

NORTHUMBERLAND

Northumberland County Council

**An Assessment of Waste Collection Systems in Northumberland,
as required by the Waste England and Wales Regulations 2011
(as amended)**

Dated : 15th October 2014

Contents

1. Introduction	3
2. What do Local Authorities Need to Do?	4
3. Step 1 : Determine What Waste is Collected and How	7
4. Step 2 : Check How Collected Materials are Treated and Recycled	11
5. Step 3 : Apply the Waste Hierarchy	13
6. Step 4 : Decide Whether Separate Collection of the Four Materials is Required	16
7. Step 5 : Obtain Sign Off	22
8. Step 6 : Retain Evidence	23
9. Step 7 : Re-evaluation Process	24
10. Appendices	25
11. Footnotes	46

1. Introduction

- 1.1. Local Authorities have new obligations under the Waste England and Wales Regulations 2011 (as amended) (the 'Regulations'). From 1st January 2015, all waste collectors in England and Wales are required to collect four materials - glass, metal, paper, and plastic - separately where it is "*necessary*" and "*technically, economically and environmentally practicable*" (TEEP) to do so.
- 1.2. The Regulations transpose into UK law the provisions of the EU Waste Framework Directive 2008, and express a clear presumption in favour of material being collected in separate streams. However, based on local circumstances there are situations where it is permissible to collect materials comingled. This document assesses whether Northumberland County Council can continue to collect recycling comingled, or whether the current waste collection systems need to be revised to comply with the Regulations.
- 1.3. There is no process set in law or statutory guidance for authorities to follow in carrying out the necessity or TEEP tests. In the absence of guidance the London Waste and Recycling Board and Waste Resources Action Programme worked jointly to produce the Waste Regulations Route Map (the 'Route Map'). The Route Map aims to help local authorities understand their legal obligations, and provides a step by step process for local authorities to follow. The Route Map is not guidance and does not constitute professional advice. However, the Environment Agency who are responsible for enforcing the Regulations confirmed in September 2014 that development of the Route Map is "*...an excellent move and regard it as good practice. If collectors follow it thoroughly, we believe this will give them high assurance of acting reasonably*".
- 1.4. The Council has followed the principles of the Route Map in its assessment of waste collection systems in Northumberland. Should a local authority be found to deliver non-compliant waste collection services after 1st January 2015, it could receive compliance, stop and/or restoration notices from the Environment Agency, and may face judicial review.

2. What do Local Authorities Need to Do?

2.1. Regulation 12 of the Regulations places an on-going requirement on local authorities to apply the waste hierarchy as follows:

'12. (1) An establishment or undertaking which imports, produces, collects, transports, recovers or disposes of waste, or which as a dealer or broker has control of waste must, on the transfer of waste, take all such measures available to it as are reasonable in the circumstances to apply the following waste hierarchy as a priority order—

- (a) prevention;*
- (b) preparing for re-use;*
- (c) recycling;*
- (d) other recovery (for example energy recovery);*
- (e) disposal.*

(2) But an establishment or undertaking may depart from the priority order in paragraph (1) so as to 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.

(3) When considering the overall impacts mentioned in paragraph (2), the following considerations must be taken into account—

- (a) the general environmental protection principles of precaution and sustainability;*
- (b) technical feasibility and economic viability;*
- (c) protection of resources;*
- (d) the overall environmental, human health, economic and social impacts.*

2.2. Regulation 13 requires local authorities to collect glass, metal paper and plastic separately subject to the application of the Necessity Test and Practicability Test, as follows:

'13. (1) This regulation applies from 1st January 2015.

(2) Subject to paragraph (4), an establishment or undertaking which collects waste paper, metal, plastic or glass must do so by way of separate collection.

(3) Subject to paragraph (4), every waste collection authority must, when making arrangements for the collection of waste paper, metal, plastic or glass, ensure that those arrangements are by way of separate collection.

(4) The duties in this regulation apply where separate collection—

(a) is necessary to ensure that waste undergoes recovery operations in accordance with Articles 4 and 13 of the Waste Framework Directive and to facilitate or improve recovery; and

(b) is technically, environmentally and economically practicable.”

2.3. The reference to article 4 means that the approach must fit the waste hierarchy, whilst article 13 means that the method of recovery must protect human health and the environment. However, the core test is whether separate collection is necessary to facilitate or improve recovery. In the absence of a definition, the Route Map and the Council has taken ‘*to facilitate or improve recovery*’ to mean to make it possible to recycle more waste, and/or more waste is recycled of a high quality. If recycling comingled material meets this aim, or is not technically, environmentally and economically practicable, then separate collection is not necessary.

2.4. The Route Map suggests that local authorities adopt a 7 stage process to achieve compliance. The following sections correlate to the 7 stages indicated on the diagram overleaf.



Waste Regulations Route Map

3. Step 1 : Determine What Waste is Collected and How

3.1. Step 1 of the Route Map is to assemble information concerning the current waste collection system to enable a comparison with separate collection. Given that regulation 12 imposes an obligation on the authority to apply the waste hierarchy to all waste collected by the Council, information is provided about municipal waste which includes both household and commercial waste.

3.2. Composition of Waste

The composition of municipal waste arisings in Northumberland has been analysed four times since 2005ⁱ. The purpose of waste sampling varies from establishing a baseline for contractual payments to informing waste minimisation and education activities. Accordingly, the sample size, the waste type sampled and the socio economic housing type has all differed from survey to survey. However, in 2009 DEFRA undertook a wide scale review of existing compositional analysis data in order to estimate national municipal waste composition. In consideration of the robustness and volume of data analysed by DEFRA (some 535 datasets were reduced to 120 when evaluation criteria were applied), it is the results of the DEFRA survey rather than previous Northumberland surveys that has been used to estimate the composition of waste in Northumberland. The percentage of each material type from the DEFRA survey has been applied to the amount of municipal waste collected in Northumberland in 2013/14 to estimate the composition of municipal waste in Northumberland:

	Estimated Composition	
	DEFRA Composition (%)	North'land tonnage
Food Waste	17.8%	28,532
Garden Waste	14.1%	22,519
Other organic	1.7%	2,767
Paper	16.7%	26,629
Card	6.0%	9,660
Glass	6.6%	10,620
Metals	4.3%	6,877
Plastic	10.0%	15,977
Textiles	2.8%	4,526
Wood	3.7%	5,966
WEEE	2.2%	3,503
Hazardous	0.5%	848
Sanitary	2.5%	4,014
Furniture	1.3%	2,143
Mattresses	0.3%	400
Misc combustible	2.4%	3,790
Misc - non combustible	2.8%	4,510
Soil	0.2%	288
Other waste	2.3%	3,710
Fines	1.7%	2,655
Total	100.0%	159,934

Source : Municipal Waste Composition: Review of Municipal Waste Component Analyses (2009), DEFRA.

3.3. The DEFRA survey indicates that the largest proportion of the municipal waste stream is food waste (17.8%), closely followed by paper (16.7%), and garden waste (14.1%).

