LITTER WASTE CHARACTERISATION

Final Report

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- Kinvara Tidy Towns Group.

GLOSSARY OF TERMS

The terms used in this report have the following meanings:

- **Biodegradable Municipal Waste (BMW)** comprises those elements of municipal waste streams that will rot or degrade biologically.
- **Connacht-Ulster Region (CUR)** is the waste region covering the local authorities Donegal, Leitrim, Sligo, Mayo, Galway County, Galway City, Roscommon, Cavan, and Monaghan.
- **Deposit Return Scheme (DRS)** is a circular economy initiative that aims to promote the return of certain types of containers by offering a refundable deposit at the time of purchase. Initially only beverage PET bottles, aluminium, and steel cans from 150ml to 3,000ml are included in the scheme.
- **Eastern-Midlands Region (EMR)** is the waste region covering the local authorities Louth, Meath, Westmeath, Longford, Fingal, South-Dublin, Dún Laoghaire, Dublin City, Kildare, Offaly, Laois, and Wicklow.
- **Fines (<20mm)** refers to material that would pass through a 20mm sieve.
- **Household waste** is defined as waste produced within the curtilage of a building/residence or self-contained part of a building/premises used for the purposes of living accommodation. Household waste includes dry recyclables (e.g., glass, plastic, metals, paper, and cardboard); organic waste (food and garden organics); residual (black bin) waste and other wastes generated in the household such as bulky waste, portable batteries, waste electrical and electronic equipment, and household hazardous wastes.
- **Litter** means a substance or object, whether or not intended as waste (other than waste within the meaning of the Waste Management Act, 1996 , which is properly consigned for disposal) that, when deposited in a place other than a litter receptacle or other place lawfully designated for the deposit, is or is likely to become unsightly, deleterious, nauseous or unsanitary, whether by itself or with any other such substance or object, and regardless of its size or volume or the extent of the deposit. Therefore, litter, for the purposes of this characterisation, is waste that is discarded.
- **List of Wastes (LoW)** is a list[1] of all waste types generated in the EU. The different types of waste are fully defined by a six-digit code, with two digits each for chapter, sub-chapter, and waste type.
- **Litter - clean-up events (20 03 99B)** is an organised activity focused on the removal of litter from a designated area, often conducted by volunteers in a community or environmental initiative.
- **Litter - Street Waste (20 03 99A)** is waste litter placed by the public in designated public waste bins.
- **Litter - Street Sweeping Waste (20 03 03)** includes materials from suction vehicles and manual picking. This definition is gathered from discussion with local authority personnel.
- **Street Waste Bin/Receptacle** refers to a receptacle designated or otherwise apparently intended to be used for waste litter that users in the vicinity wish to discard.
- **Mean** is the mathematical average of all the items in a sample.
- **N/A** means not applicable.
- **Non-recyclable material** is material that is not widely recycled. The range of materials that are recycled will change over time as technology improves and market conditions alter.

[11] The catalogue is available for download from the EPA website at:

https://www.epa.ie/publications/monitoring--assessment/waste/national-waste-statistics/2019--FULL-template.pdf

