Appendix 1

TEEP assessment to meet the conditions of the Waste (England and Wales) Regulations 2011 and Waste (England and Wales) (Amendment) Regulations 2012

Report prepared by Carole Taylor
February 2015

Contents:

List of Tables:

List of Appendices:

Appendix 1: “A Greener Strategy for a Greener Future” Lancashire’s Municipal Waste Management Strategy 2001-2020

Appendix 2: Waste Management Property Based Cost Sharing Agreement

Appendix 3: Deed of Extension and Variation 2013

Appendix 4: Local Authority Waste and Recycling Performance Benchmarks 2012/13

Appendix 5: Global Renewables Ltd, End Destinations of Recyclables – correct as of March 2014

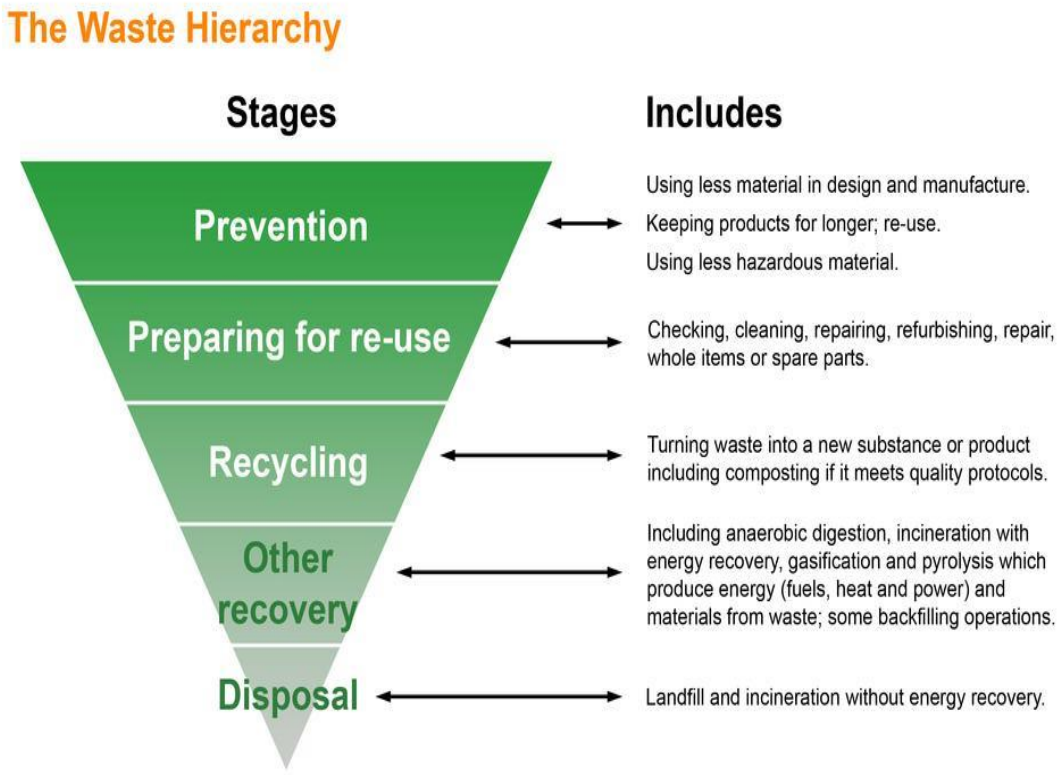
List of Abbreviations:

CSA	Cost Sharing Agreement
FWTP	Farington Waste Technology Park
GRL	Global Renewables Ltd
GRUK	Glass Recycling United Kingdom
HDPE	High Density Polyethylene
HWRC	Household Waste Recycling Centre
LA	Local Authority
LARAC	Local Authority Recycling Advisory Committee
LCC	Lancashire County Council
LGA	Local Government Association
LWP	Lancashire Waste Partnership
LWARB	London Waste and Recycling Board
MBT	Mechanical and Biological Treatment
MRF	Materials Recycling Facility
OGM	Organic Growth Medium
PAS100	Publically Available Specification (for composting)
PET	Polyethylene Terephthalate
PFI	Private Finance Initiative
RCV	Refuse Collection Vehicle
TEEP	Technically, Environmentally and Economically Practicable
WCA	Waste Collection Authority
WDA	Waste Disposal Authority
WRAP	Waste and Resources Action Programme

1. Executive Summary

1.1 The Waste (England and Wales) Regulations 2011 and the Waste (England and Wales) (Amendment) Regulations 2012 require Local Authorities to apply the waste hierarchy (Regulation 12) to the waste they are responsible for and to determine whether they are required to collect glass, metal, paper and metal separately (Regulation 13).

1.2 Regulation 12 requires local authorities to apply the waste hierarchy to each material they collect.



1.3 Departure from the hierarchy is permissible when the measures that would be required would not be "reasonable in the circumstances" or when departure will "achieve the best overall environmental outcome where this is justified by life cycle thinking on the overall impacts of generation and management of the waste".

1.4 Regulation 13 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."

1.5 A Route Map to help Local Authorities understand the steps they need to undertake to see if their collection method is compliant was produced by the Waste Resource Action Programme (WRAP) in April 2014. This assessment follows their Route Map.

Application of the Waste Hierarchy

1.6 Pendle Council is a Waste Collection Authority (WCA) and along with the other WCAs in Lancashire and the Waste Disposal Authority (WDA), Lancashire County Council (LCC), is a member of the Lancashire Waste Partnership (LWP). The LWP has put in a place a Lancashire Waste Strategy.

1.7 There is a good level of participation in the Council's kerbside recycling schemes in part due to the simplicity of the collection system provided. Our collection of commingled glass, cans and plastic bottles benchmarks in the top 25% of LAs.

1.8 Lancashire County Council as WDA is responsible for providing disposal and recycling facilities for waste collected by Pendle Council. Nearly all waste and recycling collected by Pendle Council is transferred to the Farington Waste Technology Park (FWTP) for further recovery. A significant proportion of the material that cannot be currently recycled at the kerbside is plastic tubs, pots, film and trays. The Council is working with LCC to see if viable end markets for this material can be found.

1.9 The appraisal of Pendle Council's current collection system concludes that the requirements of Regulation 12 have been met.

The Necessity Test

1.10 The purpose of this test is to see if separate collection of "the materials" is necessary to ensure the waste is recycled and to "facilitate or improve recovery". Improved recovery is where more waste is recycled than subject to other recovery and/or more of the recycling is "high quality". High quality recycling is generally thought of as closed loop recycling where the material is reprocessed back into a product of similar quality to what it was originally.

1.11 The collection system operated by Pendle Council ensures a high yield of commingled material is collected through kerbside collections. Paper and card are kept separate from other materials so the quality of the material is good. Plastics and metals can be easily separated at FWTP to achieve a good quality material that meets reprocessors' specifications.

1.12 The recovery of glass however means that currently 46% of the glass collected at kerbside is recycled into road aggregate rather than closed loop recycled into glass bottles and jars. This is due in part to the majority of glass cullet output from the Materials Recovery Facility (MRF) at FWTP being less than 25mm.

1.13 In October 2014 trials commence with the reprocessors of glass to see if a cullet greater than 8mm could go for remelt. If this trial is successful then a greater proportion of cullet will be used for remelt. However as the necessity test is being applied to 2013/14 data, the recovery of glass is likely to be improved i.e. a greater proportion of glass being above 25mm, if separate collection of glass was introduced.

1.14 Paper and card are already collected separately from other materials, and the material is of a high quantity and quality and goes for closed loop recycling. Separate collections of metals and plastics are unlikely to increase the quantity and quality of recycling. Nearly all

of these materials go for closed loop recycling. However, a separate collection of glass is likely to increase the proportion of cullet that could go to remelt i.e. closed loop recycling.

The TEEP Test

1.15 The TEEP test requires local authorities to ascertain if it is Technically, Environmentally, and Economically Practicable to collect recyclables separately but only where collecting separately will facilitate or improve recovery. Glass needs to be subjected to this test as per the necessity test.

1.16 Technical Assessment: A partial kerbside sort system was our preferred option for assessment. This is where glass and cans are collected in kerbside boxes, sorted by the crew into different compartments on one vehicle, with collection of plastic bottles in sacrificial sacks and paper/card as we currently do in separate vehicle passes. This was determined as the collection method most likely to improve recovery, and increase the percentage of glass available for closed loop recycling.

1.17 This method of collection is technically feasible though it is likely to result in lower tonnages of glass. It would also require changes to our existing vehicle fleet, purchase of new containers for households and raises concerns over how sorting of boxes could be safely carried out by collection crews on busy highways.

1.18 Environmental Assessment: This assessment was based on the carbon dioxide equivalent tonnages avoided. Carbon dioxide is a major contributor to climate change. The assessment covered three main areas:

- Reprocessing of glass either as closed or open loop recycling
- Transport emissions through changes to the vehicle fleet required for kerbside sort
- Sorting emissions for commingled or kerbside sort

1.19 The use of a kerbside sort system would reduce the climate change impact during reprocessing and sorting but increase it during transport. The net effect would be a slight saving in carbon emissions (19.34t per year). However we do not know where the potential offtakers may be located for source separated materials and therefore we have been unable to factor this into the calculations. These decisions are made by LCC and are not under the control of Pendle Council.