3.4. Types of Waste Collection

The residents of Northumberland are provided with kerbside collections of waste and recycling on an alternate weekly basis, with paper, card, cardboard, cans and plastic bottles collected comingled one week and residual waste collected the next. The Council also offers the kerbside collection of garden waste. In 2014 95% of residents were eligible to receive kerbside garden waste collections. There were 23,000 households subscribing to the service at a cost of £24 for 20 collections. Bulky waste is collected at the kerbside which is charged according to the number of items removed. Bring sites are provided to enable residents to deposit glass and textiles. Glass is segregated into clear, green/ brown and mixed. The Council provides 12 Household Waste Recovery Centres for residents to deposit their waste free of charge. The following table lists the tonnage of material types collected through the different types of collection, the type of end destination the material is sent to, and an estimation of the cost of collectionⁱⁱ, disposalⁱⁱⁱ and revenue^{iv} recovered:

Collection Type	Material Type	Tonnage Collected	Treatment	Cost (£000's)		Income (£000's)
				Collection	Treatment	
Household Kerbside	Residual	73,086	EFW/Landfill	£ 3,159	£ 7,913	£ -
	Comingled paper/card	15,285	Recycled	£ 2,949	£ 2,210	£ -
	Comingled cans	1248	Recycled			
	Comingled plastic	1496	Recycled			
	Comingled residual	2652	EFW/Landfill			
	Bulky	-	Landfill/EFW	£ 175	-	-£ 95
	Garden Waste	7,541	Composted	£ 530	£ 721	-£ 529
	Hazardous Waste	41	Landfill	£ 24	£ 23	£ -
	Commercial	Residual	5,738	EFW/Landfill	£ 528	£ 388
Comingled paper/card		364	Recycled			
Comingled cans		30	Recycled			
Comingled plastic		36	Recycled			
Comingled residual		63	EFW/Landfill			
Glass		205	Recycled			
Glass		3,484	Recycled	£ 325		
Bring	Textiles	394	Recycled/Reused	£ -	£ -	-£ 70
	Textiles	393	Recycled/Reused	£ -	£ -	-£ 234
HWRCs	Residual	11,519	EFW/Landfill	£ -	£ 4,444	£ -
	Rubble	6,442	Reused			
	Gas Bottles	58	Reused			
	Bin-a-Brac	267	Reused			
	Fridge Freezer	268	Recycled			
	WEE LDA	77	Recycled			
	WEE SDA	914	Recycled			
	Monitors	587	Recycled			
	Mixed Metals	1,642	Recycled			
	Non Ferrous	33	Recycled			
	Wood	5,113	Recycled			
	Paper	489	Recycled			
	Card	959	Recycled			
	Hard Plastic	146	Recycled			
	Glass	1,472	Recycled			
	Carpets	504	Recycled			
	Flo tubes	7	Recycled			
	Tyres	112	Recycled			
	Oil	39	Recycled			
	Plaster board	408	Recycled			
	Garden	11,997	Recycled			
	Batteries Lead Acid	62	Recycled			
	Batteries Non Lead Acid	6	Recycled			
Street Sweepings	Street Sweepings	3826	Recycled	£ 94	+	£ -
	Street Sweepings	956	EFW			
Total		159,939		7,784	15,893	-2,037

* Bulky waste is not identified separately at the weighbridge and is included in the residual waste tonnage.

+ The street sweeping disposal cost reported in the cost of collection.

3.5. Collection Cost

The Council's budget to collect waste from the kerbside, trade customers, bring sites and street sweepings in 2013/14 was £7,784k. To allocate this budget to a particular service area, it was necessary to apportion it across the service as a whole such as labour, vehicles, fuel etc. The table provides an estimate of the breakdown of costs by service area. The Council undertakes waste collections in-house with the exception of hazardous waste collections, servicing of textiles and glass within skips at bring sites which are provided by external contractors.

3.6. Disposal Cost

The Council and SITA Northumberland Ltd entered into a 28 year Private Finance Initiative (PFI) contract in April 2007. The waste infrastructure provided through the contract includes the third line of the Energy from Waste (EfW) plant at Haverton Hill on Teesside, 4 Waste Transfer Stations (WTSs), a Material Recycling Facility (MRF) and a network of 12 Household waste Recovery Centres (HWRCs). The contractor is paid using a combination of a rate per tonne and performance based payments to incentivise diversion from landfill. It is a complex payment mechanism which does not lend itself easily to isolating the cost of a particular service. However, the total PFI budget (including the disposal of hazardous waste) in 2013/14 was £15,893k and an estimation of the cost by service area is provided in the table.

3.7. Income

Income is generated by charging residents for the bulky and garden waste collection services, and charging commercial customers for trade waste collections. The Council has a contract with a third party to collect, sort and recycle textiles from the bring sites and HWRCs which returns revenue to the Council. The PFI contract includes a mechanism to return a financial benefit to the Council from the materials recycled if the revenue returned exceeds a threshold price. The method of calculating this adjustment is currently being discussed with the contractor so values have been omitted such time as an agreement is reached.

4. Step 2 : Check How Collected Materials are Treated and Recycled

- 4.1. Step 2 of the Route Map builds upon how waste is collected as described in step 1, and explains how each waste stream is currently managed.
- 4.2. The population density across Northumberland varies significantly, with over 50% of the population living in less than 5% of the area. Refuse collection vehicles working in the densely populated south east of the county deliver their refuse and recycling directly to the West Sleekburn WTS and MRF. Refuse collection vehicles working in the sparsely populated rural north and west of the county, deliver their loads to one of three WTSs at Berwick, Alnwick and Hexham. The WTSs ensure that the refuse collection vehicles do not travel excessive distances by bulking up the materials into large articulated trailers. Waste and recycling at the WTSs are kept separate, but are mixed with the same types of material from third parties.
- 4.3. The PFI contractor and the Council share the financial benefit of diverting materials from landfill through the PFI contract. To limit the amount of waste sent to landfill the contractor manages the storage capacity at the WTSs and EfW plant when maintenance at the EfW plant is planned. Bulky waste is sorted using the loading shovel to separate waste that can go to the EfW facility as opposed to settees and chairs that obstruct the grate at the EfW plant. These practices ensured that only 8.1% of municipal waste in Northumberland was sent to landfill in 2013/14.
- 4.4. Comingled material collected for recycling is delivered to the West Sleekburn MRF for sorting. The facility was opened in 2009 and cost £12 million through the PFI contract. Northumberland's comingled material is deposited with third party comingled materials that are sourced by SITA. The composition of comingled materials is listed in paragraph 3.3, and is comprised of 74% paper/ card, 7% plastic bottles, 6% cans and 13% reject material. These proportions are derived from the quantity of product out of the MRF, which includes materials delivered by the Council and third parties.
- 4.5. Garden waste is delivered directly to one of two on-farm composting facilities or to a centralised composting facility. Open windrows convert the garden waste to compost that is PAS 100 accredited, that is sold back to residents at the HWRCs or in bulk to landscape gardeners, farmers etc. Glass collected from the bring sites or from trade waste customers is stored in the colours it is collected in, namely green/ brown, clear and mixed to ensure that a high proportion of glass is sent for re-melt into new glass products, with the remaining glass sent for aggregate replacement. Textiles collected from the bring and HWRC sites are sorted into over a 100 different grades of clothing and shoes at the contractor's facility in Denny, Scotland. A range of outlets are available for the materials, including UK, African and eastern European markets. There are 24 different materials segregated at the HWRCs, some of which are sent

directly to re-processors whilst others are bulked up prior to onward transportation. Finally, street sweeping vehicles deposit their loads into skips at Council depots, and are transported to a re-processing facility on Tyneside. The material is dried out and sorted by size through a trommel. The soil and aggregate is recycled into restoration materials and the organic material sent to the EfW facility on Teesside.

- 4.6. A summary of the end destinations in 2013/14 and whether the material is used for open or closed loop¹ recycling is produced in appendix 10.1. Paper, cans, card, plastic and glass are sold on the spot market. A review of the 2013/14 transactions (see appendix 10.2) has been undertaken to establish the proportions sent to each destination. The majority of materials including paper, cans and plastic bottles are sent for closed loop recycling. In 2013/14 clear glass and some green/ brown glass was sent for re-melt, which comprised 43% of the glass. The remaining glass was sent for aggregate replacement. In 2015/16 100% of glass is sent for re-melt.
- 4.7. The PFI contract requires municipal solid waste collected by the Council to be delivered to the contractor. There is a minimum tonnage requirement of 150,000 tonnes per annum. The Council delivered 155,562 tonnes of contract waste in 2013/14. Should the Council fail to deliver the minimum tonnage and the contractor has been unable to mitigate the shortfall, then the Council is required to put the contractor in a better/ no worse position than if the minimum tonnage requirement had been met.
- 4.8. The Council is obligated to deliver a proportion of the contract waste as dry recyclables (comingled materials) and kerbside garden waste, in order that the Contractor has assurance that the facilities procured through the contract are being utilised. The 'waste mix' targets in 2013/14 were 24% for dry recyclables (the Council achieved 18.8%) and 9% kerbside garden waste (the Council achieved 6.7%). The Council is required to put the contractor in a no better/ no worse position than if the targets had been met. Any change to the collection of dry recycling or kerbside garden waste in Northumberland needs to be considered in the context of the Council's obligations to achieve the waste mix requirements of the PFI contract.

