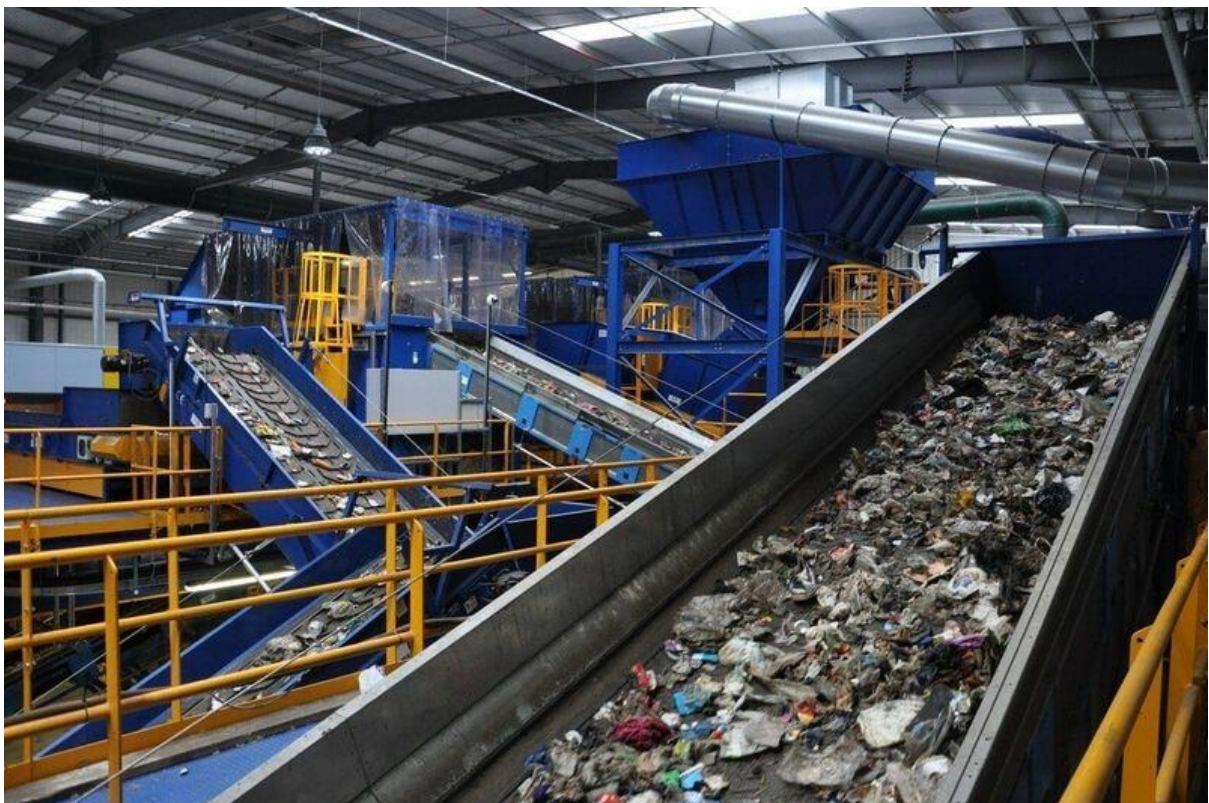


# Material Recovery Facilities (Qualifying Materials): Market Overview



*May 2023*

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## Contents

Contents .....	2
Disclaimer .....	2
Contact Details.....	2
1. Introduction .....	3
2. Summary.....	5
3. Market Overview .....	6
4. Input Material.....	10
5. Input Gate Fees.....	20
6. Output Material.....	24
7. Potential Impacts of Policy Change .....	30
8. Appendix 1: Sources of Data .....	35
9. Appendix 2: Qualifying MRFs .....	36

## Disclaimer

This report has been written by Monksleigh Ltd based upon referenced reports and databases and Monksleigh’s own in-house knowledge and analysis. Monksleigh has taken due care and consideration in the preparation of this report to ensure that all the facts and analysis presented are as accurate as possible, but no assurance is provided in respect of the evidence presented and Monksleigh are not responsible for any decisions or actions taken on the basis of the information contained therein.

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# 1. Introduction

This is the first such report published by Monksleigh, having created and populated data for [www.wikiwaste.org.uk](http://www.wikiwaste.org.uk) over the last four years and having written a report on Material Recovery Facilities (MRFs) in early 2015, prior to the introduction of the Environmental Permitting (England and Wales) Regulations 2016<sup>1</sup> and its requirement for MRFs receiving over a 1,000 tonnes of mixed material ('Qualifying MRFs') to sample both the input and output streams. All terms referred to in this report can be referenced via the wikiwaste website as a bibliography/glossary and sources for this report are listed in Appendix 1: Sources of Data.

With the complexity of MRFs and their permit tonnage thresholds varying within the overall scope of this report, Monksleigh puts forward a structure that groups them on a scale/approach basis – notwithstanding that even within such groupings there are subtle differences between many MRF operations supplying solutions in the market.

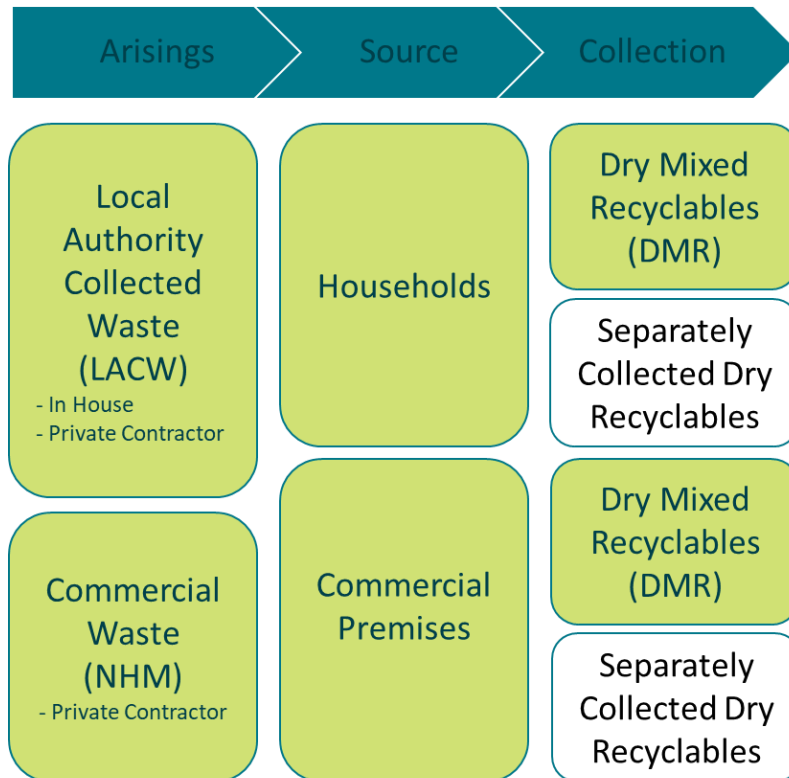
In considering the data and sites reported, the following should be noted:

- Sites exempt from an Environmental Permit are excluded, which broadly relate to smaller tonnages handled and separately collected tonnages in the market.
- Many of the sites reported have an Environmental Permit that encompasses multiple activities. This can be seen in Appendix 2: Qualifying MRFs where overall tonnage managed by the Environmental Permit significantly exceeds that reported under the regulations shown as 'Qualifying Tonnes'.
- The main EWC code used for DMR material in the scope of this report is 20 03 01, however, this code is also used for other mixed waste streams and cannot be relied upon as definitive tonnage for Qualifying Material or DMR tonnage. i.e. this same appendix shows some line entries (MRFs) with 20 03 01 tonnage higher than the Qualifying tonnage reported.
- The data is focused on the published data for Qualifying MRFs only, the most recent of which is for the calendar year 2021.
- No data is presently available on Qualifying MRFs for Northern Ireland and so they are excluded from the scope of this report, although it is known that some tonnage was moved from 'the mainland' to Northern Ireland in the period of reporting.

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<sup>1</sup> Colloquially referred to by many as the 'MRF Code of Practice', referred to here as 'the regulations'

The broad scope of the report is summarised in Figure 1 below:



**Figure 1: Schematic of the Scope of the MRF Market Receiving Qualifying Material (Monksleigh)**

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2.

## REPORT SUMMARY



### Number of MRFs



- **108** MRFs in Britain
- **4.2m** tonnes Qualifying Materials received
- **84%** in England

### Growth



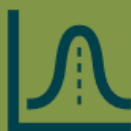
- **Flat Macro market last 5 years**
- **Growth in English tonnage** since 2017 of **c.250kt**
- **Growth expected of c.500kt next c.7 years:**
  - Loss to DRS materials
  - Gain with wider range under Consistency in Collections

### MRF Size



- **50%** of MRFs handled between **50kt and 125kt**
- **4** MRFs handled **>125kt** equiv. to **22%** of market
- **Biffa** largest player with **18%** of market

### Sampling



- **46,382** samples on inbound material (**11.4%** contam.)
- **112,031** samples on out-bound (**2.1%** contam.)
- At an assumed **cost of c.£3.2 to £7.9m**
- **Likely to double** with new guidance

### Output



- **1,389kt** Paper
- **952kt** Glass
- **516kt** Plastic
- **234kt** Metal

### Financial Challenges



- **Gate Fees** Increasing
- **Commodity risk** more towards suppliers of material
- **Capital Investment** c. 200m next c.7 years (excl. upgrades to existing MRFs for change in mix)
- **Delays in policy** change leads to potential log-jam



### 3. Market Overview

#### Scale

The MRFs falling into the scope of this report are listed in Appendix 2: Qualifying MRFs. As of December 2021 there were 118 Qualifying MRFs in Britain, split by country and input tonnage in Table 1 below.

**Table 1: Number of Qualifying MRFs and Tonnage Input**

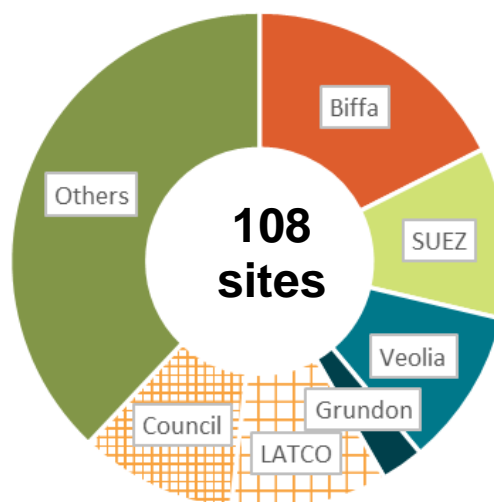
Country	Number of MRFs	Split	Input Tonnage	Split
England	81	75%	3,571,927	84%
Scotland	12	11%	406,826	10%
Wales	15	14%	298,858	7%
<b>Total</b>	<b>108</b>		<b>4,277,612</b>	

#### Operator Market Share Overview

Biffa at 18% had the largest market share by **number of sites** (including the Syracuse business which was used to assimilate the MRFs acquired from Viridor in September 2021), Suez at 11% and Veolia at 10%. Single-site operators made up the other category of 38%.

**Table 2: MRF Market Share by Number of Sites**

Operator	No.	Split
Biffa	19	18%
SUEZ	12	11%
Veolia	11	10%
Grundon	3	3%
LATCO/PPP	11	10%
Council	11	10%
Others	41	38%
<b>TOTAL</b>	<b>108</b>	

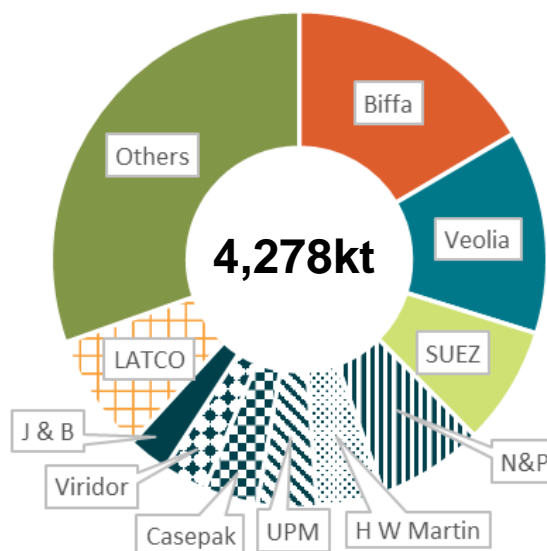


The market share by **tonnage** (outlined below), shows that Biffa still had the largest market share, Veolia at 14% and Suez at 8%. A number of the operators that appear in this analysis have one or two larger sites (falling into the 'other' category in the previous figure) and the

'council' sites (shown in the previous figure) do not feature, as they are primarily small-scale sites.

**Table 3: MRF Market Share by Tonnage Received**

Operator	'000 tonnes	Split
Biffa	767	18%
Veolia	615	14%
LATCO/PPP	361	8%
Suez	359	8%
N&P	323	8%
HW Martin	203	5%
UPM	178	4%
Casepak	163	4%
Viridor	134	3%
J&B	125	3%
Others	1,050	25%
<b>TOTAL</b>	<b>4,278</b>	



Note: of the 361kt shown managed by LATCO/PPP operators, 101kt (28%) was Norse Environmental, 82kt (23%) was Seven Waste Services, and 75kt (21%) was Lancashire Renewables.

## MRF Groupings

Appendix 2: Qualifying MRFs (and the associated tables in the appendix) show the tonnage and split of waste received and the grouping according to the Monksleigh categories which are described in the table below.

**Table 4: MRF Groupings/Size**

Category/Grouping	Size Range (tonnes per annum)	Comment
Small (S)	<20,000	Primarily transfer stations and local authority transport depots with only limited sorting - often focused on specific streamed collections (i.e. cans and plastic bottles)
Medium (M)	>20,000 <50,000	Often a single processing line for multi-streamed DMR MRF - focused on one PPP/PFI contract or up to three separate local authority contracts. Smaller end of range MRFs may be large transfer depots, with or without some simple sorting prior to onward transport for further processing

Category/Grouping	Size Range (tonnes per annum)	Comment
Large (L)	>50,000 <125,000	Complex multi-stream DMR MRFs, with one or more process lines, focusing on up to five local authority contracts
Extra Large (XL)	>125,000	Multi-stream and multi-line MRFs, focusing on at least five or more local authority contracts – of which there only four in Britain at present.

Source: Monksleigh

The split in Table 5 below shows that the majority of tonnage was received via large MRFs in Britain, with four extra-large MRFs accounting for 22% of input tonnage. Whilst there were 53 small sites (49%) they accounted for only 8% (352k tonnes) of the total tonnage received. In Table 6 below it can be seen that the split for England alone is broadly similar to Britain as a whole.