1.20 In conclusion it is environmentally practicable for Pendle Council to collect the 4 materials source separated.

1.21 Economic Assessment: The introduction of a kerbside sort system would greatly increase collection costs. The additional costs for the first year would be in the region of £952k with ongoing additional costs of around £455k for future years. These figures do not include interest charges for financing capital costs or inflation increases.

1.22 Therefore, it is not economically practicable to introduce a kerbside sort system for Pendle.

Conclusion

1.23 Separate collections for paper and card are already in place and achieve a good capture rate of high quality material that is closed loop recycled.

1.24 A separate collection of plastic or metals is unlikely to improve recovery. These materials are currently collected commingled. The current collection method achieves a high yields, generates high quality materials and materials go for closed loop recycling.

1.25 Glass is currently collected commingled with plastic and metals. A separate kerbside collection is likely to increase in the quality of the glass collected and mean more glass would be recycled through closed loop recycling. This material was then taken through the TEEP test however economically it is not practical to introduce a separate kerbside collection for glass. Therefore the current kerbside collection method is permitted under the Regulations.

2. Introduction and Background to the Regulations

2.1. The EU Waste Framework Directive[1] provides the legislative framework for the collection, transport, recovery and disposal of waste. The directive requires all member states to take the necessary measures to ensure waste is recovered or disposed of without endangering human health or causing harm to the environment and includes permitting, registration and inspection requirements.

2.2. The directive also requires member states to take appropriate measures to encourage firstly, the prevention or reduction of waste production and its harmfulness and secondly the recovery of waste by means of recycling, reuse or reclamation or any other process with a view to extracting secondary raw materials, or the use of waste as a source of energy. The directive's requirements are supplemented by other directives for specific waste streams.

2.3. The UK Government transposed the Waste Framework Directive into UK law through the Waste Regulations 2011[2], which came into force on 1st October 2012. The regulations stated that as from 1st January 2015, Waste Collection Authorities (WCAs) must collect waste paper, metal, plastic and glass separately. It also imposes a duty on WCAs, from that date, when making arrangements for the collection of such waste, to ensure that those arrangements are by way of separate collection.

2.4. Originally the regulations (2011) stated that commingled collections of recycling were an acceptable way of meeting that duty. However the regulations were amended (2012)[3] to remove the statement about commingled collection being acceptable.

2.5. The amended regulations state that separate collections of at least paper, metal, plastic and glass are required where they are technically, environmentally and economically practicable (TEEP) and appropriate to meet 'the necessary quality standards for the relevant recycling sectors' by January 2015. Therefore if a WCA does not collect dry recycling separately, it must apply the necessity and TEEP tests to determine if this is needed in their circumstances.

2.6. These duties apply to waste classified as waste from households and waste that is classified as commercial or industrial waste.

[1] Directive 2008/98/EC on waste (Waste Framework Directive) available at www.ec.europa.eu
[2] The Waste (England and Wales) Regulations 2011 available at www.legislation.gov.uk
[3] The Waste (England and Wales) (Amendment) Regulations 2012 available at www.legislation.gov.uk

3. Waste Regulations Route Map

3.1. In April 2014, the Waste Regulations Route Map[4] was launched in order to help guide WCAs. It was developed by a working group comprising WRAP, LWARB and the Waste Network Chairs (e.g. LARAC, LGA) assisted by environmental consultancy Eunomia.

3.2. In the absence of any case law and formal government guidance, the Route Map forms the basis for tackling the recent legislative changes, by offering guidance on assessments in the form of step by step guide, with 'tests' to determine the likelihood of meeting the regulation requirements. The Route Map has been used to help Pendle Council in meeting the Waste Regulations.

From the Waste Regulations Route Map published by WRAP, April 2014

[4] Waste Regulations Route Map 2014 available at www.wrap.org.uk

4. What Waste is Collected and How (Step 1 of The Route Map)

4.1. Pendle Council is a member of the Lancashire Waste Partnership (LWP) which was formed in 1997 to address the emerging waste management agenda in relation to the implementation of the then draft Landfill Directive. It was appreciated by all authorities that as a two tier local authority area there were major benefits to be gained from working together to address this issue.

4.2. The first step forward in this process was the development of a Joint Municipal Waste Management Strategy[5] for Lancashire. Lancashire County Council (LCC) reporting through the LWP led the development of this policy document. The final document was approved and adopted by all 15 Partners in April 2001.

4.3. In developing the strategy, the LWP carried out a lot of research including waste composition analyses and two extensive public consultation exercises which used leaflet drops, newspaper adverts, press releases, public forums, a Citizens' Jury and an internet website to ask the people of Lancashire for their views on how we should deal with our waste.

4.4. This shaped the way in which Lancashire WCAs were asked to collect their waste in order to meet the targets of the strategy as well as providing the material needed for waste treatment and disposal via a network of facilities funded via a Private Finance Initiative (PFI) contract.

4.5. A ten-year Cost Sharing Agreement (CSA)[6] was developed as a binding contract between LCC as the Waste Disposal Authority (WDA) and its WCAs and was prescriptive as to types of recycling to be collected. Pendle Council entered into this agreement in 2005. The dry recycling that we can collect under the CSA is as follows: card, ferrous and non-ferrous metals, glass, paper, plastics and textiles.

4.6. Originally the CSA included a financial incentive to source separate dry recycling, with commingled recycling incurring a gate fee charge of approximately £10 per tonne. LCC decided to waive this charge so that WCAs could deliver commingled recycling to the facilities without penalty. The CSA allows ferrous and non-ferrous metals, glass and plastic together only as a commingled stream.

4.7. In June 2008, Pendle Council carried out a public consultation exercise to ask what residents thought of its current recycling collection system. 61% agreed with the Council's proposal to put all recyclables into one wheeled bin, with 22% disagreeing.

4.8. In September 2009 Pendle Council introduced a commingled collection system for glass, cans and plastic bottles in brown wheeled bins whilst the collection of paper and card remained a separate stream.

4.9. The CSA was amended and extended for a further 5 years in 2021/13[7], although this related to financial matters and the type of material to be collected as the dry recycling fraction was unchanged.

[5] "A Greener Strategy for a Greener Future" Lancashire's Municipal Waste Management Strategy 2001-2020 (Appendix 1)
[6] Waste Management Property Based Cost Sharing Agreement (Appendix 2)
[7] Deed of Extension and Variation 2013 (Appendix 3)

5. Evidence of Waste Collected

5.1. Compositional Analyses were carried out during the development of the original Lancashire Waste Strategy by MEL Research[8] in 1999/2000. This showed that there was a potential 79% of recyclable/compostable waste in Lancashire's collected household waste stream and this was developed into targets by applying possible capture, participation and efficiency factors in being able to recover this waste. The targets set in the 2001 waste strategy were:

- Recycle/compost 36% by 2005
- Recycle/compost 58% by 2015

In 2013/14, Pendle Council collected the following types of waste:

Table 1 – Summary of Kerbside Collection Services:

Material	**Collected at kerbside?** **(separate from residual waste)**	**In house service or contracted?**	**Container type and volume**	**Coverage** **(number of households)**
Mixed Paper/Card	Yes	In house	55l green box (no lid) or empty cardboard box or old carrier bag	39390
Plastic bottles/ Cans/Glass bottles and jars	Co-mingled	In house	240l or 140l brown wheeled bins	39390
Textiles/ shoes	Yes	In house	Red sacrificial sack	39390
Garden waste	Yes – subscription scheme	In house	240l green wheeled bins	Available to 26,000 – 7500 participate
Residual waste	Yes	In house	240l or 140l grey wheeled bins, some with sacks	39780
Clinical waste	Yes	Contracted to Cannon Hygiene	Various	Available to whole borough – 33 participate
Nappies	No	Not applicable	Not applicable	0
Food waste	No	Not applicable	Not applicable	0
Bulky items	Yes	Sub-contracted to Orchard Recycling	Not applicable	39780

[8] MEL Waste Analysis 1999 and 2000 (available from Pendle Council)

Material	Collected at kerbside? (separate from residual waste)	In house service or contracted?	Container type and volume	Coverage (number of households)
Large WEEE	Yes	In house and sub-contractor, Orchard.	Not applicable	39780
Small WEEE	No	Not applicable	Not applicable	0
Batteries	No	Not applicable	Not applicable	0
Trade waste – residual	Yes	In house	1280l, 1100l & 660l 4-wheeled containers, 240l & 140l 2-wheeled bins or black sacks	Available to whole borough, approx. 700 participate
Trade waste – recycling	Yes	In house	1280l, 1100l & 660l 4-wheeled containers, or 240l/140l 2-wheeled bins	Available to whole borough, approx. 260 participate
Street sweepings	Yes	In house	Not applicable	Whole borough
Waste arising from fly tipping	Yes	In house	Not applicable	Whole borough
Street cleansing waste (litter bins etc)	Yes	In house	Various free standing and post mounted	Whole borough

In urban areas, all collections are on the same day of the week, with recycling and garden waste being made the same week, and residual waste the following (alternate) week.

