

Commercial and Industrial Waste in Wales



Composition analysis of Commercial and Industrial waste in Wales

WRAP's vision is a world in which resources are used sustainably.

Our mission is to accelerate the move to a sustainable resource-efficient economy through re-inventing how we design, produce and sell products; re-thinking how we use and consume products; and re-defining what is possible through re-use and recycling.

Find out more at www.wrapcymru.org.uk

Document reference (please use this reference when citing WRAP's work):
[WRAP, 2020, Cardiff, Commercial and Industrial Waste in Wales, Prepared by Resource Futures]

Written by: Coralline Dundon



Front cover photography: Waste Composition Analysis Fieldwork

While we have taken reasonable steps to ensure this report is accurate, WRAP does not accept liability for any loss, damage, cost or expense incurred or arising from reliance on this report. Readers are responsible for assessing the accuracy and conclusions of the content of this report. Quotations and case studies have been drawn from the public domain, with permissions sought where practicable. This report does not represent endorsement of the examples used and has not been endorsed by the organisations and individuals featured within it. This material is subject to copyright. You can copy it free of charge and may use excerpts from it provided they are not used in a misleading context and you must identify the source of the material and acknowledge WRAP's copyright. You must not use this report or material from it to endorse or suggest WRAP has endorsed a commercial product or service. For more details please see WRAP's terms and conditions on our website at www.wrap.org.uk

Executive summary

This study was conducted to provide Welsh Government (WG) and WRAP Cymru up-to-date data on the composition of commercial and industrial (C&I) waste in Wales.

The objectives of the work were to estimate the total C&I waste arisings, analyse the findings by source and material type, and to estimate the proportion of materials which could have been avoided through recycling or composting. The findings will be used to inform policy and the design of relevant interventions.

The methodology applied broadly followed that used in the 2007 study 'Determination of the Biodegradability of Mixed Industrial and Commercial Waste Landfilled in Wales' (Environment Agency Wales, 2007).

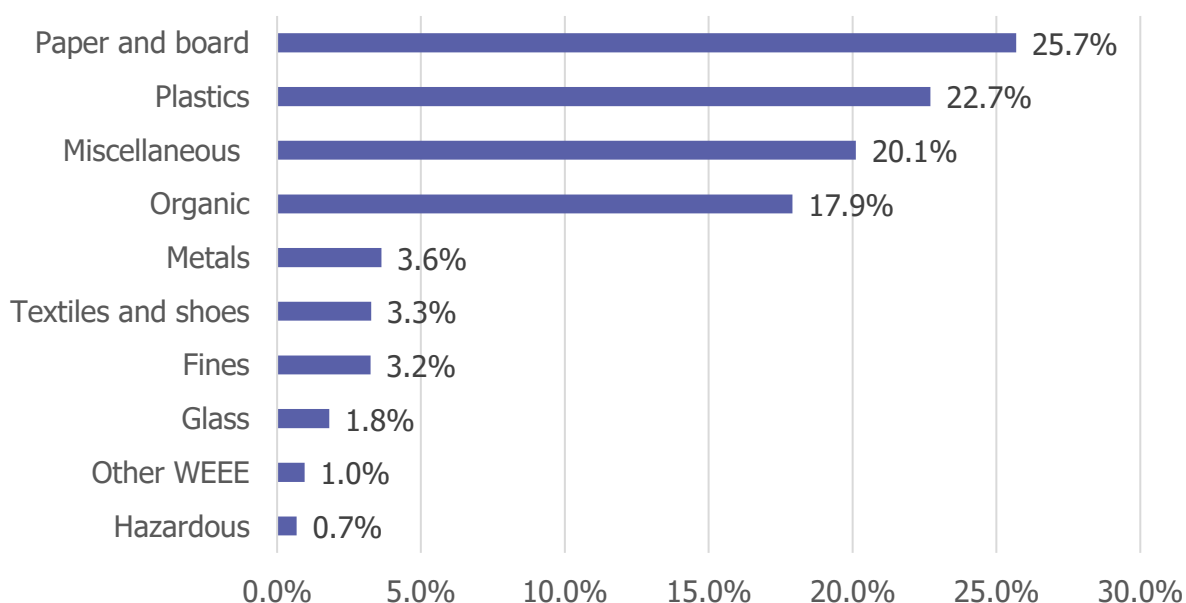
Sampling of commercial and industrial waste was undertaken at four main sites: Pwllfawatkin landfill, Swansea Baling Plant, Cardiff Energy Recovery Facility and Bessemer Close transfer station. Waste sampled at these locations was either received directly from collectors or transferred from other sites. It was not possible to identify a site in the North of the Country with adequate facilities to accommodate fieldwork.

The survey analysed a total of 108 samples: 13 of waste landfilled directly, 60 destined for energy recovery and 35 from transfer stations. Of the samples analysed, 64 could be identified as commercial waste and 6 could be identified as industrial, the remaining 38 were mixed C&I waste. Samples were classified as EWC code 191212 (21) and 200301 (87). In total, 26 tonnes of material was sampled and analysed.

Total quantities of commercial and industrial waste were estimated by subtracting the total input of local authority collected household waste (taken from WasteDataFlow) from the quantity of MSW received at each facility (obtained from Natural Resource Wales Facility Returns). These data were then combined with the composition data to estimate the quantities of different materials.

Results of the composition analysis are summarised in .

Figure 1: Overall composition of C&I waste in Wales (main category level). N=108



Paper and board was the most commonly found material, accounting for 25.7% of the C&I waste analysed. A further 22.7% of the material analysed was plastics, while 20.1% was miscellaneous and 17.9% was organic material.

The main changes since 2007 have been an increase in the proportion of plastics and organic matter (by 7.9% and 2.9% respectively)¹ alongside a decrease in the proportion of paper and board and miscellaneous waste (by 6.6% and 3.1% respectively).

The analysis included an assessment of the proportion of the material that was potentially recyclable or compostable. The materials deemed potentially recyclable were aligned with the 2007 report for comparability and are shown in Appendix 4. The majority of the residual waste analysed (74.5% +/- 2.4%, or an estimated 450,478 tonnes annually) could have potentially been avoided. This represents a small decrease from 2007 (with 77% recyclable or compostable found in residual C&I waste).

Of the 452,258 tonnes of materials which could be diverted from the residual waste stream, edible food waste was the most prevalent, with an estimated arising of 68,679 tonnes per annum. As a further 22,062 tonnes of materials were inedible food waste, food waste represented the highest proportion of materials (and 15% of the total waste arisings) which could potentially be diverted from residual waste streams. Packaging film accounted for 54,663 tonnes, cardboard for 40,073 tonnes, and construction and demolition (C & D) waste arisings were estimated at 25,014 tonnes of the total materials which could have been diverted from residual waste streams.

The biodegradability of the average waste was assessed using calculations described in Environment Agency's guidance on the Landfill Allowance Trading Scheme (LATS)², as shown in Appendix 5. The calculated average biodegradability of the waste analysed was 57% (+/- 2%), slightly lower than the 61% (+/- 3%) biodegradability calculated in the 2007 analysis.

¹ Changes in composition are expressed as changes in the percentage of the total composition (sometimes referred to as "percentage points"), rather than growth relative to a baseline value, unless stated otherwise. For example, an increase from 5% to 10% would be described as an increase of 5% (rather than 100%).

² Environment Agency (2006) Guidance on the landfill allowance schemes: municipal waste

Contents

1.0	Objectives and scope	7
2.0	Methodology	7
2.1	Sample strategy development and site selection	7
2.1.1	Identifying sites receiving C&I waste	7
2.1.2	Selection of facilities for sampling.....	9
2.2	Data management	9
2.2.1	Sampling and analysis of the material	9
2.2.2	Data Checking	10
2.2.3	Data analysis.....	10
3.0	Results	11
3.1	Samples included	11
3.2	Overall C&I Waste Composition	11
3.3	Biodegradable content.....	12
3.4	Potentially recyclable content	13
3.5	Analysis by sector	15
3.5.1	Commercial waste.....	16
3.5.2	Industrial waste	16
3.5.3	Biodegradability and recyclability	17
3.6	Analysis by EWC Code	18
3.6.1	20.03.01 C&I waste	18
3.6.2	19.12.12 C&I waste	18
3.6.3	Biodegradability and recyclability	19
3.7	Analysis by waste sampling point.....	20
3.7.1	Energy from waste.....	20
3.7.2	Landfill.....	20
3.7.3	Transfer station	21
3.7.4	Comparison	22
3.8	Headline changes since 2007	22
4.0	Conclusions	24
	Appendix 1 – Estimated inputs of mixed C&I waste	26
	Appendix 2 – Material Categorisation	28
	Appendix 3 – Composition of C&I Waste in Wales	31
	Appendix 4 – Recyclability	34
	Appendix 5 – Biodegradability	36

Figures

Figure 1: Overall composition of C&I waste in Wales (main category level).....3

Figure 2: Estimated inputs of mixed C&I waste**Error! Bookmark not defined.**

Figure 3: Overall composition of C&I waste in Wales (main category level)..... 12

Figure 4: Overall composition of C&I waste in Wales (subcategory level) 15

Figure 5: Composition of commercial waste in Wales..... 16

Figure 6: Composition of industrial waste in Wales 17

Figure 7: Composition of 191212 C&I Waste..... 19

Figure 8: Composition of 200301 C&I Waste..... 18

Figure 9: Composition of C&I waste to landfill..... 20

Figure 10: Composition of C&I waste to Energy from waste 20

Figure 11: Composition of transfer station C&I waste 21

Figure 12: Estimated annual tonnage of recyclable materials within C&I waste 14

Figure 13: Composition of C&I waste in Wales in 2007 and 2019..... 24

Tables

Table 1: Samples achieved 11

Table 2: Overall composition of C&I waste in Wales**Error! Bookmark not defined.**

Table 3: Composition of commercial waste in Wales.....**Error! Bookmark not defined.**

Table 4: Composition of industrial waste in Wales**Error! Bookmark not defined.**

Table 5: Composition of 19212 C&I waste**Error! Bookmark not defined.**

Table 6: Composition of 200301 C&I waste**Error! Bookmark not defined.**

Table 7: Composition of C&I waste to landfill.....**Error! Bookmark not defined.**

Table 8: Composition of C&I waste to Energy from waste**Error! Bookmark not defined.**

Table 9: Composition of transfer station C&I waste**Error! Bookmark not defined.**

Table 10: Composition of C&I waste in Wales in 2007 and 2019..... 23

Acknowledgements

Resource Futures would like to thank the City and County of Swansea, Biffa, FCC and Viridor; as well as the staff at Pwllfawtkin Landfill site, the Swansea Baling Plant, the Cardiff Energy Recovery facility and the Biffa Roath Docks site for their assistance with this project.

1.0 Objectives and scope

The Welsh Government and WRAP Cymru required up-to-date data on the composition of residual commercial and industrial (C&I) waste in Wales as the work was last undertaken in 2007.

The scope of the work was restricted to C&I residual waste received at disposal locations in Wales. Where this was identified as being generated from outside Wales, it was excluded from the study as the intention was to identify the amounts of recyclable material present in Welsh residual C&I waste. The project aimed to identify the amounts of recyclable material present in the residual waste stream.

The objectives of the work were to estimate the total C&I waste arisings, analyse the findings by source and material type, and to estimate the proportion of materials which could have been avoided through recycling or composting. The findings will be used to inform policy and the design of relevant interventions.

Additionally, the study aimed to obtain indicative composition for the commercial and industrial streams separately.

2.0 Methodology

The study methodology broadly followed the methodology described in the 2007 study 'Determination of the Biodegradability of Mixed Industrial and Commercial Waste Landfilled in Wales' (Environmental Agency Wales, 2007).

2.1 Sample strategy development and site selection

2.1.1 Identifying sites receiving C&I waste

In developing the sampling strategy for waste analysis, it was necessary to identify those facilities with a significant input of mixed C&I waste.

These sites were identified based on the data submitted by local authorities (LAs) to WDF question 100 combined with the data submitted by residual treatment facilities to Natural Resources Wales as part of the permitting obligations. The data provided an overview of the total quantities of residual C&I waste disposed via the facilities and the quantities of C&I waste disposed in Wales.

The method used to estimate the inputs of mixed C&I waste at individual facilities was the subtraction of local authority collected household waste from known total mixed waste deposits, as shown in the formula below.

$$[\text{mixed C\&I input at facility}] = [\text{total recorded mixed waste input}] - [\text{LA household waste input}].$$

Facility returns, completed by site operators for Natural Resource Wales, gave total inputs of mixed waste into facilities for the year 2017. Landfill sites, Energy from Waste plants and transfer stations were included in the analysis.

