

# Materials Facility Reporting Portal Q4 2018 – Commentary

## Key points

- This is the seventeenth publication of data under the Environmental Permitting (England and Wales) Regulations 2016 (Schedule 9), relating to the reporting period, October-December (Q4) 2018, and represents over 4 years of data reporting by MF operators.
- The average percentage (by weight) of target material received by responding MFs in Q4 2018 was 83.9% for England and 88.3% for Wales. The figure for England has decreased by 0.3% since the last quarter, and there has been a 0.7% decrease for Wales.
- The lowest average percentage (by weight) of target material in the output material streams is for glass in England (89.1%), and glass for Wales (91.6%).

## Background

The MF Portal displays the input and output sampling data required by the Regulations for qualifying MFs<sup>1</sup>. It does not display all data recorded by the facilities. The sampling of input tonnage is only for mixed dry recycling and is recorded for each supplier. The sampling of output waste is focused on the specified output material streams (grades of glass, paper, metal and plastic). Therefore, the Portal does not include tonnes for all other input and output waste and materials from the facilities.

Facilities have been sampling and reporting for 51 months. The Regulators (Environment Agency and Natural Resources Wales) are continuing their annual programme of announced and unannounced visits to each site. The visits enable the Regulator to advise operators on the statutory sampling and reporting requirements and assess compliance with them, as well as provide advice on best practice as set out

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<sup>1</sup> A qualifying MF is defined as a regulated facility that receives mixed waste material in order to separate it into specified output material (SOM) for the purpose of selling it, or transferring it to other facilities or persons to enable that material to be recycled by those facilities or persons. To qualify, a facility must receive 1,000 tonnes or more of mixed waste material in a 12 month period.

in the WRAP guidance. Any potential adjustments a facility might make to their sampling arrangements following feedback and guidance from the Regulator, may not be seen immediately in their reported data on the portal due to timescales involved in reporting and publishing on the Portal (which could be up to 6 months).

The MF Portal is a transparent display of data provided by the facilities. The data is available for waste suppliers (such as local authorities or businesses) and reprocessors to use and to inform feedback and discussions with their MF. For local authorities it can provide information on the quality of the material they are getting from their residents. Users should be aware that any queries raised during the Regulators' validation processes are reported back to the facilities, but the data entries are not always rectified in response. This means the Portal will include data for facilities where there is an outstanding validation issue.

### **General observations for Q4 2018**

The data displayed in the MF Portal and summarised here is the latest supplied by the facilities for Q4 2018. Since the MF Portal displays the data as provided by the facility, submitted data that appears extreme has not been removed or adjusted. The summary statistics presented in this commentary are intended to be representative of the MFs who have submitted the quarterly return.

In England 89 facilities notified the Regulator (in accordance with the Regulations) for October - December 2018 and 87 submitted a quarterly data return. In Wales, 13 facilities notified the Regulator, and all 13 submitted data.

### **MF input stream analysis**

#### *MF Input stream analysis England*

The waste supplied to the responding MFs in England was attributed directly to 237 local authorities (LAs) and 210 other named suppliers (such as waste management companies or other waste facilities)<sup>2</sup>.

The total tonnage of mixed material entering the MFs in Q4 2018 was 842,099 tonnes which is around 3205 tonnes or 0.4% more than the previous quarter. The MFs provided data based on a total of 9,068 samples totalling around 629 tonnes.

Table 1 below shows that the average percentage (by weight) of target material received by responding MFs in Q4 2018 was 83.9%, which is less than the previous quarter.

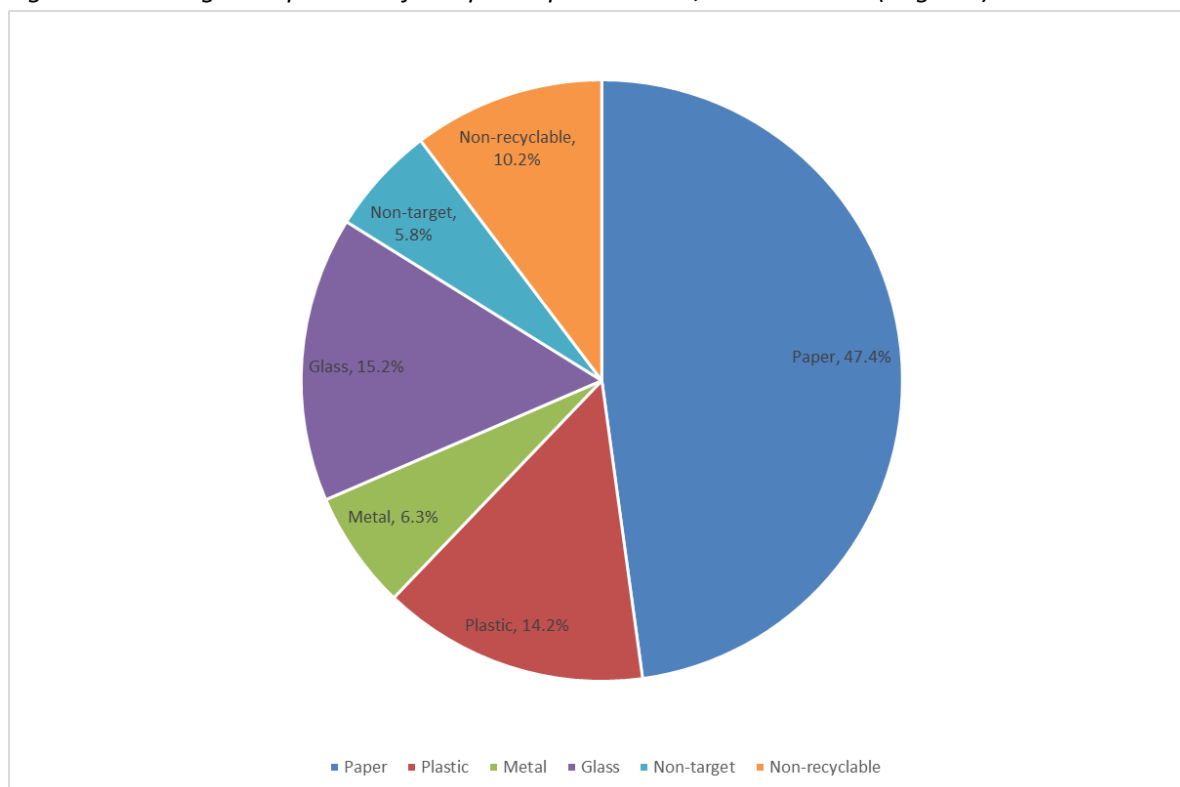
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<sup>2</sup> Listed as either "other supplier" or "Another MF or Waste Facility" in the waste return.