**Table 5: Split of MRF Groupings and Tonnage Input (Britain)**

Category/Grouping	Number	Split	Tonnes	Split
Small	53	49%	352,161	8%
Medium	26	24%	855,957	20%
Large	25	23%	2,138,588	50%
Extra Large	4	4%	930,906	22%
<b>Total</b>	<b>108</b>	<b>100%</b>	<b>4,277,612</b>	<b>100%</b>

**Table 6: Split of MRF Groupings and Tonnage Input (England only)**

Category/Grouping	Number	Split	Tonnes	Split
Small	37	46%	262,073	7%
Medium	19	23%	622,592	17%
Large	22	27%	1,934,527	54%
Extra Large	3	4%	752,738	21%
<b>Total</b>	<b>81</b>	<b>100%</b>	<b>3,571,927</b>	<b>100%</b>

## Market Share - England

The market share split across the size groupings reveals that whilst Biffa and Suez are in the top three overall, the larger sites mask their high number of smaller sites, which are generally focused on delivering part of a solution for local authority collection contracts.

In addition, it shows that whilst Veolia is the single largest operator of large MRFs in England, many of the large MRFs are operated by independents, as are two of three extra-



large MRFs (the third MRF being Biffa at Edmonton – the three in total comprise 21% of the market by tonnage).

The single largest site in England is the N&P site at Crayford (acquired from Viridor in January 2022 as part of the wider divestment of its MRF assets to Biffa four months earlier).

**Table 7: Main Operators by Number of MRFs, Split by MRF Groupings (England)**

Operator	Total	Small	Medium	Large	Extra Large
Biffa	14	7	3	3	1
Veolia	11	2	3	6	
SUEZ	11	7	2	2	
Grundon	2		2		
Renewi	2	1	1		
Cheshire West Recycling	2	2			
New Earth Solutions	2	1		1	
FCC	2	1	1		
H W Martin	2			2	
Others	33	16	7	8	2
<b>Total</b>	<b>81</b>	<b>37</b>	<b>19</b>	<b>22</b>	<b>3</b>

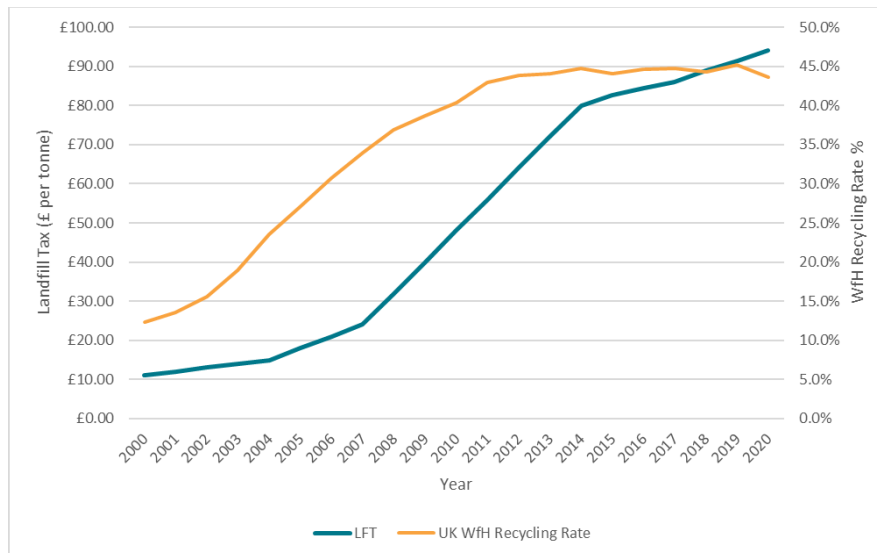
**Table 8: Main Operators by Percentage Split by Tonnage Received, Split by Groupings (England)**

Operator	Tonnes	Small	Medium	Large	Extra Large
Biffa	644,923	15%	13%	13%	35%
Veolia	614,992	8%	14%	26%	
N&P Crayford	322,560				43%
SUEZ	308,233	17%	12%	10%	
H W Martin	203,267			11%	
Casepak	163,186				22%
J & B	124,839			6%	
Norse	101,538			5%	
Pearce	98,411			5%	
Bywaters	91,127			5%	
Others	898,849	60%	61%	19%	
<b>Total</b>	<b>3,571,927</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

## 4. Input Material

### Macro Picture

Recycling rates of dry recyclables generally have not changed dramatically since 2014, when landfill tax increases ceased acting as a driver for change, notwithstanding the impacts on household waste that occurred during the COVID pandemic.



Source: DEFRA Statistics, HMRC, Monksleigh

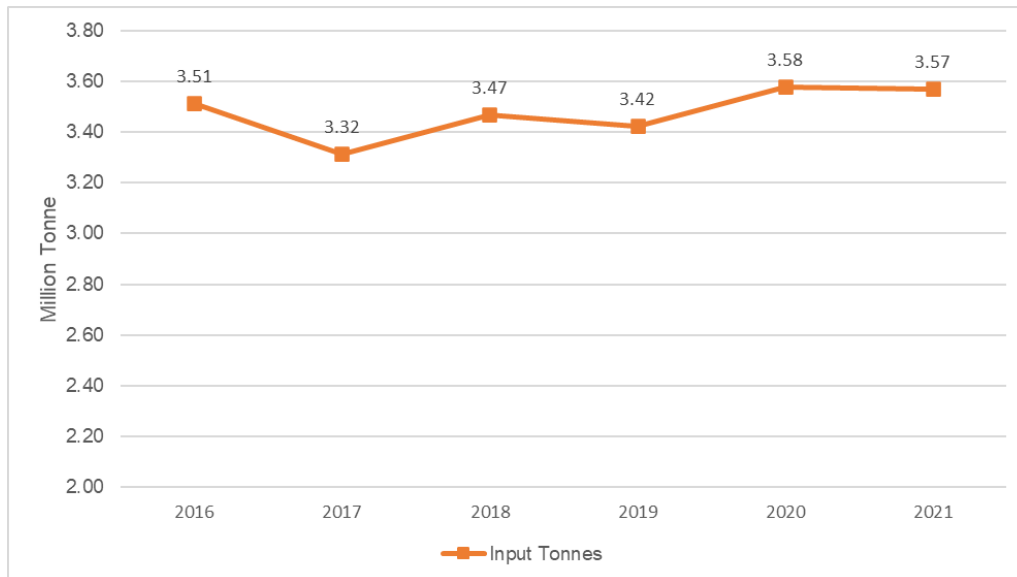
Figure 2: Waste from Households Recycling Performance Relative to Landfill Tax



Source: DEFRA Statistics, Monksleigh

Figure 3: Waste from Households Recycling Performance by Country

This report represents Qualifying Material data for 2021 only; a broad trend is possible for English data since the introduction of the regulations in 2016, but not at a granular level at this time. It shows that whilst the tonnage recycled through MRFs has remained broadly flat in a macro context, since 2017 the tonnage into MRFs in England grew by c. 250kt.



**Figure 4: Total Tonnage Received by MRFs (England)**

Comparing MRF input tonnage for England (from this data) to recycled Waste from Households in England (reported by DEFRA), around 35% of the total tonnage was consistently managed by these MRFs (noting that the MRFs also handle NHM waste).



Source: Data from EA and DEFRA, Monksleigh Analysis

**Figure 5: Qualifying Tonnage to MRFs for England and Total Tonnage Recycled of Household Waste for England**

## Presentation of Material

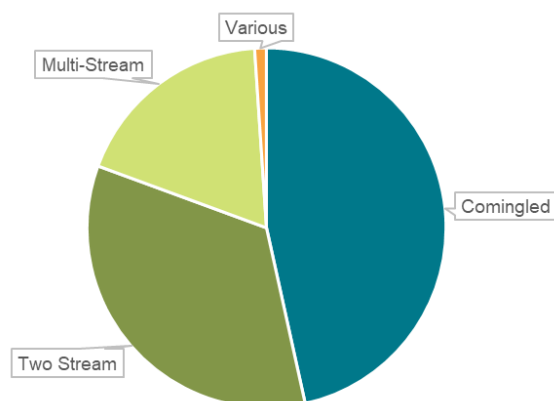
The type and complexity of a MRF for managing DMR is a function of the way that the material has been collected and presented by the collection system. The current preference by Local Authorities to collect DMR is in one of three primary collection systems:

- Fully comingled (can be with or without glass included in the mix).
- Two Streamed (also known as twin streamed)
  - o Separate collection of glass, with remainder fully comingled
  - o Separate collection of fibre, with remainder fully comingled
- Multi-streamed (also known as Kerbside sort – i.e. separated at the kerbside, often with only limited sorting of plastic and metal cans at a very simple MRF).

Monksleigh’s analysis of WRAP LA Portal data in Table 9 shows a higher proportion of multi-streamed and two streamed collections than that listed within the MRF section of the WRAP Gate Fees Report 2021/22 in Table 9 below.

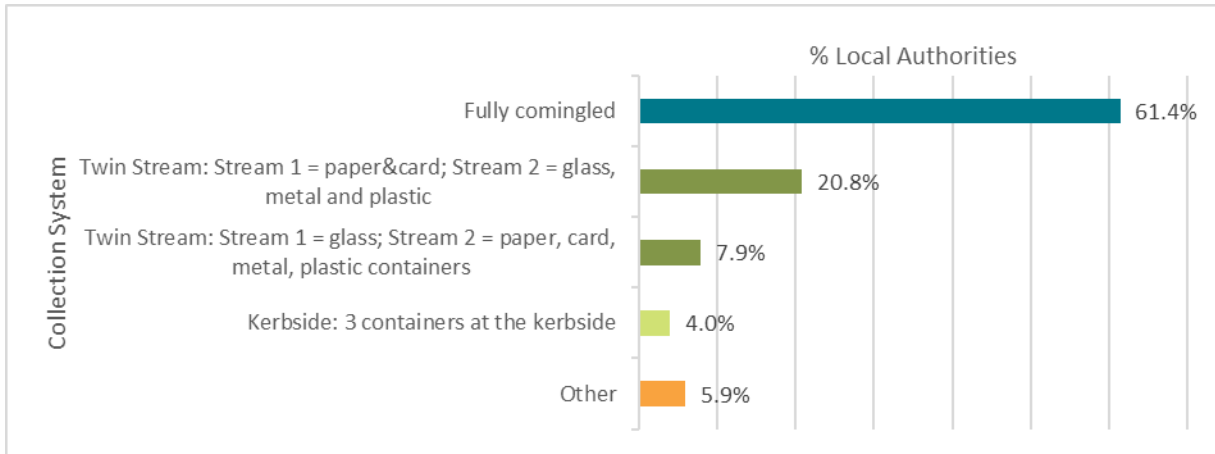
**Table 9: Local Authority Collection Systems (Britain)**

Collection System	No. Authorities	% Split
Comingled	169	47%
Two Stream	126	34%
Multi-Stream	68	18%
Various*	2	1%
<b>TOTAL</b>	<b>365</b>	



Source: WRAP Local Authority Portal, Monksleigh

\* Relates to those Local Authorities still using more than one primary DMR kerbside collection system within their jurisdiction.



Source: Figure 3 and Table 10 of WRAP Gate Fee Report 2021/22

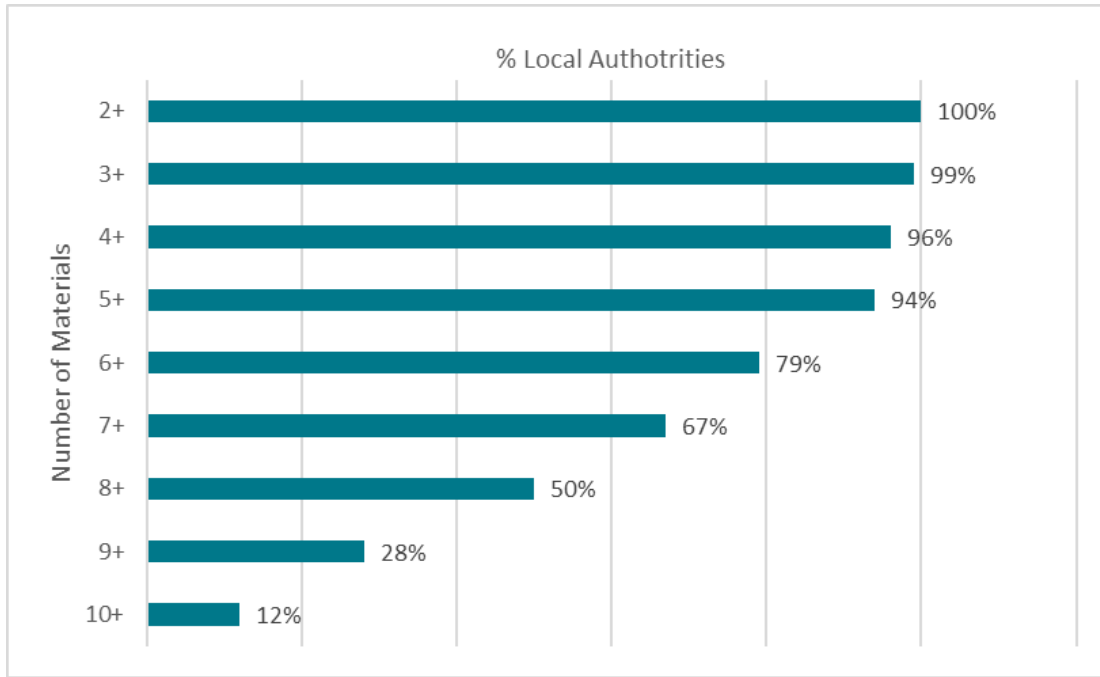
### Figure 6: Methods of Collection of Materials

The results from Figure 6 above indicates that the MRF section within the WRAP Gate Fees Report (which only captures a proportion of the total market) concentrates primarily towards reporting comingled MRFs in its overall findings.

The Gate Fees Report suggested that no respondents were considering a move to a fully comingled solution, although 37% were considering a change; of this 37%, 75% were currently collecting fully comingled. Of those respondents considering change, 41% said they were considering a shift to a 'Twin-Stream' with separate paper and card, and 5% considering a multi-stream collection.

The report also sets out the considerable variation and type of materials collected by local authorities. Figure 7 below highlights the number of materials collected, with the large majority collecting at least five or more materials.