The inputs of local authority collected household waste for disposal during 2017 were obtained from the WasteDataFlow database, within which local authorities record all waste sent to disposal facilities on a quarterly basis.

Only waste recorded as EWC codes 19.12.12 and 20.03.01 was included in the analysis in line with the 2007 work. Waste disposed of directly after collection from the producer is coded 20.03.01, while that passing through a transfer station or treatment facility before disposal is coded 19.12.12. The EWC codes are defined as follows:

- 19.12.12 (other wastes (including mixtures of materials from mechanical treatment of wastes other than those mentioned in 19 12 11))
- 20.03.01 (mixed municipal wastes)

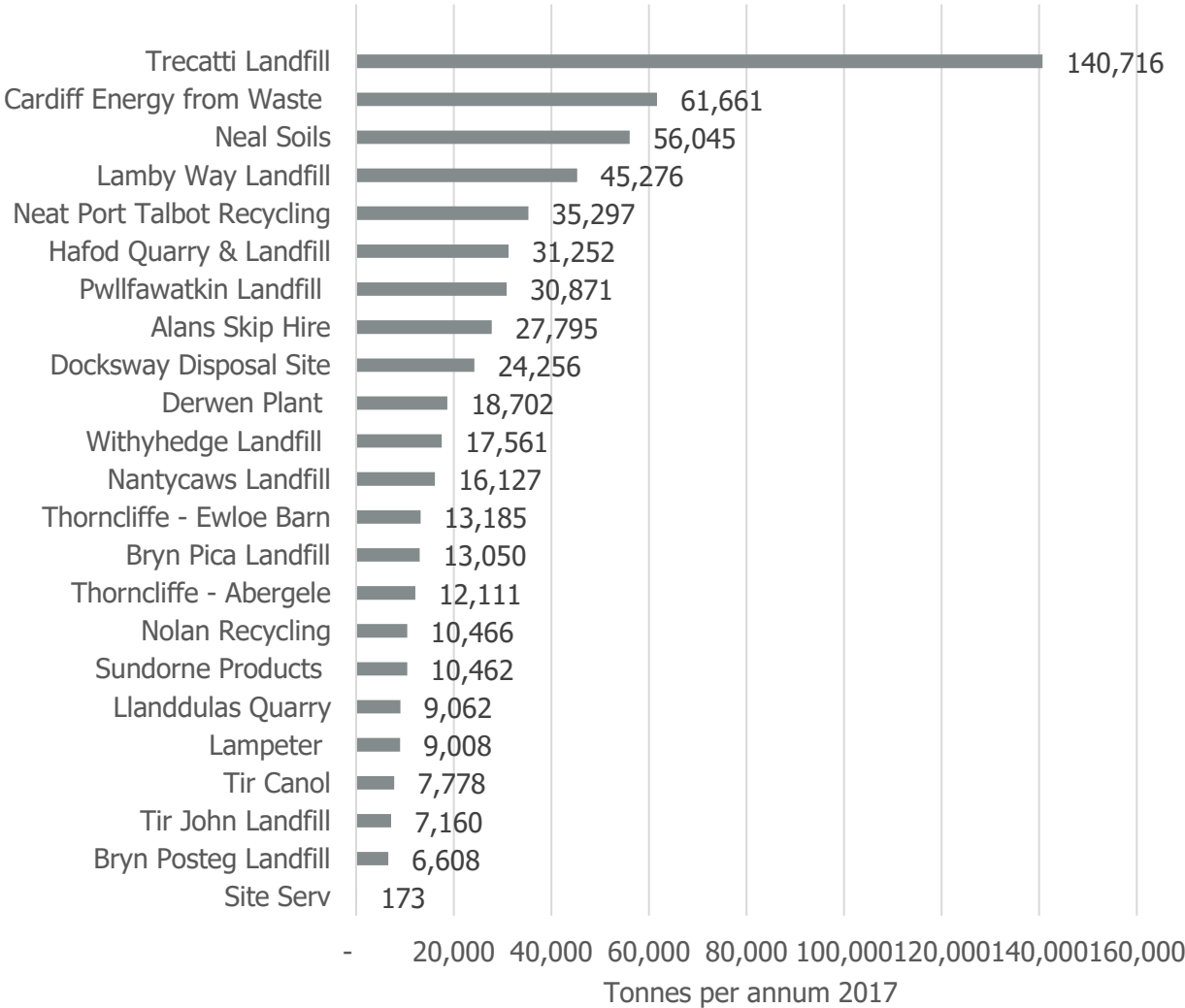
Waste records within the facility returns which could be identified as originating from an English local authority were excluded from the analysis.

Based on the data analysed, the total amount of C&I waste originating in and being disposed of in Wales under waste codes 19.12.12 and 20.03.01 was 604,623 tonnes in 2017.

The 2007 work estimated the total amount of C&I waste disposed of to be 686,000 tonnes.

Estimated inputs of mixed C&I waste per site based on the 2017 data analysed are shown in the figure below and in Appendix 1.

Figure 2: Estimated inputs of mixed C&I waste



2.1.2 Selection of facilities for sampling

Once the inputs of mixed C&I waste had been estimated, sites were contacted to verify the estimates and determine their suitability to accommodate waste composition analysis. Several sites did not have any suitable facilities to safely carry out waste analysis, which led to their exclusion from the project. In choosing sites for initial contact, priority was given to those thought to be accepting a significant tonnage of mixed C&I waste, as identified above.

Following initial contact, it became clear that there were differences between the data analysed and the actual site inputs. For example, the Lamby Way landfill has been closed for 2 years, and the Trecatti landfill is mainly accepting inert waste. This is thought to be mainly due to the fact that the data is over two years old and is reliant on accurate reporting from the operator.

More up-to-date data was sought from Natural Resource Wales and, following further discussion, the following sites were identified as most suitable for inclusion:

- Landfill: Pwllfawatkin
- Energy recovery: Cardiff Energy from Waste
- Transfer stations: Swansea Baling Plant & Biffa Bessemer Close³

The 2007 study targeted the four largest facilities with one in the North of the Country and three in the South. It was not possible to identify a site in the North of the Country, mainly for health and safety reasons. Hafod Landfill and Quarry facility was willing to be included but lacked adequate facilities to accommodate fieldwork.

Ahead of the sampling, each site was contacted to discuss the project and the assistance required from the site (sample extraction, sorting space, H&S).

2.2 Data management

Figure 3 below illustrates the process used for data collection, verification and analysis, and the responsibilities attributed to each role involved in the management of survey data.

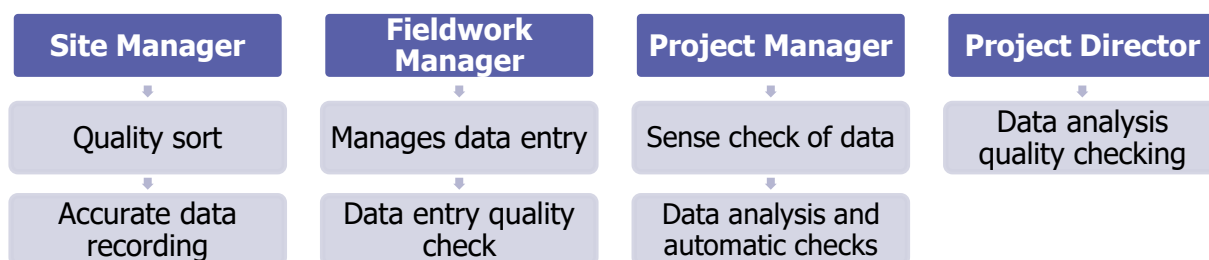


Figure 3: Data Management Process and Responsibilities

2.2.1 Sampling and analysis of the material

As in the 2007 study, the sampling strategy was based on analysis of 250kg samples, with a target of 160 samples. The strategy was based on proportional stratified sampling where the numbers of samples required from each facility type were proportional to the overall inputs received at the relevant facility types across Wales. Materials were sorted according to

³ As the fieldwork could not be accommodated at the Bessemer Close site it was actually undertaken at the Biffa Roath Docks site

materials categories agreed with Welsh Government, Natural Resources Wales and WRAP Cymru prior to the fieldwork. See Appendix 2 for details.

The sampling and analysis at each of the sites was staffed by teams of experienced, independent waste analysis technicians. The survey site manager liaised with each facility's weighbridge staff to select target commercial and industrial loads arriving at the site, based on relevant EWC codes as noted in the associated waste transfer documentation. Data were recorded during the on-site analysis using carefully designed datasheets.

The origin of each load sampled, the waste collector and, where possible, the business sector (commercial or industrial) was recorded at each survey site. As samples tended to include waste from more than one source, a detailed analysis by Standard Industrial Classification (SIC) code was not possible. The relationship between sample composition and its origin was based on anecdotal information collected during the fieldwork. Where possible, loads were recorded as either commercial or industrial, and were recorded as mixed C&I where it was not possible to attribute materials to an individual category. As a result of the limited sources of information provided to classify waste origin, it was difficult to determine with certainty whether the waste was of industrial or commercial origin. Only a small number of samples were attributed purely to industrial sources and therefore data relating to industrial waste composition be regarded as indicative rather than definitive.

The (survey) site manager supervised the extraction of 250kg samples from each load and their delivery of samples to the sorting teams. A variety of loads were selected to ensure the sampling was representative of the facility input. Samples were pre-weighed before being sorted by material category, for quality control purposes. The site manager checked that sort accuracy was within 5% for each sample.

The waste analysis technicians then analysed wastes based on the agreed material categories. All bags and sacks were opened, and the contents sorted. The weight of each category was obtained using calibrated digital scales and the results for each sample were then recorded by the (survey) site manager.

2.2.2 Data Checking

The fieldwork manager was then responsible for the entry of composition and collection data into spreadsheets and quality checked data entered for 100% accuracy. The project manager then sense checked the data for any outliers and the category allocation of unusual items that were flagged up by the site managers on the datasheets. Raw data has been provided in an Appendix 3.

Data analysis was carried out by the project manager and checked for quality by the project director. Data analysis was carried out in MS Excel following good practice guidance endorsed by WRAP⁴.

2.2.3 Data analysis

The combined composition of the C&I waste analysed was calculated by taking the average composition from all samples taken across the four sites included in the study. Analysis by sector, EWC code and sampling point was also carried out.

⁴ WRAP, 2010. *Improving the performance of waste diversion schemes – A good practice guide to monitoring and evaluation (WRAP Project EVA092-000)*. Report prepared by Resource Futures and WRAP, Banbury, WRAP.

The analysis included an assessment of the proportion of the material that was potentially recyclable or compostable. The materials deemed potentially recyclable were aligned with the 2007 report for comparability and are shown in Appendix 4.

The biodegradability of the average waste was assessed using calculations described in Environment Agency's guidance on the Landfill Allowance Trading Scheme (LATS)⁵, as shown in Appendix 5. Materials such as food waste, garden waste, paper and wood are considered 100% biodegradable, while materials such as clothing, mattresses, carpets and nappies are considered 50% biodegradable. The biodegradability factor for each sub-category was applied to the composition to determine the overall biodegradability of the sample.

All confidence intervals were calculated using 95% significance level.

3.0 Results

3.1 Samples included

The samples analysed at each site are shown below in Table 1.

Table 1: Breakdown of samples achieved by site

Site	No. of samples	Sorted (kg)	Average sample (kg)
Pwllfawatkin Landfill Site	13	3,316	255
Swansea Baling Plant	21	4,848	231
Trident Park Energy Recovery Facility	60	14,470	241
Biffa Roath Dock	14	3,391	242
Total	108	26,024	241

In total 108 samples were analysed. An estimated 250kg was sampled from each load, the actual average sample weights are shown in the table above.

The main reason for the reduced number of samples analysed was time lost due to numerous samples of suspected asbestos being found within samples, particularly at Pwllfawatkin Landfill. The suspected asbestos required laboratory testing during which the analysis was suspended until a result was returned and it was deemed safe to resume.

The distribution of the samples by EWC code and facility type is shown in Table 2 below.

Table 2: Sample distribution of EWC codes by facility type

Row Labels	19.12.12.	20.03.01.	Total
Energy from waste	12	48	60
Landfill	9	4	13
Transfer station	0	35	35
Total	21	87	108

3.2 Overall C&I Waste Composition

⁵ Environment Agency (2006) Guidance on the landfill allowance schemes: municipal waste

The estimated overall composition of commercial and industrial waste in Wales is shown in Table 2. These results are based on all 108 samples.

