%) collected is sent for closed loop recycling.

6.17 The materials that are unsuitable for closed loop recycling are sent to open loop recycling whereby the material is recycled into different, lower grade, products.

6.18 The 20% of paper which is unsuitable for closed loop recycling is used to create cardboard products, not paper products. Although the recycled material is of a lower grade there is still a significant market for cardboard recycled products.

Co-mingled Collections excluding glass

6.19 Wiltshire Council has also invited tenders for the co-mingled collection of materials excluding glass. This solution means that paper, metal and plastic are collected together in one bin at the kerbside and glass is collected separately in a kerbside box.

6.20 Table 10 shows the tendered collection yield expected for a co-mingled excluding glass collection service, using the council's current yields from 2014-15 as a baseline. The tenderer has confirmed that this estimate is based on a ■% increase in collection yields.

6.21 The tendered yield for plastics bottles reflects an approximate ■% increase however the assumptions used for the total additional pots, tubs and trays (PTT) collection are the same for all solutions. These are based in figures published by WRAP as the council does not currently collect PTT.

6.22 Co-mingled materials are sorted in a materials recovery facility (MRF) prior to being reprocessed. An 8% reject rate has been tendered by Lot 1 for this sorting process.

6.23 The amount of paper, glass and metal which is likely to be rejected during reprocessing is the same as that for co-mingled excluding glass collections and kerbside sorted collections, with 2% of paper, 1% of metal and 1% of glass being rejected. There is however an increase in the plastic rejected from a co-mingled excluding glass collection (10%) compared to a kerbside sort collection (5%). This reflects the need for additional sorting at the reprocessors to further separate the plastic to secure good quality materials.

6.24 In addition, the amount of glass and metal recycled closed loop is the same for co-mingled excluding glass and kerbside sorted collection, with 98% of metal and 85% of glass being recycled closed loop. There is however a reduced amount of paper (57%) and plastic (90%) recycled closed loop when collected co-mingled excluding glass compared to kerbside sort.

Co-mingled collections including glass

- 6.25 Wiltshire Council has also invited tenders for a co-mingled collection which includes glass. This means all the four materials are collected together in one bin at the kerbside.
- 6.26 The expected collection yield for co-mingled including glass has been tendered by the Lot 5 (collection services) tenderer submitting the most economically advantageous tender. This represents an approximate 1% increase in collection yield compared to a kerbside sort collection.
- 6.27 As co-mingled materials are sorted in a materials recovery facility (MRF) prior to being reprocessed, a percentage reject rate was researched in conjunction with the council's Lot 1 (management of recyclable materials) contractor and found, on average, to be 12.5% for each material.
- 6.28 In conjunction with the council's Lot 1 contractor, the council has also researched the impact of co-mingling materials with glass on the quality of all materials collected.
- 6.29 The research has shown that the reprocessor reject rate for glass is higher when collected co-mingled including glass (15%), compared with kerbside sort (1%) and co-mingled excluding glass (1%) collections. It is reported that this is due to the reduced cullet size (smaller pieces of glass due to treatment process) and higher contamination levels by food and paper attached to the glass observed with co-mingled services.
- 6.30 The impact of a co-mingled including glass collection on the quality of paper reprocessed has been difficult to ascertain. The risk of any shards of glass within the paper recycling stream means that the paper would need to be sorted in a MRF once again at the reprocessors; therefore an increased reprocessor reject rate is likely. Once the paper is re-sorted at the reprocessor the proportion of paper that can be sent to closed loop recycling should be similar to paper collected through co-mingled excluding glass collections (57%).
- 6.31 The plastics reprocessors have indicated that the amount of plastic rejected in co-mingled including glass collections is the same as that collected in co-mingled excluding glass collections. The total amount of plastic recycled using closed loop recycling however is reduced when collected with glass (80% compared to 90%). This is because this plastic generally cannot be used for manufacturing food packaging due to the risk of glass fragments within the polymers. The plastic is therefore used for non-food packaging purposes.
- 6.32 There has been no reported impact of co-mingling including glass on the quality of metal collected for reprocessing closed loop.
- 6.33 It has been found that co-mingled including glass collections have a significant impact on the quality and quantity of glass collected for closed loop recycling.

15% of all glass input from this source is rejected and sent to landfill, with a further 35% unsuitable for closed loop recycling and therefore sent to aggregate markets (open loop recycling). 50% of glass delivered to the reprocessor would be recycled using closed loop methods. This is 59% of the material which is reprocessed.