¹ 'Closed loop' recycling refers to a material that is reprocessed back into a product of similar quality to what it was originally. This is indicative of high quality recycling and is examined in further detail when applying the 'necessity' test in paragraph 6.2.1.

5. Step 3 : Apply the Waste Hierarchy

5.1. The Regulations require authorities on an on-going basis to apply the waste hierarchy to all materials, in order to establish how much could be diverted from disposal by (and in order of preference):

- 5.1.1. Prevention
- 5.1.2. Preparation for Reuse
- 5.1.3. Recycling
- 5.1.4. Other recovery including energy recovery.

5.2. Departure from the hierarchy is only allowed when '*reasonable in the circumstances*' and will achieve the best overall environmental outcome where justified by '*life-cycle thinking*'. Life cycle thinking requires consideration of 4 principles:

- 5.2.1. the general environmental protection principles of precaution and sustainability;
- 5.2.2. technical feasibility and economic viability;
- 5.2.3. protection of resources;
- 5.2.4. the overall environmental, human health, economic and social impacts.

5.3. The Council has followed the advice from DEFRA published in their 'Guidance on applying the Waste Hierarchy' in 2011. The guidance sets out how the hierarchy should be applied for a range of common materials and products:

Paper and Card	Food	Garden Waste	Textiles	Wood	Glass	Metals	Plastics±	WEEE	Tyres	Residual 'black bag'
Prevention	Prevention	Prevention	Prevention	Prevention	Prevention	Prevention	Prevention	Prevention	Prevention	Prevention
Preparation for re-use			Preparation for re-use	Preparation for re-use	Preparation for re-use	Preparation for re-use	Preparation for re-use	Preparation for re-use	Re-treading	
Recycling	Anaerobic Digestion	Anaerobic Digestion (dry)	Recycling	Recycling; energy recovery* (preferable to recycling for lower grade materials)	Recycling in a remelt process	Recycling	Closed loop recycling	Recycling (esp. suitable for metals and high quality plastic)	Recovery; use in road surfaces	Solid recovered fuel derived from MHT or MBT where it replaces coal*
Energy recovery* (esp. suitable for short fibres or contaminated materials)	Composting; other energy recovery technologies	Composting; other energy recovery technologies			Other recycling		Other recycling	Energy recovery (esp. suitable for non-hazardous mixed plastic)	Energy recovery in cement kilns	Energy Recovery, all technologies (Heat Only)
			Energy recovery*		Energy recovery*	Recycling after energy recovery	Energy recovery*	Energy recovery* (esp. suitable for non-hazardous mixed plastic)	Energy recovery through pyrolysis	Energy Recovery, all technologies (CHP)
Disposal	Disposal	Disposal	Disposal	Disposal	Disposal	Disposal	Disposal	Disposal	Other recovery (eg drainage fill & sea defences)	Energy Recovery, all technologies (Electricity Only)
									Gasification /incineration with EFW	MBT or MHT outputs used as fuel (but do not replace coal) or *
									Microwave treatment	Disposal

Source : Guidance on applying the Waste Hierarchy, DEFRA, 2011

5.4. The waste hierarchy has been applied to the waste streams collected in Northumberland. A table summarising how waste is managed in relation to the waste hierarchy, and the options promoted to residents is provided in Appendix 10.3.

5.5. A high level review has been undertaken to establish the Council's effectiveness to move waste up the waste hierarchy. The Council only sends 8.1% of municipal waste to landfill when all other options have been explored, so disposal is minimised where ever possible. To evaluate the Council's recycling and reuse practices, the theoretical composition of Northumberland's municipal waste derived from DEFRA's Municipal Waste Composition in paragraph 3.2, is compared to the actual tonnage of waste collected in Northumberland for recycling and reuse (paragraph 3.4) and is detailed below:

	Theoretical Arisings (tonnes)	Current collections for recycling/reuse (tonnes)	Potential for recycling/ reuse (tonnes)	Capture Rate (%)	Comments
Food Waste	28,532	0	28,532	0%	
Paper/ Card	36,289	17,077	19,212	47%	
Plastic	15,977	1,678	14,299	11%	
Glass	10,620	5,161	5,459	49%	
Sanitary	4,014	0	4,014	0%	
Metals	6,877	3,011	3,866	44%	
Other waste	3,710	267	3,443	7%	Bric a brac
Garden Waste/ soil	22,807	19,538	3,269	86%	
Textiles	4,526	1,291	3,235	29%	Textiles and carpets
Other organic	2,767	0	2,767	0%	
Fines	2,655	0	2,655	0%	
Furniture	2,143	0	2,143	0%	
WEEE	3,503	1,853	1,650	53%	
Wood	5,966	5,113	853	86%	
Hazardous	848	219	629	26%	Asbestos, pesticides, tyres, oil and batteries
Mattresses	400	260	140	65%	
Misc combustible	3,790	3,826	-36	101%	Street sweepings
Misc - non combustible	4,510	6,850	-2,340	152%	Rubble and plasterboard
Total	159,934	66,144	93,790	41%	

5.6. Food waste has the greatest potential to move up the waste hierarchy based on weight. Currently food waste is not separately collected from refuse, and is delivered for energy recovery. Obstacles to overcome to segregate food waste include a lack of anaerobic digestion capacity in the north east, the significant financial investment required in collection vehicles and crews, and a contractual obligation to deliver all municipal waste to the PFI contractor. Paper and card is collected through kerbside comingled collections and the HWRCs, however only 47% of the potential arisings is being recycled. An increase in the quantity of paper/ card, cans

and plastic bottles recycled via the kerbside bin would help the Council achieve its waste mix obligations.

- 5.7. The DEFRA survey suggests there are high quantities of plastic in the municipal waste stream, whereas only 11% is recovered for recycling by the council. The DEFRA survey does not distinguish between the types of plastic as not all grades are readily recycled. The Council's comingled kerbside collection system targets plastic bottles that are separated at the MRF into PET and HDPE for closed loop recycling. Mixed plastics such as film and food trays are not target materials due to the lack of local re-processing facilities and the requirement to reconfigure the MRF at the expense of other higher volume materials. Hard bulky plastics, such as plastic toys, are collected at the HWRCs.
- 5.8. The table indicates that 49% of glass is recycled. Glass is not collected at the kerbside, but containers are provided at local bring sites and the 12 HWRCs for residents to separate their glass. Glass is separated into green/ brown, mixed and clear.
- 5.9. A survey to establish the composition of kerbside refuse bins will be conducted in 2014. It will provide more accurate information than the national DEFRA survey, and will establish whether Northumberland residents are depositing significant quantities of potentially recyclable material in the refuse bin to inform waste awareness and education activities. .

6. Step 4 : Decide Whether Separate Collection of the Four Materials is Required

6.1. The purpose of step 4 is to decide whether the Council needs to collect glass, metal, paper and plastic separately from one another. These four materials are subject to additional requirements than the waste hierarchy that is applied to all waste types. In Northumberland, metal, paper and plastic is collected comingled by kerbside collections, whereas glass is collected separately from other waste at bring sites and HWRCs. It is necessary to collect these four materials separately by 1st January 2015 if both the 'necessity' and 'practicability' tests are passed.

6.2. Necessity Test

Is separate collection necessary to ensure that waste is recycled and to 'facilitate or improve recovery'? To answer this question we have compared the likely differences in both the quality and quantity of materials collected through the existing comingled arrangements for paper, cans and plastic as opposed to collecting these materials separately.

6.2.1. Quality

There is no simple definition of '*high quality*' recycling. The Route Map suggests that high quality recycling could mean that the material collected can be used in the same ways and has the same environmental benefits as separately collected materials, for example, can a similar proportion of news and pamphlets be used to produce fresh newsprint or other high grade paper products? The Council has adopted this approach to assess the quality of recycling.

6.2.2. The Council and the contractor have an agreed input specification through the PFI contract for the co-mingled materials and glass collected by the Council (see appendices 10.4 and 10.5). A maximum of 10% contamination is permitted in comingled loads, and only 2% contamination of glass. Contaminated loads are either sorted at an agreed premium rate, or sent to energy recovery or disposal. No loads of co-mingled material or glass exceeded the rates of permitted contamination during 2013/14.