Figure 4: Composition of C&I residual waste (EWC 19.12.12 & 20.03.01) in Wales. N=108

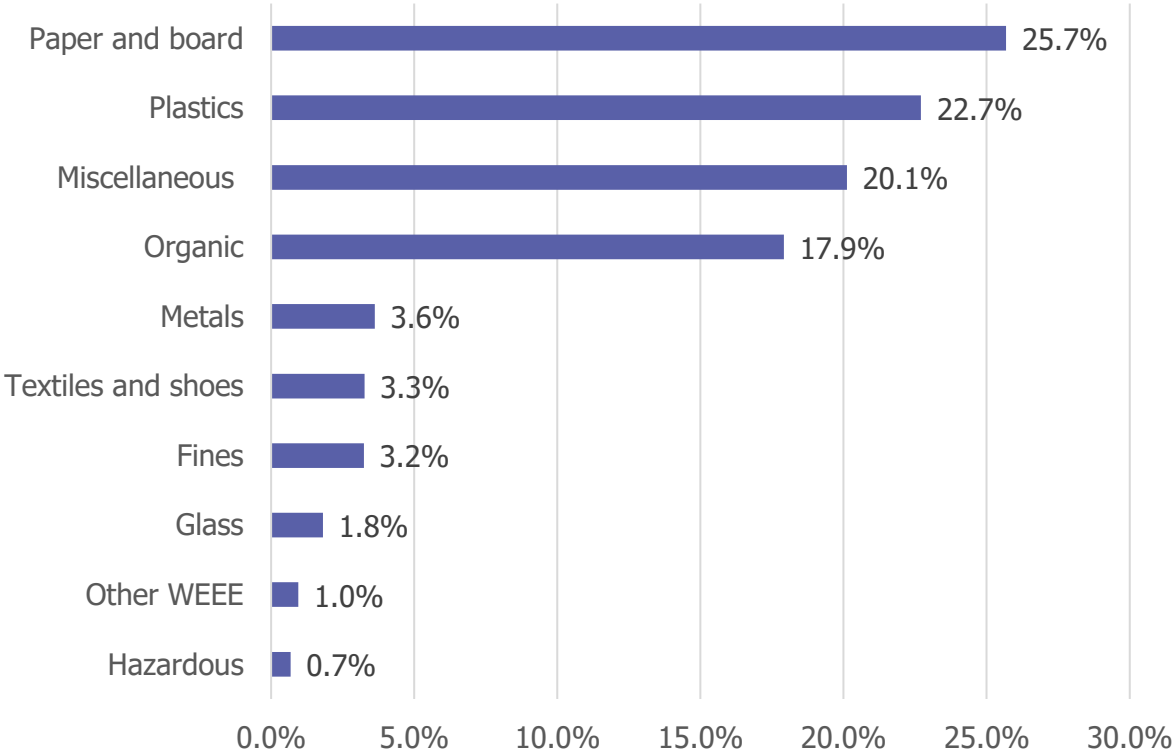


Figure 4 above shows the composition of C&I waste in Wales at the main category level.

Paper and board was the most commonly found material, accounting for 25.7% of the C&I waste analysed. A further 22.7% of the material analysed was plastics, while 20.1% was miscellaneous and 17.9% was organic material.

Biodegradability is discussed in section 3.3, and the potentially recyclability of the material is discussed in section 3.4

The differences between the 2007 and 2019 data are shown in section 3.8.

Table 6 below shows the composition of C&I waste in Wales at sub-category level and is shown in the same format used in 2017 for ease of comparison.

3.3 Biodegradable content

The calculated average biodegradability of the waste sampled was 57% (+/-2%).

This is slightly lower than the 61% (+/- 3%) biodegradability calculated in the 2007 study.

The results suggest that the biodegradability of non-household C&I waste in Wales has reduced slightly since 2007, perhaps due to factors such as improved food waste diversion. However, due to the level of uncertainty associated with the results, it is not possible to state that there is a significant difference between biodegradability in 2007 and 2019.

3.4 Potentially recyclable content

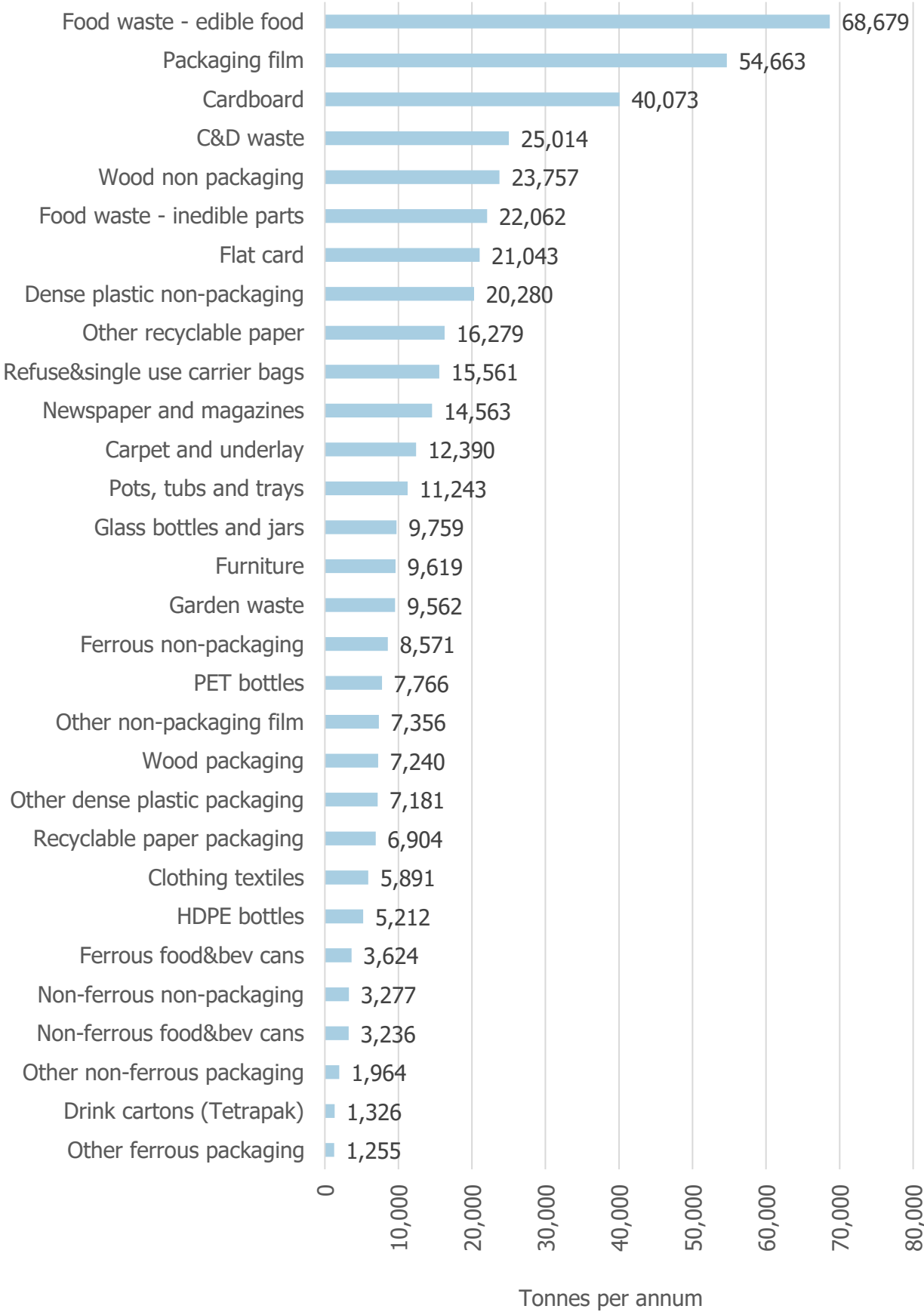
The majority of the waste analysed (74.5% (+/- 2.4%) or 450,478 tonnes annually) could have potentially been recycled.

This is lower than in 2007, when the proportion which could potentially have been recycled was 77% and an estimated 530,000 tonnes of recyclable materials were going to landfill. The estimated arisings of C&I waste in Wales were applied to the overall composition of the samples analysed to estimate the annual tonnage which could be potentially diverted to recycling. The materials deemed potentially recyclable were aligned with the 2007 report for comparability.

The estimated annual tonnage of each material within Welsh C&I waste which could potentially be diverted for recycling is shown in Figure 5 below.

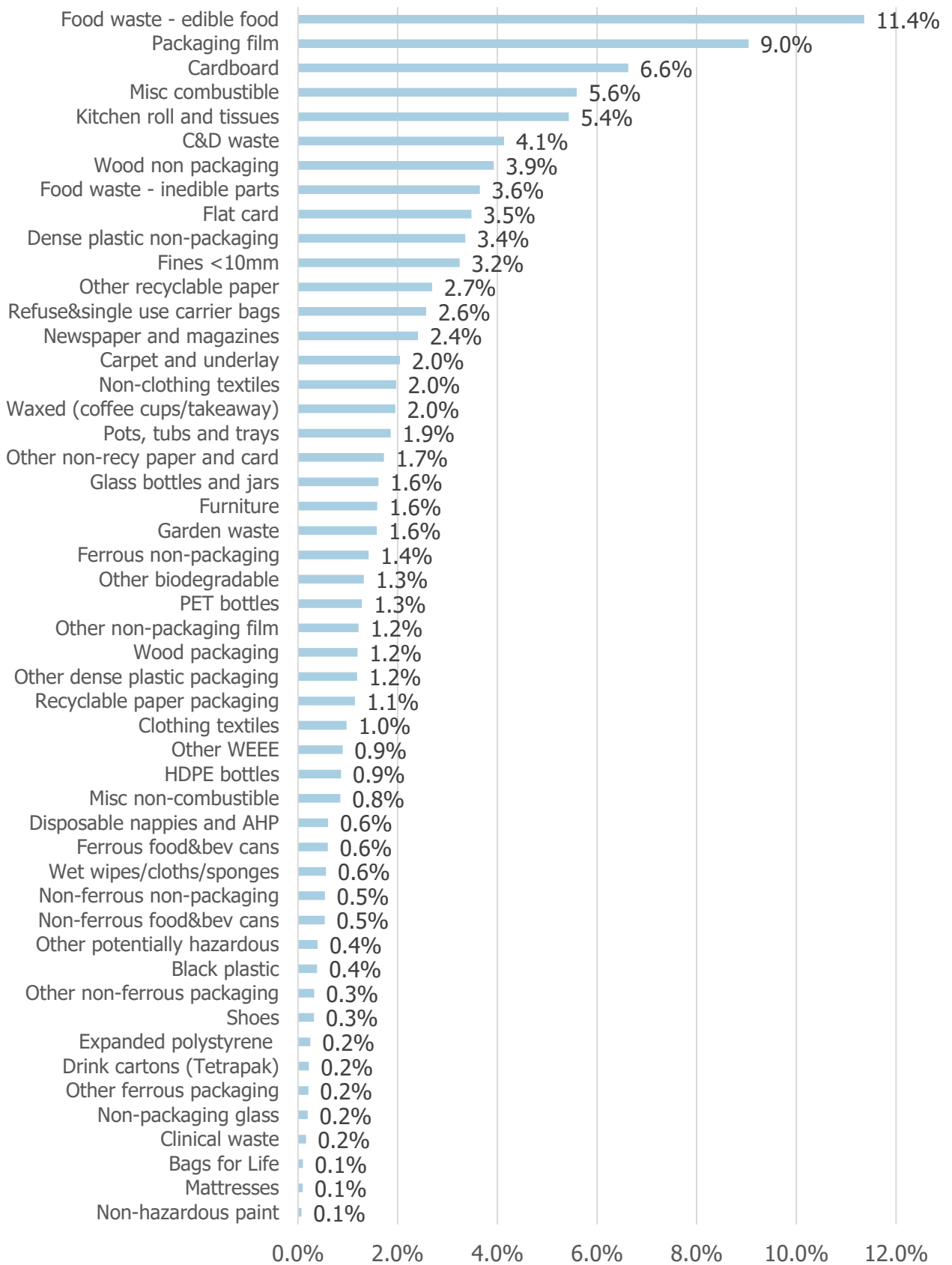
The most common material which could have been diverted from the residual waste stream was edible food waste, with an estimated arising of 68,679 tonnes per annum. As a further 22,062 tonnes was inedible food waste, therefore food was the most significant material in terms of opportunities to reduce residual waste. Packaging film accounted for an estimated 54,663 tonnes, cardboard for 40,073 tonnes and wood waste for another 30,997 tonnes.