Table 1: Breakdown of samples from waste received by responding MFs, split by material type, Q4 2018 England

Material Type	Percentage of waste received
Target material	<b>83.9%</b> <sup>3</sup> (Inter-quartile range <sup>4</sup> 77.3% – 89.3%)
Of which:	
• Paper	47.4%
• Plastics	14.2%
• Metals	6.3%
• Glass	15.2%
Non-target recyclable material <sup>5</sup>	<b>5.8%</b>
Non-recyclable material <sup>6</sup>	<b>10.2%</b>
All material received	100%

Figure 1 – Average composition of sampled input material, Oct-Dec 2018 (England)



### Time series of input stream analysis: England

Table 2 and Figure 2 show that since reporting started in Q4 2014 input tonnes have varied by 108,421 between the highest tonnage of 897,816 in 2016 Q2 and lowest of 789,395 in 2014 Q4. After a slight peak in 2018 Q1 of 884,711, Q2 and Q3 saw input tonnes fall by 45,817 to 838,894 (missing data from two facilities may have had an impact), but there has been a slight rise of 3,205 in the current quarter.

<sup>3</sup> Average is weighted by the total sample tonnage of each MF-supplier pairing

<sup>4</sup> The inter-quartile range shows the distribution of the middle 50% of the sample.

<sup>5</sup> Material that is capable of being recycled but is not a target material for that facility.

<sup>6</sup> Waste material that is not capable of being recycled (e.g. disposable nappies).

Table 2 Total input tonnes in England Q4 2014 – Q4 2018

Quarter	Total input tonnage
2014 - Q4	789,395
2015 - Q1	876,744
2015 - Q2	817,779
2015 - Q3	817,851
2015 - Q4	886,511
2016 - Q1	880,307
2016 - Q2	897,816
2016 - Q3	852,397
2016 - Q4	884,406
2017 - Q1	855,900
2017 - Q2	826,312
2017 - Q3	811,085
2017 - Q4	823,499
2018 - Q1	884,711
2018 - Q2	860,708
2018 - Q3	838,894
2018 - Q4	842,099