6.2.3. In March The Environmental Permitting (England and Wales) (Amendment) Regulations 2014, known as the Material Facilities (MF) Regulations were implemented. From October 2014, MF operators processing more than 1,000 tonnes of mixed waste per year, are required to sample the incoming wastes and the recycling streams they produce, assess the quality and level of contaminants, and report the data to the Environment Agency.

6.2.4. At the time of writing (October 2014), sampling information obtained for the MF Regulations is unavailable. However, since the West Sleekburn MRF opened in 2009, sampling has been an integral part of the quality

assurance process. The contractor is a member of the Recycling Registration Service (RRS), an independent externally audited scheme to enable members to demonstrate that waste material handled or processed at registered MRFs and exported out of the UK by a member or broker acting on its behalf:

- 6.2.4.1. is handled or processed at the registered MRF in accordance with good industry practice in the UK,
- 6.2.4.2. accords with Green List waste guidance as verified from time to time by the auditor operating under the scheme,
- 6.2.4.3. when exported goes to a recovery facility that is authorised to operate under applicable domestic legislation, is in general compliance with applicable EHS legislation and is operated to standard broadly equivalent to EU standards.

6.2.5. A summary of the sampling undertaken at the West Sleekburn MRF from April to August 2014 compared to the RRS and Resource Association quality standards is tabulated below.

Material Type	Number of samples	Average Contamination	Quality Standards		Compliance with RRS & Resource Association (y/n)
			RRS	Resource Association ²	
News & Pams	118	0.45%	2.0%	0.5%	Y
Soft mixed paper	118	0.64%	2.0%	1.5%	Y
Old corrugated cardboard	33	0.39%	2.0%	1.5%	Y
HDPE	19	0.22%	2.0%	1.0%	Y
PET	19	0.20%	2.0%	1.0%	Y
Non-ferrous cans	49	0.08%	2.0%	3.0%	Y
Steel cans	49	0.12%	2.0%	n/a	Y
Glass for re-melt - green/ brown cullet	0	n/a	2.0%	1.0%	n/a
Glass for re-melt - clear cullet	0	n/a	2.0%	1.0%	n/a

² Resource Association

Newspaper & magazines - 0.5% non-paper components, 1% non-paper components and other unwanted materials

Cardboard, soft mixed paper - 1.5% non-paper components & 2.5% to 3% non-paper components and other unwanted materials

Plastic bottles - all contaminants < 6%, of which < 1% can be Plastic Bags; < 2% Steel Cans; < 3% News & PAMs; and <5% Aluminium Cans. Food waste must be < 1% by weight.

Clear cullet glass - 1.5% colour. Green cullet glass - 10% amber.

6.2.6. The table shows that the quality of material sent to re processors meets the standards set by both the RRS and the Resource Association. It should be noted that the more stringent Resource Association quality standards were only published in June 2014 and that the West Sleekburn MRF was already supplying materials to re-processors which met these standards. The Resource Association quality standards represent the quality specifications for UK re-processing facilities (responsible for processing 12,917,800 tonnes of recyclate annually), and gives a very good indication of the 'high quality' recyclate needed to achieve closed loop recycling. It is evident that the quality of recyclate segregated from comingled materials collected in Northumberland, is at least comparable to that collected separately, and surpasses the acceptance criteria required by re-processing operators to achieve closed loop recycling.

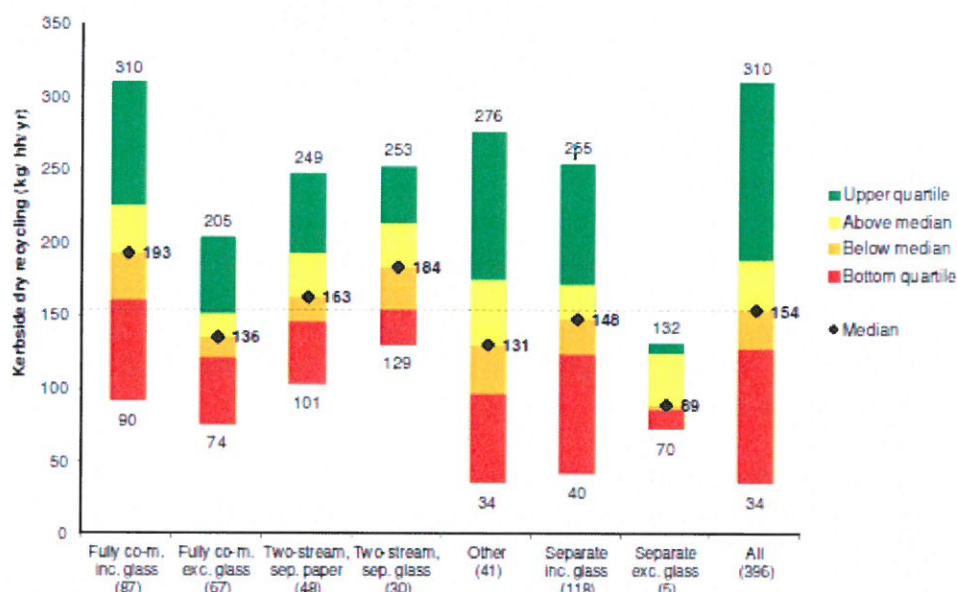
6.2.7. Glass is not collected comingled but has been evaluated in terms of the quality and quantity of recycling. Glass is not sampled at the WTSs. However there have been no loads rejected at the glass re-processors listed in paragraph 4.6, indicating that the glass collected from the bring sites and HWRCs in Northumberland meets their quality requirements for re-melt; namely that there is less than 1% non-glass contamination and clear cullet has less than 1.5% colour contamination and green cullet has less than 10% brown colour contamination. In 2014/15 arrangements are in place to ensure that all glass collected is sent for re-melt and closed loop recycling.

6.2.8. Quantity

The quantity of paper, cans and plastic collected through co-mingled collections needs to be compared to the quantity that could be collected if a separate collection system were implemented. Consultants WYG Groups fourth annual report^v, covering 2011/12, found that 20 of the top 30 local authorities in the recycling league table collected co-mingled waste, compared to just two of the bottom 30. The report noted that 90% of MRF reject rates in 2011/12 were 13% or lower, which suggests that the West Sleekburn MRF efficiently removes contamination to safeguard the quality of recyclate. However, a separate collection system would not require materials to be sorted at a MRF, so would the quantity recovered be greater?

6.2.9. The WYG report identifies that authorities, such as Northumberland, with fully co-mingled collections (excluding glass), generate a median dry recycling yield of 136 kg/hh/year, compared to 89 kg/hh/year for a

separate collection system (excluding glass).



Source : Review of Kerbside Recycling Collection Schemes in the UK in 2011/12, WYG Group, June 2013.

6.2.10. The actual kerbside yield of paper, cans and plastics in Northumberland in 2013/14, net of the reject identified at West Sleekburn is 125 kg/hh/year, significantly higher than those from separate collections (a median of 89 kg/hh/year). It is clear that separate collections of paper, cans and plastics are not necessary to facilitate recovery in terms of the quantity of recycling collected.

6.2.11. Glass is collected separately in Northumberland. The WYG report helps to establish whether collecting glass at the kerbside, comingled with dry recyclables would increase the yield of glass compared to the current separate collection arrangements. The median dry recycling yield of authorities collecting glass fully comingled is 57 kg/hh/ year higher compared to those that exclude glass. In Northumberland this equates to 8,400 tonnes of glass per year, as opposed to the 4,950 tonnes of glass collected from bring and HWRC sites in 2013/14. If comingled collections were re-configured to include glass and glass was no longer collected at bring and HWRC sites, it would increase the quantity of glass collected by 3,450 tonnes. However, configuring collections in this way could have a major impact on the quality of material collected. The glass recovered is unlikely to be suitable for re-melt and have to be used for aggregate, and shards of glass would be detrimental to the high quality of paper currently recovered. It is likely that comingled collections that include glass, would pass the quality part of the necessity test, and would need to be subjected to the 'practicability test' which is the subject of paragraph 6.3.

6.2.12. Step 4 asks the question 'Is separate collection necessary to ensure that waste is recycled and to 'facilitate or improve recovery'? The evidence presented above strongly suggests that separate collection is

not necessary to facilitate or improve recovery, neither to improve the quality of recycling or the quantity of material collected. The Route Map suggests that even where the necessity test is not met, it may be desirable for local authorities to apply the 'practicability test' to demonstrate clear compliance.

