

## Appendix A6- Recycling performance

### 1. How Cardiff compares with other Welsh local authorities (2016/17) & core Cities

Area	%
Ceredigion	70.1
Wrexham	68.7
Monmouthshire	68.7
Flintshire	68.2
Carmarthenshire	66.2
Isle of Anglesey	65.8
Caerphilly	65.5
Vale of Glamorgan	65.3
Pembrokeshire	65.3
Merthyr Tydfil	65.2
Powys	65.2
Denbighshire	64.7
Rhondda Cynon Taf	64.4
<b>Wales</b>	<b>63.8</b>
Swansea	63.7
Torfaen	63.6
Neath Port Talbot	62.8
Conwy	62.6
Newport	61.4
Gwynedd	61.1
<b>Cardiff</b>	<b>58.1</b>
Bridgend	57.9
Blaenau Gwent	56.8

It should be noted that Cardiff have a high proportion of commercial waste within the waste stream. The majority of the Welsh Authorities do not have the same commercial opportunities as Cardiff or choose to price themselves out of the Commercial market. If Cardiff were to remove the profitable commercial element, the performance could potentially increase by 4%.

However, as a capital city, Cardiff faces many challenges that other Welsh Authorities do not encounter. To gauge the performance as a capital city a core cities comparison provides an insight on just how well Cardiff performs as a Capital City. The table below outlines performance of the Core cities in Cardiff's comparison group.

Area	Recycling	Residual	Garden	Food	No. of HWRCs	Population* census 2011	No. of houses* census 2011	Surface area	Population Density	Recycling performance 2016/17 (%)
Cardiff	Weekly co-mingled	Fortnightly 140L bins or 3 bags	Green bin fortnightly  Monthly in winter	Weekly	3 moving to 2	346,100	142,802	140.3km <sup>2</sup>	2,500/km <sup>2</sup>	58.1
Edinburgh	Fortnightly kerbside sort  Green Bin: textiles, tins cans paper cardboard envelopes plastic bottles, pots, tubs and trays  Blue box: glass, batteries, small electrical goods.	Residual 140L Fortnightly	Garden Waste  Every 3 weeks	Food waste weekly	3	476,626	230,058	264km <sup>2</sup>	1,828/km <sup>2</sup>	42.3
Bristol	Kerbside sort  Green box; cartons, cardboard, plastic bottles/packaging, cans, foils, aerosols, lids + small WEEE next to box  Black box; directories, paper, glass, batteries (put in a small bag),	Residual 180ltr or up to 3 bags  Fortnightly	Chargeable  Garden 240ltr bin – fortnightly, buy bags/phone for collection	Food Weekly	2	428,234	182,747	110km <sup>2</sup>	3,892/km <sup>2</sup>	43.4

	textiles (in an untied bag), shoes, spectacles, engine oil, car batteries (to side of box)		(same day as recycling)							
Manchester	<p>Kerbside sort</p> <p>Brown bin glass jars/bottles, plastic bottles, tins &amp; cans, foil and takeaway trays</p> <p>Blue bin/bag; paper, card, food &amp; drink cartons</p> <p>alternate weeks</p>	Residual  120ltr fortnightly	Garden bin	Food if they have room to have a garden bin then food is combined	3	503,127	224,540	115.6km	4,680/km <sup>2</sup>	36
Glasgow	<p>Twin stream 140L purple bin; glass. Every 4 weeks</p> <p>Blue bin; paper, tins, cans, plastic bottles, cardboard. Every 2 weeks</p>	Fortnightly-green bin  7 day collection schedule	Brown bin- every 2 weeks (March-November)	Food in garden bin	4	593,245	285,693	149.9km <sup>2</sup>	4,023/km <sup>2</sup>	26
Newcastle	Fortnightly (alternate to residual) Twin Stream All Cardiff items, textiles (in separate bag).	Residual every 2 weeks	Brown bin £20 year for collection	Food every 2	3	280,177	128,030	360km <sup>2</sup>	2,613/km <sup>2</sup>	42