Figure 5: Annual tonnage of recyclable materials in residual C&I waste (EWC 19.12.12 and 20.03.01) arising in Wales. N=108



The composition by subcategory material is shown in Figure 6 below.

Figure 6: Composition of C&I residual waste (EWC 19.12.12 & 20.03.01) in Wales (subcategory level). N=108

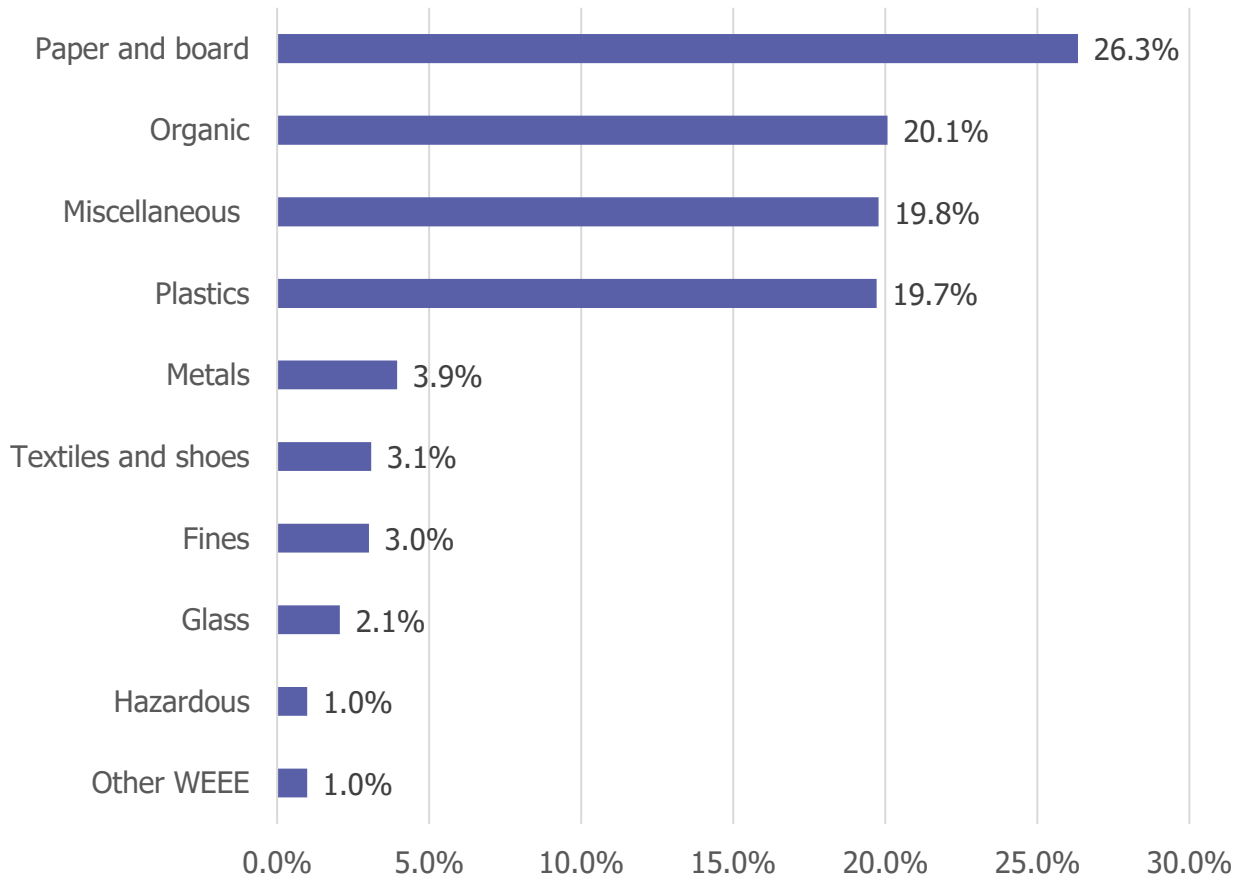


3.5 Analysis by sector

3.5.1 Commercial waste

The composition of the samples analysed which were identified as commercial waste only has been shown below. These results are based on 64 samples.

Figure 7: Composition of commercial residual waste (EWC 19.12.12 & 20.03.01) in Wales. N=64



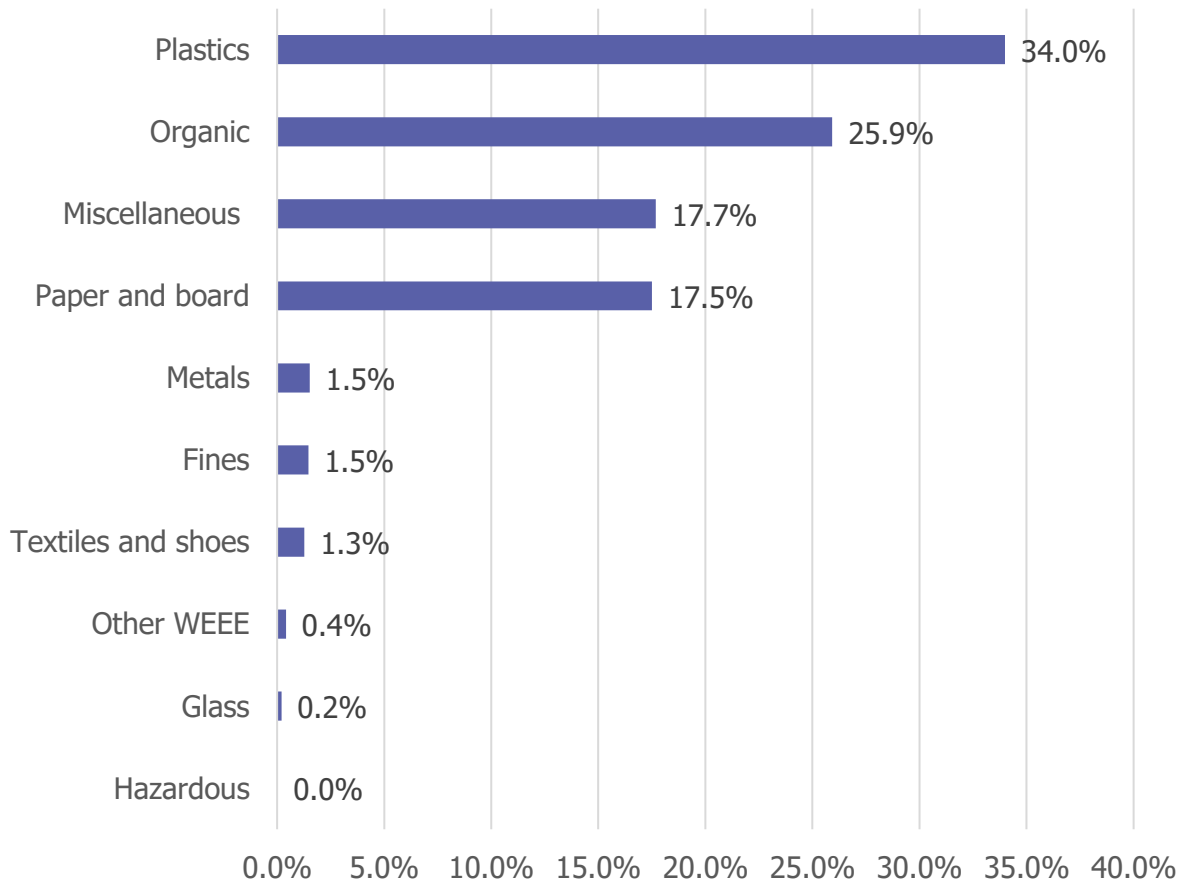
Paper and board was the most commonly found material (26.3%), followed by organic waste (20.1%), miscellaneous waste (19.8%) and plastics (19.7%).

3.5.2 Industrial waste

The composition of the samples analysed which were identified as industrial waste only has been included below.

This information should be treated with caution, as it has been based on a limited number (6) of samples, half of which were assumed to have originated from food production facilities. This is likely to have overestimated the proportion of food waste.

Figure 8: Composition of industrial residual waste (EWC 19.12.12 & 20.03.01) in Wales. N=6



Plastic was the most commonly found material (34.0%), followed by organic waste (25.9%), miscellaneous waste (17.7%) and paper and board (17.5%).

3.5.3 Biodegradability and recyclability

The biodegradability and potential recyclability of the waste analysed is shown in Table 3 below.

Table 3: Recyclability and biodegradability of commercial and industrial residual waste (EWC 19.12.12 & 20.02.01) in Wales

		Average	STDEV.S	C.I. 95%
Commercial	Recyclability	74.0%	13.8%	3.4%
	Biodegradability	60.5%	10.7%	2.6%
Industrial	Recyclability	80.5%	10.9%	8.7%
	Biodegradability	48.7%	11.0%	8.8%

The average proportion of the commercial waste analysed which was potentially recyclable or compostable was 74.0% (+/- 3.4%). The biodegradable content of the commercial waste was calculated to be 60.5% (+/-2.6%).

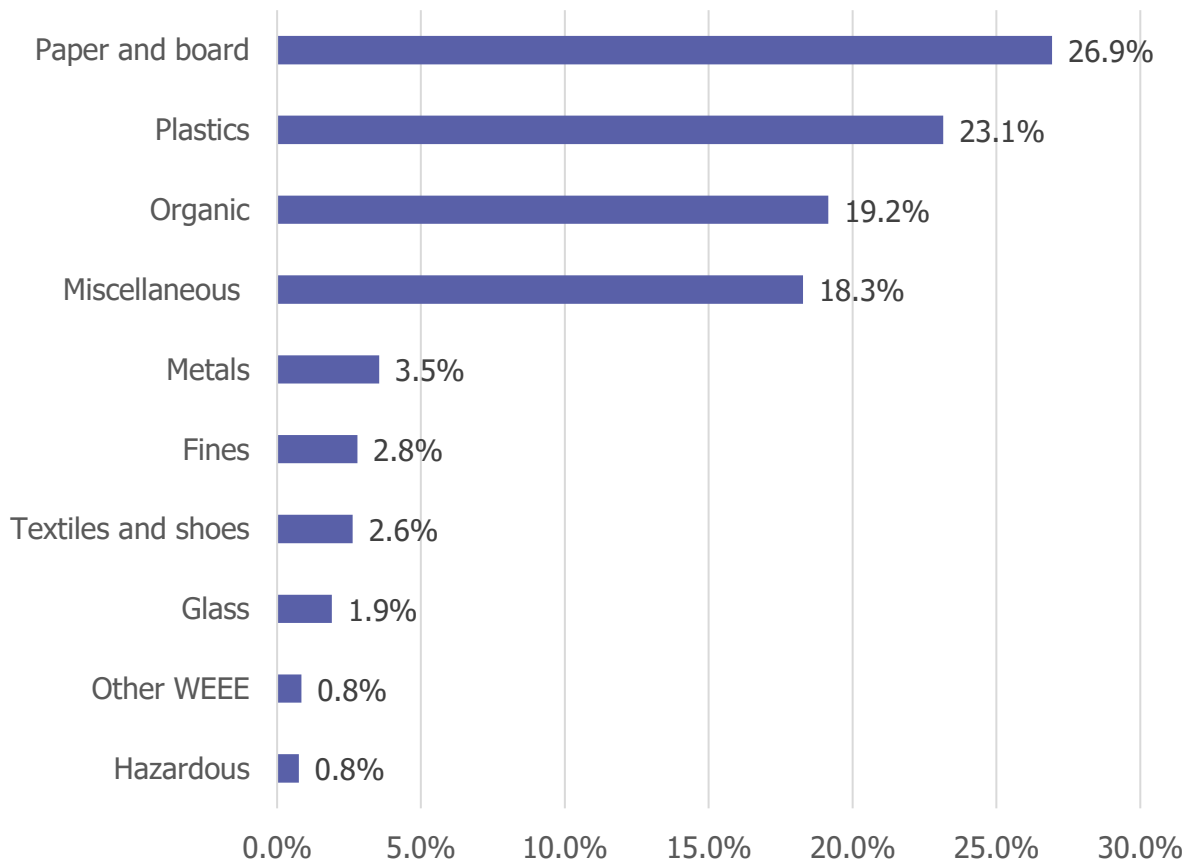
The average proportion of the industrial waste analysed which was potentially recyclable or compostable was 80.5% (+/- 8.7%). The biodegradable content of the industrial waste was calculated to be 48.7% (+/-8.8%).