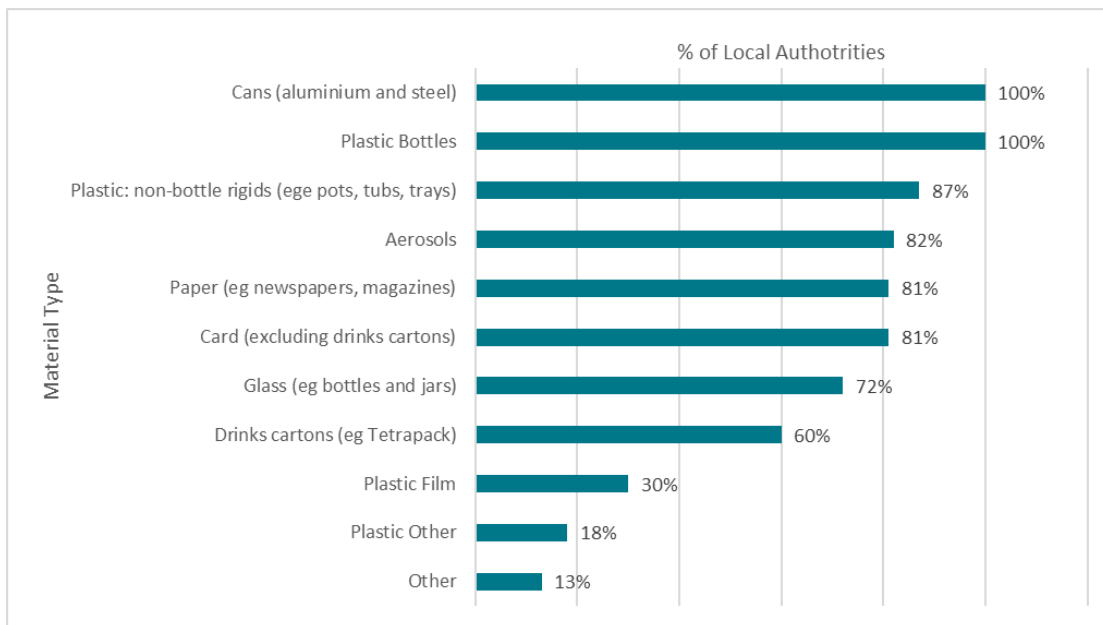
The variety in the collection systems leads to different sorting systems at MRFs, and the most successful MRFs have the most flexible systems, or multiple sorting lines, allowing them to receive a greater range of materials.



Source: Figure 10 and Table 10 of WRAP Gate Fees Report 2021/22

### Figure 7: Number of Materials Collected

Of the materials collected, the findings of the WRAP report suggested that the majority of Local Authorities collected cans, plastic bottles and PTT. The greatest variability in the four target materials (Paper, Plastics, Glass, and Metal) are in Paper and Glass, as shown in the figure below.



Source: Figure 1 and Table 8 of WRAP Gate Fee Report 2021/22

### Figure 8: Percentage of Local Authorities Collecting Material Types

## Input Material Mix

The number of samples taken in 2021 in accordance with the regulations totalled over 46,382, equivalent to an average rate of one sample every 86.6 tonnes across all suppliers. At £20 to £50 per sample this is an equivalent cost of £0.9m to £2.3m for inbound analysis.

**Table 10: Actual Sampling Rates vs Requirement**

Qualifying Material Input	Requirement [sample every x tonnes]	Actual [sample every x tonnes]	Rate Above Required (%)
All Inputs	125	86.6	44%

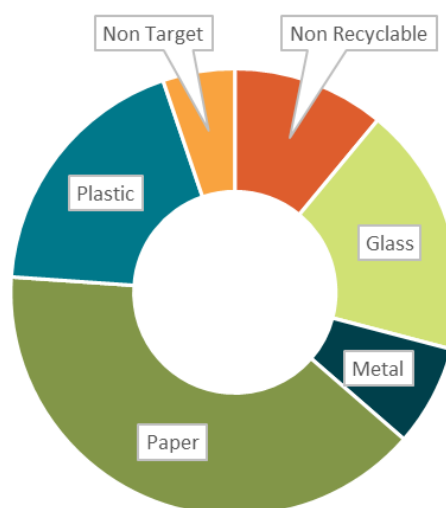
The sampling frequency above the requirement of 125 tonnes may be due to the size of each supplier's input (i.e. not in evenly spaced 125 tonne units) but also some operators choosing to sample more frequently for some or all customers (i.e. for wider management purposes).

The overall sampling of input tonnage gives the following mix of materials:

**Table 11: Input Tonnage to Qualifying MRFs by Qualifying Material % Sampled**

### All MRFs Input Mix (108 Sites)

Material	Split	No. of Sites Receiving Material	Split/ Receiving
Glass	18.1%	75	69%
Metal	7.3%	107	99%
Paper	39.7%	89	82%
Plastic	18.7%	105	97%
Non-Target	5.2%		
Non-Recyclable	11.0%		



The mix of materials shown above changes, however, when the MRF size alters. The following table shows the changes to the material input mix when the size of the MRF increases.

**Table 12: Input Tonnage to Qualifying MRFs by Qualifying Material % Sampled (by site size)**

<b>Small MRF Input Mix (53 Sites)</b>			
Material	Split	No. of MRF's Receiving Material	% of MRF's Receiving Material
Glass	4.4%	31	58%
Metal	9.4%	52	98%
Paper	42.1%	39	74%
Plastic	22.1%	51	96%
Non-Target	5.0%		
Non-Recyclable	17.0%		

<b>Medium MRF Input (26 Sites)</b>			
Material	Split	No. of MRF's Receiving Material	% of MRF's Receiving Material
Glass	15.5%	21	81%
Metal	8.4%	26	100%
Paper	33.8%	24	92%
Plastic	28.2%	25	96%
Non-Target	6.0%		
Non-Recyclable	8.1%		

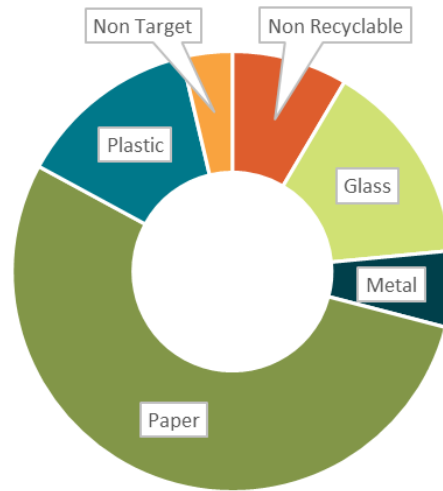
  

<b>Large MRF Input (25 Sites)</b>			
Material	Split	No. of MRF's Receiving Material	% of MRFs Receiving Material
Glass	26.0%	20	80%
Metal	6.4%	25	100%
Paper	38.0%	22	88%
Plastic	13.3%	25	100%
Non-Target	5.4%		
Non-Recyclable	11.0%		



### X Large MRF Input (4 Sites)

Material	Split	No. of MRF's Receiving Material	% of MRF's Receiving Material
Glass	15.0%	4	100%
Metal	5.6%	4	100%
Paper	53.9%	4	100%
Plastic	13.4%	4	100%
Non-Target	3.7%		
Non-Recyclable	8.5%		



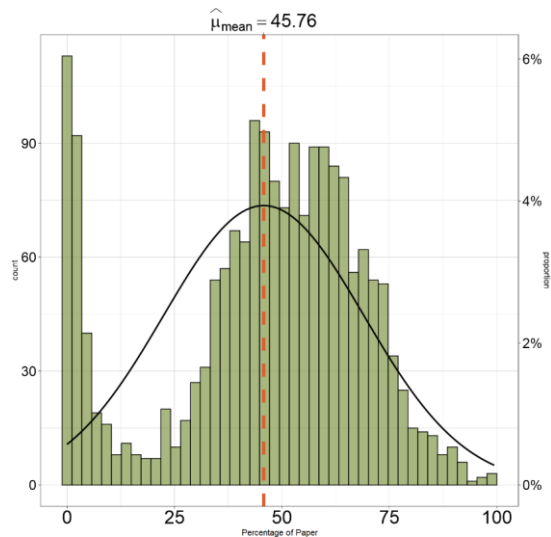
The split between the four main Qualifying materials for each MRF is summarised in Appendix 2: Qualifying MRFs in Table 20.

The following table splits the four main target/Qualifying Materials into separate entries and further extrapolates the percentage split of each individual material received at differing sizes of MRFs using a distribution plot.

**Table 13: Distribution of Sampling of Input Materials (\*see note on mean and ranges below)**

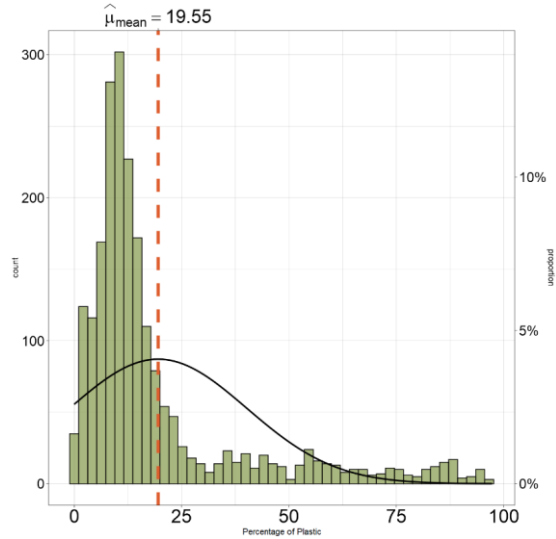
#### Paper

Size	Average	Lower Range	Upper Range
S	40.9%	0	23.0%
M	34.6%	0.9%	39.5%
L	40.5%	5.9%	42.5%
XL	54.4%	50.7%	58.5%
<b>All</b>	<b>41.2%</b>	<b>2.8%</b>	<b>44.6%</b>



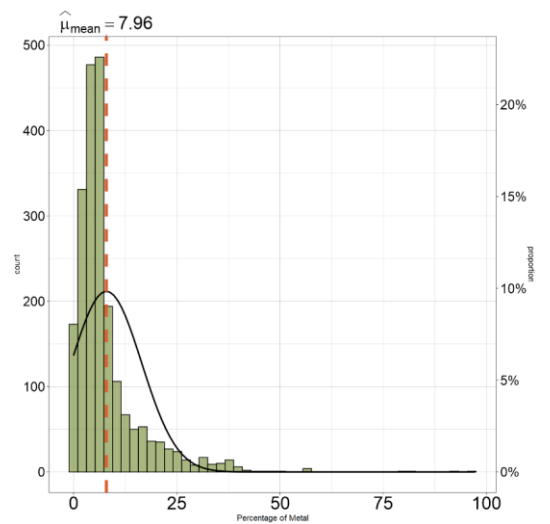
## Plastic

Size	Average	Lower Range	Upper Range
S	21.5%	1.0%	6.3%
M	28.8%	10.0%	17.4%
L	14.1%	7.5%	10.5%
XL	13.5%	13.5%	12.5%
<b>All</b>	<b>19.4%</b>	<b>7.5%</b>	<b>11.5%</b>



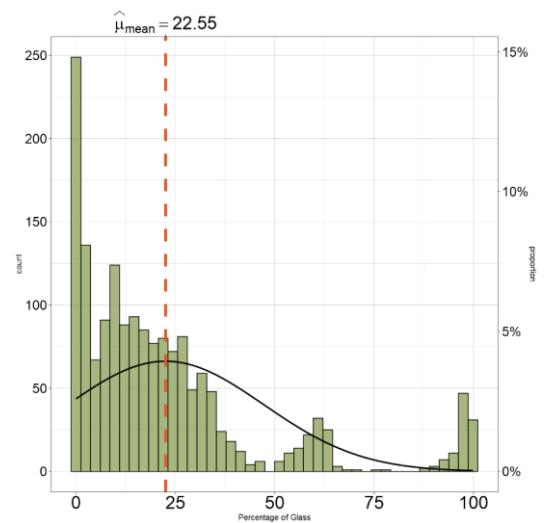
## Metal

Size	Average	Lower Range	Upper Range
S	9.1%	0	2.0%
M	8.6%	4.0%	6.7%
L	6.8%	4.0%	5.6%
XL	5.7%	5.0%	5.7%
<b>All</b>	<b>7.5%</b>	<b>3.1%</b>	<b>5.4%</b>



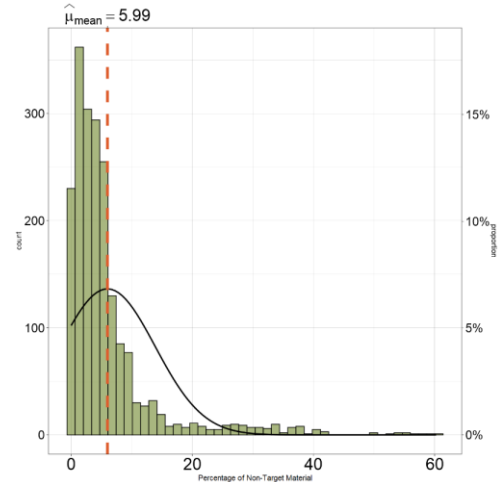
## Glass

Size	Average	Lower Range	Upper Range
S	4.3%	0	N/A
M	15.9%	0	7.5%
L	27.7%	5.5%	19.0%
XL	15.1%	9.7%	19.7%
<b>All</b>	<b>18.8%</b>	<b>0</b>	<b>9.0%</b>



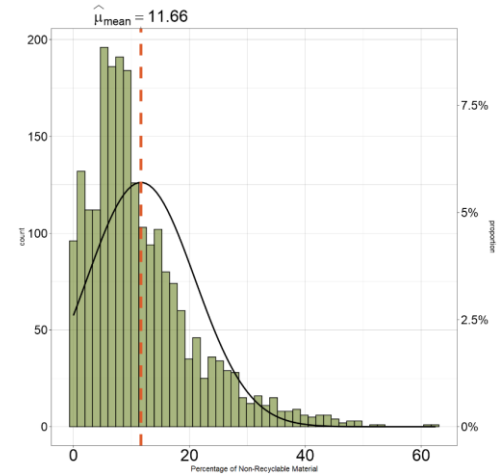
### Non-Target

Size	Average	Lower Range	Upper Range
S	4.9%	0	2.0%
M	6.2%	2.1%	5.1%
L	5.7%	0.8%	2.4%
XL	3.7%	3.4%	4.2%
<b>All</b>	<b>5.4%</b>	<b>1.2%</b>	<b>3.3%</b>



### Non-Recyclable

Size	Average	Lower Range	Upper Range
S	16.5%	0	7.6%
M	11.7%	6.6%	10.7%
L	8.5%	6.4%	8.4%
XL	8.3%	4.8%	7.9%
<b>All</b>	<b>11.4%</b>	<b>5.2%</b>	<b>9.0%</b>



\*Note: Lower range and upper range are expressed as the 40<sup>th</sup> and 60<sup>th</sup> percentile respectively. The mean excludes all zero values and therefore is not the same as the average in the table which is across all values.

The average residual/non-recyclable tonnage in the above table is 11.4% but this is skewed considerably by several readings with contamination levels at 30% or more. The non-target material, whilst recyclable, may or may not be recycled, and therefore may be included by some commentators as additional contamination.