6.34 Table 10 shows the tonnage of each material modelled for a co-mingled including glass collection system.

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	Paper			Mixed Plastic			Metal			Glass		
	Kerbside sort collections	Co-mingled excluding glass collections	Co-mingled including glass collections	Kerbside sort collections	Co-mingled excluding glass collections	Co-mingled including glass collections	Kerbside sort collections	Co-mingled excluding glass collections	Co-mingled including glass collections	Kerbside sort collections	Co-mingled excluding glass collections	Co-mingled including glass collections
Quantity of material available identified by tenderer												
% of materials rejected through sorting processes	0%	8%	12.5%	6%	8%	12.5%	2%	8%	12.5%	0%	0%	12.5%
Tonnage delivered to reprocessor												
% of materials rejected through reprocessing	2%	2%	4%	5%	10%	10%	1%	1%	1%	1%	1%	15%
Tonnage reprocessed												
% of target materials recycled	98%	90%	84%	89%	83%	79%	97%	91%	87%	99%	99%	74%
% of materials recycled closed loop	80%	57%	57%	95%	90%	65%	98%	98%	98%	85%	85%	59%
Tonnage recycled closed loop												
Tonnage recycled open loop												
Total reject (t)												

Table 10. Necessity Test Results

6.35 Overall the results of Wiltshire Council's necessity test state that it is necessary to collect glass and paper separately but not necessary to collect plastic and metal separately in order to facilitate and improve recovery.

6.36 Kerbside sorted paper yields the highest amount of paper which can be recycled closed loop, with the remaining being downgraded and recycled as cardboard. Although the materials have been downgraded there is still a significant recycling market for cardboard.

6.37 The results show that a kerbside sort collection yields 25% more closed loop paper recycling than co-mingled excluding glass collections and 30% more closed loop recycling than co-mingled including glass collections.

6.38 The results show that there is a very small difference (1%) in the total amount of plastic collected through kerbside sort and co-mingled excluding glass collections. This shows therefore that it is not necessary to collect plastic separately.

6.39 The results show that the co-mingled excluding glass collections yield 7% more closed loop metal recycling than kerbside sort collections and 3% more than comingled including glass collections. Therefore it is not necessary to collect metal separately.

6.40 The total tonnage of glass reprocessed closed loop is 12% higher for co-mingled excluding glass than kerbside sort collections; however the glass is collected separately for both solutions. When glass is included in the co-mingled collections, the overall amount of glass sent for closed loop recycling is reduced by 23% compared to co-mingled excluding glass collections, hence the requirement to collect glass separately from other materials.

	Total tonnage reprocessed using closed loop – Kerbside sort	Total tonnage reprocessed closed loop – Co-mingled collections (excluding glass)	Total tonnage reprocessed closed loop – Co-mingled collections (including glass)	Necessary to collect separately to facilitate or improve recovery
Paper				Yes
Plastic				No
Metal				No
Glass				Yes

Table 11. Results of the necessity tests.

6.41 The Resource Association Quality Specifications outline the reprocessor industry acceptable level of contamination for the materials to be reprocessed. The reprocessor reject information provided within the necessity test for each system was compared to the standard specifications for paper, plastic, metal and glass. This shows that for paper, metal and glass the standards are met using a kerbside sort and comingled excluding glass collection service. However paper and glass collected comingled including glass do not meet these specified standards.

6.42 Metal collected using any of the modelled collection systems meets the specified contamination standards.

6.43 The Resource Association Quality Specifications state that the acceptable contamination levels for mixed plastic are from 0 – 5%. The necessity test shows that plastic collected in a kerbside sort system meets this standard however plastic collected co-mingled does not meet this standard. The specifications are clear that the mixed plastic specifications have only just been developed as this is a relatively new market and that suppliers must speak to their own reprocessors to obtain their current specifications.