- **NWCPO** means the National Waste Collection Permit Office, the regulatory agency responsible for managing waste collection permits and registrations.
- **Organic waste (OW)** in this report means biodegradable food and liquids (packaged and not packaged), garden and landscaping waste. This is a stream that is sub-divided in the report into:
- **'Organics (Garden)'** which includes biodegradable waste from gardens and parks such as grass and bush cuttings, twigs, soil, flowers, leaves, tree branches, weeds.
- **'Organics (Food)'** which includes:
    - Food waste, such as Unused or partially used packaged food that cannot easily be separated from packaging. e.g., Jar of honey, a tub of soft cheese, packet of ham, cheese in packaging; Vegetables, fruit, cheese, or sausages removed from packaging. Fruit & vegetables, block of cheese, sausages, bread; Inedible food wastes. Fruit & vegetables peelings, tea bags, meat carcasses (termed 'food waste' in this report).
    - Liquids contained in drink or milk containers. e.g., milk, soft drinks, juices.
    - Vegetable oils such as sunflower or olive oil.
- **Packaging** is defined in Directive 94/62/EC initially as: 'packaging' shall mean all products made of any materials of any nature to be used for the containment, protection, handling, delivery, and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer. 'Non-returnable' items used for the same purposes shall also be considered to constitute packaging.
- **Representative** means a sample resulting from a sampling plan that can be expected to reflect adequately the properties of interest in the parent population.
- **Representative sample** means a sample in which the characteristic(s) of interest is (are) present with a reliability appropriate for the purposes of the testing programme.
- **Sample** means portion of material selected from a larger quantity of material.
- **Single Use Plastic (SUP)** products are made wholly or partly from plastic and are typically intended to be used just once or for a brief period before they are discarded. As defined under the Directive (EU) 2019/904.
- **Southern Region (SR)** is the waste region covering the local authorities Clare, Kerry, Limerick, Tipperary, Kilkenny, Carlow, Wexford, Waterford, Cork City, and Cork County.
- **Spatial variability** is a general term for the variability between locations in the material to be sampled.
- **Stratification** consists of dividing the population into subsets (called strata) within each of which an independent sample is selected. The process of stratification may be undertaken on a geographical basis, e.g., by dividing up the sampled area into sub-areas on a map; or by reference to some other quality of the population, e.g., by dividing the population into strata according to urban or rural status. The term stratum is sometimes used to denote any division of the population for which a separate estimate is desired, i.e., in the sense of a domain of study. It is also used sometimes to denote any division of the population for which neither separate estimates nor actual separate sample selection is made.
- **Stratified sampling** in a population which can be divided into mutually exclusive and exhaustive strata (i.e., sub-populations), is sampling that is carried out in such a way that specified proportions of the sample are drawn from the different strata and each stratum is sampled with at least one sampling unit.
- **A stratum (plural strata)** refers to a subset (part) of the population (complete collection of items under consideration) which is being sampled. Stratification thus consists of dividing the population into strata within each of which an independent sample can be chosen. In this project strata were selected that describe the Irish waste management system, including urban/rural divisions and divisions by type of service provided.
- **Temporal variability** is a general term for the variability through time.

- **Vapes** are handheld electronic devices designed for inhaling vaporised substances. Vapes include single use batteries or have rechargeable batteries.
- **Urban strata** include Dublin City (the four LAs), Cork City, Galway City, Limerick City and Waterford City. Rural classification covers all other areas.
- **Waste** is defined as any substance or object which the holder discards or intends or is required to discard, under the Waste Framework Directive (2008/98/EC).
- **Waste Categories:** refers to classification of waste materials for the purposes of both reporting and on-site survey work. There are three types of waste categories used:
    - **Primary Category** is a high-level waste category e.g., plastics, organics, metals etc.
    - **Primary Sub-Category** is a more specific sub-category within a Primary Category, e.g., Polyethylene (PET) packaging bottles, food waste, ferrous metal etc.
    - **Secondary Sub-Category** includes specific wastes including Single Use Plastics (SUP), compostable wastes and 'special interest items' that could be targeted for alternative collections, and/or has a potential reuse alternative.
- **Waste electrical and electronic equipment (WEEE)** refers to electrical and electronic equipment which is waste within the meaning of Article 3(a) of the Waste Directive 2008/98/EC, including all components, subassemblies and consumables which are part of the product at the time of discarding.
- **Waste management** means the collection, transport, recovery, and disposal of waste, including the supervision of such operations and the aftercare of disposal sites, and including actions taken as a dealer or broker.

EXECUTIVE SUMMARY

This report presents the composition of the national public litter waste in Ireland in 2024. The profile was generated from a series of physical analysis of public litter waste streams. The report profiles the following waste streams:

- **Public street litter bins (20 03 99A)** waste is litter placed by the public in designated public waste bins.
- **Local Authority (LA) Street litter sweeping activities (20 03 03)**, includes materials from suction vehicles and manual picking.
- **Other litter clean-up events, including some beach clean-ups (20 03 99B)**, is an organised activity focused on the removal of litter from a designated area, often conducted by volunteers in a community or environmental initiative.

The aim of the project is to provide accurate up-to-date national information on the composition of waste derived from the three litter streams, mentioned above to enable accurate waste statistics reporting and to inform national waste and circular economy policy, infrastructure planning and regulatory and enforcement activities.

The results from the study are summarised in **Table ES.1**.