In rural areas, we collect the same materials on the same day of the week, but use 2 split bodied vehicles that collect the dry recycling one week (separated into paper/card/textiles and commingled glass/cans/plastic) and green and residual the alternate week.

Table 2 – Summary of Bring Site Services:

Material	**Collected at bring sites?** (separate from residual waste)	**In house service or contracted?** (Please provide details)	**Average container volume**
Paper	Yes	In house for 1280l bins and contracted to Palm Recycling for igloos	1280l and 3.2 cubic metre igloos
Card	Yes	In house	1280l
Plastic bottles	Yes	In house and contracted to TCS Waste for skip emptying	1280l and 30 cubic yard skips
Cans	Yes	In house and contracted to TCS Waste for skip emptying	1280l and 30 cubic yard skips
Glass	Yes	Contracted to Glass Recycling UK	3 cubic metre igloos
Textiles/ shoes	Yes	Contracted to Scope and Salvation Army	3.3 cubic metre banks
Tetra Pak banks	Yes	Contracted to Recresco	3.2 cubic metre igloos
Street cleansing waste (litter bins etc)	Yes	In house	Various free standing and post mounted

5.2. Costs:

The following are headline budget figures (operational costs to provide the service, including staff) and any income (total) for each of the aforementioned collection methods, for 2013/14:

Table 3 - Headline Total Costs/Income:

Materials	Total cost 2013/14			
	Cost (£)	Income (£)	Net expenditure (£)	Cost per household (£)
Dry recyclate	951,815.98	210	951,605.98	23.92
Garden waste	281,985.67	0	281,985.67	7.09
Residual waste	1,095,012.63	24,292.46	1,070,720.17	26.92
Street cleansing	1,047,955.57	32,823.83	1,015,131.74	25.52
Trade waste	533,825.74	533,825.74	0.00	0.00
Cost Sharing Agreement	0	815,592.00	-815,592.00	-20.50
Grand Totals	3,910,595.59	1,406,744.03	2,503,851.56	62.94

Table 4 - Operational Costs and Income:

Operational costs		Income	
Employees	£1,618,262.13	Fees and charges	£574,543.03
Premises	£37,165.36	Cost Sharing Agreement	£815,592.00
Transport	£1,131,479.17	Textile sales	£210
Supplies	£109,601.44	Recyclate sales	£5,089.00
Support	£504,872.95	Other contribution	£11,310.00
Capital	£173,319.51		
Contract costs	£139,527.95		
Trade disposal	£196,367.08		
Total	£3,910,595.59	Total	£1,406,744.03

Table 5 - Kerbside Collection Costs:

Material	**Collector** (in–house or contracted)	**Total collection cost (£)**
Paper and Card, Textiles and Shoes	In House	394,779.94
Plastic bottles, Glass and Cans	In House	563,971.34
Garden waste	In House	281,985.67
Residual waste	In House	956,308.84
Clinical waste	Contracted to Cannon Hygiene	9,604.35
Bulky items	Sub-contracted to Orchard Recycling	131,807.40
Large WEEE	In house and sub-contractor, Orchard.	
Trade waste – residual	In house	415,215.79
Trade waste – recycling	In house	95,312.35
Street sweepings	In house	509,688.48
Waste arising from fly tipping	In house	295,332.93
Street cleansing waste	In house	190,537.38

Bring bank collection services

All costs are our own in-house costs as there are no costs associated with our contracted out services for bring banks. It is not possible to split our in-house costs into separate material streams as we do not account in this way. Our bring bank services cost £66,052 in 2013/14 to operate.

5.3. Tonnages collected in 2013/14:

Table 6 - Kerbside Collection Tonnages:

Paper/card	2832t
Commingled glass/cans/plastic	3920t (less 183t rejected at MRF)
Garden waste	4149t
Fridges/freezers	56t
White goods	47t
Mattresses	11t
TVs	2t
Textiles	0.6t
Bulky waste reused	177t
Trade paper/card	134t
Trade commingled glass/cans/plastic	47t less 1.16t rejected at MRF

Table 7 - Bring Site Tonnages:

Paper/card	108t
Glass	132t
Tetra Paks	3t
Textiles	63t
Shoes	4t

Table 8 - Residual Waste to MBT:

Household collections	17,590t
Street cleansing (part landfilled)	3,048t
Trade waste	2,072t
Bulky waste	614t
Fly tips	377t

Clinical waste – incinerated = 15t

5.4. Overview of Waste Management process:

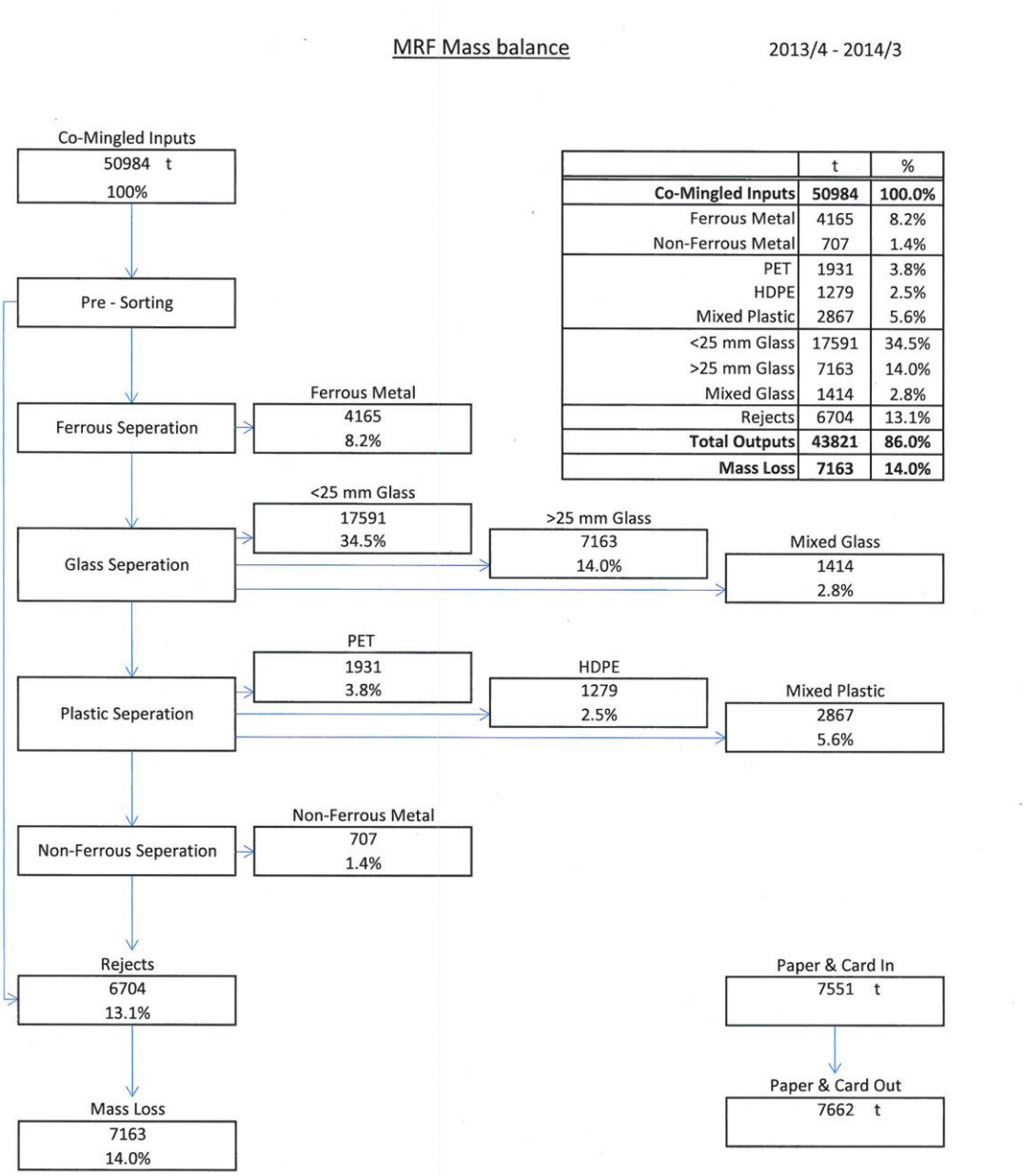
5.4.1 Pendle's green waste and residual waste is direct delivered to Pendle Transfer Station then the residual waste goes to FWTP to be treated via the Mechanical Biological Treatment (MBT) process, producing an Organic Growth Material (OGM). The biodegradable green waste is dealt with by a separate composting contract with SITA where is it processed at another site producing PAS 100 compliant compost.