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7. TEEP tests

- 7.1 The requirements of the Waste Regulations generate the need for TEEP (technical, environmental and economical practicability) tests to be applied to any material which the necessity test demonstrates should be collected separately. This is because separate collections are only required when it is technically, environmentally and economically practicable to do so. The route map states that even where the necessity test demonstrates it is not necessary to collect a material separately it would be advantageous to consider undertaking the TEEP tests to ensure that the strongest evidence is presented to demonstrate compliance.
- 7.2 The route map is clear that separate collection is required if all three elements of the TEEP test are passed. If a material fails any one of the tests, co-mingled collection of the material(s) is permissible. If no collection system was found to be practicable, collection of material for recycling would not be required.
- 7.3 The Council recognises that a chosen collection system needs to suit the local circumstances and a one size fits all approach cannot be taken for the whole council area. Wiltshire Council is predominately a rural, sparsely populated county with an average population density of 145 residents per square km. However there are more densely populated urban areas in which the council delivers a range of bespoke collection systems. There are 7,710 properties which are provided with alternative containers as the properties are unsuitable for a wheeled bin and there are currently 15,850 properties which are serviced by a smaller vehicle as the access is unsuitable for a regular collection vehicle. These specific service requirements have been built into the modelled separate, comingled excluding glass and comingled including glass collection services and tested in accordance with the technical, environmental and economic practicability tests. .

Technical practicability

- 7.4 The aim of the technical practicability test is to determine whether collecting the dry recyclable materials separately would be possible from a technical perspective. Wiltshire Council believes that it is technically practicable to collect the material separately in Wiltshire. This is based on the fact that the council currently collects paper, glass and metal separately using up to two kerbside recycling boxes.
- 7.5 WRAP identified that in 2013/14, 50% of local authorities in England collected recycling using a single stream co-mingled system (co-mingled including glass), whereas 34% operate a twin stream service whereby at least two of the materials are collected co-mingled and 28% operate a multi stream collection service whereby recyclates are collected separately (material streams may include a selected mix of some materials). The percentages add up to more than 100% as some authorities will operate more than one scheme.

7.6 Should all materials, however, be collected separately in Wiltshire using a kerbside sort system only it is likely that residents would need to have up to six separate recycling boxes or containers. Although this collection system is in theory technically practicable, many households in Wiltshire would struggle to store such a large number of containers, which in-turn may affect public satisfaction and participation.

7.7 As previously highlighted, Wiltshire Council does not currently collect plastic pots, tubs and trays from the kerbside. However the council is currently in the process of procuring waste collection and disposal services for commencement on 1 August 2017. The specifications for these new services include the requirement to provide a collection of mixed rigid plastic packaging from the kerbside.

Environmental practicability

7.8 The aim of the environmental practicability test is to determine the relative environmental performance of kerbside sort collections, co-mingled excluding glass collections and co-mingled including glass collections. The regulations are clear that an end-to-end approach, from collection through to reprocessing, should be taken to environmental practicability. They state that separate collection will be environmentally practicable if the benefits from increased or improved recycling outweigh any negative impacts.

7.9 The council has assessed environmental practicability by analysing both the total carbon emission impact for each collection system and the impacts of each system on air quality. In addition there are a number of wider ecological impacts of the different collection systems which are difficult to quantify but are notable.

7.10 Other considerations which are difficult to calculate are the impact of the collection service on the local ecology. The smaller receptacles and the kerbside sorting operation of separate collections may result in an increase in associated litter and have a damaging effect on the local environment and its appearance. Co-mingled materials are collected in lidded bins which should mean less risk of associated litter.

7.11 The report will first set out the carbon assessment undertaken and then will consider the air quality impacts.

Carbon Assessment

7.12 The aim of the environmental practicability test is to determine the relative environmental performance of kerbside sort collections, co-mingled excluding glass collections and co-mingled including glass collections. The regulations are clear that an end-to-end approach should be taken to environmental practicability and states that separate collection will be environmentally practicable if the benefits from increased or improved recycling outweigh any negative impacts.

7.13 The environmental impacts of the collection systems have been modelled using carbon dioxide as the main indicator. The results are calculated as the tonnages of carbon dioxide equivalent emissions (CO₂e).

7.14 The method used to estimate the quantities of carbon dioxide equivalent emissions resulting from each collection varied for each of the following eight steps in the process:

- Collection and haulage to transfer station;
- Transfer station operation;
- Transportation and haulage from transfer station to MRF;
- MRF sorting operations;
- Reject disposal through sorting MRF;
- Transportation and haulage from MRF and transfer station to reprocessors;
- Reject disposal through reprocessing, and
- CO₂e benefit of closed loop recycling.

7.15 The method, assumptions and results for each of these above steps follows and uses a combination of tendered data from Lot 1 (management of recyclable materials) and Lot 5 (collection services). Throughout each step the results have been applied to each of the four materials using the following calculation:

$$\left(\frac{\text{Total tCO}_2\text{e of collection system}}{\text{total collected tonnage}} \right) \times \text{individual stream collected tonnage}$$

Collection and haulage to transfer

7.16 The transport emissions generated by operating co-mingled excluding glass, co-mingled including glass and kerbside sort collections have been modelled. This model uses tendered vehicle numbers and estimated annual mileage for each collection type.