Table ES.1 1: Litter Distribution between streams

Waste Categories	Public Litter Bins	Street Sweepings	Community Clean-up
Organics (all)	25.7%	93.6%	29.4%
Papers	7.8%	0.3%	3.6%
Cardboards	4.2%	0.2%	3.7%
Composites	4.2%	0.2%	3.2%
Textiles excl. Nappies	2.1%	0.3%	6.5%
Nappies	2.3%	0.0%	0.5%
Plastics	11.3%	1.2%	14.8%
Glass	6.7%	0.2%	9.8%
Metals	3.5%	0.2%	5.1%
Wood	0.2%	0.0%	0.8%
Hazardous / Non-Hazardous Municipal Waste	2.7%	0.0%	1.8%
Non-Hazardous Municipal Waste	0.0%	0.0%	1.4%
Unclassified Combustibles	13.5%	0.0%	2.6%
Unclassified Incombustibles	0.7%	0.0%	5.1%
Fines (<20mm)	2.1%	3.0%	1.3%
Non-municipal waste	4.0%	0.0%	2.2%
Contamination	9.1%	0.7%	8.3%
Total	**100.0%**	**100.0%**	**100.0%**

Organics was the largest primary waste category in each of the three **public litter streams.** The proportion of organics was highest in street sweepings (94%), with lower levels in community clean-up events (29%) and public street litter bins (26%).

Food waste which is a subset of the organics primary waste category (Table ES.1 1), remains a concern in public litter bins, representing a significant portion (18%) of the litter stream. The report finds that it has decreased slightly since 2020, when it comprised over a quarter (26%) of waste in public litter bins.

Biodegradable waste from garden & park which falls under the organics primary waste category (Table ES.1 1), comprised most (94%) of the material in LA street sweepings. This material comprised primarily a mix

of decomposed vegetation and soil/grit picked up by suction sweepers that resembles a compost. This is an increase (73%) from the previous litter project.

Mixed municipal household waste in black bin bags were identified in both public litter bin and clean-up event samples but were absent in sweeping samples. It comprised a substantial portion of waste in public street litter bins (18%), with one sample 76% household mixed municipal waste. This would indicate that members of the public and others choose to dispose of household waste in the public bins stream.

Recyclable materials such as plastic beverage bottles and aluminium drinks cans, were quantified at 4% in public street litter bins and at 7% in clean-up events. It is expected that recent introduction of the Deposit Refund Scheme (DRS) in Ireland will reduce the volume of recyclable materials in street litter. The data from this study will inform the monitoring of the DRS.

Glass packaging comprised a notable portion of waste in public street litter bins (6%) and clean-up events (9%). A significant proportion of this primary waste category was found to be alcohol packaging. The findings from the report emphasise the need for actions to improve litter segregation and management, which may include:

- Targeted awareness and education campaigns focused on improving the capture of food waste, DRS recyclables, and glass away from the litter stream.
- Enforcement measures to lower the proportion of mixed municipal household waste in public litter bins.

These measures could reduce the proportions of non-target waste ending up as litter. These actions can help enhance resource efficiency and support circular economy principles by ensuring resources are managed effectively.

1 INTRODUCTION

1.1 Background

This litter and street bin waste characterisation project was undertaken on behalf of the Environmental Protection Agency (EPA).

Effective waste management and planning requires accurate and up-to-date information on the composition of waste.

The EPA's Circular Economy and Waste Statistics team is responsible for compiling and publishing national waste statistics. These publications provide accurate and up to date information on waste generation and management in Ireland. The data is used to inform national waste and circular economy policy, infrastructure planning, regulatory and enforcement activities, and progress legislative targets.

The EPA's Circular Economy and Waste Statistics team have identified gaps in the waste characterisation information such as detailed information on the composition of waste collected from:

- Public street litter bins (20 03 99A).
- Local Authority (LA) Street litter sweeping activities (20 03 03)
- Other litter clean-up events, including some beach clean-ups (20 03 99B).

The most recent national litter waste characterisation study was 2020. New data is therefore required.

1.2 Aim

The aim of the project is to provide accurate up-to-date national information on the composition of waste derived from nationally representative samples of the three litter streams (Public Street litter bins (20 03 99A), Local Authority (LA) Street litter sweeping activities (20 03 03), Other litter clean-up events, including some beach clean-ups (20 03 99B)).