6.3. The Practicability Test

Separate collection is only required where it meets the necessity and the practicability test. The practicability test assesses whether separate collection is technically, environmentally, and economically practicable. Practicable does not mean difficult or inconvenient, but could represent a high hurdle to overcome. Separate collection is only required where all three elements of practicable are met.

6.3.1. Technically Practicable

Technically practicable means '*that the separate collection may be implemented through a system which has been technically developed and proven to function in practice.*'^{vi}. The only kerbside sort systems as opposed to comingled collections that have been implemented in Northumberland in the past were for glass. The service was provided to 7,600 households, and was withdrawn in 2009 as part of Local Government Reorganisation. Nevertheless, based on the experience of other local authorities that have implemented kerbside sort collection systems across a range of urban and rural areas, it would be technically practicable to introduce separate collections in Northumberland.

6.3.2. Environmentally Practicable

Environmentally practicable means '*that the added value of ecological benefits justify possible negative environmental effects of the separate collection (e. g. additional emissions from transport)*'. To accurately assess the environmental impact and benefits of collections, it would be necessary to undertake detailed environmental modelling to establish the transport emissions, energy consumption of the MRF, and greenhouse gas savings arising from high quality recycling.

6.3.3. The information presented in paragraph 6.2 sets out the evidence to support that the Council is collecting a high quantity and quality of recycling through co-mingled collections. The introduction of separate collections would not improve the quality of recycling, and will reduce the quantity collected. Kerbside sort vehicles would be required to collect materials separately, and displace some of the refuse collection vehicles currently utilised for both refuse and recycling service. However, the current flexibility derived from using refuse collection vehicles for both refuse and recycling services would be lost, resulting in an increase in the total number of vehicles to provide the service and consequently adversely impact on greenhouse gases. There would be an environmental benefit of decommissioning the MRF, however the facility is an integral part of the PFI contract and would not be justified economically (discussed further in paragraph 6.3.4). The introduction of

separate collections would not deliver overall environmental benefits and is deemed not practicable.

- 6.3.4. Economically practicable means '*a separate collection which does not cause excessive costs in comparison with the treatment of a non-separated waste stream, considering the added value of recovery and recycling and the principle of proportionality*'. It is difficult to understand where the added value of recovery and recycling arises, given the current co-mingled collection system delivers high quality recycling and exceeds the quantity recycled from separate collections. To accurately assess the economic impact of introducing separate collections, it would be necessary to undertake a detailed cost benefit analysis to determine the number and type of vehicles and staff required to deliver the service, to re model the routes to estimate changes in fuel consumption, and the modifications to the existing transfer stations. Whilst separate collections would no longer require a MRF it was procured through the waste PFI contract, and the contractor would be put in a no better/ no worse financial position than if it were operational. The introduction of separate collections would entail excessive cost considering the absence of added value from recovery and recycling, and is deemed not practicable.
- 6.4. The evidence presented in paragraph 6.2 strongly suggests that separate collections are not necessary to facilitate or improve recovery in terms of the quantity or quality of the materials recycled. Even though the practicability test was not needed, a high level review was conducted as detailed in paragraph 6.3 and suggests that separate collections are technically but not environmentally or economically practicable, albeit further detailed evidence would be required should the practicability test be relied upon. On this basis the Council is compliant with the Regulations by providing comingled collections of paper, cans and plastic and separate collections of glass.

7. Step 5 : Obtain Sign Off

7.1. This report 'An Assessment of Waste Collection Systems in Northumberland' has been subject to peer review by senior officers in the Neighbourhood Services of Local Services, Northumberland County Council.

7.2. The report has been considered by the following officers, members and groups as part of the Council's decision making process:

7.2.1. Head of Neighbourhood Services

7.2.2. Principle Lawyer


7.2.3. Executive Director of Local Services

7.2.4. Policy Board Member for Street care and Environment

7.2.5. Communities and Place Overview and Scrutiny Committee

7.3. Decisions arising from the Place Overview and Scrutiny Committee will be retained and recorded in line with council policy.

The following officers confirm that this report '*An Assessment of Waste Collection Systems in Northumberland*' dated 15th October 2014 demonstrates that Northumberland County Council is compliant with the Waste England and Wales Regulations 2011 (as amended):

Signature:  Date: 30/4/15

Name: Paul Jones Designation: Head of Neighbourhood Services

Signature:  Date: 30/4/15

Name: Liam Henry Designation: Legal Services Manager

8. Step 6 : Retain Evidence

8.1. Evidence that supports the Council's rationale has been included and referenced within this document (see appendices and footnotes), or is referenced and retained, such as PFI contract documentation and WasteDafaflow records. Information referred to in this report will be retained should the Council be required to demonstrate the rationale underlying the decision making process..

9. Step 7 : Re-evaluation Process

9.1. To ensure continuing compliance it will be necessary to reevaluate the Council's position. Potential catalysts that may prompt a review include (but are not limited to):

9.1.1. Results from compositional analysis

9.1.2. Procurement of new fleet

9.1.3. Review of the Waste Management Strategy

9.1.4. Changes to collections systems to achieve 50% recycling by 2020.

10. Appendices

10.1. Summary of End Destinations and type of recycling in 2013/14.

Material Type	End Destination	13/14 proportion to end destination	Closed Loop Recycling
Comingled paper	Shotton Paper Mill, Flintshire, Cheshire, CH5 2LL(UPM-KYEMME)	46%	✓
	Mark Lyndon Paper Enterprises UK Ltd 12 The Triangle, Nottingham, NG2 1AE	54%	✓
Comingled card	Mark Lyndon Paper Enterprises UK Ltd 12 The Triangle, Nottingham, NG2 1AE	71%	✓
	J & H Sales 11a Cambridge Park Wandstead LONDON E11 2PU	19%	✓
	A.C.N. Suite 10, Egerton House, Towers Business Park, Wilmslow Road, Didsbury, Manchester. M20 2DX	10%	✓
Comingled cans - ferrous	SITA Metals Coventry Three Spires Ind Est Ibstock Road Coventry West Midlands CV6 6JR	100%	✓
Comingled cans - non-ferrous	Aleris 38 Waunarlwydd Swansea West Glamorgan SA5 4YG	33%	✓ The metal is melted and depending on the purity will make different specifications of alloys for cars, small engines, appliances and electrical and consumer products.
	Alutrade Ltd Langley Forge House Tat Bank Road Oldbury West Midlands B69 4NH	5%	✓ Aluminium head rail, roller blind tube, pleated bar, awning section

Material Type	End Destination	13/14 proportion to end destination	Closed Loop Recycling
	Novelis UK Ltd Novelis Recycling Latchford Locks Works Warrington Cheshire WA4 1NP	62%	Produces aluminium ingots for the beverage can manufacturing industry
Comingled plastic	AWS Eco Plastics Unit 2, Britannia Bus Pk Point Pleasant Ind Est Wallsend Newcastle Upon Tyne NE28 6HA	29%	✓ PET and hot washed PET typically used to produce drinks bottles and various food packaging
	J & A Young Brook House Hambleton Road Egleton Oakham Leicestershire LE15 8AE	4%	✓ PET and hot washed typically used to produce drinks bottles and food packaging.
	Monoworld Ltd Monoworld Bus Pk Rushden Road Sharnbrook Bedfordshire MK44 1NB	44%	✓
	Polypipe Broomhouse Lane Edlington Doncaster DN12 1ES, UK Recycled UK	15%	✓
	Recycled UK Unit 22-24 Cannon Business Park Gough Road WV14 8XR	7%	✓
	Biffa (Plastics) Plastics Road Redcar TS10 4RG	1%	✓
Garden Waste	DJ & SJ Recycling Anick Grange Anick Hexham NE46 4PL	23%	✓ Used for landscaping, agriculture and sold to the public.