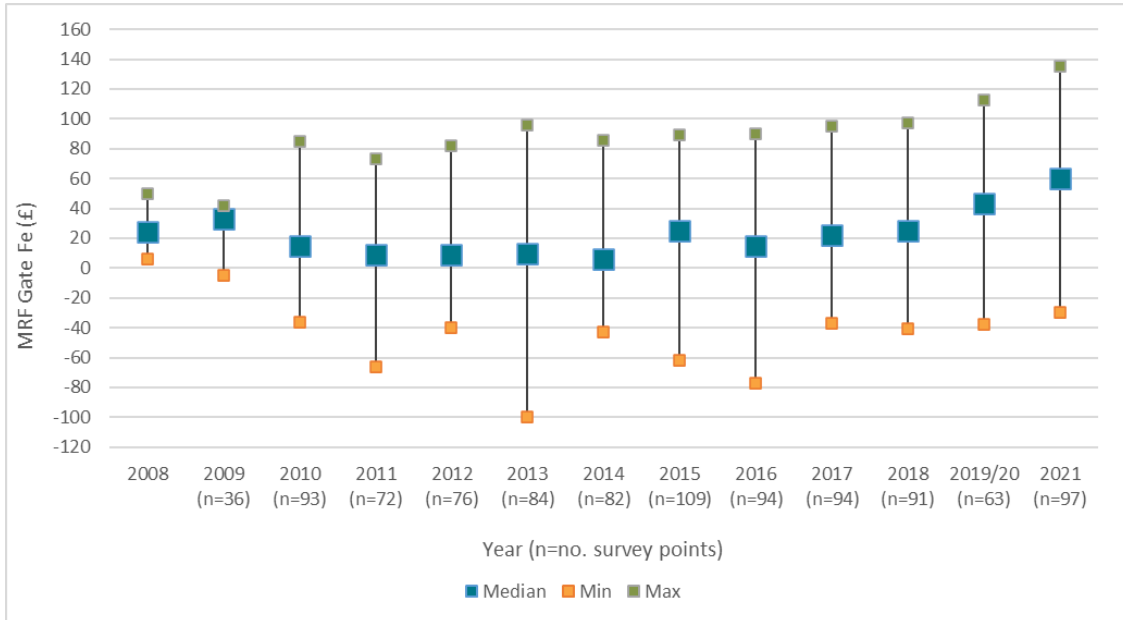
The data suggests that there is no direct correlation between high 'contamination' and either commercial or local authority delivered materials.

Monksleigh's previous work in 2015 focused on large and extra-large MRFs and suggested contamination rates of between 8% and 26%. This is not unreasonable in the overall ranges above but the sampling, which is more intense at the larger sites, suggests that most current contamination levels are at the lower end of this earlier work.

# 5. Input Gate Fees

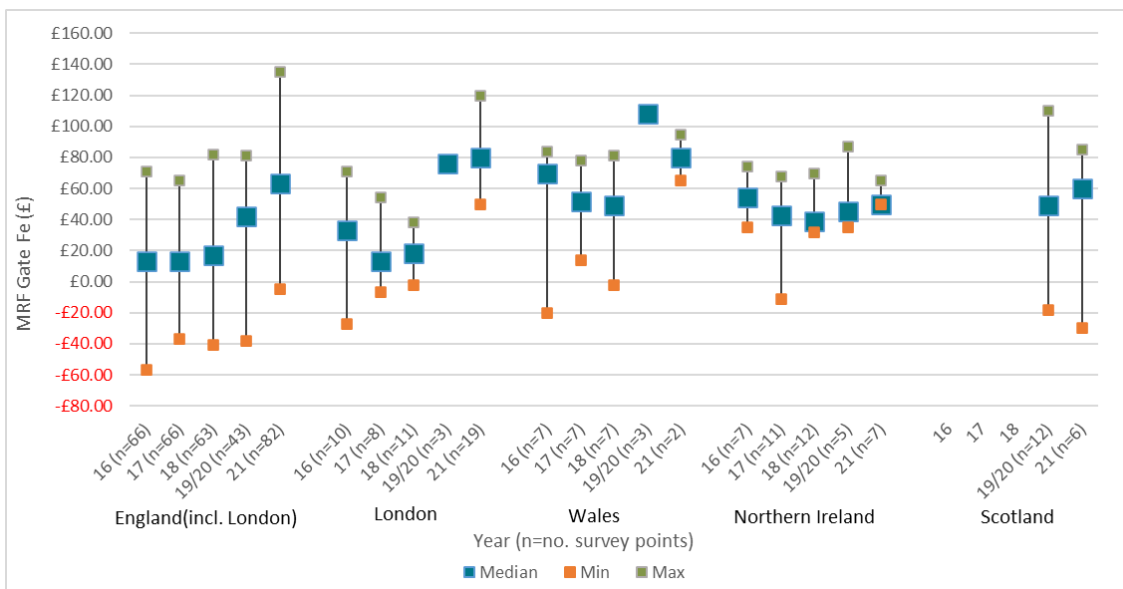
## Overview

The most recent WRAP report on gate fees shows an **increasing trend in gate fees** for MRFs although this varies by geographical region.



Source: Adapted from Figure 6 of WRAP Gate Fee Report 202/21

Figure 9: Gross MRF Gate Fees (excl. Transport)



Source: Composite figure from last five WRAP Gate Fee Reports, Monksleigh

Figure 10: Gross MRF Gate Fees (excl. Transport) by Country/Region



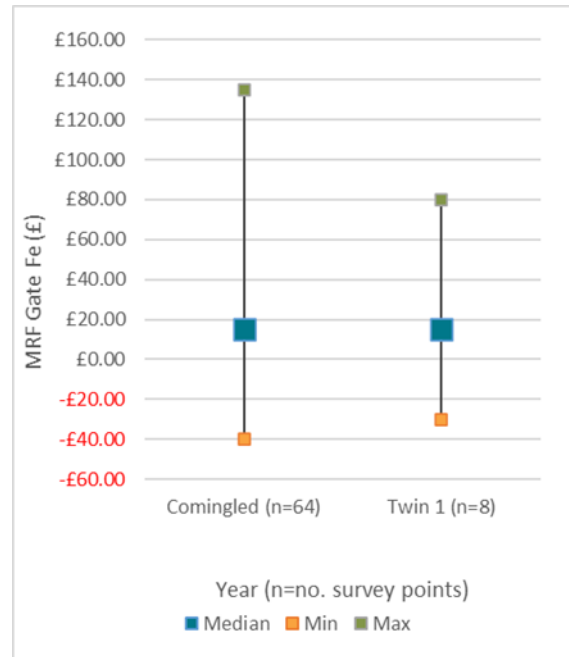
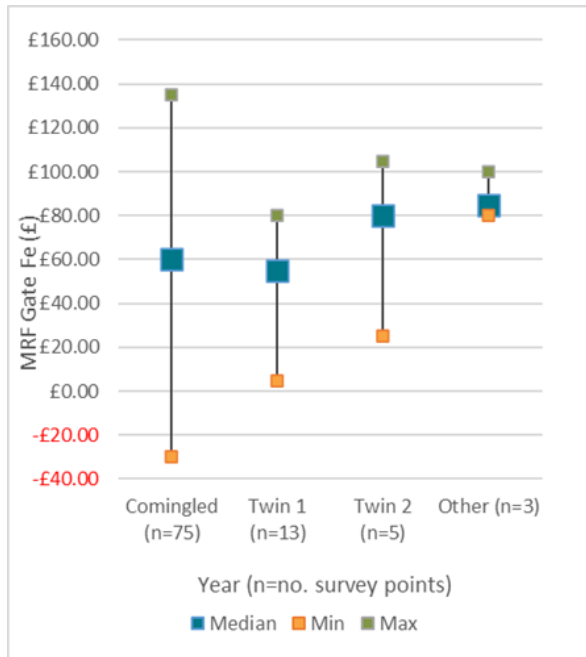
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The wide range of prices reflects significant variability in the types of contract arrangements in place, which is due to a blend of historical arrangements:

- Early-stage contracts in the market, often long term in nature, centered on the operator taking all the benefit of the recyclables (and associated risk) and paid a gate fee to the local authority. Some of these early contracts had risk/reward mechanisms but the MRF operator generally assumed the recyclate would cover their processing fee to generate a margin – but as prices dropped many operators struggled and indeed failed.
- The mid-stage contracts saw a more sophisticated development of gate fees where there was a development of some form of guaranteed gate fee paid by the local authority (in many cases set close to the anticipated basket value for recyclables) with a risk reward around a baseline. These contracts often were longer than 5 years and so the mechanisms were designed to flex, but the exact degree and parameters were based upon markets for recyclate that had not been particularly volatile.
- Most recently (and since the market drop in 2015 and subsequent volatility in the market for output materials) there has been more of a move to a fixed processing fee with a credit for a percentage of the basket value, with contracts of around three years plus potential extensions. This clearly underwrites the profitability of a MRF and shares the upside of the recyclate value depending on the frequency of review of the mix and price in the calculation of the market basket rate.

The natural evolution towards shorter-term contracts, with higher processing fees and a share in commodities, has led to a progressive increase in the MRF ‘gross’ gate fees, and this can be seen in the general trends in the previous graphs.

The share in commodity sales is the most significant variable between contracts, which is inevitably also influenced by the mix of materials collected and the actual commodity value used. This has led WRAP in their most recent Gate Fees report to start to split out the gross gate fee by collection type (i.e. more mixed/complex, higher cost) and the net gate fee (the actual cost to the local authority after any rebate and allowing for the cost of contamination).



**Gross Gate Fees (excl. transport)**

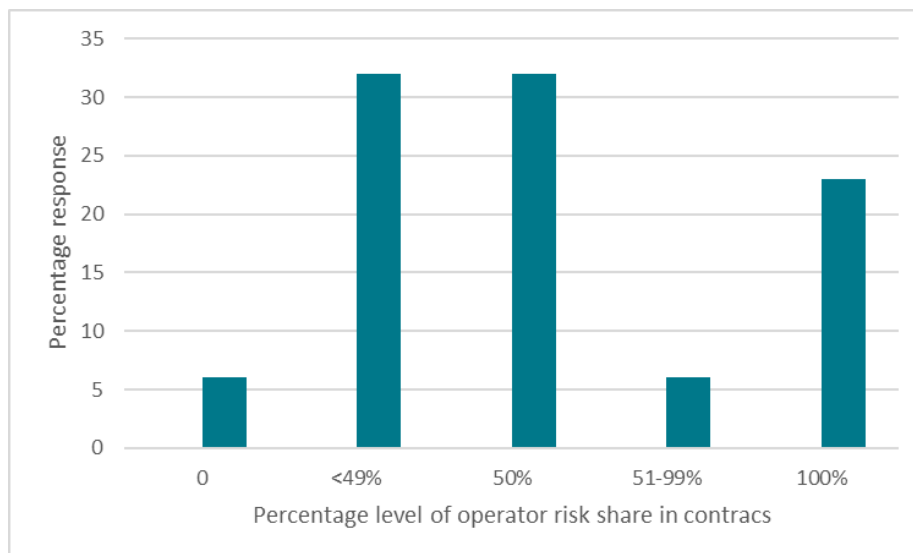
**Net Gate Fees (excl. transport)**

Source: Table 14 and Table 17 of WRAP Gate Fee Report 202/21

**Figure 11: WRAP MRF Gate Fees by Type of Collection**

## Risk Share

The WRAP Gate Fees Report 2021/22 indicates that 57% of survey respondents had a risk sharing mechanism for their commodities.



Source: Adapted from Table 17 of WRAP Gate Fee Report 202/21

**Figure 12: Percentage Level of Operator Risk Share in Contracts**

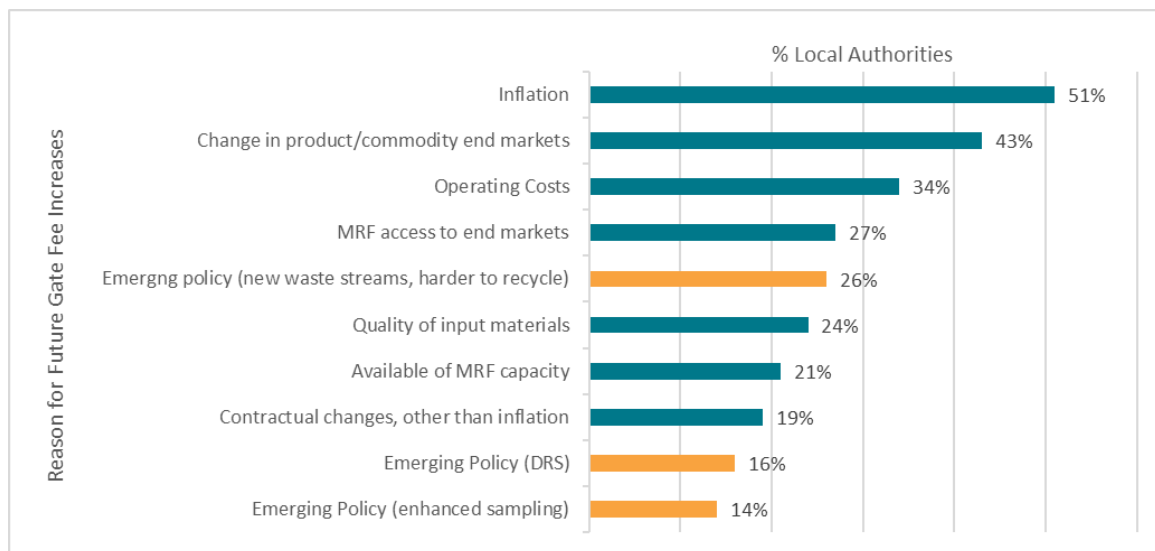
When considering the degree of risk share in contracts 23% of respondents took 100% of the commodity risk, a legacy of older contracts, often linked to PPP/PFI, where the contractor took all risk and reward in the material value.

## Contract Renewals

The WRAP Gate Fees Report suggested that 48% of Local Authority respondents had a contract end date in 2022, 16% in 2023 and 11% in 2024 and 2025. Out of the respondents 86% had contracts ending by the end of 2025. The short-term nature of current contracts is a function of uncertainty in the market, which will hold back investment and create a deferred need to tender a large number of contracts simultaneously in the market.

## Gate Fee Changes

The top 10 reasons for anticipated increases in gate fees by those surveyed in the WRAP report have been extracted into the figure below, noting that the three highlighted in orange are slightly different versions centered on a common theme – the impacts of anticipated policy changes.



Source: Adapted from Table 23 of WRAP Gate Fee Report 2020/21, Monksleigh

**Figure 13: Top 10 Reasons for Future Gate Fee Increases**

What the survey does not capture in Monksleigh’s opinion, is the potential impact of changing mix of materials as a result of policy change, leading to a lower rebate for suppliers – although arguably this may be offset by the Extended Producer Responsibility (EPR) payments to local authorities.