3.6 Analysis by EWC Code

3.6.1 20.03.01 C&I waste

The composition of the samples (N = 87) classified as EWC code 20.03.01 (mixed municipal waste) from trade sources are shown below.

Figure 9: Composition of 20.03.01 C&I residual waste in Wales. N=87

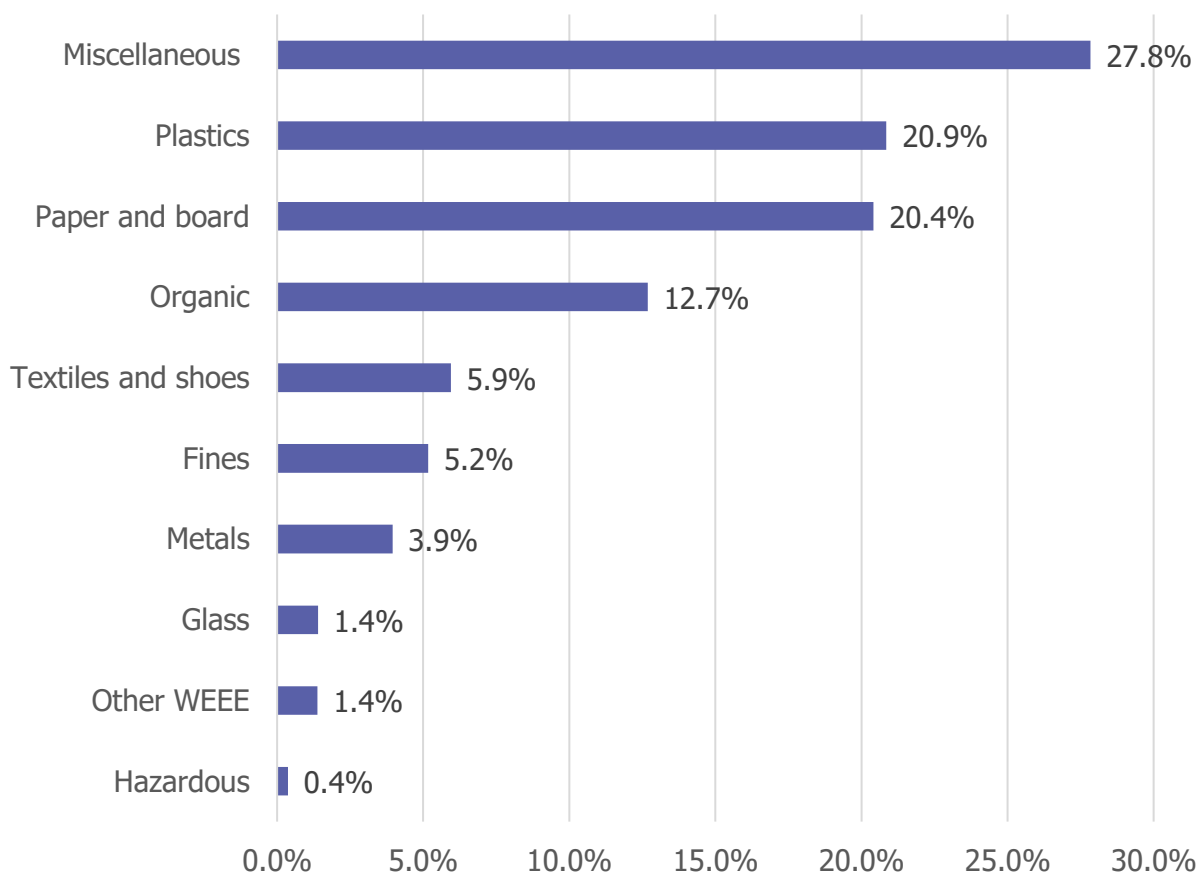


Paper and board was the most commonly found material (26.9%), followed by plastics (23.1%) organic waste (19.2%) and miscellaneous waste (18.3%).

3.6.2 19.12.12 C&I waste

The composition of the samples classified as EWC code 19.12.12 (other wastes (including mixtures of materials from mechanical treatment of wastes other than those mentioned in 19.12.11)) are shown below. These results are based on 21 samples.

Figure 10: Composition of 19.12.12 residual C&I Waste in Wales. N=21



Miscellaneous waste was the most commonly found material (27.8%) followed by plastics (20.9%), paper and board (20.4) and organic waste (12.7%).

3.6.3 Biodegradability and recyclability

The biodegradability and potential recyclability of the waste analysed is shown in Table 4 below.

Table 4: Recyclability and biodegradability of samples by EWC code

		Average	STDEV.S	C.I. 95%
20.03.01.	Recyclability	75.0%	13.2%	2.8%
	Biodegradability	58.6%	11.9%	2.5%
19.12.12.	Recyclability	72.3%	9.0%	3.8%
	Biodegradability	51.9%	10.7%	4.6%

The average proportion of 20.03.01 waste analysed which was potentially recyclable or compostable was 75.0% (+/- 2.8%). The biodegradable content of 20.03.01 waste was calculated to be 58.6% (+/-2.5%).

The average proportion of 19.12.12 waste analysed which was potentially recyclable or compostable was 72.3% (+/- 3.8%). The biodegradable content of 19.12.12 waste was calculated to be 51.9% (+/-4.6%).

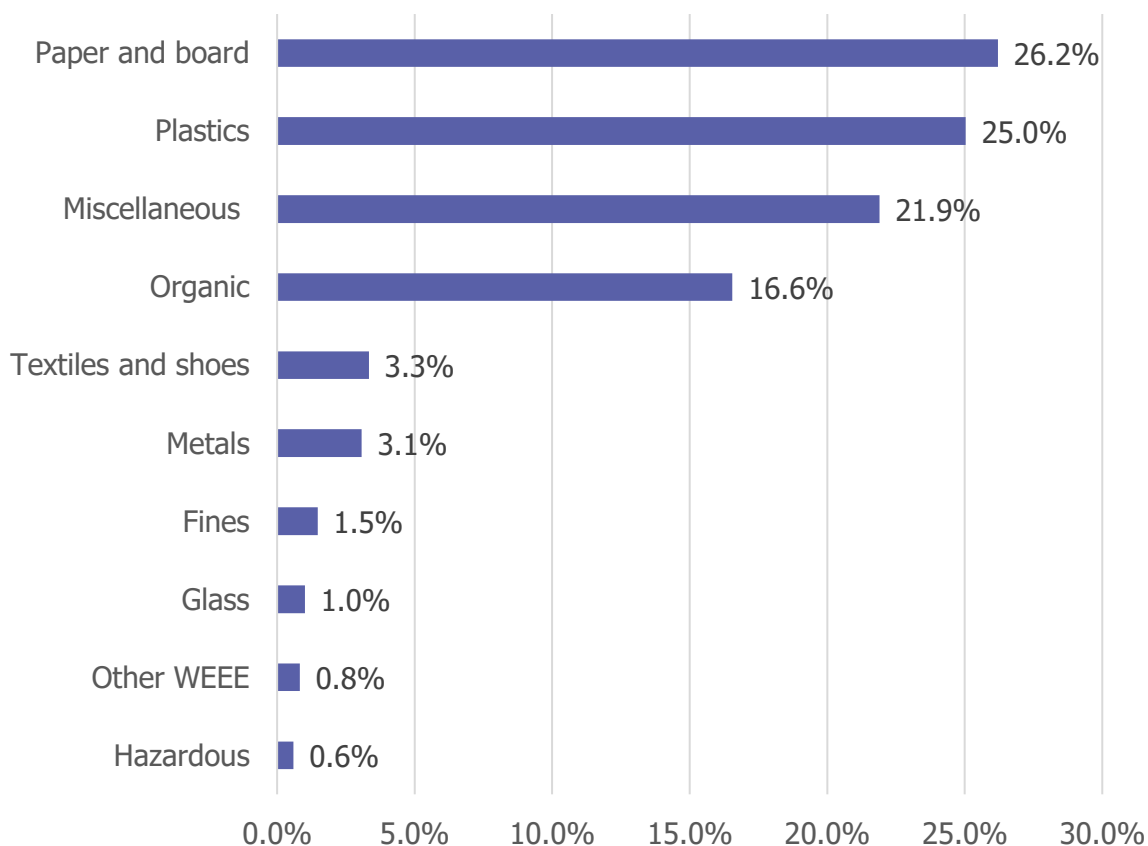
Waste classified as 19.12.12 had a lower biodegradable fraction than waste classified a 200301 (51.9% and 58.6% respectively).

3.7 Analysis by waste sampling point

3.7.1 Energy from waste

The composition of the samples analysed which were destined for energy recovery are shown below. These results are based on 60 samples.

Figure 11: Composition of C&I residual waste (EWC 19.12.12 & 20.02.01) to Energy from waste in Wales. N=60



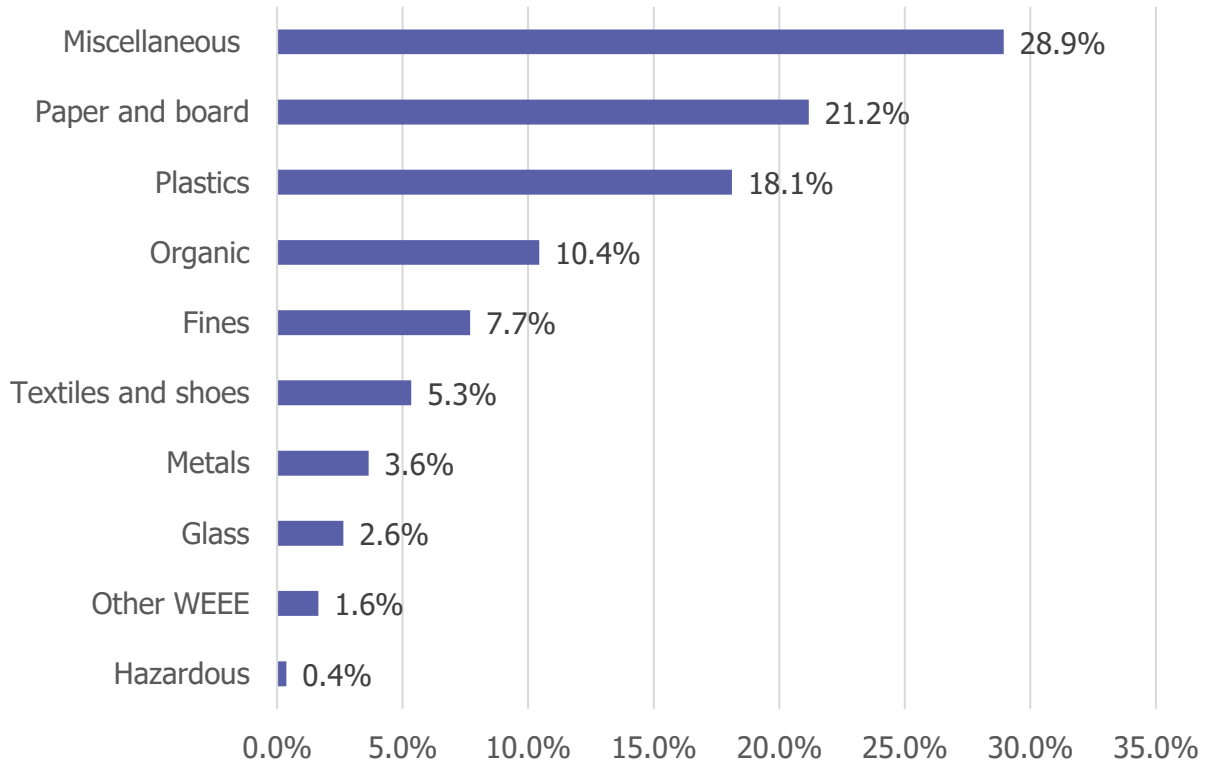
Paper and board was the most commonly found material (26.2%), followed by plastics (25.0%) organic waste (16.6%) and miscellaneous waste (21.9%).

3.7.2 Landfill

The composition of the samples (N = 13) collected at landfill site has been shown below.

Miscellaneous waste was the most commonly found material (28.9%) followed by paper and board (21.2%), plastics (18.1%) and organic waste (10.4%).