7.17 It has been tendered that ■ collection vehicles would be required to deliver a kerbside sort collection service, with a tendered total of ■ miles per annum. This is based on working a 7.24hr working day.

7.18 It has also been tendered that ■ collection vehicles would be required to deliver a co-mingled excluding glass collection service, with a total of ■ miles per annum. This total number of vehicles and mileage is based on a variant tendered solution of working ■ hrs per day rather than the current 7.24hrs per day. This means that 58% fewer vehicles are required to deliver this service compared to a kerbside sort collection, travelling 33% less miles per annum.

7.19 In addition, it has been tendered that ■ collection vehicles would be required to deliver a co-mingled including glass collection service with a total of ■ miles per annum. This is based on working a 7.24hr working day. This means

that 60% fewer vehicles are required to deliver this service compared to a kerbside sort collection, travelling 59% less miles per annum.

Collection type	Annual mileage of all vehicles	CO2e (tonnes)				
		Paper	Mixed Plastic	Metal	Glass	Total
Kerbside sort collections						
Co-mingled excluding glass collections						
Co-mingled including glass collections						

Table 12. Carbon dioxide equivalent emissions for collection of recyclates.

Transportation and haulage from transfer station to MRF

7.20 The fuel used and emissions generated by our current system for transporting co-mingled waste from transfer stations to the MRF has been modelled. This model was then applied to the yield expected. See table 13 below.

Collection type	Fuel used (litres of Diesel) per year	CO2e (tonnes)				
		Paper	Mixed Plastic	Metal	Glass	Total
Kerbside sort collections						
Co-mingled excluding glass collections						
Co-mingled including glass collections						

Table 13. Emissions for transportation from transfer station to MRF.

7.21 The plastic and metal collected from a kerbside sort collection system are transported from the waste transfer station to the MRF for further sorting. The fuel used to transport the kerbside sort collected plastic is higher than co-mingled plastic as the plastic is bulky and light to transport on its own therefore requiring more vehicles. It is the volume rather than the tonnage which dictates the number of vehicles required.

7.22 It has been assumed that all transfers cover the same distance and 26.6% of materials collected are transferred from Amesbury transfer station in the south

of the county to the MRF. The annual fuel use estimate for each vehicle type is tendered by the Lot 1 tenderer.

Transfer station operation

7.23 The emissions generated by the transfer station operation have been tendered by the Lot 1 tenderer and are set out in Table 14 below.

		CO2e (tonnes)				
	Fuel usage for transfer station	Paper	Mixed Plastic	Metal	Glass	Total
Kerbside sort collections	Electricity KWh – 4,000 Diesel litres – 29,000					
Co-mingled excluding glass collections						
Co-mingled including glass collections						

Table 14. Emissions for operation of transfer station.

7.24 It has been assumed that each stream uses the same amount of fuel per tonne to process at the transfer station. Only fuel and electricity used by the council’s Amesbury transfer station have been taken into account. It is assumed that, regardless of whether the materials are collected through a kerbside sort, co-mingled excluding glass and co-mingled including glass system, transfer stations are operated in the same manner and therefore the emissions produced per tonne would be the same.

MRF Sorting operations

7.25 The fuel used and emissions generated by the MRF sorting materials collected through a co-mingled excluding glass system have been tendered by the Lot 1 tenderer. The electricity used for sorting the materials collected through a co-mingled including glass system is 34% more than that used to sort materials collected through a co-mingled excluding glass system. This represents the estimated increase in electricity costs for running the MRF.

7.26 The same calculation was undertaken for the metal collected from kerbside sort collections as this will be separated into ferrous and non-ferrous in order to achieve the highest quality of materials. The results are set out in Table 15 below.

		CO2e (tonnes)				
	Fuel usage for MRF	Paper	Mixed Plastics	Metals	Glass	Total
Kerbside sort collections	Electricity KWH – 245,000 Diesel Ltrs – 32,000					

Co-mingled excluding glass collections	Electricity KWH – 1,250,000 Diesel Ltrs – 20,000	
Co-mingled including glass collections	Electricity KWH – 1,675,000 Diesel Ltrs – 20,000	

Table 15. Emissions for the operation of transfer station.