Figure 2 Changes in input tonnes in England Q4 2014 – Q4 2018

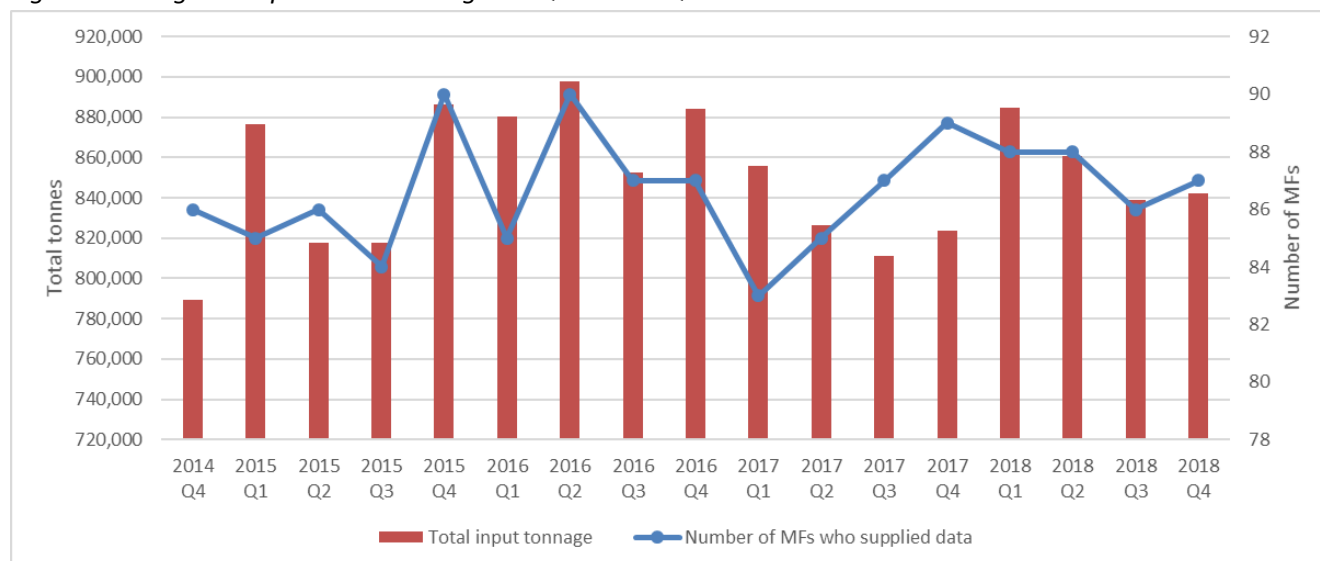


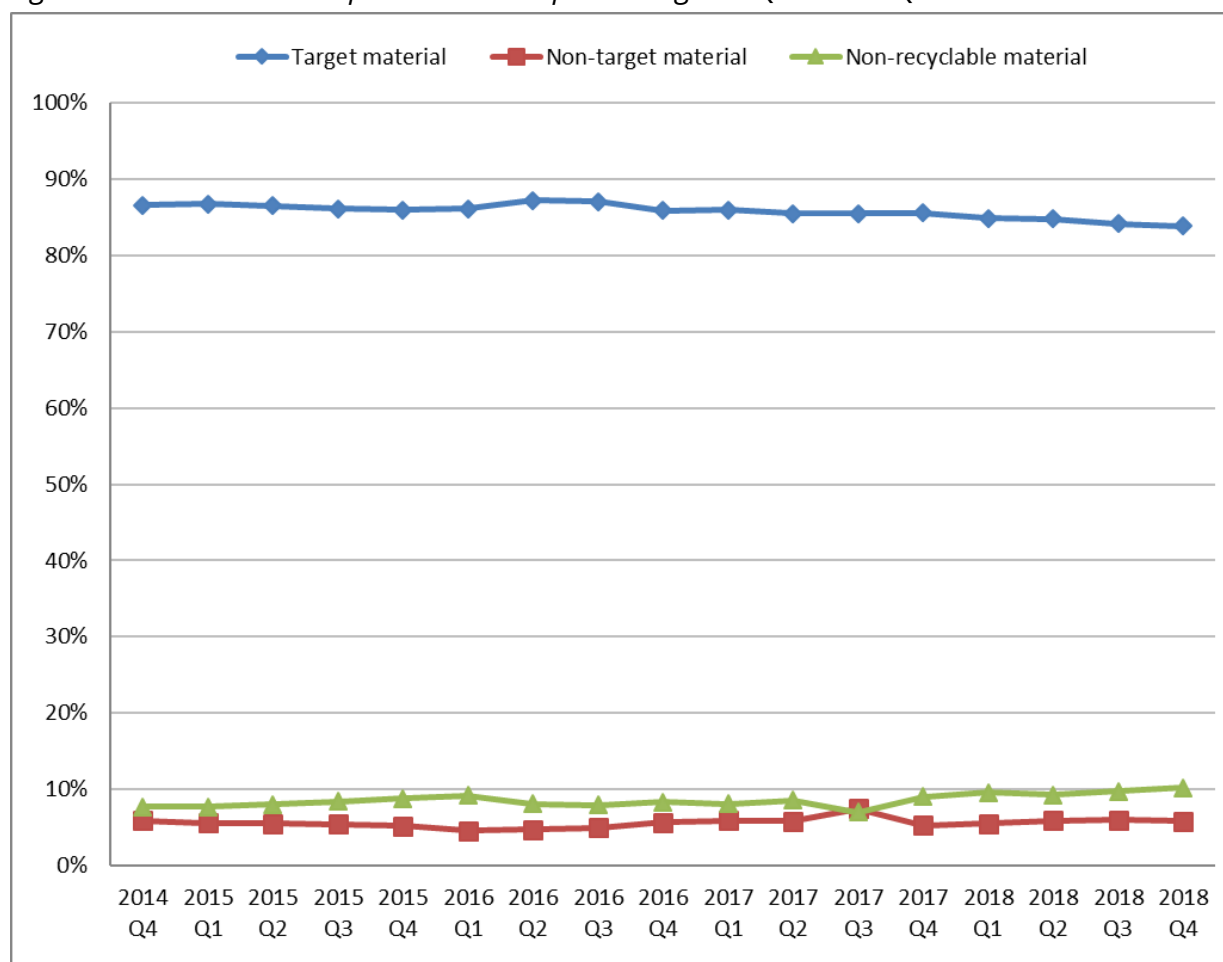
Table 3 and Figure 3 show there has been little change in target waste received since reporting started in Q4 2014. The highest level of target material was 87.2% in 2016 Q2, and the lowest is 83.9% in the current quarter (2018 Q4). The largest fluctuation of target material between two consecutive quarters took place between Q3 2016 and Q4 2016, with a decrease of 1.2%. Target material is now at the lowest level since reporting started (3.3 percentage points lower than the highest level in 2016 Q2). This may be due to more accurate reporting from sites in relation to the change in definition of target material in 2016. Previously any paper, plastic, metal and glass will have been reported

as target material, now only materials the site accepts and sorts should be reported as target material.

*Table 3: Breakdown of samples from input streams in England Q4 2014 – Q4 2018*

	<b>Average percentage of composition</b>		
	<b>Target material</b>	<b>Non-target material</b>	<b>Non-recyclable material</b>
<b>2014 - Q4</b>	86.6	5.9	7.7
<b>2015 - Q1</b>	86.8	5.6	7.7
<b>2015 - Q2</b>	86.5	5.5	8
<b>2015 - Q3</b>	86.1	5.4	8.4
<b>2015 - Q4</b>	86.0	5.2	8.8
<b>2016 - Q1</b>	86.1	4.6	9.2
<b>2016 - Q2</b>	87.2	4.7	8.1
<b>2016 - Q3</b>	87.1	5.0	7.9
<b>2016 - Q4</b>	85.9	5.7	8.3
<b>2017 - Q1</b>	86.0	5.9	8.1
<b>2017 - Q2</b>	85.5	5.8	8.5
<b>2017 - Q3</b>	85.5	7.4	7.0
<b>2017 - Q4</b>	85.6	5.3	9.0
<b>2018 - Q1</b>	84.9	5.5	9.6
<b>2018 - Q2</b>	84.8	5.9	9.3
<b>2018 - Q3</b>	84.2	6.0	9.7
<b>2018 - Q4</b>	83.9	5.8	10.2

Figure 3: Fluctuations in input stream samples in England Q4 2014 – Q4 2018



#### MF Input stream analysis: Wales

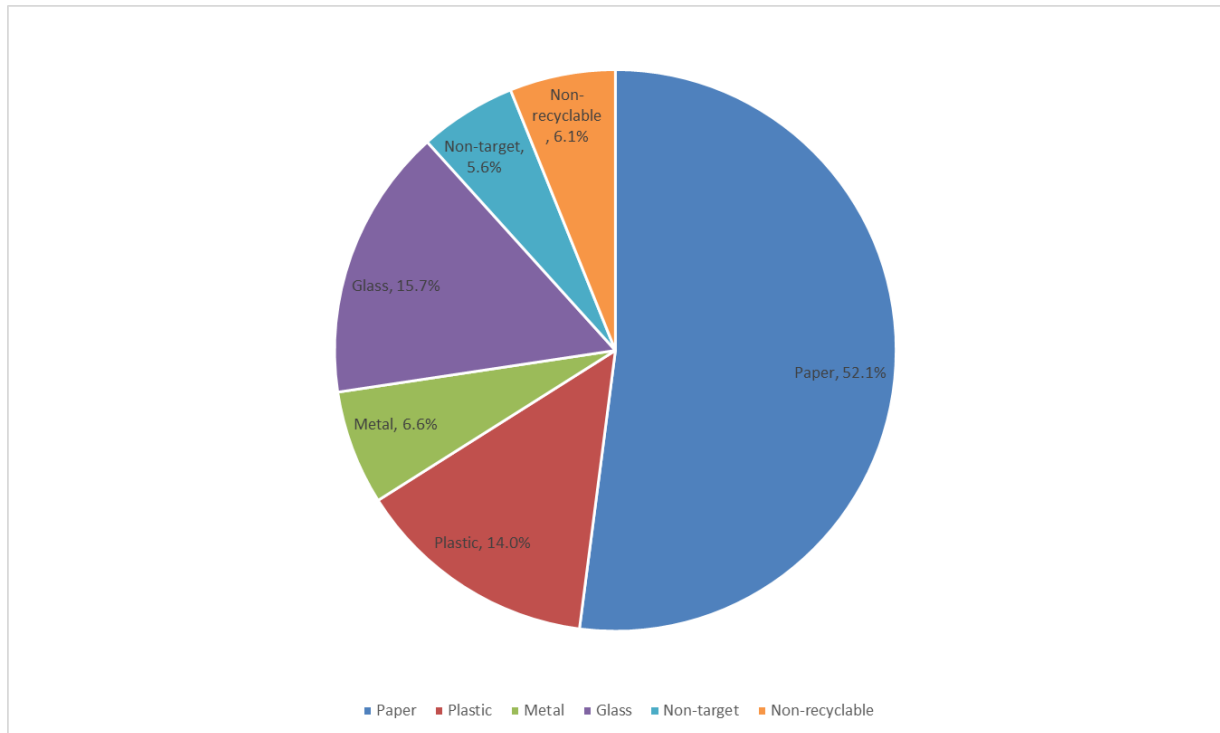
The total tonnage of mixed material entering the MFs in Q4 2018 was 71,839 tonnes. All of the 13 notified facilities submitted data. 628 samples were taken which amounted to nearly 52 tonnes.