## 6. Output Material

### Output Material Mix

The number of samples taken in accordance with the regulations was over 112,031; undertaken at a rate considerably higher than that required by the guidance. At £20 to £50 per sample this is an equivalent cost of £2.2m to £5.6m for outbound analysis.

**Table 14: Actual Sampling Rates vs Requirement**

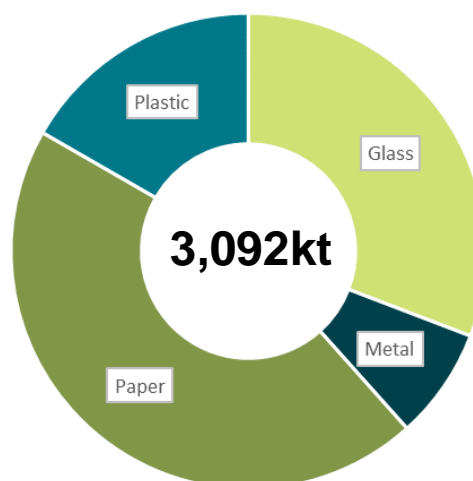
Qualifying Material	Requirement [sample every x tonnes]	Undertaken [sample every x tonnes]	Rate Above Required (%)
Glass	50	42.1	19%
Metal	50	15.8	216%
Paper	60	49.9	20%
Plastic	50	12.7	294%
<b>Average Rate (All Materials)</b>		<b>25.6</b>	

This may be due to the size of each delivery to an offtaker (i.e. the offtaker may require a more frequent sample per load) but also some operators choosing to sample more frequently (i.e. for wider management purposes).

The overall sampling of output tonnage of Qualifying Material gives the following mix:

**Table 15: Output Qualifying Material Tonnage (all MRFs)**

Target Material	Tonnes	Split
Glass	952,471	31%
Metal	234,176	8%
Paper	1,388,902	45%
Plastic	516,385	17%
<b>Total</b>	<b>3,091,934</b>	<b>100%</b>





From this mix the following table shows the reconciliation between input and output tonnes, applying a calculation to the balancing figures and noting that 352,025 tonnes went back into MRFs for further processing (but not necessarily the MRFs listed in this report).

**Table 16: Output Tonnage Reconciled to Input Tonnage**

Material	Tonnes	Split
Target Material	3,091,934	72%
For Re-processing	352,025	8%
Non-Recyclable (calculated)	485,514	11%
Non-Target (calculated)	230,302	5.4%
Balance (not accounted for i.e. losses and stock)	117,837	2.8%
<b>Total Output (reconciled to input tonnage)</b>	<b>4,277,612</b>	<b>100%</b>

The outbound sampling showed the following element of non-recyclable and non-target material in the sorted and processed output material (i.e. indicating the contamination unable to be separated by the MRF).

**Table 17: Percentage of Target Material by MRF Size (average for materials)**

MRF Size	Target Material (%)	Non-Target (%)	Non-Recyclable (%)
Small	88.8%	4.9%	2.0%
Medium	90.6%	6.5%	2.3%
Large	93.1%	4.4%	2.2%
X Large	94.4%	4.8%	1.7%
<b>Total</b>	<b>91.1%</b>	<b>5.2%</b>	<b>2.1%</b>

This level of contamination may be less sensitive in, for example, metal output, but more sensitive in, for example, paper output. It is also apparent from the data that some non-target measurement is a factor of measuring the grade of the output material i.e. paper 'contamination' in a cardboard grade leading to the paper measured as non-target.

Overall, therefore, all MRFs appear to be able to clean up inputs to give an output with no worse than 2.3% contamination – although it seems that the larger MRFs are able to deliver better quality outputs – likely a function of the equipment available being able to achieve better outcomes.

The distribution of the sampling around the output tonnage per individual target/Qualifying Material is set out in the table below. They indicate that the sampling is weighted towards high levels of target material, re-enforcing the better performance by the larger MRFs, with plastics showing the lowest levels of target material and paper the highest.

Table 18: Distribution of Sampling of Output

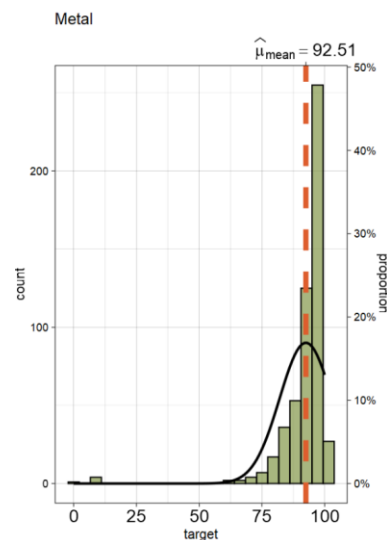
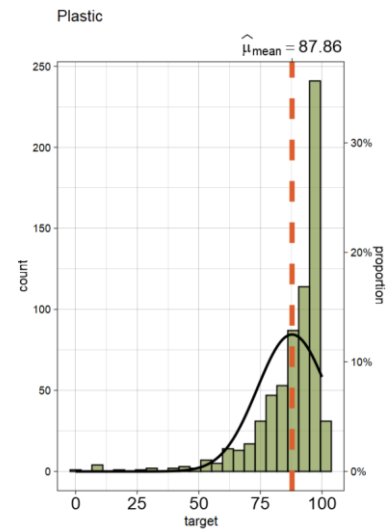
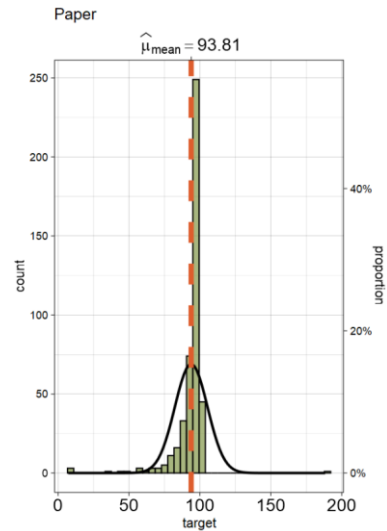
Paper			
Size	Average	NonTgt.	NonRecyc.
S	94.6%	3.6%	1.7%
M	93.4%	4.7%	2.0%
L	96.4%	1.8%	0.9%
XL	98.2%	1.4%	0.5%
<b>All</b>	<b>95.0%</b>	<b>3.3%</b>	<b>1.5%</b>

Plastic			
Size	Average	NonTgt.	NonRecyc.
S	84.7%	6.3%	2.4%
M	87.0%	10.2%	2.2%
L	90.7%	6.8%	2.6%
XL	91.3%	8.6%	1.8%
<b>All</b>	<b>87.9%</b>	<b>7.8%</b>	<b>2.3%</b>

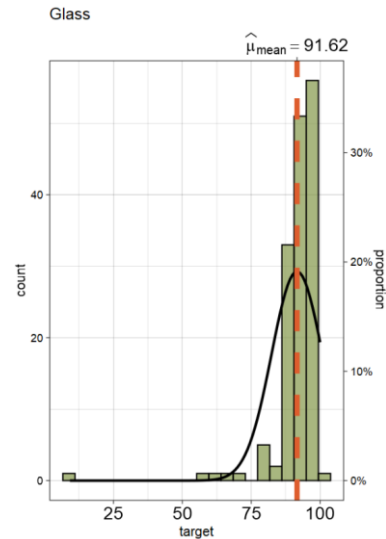
  

Metal			
Size	Average	NonTgt.	NonRecyc.
S	88.6%	3.6%	1.4%
M	91.5%	4.7%	2.3%
L	93.8%	1.8%	2.3%
XL	97.5%	1.4%	0.6%
<b>All</b>	<b>91.5%</b>	<b>3.3%</b>	<b>1.8%</b>



## Glass

Size	Average	NonTgt.	NonRecyc.
S	92.0%	2.9%	5.7%
M	91.2%	3.2%	4.0%
L	91.9%	3.9%	4.1%
XL	93.5%	0.9%	5.7%
<b>All</b>	<b>91.9%</b>	<b>3.1%</b>	<b>4.5%</b>



Note: The mean excludes all zero values and therefore is not the same as the average in the table which is across all values.

There appears to be little correlation between the input collection system and degree of non-target and non-recyclable outputs, other than the smaller MRFs appear to be able to tolerate less, i.e. higher levels of ‘contamination’ on the input lead to higher levels of ‘contamination’ in the output. This, however, ignores for example separately collected paper grades that are not captured in the scope of this report.

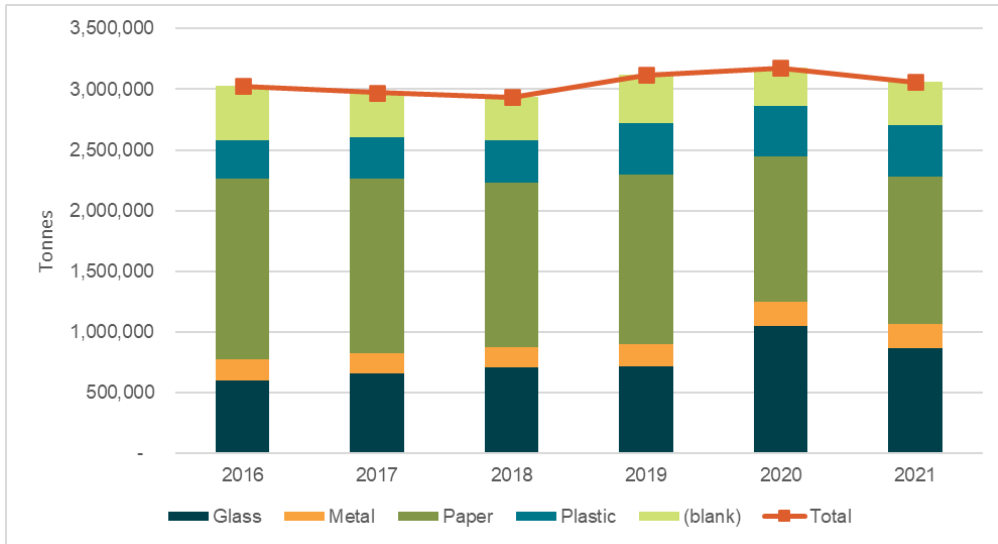
Whilst the overall mix is undoubtedly a function of the collection system, the MRF processing is more a reflection of the MRFs ability to process it technically. Hence input contamination is more a function the source of the waste and the degree of attention to detail by those putting out the recyclables for collection.

## Trends in Output Material

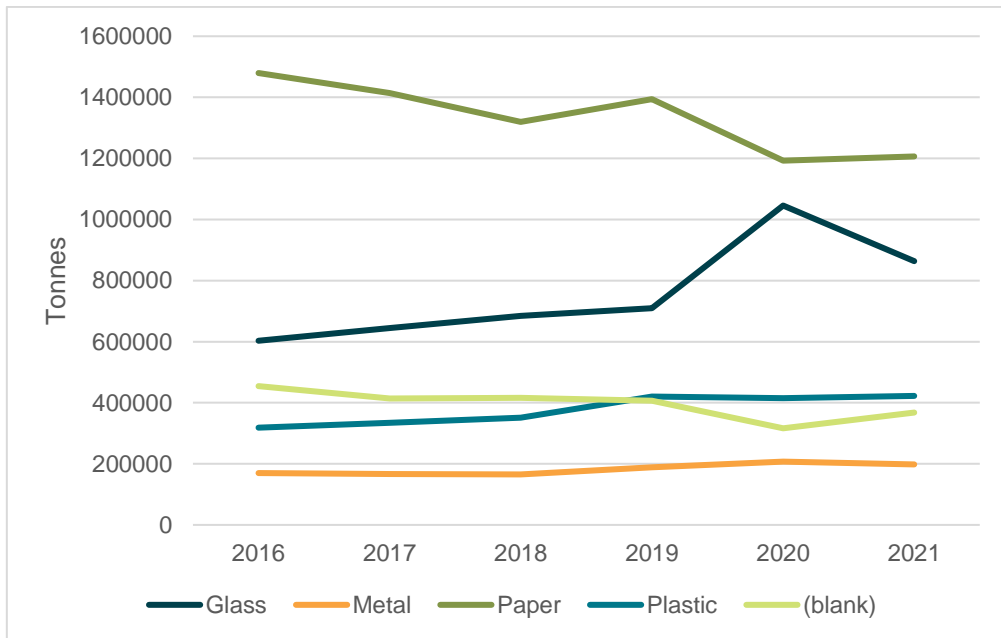
As per the input analysis, this report represents Qualifying Material data for 2021 only; a broad trend is possible for output data for England since the regulations were introduced in 2016, but not at a granular level at this time. Output from MRFs consistently report c.90% of input material, without considering losses and balancing tonnage.