Material Type	End Destination	13/14 proportion to end destination	Closed Loop Recycling
	Com-Vert Shieldykes Farm Felton NE65 9LS	24%	✓ Used for landscaping, agriculture and sold to the public.
	SITA Uk Ellington Composting Ellington NE63 9XR	53%	✓ Used for landscaping, agriculture and sold to the public.
Hazardous Waste	Virridor Waste Management Pilsworth Rd Bury Greater Manchester BL9 8QZ	All	x Cement bound asbestos is disposed to hazardous waste landfill. Chemicals are recycled where possible.
Glass	O&I Glasshouse Loan Alloa Clackmannanshire FK10 1PD	35%	✓ Re-melt
	Recresco Ltd Lane End Urban Rd, Kirby in Ashfield, Nottingham, NG17 8AP	51%	x Aggregate Replacement
	Berryman. Lidgate Crescent, Langthwaite Grange Ind Est, South Kirby, Pontefract, WF9 3AA	8%	✓ Re-melt
	Virridor Glass Recycling Ltd	6%	x Aggregate Replacement
Textiles	Nathans 13 Winchester Ave Denny, Stirlingshire, FK6 6QE	All	✓ >98% is reused or recycled to wiping cloths, sound proofing within the automotive industry, carpets, underlay and mattress linings.
Rubble	JBT Barrington Rd Ind Est Bedlington NE22 7DG	98%	✓

Material Type	End Destination	13/14 proportion to end destination	Closed Loop Recycling
	ED & MA Redpath Scotts Yard Wooler Northumberland NE71 6NE	2%	✓
Gas Bottles	Returned to manufacturer	All	✓ Reused by manufacturer
Bric-a-Brac	Alan Fairbairn 23 Harveydene Newcastle Upon Tyne NE5 4QD	33%	✓ Sold and re-used
	Norman Alan Glendenning 3 Appletree Gardens Newcastle Upon Tyne NE6 4NY	33%	✓ Sold and re-used
	George Long 8 Pine Avenue Guidepost Choppington Northumberland NE62 5PN No (sold and re used)	34%	✓ Sold and re-used
Fridge Freezer WEEE SDA & LDA & monitors	SIMs Macklin Avenue Cowpen Ind Est Billingham, Cleveland TS23 4BZ	All	✓ Items are re-used where possible. Other items are shredded and segregated into material types and made into new products.
Mixed Metals	EASCO Ltd SPC Atlas Works Norwich Rd, Lenwade, Norfolk NR9 5SN	All	✓
Non Ferrous	EASCO Ltd SPC Atlas Works Norwich Rd, Lenwade, Norfolk NR9 5SN	All	✓
Wood	Timberpak Staithes Rd, Pattinson Ind Est Washington Tyne & Wear NE38 8NW	All	✓ Sold to EGGER
Hard Plastic	GFSL Wilton International	All	✓

Material Type	End Destination	13/14 proportion to end destination	Closed Loop Recycling
	Redcar, Teeside TS10 4RG		
Carpets	Valley Equestrian Unit 8, Bradkey Fold Trading Est, Radcliffe Moor Rd Bolton, Lancashire BL2 6RT	All	✗ Granulated and used for horse arenas
Fluorescent tubes	Balcan Engineering Banovaluum Court, Boston Rd Ind Est, Horncastle, Lincolnshire, LN9 6JR	All	✗ Fluorescent tubes are crushed and made into various products
Tyres	Vellco Vellco Ind Pk Ropery Lane Weaverthorpe Malton N Yorkshire, YO17 8EZ	All	✗ Tyres are shredded/ granulated to make sports tracks, children's play areas and equestrian arenas.
Oil	Oil Salvage Ltd Lyster Rd, Bootle, Merseyside, L20 1AS	All	✓ Produce fuel oil.
Plaster board	Roy Hatfield Plasterboard Recycling Fullerton Road Rotheram, S60 1DH	All	✓ Recycled into re-processed gypsum
Batteries Lead Acid	G&P Batteries Crescent Work Wileenhall Rd Darlaston Walsall, WS10 8JJ	All	✓ Ingots or 'slugs' to battery maker
Batteries Non Lead Acid	G&P Batteries Crescent Work Wileenhall Rd Darlaston Walsall WS10 8JJ	All	✗ Various products such as hearing aids, clocks, emergency lighting, military, IT, Hybrid vehicles and Aeronautical
Street Sweepings	O'Briens Waste Recycling Solutions Aaron House Potter Street Willington Quay Newcastle NE28 6UE	All	✗ Sweepings are screened, sorted by size and used for restoration.

10.3. Application of Waste Hierarchy in Northumberland

Material Type	Prevention	Preparation for re-use	Recycling/ Anaerobic digestion	Composting	Other Recovery
Comingled paper/card	<p>✓</p> <p>Promotion of Junk Mail avoidance scheme, Council emails advise no printing of emails unless necessary, set printers to double sided print, online bin calendars instead of mailing paper copies, Council Magazine issued electronically and only limited paper copies available.</p>	<p>✓</p> <p>Residents are encouraged to use book banks or to donate direct to Charity shops</p> <p>Residents are advised that confidential papers are shredded and used in home composting or pet bedding</p>	<p>✓</p> <p>Paper/card is recycled into lower grade paper or card.</p> <p>Residents advised to only shred where necessary in order to maintain recyclable paper quality, also advised to wash/dry other mixed recyclables to avoid contamination of paper in comingled collection</p>	<p>✗</p> <p>N/A</p>	<p>✓</p> <p>Paper/card not recycled at the MRF is delivered to the EfW facility to recover energy.</p>
Comingled cans	<p>✓</p> <p>Communications activities via public events, leaflets, Council website which encourages avoidance of food waste in cans in line</p>	<p>✗</p> <p>It is unreasonable and not in line with life cycle thinking to expect residents to reuse cans</p>	<p>✓</p> <p>Comingled cans are recycled into more cans or metal ingots for use in manufacturing other metal products. Residents are asked</p>	<p>✗</p> <p>N/A</p>	<p>✓</p> <p>Cans not recycled at the MRF are delivered to the EfW facility where those not volatised at high temperature are recovered from the</p>

Material Type	Prevention	Preparation for re-use	Recycling/ Anaerobic digestion	Composting	Other Recovery
	with Love Food Hate Waste programme – by using shopping lists and menu planning.		to wash cans before recycling – communications advice given in the council tax leaflet and on website.		furnace bottom ash and recycled (1,800 t per annum).
Comingled plastic	<p>✓</p> <p>Communications activities via public events, leaflets, Council website which encourages avoidance of food waste with packaging in line with Love Food Hate Waste. Residents are encouraged to avoid plastic waste by replacing carrier bags with bags for life</p>	<p>✓</p> <p>Residents are encouraged to reuse plastic carrier bags to reduce the number entering the waste stream</p>	<p>✓</p> <p>Comingled plastic bottles are recycled into plastic pellets and flake prior to being manufactured into other plastic products. Residents are asked to wash, squash, tops off bottles via leaflet advice given with the council tax bill and also on council website in order to maintain the quality of the recycled product.</p>	<p>✗</p> <p>N/A</p>	<p>✓</p> <p>Plastic not recycled at the MRF is delivered to the EfW facility to recover energy.</p>

Material Type	Prevention	Preparation for re-use	Recycling/ Anaerobic digestion	Composting	Other Recovery
Garden Waste	<p>✓ Promote Home Composting (prevents waste entering domestic collections).</p>	<p>✓ Residents are encouraged to reuse their own garden waste as a mulch, by using home garden shredders.</p>	<p>* Uneconomic and environmentally detrimental to transport garden waste to AD plants outside of North'land. Utilise local windrow composting facilities.</p>	<p>✓ Promote kerbside collections of garden waste and delivery to HWRs. The amount of garden waste composted has increased in 13/14.</p>	<p>✓ Garden waste not composted and deposited in the refuse bin is delivered to the EfW facility to recover energy.</p>
Food waste	<p>✓ Promotion of Love Food Hate Waste campaign to make residents aware of which foods are fit to eat, reduction of food waste by using shopping lists and menu planners and smart shopping techniques</p>	<p>✓ Residents are given advice as to which food waste can be composted and how to compost many categories of food waste successfully at home using home compost bins and hot bins</p>	<p>* It is uneconomic and environmentally detrimental to transport food waste to AD plants outside of Northumberland.</p>	<p>* Food waste cannot be composted in the local windrow composting facility due to the restrictions in place on those facilities by the Animal By-Product regulations 2009</p>	<p>✓ Food waste which is deposited in the refuse bin is delivered to the EfW facility to recover energy.</p>
Hazardous Waste	<p>✓ Promote awareness of hazardous chemicals and their</p>	<p>* It is unreasonable to expect hazardous waste to be reused</p>	<p>*/✓ Cement bound asbestos is not recycled, however,</p>	<p>* N/A</p>	<p>* It is unreasonable and not supportive of life cycle thinking</p>