Table 4 below shows that the average percentage of target material received by responding MFs in Q3 2018 was 88.3%, which is a 0.7% decrease from the previous quarter (89.0%).

Table 4: Breakdown of samples from waste received by responding MFs, split by material type, Q4 2018 Wales

Material Type	Percentage of waste received
Target material	<b>88.3%</b>
Of which:	
• Paper	52.1%
• Plastics	14.0%
• Metals	6.6%
• Glass	15.7%
Non-target recyclable material	<b>5.6%</b>
Non-recyclable material	<b>6.1%</b>
All material received	100.0%

Figure 4 – Average composition of sampled input material Oct-Dec 2018 (Wales)



*Time series of input stream analysis: Wales*

Table 5 and Figure 5 show there has been a small amount of variation in input tonnes in Wales since reporting started in Q4 2014 - 33,995 tonnes between the lowest input tonnage of 49,541 in 2015 Q2, and the highest of 83,536 in 2016 Q1. In Q1 2018 input tonnes dipped below 70,000 tonnes for the first time since Q2 2015, but have now increased again to 71,839 in the current quarter. Missing data from two facilities had an impact on the input tonnage figures prior to the current quarter and will be updated in a future release when the data is received.

Table 5 Total input tonnes in Wales Q4 2014 - Q4 2018

Quarter	Total input tonnage
2014 - Q4	63,128
2015 - Q1	74,473
2015 - Q2	49,541
2015 - Q3	74,995
2015 - Q4	83,410
2016 - Q1	83,536
2016 - Q2	78,089
2016 - Q3	78,199
2016 - Q4	75,795
2017 - Q1	71,269
2017 - Q2	76,461
2017 - Q3	74,738
2017 - Q4	74,779
2018 - Q1	69,769
2018 - Q2	70,615
2018 - Q3	59,940
2018 - Q4	71,839