Analysis of the data, set out in Figure 14 and Figure 15 below, shows that the tonnage recycled through MRFs has:

- A progressive downward trend for paper
- A marked increase from 2018 in glass handled (with a peak in 2020)
- An increase in plastics from 2018 to 2019 and a flat profile thereafter



**Figure 14: Outputs from MRFs for England**



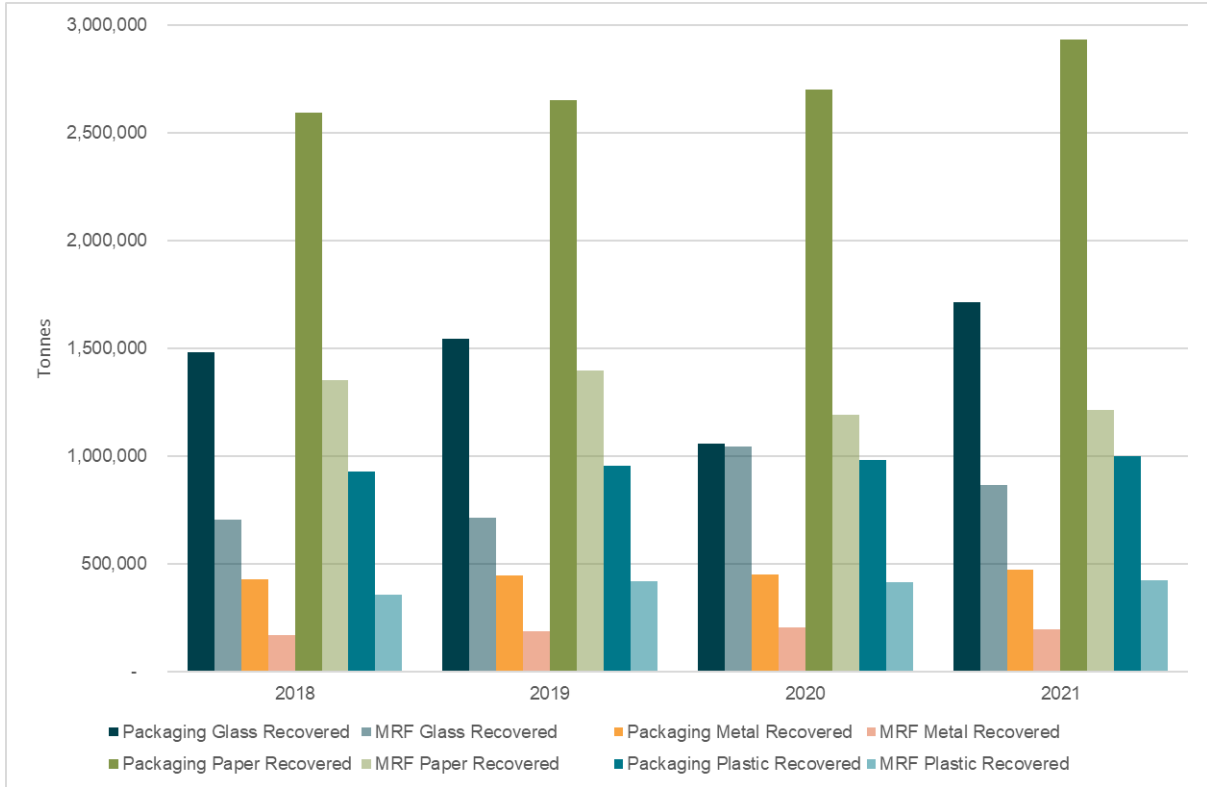
**Figure 15: Outputs from MRFs for England**

Analysis of Qualifying Materials leaving sites vs the amount of those packaging waste materials that have been recovered/recycled are shown in Figure 16 below. The key features are:

- An increase in paper packaging over the period, with a drop in paper from MRFs (i.e. more paper packaging is likely to be being recycled via a segregated system)
- A dramatic drop in glass packaging in 2020, corresponding with nearly all of that collected going through MRFs in that year (i.e. the period of COVID suggests a drop in glass packaging with the closure of restaurants and pubs, with an increase of glass

in households, that then increases in MRFs throughput rather than segregated collections)

- Increases in metals and plastics packaging, with largely corresponding increases in MRFs sending this material out



Source: Qualifying Material and National Packaging Waste Data, Analysis by Monksleigh

**Figure 16: Recovery of Packaging Materials vs MRF Outputs (England)**

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## 7. Potential Impacts of Policy Change

### Background

Four main consultations were launched as part of a package of measures to deliver change and ultimately the targets set out in the Circular Economy Package:

- **Plastics Packaging Tax**<sup>2</sup> (now implemented)
- **Extended Producer Responsibility**<sup>3</sup> (EPR)
- **Consistency in Recycling Collections**<sup>4</sup>
- **Deposit Recovery Scheme**<sup>5</sup> (DRS)

It is unclear to Monksleigh how these interlocking initiatives will impact upon each other, and Monksleigh believes that no commentator can say with certainty how they will impact the MRF market. The following is a brief set of thoughts on the possible main impacts.

### Plastics Tax

The primary impact of the plastics tax MRF's will be to increase demand, and in turn price, for recycled plastic packaging. The limitation to price and demand will be the cost of virgin plastic but it will drive more plastics of higher grades over time. A secondary impact is likely to be a reduction in the use of plastic packaging.

### Extended producer Responsibility (EPR)

The EPR data gathering requirement commenced as of January 2023 for household packaging placed on the market, with the intention to implement the scheme from 2024. This will essentially involve payments from business to a central body, for onward distribution to Local Authorities for the collection of their packaging waste put on the market.

It appears that the payment made will be based on the type of collection system implemented. The exact arrangements, the amounts to be paid and the way the Local Authorities will ultimately spend/allocate the money on delivering the service remain unclear.

If the levels of payment are heavily skewed to a particular collection system, then it could influence the approach taken. On the other hand, the cost of changing systems, bins, and associated arrangements (MRFs, bulking, offtakes) are such that many authorities will

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<sup>2</sup> [https://wikiwaste.org.uk/Plastic\\_Packaging\\_Tax](https://wikiwaste.org.uk/Plastic_Packaging_Tax)

<sup>3</sup> [https://wikiwaste.org.uk/Extended\\_Producer\\_Responsibility](https://wikiwaste.org.uk/Extended_Producer_Responsibility)

<sup>4</sup> [https://wikiwaste.org.uk/Consistency\\_in\\_Recycling\\_Collections\\_in\\_England](https://wikiwaste.org.uk/Consistency_in_Recycling_Collections_in_England)

<sup>5</sup> [https://wikiwaste.org.uk/Deposit\\_Return\\_Scheme](https://wikiwaste.org.uk/Deposit_Return_Scheme)

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possibly not change their systems dramatically, just adding the materials under the consistency of materials.

The main impact is likely to be the increased sampling requirements for MRFs to support the data collection and performance feedback – at possibly double the levels presently being undertaken, with major cost and practical space implications for operators.

## Consistency in Collection

After extensive lobbying by Local Authorities, it appears to Monksleigh that the consistency of collection (relating to the manner in which household kerbside recyclates are collected) will be left to the choice of the individual Local Authorities, although the payment from EPR is likely to be directed to one of the three ‘approved’ systems/options. The exact range of materials to be collected is yet to be clarified. The publication of the final approach in Consistency of Collection is thought to be imminent.

### - Collection Systems Context

In Monksleigh’s opinion, and based on the survey results by WRAP in their annual gate fee report, the patterns for Dry Recyclables collection systems are likely to change as Local Authority contracts come up for renewal:

- A small number of multi-stream collections continue, with possibly a small increase over time if local circumstances and EPR encourage them to do so (this is especially likely to continue in Wales, for example)
- Fully comingled collection continues for metropolitan areas and those areas where it is impractical to change. In some cases it may be that a mixed solution is given, where fully comingled collections continue for multi-occupational housing/flats alongside a different system in the same local authority for houses. Local Authorities are likely to use TEEP to justify this approach.
- An increased movement from fully comingled to a form of twin-streamed collections – the option is primarily to collect either glass or card separately with the remainder a comingled stream.

Therefore MRFs with the ability to handle both fully comingled and twin-streamed solutions will remain competitive and relevant to the widest cross section of the market, but the throughput and storage aspects of the MRF design may be impacted over time with these changing flows.

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## - Consistency in Materials

Monksleigh's opinion is that the core materials are likely to include:

- News Papers & Magazines (News & PAMS)
- Card
- Glass
- Plastic Bottles
- Plastic Pots, Tubs and Trays (PTT)
- Cans (Steel and Aluminium)
- Aerosols

Potential other streams that might be included, but are relatively small tonnages, are:

- Tetrapak
- Aluminium Foil
- Batteries
- Small Waste Electrical and Electronic Equipment

In Monksleigh's opinion the material with the greatest uncertainty, but the largest potential implication for the collection and sorting systems, is plastic film. Trials are presently underway for plastic film collection and, as a result, it is Monksleigh's opinion that including these materials at this stage should be delayed. The biggest issues for plastic film are:

- Surfaces can be heavily contaminated with food and other materials.
- There are presently very limited outlets/offtakes.
- It wraps itself around other materials and objects, making its removal in a mixed stream very difficult.
- The public will have very different views on what constitutes film (for example it might include nappies, crisp packets, carrier bags, food wrapping, dog waste bags etc.) which has implications for contamination, plastic mix/type, offtake arrangements, and plastic offtake arrangements.

## - Potential Impact

Monksleigh's assessment of the Consistency in Collection impact report is that in option 1 (of the three main collection system options) the movement from Local Authorities is from a 44.8% recycling rate to a 58.4% recycling rate by 2035 (notwithstanding that the original roll-out was planned from 2023 and the earliest this now looks to be possible is 2024/5).

However, this growth plan is substantially underpinned by the recycling of food and green waste, with dry recyclables equivalent to a c.17% increase in the period and some of the



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Local Authorities sending material to MRFs already substantially comply with the system and material requirements.

In Monksleigh's opinion, the largest element of material not uniformly collected at present is PTT (leaving to one side the plastic film issues highlighted earlier), although, in the case of the current input streams, PTT is on the whole incorporated, as are cartons/Tetrapak. As a result, it is our view that tonnages are likely to increase, with an estimate range of between 5 to 17% of that presently received, equivalent to c. 200,000 to 700,000tpa.

For the commercial/NHM tonnage, the step change in option 1 was far higher, moving from 35%<sup>6</sup> recycling to 70% recycling by 2035 (notwithstanding that the original roll-out was staggered from a planned 2023 start, with the earliest this now looks to be possible is 2027).

Whilst this looks to have a substantial element of food waste in this target, recyclables (in the form of DMR and separately collected recyclables) would have to grow by 93% to meet the targets (equivalent to around 5.4 million tonnes in England).

In Monksleigh's opinion, this is highly unlikely (with delayed start, no clarity on implementation and poor core data that may mean recycling is already higher than this level) and the lobbying from business may delay it further. The main driver may be the way the EPR is implemented, which drives change in the systems, and businesses themselves seeking to save money/improve recycling.

## DRS

The implementation of DRS has become increasingly clear for England in the past two months. The focus is upon:

- Beverage/Drinks Cans (Aluminium and Steel)
- PET Drinks Bottles (all sizes up to 3 litres)

The target is to progressively implement reverse vending machine roll-out from 2026 to 2028 to achieve 70%, 80% and 90% recovery in each year. This narrower application to DRS will have a lower impact on MRFs (i.e. non-beverage cans will continue as will other plastic bottles). The ramification for the MRF of a fully implemented DRS hitting the target recovery levels is, therefore, a loss of 5.66% of tonnage at the target recovery rate, or higher in the case where it represents a metal/plastic separation system only.

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<sup>6</sup> The estimates in the impact assessment were between 30 and 40% based on the vagaries of the data available.

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If Scotland were to continue with its current plan to include glass in the DRS scheme, the impact on larger MRFs on managing glass would have a far wider impact.

On balance, the impacts to MRFs are unlikely to occur until around 2025 onwards, and it appears at face value that the loss of tonnage from DRS may well be more than offset by increased tonnage from changes to the collection systems and materials collected by Local Authorities. However, the impact to the income from material sales and changing mix could be potentially significant for both suppliers of materials and MRF operators where they assume some or all commodity risk.

## Net Growth

The net effect of loss of materials to DRS, and increase of collected target materials, leads Monksleigh to assume that tonnage of local authority materials to MRFs will increase by a net c. 500,000 tonnes per annum (also assuming an increase in segregated collection of materials occurs). At a scale of 50,000 tonnes per MRF, at an assumed capital cost of £20m per MRF, this represents a capital investment of £200m, excluding any capital costs of modifying or upgrading existing MRFs.

The delivery requirements for the NHM tonnage would be in addition to this tonnage, and whilst there could be a doubling of the tonnage required to be managed by MRFs with associated new capacity and investment requirements, without the clarity on policy and current recycling arrangements, the scale of delivery required is very uncertain.

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## 8. Appendix 1: Sources of Data

- Environment Agency's (EA) Waste Data Interrogator tool<sup>7</sup> (referred to here as the WDI Tool) for England. The latest version is for the calendar year 2021.
- Natural Resource Wales (NRW) Waste Data Interrogator tool (referred to here as the WDI Tool) for Wales. The latest version is for the calendar year 2021.
- Scottish Environmental Protection Agency (SEPA) – Waste from all Sources Discover Data Tool<sup>8</sup> (subsequently referred to as the “SEPA Data Tool”). The latest version is for the calendar year 2021.
- Data published by SEPA, the EA, and NRW as a result of quarterly returns by those MRFs in the scope of the 2016 Environmental Permitting (England and Wales) Regulations. The latest data is for the calendar year 2021.
- National Packaging Waste Database published by the Environment Agency <https://npwd.environment-agency.gov.uk/Public/PublicSummaryData.aspx>
- Macro data from DEFRA's annual digest of waste and the associated support documents that are supplied by the UK's regulators from waste returns. <https://www.gov.uk/government/statistics/uk-waste-data>
- Macro data interpreted by Monksleigh from the 'Impact Assessment' associated with the 'Consistency in Household and Business Recycling'. [https://consult.defra.gov.uk/waste-and-recycling/consistency-in-household-and-businessrecycling/supporting\\_documents/Consistency%20in%20recycling%20impact%20assessment.pdf](https://consult.defra.gov.uk/waste-and-recycling/consistency-in-household-and-businessrecycling/supporting_documents/Consistency%20in%20recycling%20impact%20assessment.pdf)
- Compositional analysis by WRAP used as a baseline for the Consistency in Household and Business Recycling, from a 2017 baseline study. <https://wrap.org.uk/resources/report/quantifying-composition-municipal-waste>
- WRAP Gate Fee report for 2021-22 (published August 2022) which acts as the main survey reference for Local Authorities. <https://wrap.org.uk/resources/report/gate-fees-202122-report>

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<sup>7</sup> Published under open license.

<sup>8</sup> Published under open license.

## 9. Appendix 2: Qualifying MRFs (see Table 19 for reference numbers)

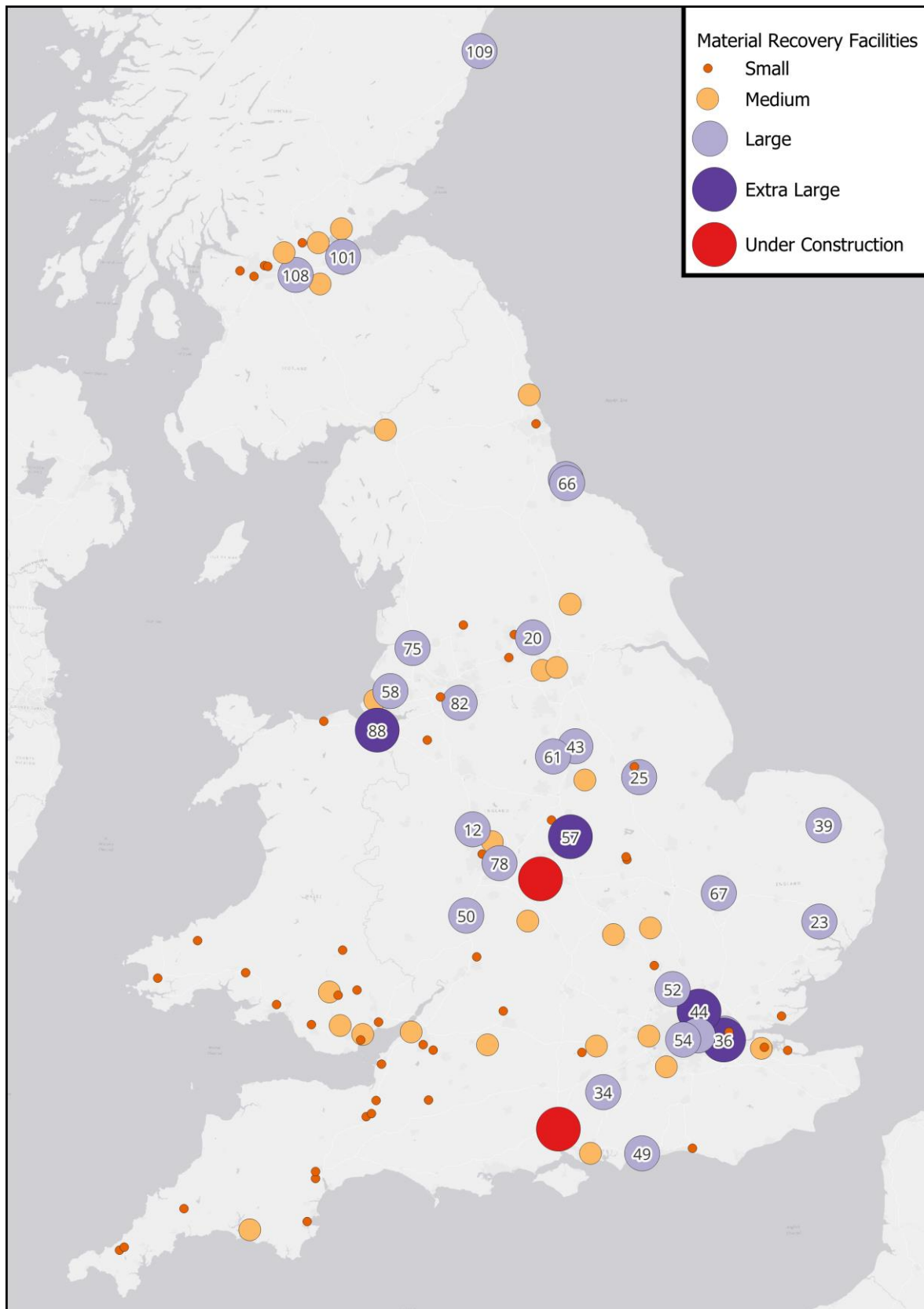


Figure 17: Qualifying MRFs.