7.27 It has been assumed that each stream uses the same amount of fuel per tonne of waste to sort.

Reject disposal through sorting at MRF and Reprocessing

7.28 The emissions generated by the disposal of rejected materials through MRF sorting and reprocessing have been modelled. This calculates the tonnage of materials rejected and applies a CO₂e conversion factor in order to calculate the emissions generated.

7.29 It has been assumed that all MRF and reprocessor rejects are sent to energy from waste plants. Conversion factors for each material were selected from the 'combustion' section of DEFRA's carbon conversion factors 2014 (source: www.ukconversionfactorscarbonsmart.co.uk). The factors and results are set out in Table 16 below.

7.30 Paper is shown as a minus figure as there is an environmental benefit of sending rejected paper to combustion, compared to landfill. As paper is a biodegradable material when it is landfilled methane is produced and therefore the environmental impact is significant. The waste hierarchy still however shows that it is more environmentally advantageous to reduce, reuse or recycle paper rather than sending it to combustion or landfill.

		Paper	Mixed Plastic	Metal	Glass	Total
Tonnes rejected	Kerbside sort collections					/
	Co-mingled excluding glass collections					
	Co-mingled including glass collections					
Combustion EfW (kg CO ₂ e/tonne) (2011 factors)	Kerbside sort collections					/
	Co-mingled excluding glass collections	-529	1197	31	26	
	Co-mingled including glass collections					
CO ₂ e impact of	Kerbside sort collections					

rejects kgCO2e	Co-mingled excluding glass collections		
	Co-mingled including glass collections		
CO2e impact of rejects tonnes CO2e	Kerbside sort collections		
	Co-mingled excluding glass collections		
	Co-mingled including glass collections		

Table 16. Reject disposal through MRF sorting and reprocessing.

Transportation and haulage from MRF or Transfer station to reprocessors

7.31 The emissions generated by the transport of waste from transfer stations and MRF to reprocessors have been modelled. This model is based on fuel used and the capacity of existing bulk vehicles.

		Paper	Mixed Plastic	Metal	Glass	Total
Diesel litres per year	Kerbside sort collections					
	Co-mingled excluding glass collections					
	Co-mingled including glass collections					
Tonnes CO2e per year	Kerbside sort collections					
	Co-mingled excluding glass collections					
	Co-mingled including glass collections					

Table 17. Fuel usage and emissions of haulage from MRF and Transfer Station to reprocessors.

7.32 The data includes haulage of materials from Amesbury transfer station, Lower Compton Transfer Station and Lower Compton MRF. Kerbside sort collected glass and paper will go straight from Amesbury transfer station to the reprocessors, therefore travelling a further distance. Plastic and metal will all be transported from Lower Compton MRF as they will be processed through the MRF regardless of the collection system.

7.33 This method takes into account transport and haulage from the transfer station and MRF to existing reprocessors. For unknown values it has been assumed that haulage follows the same route using the same vehicles and fuel quantities.

CO2e benefit of closed loop recycling

7.34 There are significant environmental benefits of closed loop recycling. The emissions avoided by using closed loop recycling have been modelled and are set out in Table 19 below. A minus figure represents a negative emission impact.

		CO2e				
		Paper	Mixed Plastic	Metal	Glass	Total
Tonnage recycled as closed loop	Kerbside sort					
	Co-mingled (ex glass)					
	Co-mingled (inc. glass)					
kgCO2e benefit of closed loop per tonne	Kerbside sort					
	Co-mingled (ex glass)	-157	-1,171	-9,245	-366	
	Co-mingled (inc. glass)					
Benefit factor * tonnage = kgCO2e	Kerbside sort					
	Co-mingled (ex glass)					
	Co-mingled (inc. glass)					

Table 18. CO2e benefit of closed loop recycling.

7.35 The benefit of closed-loop recycling analysis used DEFRA's factors from DCF Carbon Factors 2011 (Annex 9d, Life cycle conversion factors for waste disposal).

Air Quality Impacts

7.36 Air quality is the state of the air around us which is measured by the concentration of pollutants within the air which can cause adverse health effects.

7.37 The council has a duty to monitor air quality within Wiltshire and has produced an Air Quality Strategy which informs policy and direction across a range of council services with the aim of improving air quality. The main aim of the strategy is that:

Wiltshire Council working collaboratively will seek to maintain the good air quality in the county and strive to deliver improvements in areas where air quality fails national objectives in order to protect public health and the environment.