The data arising from the project will be used to generate a set of factors that can be applied by EPA to national data for the purpose of national waste data reporting on national waste and circular economy policy, infrastructure planning and regulatory and enforcement activities.

1.3 Project Delivery

The sampling methodology was based on the method developed in 2015[2] ('the 2015 methodology') and updated sampling plans issued to the EPA in January 2023. The sampling methodology draws learnings from sampling plans developed for other recent, similar waste characterisation projects delivered for the EPA.

The sampling fieldwork was completed between October 2023 and May 2024. The fieldwork consisted of a physical waste compositional analysis of the following litter streams.

- **Public Street litter bins (20 03 99A)** is waste placed by the public in designated public waste bins.
- **Local Authority (LA) Street litter sweeping activities (20 03 03)** litter collected by suction vehicles and manual picking.
- **Other litter clean-up events, including some beach clean-ups (20 03 99B)** is litter waste arising from an organised activity focused on the removal of litter from a designated area, often conducted by volunteers in a community or environmental initiative.

1.4 Report Content

This report is presented in the following sections:

- An executive summary.

[2] RPS, 2015. Review of the methodologies used for the characterisation of household municipal waste.

- A detailed description of the methodology.
- Survey results.
- Discussion of survey results including the weight and percentages of the materials surveyed, a set of national waste characterisation factors and a comparison to previous studies on this topic.
- Conclusions and recommendations.

The results present data at primary category and primary sub-category and secondary sub-categories.

- **Primary Category** is a high-level waste category e.g., plastics, organics, metals etc.
- **Primary Sub-Category** is a more specific sub-category within a Primary Category, e.g., polyethylene (PET) packaging bottles, food waste, ferrous metal etc.
- **Secondary Sub-Category** includes specific wastes including Single Use Plastics (SUP).

The results for the Public Street litter bins, Local Authority (LA) Street litter sweeping activities, other litter clean-up events are appended to this document in **Appendices B, C** and **D**.

The results for the three streams mentioned above have been adjusted to reflect contamination measured on packaging waste. This means that references to packaging waste account for adhering residue: the proportions of packaging waste presented are for clean and dry materials and proportions of contamination are presented separately. This adjustment was not included in the 2020 Litter Characterisation report published. Comparisons with the previous Litter Characterisation project take this change in results into account.

2 SAMPLING METHODOLOGY

2.1 Sampling Approach

This **sampling methodology** was developed using the most recently available (2021) data available from the Local Authorities (LAs) and EPA.

The sampling methodology considers how best to conduct characterisation surveys on statistically valid regional and national samples.

The background information provided by the EPA was used to:

- Allocate the sampling effort per litter waste stream (public street bins (20 03 99A), local authority street litter sweeping activities (20 03 03), other litter clean-up events (20 03 99B)).
- Allocate sampling effort for each stratum[3].
- Identify suitable LAs.

2.2 Sampling Strategy

Selecting samples requires a systematic means of classify them in terms of key factors that influence waste composition. This approach is called stratification and involves dividing the population into different strata (nonoverlapping groups) that reflects the main variables that influence kerbside waste composition. Strata are mutually exclusive and exhaustive parts of a population.

The strata chosen by EPA this study are set out below and illustrated in figure following:

- Source of the litter; Public Street litter bins; LA street litter sweeping activities; Other litter clean-up events.
- Area type from which litter was collected; Urban (Cities (& their suburbs)); Rural & mixed rural/ city areas").
- The Waste Management Regions – EMR, SR and CUR.