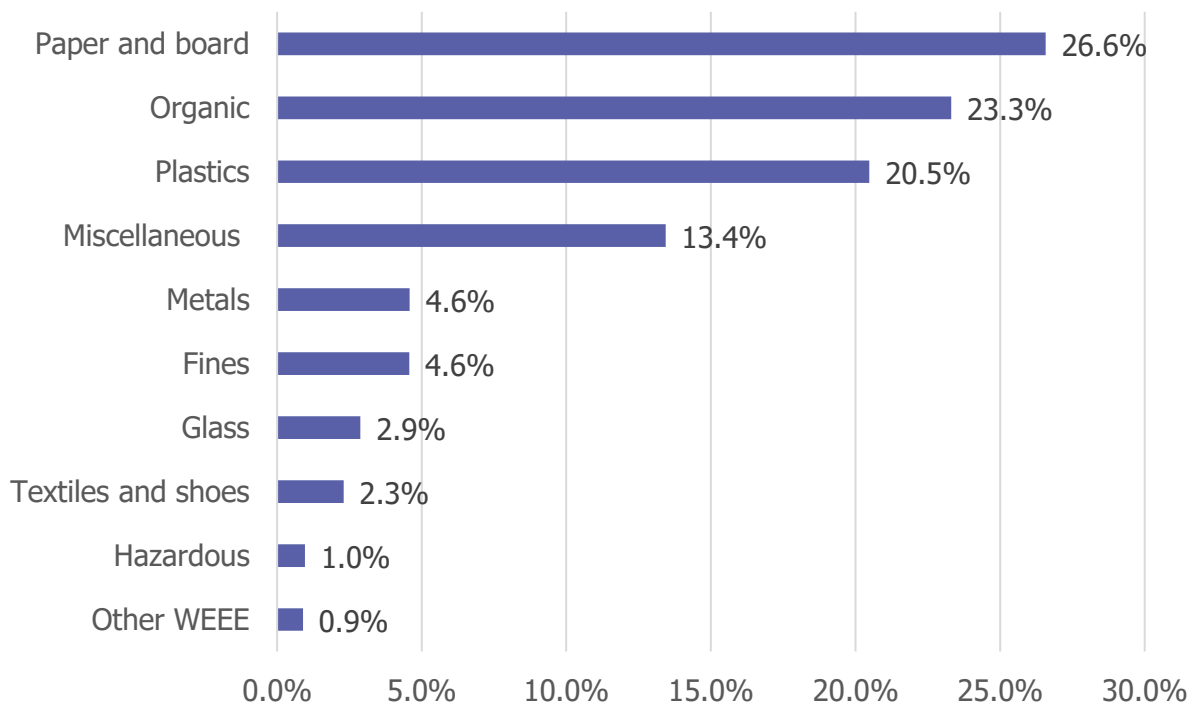
Figure 12: Composition of C&I residual waste (EWC 19.12.12 & 20.02.01) to landfill in Wales. N=13



3.7.3 Transfer station

The composition of the samples analysed (N = 35) which originated from transfer stations have been shown below.

Figure 13: Composition of transfer station C&I residual waste (EWC 19.12.12 & 20.02.01) in Wales. N=35

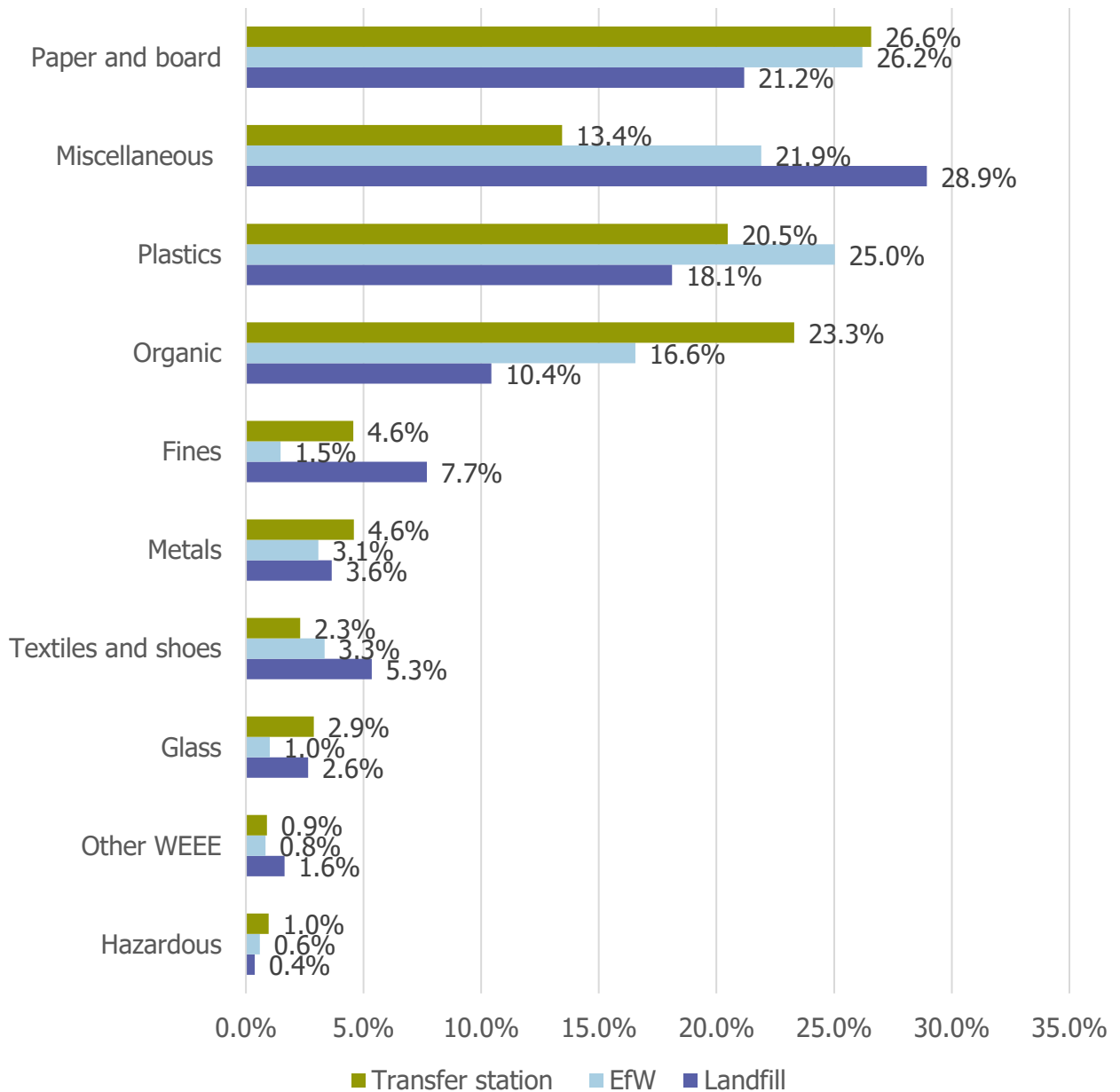


Paper and board was the most commonly found material (26.6%), followed by organic waste (23.3%), plastics (20.5%) and miscellaneous waste (13.4%).

3.7.4 Comparison

The composition of waste from all three facility types is shown in the figure below.

Figure 14: Composition of C&I residual waste (EWC 19.12.12 & 20.02.01) in Wales by sampling point



Less than half the waste sampled at landfill sites was biodegradable (at 49%), in comparison to waste sampled at transfer stations, of which 60% was found to be biodegradable.

3.8 Headline changes since 2007

The composition of the waste analysed in 2007 and 2019 is shown in the table below.

Table 5: Composition of C&I residual waste in Wales (EWC 19.12.12 & 20.02.01) in 2007 and 2019 (%)

Category	Composition 2007 (%)	Composition 2019 (%)
Paper and board	32.3%	25.7%
Plastics	14.8%	22.7%
Miscellaneous	23.2%	20.1%
Organic	15.0%	17.9%
Metals	4.4%	3.6%
Textiles and shoes	1.7%	3.3%
Fines	3.4%	3.2%
Glass	3.5%	1.8%
Other WEEE	1.1%	1.0%
Hazardous	0.6%	0.7%
Total	100.0%	100.0%

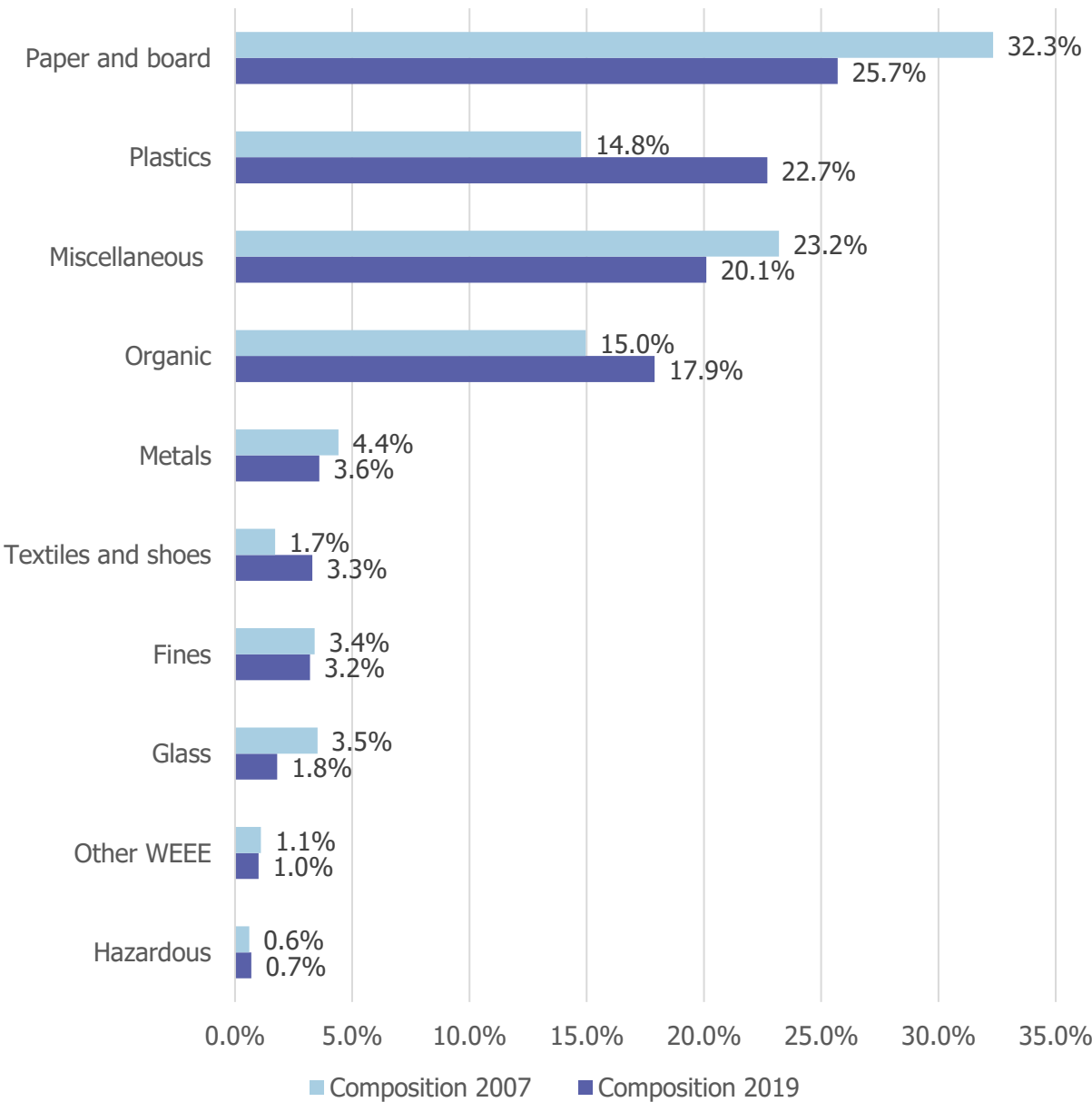
The main changes since 2007 have been an increase in the proportion of plastics and organic matter (7.9% and 2.9% respectively) alongside a decrease in the proportion of paper and board and miscellaneous waste (6.6% and 3.1% respectively).

The estimated tonnage of each main category, in 2007 and 2019, is shown in Table 6 below.