5.4.2 Pendle's kerbside recycling is bulked up at Fleet Street Depot and then paper/card is collected by Saica Natur and goes direct to their depot in Manchester. The commingled glass, cans and plastic bottles is taken by LCC's contractor Viridor to the MRF at FWTP. At FWTP the comingled dry recycling is mixed with materials from the other Lancashire WCAs.

5.4.3 The MRF separates and sorts 45,690 tonnes per annum of mixed recycling (glass bottles, and jars, food and drink cans and plastic bottles).

5.4.4 The in feed goes through a pre-sort cabin first to split bags and remove any hazardous material. An overband magnet is then used to separate ferrous metals. The next stage is to remove the glass with a star screen which breaks down the cullet to less than 50mm. Plastics are optically sorted into the main polymer types – PET, HDPE, Coloured and Clear. Finally eddy currents are used to remove the non-ferrous metals, mainly aluminium.

5.4.5 This results in a high degree of quality separation. Around 13% of the material processed is rejected and sent secondary sorting or disposal as detailed in the facility mass balance table (see Mass Balance Flow Chart below).



	t	%
Co-Mingled Inputs	**50984**	**100.0%**
Ferrous Metal	4165	8.2%
Non-Ferrous Metal	707	1.4%
PET	1931	3.8%
HDPE	1279	2.5%
Mixed Plastic	2867	5.6%
<25 mm Glass	17591	34.5%
>25 mm Glass	7163	14.0%
Mixed Glass	1414	2.8%
Rejects	6704	13.1%
Total Outputs	**43821**	**86.0%**
Mass Loss	**7163**	**14.0%**

5.4.6 With the exception of glass all the materials are of suitable quality for closed loop recycling, and therefore meet the same industry specification as source separated materials (REQUIP Standards). Due to the size of the glass cullet (following the

collection, bulking, haulage and handling in the MRF process), only a proportion of this can be closed loop recycled with approximately 54% going to aggregate in 2013/14. However in October 2014, LCC and the MRF operators reported that they had secured contracts with Recresco to accept glass cullet down to 8mm for closed loop recycling.

5.4.7 The MRF Control Operators undertake quality control checks of the tipped recyclate, with issues reported back to the WCA's with vehicle registration details / times etc which allows follow up action with crews and customers.

5.4.8 Contractually the MRF Operators undertake routine audits of the infeed and outputs to ensure standards are maintained. The reject / contamination rate of the MRF cannot be attributed to specific WCAs as the in-feed sources are mixed at the MRF receival hall. The rejected rates are therefore pro-rated based on the weights of the delivered material. The MRF Rejects are sent for further secondary sorting, whereby other recyclates are removed where possible and the final residual elements sent for RDF.

5.5. How and why it was decided to offer the current collection system:

Section 3 explains how and why [Pendle] offers its current collection system. Below is a summary of the record of decisions taken:

1997 – Pendle joined the Lancashire Waste Partnership.
2001 – Pendle adopted Lancashire's Municipal Waste Management Strategy 2001-2020 (A Greener Strategy for a Greener Future).
2003 – Pendle Council agrees to enter into Cost Sharing Agreement (CSA) and to introduce segregated stream waste collections as from 2005/06.
2005 – Pendle signs CSA (10 year agreement).
2009 – Pendle Council agrees to move from fully source separated collections to commingled glass, cans and plastic bottles as a result of gate fees waived by LCC (Full Council, Feb 2009). Paper, card and textiles remain as a separate collection.
2009 – Commingling collections (brown bins) start in September.
2010 – LCC instructs Pendle's dry recycling to go into PFI facility (November /December). Loss of income payment starts (see CSA).
2012 – Pendle Council agrees extension of CSA up to 2018, accepting a reduction in the annual payment made by LCC.
2013 – Pendle signs CSA Deed of Variation/ Extension.

Using the WRAP local authority portal to benchmark our performance[9], we can see that our yields of paper and card are in the bottom half of the league table, but our commingled collections of glass, cans and plastic bottles are in the top 25%.

5.6. Key contract documents:

We have a contract with Go-Plant Ltd for our fleet of vehicles which runs until October 2016. Any changes to the provision of vehicles, e.g. switching to Kerbsiders for source separating, would have a cost implication for the council.

[9] Local Authority waste and recycling performance benchmarks 2012/13 (Appendix 4)

The financial penalty of changing vehicles from our current dry recycling system to a fully source separated collection system as detailed in section 9 would be £186,220 per calendar year, i.e. if we implemented a change 18 months before the contract end date, then the cost would be £279,330.

All end market contracts are under the control of LCC (operated by GRL) and therefore we have no say in which end markets we can use. Changing from a commingled collection to a source separated system would also impact on LCC's existing contracts.

6. How Collected Materials are Treated and Recycled (Step 2 of the Route Map)

6.1. Detailed below is the current recycling, reprocessing and treatment arrangements for each material collected via each collection method, along with the annual tonnage for each arrangement for the last financial year:

Table 9 - Kerbside Services Arrangements:

Materials	Arrangements				Total tonnage 2013/14
	Collected by	Terms	Delivered to	Treatment method	
Residual waste	Pendle Council in-house	No fixed term	Pendle Transfer Station	MBT at Farington WTP (via LCC contract)	17590t
Commingled glass bottles/ jars, cans & plastic bottles	Pendle Council in-house	No fixed term	Fleet St Depot operated by Pendle Council	MRF at Farington WTP for household (via LCC contract); Norpol Recycling for trade	Household - 3920t (less 183t rejected at MRF) Trade – 46.58t (less 1.16t rejected)
Separate paper and card	Pendle Council in-house	No fixed term	Fleet St Depot operated by Pendle Council	Recycled by Saica Natur, Manchester (via LCC contract)	2832t
Textiles / shoes	Pendle Council in-house	No fixed term	Fleet St Depot operated by Pendle Council	Recycled/ reused by Willcox Ltd (via LCC contract)	0.6t
Garden waste	Pendle Council in-house	No fixed term	Pendle Transfer Station	Composted by SITA (via LCC contract)	4149t
Large WEEE and Furniture	Pendle Council in-house and Orchard	Orchard contract reviewed annually	Orchard and Fleet St Depot	Some bulkies are reused by Orchard, some go for disposal. White goods are recycled by Sims and local scrap dealers. TVs recycled.	Bulky waste reused - 177t, Fridges/ freezers - 56t, White goods - 47t, TVs – 2t.

Materials	Arrangements				Total tonnage 2013/14
	Collected by	Terms	Delivered to	Treatment method	
Clinical waste	Cannon Hygiene	Contract reviewed annually	SRCL at Royal Bolton Hospital or Royal Oldham Hospital	Incinerated without energy recovery	15t
Street cleansing waste	Pendle Council In-house	No fixed term	Fleet St Depot	MBT at Farington and some landfilled at Whinney Hill (via LCC contract)	3048t
Fly tipped waste	Pendle Council In-house	No fixed term	Fleet St Depot	MBT at Farington (via LCC contract)	377t
Mattresses (kept separate to rest of bulky collections)	Orchard	Contract reviewed annually	Orchard then EOL Recycling	Recycled at EOL (via LCC contract)	11t

None of the above waste is mixed with any other waste after collection (other than the same type of waste from other LAs etc.)

Table 10 - Bring Site Services Arrangements:

Materials	Arrangements				Total tonnage 2013/14
	Collected by	Terms	Delivered to	Treatment method	
Paper	Pendle Council In-house	No fixed term	Fleet St Depot	Mixed with kerbside (see above)	Not known
	Palm Recycling	No fixed term	Palm Recycling	Recycled by Palm Recycling, Ellesmere Port	108t
Card	Pendle Council In-house	No fixed term	Fleet St Depot	Mixed with kerbside (see above)	Not known
Plastic bottles	Pendle Council In-house	No fixed term	Fleet St Depot	Mixed with kerbside (see above)	Not known
Cans	Pendle Council In-house	No fixed term	Fleet St Depot	Mixed with kerbside (see above)	Not known
Glass	Glass Recycling UK Ltd.	No fixed term	GRUK Barnsley	GRUK cullet reprocessing	132t
Textiles/ shoes	Salvation Army/ Scope/Oxfam	No fixed term	Salvation Army/ Scope/Oxfam	Reuse and Recycling	63t
Tetra Pak banks	Recresco on behalf of ACE	No fixed term	Recresco	Recycled	2.6t
Street cleansing waste (litter bins etc)	Pendle Council In-house	No fixed term	Fleet St Depot	Mixed with kerbside (see above)	Not known as mixed with other waste

NB – we do not have a weighbridge at our depot hence we cannot weigh the bring site material that is bulked up with kerbside collected material.
None of the above waste is mixed with any other waste after collection (other than the same type of waste from other LAs etc.)

6.2. Costs of each recycling, reprocessing and treatment arrangement for each material collected, borne by the WCA, in the last financial year:

Pendle Council, as a WCA does not have direct costs associated with recycling, reprocessing and treatments arrangements of any collected waste. These are all borne by the WDA as part of the Cost Sharing Agreement (CSA).