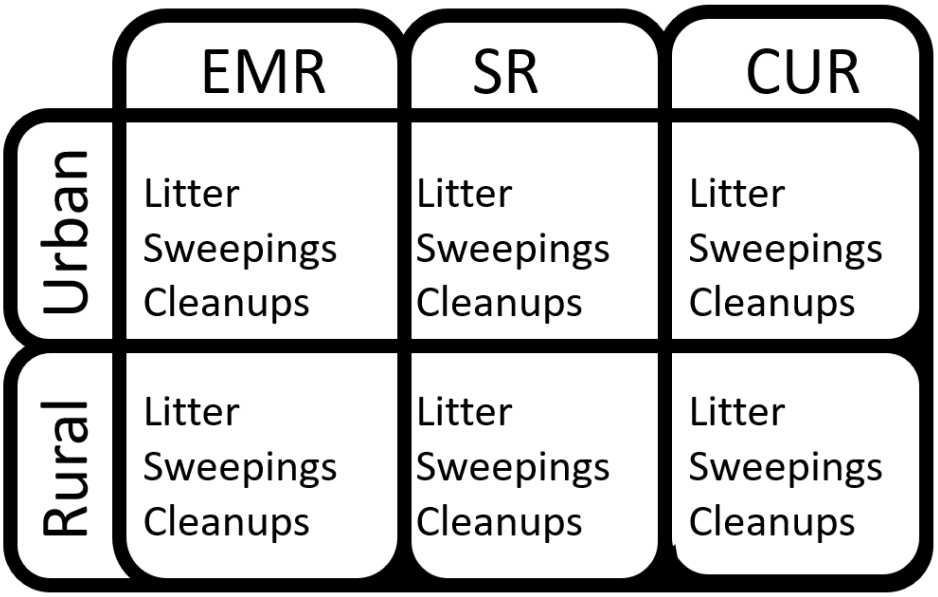

Figure 2-1: Strata Sampled

[3] Stratum/strata are mutually exclusive and exhaustive parts of a population. They are identified either because they are believed to be different from each other or for the purposes of sampling.

Sampling effort was set by the RFT at 30+ sampling events. These samples were distributed between the 3 litter types, Public Street Bins and LA Street Sweepings and Litter Clean-up Events using tonnages and other data.

Due to limitations in the available data for litter clean-up events, samples could not be distributed between the three litter streams using tonnage data alone. Instead, a manual distribution alongside tonnage data was used to distribute samples. 5 samples were allocated to the litter clean-up event stream to avoid a small sample size. The remaining 25 samples were distributed between public street litter bins and LA street sweepings.

This allocation was then distributed between the strata:

- The Eastern-Midlands Region (EMR) Southern Region (SR) Connacht-Ulster Region (CUR) according to national population (Census 2022) ratios.
- Rural or City according to the relevant population (Census 2022) ratios in the relevant Region.

The distributed number of samples to be analysed for each litter source is shown in Table 2-1

Table 2-1: Allocation of sampling effort proposed

Regional base for sampling	EMR		SR		CUR		Total
	Urban	Rural	Urban	Rural	Urban	Rural	
Public Street Litter Bins	2	4	2	2	1	1	12
LA Street Sweepings	3	4	2	2	1	1	13
Litter Clean-up Events	1	1	1	1	0	1	5
Total	6	9	5	5	2	3	30

2.3 Modelling

The data collected during the surveys was used to produce separate models for each of the three waste streams. Each of the three models calculate a set of aggregated national factors to be applied to scale up nationally aggregated litter waste data that is collated by the EPA for reporting requirements.

The models contain:

- Calculated factors with clear and transparent links to the survey data spreadsheets.
- Single, simple spreadsheets that include all weights, calculations, and account for the level of contamination.

The models generated take account of the published[4] contamination 'factors' for packaging waste developed as part of the 2022 Household Municipal Waste Characterisation Study. These contamination factors were used to adjust the waste characterisation data be removing contamination data from packaging data (i.e., corrected for contamination) and to account for contamination as a separate line item. This allowed production of more accurate estimates of packaging percentages within litter waste.

[4] www.epa.ie/publications/monitoring--assessment/waste/national-waste-statistics/2022-household-municipal-waste-characterisation-report.php

3 SURVEY RESULTS

3.1 Public Street Litter Bins (20 03 99A)

A total of 14 public street litter bin (20 03 99A) samples[5] were analysed over the course of the project. Table following shows the summary composition of public street litter bins[6] (20 03 99A). To compare waste categories, a confidence level of 90% has been used consistently in this report. Detailed results are presented in **Appendix B**. As previously noted, these results are corrected for contamination, with contamination presented in a separate category.