Figure 5 Changes in input tonnes in Wales Q4 2014 - Q4 2018

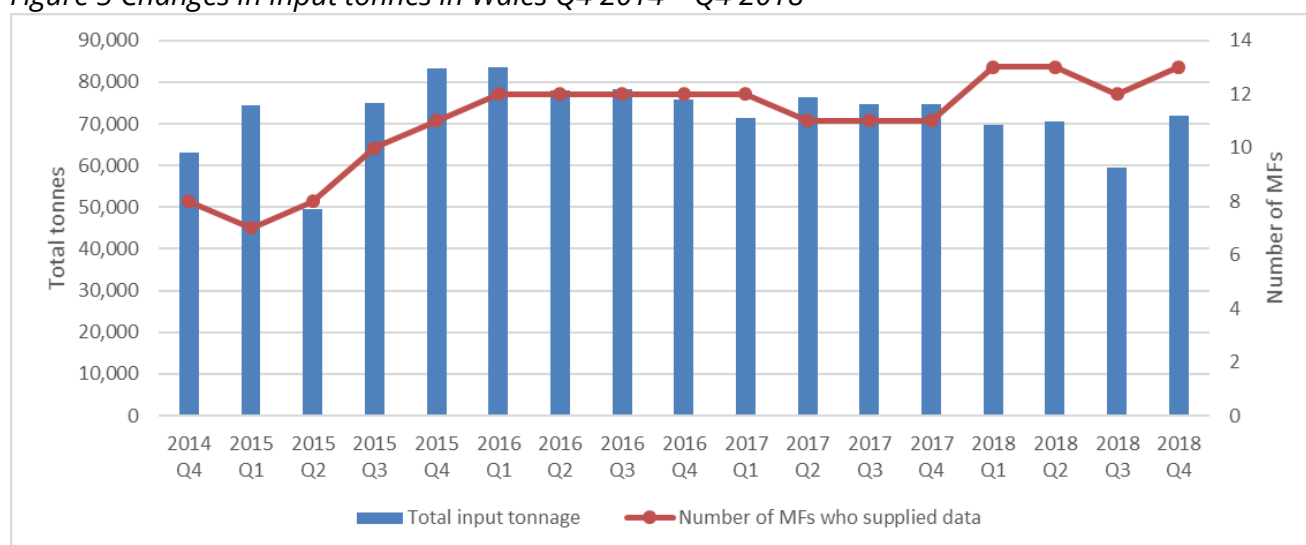


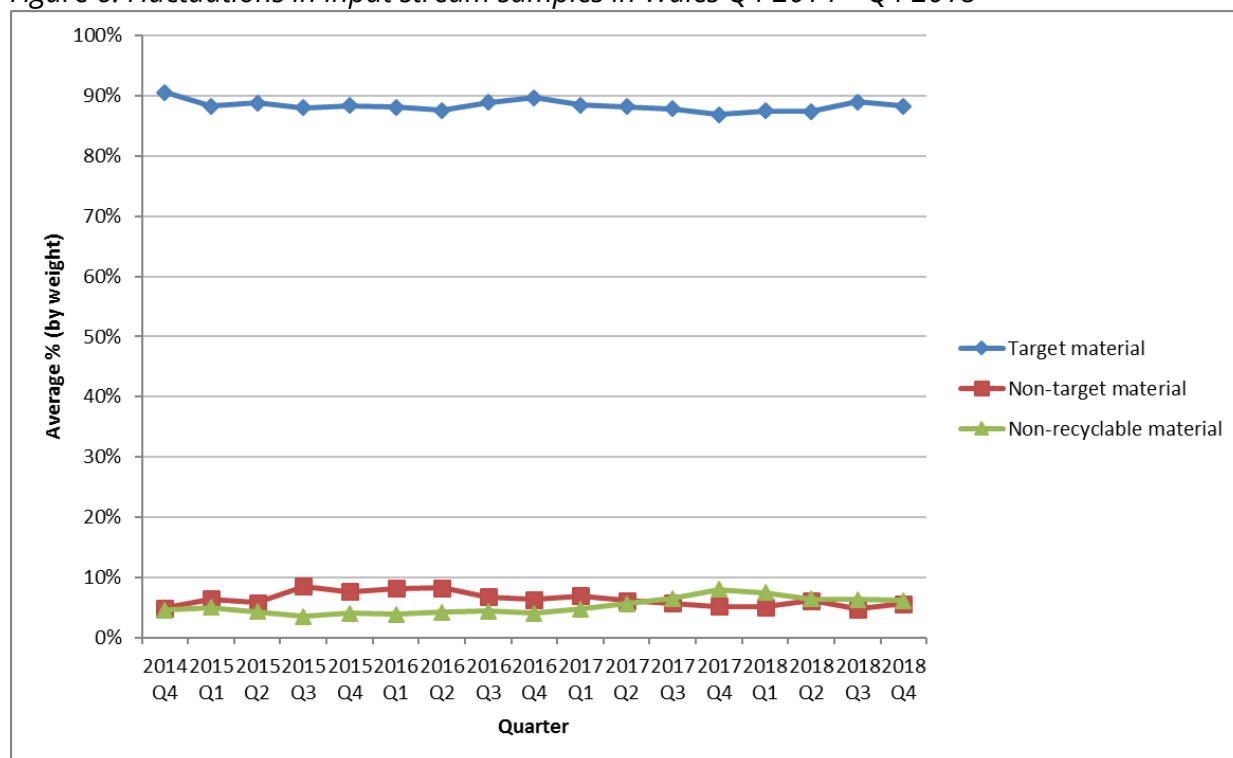
Table 6 and Figure 6 show there has been a change in target material (0.7% decrease), non-target (0.9% increase), and non-recyclable (0.2% decrease) material since the last reporting period (2018 Q3). There has been a 2.6% difference in target material received by MFs in Wales since reporting started in Q4 2014, between the highest level in Q4 2014 (90.6) and the lowest level in Q4 2017 (86.9%). In Q3 2017 the percentage of non-recyclable material received exceeded that of non-target material for the first time, and this has continued in Q4 2018.



Table 6: Breakdown of samples from input streams in Wales Q4 2014 – Q4 2018

	Average percentage of composition		
	Target material	Non-target material	Non-recyclable material
2014 - Q4	90.6	4.9	4.5
2015 - Q1	88.3	6.4	5.0
2015 - Q2	88.8	5.8	4.3
2015 - Q3	88.0	8.5	3.5
2015 - Q4	88.4	7.6	4.0
2016 - Q1	88.1	8.1	3.8
2016 - Q2	87.6	8.2	4.2
2016 - Q3	88.9	6.7	4.4
2016 - Q4	89.7	6.3	4.0
2017 - Q1	88.5	6.9	4.7
2017 - Q2	88.2	6.2	5.6
2017 - Q3	87.8	5.7	6.5
2017 - Q4	86.9	5.1	8.0
2018 - Q1	87.5	5.1	7.4
2018 - Q2	87.4	6.1	6.4
2018 - Q3	89.0	4.7	6.3
2018 - Q4	88.3	5.6	6.1

Figure 6: Fluctuations in input stream samples in Wales Q4 2014 – Q4 2018



## MF Output stream analysis

### *MF Output stream analysis: England*

The total tonnage of Specified Output Material (SOM) leaving the responding MFs in Q4 2018 was 650,985 tonnes. This is an increase of 23,245 tonnes compared to the previous quarter. The MFs provided data based on a total of 21,423 samples totalling nearly 831 tonnes which shows a decrease of samples from the last quarter.

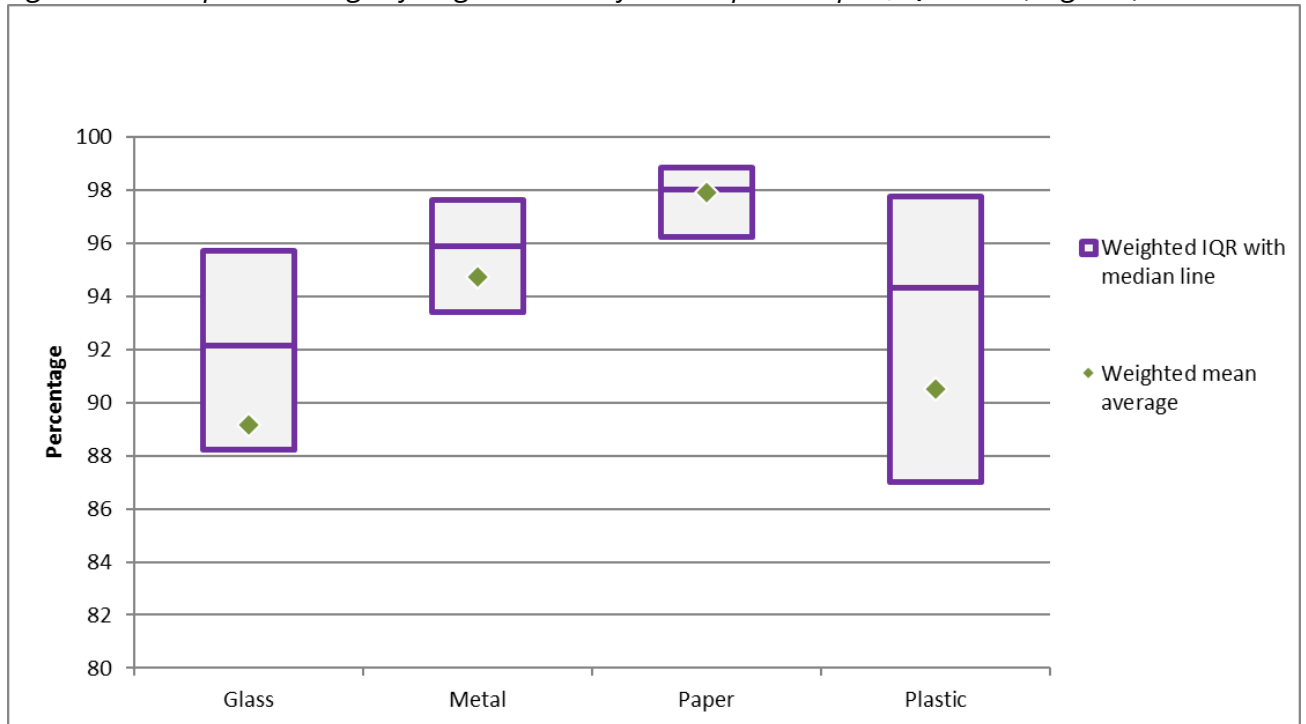
SOM produced by MFs contain some materials that are non-target and non-recyclable. Table 7 below is based on the sampling data of outputs and shows that the average percentage of target material of responding MFs is 89.1% or higher for all of the four main SOM. Figure 7 displays the target material percentage and inter-quartile range for each material. There has been an increase in the average percentage of metal by 0.3% and plastic by 0.8%. Paper has stayed the same, and there has been a decrease in glass (3.1%). The variability across samples as indicated by the inter-quartile range is lowest for paper and highest for plastic.