	Black caddy within blue bin for glass bottles & batteries (in separate plastic bag)			weeks						
Sheffield	Kerbside sort Fortnightly Blue bin; plastic bottles, glass bottles & jars, cans Blue box; paper & card	Fortnightly alternate week to recycling provided by veolia  Student scheme-red sacks provided to students for additional waste, collected between 10 June and 5 July.	Garden £55.87 – full 15 collections  £47.99 x 9 and final 5 £37.99	Food into residual	5	539,064	229,928	267.8k m2	1,563/km2	29.6
Liverpool	Fortnightly: Co-mingled blue bin Same contents as Cardiff	Residual some areas weekly, most every 2 weeks	Garden every 2 weeks	Food no collections	2	466,415	206,515	111.8k m2	4,332/km2	28.1

Leeds	Depending on the area some fortnightly, 3 weekly and 4 weekly	Weekly	Only collection s March – November	Same	8	751,485	320,596	551.7k m2	1,416/km <sup>2</sup>	37.9
Nottingham	Fortnightly (alternate to residual) Brown bin with grey lid-same materials as Cardiff  Orange “survival bags” for properties not suitable for bins	Fortnightly  Weekly for residents on orange bags	April - October	Fortnightly	1	305,680	126,131	74.61k m2	4,359/km <sup>2</sup>	29.8
Birmingham	Twin stream being rolled out. Blue box; paper, cardboard. Green box; glass, cans, plastic bottles, pots, tubs, food trays and aluminum foil.  OR; 240L recycling wheeled bin, inner caddy for paper/cardboard	Weekly-180L bin	£40, £38 on-line or early bird £35 March - Dec	Into residual waste	5	1,073,045	410,736	267.8k m2	4,199/km <sup>2</sup>	24.4

## **2. Recycling Data comparison**

The overall recycling rate is based on all MSW tonnages, but it is important to see how each of the elements of MSW build up to form the overall recycling performance.

### **Kerbside Collections ~ 65% recycling rate**

The effects of the move to smaller residual waste containers has seen an increase in the performance of the kerbside collections services. Cardiff out performs many recycling collection services.

### **HWRC ~70% recycling rate**

Investment in new recycling markets e.g. carpets/mattresses, the new Lamby Way recycling centre and additional time and training for site attendants to have a more focussed 'meet and greet' role. Increasing recycling through the education stations at the HWRCs will be one of the main focuses of the new waste strategy 2018 onwards with an aim to reach 80% as set out in Welsh Government's collections blueprint.

### **Commercial Services ~ 29% recycling rate**

The overall recycling performance of the commercial waste department has only slightly increased in recent years. The additional recycling collected can be attributed to more focused recycling efforts, as part of successful tender bids for companies such as Wales Millennium Centre, Principality Stadium and Cardiff and Vale NHS. However, this has also increased the overall amount of waste collected. Significant change is needed here supported by the Environment Act (Wales) Regulations, that are not yet available from Welsh Government.

### **Street Cleansing ~70% recycling rate**

Although the smallest fraction of the MSW stream, the sweepings recycling contributes significantly to the performance of this area. It should be noted that very little recycling is yielded from on-street litter bins and flytipping where they are currently located. Although more sorting of flytipping waste is in place

All of the above tonnages combine to calculate the council overall expected recycling performance in 2016/17 to be 58.1% .

## **3. Quality of Green Bags Recycling**

The analysis of green bags identified that the vast majority of the composition was material that we accept within the kerbside recycling collections.

Although, it is clear that there is confusion from the public and the attempts to recycling; 6.1% of the material could be recycled at a HWRC, and a further 4% in other kerbside collections e.g. food waste, hygiene collection, garden waste.