**Table 19: Input Tonnage to Qualifying MRFs in Scotland, Wales and England.**

ID	Permit	Size	Operator	Site Name	Country	Permit Tonnes	20 03 01	Qualifying Tonnes
1	10023	M	Viridor Waste Ltd	Pelican Reach (Plot L)	England	88,335	61	32,147
2	19979	M	Veolia ES [UK] Ltd	Portsmouth MRF	England	54,554	36,114	31,223
3	21603	S	SWISCO Ltd	Torbay Transfer Station	England	73,825	55,829	1,544
4	21607	S	Kenbury Wood Ltd	Kenbury Wood Landfill Site	England	88,684	23,716	11,502
5	21739	S	Exeter City Council	Exeter City Council MRF	England	8,876	8,441	8,446
6	26031	S	Bristol Waste Company Ltd	Bristol Waste Recycling Facility	England	52,149	7,614	6,599
7	26157	S	Bath And North East Somerset Council	Keynsham Depot Transfer Station	England	25,073	79	3,286
8	26173	S	SUEZ Recycling and Recovery UK Ltd	Evercreech Depot	England	36,128	4,854	4,677
9	27072	S	Biffa Waste Services Ltd	Priorswood (Syracuse Waste Ltd)	England	36,916	2,330	5,340
10	40292	S	North West Leicestershire District Council	Coalville Waste Transfer Station	England	11,748	582	1,131
11	40326	M	Biffa Waste Services Ltd	Aldridge Waste Transfer Station	England	103,767	37,739	28,654
12	42150	L	Veolia ES [UK] Ltd	Four Ashes MRF	England	80,508	34,006	80,508
13	48023	S	S Grundon (Waste) Ltd	Wingmoor Farm	England	46,316	43,376	4,609
14	50392	M	Veolia ES [UK] Ltd	Bidston Recycling Park	England	169,331	140,760	30,217
15	54424	S	Norpol Recycling Ltd	Norpol Recycling Limited	England	56,329	15,806	15,806
16	60684	S	UK Waste Management Ltd	Laisterdyke Transfer Station	England	22,190	9,752	9,752
18	65286	S	SUEZ Recycling and Recovery UK Ltd	Vine Street MRF	England	17,800	16,839	17,592
19	65300	M	Glass Recycling (UK) Ltd	Carlton Road Site	England	270,747	21,821	21,821
20	65547	L	H W Martin Waste Ltd	H W Martin Waste Ltd	England	81,062	38,006	79,403
21	66013	M	Yorwaste Ltd	Harewood Whin Recycling Centre Facility	England	146,049	122,629	26,356
22	70101	M	Biffa Waste Services Ltd	Milton Keynes MRF (Syracuse Waste Ltd)	England	35,251	27,879	27,940
23	71095	L	Biffa Waste Services Ltd	Masons MRF (Syracuse Waste Ltd)	England	70,463	70,463	70,463
24	71431	S	James Waste Management LLP	Brickfields Way Transfer Station	England	74,785	56,444	11,205
25	73004	L	New Earth Solutions (West) Ltd	Copper Hill Industrial Estate	England	272,406	147,502	69,832
26	73021	S	New Earth Solutions (West) Ltd	Materials Recycling Facility	England	152,670	44,956	12,149
27	73127	S	Biffa Waste Services Ltd	Corby Materials Recycling Facility	England	29,438	19,604	2,545
28	75004	M	Veolia ES [UK] Ltd	Elstow MRF	England	103,420	101,965	24,730
29	80126	S	Renewi UK Services Ltd	Ilford Recycling Centre	England	13,857	7577	7,577
30	80601	S	FCC Recycling (UK) Ltd	Luton Transfer Station	England	86,429	76218	9,661
31	80704	L	Veolia ES [UK] Ltd	Rainham MRF	England	181,973	0	96,872
32	80744	L	Bywaters (Leyton) Ltd	Bywaters Recycling And Recovery Centre	England	105,477	92,513	91,127
33	83184	S	SUEZ Recycling and Recovery UK Ltd	Mitcham Transfer Station	England	123,217	58,509	11,615
34	83426	L	Veolia ES [UK] Ltd	Alton Material Recycling Facility	England	94,226	88,752	74,234

ID	Permit	Size	Operator	Site Name	Country	Permit Tonnes	20 03 01	Qualifying Tonnes
35	83440	M	Grundon Waste Management Ltd	Tanhouse Farm MRF	England	72,262	50,353	27,405
36	83464	XL	N&P Crayford MRF Ltd	Crayfords Materials Recycling Facility	England	331,067	284,358	322,560
37	83513	M	Grundon Waste Management Ltd	Leatherhead MRF	England	35,069	35,010	34,987
38	86170	S	Jeremy Mark Freeth	Kingshill Recycling Centre	England	77,669	1,791	1,776
39	100179	L	Norse Environmental Waste Services Ltd	Costessey Resource Recovery Park	England	106,953	101,538	101,538
40	100185	S	Veolia ES [UK] Ltd	Hollingdean MRF & W T S Facility	England	100,779	83,431	16,994
41	100243	M	FCC Recycling (UK) Ltd	Smallmead Waste Management Centre	England	125,579	85,849	27,473
42	100277	M	Pure Recycling Warwick Ltd	Ettington Materials Recycling Facility	England	47,931	47,931	47,931
43	100283	L	Veolia ES [UK] Ltd	Crown Farm Materials Recycling Facility	England	69,181	56,247	57,498
44	100373	XL	Biffa Waste Services Ltd	Edmonton (Atlas) MRF	England	290,599	290,599	266,992
45	100379	S	Biffa Waste Services Ltd	Hadrian Yard Central	England	118,389	51,748	5,236
46	100384	L	J & B Recycling Ltd	J & B Recycling Limited, Windermere MRF	England	139,010	92,717	124,839
47	100467	M	SUEZ Recycling and Recovery UK Ltd	West Sleekburn Materials Recycling Facility	England	110,513	88,878	34,366
48	100619	S	Biffa Waste Services Ltd	Irlam - Material Resource Centre	England	93,259	62,942	8,066
49	100630	L	Biffa Waste Services Ltd	Ford Materials Recycling Facility (Syracuse Waste Ltd)	England	89,502	85,320	85,292
50	100768	L	Severn Waste Services Ltd	Envirosort	England	81,938	81,538	81,938
52	101299	L	Pearce Recycling Company Ltd	Pearce Recycling Limited	England	129,641	98,411	98,411
53	101349	S	SUEZ Recycling and Recovery UK Ltd	Colley Lane	England	26,943	3,015	3,015
54	101352	L	Cory Environmental Ltd	Smugglers Way Transfer Station / MRF	England	70,753	70,712	70,753
55	101397	S	SUEZ Recycling and Recovery UK Ltd	Taunton Depot	England	6,356	654	654
56	101437	S	Recycle Force Ltd	Recycle Force Ltd	England	50,439	29,805	16,167
57	101523	XL	GAE Smith (Holdings) Ltd	Casepak Material Recycling Facility	England	163,186	163,186	163,186
58	101533	L	Veolia ES [UK] Ltd	Gillmoss Materials Recovery Facility	England	96,310	95,908	96,003
59	101680	S	SUEZ Recycling and Recovery UK Ltd	Bodmin Materials Recycling Facility	England	33,239	22,831	4,090
60	101838	S	SUEZ Recycling and Recovery UK Ltd	Pool Materials Recycling Facility	England	29,530	17,909	3,545
61	102429	L	H W Martin Waste Ltd	Alfreton Recycling Centre	England	132,718	123,996	123,864
62	102968	S	Cheshire West Recycling Ltd	Winsford Depot	England	23,456	3,270	3,270
65	103737	S	BPR Group Europe Ltd	Juliette Way Materials Recycling & WEEE ATF	England	8,692	2,374	873
66	103834	L	Biffa Waste Services Ltd	Teesside Recycling Facility	England	126,633	112,286	102,743
67	104133	L	Thalia WB ODC Ltd	Waterbeach Materials Recycling Facility	England	82,663	80,837	80,837
68	104294	S	Biffa Waste Services Ltd	Redruth Waste Transfer Station	England	25,043	19,441	2,441
69	104898	M	Cumbria Waste Management Ltd	Hespin Woods MRF	England	55,242	5,980	44,033
70	401444	M	Biffa Waste Services Ltd	Chelson Meadow MRF (Syracuse Waste Ltd)	England	25,134	23,533	23,558
71	402072	S	Cheshire West Recycling Ltd	C W & C Canalside Operations Hub	England	31,603	4,736	4,736
72	403218	S	Biffa Waste Services Ltd	Eastleigh Waste Transfer And Recycling Facility	England	64,041	46,848	7,139

ID	Permit	Size	Operator	Site Name	Country	Permit Tonnes	20 03 01	Qualifying Tonnes
73	403235	S	North Somerset Environment Company Ltd	Westlands Distribution Park	England	28,156	27,214	4,245
74	406191	M	Hills Waste Solutions Ltd	Sand's Farm Facility	England	43,319	34,225	31,404
75	AP3937KS	L	Lancashire Renewables Ltd	Leyland Waste Treatment Facility	England	135,167	54,598	58,394
76	CP3938JU	S	Biffa Waste Services Ltd	Biffa Tipton Waste Transfer Station	England	68,501	59,176	8,516
77	DP3236HH	M	SUEZ Recycling and Recovery UK Ltd	Bristol Resource Recovery Park	England	55,463	31,822	41,741
78	FP3335RJ	L	SUEZ Recycling and Recovery UK Ltd	Landor Street IRRF	England	118,834	93,171	93,455
79	JP3934WW	M	Enva Ltd	Enva Colwick RRRF	England	305,311	101,842	46,501
80	KP3539AJ	S	Countrystyle Recycling Ltd	Countrystyle Recycling Limited	England	150,558	48,430	3,151
81	PP3737GT	L	Veolia ES [UK] Ltd	Southwark Integrated Waste Management Facility	England	227,003	163,976	103,041
82	RP3636QW	L	SUEZ Recycling and Recovery UK Ltd	South Manchester Resource Recovery Centre	England	247,373	181,576	93,483
83	SP3832WD	S	Veolia ES [UK] Ltd	Padworth IWM Facility	England	82,515	33,365	3,674
84	VP3535CL	M	Renewi UK Services Ltd	South Kirkby WMF	England	159,513	128,184	40,105
85	AB3191ZE	S	Newport Wastesavers	Wastesavers Resource Centre	Wales	22,455	0	4,126
86	AP3199FE	M	Cynon Valley Waste Disposal Co Ltd	Bryn Pica Waste Operations	Wales	75,576	49,018	32,887
87	BB3092HJ	S	Merthyr Tydfil CBC	MTCBC Waste Transfer Station	Wales	16,330	8,816	930
88	BT4885IT	XL	UPM-Kymmene (UK) Ltd	Shotton Paper	Wales	370,797	178,168	178,168
89	EP3995FL	M	Cardiff Council	Lamby Way Depot	Wales	79,422	51,967	30,649
90	GP3690LR	S	May Gurney Ltd	Tondu Waste Transfer Station	Wales	23,039	5,000	3,757
91	HP3591EZ	S	Conwy County Borough Council	Gofer Bulking Station	Wales	9,203	0	878
92	KB3097TU	S	CWM Environmental Ltd	Nantycaws Resource Management Centre	Wales	57,851	40,402	7,932
93	MP3895FT	S	Silent Valley Waste Services Ltd	Silent Valley Waste Transfer Station	Wales	28,947	23,745	1,727
94	QB3032RW	S	City & County of Swansea	The Baling Plant	Wales	144,442	67,924	9,299
95	RP3399FC	S	Powys County Council	Brecon Transfer Station - Cwrt Y Plyffin	Wales	16,069	8,938	1,328
96	SP3795FZ	S	Biffa Waste Services Ltd	Nationwide Works	Wales	25,318	1,998	3,817
97	XB3393HM	M	Project Red Recycling Ltd	Project Red Recycling Ltd	Wales	97,404	24,254	21,568
98	406721	S	P & D Material Recovery Ltd	Berth 6, Basin 3	England	40,576	14,597	19,448
99	PPC/E/0020001	M	Levenseat Ltd	Levenseat Ltd	Scotland	299,936	5,545	46,442
100	PPC/E/0020083	M	Cireco Lochhead	Cireco Lochhead	Scotland	311,596	94,667	27,752
101	WML/E/0020002	L	Biffa Waste Services Ltd	Biffa Broxburn	Scotland	84,703	29,839	51,974
102	WML/E/0020112	S	Falkirk Council	Falkirk Council	Scotland	7,476	2,575	10,537
103	WML/E/0120034	M	Biffa Waste Services Ltd	Biffa Grangemouth	Scotland	38,197	0	47,715
108	WML/L/1117120	L	Viridor Waste Ltd	Viridor Newhouse	Scotland	102,973	0	101,453
109	WML/L/1137739	L	SUEZ Recycling and Recovery UK Ltd	Suez Aberdeen	Scotland	99,398	98,851	50,635
111	WML/W/0000026	S	Biffa Waste Services Ltd	Biffa Glasgow	Scotland	75,294	58,266	9,203
112	WML/W/0020110	S	Enva Ltd	ENVA Linwood	Scotland	165,253	58,314	14,421