*Table 7: Summary of samples taken of Specified Output Materials (SOM) produced by responding facilities, Q4 2018 England (data for Q3 2018 in brackets)*

<b>SOM</b>	<b>Grades included</b>	<b>Weighted mean average percentage targeted material in output<sup>7</sup></b>	<b>Inter-quartile Range</b>
Paper	Cardboard, Newspapers and Magazines, Paper – Mixed	97.9% (97.9%)	96.2%-98.8% (96.0%-99.0%)
Plastic	Hard Plastic, HDPE Bottles – Clear, HDPE Bottles – Coloured, HDPE Bottles – Mixed, Household Plastic Film, LDPE Film – Clear, LDPE Film – Coloured, Mixed Plastic, Mixed Plastic Bottles, Mixed Rigid Plastic, PET Bottles – Clear, PET Bottles – Coloured, PET Bottles – Mixed, Polypropylene (PP), Pots, Tubs and Trays (PTT)	90.5% (89.7%)	87.0%-97.7% (87.5%-98.0%)
Metal	Aluminium, Scrap metal, Steel	94.7% (94.4%)	93.4%-97.6% (91.5%-97.5%)
Glass	Glass – Clear, Glass – Brown, Glass – Green, Glass – Mixed (Aggregate/Glass Sand), Glass – Mixed (Container / Glass fibre)	89.1% (92.2%)	88.2%-95.7% (89.1%-96.7%)

<sup>7</sup> Average weighted by total tonnage of each MF-SOM grade combination.

Figure 7: Inter-quartile range of target material from output samples, Q4 2018 (England)



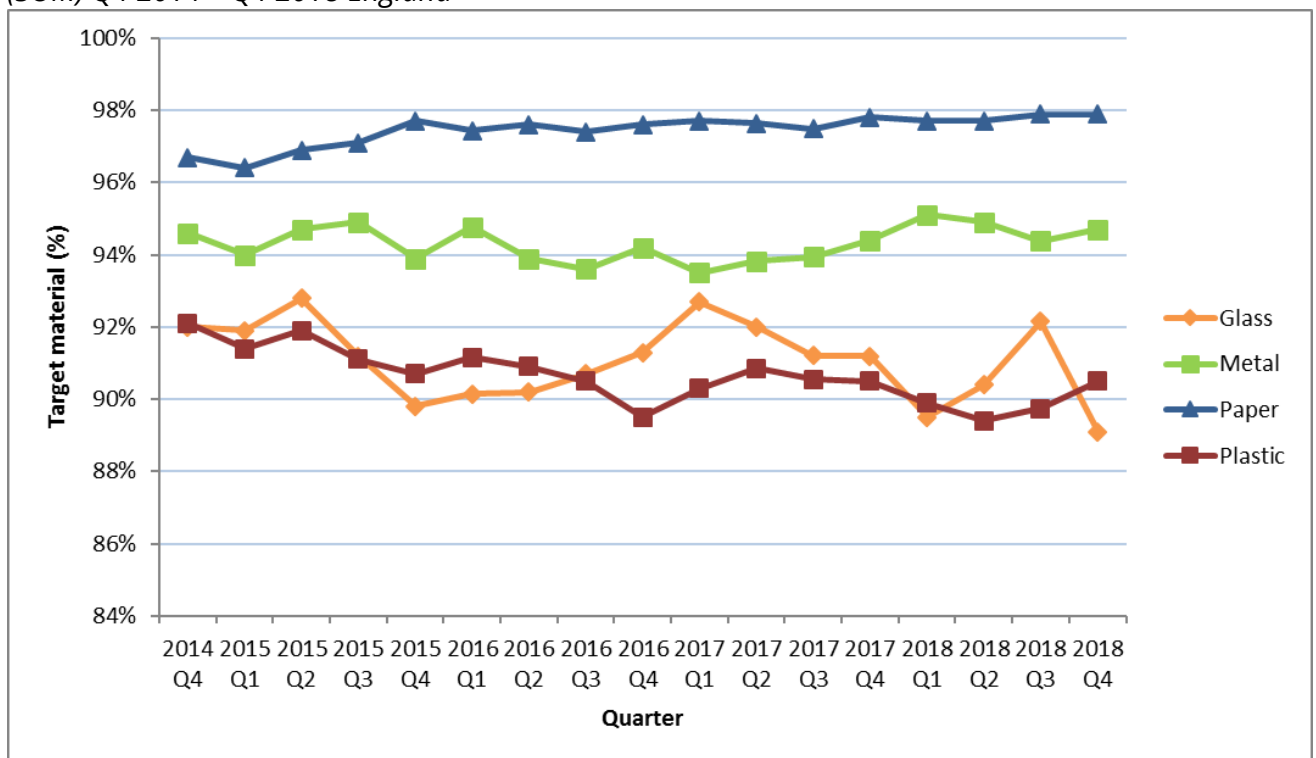
#### Time series of output stream analysis: England

Figure 8 shows that in England there has been some variation in the average percentage of targeted materials over the last seventeen quarters since recording started. The average percentage of glass has shown the greatest variation with a difference of 3.7% between the highest point in 2015 Q2 (92.8%) and the lowest in the current quarter, 2018 Q4 (89.1%). Paper has shown the least variation since reporting started, with a 1.5% difference between the highest point on the last two quarters quarter (2018 Q3 and Q4 - 97.9%) and the lowest point in 2015 Q1 (96.4%). Glass has reached the lowest level of any material in the current quarter (89.1%), and paper the highest (97.9% in the current quarter and 2018 Q3).