Table 6: Estimated arisings of C& I residual waste (EWC 19.12.12 & 20.02.01) in Wales in 2007 and 2019

Category	Estimated arisings 2007 (t)	Estimated arisings 2019 (t)
Paper and board	221,779	155,388
Plastics	101,247	137,249
Miscellaneous	159,102	121,529
Organic	102,624	108,228
Metals	30,305	21,766
Textiles and shoes	11,709	19,953
Fines	23,324	19,348
Glass	24,106	10,883
Other WEEE	7,576	6,046
Hazardous	4,133	4,232
Total	686,000	604,623

Figure 15: Composition of residual C&I waste (EWC 19.12.12 & 20.02.01) in Wales in 2007 and 2019



4.0 Conclusions

The amount of C&I waste classified as 191212 or 200301 arising in Wales was estimated to be 604,623 tonnes per annum. This is similar to the findings of the 2007 work, which estimated the total amount of C&I waste disposed of to be 686,000 tonnes. It should be noted that the data used is reliant on accurate reporting from the operator.

The analysis included samples which could be identified as commercial waste, samples which could be identified as industrial waste, and samples of mixed commercial and industrial waste. The results for the industrial waste should be treated with caution as they are based on only 6 samples of which 3 were food producers. This is likely to have overestimated the proportion of food waste. The industrial samples contained a higher proportion of plastics and organic waste than the commercial samples analysed, and a lower proportion of glass, metals and textiles.

The majority of the waste analysed (74.5%, or 450,478 tonnes annually) could have potentially been diverted from residual waste. This is lower than in 2007, when the proportion which could potentially have been recycled was 77% and an estimated 530,000 tonnes of recyclable materials were going to landfill. The main changes since 2007 have been an increase in the proportion of plastics and organic matter (7.9% and 2.9% respectively) alongside a decrease in the proportion of paper and board and miscellaneous waste (6.6% and 3.1% respectively).

There is an opportunity to increase the diversion of commercial packaging. Cardboard and card packaging accounted for 61,117 tonnes in 2019. Whilst this is a large improvement on the 101,000 tonnes found in 2007, more of this material should be diverted for recycling. A large reduction in paper was observed – from 63,000 in 2007 to 37,745 in 2019. This may reflect the increased use of electronic records. Plastic use seemed to have increased. Packaging film accounted for an estimated 54,663 tonnes, an increase on the 35,000 tonnes found in 2007. Plastic bottles accounted for 12,978 tonnes in 2019, and 11,000 tonnes in 2007.

Other changes included a reduction in wood (39,000 in 2007 and 30,997 in 2019) and C & D waste (25,014 tonnes, less than the 34,000 tonnes found in 2007). These materials could all be diverted for recycling.

The most common material which could have been diverted from residual waste was food waste, which accounted for 90,741 tonnes overall. Edible food waste had an estimated arising of 68,679 tonnes per annum, while 22,062 tonnes of C&I waste arisings were inedible food waste. Food waste represented the largest proportion (at 20%) of the fraction found with potential to be diverted from residual waste and 15% of the total C&I waste arisings. As the estimated amount of kitchen waste in 2007 was 90,000 tonnes, it appears that the arising of food waste has changed very little in the last 12 years. Further work assessing the opportunity for increasing the diversion of food waste to AD should be undertaken.

The food waste content of the waste contributes significantly to both recyclability and biodegradability. The calculated average biodegradability of the waste analysed was 57% (+/- 2%), slightly lower than the 61% (+/- 3%) biodegradability calculated in the 2007 analysis but not significantly. Reducing the proportion of food waste is key in reducing the biodegradable content of the waste.

The waste composition also varied at different types of facilities. The waste samples destined for landfill had the lowest biodegradable content⁶, 49%, while the highest biodegradable content was found in transfer station samples (60%). Similarly, landfill waste contained the lowest proportion of organic waste⁷ (10.4%), followed by EfW (16.6%) and transfer stations (23.3%). These differences may be partly attributable to moisture loss and breakdown of biodegradable content as the waste sampled on arrival to landfill appeared to be the oldest and subject to more mechanical handling.

⁶ Includes organic waste (as defined below) and other partly or fully biodegradable materials, see Appendix 5.

⁷ Main waste composition analysis category including food waste, garden waste and other organic matter such as pet excrement.

Appendix 1 – Estimated inputs of mixed C&I waste

Facility returns, completed by site operators for Natural Resource Wales, gave total inputs of mixed waste into facilities for the year 2017. Once the inputs of mixed C&I waste had been estimated (by subtracting WasteDataFlow tonnages), sites were contacted to verify the estimates. It became clear that there were differences between the data analysed and the actual site inputs. This is thought to be mainly because the data is over two years old and is reliant on accurate reporting from the operator. The data below should therefore be treated with caution - please see section 2.1 for full information about this data before use.

Name	Site	Total recorded mixed waste input	LA input	C&I input estimate
Trecatti Landfill	Biffa Waste Services Ltd, Trecatti Landfill Site, Fochriw Road, Merthyr Tydfil, Mid Glamorgan	140,811	95	140,716
Cardiff Energy from Waste	Viridor Waste Management Ltd Cardiff Energy Recovery Facility, Trident Park, Glass Avenue, Ocean Way, Cardiff	315,214	253,553	61,661
Neal Soils	Neal Soil Suppliers Ltd Ty To Maen Farm, Newton Rd, Rumney, Cardiff, Glamorgan	71,617	15,572	56,045
Lamby Way Landfill	Cardiff Council Lamby Way Landfill Site, Lamby Way, Rumney Moors, Cardiff, Cardiff	45,322	46	45,276
Neath Port Talbot Recycling	Neath Port Talbot Recycling Ltd Materials Recovery & Energy, Crymlyn Burrows, Swansea, West Glamorgan	85,569	50,272	35,297
Hafod Quarry & Landfill	Cory Environmental (Central) Ltd Hafod Quarry And Landfill Site, Bangor Road, Wrexham Borough	52,458	21,206	31,252
Pwllfawatkin Landfill	WRG Waste Services Ltd Pwllfawatkin Landfill Site, Rhydyfro, Pontardawe, West Glamorgan	39,098	8,227	30,871
Alans Skip Hire	Alans Skip Hire North West Ltd Redwither Road, Wrexham Industrial Estate, Wrexham, Wrexham	27,929	134	27,795
Docksway Disposal Site	Newport City Council Docksway Disposal Site - Phase 2, Docks Way, Maesglas, Newport, South Wales	32,306	8,050	24,256
Derwen Plant	Derwen Plant Limited Neath Abbey Wharf, Neath, Neath Port Talbot	26,040	7,338	18,702

Name	Site	Total recorded mixed waste input	LA input	C&I input estimate
Withyhedge Landfill	SITA UK Limited Withyhedge Landfill, Bowlings House, Rudbaxton, Haverfordwest, Pembrokeshire	36,526	18,965	17,561
Nantycaws Landfill	C W M Environmental Ltd Nantycaws Landfill Site, Llanddarog Road, Nantycaws, Carmarthen, Carmarthenshire	47,726	31,599	16,127
Thornccliffe - Ewloe Barn	Thornccliffe Building Supplies Ltd Ewloe Barn Industrial Estate, Mold Road, Alltami, Mold, Flintshire	48,778	35,593	13,185
Bryn Pica Landfill	Cynon Valley Waste Disposal Company Ltd, Bryn Pica Landfill Site, Llwydcoed, Aberdare, Rhondda-Cynon-Taff	15,228	2,178	13,050
Thornccliffe - Abergele	Thornccliffe Building Supplies Ltd, Gofer, Rhuddlan Road, Abergele, Conwy	30,460	18,348	12,111
Nolan Recycling	Nolan Recycling Ltd, The Old Quarry, Stormy Down, Pyle, Bridgend, Glamorgan	11,368	901	10,466
Sundorne Products	Sundorne Products Limited, Unit 41, Port of Pembroke, Pembroke Dock, Pembs, SA72 6TD,	21,050	10,588	10,462
Llanddulas Quarry	3C Waste Limited, Llanddulas Quarry, Abergele Road, Llanddulas, Abergele	26,635	17,573	9,062
Lampeter	L A S Waste Ltd L A S Waste, Tregaron Road, Lampeter, Ceredigion	13,657	4,649	9,008
Tir Canol	JLA Disposal Limited, Tir Canol, Palleg Road, Lower Cwmtwrch, Swansea	8,229	451	7,778
Tir John Landfill	Swansea City Waste Disposal Co Ltd, Tir John Landfill, Ferryboat Close, Swansea Enterprise Zone, West Glamorgan	40,053	32,893	7,160
Bryn Posteg Landfill	Sundorne Products (Llanidloes) Ltd, Bryn Posteg Landfill Site, Tylwch Road, Llanidloes, Powys	30,184	23,576	6,608
Site Serv	Site Serv Ltd, Unit 2 Llandow Trading Estate, Llandow, Cowbridge, Vale Of Glamorgan	2,108	1,935	173

Appendix 2 – Material Categorisation

Category	Sub-category	Description
Paper and board	Newspaper and magazines	Newspapers, magazines, leaflets etc
Paper and board	Recyclable paper packaging	Clean paper bags and packaging paper, envelopes, including low grade and brown paper
Paper and board	Other recyclable paper	All white office paper including envelopes
Paper and board	Cardboard	Corrugated cardboard boxes and sheets
Paper and board	Flat card	Thin card boxes, cereal boxes, tea boxes
Paper and board	Waxed paper (coffee cups, takeaway lids)	Coffee cups, drinks cups, paper plates, sandwich boxes, takeaway containers, baking paper, deli bags, soup sachets
Paper and board	Drink cartons (Tetra Pak)	Soup, milk and juice cartons
Paper and board	Kitchen roll and tissues	Paper towels, tissues, kitchen roll
Paper and board	Other non-recyclable paper and card	Photos, wallpaper etc
Plastics	PET bottles	PET bottles
Plastics	HDPE bottles	HDPE bottles
Plastics	PP bottles	PP bottles
Plastics	Other bottles	Any other bottles
Plastics	Pots, tubs and trays	All PTTS
Plastics	Wet wipes and cleaning cloths / sponges	All wet wipes, cleaning cloths and sponges
Plastics	Expanded polystyrene	Electronic item packaging, kebab boxes, disposable cups, peanuts etc
Plastics	Black plastic	Any black plastic items
Plastics	Other dense plastic packaging	Blister packs, black plastic
Plastics	Dense plastic non-packaging	Toys, pipes, hangers, PVC, plastic furniture
Plastics	Packaging film	Bubble wrap, bread bags, cling film
Plastics	Refuse sacks and single use carrier bags	All black bags and carrier bags (bag only)
Plastics	Reusable plastic bags (Bags for Life)	All bags for life
Plastics	Other non-packaging film	Plastic wallets, agricultural film

Category	Sub-category	Description
Metals	Ferrous food and beverage cans	All tins and cans excluding aerosols
Metals	Non-ferrous food and beverage cans	All tins and cans excluding aerosols and foil
Metals	Other ferrous packaging	Ferrous aerosols
Metals	Other non-ferrous packaging	Non-ferrous aerosols, foil trays and clean foil
Metals	Ferrous non-packaging	All non-packaging scrap ferrous metal
Metals	Non-ferrous non-packaging	All non-packaging scrap non-ferrous metals
Organic	Food waste - edible food	Cooked and prepared meals; whole fruit and veg; fruit and veg flesh; whole coffee products (pods, bags); unused teabags; cakes: bread - slices, whole loaves, rolls, unused oils, marger/butter, confectionary, condiments, meat & fish cooked and raw; sprouting potato
Organic	Food waste - inedible parts	Bones; gristle; cheese wax; nut shells; fruit stones; pineapple, banana, avocado, melon skin; fruit cores; fruit stalks; tops and stalks of veg except: broccoli, cauliflower, mushrooms; garlic/ginger/onion peel; teabags; coffee grounds; egg shells
Organic	Garden waste	All woody and green garden waste including cut flowers etc
Organic	Other biodegradable	Pet excrement, dead animals, hair, unidentifiable organic matter
Glass	Glass bottles and jars	Bottles and jars
Glass	Non-packaging glass	Window pane glass, Pyrex items, lab glass, drinking glasses
Textiles and shoes	Clothing textiles	All textiles Including clothing, rags etc
Textiles and shoes	Non-clothing textiles	All non-clothing textiles including carpets, underlay, stuffed and unstuffed household textiles
Textiles and shoes	Shoes	All shoes
Other WEEE	White goods	Fridges, washing machines, cookers
Other WEEE	TVs and monitors	Flat screen TVs, computer monitors, CRT screens
Other WEEE	Large electronic goods	Computers, printers, servers
Other WEEE	Other WEEE	All other WEEE
Hazardous	Oil	All hazardous oils
Hazardous	Clinical waste	All clinical waste including sharps, excluding offensive waste
Hazardous	Lead acid batteries	All lead acid batteries