Material Type	Prevention	Preparation for re-use	Recycling/ Anaerobic digestion	Composting	Other Recovery
	useful life (prevents waste entering domestic collections too early).	due to its hazardous nature.	chemicals and pesticides are recycled where practicable		to deliver hazardous waste to an EFW facility. Cement bound asbestos must be delivered to a licensed hazardous landfill site.
Glass	<p>✓</p> Residents are encouraged to reduce packaging waste by using smarter shopping techniques, menus etc as per Love Food Hate Waste campaign	<p>✓</p> Residents are encouraged to refill glass jars and reuse in painting/ decorating etc	<p>✓</p> Residents are asked to clean out jars then take them to local bring sites. Stickers on refuse bins encourage glass recycling.	<p>x</p> N/A	<p>✓</p> Glass deposited in the refuse bin is delivered to the EFW facility to recover energy.
Textiles	<p>✓</p> Residents are encouraged to prevent textile waste by buying clothes which last, and to extend the life of	<p>✓</p> Residents are encouraged to segregate textiles for reuse and deposit them at charity shops and	<p>✓</p> Textiles are collected via bring sites and sent to a re-processor to be reused or recycled. All residents are	<p>x</p> N/A	<p>✓</p> Textiles deposited in the refuse bin are delivered to the EFW facility to recover energy.

Material Type	Prevention	Preparation for re-use	Recycling/ Anaerobic digestion	Composting	Other Recovery
	clothes by repairing	charity banks thus keeping them out of the waste system. All residents are given that advice via a leaflet with the Council Tax bills.	given advice via a leaflet with the Council Tax bills.		
Rubble	✓ Promotion of private skip hire prevents rubble from the municipal waste stream.	✓ Small amounts of rubble are accepted at the network of HWRCs in the County	✓ Rubble taken from the HWRCs is sent for reuse/ reprocessing into hard core and building materials	✗ N/A	✗ Rubble deposited in the refuse bin is delivered to the EfW facility which has no calorific value.
Gas Bottles	✓ Residents are encouraged to return their unwanted gas bottles to original suppliers thus keeping them out of the municipal waste stream	✓ Gas bottles are segregated in cages at the HWRCs so that they can be returned to original suppliers	✓ The majority of gas bottles are reused. Damaged gas bottles are recycled.	✗ N/A	✗ It is not envisaged that gas bottles would enter the household waste stream via kerbsides, however if they did they would be included in the non-recyclable household waste which is delivered to

Material Type	Prevention	Preparation for re-use	Recycling/ Anaerobic digestion	Composting	Other Recovery
					the EfW facility to recover energy
Bric-a-Brac	<p>✓ Residents are directed to take Bric-a-Brac to Charity shops for reuse thus keeping it out of the municipal waste scheme</p>	<p>✓ Residents can segregate bric-a-brac at the HWRCs for reuse</p>	<p>✓ Bric-a-Brac collected at the HWRCs may be repaired in order that the item can be sold.</p>	<p>✗ N/A</p>	<p>✓ Bric-a-Brac deposited in the refuse bin is delivered to the EfW facility with the non-recyclable household waste to recover energy</p>
Fridge Freezer, LDA & SDA WEEE, and monitors	<p>✓ Residents are encouraged (via the council website) to donate white goods to a Community recycling project thus keeping it out of the municipal waste scheme</p>	<p>✓ Residents are encouraged to utilise re-use organisations prior to requesting bulky uplifts of WEEE.</p>	<p>✓ WEEE collected at the HWRCs and through bulky are segregated into separate materials for recycling.</p>	<p>✗ N/A</p>	<p>✓ Any small parts of WEEE deposited in the refuse bin are delivered to the EfW facility with the non-recyclable household waste to recover energy</p>
Mixed Metals	<p>✓ Residents are encouraged to repair metal goods before replacing them.</p>	<p>✓ Residents are encouraged to utilise re-use organisations for bicycles etc</p>	<p>✓ HWRCs accept mixed metals in a dedicated container for dispatch to scrap</p>	<p>✗ N/A</p>	<p>✓ Metal deposited in the refuse bin is delivered to the EfW facility. Metal is</p>

Material Type	Prevention	Preparation for re-use	Recycling/ Anaerobic digestion	Composting	Other Recovery
		rather than recycling at the HWRCs	dealers where it is processed into new engineering components		recovered following incineration at the bottom ash recycling facility.
Non Ferrous	<p>✓</p> <p>Residents are encouraged to repair metal goods before replacing them</p>	<p>✓</p> <p>Residents are encouraged to utilise re-use organisations rather than recycling at the HWRCs</p>	<p>✓</p> <p>HWRCs accept non-ferrous metals in a dedicated container for dispatch to scrap dealers where it is processed into new engineering components</p>	<p>✗</p> <p>N/A</p>	<p>✓</p> <p>Metal deposited in the refuse bin is delivered to the EfW facility. Metal is recovered following incineration at the bottom ash recycling facility.</p>
Wood	<p>✓</p> <p>Residents are encouraged (via website and leaflet in council tax bills) to offer unwanted furniture to others via online swap shops thus keeping it out of the household waste system.</p>	<p>✓</p> <p>Organisations that re-use furniture are eligible for financial payment from the council to promote sustainable waste management practices.</p>	<p>✓</p> <p>Wood recovered at the HWRCs is recycled into building materials and products.</p>	<p>✗</p> <p>N/A</p>	<p>✓</p> <p>Wood deposited in the refuse bin is delivered to the EfW facility to recover energy.</p>

Material Type	Prevention	Preparation for re-use	Recycling/ Anaerobic digestion	Composting	Other Recovery
Hard Plastic	x It is unreasonable and not in line with life cycle thinking to expect residents to prevent hard plastic waste.	x Information is distributed to residents via Recycling Wheels to hard plastic recycling at HWRCs	✓ Hard plastics are collected at the 12 HWRCs in the County ready for recycling into street furniture and building products	x N/A	✓ Hard plastic deposited in the refuse bin is delivered to the EfW facility to recover energy.
Carpets	x It is unreasonable and not in line with life cycle thinking to expect residents to prevent waste carpets	x Residents are advised to take carpets to HWRCs for recycling	✓ Carpets are collected at the 12 HWRCs ready for recycling into Equine exercise floor covering	x N/A	✓ Carpets deposited in the refuse bin is delivered to the EfW facility to recover energy.
Fluorescent tubes	✓ Residents are encouraged to use long life tubes in order to reduce the amount that they would seek to replace in the long term	x Recycling is a technically feasible solution as opposed to reuse.	✓ Fluorescent tubes are bulked up at the HWRCs and WTSS and dispatched for reprocessing/ recycling into individual materials	x N/A	✓ Fluorescent tubes which fail to be segregated at the HWRCs are delivered to the EfW facility to recover energy
Tyres	x It is unreasonable	✓ Residents are	✓ Residents are asked	x N/A	✓ Tyres which fail to

Material Type	Prevention	Preparation for re-use	Recycling/ Anaerobic digestion	Composting	Other Recovery
	and not in line with life cycle thinking to expect residents to prevent waste tyres.	encouraged to consider purchasing re-treaded tyres.	to take tyres which they cannot dispose of at commercial garages, to their local HWRC where they are segregated for recycling into children play surfaces, sports tracks and equestrian arenas		be segregated at the HWRCs are delivered to the EfW facility to recover energy.
Oil	x It is unreasonable and not in line with life cycle thinking to expect residents to prevent waste oil.	x Recycling Wheels inform residents that oil is recovered at HWRCs and should be segregated from the general waste stream. Recycling oil is technically feasible as opposed to reuse.	✓ Residents are encouraged to keep waste engine oil separate from other wastes and take it to their local HWRC for recycling into refined oil and cattle feed	x N/A	✓ Oil which is not collected for recycling at the HWRC is delivered to the EfW facility to recover energy.
Plaster board	x It is unreasonable to expect residents to stop replacing	x Residents are informed that plasterboard is	✓ Residents who have not entered into a private waste	x N/A	✓ Oil which is not collected for recycling at the