7.38 Air quality in Wiltshire is predominantly good with the majority of the county having clean unpolluted air. There are however eight small locations which have been designated as Air Quality Management Area's as they have exceeded the annual average of nitrogen dioxide within the air. Although nitrogen dioxide is produced when burning any fossil fuel such as coal and oil, in Wiltshire traffic burning petrol and diesel has been identified as the primary source of nitrogen dioxide. The main area of improvement within the Air Quality Strategy is therefore transport related and in particular, road traffic movements.

7.39 The councils Air Quality Strategy states that of the seven pollutants which cause air quality concerns, only fine particulate matter (PM₁₀) and nitrogen dioxide (NO₂) are of concern in Wiltshire.

7.40 Although environmental improvements to HGVs have been made it is still recognised that refuse and recycling collection vehicles have high polluting emissions therefore by increasing the number of vehicles increases the level of pollutants within the air.

7.41 The air quality assessment has considered the pollutants identified within the strategy and has focused on calculating the concentrations of nitrogen oxides (NO_x), particulate matter (PM) and nitrogen dioxide (NO₂) produced by the vehicles operating the modelled collection services.

7.42 For each modelled collection service the specification, number and mileage of the vehicles which will be used to collect recyclates have been used. Conversion factors produced for the National Atmospheric Emission Inventory by DEFRA were then used to assess the impact of operating these vehicles on the chosen pollutants. The conversion factors used are shown below (table 20).

Vehicle	Specification	Fuel	Engine specification	NO_x (g/km)	PM (g/km)	NO₂ fraction of NO_x
Light Duty Vehicle	Diesel <3,5 t	Diesel	Euro VI	0.33272	0.0015	0.3
Heavy Duty Trucks	Rigid 7,5 - 12 t	Diesel	Euro VI	0.30860	0.0022	0.1
Heavy Duty Trucks	Rigid 14 - 20 t	Diesel	Euro VI	0.55874	0.0030	0.1
Heavy Duty Trucks	Rigid 20 - 26 t	Diesel	Euro VI	0.57529	0.0038	0.1

Table 19. Air quality pollutants conversion factors

7.43 These conversion factors were then applied to the tendered vehicle information and specification provided by the MEAT tenderers for each collection system (table 21).

Tendered Vehicle information					Air Quality Impact		
Collection system	Vehicle manufacturer and model	Gross vehicle weight (t)	No.	Annual km	NO x (g)	PM (g)	NO2 (g)
Separate collections	Kerbsider Vehicle						
	Difficult Access Vehicle						
	Difficult Access Vehicle						
	Compaction Vehicle						
	Difficult Access Vehicle						
	TOTAL						
Comingled excluding glass collections	Compaction Vehicle						
	Cage Vehicle						
	TOTAL						
Comingled including glass collections	Compaction Vehicle						
	Difficult Access Vehicle						
	Cage Vehicle						
	TOTAL						

Table 20. Air quality impact of the collection systems

7.44 The calculated air quality impacts has shown that a separate collection system would result in higher NO_x, PM and NO₂ pollutants within the atmosphere, this is due to the increase in vehicles which is required to deliver this service.

7.45 A comingled including glass collection system would result is the least NO_x (59% less than kerbside sort), PM (55% less than kerbside sort) and NO₂ (59% less than kerbside sort) emitted, due to the large reduction in vehicles required to deliver this service compared to a separate collection service.

7.46 The collection rounds for each service has not been modelled therefore it is difficult to assess the impact that such a reduction would have within the council's eight air quality management areas. However, as collection vehicles work within all areas of Wiltshire, a reduction in the total number of vehicles required would however help to improve the air quality within these areas. Once the collection system is chosen, the rounds can be modelled in detail and the council will be able to report the air quality impacts within these management areas.

Results of the environmental test

7.47 Combining the results of the carbon and air quality assessments above the environmental practicability test yields the following results. A minus figures represent a negative emission impact, therefore the lower the number the greater the benefit.

Collection System	Carbon Impact - Tonnes of CO2 equivalent (annual)	Air Quality Impact		
		NOx (g)	PM (g)	NO2 (g)
Kerbside sort collection system				
Co-mingled excluding glass collection				
Co-mingled including glass collection				

Table 21. Environmental practicability results.

7.48 The results therefore show that it is not environmentally practicable to collect recyclates separately as both the carbon and air quality assessments. The carbon assessment suggests that a comingled excluding glass system is most practicable, with kerbside sort collections emitting 4% more tonnes of CO2 equivalent and comingled including glass emitting 9% more tonnes of CO2 equivalent.