### **Target Material in green bags**

	<b>Summer</b>	<b>Autumn</b>	<b>Average</b>
Recyclable paper	27.5%	28.2%	<b>27.9%</b>
Glass bottles and jars	21.9%	22.3%	<b>22.1%</b>

Thin card	8.3%	8.5%	<b>8.4%</b>
Plastic bottles	6.9%	6.4%	<b>6.7%</b>
Corrugated card	6.8%	6.3%	<b>6.6%</b>
PTTs (All types excl. black plastic trays)	4.1%	3.4%	<b>3.8%</b>
Ferrous cans and tins	3.7%	3.6%	<b>3.7%</b>
Non Ferrous cans	1.3%	1.1%	<b>1.2%</b>
Ferrous aerosols	0.4%	0.3%	<b>0.4%</b>
Non Ferrous aerosols	0.3%	0.2%	<b>0.3%</b>
<b>Total</b>	81.2%	80.3%	<b>80.8%</b>

### Target (HWRC) material in green bags

	Summer	Autumn	Average
<b>Other dense plastic</b>	<b>2.4%</b>	<b>2.4%</b>	<b>2.4%</b>
Drink cartons (Tetra packs)	0.8%	0.7%	<b>0.8%</b>
Glass non-packaging	0.5%	0.7%	<b>0.6%</b>
Other ferrous items	0.4%	0.4%	<b>0.4%</b>
Other electrical items	0.0%	0.7%	<b>0.4%</b>
Clothing	0.2%	0.4%	<b>0.3%</b>
Shoes, bags, belts	0.2%	0.4%	<b>0.3%</b>
Other small electronic items	0.1%	0.4%	<b>0.3%</b>
Other non-combustible	0.2%	0.3%	<b>0.3%</b>
Non clothing textiles	0.1%	0.2%	<b>0.2%</b>
Wood and cork	0.3%	0.0%	<b>0.2%</b>
Other Hazardous Waste	0.0%	0.1%	<b>0.1%</b>
White goods	0.1%	0.0%	<b>0.0%</b>
Batteries	0.1%	0.0%	<b>0.0%</b>
Other large electronic items	0.0%	0.0%	<b>0.0%</b>
Other non-ferrous	0.0%	0.0%	<b>0.0%</b>
Computers and televisions	0.0%	0.0%	<b>0.0%</b>
Mobile phones	0.0%	0.0%	<b>0.0%</b>
Water based paint cans	0.0%	0.0%	<b>0.0%</b>
Other paint cans	0.0%	0.0%	<b>0.0%</b>
<b>Total</b>	<b>5.5%</b>	<b>6.7%</b>	<b>6.1%</b>

### Target (other household collections) material

	Summer	Autumn	Average
Absorbent Hygiene Products (for example nappies)	1.2	0.6	<b>1.8</b>
Avoidable food waste (unpackaged)	1.2	0.3	<b>1.5</b>
Unavoidable food waste	0.4	0.1	<b>0.5</b>
Garden waste	0.1	0	<b>0.1</b>
Possibly avoidable food waste	0.1	0	<b>0.1</b>
<b>Total</b>	<b>3</b>	<b>1</b>	<b>4</b>

#### 4. Recycling Found in the General Waste

Only 38.2% of the material contained within the general waste was material that cannot be recycled. 61.8% of the material could be recycled either in the kerbside recycling collection, hygiene/food collection or at the HWRC.

It is clear that there still needs to be increased emphasis on behavioural change, to divert this material from the general waste collection. A sustained approach to increased education, awareness raising campaigns and enforcement for non-compliance will be key.

### Target Recyclable (kerbside collections) Material in Residual Waste Sample

	Summer	Autumn	Average
AHPs (hygiene separate collection)	8.7%	16.1%	<b>12.4%</b>
Avoidable food waste (unpackaged)	5.3%	5.6%	<b>5.5%</b>
Recyclable paper	4.6%	3.4%	<b>4.0%</b>
Garden waste	4.1%	1.1%	<b>2.6%</b>
Unavoidable food waste	2.7%	1.9%	<b>2.3%</b>
PTTs (All types excl. black plastic trays)	2.5%	1.8%	<b>2.2%</b>
Thin card	2.5%	1.8%	<b>2.1%</b>
Possibly avoidable food waste	1.2%	2.7%	<b>2.0%</b>
Glass bottles and jars	2.1%	1.2%	<b>1.6%</b>
Plastic bottles	1.4%	0.9%	<b>1.2%</b>
Ferrous cans and tins	0.8%	0.5%	<b>0.7%</b>
Corrugated card	0.6%	0.5%	<b>0.5%</b>
Non Ferrous cans	0.2%	0.1%	<b>0.1%</b>
Ferrous aerosols	0.1%	0.1%	<b>0.1%</b>