The bring sites also are without any reprocessing costs as these are borne either by the WDA or by the individual sub-contractors that services the banks.

6.3. Composition of the material sent to the MRF: The composition of the collected commingled glass, cans and plastics varies each quarter, but the average for 2013/14 was as follows:

Glass	70.5%
Cans	13.1%
Plastic	16.4%

6.4. Quantity of each output stream (including rejects) produced by the MRF: In 2013/14 we provided 3920t of household commingled glass, cans and plastics to the MRF at Farington, of which 183t was reject waste, or 4.67% over the year. Trade commingled to Norpol was 46.58t less 1.18t reject, or 2.5%.

6.5. Amount of recycled material which is used for open and closed loop recycling:

Table 11 - Kerbside Services Open and Closed Loop:

Material	Stage 1 Reprocessor	Stage 2 Reprocessor	Closed loop recycling?
Commingled glass jars/ bottles, cans & plastic bottles	GRL, Farington MRF (via LCC contract)	Various off takers decided by GRL via LCC contract	Glass is sent for cullet recycling (closed loop) & also used as aggregate (46% open, 54% closed loop); Cans are sent to metal recycling (7% open loop, 93% closed loop); Plastic bottles are sent for recycling (6% open loop; 94% closed loop)
Commingled glass jars/ bottles, cans & plastic bottles (trade)	Norpol Recycling, Nelson	Various off takers decided by Norpol currently: EMR, Recresco, Novelis and Eco Plastics	Glass is sent for aggregate (100% open loop); Cans are sent to metal recycling (100% closed loop) Plastics are sent to make new plastic bottles (100% closed loop)
Separate paper and card	Saica Natur, Manchester (via LCC)		Yes – 100%
Separate paper and card (trade)	Norpol Recycling, Nelson	Various off takers decided by Norpol currently: Smurfit	Yes – 100%
Textiles/shoes	Willcox Ltd		Yes – 100%

Table 12 - Bring Sites Open and Closed Loop:

Material	Stage 1 Reprocessor	Closed loop recycling?
Paper	Palm Recycling	Yes – 100%
Card	Saica Natur, Manchester (via LCC contract)	Yes – 100%
Plastic bottles	GRL, Farington MRF (via LCC contract)	Plastic bottles are sent for recycling (6% open loop; 94% closed loop)
Cans	GRL, Farington MRF (via LCC contract)	Cans are sent to metal recycling (7% open loop, 93% closed loop)
Glass	Glass Recycling UK	Yes – 100%
Textiles/ shoes	Salvation Army/ Scope/Oxfam	Yes - Reused or recycled
Tetra Pak banks	Recresco	Open loop recycling

Pendle Council has no input into where the recycling goes once it is delivered to LCC/GRL. For a full list of off takers relating to this contract for 2013/14, please see appendix 5[10].

For a full explanation of how and why the current recycling, treatment and disposal contracts were adopted, please see section 4.

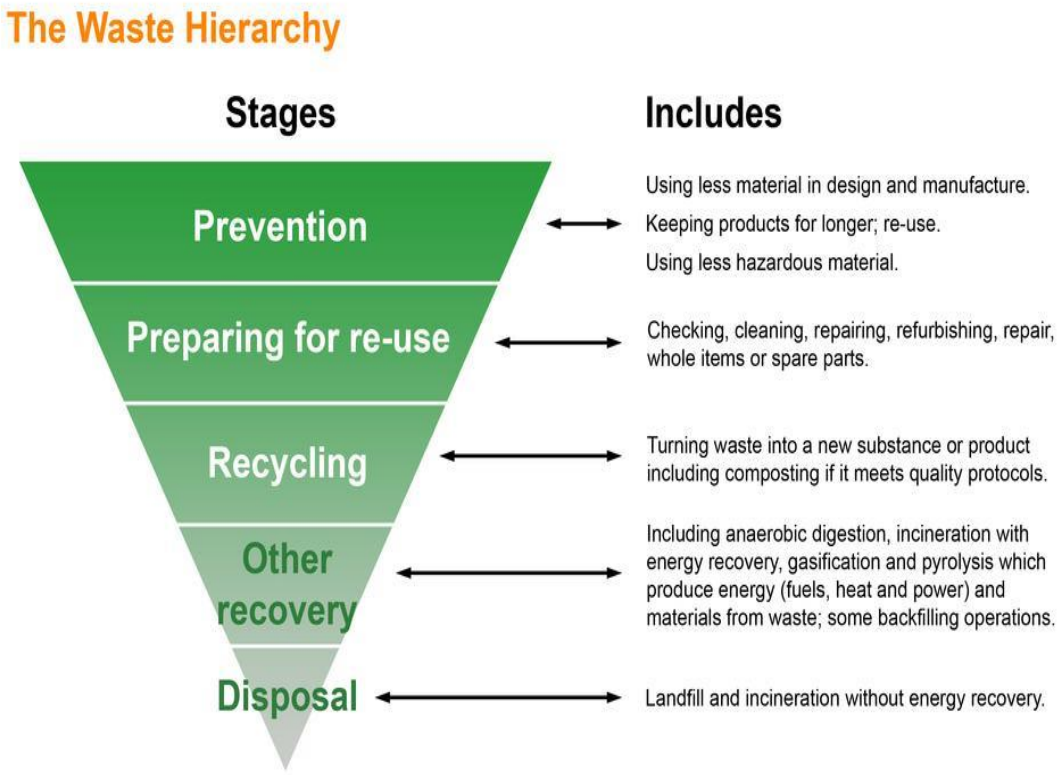
6.6. Constraints (minimum or maximum tonnage): there are no constraints on material tonnages under the current cost sharing arrangement with LCC. The only minimum is that we have to provide 90% of households in our borough with a full three-stream recycling service. LCC are constrained by the build specification of the MRF at Farington, but in cases when there is too much material, LCC arrange an additional offtaker, e.g. Norpol.

6.7. Environmental performance baseline of your current waste and recycling management approach: An assessment comparing our current commingled collection system with a proposed kerbside sort system can be found in section 9.5.

[10] Global Renewables Lancashire LTD, End Destinations of Recyclables – correct as of March 2014

7. Applying the Waste Hierarchy (Regulation 12 and Step 3 of the Route Map)

7.1. Local Authorities are required to comply with the waste hierarchy. Departure is allowed when the measures that would be required would not be "reasonable in the circumstances" or when departure will "achieve the best overall environmental outcome where this is justified by life cycle thinking on the overall impacts of the generation and management of the waste."



7.2. Pendle Council encourages waste minimisation campaigns wherever possible through joint waste campaign operated on behalf of the Lancashire Waste Partnership and promotes the work of the Environmental Education Centre at Farington in educating school children from the borough through their three stage programme of activities.

7.3. After withdrawing the food waste collection service in October 2011, the council put additional resources into promoting the Love Food Hate Waste Campaign via roadshows, leaflets, new releases, social media and attending events.

7.4. The various waste streams collected by Pendle Council were assessed to ensure compliance with Regulation 12 (Waste Hierarchy) – see following table.

Table 13 – Compliance with Waste Hierarchy

Material	Current Management Method & Actions	Can Material be Moved up the Waste Hierarchy?
Newspapers & magazines	General waste prevention campaigns. Kerbside collection & at bring sites. Closed loop recycling.	No
Other recyclable paper including books	General waste prevention campaigns. Kerbside collection & at bring sites. Closed loop recycling.	No
Non-recyclable paper	General waste prevention campaigns. Kerbside refuse collection.	No. Material goes through the MBT process at FWTP and is processed into Organic Growth Medium (OGM).
Liquid cartons e.g. Tetra Pak	General waste prevention campaigns. Five recycling banks across the Borough. Kerbside refuse collection	Liquid cartons collected through bring sites are recycled by open loop recycling. The MRF cannot sort this material currently. Material goes through the MBT process at FWTP and is processed into OGM.
Cardboard packaging	General waste prevention campaigns. Kerbside collection & at bring sites. Closed loop recycling.	No
Plastic bottles	General waste prevention campaigns. Kerbside collection & at bring sites.	No
Plastic packaging and film e.g. yoghurt pots, trays	General waste prevention campaigns. Kerbside refuse collection.	Possible but Farington WTP cannot currently process this material and there are limited end markets in the UK. Material goes through the MBT process at Farington WTP and is processed into OGM.

Material	Current Management Method & Actions	Can Material be Moved up the Waste Hierarchy?
Ferrous cans	General waste prevention campaigns. Kerbside collection & bring sites.	No
Non-ferrous cans	General waste prevention campaigns. Kerbside collection & bring sites. Closed loop recycling.	No
Other metal	General waste prevention campaign. Material pulled out at FWTP where possible and recycled.	No
Glass bottles & jars	General waste prevention campaigns. Kerbside collection & bring sites. Open and closed loop recycling.	No
Other glass	General waste prevention campaigns. Other glass not collected at the kerbside or at bring sites.	Yes but the measures required would not be reasonable.
Textiles	Encourage reuse through donation to charity shops. Limited kerbside collections provided and textile banks at bring sites.	No
Shoes	Encourage reuse through donation to charity shops. Shoe banks at bring sites.	No
Garden waste	Subsidised home compost bins promoted. Kerbside collection provided. Closed loop recycled into PAS100 compost.	No
Food waste	Love food, hate waste message promoted. Subsidised home compost bins promoted. Residual waste collection.	Pendle Council operated a separate food waste collection service for 7k households from April 2010 to October 2011. It was stopped for economic reasons and lack of local processing facilities. Material goes through the MBT process at FWTP and is processed into OGM.