7.49 The air quality assessment shows that a comingled including glass collection system would be more practicable with the least NOx (59% less than kerbside sort), PM (55% less than kerbside sort) and NO2 (59% less than kerbside sort) emitted.

Economic practicability

7.50 The regulations route map states that the economic practicability test should take into account all service costs, not just collection costs. Economically practicability does not mean the cheapest system as separate collections will be economically practicable so long as the cost is not excessive, or disproportionate to the benefits.

7.51 As the council is currently within a procurement process exact costs associated with economic practicability cannot be publically disclosed and are classed as commercially sensitive. The below assessment does however utilise actual cost differential between tendered separate, comingled excluding glass and comingled including glass solutions.

7.52 A detailed financial model was developed and tendered in order to build the costs of delivering each collection system. The economic test begins with the assessment of the total cost of the collection systems, ie. adding the tendered

prices for the most economically advantageous tenders (MEAT) for Lot 1 (management of recyclable materials) and Lot 5 (collection services).

7.53 The breakdown for operating the collection service includes costs associated with overheads, staff, management, vehicles, equipment and materials, property, MRF building and operation, haulage and transportation and financial costs.

7.54 This end to end economic assessment over an 8 year period, which utilised tendered data, showed it was best economic value to operate a comingled excluding glass collection system.

7.55 When taking into account operational costs separate collections were **5.34%** more expensive to operate than a comingled excluding glass collection system and **4.22%** more expensive than a comingled including glass collection system.

	Lot 1	Total 8 year price - Lot 1	Lot 5	Total 8 year price - Lot 5	Total 8 year price
Kerbside Sort Collections	Hills Waste Solutions				
Co-mingled excluding glass collections	Hills Waste Solutions				
Co-mingled including glass collections	Hills Waste Solutions				

Table 22. Total service costs as tendered.

7.56 A further assessment was carried out to financial risk profile of the MEAT tenders for the Lots based on delivering their tendered method statement against the tendered unit costs.

7.57 This showed that the economically practical collection system was still a comingled excluding glass system. This however showed that once risk profiled separate collections are **14.84%** more expensive than a comingled excluding glass service and **15%** more expensive than a comingled including glass service.

	Lot 1	Risk adjusted Total 8 year price - Lot 1	Lot 5	Risk adjusted Total 8 year price - Lot 5	Total 8 year price
Kerbside Sort Collections	Hills Waste Solutions				
Co-mingled excluding glass collections	Hills Waste Solutions				
Co-mingled including glass collections	Hills Waste Solutions				

Table 23. Total service costs – risk profiled tendered costs.

7.58 Finally, in order to fully assess the end to end economic impact of each collection service, the council then factored income from the sale of recyclable materials into the economic considerations, accepting that there is risk about the actual price achieved. This is based on the council's share of the income being 80% (tendered prices for information and not binding as the risk of volatility of the income is with the council).

7.59 Taking income into consideration the total 8 year cost of operating a separate collection system is **16%** higher than operating a comingled excluding glass service and **14%** higher than a comingled including glass service.

	Lot 1	Risk adjusted Total 8 year price - Lot 1	Lot 5	Risk adjusted Total 8 year price - Lot 5	Total 8 year price
Kerbside Sort collections	Hills Waste Solutions				
Co-mingled excluding glass collections	Hills Waste Solutions				
Co-mingled including glass collections	Hills Waste Solutions				

Table 24. Total service costs including income.

7.60 The economic test for the cost of ownership is in favour of a co-mingled excluding glass collection service.

Affordability for the council

7.61 Wiltshire Council currently spends around £900 million each year on more than 350 services. Changing demographics, such as people living longer, coupled

with inflation and further cuts in funding from central government mean more savings need to be found.

7.62 Last year the council received £119 million from the Government – this year it will get £103.8 million. This cut of more than £15 million, combined with the rise in demand for some key front line services and inflation costs, means the council needs to find a further £30 million of savings this financial year and therefore any additional costs in future years could be deemed unaffordable.

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8. Conclusion

8.1 Regulation 12 of the Waste (England and Wales) Regulations 2011, as amended in 2012, requires local authorities to demonstrate how it applies the waste hierarchy for all wastes it is responsible for. Section 5 evidences how waste materials are currently managed by Wiltshire Council. The assessment shows that where possible the council is managing waste within the principles of the waste hierarchy and identifies actions that will be introduced to keep moving waste up the hierarchy. The actions highlighted will be assessed and implemented both in the coming year if practical or addressed within the development of specifications for new services from 2017, where applicable and practicable.