Table 8: Percentage Target Material from sampling data of Specified Output Materials (SOM)Q4 2014 – Q4 2018 England

	Target material (%)			
	Glass	Metal	Paper	Plastic
2014 Q4	92.0	94.6	96.7	92.1
2015 Q1	91.9	94.0	96.4	91.4
2015 Q2	92.8	94.7	96.9	91.9
2015 Q3	91.2	94.9	97.1	91.1
2015 Q4	89.8	93.9	97.7	90.7
2016 Q1	90.1	94.8	97.4	91.2
2016 Q2	90.2	93.9	97.6	90.9
2016 Q3	90.7	93.6	97.4	90.5
2016 Q4	91.3	94.2	97.6	89.5
2017 Q1	92.7	93.5	97.7	90.3
2017 Q2	92.0	93.8	97.6	90.8
2017 Q3	91.2	93.9	97.5	90.6
2017 Q4	91.2	94.4	97.8	90.5
2018 Q1	89.5	95.1	97.7	89.9
2018 Q2	90.4	94.9	97.7	89.4
2018 Q3	92.2	94.4	97.9	89.7
2018 Q4	89.1	94.7	97.9	90.5

Figure 8: Variation in Target Material (%) from sampling data of Specified Output Materials (SOM) Q4 2014 – Q4 2018 England



### *MF Output stream analysis: Wales*

The total tonnage of SOM leaving the responding MFs in Q4 2018 was 48,532 tonnes which is 8,885 tonnes less than Q3 2018. All of the 13 notified facilities provided data.

SOM produced by MFs contain some materials that are non-target and non-recyclable. Table 9 below is based on the sampling data of outputs and shows that the average percentage of target material in the outputs of responding MFs is 91.6% or higher for all the four main SOM. The weighted mean average for metal increased by 0.2%. Glass has decreased by 1.7%, plastic by 2.8% and paper by 0.1% since the last quarter (Q3, 2018).

*Table 9: Summary of samples taken of Specified Output Materials (SOM) produced by responding facilities, Q4 2018 Wales (data for Q3 2018 in brackets)*

<b>SOM</b>	<b>Grades included</b>	<b>Average percentage targeted material</b>
Paper	Cardboard, Newspapers and Magazines, Paper - Mixed	98.5% (98.6%)
Plastic	Hard Plastic, HDPE Bottles – Clear, HDPE Bottles – Coloured, HDPE Bottles – Mixed, Household Plastic Film, LDPE Film – Clear, LDPE Film – Coloured, Mixed Plastic, Mixed Plastic Bottles, Mixed Rigid Plastic, PET Bottles – Clear, PET Bottles – Coloured, PET Bottles – Mixed, Polypropylene (PP), Pots, Tubs and Trays (PTT)	96.0% (98.8%)
Metal	Aluminium, Scrap metal, Steel	97.6% (97.4%)
Glass	Glass – Clear, Glass – Brown, Glass – Green, Glass – Mixed (Aggregate/Glass Sand), Glass – Mixed (Container / Glass fibre)	91.6% (93.3%)

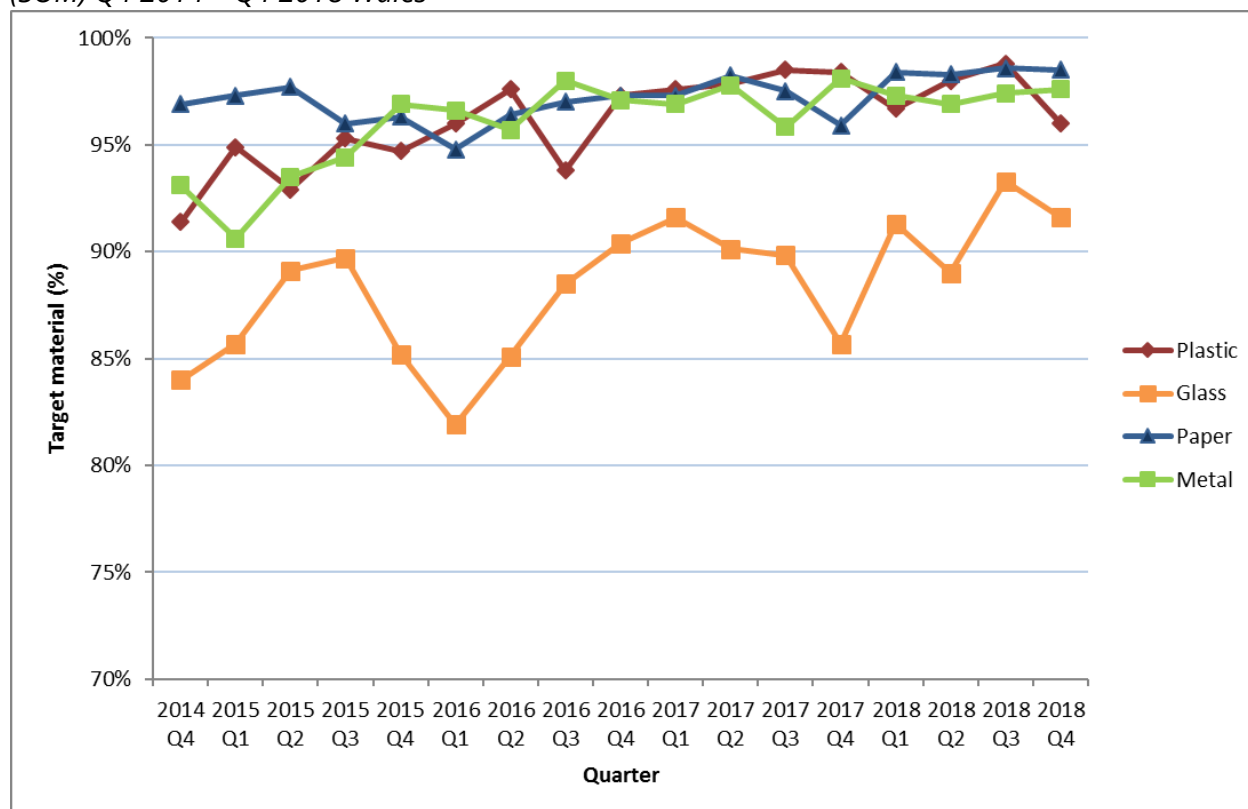
### *Time series of output stream analysis: Wales*

Figure 9 shows that in Wales there has been some variation in the average percentage of targeted materials over the last seventeen quarters. Glass has shown the greatest variation in target material, with a difference of 11.4% between the lowest percentage of 81.9% in 2016 Q1 and highest percentage of 93.3% in 2018 Q3. Paper has shown the least variation, with a difference of 3.8% between lowest percentage of 94.8% 2016 Q1 and highest percentage of 98.6% in 2018 Q3. Glass reached the lowest level of any material in 2016 Q1 (81.9%) and plastic the highest of 98.8% in 2018 Q3. Fluctuations for Wales are largely due to the small sample size and the numbers of facilities that notify over time.