Non Ferrous aerosols	0.1%	0.1%	<b>0.1%</b>
Total	36.9%	37.8%	<b>37.3%</b>

### Target Recyclable (HWRC) Material in Residual Waste Sample

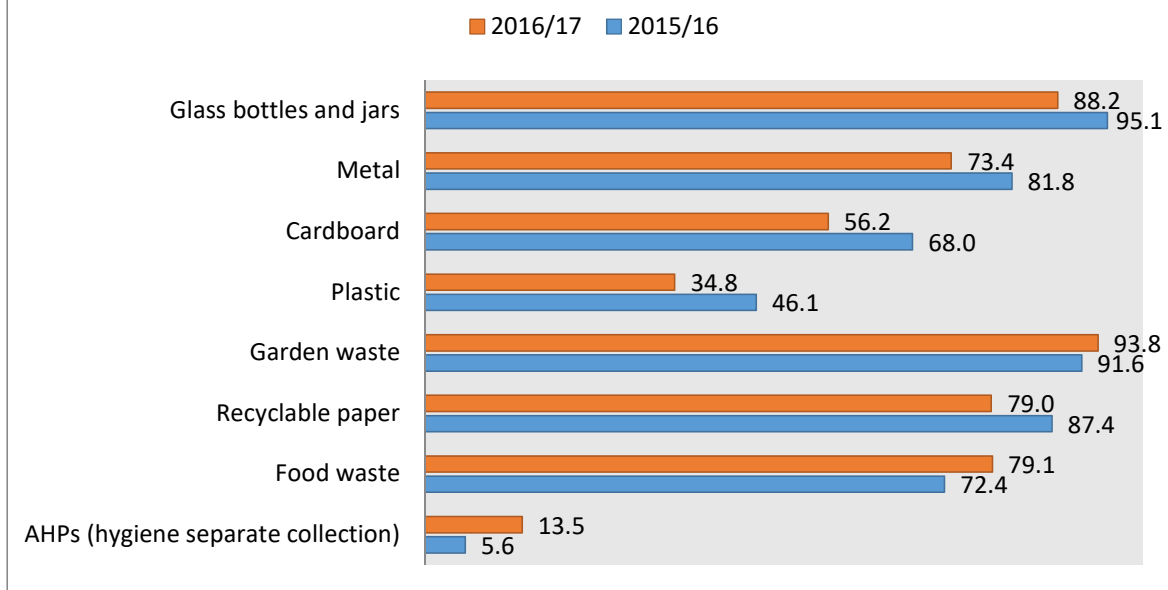
	Summer	Autumn	<b>Average</b>
Other non-combustible (incl.rubble)	6.3%	8.4%	<b>7.4%</b>
Other dense plastic	4.7%	4.5%	<b>4.6%</b>
Clothing	2.4%	2.0%	<b>2.2%</b>
Wood and cork	3.4%	0.6%	<b>2.0%</b>
Shoes, bags, belts	0.9%	2.0%	<b>1.5%</b>
Non clothing textiles	1.9%	0.9%	<b>1.4%</b>
Other electrical items	1.0%	1.2%	<b>1.1%</b>
Other ferrous items	1.0%	0.9%	<b>1.0%</b>
Other Hazardous Waste	0.2%	0.8%	<b>0.5%</b>
Glass non-packaging	0.5%	0.4%	<b>0.5%</b>
Computers and televisions	0.3%	0.4%	<b>0.4%</b>
Other large electronic items	0.5%	0.2%	<b>0.4%</b>
Other small electronic items	0.2%	0.3%	<b>0.3%</b>
Other non-ferrous	0.30%	0.1%	<b>0.2%</b>
Other paint cans	0.4%	0.0%	<b>0.2%</b>
Drink cartons (Tetra packs)	0.1%	0.1%	<b>0.1%</b>
Batteries	0.1%	0.1%	<b>0.1%</b>
White goods	0.0%	0.0%	<b>0.0%</b>
Mobile phones	0.0%	0.0%	<b>0.0%</b>
Water based paint cans	0.0%	0.0%	<b>0.0%</b>
Total	24.2%	22.9%	<b>23.6%</b>

### 5. Capture rates

The data provided by the compositional analysis research, enabled the Council to identify which material is not being captured to its full potential.