Table 3-1: Composition of Public Litter Bins

Primary Waste Categories	Mean	Min	Max	L. Limit	U. Limit
Organics (all)	25.7%	8.0%	45.5%	20.6%	30.9%
Unclassified Combustibles	13.5%	1.2%	40.2%	9.0%	17.9%
Plastics	11.3%	5.3%	26.9%	9.0%	13.5%
Contamination	9.1%	4.9%	16.4%	7.8%	10.4%
Papers	7.8%	1.8%	12.7%	6.5%	9.1%
Glass	6.7%	2.7%	12.7%	5.4%	8.0%
Composites	4.2%	1.7%	12.2%	3.0%	5.4%
Cardboards	4.2%	1.4%	8.3%	3.3%	5.0%
Non-municipal waste	4.0%	0.0%	46.1%	-1.2%	9.2%
Metals	3.5%	1.7%	10.5%	2.6%	4.5%
Hazardous / Non-Hazardous Municipal Waste	2.7%	0.2%	17.2%	0.9%	4.5%
Nappies	2.3%	0.0%	7.7%	1.3%	3.3%
Fines (<20mm)	2.1%	0.0%	9.0%	1.1%	3.2%
Textiles excl. Nappies	2.1%	0.0%	5.6%	1.4%	2.7%
Unclassified Incombustibles	0.7%	0.0%	7.3%	-0.1%	1.5%
Wood	0.2%	0.0%	0.5%	0.1%	0.3%
Non-Hazardous Municipal Waste	0.0%	0.0%	0.2%	0.0%	0.1%
Total	100%	N/A	N/A	N/A	N/A

The composition of public street litter bins is illustrated in **Figure 3-1**.

[5] 14 samples rather than the required 12 were taken. These were de-weighted in the model to align with the sampling plan.

[6] To simplify data and make it more readable percentages are generally presented in this report with no decimal places in the text discussions and with one decimal place in tables. Some of the percentages presented in the tables do not total exactly to 100% due to the mathematical rounding of numbers. This slight numerical discrepancy does not reflect an error in calculations but is a natural outcome of rounding for simplicity.