ID	Permit	Size	Operator	Site Name	Country	Permit Tonnes	20 03 01	Qualifying Tonnes
114	WML/W/0020181	S	Glasgow City Council	Glasgow City Council	Scotland	32,818	0	19,494
115	WML/W/0022002	S	J&M Murdoch Ltd	J&M Murdoch Ltd	Scotland	60,386	672	847
116	WML/W/0220257	M	Saica Natur [UK] Ltd	Saica Natur [UK] Ltd	Scotland	75,058	841	26,354
117	JP3998FN	S	AJ Recycling Ltd	Meigan Wells	Wales	9,289	2,270	553
118	QP3098FL	S	Resources Management UK Ltd	Withyhedge MRF	Wales	158,345	26,461	1,240
<b>UNDER DEVELOPMENT</b>								
UC	TBC	XL	Clegg Group	Sherbourne Recycling	England	175,000		
UC	TBC	XL	Hampshire/Veolia	Eastleigh MRF	England	135,000		
<b>FIRES SINCE REPORTING PERIOD</b>							<b>Date</b>	
28			Veolia ES [UK] Ltd	Elstow MRF		August 2022		
42			Pure Recycling Warwick Ltd	Ettington Materials Recycling Facility		July 2021		
92			CWM Environmental Ltd	Nantycaws Resource Management Centre		April 2021		
109			SUEZ Recycling and Recovery UK Ltd	Suez Aberdeen		July 2022		

**Table 20: Input to Qualifying MRFs in Scotland, Wales and England by Qualifying Material Split**

ID	Operator	Site Name	Size	Avg % Glass	Avg % Metal	Avg % Paper	Avg % Plastic
1	Viridor Waste Ltd	Pelican Reach (Plot L)	M	1.5	4.3	8.9	74.5
2	Veolia ES [UK] Ltd	Portsmouth MRF	M		5.5	75.3	6.6
3	SWISCO Ltd	Torbay Transfer Station	S		32.9		62.7
4	Kenbury Wood Ltd	Kenbury Wood Landfill Site	S		8.6	44.8	29.0
5	Exeter City Council	Exeter City Council MRF	S		4.5	63.4	2.0
6	Bristol Waste Company Ltd	Bristol Waste Recycling Facility	S	1.6	37.9	1.5	55.7
7	Bath And North East Somerset Council	Keynsham Depot Transfer Station	S	2.3	37.3	1.6	55.9
8	SUEZ Recycling and Recovery UK Ltd	Evercreech Depot	S		38.2		57.6
9	Biffa Waste Services Ltd	Priorswood HWRC (Syracuse Waste Ltd)	S	0.9	1.8	58.5	8.7
10	North West Leicestershire District Council	Coalville Waste Transfer Station	S		43.1		49.4
11	Biffa Waste Services Ltd	Aldridge Waste Transfer Station	M	42.8	13.3	0.1	25.8
12	Veolia ES [UK] Ltd	Four Ashes MRF	L	3.3	16.4		37.4



ID	Operator	Site Name	Size	Avg % Glass	Avg % Metal	Avg % Paper	Avg % Plastic
13	S Grundon (Waste) Ltd	Wingmoor Farm	S	6.3	5.7	71.9	6.3
14	Veolia ES [UK] Ltd	Bidston Recycling Park	M	15.6	5.6	66.5	2.7
15	Norpol Recycling Ltd	Norpol Recycling Limited	S	62.1	10.0		11.6
16	UK Waste Management Ltd	Laisterdyke Transfer Station	S		2.5	71.2	8.8
18	SUEZ Recycling and Recovery UK Ltd	Vine Street MRF	S		6.9	6.5	9.4
19	Glass Recycling (UK) Ltd	Carlton Road Site	M	18.4	22.8		43.6
20	H W Martin Waste Ltd	H W Martin Waste Ltd	L		8.2	55.6	18.3
21	Yorwaste Ltd	Harewood Whin Recycling Centre Facility	M	31.3	2.4	4.3	38.6
22	Biffa Waste Services Ltd	Milton Keynes MRF (Syracuse Waste Ltd)	M		4.9	57.1	19.3
23	Biffa Waste Services Ltd	Masons Material Reclamation Facility (Syracuse Waste Ltd)	L	0.9	8.6	6.1	17.5
24	James Waste Management LLP	Brickfields Way Transfer Station	S	9.5	1.6	54.1	4.2
25	New Earth Solutions (West) Ltd	Copper Hill Industrial Estate	L	14.1	4.3	39.7	8.8
26	New Earth Solutions (West) Ltd	Materials Recycling Facility	S	17.0	4.9	35.6	9.3
27	Biffa Waste Services Ltd	Corby Materials Recycling Facility	S	0.1	2.4	68.9	2.2
28	Veolia ES [UK] Ltd	Elstow MRF	M		7.6	51.8	1.8
29	Renewi UK Services Ltd	Ilford Recycling Centre	S	18.5	12.1		22.7
30	FCC Recycling (UK) Ltd	Luton Transfer Station	S	2.8	5.7	47.8	13.7
31	Veolia ES [UK] Ltd	Rainham MRF	L	27.0	16.8		2.3
32	Bywaters (Leyton) Ltd	Bywaters Recycling and Recovery Centre	L	8.6	5.7	4.4	17.6
33	SUEZ Recycling and Recovery UK Ltd	Mitcham Transfer Station	S	0.8	1.3	78.8	3.2
34	Veolia ES [UK] Ltd	Alton Material Recycling Facility	L		6.9	69.4	10.0
35	Grundon Waste Management Ltd	Tanhouse Farm MRF	M	1.4	1.6	46.7	14.4
36	N&P Crayford MRF Ltd	Crayfords Materials Recycling Facility	XL	7.0	6.8	57.8	17.9
37	Grundon Waste Management Ltd	Leatherhead MRF	M	21.7	4.6	54.5	6.7
38	Jeremy Mark Freeth	Kingshill Recycling Centre	S	0.9	8.6	0.3	85.6
39	Norse Environmental Waste Services Ltd	Costessey Resource Recovery Park	L	33.6	4.4	37.1	8.6
40	Veolia ES [UK] Ltd	Hollingdean MRF & W T S Facility	S		2.2	84.3	2.9
41	FCC Recycling (UK) Ltd	Smallmead Waste Management Centre	M	1.2	6.9	6.6	14.2
42	Pure Recycling Warwick Ltd	Ettington Materials Recycling Facility	M	27.0	4.8	45.2	8.2
43	Veolia ES [UK] Ltd	Crown Farm Materials Recycling Facility	L		5.6	69.2	7.6

ID	Operator	Site Name	Size	Avg % Glass	Avg % Metal	Avg % Paper	Avg % Plastic
44	Biffa Waste Services Ltd	Edmonton (Atlas) MRF	XL	18.4	3.6	55.8	9.8
45	Biffa Waste Services Ltd	Hadrian Yard Central	S	2.5	1.9	53.3	6.7
46	J & B Recycling Ltd	J & B Recycling Limited, Windermere MRF	L	11.6	6.2	56.6	14.4
47	SUEZ Recycling and Recovery UK Ltd	West Sleekburn Materials Recycling Facility	M		7.7	61.6	9.5
48	Biffa Waste Services Ltd	Irlam - Material Resource Centre	S		0.3	5.1	7.7
49	Biffa Waste Services Ltd	Ford Materials Recycling Facility (Syracuse Waste Ltd)	L	35.2	5.2	44.2	7.8
50	Severn Waste Services Ltd	Envirosort	L	16.7	3.9	63.9	6.5
52	Pearce Recycling Company Ltd	Pearce Recycling Limited	L	19.6	7.4	43.8	18.6
53	SUEZ Recycling and Recovery UK Ltd	Colley Lane	S	1.8	37.3	0.9	53.0
54	Cory Environmental Ltd	Smugglers Way Transfer Station / MRF	L	25.4	3.2	47.2	9.0
55	SUEZ Recycling and Recovery UK Ltd	Taunton Depot	S		18.5		71.4
56	Recycle Force Ltd	Recycle Force Ltd	S	3.1	5.9	32.3	9.9
57	GAE Smith (Holdings) Ltd	Casepak Material Recycling Facility	XL	25.0	5.2	47.6	11.8
58	Veolia ES [UK] Ltd	Gillmoss Materials Recovery Facility	L	21.5	4.6	5.2	5.8
59	SUEZ Recycling and Recovery UK Ltd	Bodmin Materials Recycling Facility	S	1.3	32.2	0.5	6.5
60	SUEZ Recycling and Recovery UK Ltd	Pool Materials Recycling Facility	S	2.1	31.7	0.7	55.4
61	H W Martin Waste Ltd	Alfreton Recycling Centre	L	17.9	16.3	21.9	29.2
62	Cheshire West Recycling Ltd	Winsford Depot	S		14.9		82.9
65	BPR Group Europe Ltd	Juliette Way Materials Recycling & WEEE	S	2.8	1.8	42.3	6.9
66	Biffa Waste Services Ltd	Teesside Recycling Facility	L	26.0	6.5	36.9	1.6
67	Thalia WB ODC Ltd	Waterbeach Materials Recycling Facility	L	32.2	3.7	43.3	9.8
68	Biffa Waste Services Ltd	Redruth Waste Transfer Station	S	0.4	1.9	59.0	6.0
69	Cumbria Waste Management Ltd	Hespin Woods MRF	M	55.4	13.8		25.8
70	Biffa Waste Services Ltd	Chelson Meadow MRF (Syracuse Waste Ltd)	M	22.3	6.6	48.0	13.3
71	Cheshire West Recycling Ltd	C W & C Canalside Operations Hub	S	0.3	16.8	0.2	79.4
72	Biffa Waste Services Ltd	Eastleigh Waste Transfer and Recycling Facility	S	0.3	1.9	62.7	5.6
73	North Somerset Environment Company Ltd	Westlands Distribution Park	S		33.5		46.0
74	Hills Waste Solutions Ltd	Sand's Farm Facility	M	0.3	6.6	57.7	13.5
75	Lancashire Renewables Ltd	Leyland Waste Treatment Facility	L		19.3	2.5	33.4
76	Biffa Waste Services Ltd	Biffa Tipton Waste Transfer Station	S	0.1	0.1	59.7	17.9

ID	Operator	Site Name	Size	Avg % Glass	Avg % Metal	Avg % Paper	Avg % Plastic
77	SUEZ Recycling and Recovery UK Ltd	Bristol Resource Recovery Park	M	8.7	5.7	53.4	11.8
78	SUEZ Recycling and Recovery UK Ltd	Landor Street IRRC	L	11.4	7.2	29.0	9.2
79	Enva Ltd	Enva Colwick Recycling and Resource Recovery Facility	M	12.9	6.8	44.7	16.4
80	Countrystyle Recycling Ltd	Countrystyle Recycling Limited	S	1.9	1.8	54.5	2.5
81	Veolia ES [UK] Ltd	Southwark Integrated Waste Management Facility	L	1.2	2.4	65.3	9.2
82	SUEZ Recycling and Recovery UK Ltd	South Manchester Resource Recovery Centre	L	59.9	1.7		12.3
83	Veolia ES [UK] Ltd	Padworth IWM Facility	S		4.1		7.7
84	Renewi UK Services Ltd	South Kirkby WMF	M	11.6	6.4	49.3	11.7
85	Newport Wastesavers	Wastesavers Resource Centre	S	1.5	24.2	1.5	7.2
86	Cynon Valley Waste Disposal Co Ltd	Bryn Pica Waste Operations	M	14.5	8.5	42.0	19.3
87	Merthyr Tydfil CBC	MTCBC Waste Transfer Station	S				
88	UPM-Kymmene (UK) Ltd	Shotton Paper	XL	16.8	7.6	54.1	11.2
89	Cardiff Council	Lamby Way Depot	M	13.6	8.7	36.1	23.6
90	May Gurney Ltd	Tondu Waste Transfer Station	S		2.9		75.4
91	Conwy County Borough Council	Gofer Bulking Station	S	1.4	27.3	1.6	62.6
92	CWM Environmental Ltd	Nantycaws Resource Management Centre	S		8.6	69.6	12.0
93	Silent Valley Waste Services Ltd	Silent Valley Waste Transfer Station	S		37.1		49.9
94	City & County of Swansea	The Baling Plant	S	67.9	28.1		
95	Powys County Council	Brecon Transfer Station - Cwrt Y Plyffin	S		23.3		74.5
96	Biffa Waste Services Ltd	Nationwide Works	S	0.8	1.3	55.4	3.7
97	Project Red Recycling Ltd	Project Red Recycling Ltd	M	4.3	4.9	27.2	24.5
98	P & D Material Recovery Ltd	Berth 6, Basin 3	S	5.8	4.5	35.3	43.1
99	Levenseat Ltd	Levenseat Ltd	M	13.2	9.6	88.8	15.4
100	Cireco Lochhead	Cireco Lochhead	M		5.8	28.5	18.9
101	Biffa Waste Services Ltd	Biffa Broxburn	L		3.9	4.8	8.4
102	Falkirk Council	Falkirk Council	S		16.5	38.3	28.8
103	Biffa Waste Services Ltd	Biffa Grangemouth	M	2.4	7.5	7.8	7.4
108	Viridor Waste Ltd	Viridor Newhouse	L	94.1	0.6	0.6	2.1
109	SUEZ Recycling and Recovery UK Ltd	Suez Aberdeen	L	7.5	6.4	37.5	11.8
111	Biffa Waste Services Ltd	Biffa Glasgow	S		2.2	23.5	3.3

ID	Operator	Site Name	Size	Avg % Glass	Avg % Metal	Avg % Paper	Avg % Plastic
112	Enva Ltd	ENVA Linwood	S	0.3	6.2	14.5	11.9
114	Glasgow City Council	Glasgow City Council	S		5.9	43.6	7.5
115	J&M Murdoch Ltd	J&M Murdoch Ltd	S		4.9	6.8	3.7
116	Saica Natur [UK] Ltd	Saica Natur [UK] Ltd	M	0.3	0.3	3.2	
117	AJ Recycling Ltd	Meigan Wells	S		34.6		61.7
118	Resources Management UK Ltd	Withyhedge MRF	S	0.6	2.4	2.9	16.6
<b>PREDOMINATELY PLASTIC MRF (PERF)</b>							
1	Viridor Waste Ltd	Pelican Reach (Plot L)					
<b>PREDOMINANTLEY GLASS MRF</b>							
108	Viridor Waste Ltd	Viridor Newhouse					