Table 10: Percentage Target Material from sampling data of Specified Output Materials (SOM) Q4 2014 – Q4 2018 Wales

	Target material (%)			
	Glass	Metal	Paper	Plastic
2014 Q4	84.0	93.1	96.9	91.4
2015 Q1	85.7	90.6	97.3	94.9
2015 Q2	89.1	93.5	97.7	92.9
2015 Q3	89.7	94.4	96.0	95.3
2015 Q4	85.2	96.9	96.3	94.7
2016 Q1	81.9	96.6	94.8	96.0
2016 Q2	85.1	95.7	96.4	97.6
2016 Q3	88.5	98.0	97.0	93.8
2016 Q4	90.4	97.1	97.3	97.3
2017 Q1	91.6	96.9	97.3	97.6
2017 Q2	90.1	97.8	98.2	97.8
2017 Q3	89.8	95.8	97.5	98.5
2017 Q4	85.7	98.1	95.9	98.4
2018 Q1	91.3	97.3	98.4	96.7
2018 Q2	89.0	96.9	98.3	98.0
2018 Q3	93.3	97.4	98.6	98.8
2018 Q4	91.6	97.6	98.5	96.0

Figure 9: Variation in Target Material (%) from sampling data of Specified Output Materials (SOM) Q4 2014 – Q4 2018 Wales



Date of next release

The release of January - March 2019 data is expected for August 2019. There will be a commentary on the data at this time.

*Date of analysis - 02/04/19*

This analysis uses data that were current on this date. The October - December quarterly data may get updated in future quarters.

## Annex - The Portal and the MF Regulations

The Regulations require qualifying Materials Facilities (MFs)<sup>8</sup> to provide quarterly details of the mixed waste tonnage received from each supplier and the output tonnage despatched by four specified material streams. Under the Regulations MFs are also required to take samples of the input and output material and identify the average percentage of target, non-target and non-recyclable material. This data will enable the market to obtain a greater understanding of recycling quality, through the transparency of data in this area.

Transitional sampling arrangements changed on 1 October 2016. For mixed waste inputs samples must be taken for every 125 tonnes received from each supplier (except where the mixed waste is being transferred to another MF for separating into specified output material). For specified output material (SOM) the sampling frequency for paper SOM changed to 1 sample for every 60 tonnes produced and for plastic SOM sampling, frequency changed to 1 sample for every 15 tonnes produced.

The online Materials Facility Reporting Portal ([The Portal](#)) was developed to provide a simple way for users across the sector to display and interrogate the sampling data returned by the MFs to the Regulators. Where a facility has responded to queries from The Regulator by resubmitting its return, the data displayed in The Portal reflects the update. Where no response to queries has been received, the data shown is the original supplied by the MF. There is no distinction in the Portal to whether there has been a response from the facility. All data is included to promote transparency.

### MF Input streams

The Portal displays the following input stream data for each MF-supplier pairing<sup>9</sup>:

- Tonnes of mixed waste material entering facility;
- Number of samples taken;
- Total sample weight;

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<sup>8</sup> A qualifying MF is defined as a regulated facility that receives mixed waste material in order to separate it into specified output material (SOM) for the purpose of selling it, or transferring it to other facilities or persons to enable that material to be recycled by those facilities or persons. To qualify, a facility must receive or expect to receive 1,000 tonnes or more of mixed waste material over a 12-month period

Mixed waste is defined as material that:

- (a) originates
- (i) from households; or
  - (ii) from other sources but is similar to household waste in terms of its nature or composition; and
- (b) consists in the largest proportion of two or more of the following kinds of target materials mixed together:
- (i) glass
  - (ii) metal
  - (iii) paper
  - (iv) plastic

<sup>9</sup> Sampling is required where the input tonnage from the supplier reaches the sampling thresholds as stated in The Regulations. for mixed waste being separated into SOM (rather than transferred to another MF for separating)



- Average percentage composition of target material<sup>10</sup>, broken down (where targeted) by:
  - Paper
  - Plastic
  - Metal
  - Glass
- Standard deviation of the average percentage composition levels for the target materials found in samples
- Standard error of the mean, and 95% confidence interval of total target percentage composition<sup>11</sup>;
- Average percentage composition of non-target material<sup>12</sup>; and Average percentage composition of non-recyclable material.<sup>13</sup>

Further detail around the sampling regime, definitions of terms and the calculations on the data required by MFs can be found in the MF Sampling Guidance<sup>14</sup>.

### **MF Output streams**

Each MF submitted the following data for each grade of Specified Output Material (SOM) that it produces:

- Tonnes of material leaving facility;
- Number of samples;
- Total sample weight;
- Target material;
- Average percentage composition of the target material;
- Standard deviation of the average percentage composition levels for the target materials found in samples
- Standard error of the mean, and 95% confidence interval of total target percentage composition<sup>15</sup>;
- Average percentage composition of non-target material; and
- Average percentage composition of non-recyclable material.

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<sup>10</sup> A material that is identified by the operator of a Materials Facility as destined to be separated out from Mixed Waste Material in order to produce bulk quantities of that identified material.

<sup>11</sup> Standard error of the mean and 95% confidence intervals are calculated by WRAP.

<sup>12</sup> Material that is capable of being recycled but is not a target material for that facility.

<sup>13</sup> Waste material that is not capable of being recycled (e.g. disposable nappies).

<sup>14</sup> <http://www.wrap.org.uk/sites/files/wrap/MF%20Sampling%20Guidance%20April%202014.pdf>

<sup>15</sup> Standard error of the mean and 95% confidence intervals are calculated by WRAP.

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