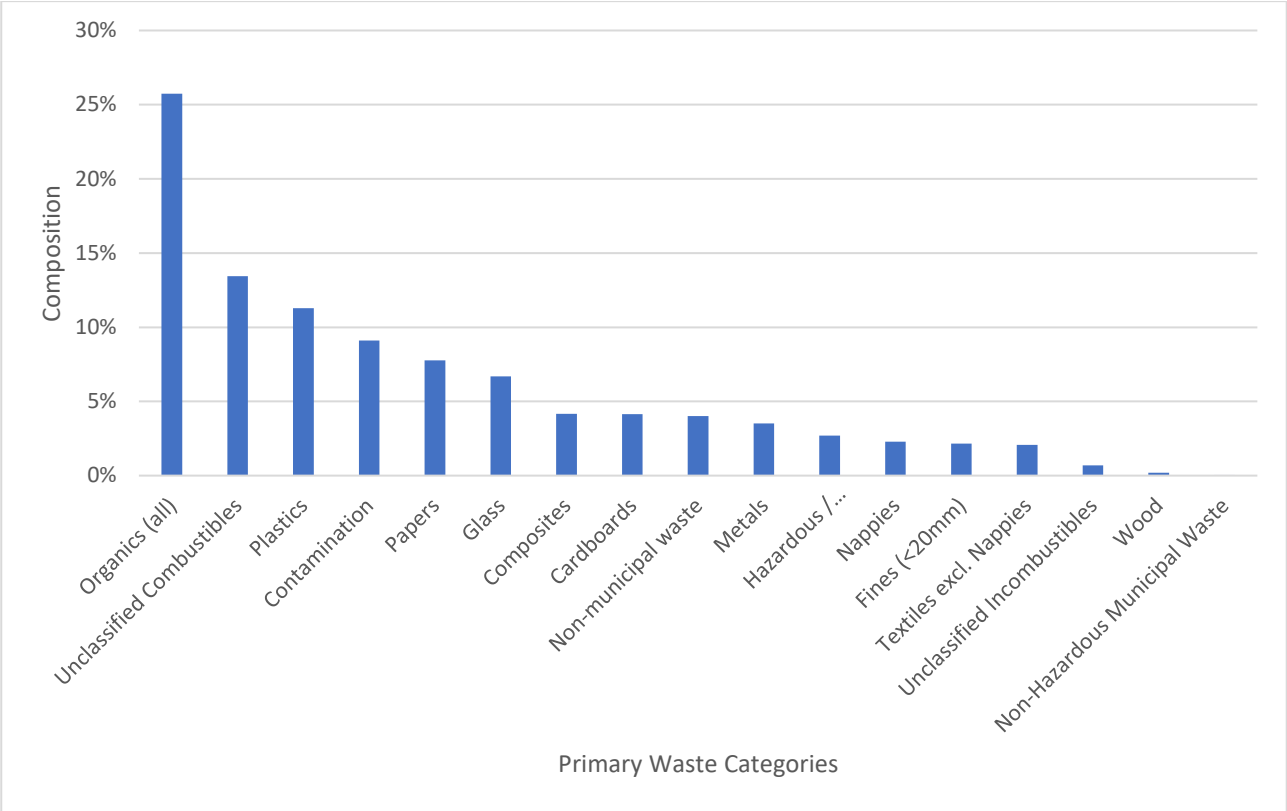

Figure 3-1: Composition of Public Street Litter Bins

The three most prominent waste categories in the public street litter bins were organics, unclassified combustibles, and plastics. These three categories comprise over half of the total public street litter bin stream.

The largest primary category was organics (26%). This category is comprised of food waste (18%), biodegradable waste from garden & parks (4%) and liquid fit for human consumption (3%).

The second largest primary category was unclassified combustibles (14%). This primary category includes the primary subcategories unclassified combustibles (dog waste) (non-packaging) (13%), and unclassified combustibles (packaging) (0.3%).

Plastics constituted the third largest primary category (11%). Within the plastics category were primary sub-categories: soft plastic packaging (bags and films) (4%), hard plastic packaging other than SUP packaging drink bottles (incl. caps and lids (3%), PET SUP packaging drinking bottles including their caps and lids (3%), plastic (non-packaging) (1%) and other than PET SUP packaging drinking bottles including their caps and lids (1%).

The remaining primary categories each comprised less than 10% of the total composition of waste in public litter bins. Detailed results (corrected for contamination, with contamination counted in a separate category) are available in **Appendix B**.

3.2 Local Authority Street Sweepings (20 03 03)

A total of 13 LA street sweeping (20 03 03) samples were analysed. Table 3-2shows the composition of LA street sweepings (20 03 03). Detailed results (again, corrected for contamination, with contamination counted in a separate category) are presented in **Appendix C.**

Table 3-2: Composition of Local Authority Street Sweepings

Primary Waste Categories	Mean	Min	Max	L. Limit	U. Limit
Organics (all)	93.6%	73.4%	100.0%	90.1%	97.2%
Fines (<20mm)	3.0%	0.0%	25.3%	-0.4%	6.3%
Plastics	1.2%	0.0%	5.9%	0.4%	2.1%
Contamination	0.7%	0.0%	3.7%	0.2%	1.2%
Papers	0.3%	0.0%	2.2%	0.0%	0.5%
Textiles excl. Nappies	0.3%	0.0%	2.2%	0.0%	0.5%
Composites	0.2%	0.0%	1.2%	0.1%	0.4%
Metals	0.2%	0.0%	1.3%	0.1%	0.4%
Cardboards	0.2%	0.0%	1.4%	0.0%	0.4%
Glass	0.2%	0.0%	0.9%	0.0%	0.3%
Nappies	0.0%	0.0%	0.6%	0.0%	0.1%
Wood	0.0%	0.0%	0.1%	0.0%	0.0%
Hazardous / Non-Hazardous Municipal	0.0%	0.0%	0.1%	0.0%	0.0%
Unclassified Incombustibles	0.0%	0.0%	0.3%	0.0%	0.1%
Non-Hazardous Municipal Waste	0.0%	0.0%	0.0%	-	-
Unclassified Combustibles	0.0%	0.0%	0.0%	-	-
Non-municipal waste	0.0%	0.0%	0.0%	-	-
Total	100%	**N/A**	**N/A**	**N/A**	**N/A**

The composition of public street litter bins is illustrated in **Figure 3-2**.