Material	Current Management Method & Actions	Can Material be moved up the Waste Hierarchy?
WEEE	Kerbside collection and HWRC sites.	Yes but the measures required would be unreasonable.
Bulky household waste e.g. furniture	Encourage reuse by directing to charity shops. Orchard Recycling also reuse from bulky collections. Material not suitable for reuse delivered to LCC.	Yes but the measures required would be unreasonable.
Clinical waste	Clinical waste collected by Cannon Hygiene goes for safe disposal by incineration. Offensive waste collected via residual waste collection.	No. Some recovery of material through MBT process, output Organic Growth Medium.
Street cleansing waste	Some waste delivered to LCC goes MBT process. Street sweepings landfilled at Whinney Hill.	No. Some recovery of material through MBT process, output OGM. Currently discussing with LCC about extraction of metals for recycling.
Fly tipped waste	Some waste delivered to LCC goes MBT process or if hazardous material goes for appropriate treatment.	Yes but the measure required would be unreasonable.

8. Is Separate Collection of the Four Materials Required? (Regulation 13/Step 4 of the Route Map)

8.1. Pendle Council collects glass, paper, plastic and metal for recycling from the kerbside and has done so since 2005. Paper is interpreted by the Regulations as including cardboard, and paper and card are collected separately from the other three materials.

8.2. Since 2009, glass, plastic bottles and cans have been collected commingled in a brown bin, having previously collected them as part of a fully source separated system. The decision to commingle was made following the decision by LCC to remove the gate fee for commingled material and after a public consultation exercise which resulted in the majority of Pendle residents wanting a wheeled bin for their recycling.

8.3. Necessity Test for Paper:

Kerbside Services:

8.3.1. Paper and card is currently collected separately from the other three materials at the kerbside from domestic properties. Pendle Council originally provided a 55 litre green box for paper and card, and decided to no longer provide these in 2011 when LCC allowed us to mix paper and card together. Householders who have mislaid their green box are now asked to use an old carrier bag or old cardboard box.

8.3.2. Clothing and shoes (in red sacks) are also collected on the same vehicle as paper and card but the bags are separated out when the material is delivered to our depot. The quantity of clothing collected is very small (less than 1 tonne per year) so the bags are easily separated.

8.3.3. The paper and card collected at the kerbside from domestic premises is a high quality material. It is brought to Fleet Street Depot where is it bulked up for collection by Saica Natur as part of their contract with LCC. In 2013/14 we collected 2832t of paper/card.

8.3.4. Saica specifies the quality of the material they will accept for reprocessing. Loads are rejected if they contain more than 2% unacceptable papers and materials or more than 5% non-paper components. The material is reprocessed and turned into high quality card and paper products. No loads have been rejected by them. This is an example of closed loop recycling.

8.3.5. A separate collection of paper is required to ensure the waste undergoes recovery operations. The tonnages of paper recovered have dropped over the years but this is in line with national trends. The amount of contaminated paper and card in the residual waste stream is 2.3% (schedule 26 contract waste audit, FWTP 2012/13) so capture rates are good.

8.3.6. Pendle Council also offers a separate collection of trade paper and cardboard to all our commercial waste customers. At the time of writing this assessment, we have 260 participants in the scheme with a variety of container types and sizes. The paper and card from our commercial customers is delivered direct to Norpol Recycling and is sent for closed loop recycling.

Bring Sites:

8.3.7. Pendle Council has 8 recycling sites at various locations across the Borough for recycling paper and cardboard. Separate banks are provided on seven of the sites with paper being serviced by Palm Recycling and the cardboard banks being serviced in-house by Pendle Council. One site has mixed paper and card serviced by Pendle Council. All paper and card collected is sent for closed loop recycling.

A separate collection of paper is provided therefore this is compliant with Regulation 13.

8.4. Necessity Test for Metals:

8.4.1. Metal cans are currently collected commingled with glass bottles/jars and plastic bottles at the kerbside from domestic properties. Pendle Council provides a 240 or 140 litre wheeled bin for the commingled materials.

8.4.2. Pendle Council also has 9 recycling sites for the collection of mixed cans and plastic bottles. This material is collected with the cans and plastic bottles from kerbside collections so it is not possible to provide a separate tonnage figure.

8.4.3. In 2013/14, it is estimated that we collected 490t of cans. This is calculated from LCC's estimated composition of commingled material (13.1% for cans) that the MRF dealt with, net of the reject amount, i.e. 3920t less 183t reject x 13.1%.

8.4.4. In 2008/09 we collected cans as a source separated material and that year the yield was 449t. By collecting commingled, we have increased the annual quantity of cans collected for recycling by approximately 40t per year.

8.4.5. The commingled cans/glass/plastic bottles are bulked up at our depot (Fleet Street) and then collected by Viridor on behalf of LCC/GRL and taken to the MRF at FWTP.

8.4.6. The commingled stream is separated at the MRF. For 2013/14 we reported a reject rate of 4.67% over the year to WasteDataFlow (figure provided to us by LCC).

8.4.7. Metal cans are separated into two streams; ferrous and non-ferrous. The ratio is approximately 6:1. They are separated at using magnets and eddy currents into their respective fractions.

8.4.8. The metal collected and separated into the two fractions is a high quality material. The material is baled at the MRF and then sent to two reprocessors, Recycling Lives at Preston and EMR in Manchester (in 2013/14).

8.4.9. Both reprocessors specify the quality of the material they will accept for reprocessing. The material is reprocessed and turned into high quality end products. The ferrous metal is fragmented for use in steel production and non-ferrous used to make cans. No loads have been rejected by them. This is an example of closed loop recycling.

8.4.10. Pendle Council also offers a separate collection of trade commingling to all our commercial waste customers. At the time of writing this assessment, we have 147 participants in the scheme with a variety of container types and sizes. The commingled

material from our commercial customers is delivered direct to Norpol Recycling where the metal is separated out and is sent for closed loop recycling to EMR and Novelis.

Based on the evidence available it is not necessary for metal to be collected separately as the separation processes produce a high quality end product that can be used for closed loop recycling.

8.5. Necessity Test for Plastics:

8.5.1. Plastics are currently collected commingled with glass bottles/jars and metal cans at the kerbside from domestic properties. Only HDPE & PET type plastics are specified for collection, these are usually plastic bottles. Pendle Council provides a 240 or 140 litre wheeled bin for the commingled materials.

8.5.2. Pendle Council also has 9 recycling sites for the collection of mixed cans and plastic bottles. This material is collected with the cans and plastic bottles from kerbside collections so it is not possible to provide a separate tonnage figure.

8.5.3. In 2013/14, it is estimated that we collected 613t of plastic bottles. This is calculated from LCC's estimated composition of commingled material (16.4% for plastics) that the MRF dealt with, net of the reject amount, i.e. 3920t less 183t reject x 16.4%.

8.5.4. In 2008/09 we collected plastic bottles as a source separated material and that year the yield was 551t. By collecting commingled, we have increased the annual quantity of plastics collected for recycling by approximately 60t per year.

8.5.5. The commingled cans/glass/plastic bottles are bulked up at our depot (Fleet Street) and then collected by Viridor on behalf of LCC/GRL and taken to the MRF at FWTP.

8.5.6. The commingled stream is separated at the MRF. For 2013/14 we reported a reject rate of 4.67% over the year to WasteDataFlow (figure provided to us by LCC).

8.5.7. The commingled stream is visually checked for contamination when it is tipped off at the MRF and it then moves by conveyor belt to the hand sort area. Here any hazardous or non-recyclable elements are removed. The plastic bottles go through a perforator after being separated from the metal and glass fractions so they can be flattened and pierced to reduce volume. An optical sorter sorts the plastic into the five streams detailed below:

- HPDE, these are then divided into clear and coloured plastics
- PET, these are then divide into clear and coloured plastics
- Mixed plastics

8.5.8. The plastics collected and separated into the five fractions is a high quality material. The material is baled at the MRF and then sent to a number of reprocessors, the two main reprocessors used by GRL are Hanbury and Virador. The plastic is flaked and pelletized and sold on to be turned into non-food packaging and drainage products.

8.5.9. Both reprocessors specify the quality of the material they will accept for reprocessing. The material is reprocessed and turned into high quality end products. In 2013/14 three loads of HPDE coloured plastic was rejected by a reprocessor due to metal

contamination. The 38.5 tonnes rejected represents less than 0.1% of the total MRF inputs for 2013/14.