Material Type	Prevention	Preparation for re-use	Recycling/ Anaerobic digestion	Composting	Other Recovery
	plaster board in their homes, but they are encouraged to use private waste contractors to collect this waste in a skip for recycling, thus avoiding it entering the municipal waste stream.	recycled at the HWRCs. Recycling is a more feasible solution than reuse.	arrangement for plaster board disposal are encouraged to keep plasterboard separate from other wastes and take it to their local HWRC for recycling into new plasterboard		HWRCs is delivered to the EfW facility to recover energy.
Batteries Lead Acid	<p>x</p> <p>Batteries are required for electric or conventional cars. Residents are encouraged to exchange lead acid batteries for new at the garage to avoid them entering the municipal waste stream</p> <p>✓</p> <p>Residents are encouraged to use rechargeable</p>	<p>x</p> <p>Residents who dispose of lead batteries at the HWRC are asked to place them in the dedicated container for recycling. Recycling is a technically feasible solution as opposed to reuse.</p>	<p>✓</p> <p>Lead batteries are sent for recycling into individual component parts and metals</p>	<p>x</p> <p>N/A</p>	<p>✓</p> <p>Lead acid batteries which are not collected for recycling at the HWRCs are delivered to the EfW facility to recover energy.</p>
Batteries Non Lead Acid	<p>✓</p> <p>Residents are encouraged to use rechargeable</p>	<p>x</p> <p>Recycling is a technically feasible solution as opposed to reuse.</p>	<p>✓</p> <p>Residents are advised to take household batteries</p>	<p>x</p> <p>It is unreasonable to expect non lead acid batteries to be used</p>	<p>✓</p> <p>Whilst residents are advised of recycling routes for non-lead</p>

Material Type	Prevention	Preparation for re-use	Recycling/ Anaerobic digestion	Composting	Other Recovery
	batteries in order to avoid battery waste entering the municipal waste stream.	to reuse.	to recycling points at supermarkets, libraries etc or at the HWRCs which have dedicated containers for their collection Batteries from HWRCs are dispatched to battery re-processors for breaking down into component parts and recycling.	as part of a composting process	batteries, there will be a number which will reach the WTSs and MRF within the general household waste. These batteries will be dispatched with general waste to the EfW plant to recover energy
Street Sweepings	x It is unreasonable to expect street sweepings to remain uncollected.	x It is unreasonable to expect street sweepings to be re-used.	√ Street sweeping materials are screened, sorted by size and used as restoration material. There is a lack of anaerobic digestion facilities in the region.	x The EA have confirmed that street sweepings cannot be composted due to hydrocarbons present in the material.	√ Street sweepings not recycled are delivered to the EfW facility to recover energy.

10.4. Input Specification - Co-mingled material

Table 1		
Target Materials	DR Load Contaminants	Limit per Target Material %
CO-MINGLED DRY RECYCLATES	Total contamination not to exceed (by weight)	10
Newspaper	Hazardous waste	0
Magazines	Sharps	0
Office Waste Paper	Glass	0.5
Catalogues	Ceramics	10
Telephone directories	Plastic bags	10
Yellow pages	Plastic wrapping	10
Cardboard (in cereal and soap boxes)	Poly and waxed lined (eg milk cartons)	10
Telephone directories	Foil lined (juice cartons)	10
Envelopes	Plastic laminates	10
Junk Mail	Sand and building materials	10
Wrapping papers	Bitumised union papers (tar paper)	10
Beverage cans	Wood	10
Steel drinks cans	String	10
Aluminium drinks cans	Other general household refuse	10
HDPE, PET and PVC plastic drinks bottles	Brown cardboard (in bulk packaging)	10

Source : Schedule 1 Authority's Requirements, PFI contract.

10.5. Input Specification – Glass

Table 1		
Target Materials	DR Load Contaminants	Limit per Target Material %
	Glass	5
	Other general household refuse	5
	Brown Cardboard	5
	Coal or Coal Dust	0
GLASS		
Colour separated flint glass Acceptable Material – Flint Container Glass	Total contaminants not to exceed (by weight)	2
	Amber glass	2
	Green glass	2
	Blue glass	2
	Glass plates or cups	2
	Pyrex glass saucepans or similar	2
	Non Container glass	2
	Flat glass, tableware, laboratory ware, light bulbs, CRT tubes	2
	Vision ware, pyrex	2
	Ceramics	2
	Coal or coal dust	0
	Non-magnetic metals	2
	Wood	2
	Plastics	2
Textiles	2	
Medical or chemical wastes	0	
Colour separated amber glass Acceptable Material – Amber Container Glass	Total contamination not to exceed (by weight)	2
	Glass plates or cups	2
	Pyrex glass saucepans or similar	2
	Non Container glass	2

Table 1		
Target Materials	DR Load Contaminants	Limit per Target Material %
	Flat glass, tableware, laboratory ware, light bulbs, CRT tubes	2
	Vision ware, pyrex	2
	Ceramics	2
	Coal or coal dust	0
	Non-magnetic metals	2
	Wood	2
	Plastics	2
	Textiles	2
	Medical or chemical wastes	0
Colour separated green glass Acceptable Material – Green Container Glass	Total contamination not to exceed (by weight)	2
	Glass plates or cups	2
	Pyrex glass saucepans or similar	2
	Non Container glass	2
	Flat glass, tableware, laboratory ware, light bulbs, CRT tubes	2
	Vision ware, pyrex	2
	Ceramics	2
	Coal or coal dust	0
	Non-magnetic metals	2
	Wood	2
	Plastics	2
	Textiles	2
	Medical or chemical wastes	0

Table 1		
Target Materials	DR Load Contaminants	Limit per Target Material %
Mixed Colours of Glass Acceptable Material – Flint, Amber & Green Container Glass	Total contamination not to exceed (by weight)	2
	Glass plates or cups	2
	Pyrex glass saucepans or similar	2
	Non Container glass	2
	Flat glass, tableware, laboratory ware, light bulbs, CRT tubes	2
	Vision ware, pyrex	2
	Ceramics	2
	Coal or coal dust	0
	Non-magnetic metals	2
	Wood	2
	Plastics	2
	Textiles	2
Medical or chemical wastes	0	

11. Footnotes

ⁱ Compositional Waste Analysis

- Northumberland Household Waste Study, 2005, MEL Research. Kerbside collection of refuse and recycling at 147 households, refuse at HWRCs.
- Northumberland Waste Compositional Study, 2007, MEL Research. Kerbside collection of refuse and recycling at 50 households in poor performing areas to assess the before and after impact of an awareness campaign.
- Compositional analysis of dry recyclables arising in Northumberland, 2008, Waste Research Ltd. All recycling rounds.
- Direct Mail Results Blyth Valley, 2009, MEL Research. Kerbside collection of refuse and recycling, 25 households.

ⁱⁱ Calculation of Collection Costs

P:\Place\Waste\Central\New\TEEP\Source Info\Table Calculations

P:\Place\Waste\Central\New\TEEP\Source Info\Budget Review Waste 7 10 14

ⁱⁱⁱ Calculation of PFI Treatment & Disposal Costs

P:\Place\Waste\Central\New\TEEP\Source Info\Table Calculations

P:\Place\Waste\Central\New\Waste ops\PFI Information\PFI AUC NCCR Bus Rates\AUCs & Invoices\2013 14 Monthly AUC's

'W' numbers and performance payments have been isolated from the March 13/14 Annual Unitary Charge spreadsheet to identify the cost associated with specific areas of the PFI contract.

^{iv} Calculation of Revenues

P:\Place\Waste\Central\New\TEEP\Source Info\Budget Review Waste 7 10 14

^v Review of Kerbside Recycling Collection Schemes in the UK in 2011/12, WYG Group, June 2013.

^{vi} Guidance on the interpretation of key provisions of Directive 2008/98/EC on waste, European Commission, 2008.