8.2 Regulation 13 also states that “from 1st January 2015 all Waste Collection Authorities will be required to collect paper, metals, plastics and glass (the materials) separately, where doing so is:

- Necessary to ensure that waste undergoes recovery operation in accordance with Articles 4 and 13 of the Waste Framework Directive and facilitate or improve recovery; and
- Technically, environmentally and economically practicable”.

8.3 Section 7 evidences the approach taken by the council to assess when separate collections of the four materials are necessary and TEEP.

8.4 The necessity test suggests that it is necessary to collect glass and paper separately but not necessary to collect plastics and metals separately in order to facilitate and improve recovery.

	Necessary to collect separately to facilitate or improve recovery
Paper	Yes
Plastic	No
Metal	No
Glass	Yes

Table 25. Results of the necessity tests.

8.5 The route map suggests that if the material passes the necessity test then the council is not required to undertake the TEEP tests. The results of the TEEP tests are shown in the table below.

	Do separate collections pass the TEEP Tests?
Technical	Yes

Environmental	No
Economic	No

Table 26. Results from TEEP tests.

8.6 Although it is clear that it is technically practicable to collect the materials separately, it would mean that residents would need to separate waste into up to six containers. These containers would be difficult to store for some residents and may affect customer satisfaction and participation in the service.

8.7 The results from the tests show that it is technically practicable to collect the four materials separately, but not environmentally and economically practicable.

9. Sign off and review

9.1 The Environment Agency (EA) acts as the regulatory body to monitor and enforce compliance with the regulations. In a briefing note supplied to local authorities in December 2014, the EA briefly outlined how they were planning to assess compliance with the regulations. Putting the responsibility onto local authorities, the EA stated that local authorities should rigorously apply the necessity and TEEP tests to ensure compliance.

9.2 In order to demonstrate compliance with the regulations the EA highlights that collectors who have concluded it not necessary or not TEEP to operate separate collection should provide an audit trail of decision making demonstrating compliance for inspection.

9.3 This document forms the audit trail of the process undertaken by Wiltshire Council to assess compliance of its collection services with The Waste Regulations.

9.4 It is essential that there is a robust and transparent decision making process is followed which reflects local priorities and circumstances. In advance to the decision making process by elected members the report has been considered and signed off by the following senior officers:

- Associate Director, Waste and Environment
- Head of Waste Management
- Head of Legal, Legal Services

9.5 This report was presented to the council's cabinet members at a Cabinet meeting on 10 November 2015, as referred to in the meeting minutes. Cabinet members were provided within the report in advance of the meeting and were briefed by the Cabinet Member with responsibility for strategic planning, (strategic and development management), property, waste and strategic housing during the meeting. In advance of the decision making process, elected

members were therefore fully informed and were able to consider the potential outcomes from a local perspective. At the meeting the council's cabinet agreed :

- To note the results of the application of the necessity and TEEP tests carried out to date on the tendered collection services, notes that it is not environmentally or economically practicable to collect the four materials separately, and agrees that further work should be done on the environmental practicability test to take account of air quality and the impact of the reprocessing of the recyclable materials.
- To agree that the Cabinet Member for Strategic Planning (Strategic and Development Management), Property, Waste and Strategic Housing will sign off the final report in accordance with the protocol for Cabinet Member delegated decision making, subject to the work carried out in accordance with proposal above confirming that the system for collection of dry recyclables should be co-mingled using the blue lidded bin for all materials excluding glass which should be collected from the black box, and subject to there being no material objections raised.
- To agree that the system for collection of dry recyclables should be co-mingled using the blue lidded bin for all materials excluding glass which should be collected from the black box.

9.6 The cabinet member decision process which will follow the council's Cabinet will set out the consultation process undertaken and will request comments from other interested parties. All comments received will be considered and should any material objections be raised a follow up report will be drafted for Cabinet to consider.

9.7 The council is currently in the process of reviewing the future delivery of waste and recycling services. The council's current waste disposal and collection contracts are due to end on 31 July 2017.

9.8 The council will undertake the process outlined above using tendered data to inform the process of decision making for future waste collection and disposal services.

9.9 Any significant changes to material markets or available collection methods prior to these dates would prompt earlier review of the process, by an officer working group. This group will provide the Cabinet Member with formal updates annually, who will then take a report to Cabinet if required. However, once the new contracts commence on 1 August 2017, any changes to the collection services may not prove to be economically practicable given that the new contracts are for a period of eight years.