8.5.10. Pendle Council also offers a separate collection of trade commingling (glass/cans plastics) to all our commercial waste customers. At the time of writing this assessment, we have 147 participants in the scheme with a variety of container types and sizes. The commingled material from our commercial customers is delivered direct to Norpol Recycling where the plastic is separated out and is sent for closed loop recycling to Eco Plastics.

Based on the evidence available it is not necessary for plastic to be collected separately as the separation processes produce a high quality end product that can be used for closed loop recycling.

8.6. Necessity Test for Glass:

Kerbside Services:

8.6.1. Glass bottles/jars are currently collected commingled with plastic bottles and metal cans at the kerbside from domestic properties. Pendle Council provides a 240 or 140 litre wheeled bin for the commingled materials.

8.6.2. In 2013/14, it is estimated that we collected 2,635t of glass. This is calculated from LCC's estimated composition of commingled material (70.5% for glass) that the MRF dealt with, net of the reject amount, i.e. 3,920t less 183t reject x 70.5%.

8.6.3. In 2008/09 we collected glass as a source separated material and that year the yield was 1,815t. By collecting commingled materials, we have significantly increased the annual quantity of glass collected for recycling (820t in a year).

8.6.4. The commingled cans/glass/plastic bottles are bulked up at our depot (Fleet Street) and then collected by Viridor on behalf of LCC/GRL and taken to the MRF at FWTP.

8.6.5. The commingled stream is separated at the MRF. For 2013/14 we reported a reject rate of 4.67% over the year to WasteDataFlow (figure provided to us by LCC).

8.6.6. Glass can be broken as soon as it is dropped in the bin, emptied and compacted in the waste collection vehicle, emptied on to the waste transfer station floor and then bulked loaded to the MRF where it is emptied on to the floor.

8.6.7. The co-mingled stream is separated at the MRF. Glass is broken using a bottle breaker as part of separation process, and then separated into two size fractions through screening. They are greater than 25mm cullet and less than 25mm cullet

8.6.8. In 2013/14, the proportion of cullet <25mm is 71% and >25mm 29%. GRL are currently trialling cullet <8mm being send to glass merchants for remelt which will increase the amount going to closed loop recycling in the future.

The glass cullet from household kerbside collections is a high quality product and 54% of it is used for remelt by Recresco. This is an example of closed loop recycling. 46% of the cullet is used for road aggregate and which could be considered as a lower quality recycling

product. A separate collection for glass would be likely to lead to an increase in quality as the proportion of cullet > 25mm size is likely to increase so this would meet the necessity test.

8.6.9. Pendle Council also offers a separate collection of trade commingling (glass/cans plastics) to all our commercial waste customers. At the time of writing this assessment, we have 147 participants in the scheme with a variety of container types and sizes. The commingled material from our commercial customers is delivered direct to Norpol Recycling where the glass is separated out and is sent for open loop recycling to Recresco.

The glass from trade kerbside collections is 100% used for road aggregate and which could be considered as a lower quality recycling product. A separate collection for glass would be likely to lead to an increase in quality as the proportion of cullet > 25mm size is likely to increase so this would meet the necessity test.

Bring Sites:

8.6.10. Pendle Council has 12 recycling sites at various locations across the Borough for recycling glass bottles and jars. Separate banks are provided on these sites for clear, amber and green glass serviced by Glass Recycling UK. All glass collected by GRUK is sent for remelt, i.e. closed loop recycling.

The glass from bring sites is collected separately and 100% used for remelt which is high quality recycling.

8.7. Conclusion of Necessity Tests:

Table 14 - Kerbside Services Necessity Tests:

Material	Is Separate Collection in Place?	Is Separate Collection Necessary to ensure that waste is recycled and to "facilitate or improve recovery"?	Practicability test to be applied
Glass	No	Yes	Yes
Metal	No	No	No
Paper	Yes	Not applicable	No
Plastic	No	No	No

Table 15 - Bring Sites Necessity Tests:

Material	Is Separate Collection in Place?	Is Separate Collection Necessary to ensure that waste is recycled and to "facilitate or improve recovery"?	Practicability test to be applied
Glass	Yes	Not applicable	No
Metal	No	No	No
Paper	Yes	Not applicable	No
Plastic	No	No	No

9. The Practicability Test (TEEP)

9.1. Kerbside collected glass is the only material that met the necessity test in that there would likely be an improvement in the quality of glass if collected separately as currently 54% of household glass and 100% of commercial glass collected goes to open loop recycling.

9.2. There are a number of options for how kerbside collected glass could be collected separately in Pendle. However in this assessment we have looked to collect all 4 materials separately to avoid any future challenges under the legislation. The following two options were considered most suitable for Pendle residents:

- Option 1 – full kerbside sort where all dry recycling is collected in kerbside boxes and sorted by the crew into different compartments on one vehicle.
- Option 2 – partially kerbside sort where glass and cans are collected in kerbside boxes, sorted by the crew into different compartments on one vehicle, with collection of plastic bottles in sacrificial sacks and paper/card as we currently do in separate vehicle passes.

9.3. It was felt that Option 1 would be too restrictive on the amount of recycling capacity for each resident, and Option 2 would be better as it allows more container capacity and therefore yield higher tonnages. We have looked at this option in detail comparing against our current collection systems.

9.4. Technical Practicability:

9.4.1. It would be technically practicable to introduce a partial kerbside sort system in Pendle as this has been operated before. There would be significant issues to address though:

- Replacement of the existing fleet
- Health and Safety issues for operative sorting waste on the highway
- Purchase and provision of new kerbside boxes for glass and cans
- Removal of existing wheeled bins
- Additional storage footprint required at households/commercial premises as plastic bottles are to be collected by a separate containment method to glass and cans
- Additional bulking bays at Fleet Street Depot to accommodate extra material separation requirements

9.4.2. There would be also be an impact on residual waste vehicles which would have to collect extra tonnage as a result of less recycling being collected via the kerbside sort system.

9.4.3. As Pendle Council has previously operated a kerbside sort system (from June 2005 until September 2009), we can see the effect that moving to a commingled system had on household tonnage yields (see table below):

Table 16 – Household Tonnage Yields for Glass, Cans and Plastic 2005/06 to 2013/14:

Financial Year	Kerbside sort combined tonnage (glass/cans/plastic)	Commingled (t)	Paper/cardboard (t)
2005/06	2155		3002
2006/07	2619		3405
2007/08	2822		3569
2008/09	2816		3340
2009/10	1233	1876	3326
2010/11		3773	3261
2011/12		3915	3063
2012/13		3817	3013
2013/14		3737	2832

9.4.4. For our commercial waste customers, the main issue of introducing a source separated collection system would be storage of additional containers. They have never been offered a source separated recycling system before and we have found it a challenge to get them on board with one extra container for commingled recycling and many have said they do not have the space to store additional bins.

9.4.5. From October 2014 we have contacted all our trade waste customers either in person or by letter in order to separate out their recycling from residual waste. This process is ongoing.

In conclusion, it is technical practicable to collect the 4 materials separately, but this will cause a drop in recycling tonnages collected, increase residual tonnages and create storage problems for householders/trade waste customers.

9.5. Environmental Practicability:

9.5.1. The environmental impact of the collection systems have been modelled using carbon dioxide as the main indicator. The climate change benefits are calculated as carbon dioxide equivalent tonnages avoided.

9.5.2. Assessment of reprocessing emissions – the table below compares the carbon saving of commingled glass collections versus a kerbside source separated glass collection, using the tonnages recycled in 2013/14 and 2008/09:

Table 17 – Assessment of Reprocessing Emissions:

		Commingled		Kerbside Sort	
	T CO_2 avoided per t recycled	Quantity(t)	T CO_2 equivalent avoided	Quantity (t)	T CO_2 equivalent avoided
Glass open loop	-0.0211	1,212.10	-25.58	181.5	-3.83
Glass closed loop	-0.168	1,422.90	-239.05	1,633.5	-274.43
Total		2,635	-264.63	1,815	-278.26

Assumptions
Figures for tonnes of carbon dioxide avoided per tonne of glass recycled are from the WRAP 2011 report on Kerbside Collections Options for Wales.
The figure for open loop recycling of glass is from RMC aggregates and the figure for closed loop recycling is the British Glass Carbon factor.
1815t of glass collected via a kerbside sort collection with 90% going to closed loop recycling.

The commingling system would result in 264.63t of carbon dioxide being avoided compared to 278.26t for the kerbside sort system, a difference of 13.63t a year.

9.5.3. Assessment of Transport Emissions - The transport emissions have been modelled comparing our current commingled system (3 RCVs for glass/cans/plastic , 3 Toploaders for paper/cardboard, 1 rural split bodied and trade waste RCVs 2 days per week) against a partially source separated system using 4 Kerbsiders for collecting glass and cans (sorted by crews at the kerbside); 2 RCVs for plastic bottles (in sacrificial sacks), 2 RCVs for paper and cardboard, 2 Kerbsiders for rural rounds and 1 Kerbsider for trade rounds.