Category	Sub-category	Description
Hazardous	Other potentially hazardous	Any other potentially hazardous
Hazardous	Paint	All potentially hazardous paint
Misc.	Non-hazardous paint	Any non-hazardous paint
Misc.	Wood packaging	Pallets, camembert boxes
Misc.	Wood non packaging	Wood lengths, planks, fence panels,
Misc.	C & D waste	Rubble, bricks, concrete, plasterboard
Misc.	Carpet and underlay	All carpet, underlay and rugs
Misc.	Mattresses	All mattresses
Misc.	Furniture	All furniture
Misc.	Disposable nappies and AHP	All disposable nappies, including adult AHP
Misc.	Misc. combustible	Mops, multilayer pouches, netting, pill packets, balloons, balls, stuffed toys, DIY combustibles, Hoover bags, soap, candles etc
Misc.	Misc. non-combustible	Clay cat litter, crockery and ornaments, rocks, ash, traditional lightbulbs
Misc.	Biodegradable industrial sludges	Biodegradable sludges
Misc.	Non-biodegradable industrial sludges	Non-biodegradable sludges
Misc.	Fines <10mm	All materials <10mm

Appendix 3 – Composition of C&I Waste in Wales

Category	Sub-category	Overall C&I (%)	Commercial Waste (%)	Industrial Waste (%)	20.03.01 Waste (%)	19.12.12 Waste (%)
	Number of samples:	N=108	N=64	N=6	N=87	N=21
Paper and board	Newspaper and magazines	2.4%	1.9%	0.5%	2.5%	2.0%
Paper and board	Recyclable paper packaging	1.1%	0.9%	4.5%	1.3%	0.5%
Paper and board	Other recyclable paper	2.7%	2.9%	0.6%	2.7%	2.7%
Paper and board	Cardboard	6.6%	7.1%	4.1%	6.9%	5.4%
Paper and board	Flat card	3.5%	3.6%	3.5%	3.7%	2.6%
Paper and board	Waxed (coffee cups/takeaway)	2.0%	2.1%	2.6%	2.1%	1.5%
Paper and board	Drink cartons (Tetra Pak)	0.2%	0.3%	0.0%	0.2%	0.2%
Paper and board	Kitchen roll and tissues	5.4%	6.6%	0.9%	5.8%	4.0%
Paper and board	Other non-recyclable paper and card	1.7%	1.0%	0.7%	1.8%	1.5%
Plastics	PET bottles	1.3%	1.6%	0.3%	1.4%	0.9%
Plastics	HDPE bottles	0.9%	1.1%	0.5%	1.0%	0.5%
Plastics	PP bottles	0.0%	0.0%	0.0%	0.0%	0.0%
Plastics	Other bottles	0.0%	0.0%	0.0%	0.0%	0.0%
Plastics	Pots, tubs and trays	1.9%	2.1%	1.8%	2.0%	1.2%
Plastics	Wet wipes/cloths/sponges	0.6%	0.6%	1.0%	0.6%	0.6%
Plastics	Expanded polystyrene	0.2%	0.2%	0.4%	0.2%	0.3%
Plastics	Black plastic	0.4%	0.4%	0.9%	0.4%	0.2%
Plastics	Other dense plastic packaging	1.2%	0.7%	0.2%	1.1%	1.6%

Category	Sub-category	Overall C&I (%)	Commercial Waste (%)	Industrial Waste (%)	20.03.01 Waste (%)	19.12.12 Waste (%)
Plastics	Dense plastic non-packaging	3.4%	3.2%	3.1%	3.0%	4.8%
Plastics	Packaging film	9.0%	6.8%	23.1%	9.5%	6.9%
Plastics	Refuse and single use carrier bags	2.6%	2.7%	2.4%	2.6%	2.5%
Plastics	Bags for Life	0.1%	0.1%	0.0%	0.1%	0.2%
Plastics	Other non-packaging film	1.2%	0.3%	0.4%	1.2%	1.2%
Metals	Ferrous food and beverage cans	0.6%	0.7%	0.3%	0.6%	0.5%
Metals	Non-ferrous food and beverage cans	0.5%	0.6%	0.1%	0.6%	0.3%
Metals	Other ferrous packaging	0.2%	0.2%	0.1%	0.2%	0.2%
Metals	Other non-ferrous packaging	0.3%	0.3%	0.5%	0.3%	0.4%
Metals	Ferrous non-packaging	1.4%	1.3%	0.5%	1.2%	2.4%
Metals	Non-ferrous non-packaging	0.5%	0.8%	0.1%	0.6%	0.2%
Organic	Food waste - edible food	11.4%	12.4%	23.2%	12.5%	6.7%
Organic	Food waste - inedible parts	3.6%	4.9%	0.6%	3.9%	2.4%
Organic	Garden waste	1.6%	1.7%	1.8%	1.6%	1.3%
Organic	Other biodegradable	1.3%	1.1%	0.4%	1.1%	2.2%
Glass	Glass bottles and jars	1.6%	1.9%	0.2%	1.7%	1.1%
Glass	Non-packaging glass	0.2%	0.2%	0.0%	0.2%	0.3%
Textiles & shoes	Clothing textiles	1.0%	0.7%	0.3%	0.6%	2.4%
Textiles & shoes	Non-clothing textiles	2.0%	2.1%	0.8%	1.7%	3.0%
Textiles & shoes	Shoes	0.3%	0.3%	0.2%	0.3%	0.5%
Other WEEE	White goods	0.0%	0.0%	0.0%	0.0%	0.0%
Other WEEE	TVs and monitors	0.0%	0.0%	0.0%	0.0%	0.1%

Category	Sub-category	Overall C&I (%)	Commercial Waste (%)	Industrial Waste (%)	20.03.01 Waste (%)	19.12.12 Waste (%)
Other WEEE	Large electronic goods	0.0%	0.0%	0.0%	0.0%	0.1%
Other WEEE	Other WEEE	0.9%	0.9%	0.4%	0.8%	1.2%
Hazardous	Oil	0.0%	0.1%	0.0%	0.1%	0.0%
Hazardous	Clinical waste	0.2%	0.3%	0.0%	0.2%	0.1%
Hazardous	Lead acid batteries	0.0%	0.0%	0.0%	0.0%	0.0%
Hazardous	Other potentially hazardous	0.4%	0.6%	0.0%	0.4%	0.2%
Hazardous	Paint	0.0%	0.0%	0.0%	0.0%	0.1%
Misc.	Non-hazardous paint	0.1%	0.0%	0.0%	0.0%	0.3%
Misc.	Wood packaging	1.2%	1.2%	2.0%	1.4%	0.4%
Misc.	Wood non packaging	3.9%	3.8%	0.6%	3.4%	6.3%
Misc.	C & D waste	4.1%	3.4%	5.6%	3.3%	7.8%
Misc.	Carpet and underlay	2.0%	2.2%	0.4%	1.8%	3.3%
Misc.	Mattresses	0.1%	0.0%	0.0%	0.0%	0.5%
Misc.	Furniture	1.6%	1.8%	0.0%	1.5%	2.1%
Misc.	Disposable nappies and AHP	0.6%	0.6%	0.0%	0.5%	1.1%
Misc.	Misc. combustible	5.6%	5.8%	8.7%	5.7%	5.3%
Misc.	Misc. non-combustible	0.8%	0.9%	0.5%	0.9%	0.8%
Misc.	Biodegradable sludges	0.0%	0.0%	0.0%	0.0%	0.0%
Misc.	Non-biodegradable sludges	0.0%	0.0%	0.0%	0.0%	0.0%
Fines	Fines <10mm	3.2%	3.0%	1.5%	2.8%	5.2%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%

Appendix 4 – Recyclability

Materials counted as recyclable when calculating recyclability of the waste.

Main category	Sub-category	Recyclable or compostable?
Paper and board	Newspaper and magazines	Yes
Paper and board	Recyclable paper packaging	Yes
Paper and board	Other recyclable paper	Yes
Paper and board	Cardboard	Yes
Paper and board	Flat card	Yes
Paper and board	Waxed (coffee cups/takeaway)	No
Paper and board	Drink cartons	Yes
Paper and board	Kitchen roll and tissues	No
Paper and board	Other non-recyclable paper and card	No
Plastics	PET bottles	Yes
Plastics	HDPE bottles	Yes
Plastics	PP bottles	Yes
Plastics	Other bottles	Yes
Plastics	Pots, tubs and trays	Yes
Plastics	Wet wipes/cloths/sponges	No
Plastics	Expanded polystyrene	No
Plastics	Black plastic	No
Plastics	Other dense plastic packaging	Yes
Plastics	Dense plastic non-packaging	Yes
Plastics	Packaging film	Yes
Plastics	Refuse and single use carrier bags	Yes
Plastics	Bags for Life	Yes
Plastics	Other non-packaging film	Yes
Metals	Ferrous food and beverage cans	Yes
Metals	Non-ferrous food and beverage cans	Yes
Metals	Other ferrous packaging	Yes
Metals	Other non-ferrous packaging	Yes
Metals	Ferrous non-packaging	Yes
Metals	Non-ferrous non-packaging	Yes
Organic	Food waste - edible food	Yes
Organic	Food waste - inedible parts	Yes
Organic	Garden waste	Yes
Organic	Other biodegradable	No
Glass	Glass bottles and jars	Yes
Glass	Non-packaging glass	No
Textiles and shoes	Clothing textiles	Yes
Textiles and shoes	Non-clothing textiles	No
Textiles and shoes	Shoes	No

Main category	Sub-category	Recyclable or compostable?
Other WEEE	White goods	Yes
Other WEEE	TVs and monitors	Yes
Other WEEE	Large electronic goods	Yes
Other WEEE	Other WEEE	Yes
Hazardous	Oil	No
Hazardous	Clinical waste	No
Hazardous	Lead acid batteries	No
Hazardous	Other potentially hazardous	No
Hazardous	Paint	No
Misc.	Non-hazardous paint	No
Misc.	Wood packaging	Yes
Misc.	Wood non packaging	Yes
Misc.	C&D type waste	Yes
Misc.	Carpet and underlay	Yes
Misc.	Mattresses	Yes
Misc.	Furniture	Yes
Misc.	Disposable nappies and AHP	No
Misc.	Misc. combustible	No
Misc.	Misc. non-combustible	No
Misc.	Biodegradable sludges	No
Misc.	Non-biodegradable sludges	No
Fines	Fines <10mm	No

Appendix 5 – Biodegradability

This table lists the materials counted as biodegradable when calculating the biodegradability of the waste. This classification is based on Environment Agency (2006) *Guidance on the landfill allowance schemes: municipal waste*

Sub-category	Biodegradability
Newspaper and magazines	100%
Recyclable paper packaging	100%
Other recyclable paper	100%
Cardboard	100%
Flat card	100%
Waxed (coffee cups/takeaway)	100%
Drink cartons	100%
Kitchen roll and tissues	100%
Other non-recyclable paper and card	100%
PET bottles	0%
HDPE bottles	0%
PP bottles	0%
Other bottles	0%
Pots, tubs and trays	0%
Wet wipes/cloths/sponges	0%
Expanded polystyrene	0%
Black plastic	0%
Other dense plastic packaging	0%
Dense plastic non-packaging	0%
Packaging film	0%
Refuse and single use carrier bags	0%
Bags for Life	0%
Other non-packaging film	0%
Ferrous food and beverage cans	0%
Non-ferrous food and beverage cans	0%
Other ferrous packaging	0%
Other non-ferrous packaging	0%
Ferrous non-packaging	0%
Non-ferrous non-packaging	0%
Food waste - edible food	100%
Food waste - inedible parts	100%
Garden waste	100%
Other biodegradable	100%
Glass bottles and jars	0%

Sub-category	Biodegradability
Non-packaging glass	0%
Clothing textiles	50%
Non-clothing textiles	50%
Shoes	50%
White goods	0%
TVs and monitors	0%
Large electronic goods	0%
Other WEEE	0%
Oil	0%
Clinical waste	0%
Lead acid batteries	0%
Other potentially hazardous	0%
Paint	0%
Non-hazardous paint	0%
Wood packaging	100%
Wood non packaging	100%
C&D type waste	0%
Carpet and underlay	50%
Mattresses	50%
Furniture	50%
Disposable nappies and AHP	50%
Misc. combustible	50%
Misc. non-combustible	0%
Biodegradable sludges	100%
Non-biodegradable sludges	0%
Fines <10mm	50%

www.wrapcymru.org.uk