A comparison of the material capture rates (2015/16-2016/17) is below:

## Material capture rate comparisons- kerbside collections



The above identifies that members of the public are still placing large amounts of nappies, plastic and cardboard into their general waste collection despite the fact that there are alternative services for these.

However as anticipated, the restriction campaign in 2015 has more than doubled the capture rate of nappies/incontinence waste into the hygiene collection rather than the general waste.

It is also positive to note an increase in the capture of food waste in 2016/17.

It is recognised nationally that plastic is a material that residents are most confused about recycling, due to the differing grades of plastic and conflicting advice on packaging.

It has been estimated that to achieve the 70% recycling target, 90% of residents need to be recycling to their full potential 90% of the time. The compositional analysis, and capture rates data identifies there is lots still to do. There still needs to be increased emphasis on behavioural change, to divert this material from the general waste collection. A sustained approach to increased education, awareness raising campaigns and enforcement for non-compliance will be key.

### **6. Potential new material to collect from the kerbside**

To examine the potential of improving recycling rates in Cardiff, we have examined the recyclable materials that are most prevalent in the kerbside residual waste stream and also potential MRF rejects via composition analysis data – in order to ascertain which materials have the greatest potential effect on recycling rates, if they were to be diverted into the recycling stream.

When combining the observed waste arising of residual composition analysis and recycling composition analysis in 2015, the materials that were most prevalent were textiles (clothing, shoes, bags and non-clothing textiles), WEEE (electrical items and small electronics) and Cartons (tetra-pak style). The table below shows an estimated potential tonnage of how much of each material could have existed in 2016/17 residual tonnage, based on composition analysis proportions.

**Potential Kerbside Tonnage yields for textiles, WEEE and Cartons in recycling 2016-17**

	<b>Total</b>
Textiles	1602.34
WEEE	482.72
Cartons (tetra packs)	66.08
Grand total all material	2151.13

This concludes that the greatest potential for tonnages is in collection of textiles.

The tonnage shown could also significantly increase as a result of a promoting campaign for the collection of a new material. However it is also important to consider that the other outlets for this type of material in Cardiff are well established, such as charity shop donations or “Cash for Clothes” businesses. Therefore WEEE should not be discounted as electronics could have high potential for capture as the electronic economy becomes increasingly disposable.

## **7. Overall Recycling Potential**

Based on the current tonnages achieved and the composition analysis of what is available the following short summary outlines how 70% can be achieved;

Domestic if an uplift on performance from 64% to 70% is achieved a further 6600 tonnes could be recovered. Almost 1000 tonnes could yield from hygiene waste recycling and as identified areas like textiles could yield positive results. The rest of the changes will come from education and influencing habits of residents to recycle correctly and as much as possible.

Commercial has the challenge of increasing recycling whilst improving income. Based on the compositional analysis there is a large proportion of recycling available in the commercial waste streams. If the current level of recycling is increase to 50% a further 5800, tonnes could be recycled.

The next large area of recycling potential is the household waste recycling centres, in achieving the desired target of 80% almost 7700 tonnes could be added to the recycling performance.

Areas like bulky waste, cleansing and fly tipping contribute a smaller proportion of the whole waste stream, but even small changes could yield an additional half a percent in performance.

With all step changes in recycling there needs to be consideration of the waste flow changes that will occur if waste is removed from the disposal stream. The energy recovery process used by the Council also contributes to recycling, so less waste through the facility does affect the tonnage balance.

Whilst it is difficult to profile the cities growth and peoples habits on recycling, the review has determined that there is sufficient recyclate still available in the residual streams to achieve 70% or above recycling within the city.