9.5.4. The source separated materials would be bulked up at Fleet Street Depot and it is likely that there would be no need for bulk hauling of commingled materials to Farington MRF for sorting/baling. However LCC have indicated that offtakers for plastics would be unlikely to collect them loose, and therefore they would need baling locally or transporting to Farington for baling. This additional transport has been factored into the assessment.

9.5.5. It is not known if there would be additional transport needed from the offtakers hauling the source separated materials to their facilities as potential offtakers at this time is unknown.

Table 18 – Assessment of Transport Emissions:

Vehicle type	Litres of fuel used per year	CO_2 Equivalent (tonnages)
Current System:		
3 RCVs	28,290	92.23
3 Toploaders	9,639	31.42
1 split bodied (rural)	9,615	31.34
1 RCV trade (2 days pw)	5,356	17.46
Total	**52,900**	**172.45**
Proposed Kerbside Sort:		
6 Kerbsiders (4 urban, 2 rural)	41,658	135.81
4 RCVs (plastic and paper/card)	27,772	90.54
1 Kerbsider (trade)	6,943	22.63
Sub Total	**76,373**	**248.98**
Bulk haulage saving (269 loads)	-10,459	-34.10
Plastic loads to Farington	4,044	13.18
Total	**69,958**	**228.06**

Assumptions
Data on mileage and fuel consumption provided is based on our current vehicles and compared to the vehicles we proposed to use on a source separated system.
There would be no bulk hauling to FWTP – it is assumed that end markets would collect direct from Fleet Street Depot therefore a carbon saving in reduced vehicle movements.
LCC provided the litres/mile for bulk haulage by Viridor at 0.72 litres/mile. Round trip to Farington = 54 miles. Estimated number of trips in 2013/14 = 269.
Plastic haulage to Farington estimated 2 loads per week, 104 loads per year.
Diesel emissions kg carbon dioxide per litre 3.26kg/litre (WRAP, 2011)

9.5.6. Assessment of Sorting Emissions - If glass was collected separately it would no longer need to be processed through the MRF at Farington. It would be delivered to our transfer station (Fleet St Depot) which would significantly reduce the carbon dioxide emissions. This is assuming that we are able to adapt our depot to be able to bulk up the source separated materials and that the relevant environmental permits are available to us.

Table 19 – Assessment of Sorting Emissions:

	Glass collected (tonnes)	Facility Electricity Use (kwh)	CO_2 Equivalent (tonnes)	Facility Diesel (litres)	CO_2 tonnes	Total CO_2 tonnes
Commingled	2,635	92,225	54.40	5,270	17.08	71.48
Kerbside Sort	1,815	7,260	4.28	1,815	5.88	10.16

Assumptions
MRF uses 35Kwh electricity per tonne (WRAP, 2011)
MRF uses 2 litres per tonne (WRAP, 2011)
Transfer station uses 4Kwh electricity per tonne (WRAP, 2011)
Transfer station uses 1 litre diesel per tonne (WRAP, 2011)
General diesel emission factor kg CO2 per kWh used is 0.58982
General diesel emission factor kg CO2 per litre used is 3.2413

Table 20 - Environmental Conclusion/Emissions Assessment Summary:

	Comingled (t CO_2 equivalent)	Kerbside Sort (t CO_2 equivalent)	Impact of changing collection (t CO_2 equivalent)
Reprocessing	-264.63	-278.26	-13.63
Transport	172.45	228.06	55.61
Sorting	71.48	10.16	-61.32
			-19.34

9.5.7. The use of a kerbside sort system would reduce the climate change impact during reprocessing and sorting but increase it during transport. The net effect would be a slight saving in carbon emissions (19.34t per year). However we do not know where the potential offtakers may be located for source separated materials and therefore we have been unable to factor this into the calculations. These decisions are made by LCC and are not under the control of Pendle Council.

In conclusion it is environmentally practicable for Pendle Council to collect the 4 materials source separated.

9.6. Economic Practicability:

9.6.1. As stated earlier, we have a contract with Go-Plant Ltd for our fleet of vehicles which runs until October 2016. Any changes to the provision of vehicles, e.g. switching to Kerbsiders for source separating, would have a cost implication for the council.

9.6.2. The financial penalty of changing vehicles from our current dry recycling system to a fully source separated collection system would be £186,220 per calendar year, i.e. if we implemented a change 18 months before the contract end date, then the cost would be £279,330.

9.6.3. There would also be costs associated with upgrading the transfer station area of our depot in order to be able to store the source separated materials. We would also have to purchase additional kerbside boxes and sacrificial sacks in order to implement the new system, as well as carrying out a comprehensive publicity campaign.

9.6.4. As we are in a Cost Sharing Agreement (CSA) with LCC, Pendle Council would not benefit for any additional income associated with source separated materials. Our income from LCC is a fixed annual amount under the CSA.

9.6.5. Table 21 shows the cost assessment of our current commingled collection system compared to the source separated collection system as proposed in order to meet the regulations:

Table 21 – Comparing Costs of a Commingled System with a Source Separated System:

Description of requirements	Cost	
	Revenue	**Capital**
Commingled System:		
3 RCVs for commingling glass, cans and plastic with driver and 2 loaders for urban areas inc hire/running costs	£354,540	
3 Toploaders for paper/card/textiles with driver and loader for urban areas inc hire/running costs	£202,560	
1 Split bodied RCV for rural recycling with driver and loader inc hire/running costs	£98,910	
1 RCV for trade waste recycling (2 days pw) with driver and loader inc hire/running costs	£43,236	
Commingled System Total:	**£699,246**	**0**
Source Separated System:		
4 Kerbsiders with driver and 2 loaders for urban areas inc hire/running costs	£487,840	
4 RCVs with driver and 1 loader for paper/card and plastics in urban area inc hire/running costs	£316,400	
2 Kerbsiders with driver and 1 loader for rural areas inc hire/running costs	£197,820	
1 Kerbsider with driver and 2 loaders for trade waste inc hire/running costs	£121,410	
Provision of new kerbside boxes (£4.90 x 40,100)		£196,490
Provision of sacrificial sacks (26 per hh p.a.)	£31,200	
Publicity costs		£40,000
Transfer station alterations		£20,000
Removal of existing brown bins		£54,038
Termination of vehicle contract (one year cost)		£186,220
Source Separated System total:	**£1,154,670**	**£496,748**
Extra costs for moving to Source Separated:	**£455,424**	**£496,748**

9.6.6. If the Council was to move towards a source separated kerbside collection, the additional costs for the first year would be in the region of £952k with ongoing additional costs of around £455k for future years. These figures do not include interest charges for financing capital costs or inflation increases.

In conclusion it is not economically practicable to introduce a kerbside sort system.

Table 22 - Conclusion of Practicability Tests:

Parameters	Does separate collection pass the Practicability Test?	
	YES	NO
Technical	✓	
Environmental	✓	
Economic		✓

9.7. As separate collections do not pass the economic practicability test, then we are not legally obligated to collect the 4 materials separately.

10. Overall Conclusion

10.1. Regulation 12 requires local authorities to meet the waste hierarchy for all wastes it is responsible for. This assessment concludes that this regulation has been met.

10.2. Regulation 13 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."

10.3. The introduction of a kerbside sorting system for these materials has been subjected to these tests with the following conclusions:

- The collection system operated by Pendle Council ensures a high yield of material is collected through kerbside collections.
- Paper and card are kept separate from other materials so the quality of the material is good and it goes for closed loop recycling. Therefore the current collection method is permitted under these Regulations.
- Plastics and metals can be easily separated at Farington Waste Technology Park to achieve a good quality material that meets closed loop reprocessors' specifications. Therefore the current collection method is permitted under these Regulations.
- The separate collection of glass via kerbside sort is unlikely to facilitate higher recovery but it would improve the amount of glass that could be closed loop recycled. The TEEP test shows it is technically and environmentally practicable to introduce a kerbside sort system. However it is not economically practicable as a source separated collection system would increase our costs by £862,044 in year 1 with ongoing additional costs of £455,000 per year.
-

10.4. Separate collection of glass at the kerbside is not economically practicable for Pendle Council. Therefore the current kerbside collection method is permitted under these Regulations.

11. Sign Off and Review

11.1. An Executive Member Decision report will be drafted recommending the Council's compliance with these Regulations is noted and approval of the assessment. The Executive Member Decision report is expected to be approved in March 2015.

11.2. This assessment will be reviewed in the event of key triggers including;

- Vehicle contract renewal
- Cost Sharing Agreement ending
- Significant changes to the MRF at Farington Waste Technology Park
- New data becomes available which is likely to affect the overall conclusion of this assessment

Appendix 1: “A Greener Strategy for a Greener Future” Lancashire’s Municipal Waste Management Strategy 2001-2020

Appendix 2: Waste Management Property Based Cost Sharing Agreement

Appendix 3: Deed of Extension and Variation 2013

Appendix 4: Local Authority Waste and Recycling Performance Benchmarks 2012/13

Appendix 5: Global Renewables Ltd, End Destinations of Recyclables – correct as of March 2014