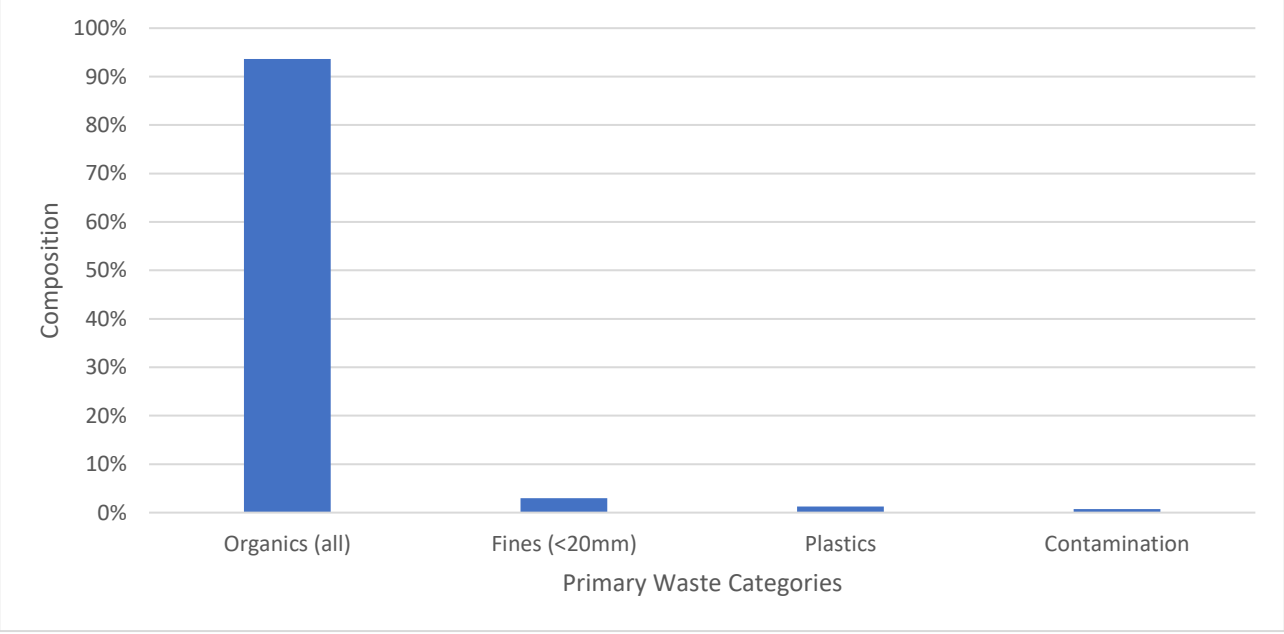

Figure 3-2: Composition of Local Authority Street Sweepings (fractions >1%)

Organics biodegradable waste from gardens and parks (94%) was the largest category in LA street sweeping samples. This category comprises primarily a mix of decomposed vegetation and soil/grit picked up by suction sweepers that resembled compost.

Figure 3-3: Street sweepings largely comprised decomposed vegetation and grit

The other primary waste categories comprised the remaining 6% of LA street sweepings. The majority of these were fines (<20mm) (3%), plastics (1%) and contamination (1%). All other primary categories comprised 2% and the detailed results are available in **Appendix C**.

3.3 Litter Clean-up Events (20 03 99B)

A total of 5 litter clean-up event (20 03 99B) samples were analysed. Table 3-3 shows the composition of LA street sweepings (20 03 99B). Detailed results (corrected for contamination, with contamination counted in a separate category) are presented in **Appendix D.**

Table 3-3: Composition of Litter Clean-up Events

Primary Waste Categories	Mean	Min	Max	L. Limit	U. Limit
Organics (all)	29.4%	1.8%	81.2%	8.4%	50.4%
Plastics	14.8%	6.5%	22.3%	11.1%	18.6%
Glass	9.8%	1.0%	17.4%	5.2%	14.3%
Contamination	8.3%	3.0%	13.7%	5.6%	10.9%
Textiles excl. Nappies	6.5%	2.3%	11.1%	4.4%	8.5%
Metals	5.1%	0.9%	11.4%	2.3%	7.9%
Unclassified Incombustibles	5.1%	0.0%	13.0%	1.7%	8.4%
Cardboards	3.7%	1.4%	6.5%	2.5%	5.0%
Papers	3.6%	1.2%	4.8%	2.6%	4.5%
Composites	3.2%	0.3%	5.8%	2.0%	4.5%
Unclassified Combustibles	2.6%	0.1%	5.3%	1.2%	4.0%
Non-municipal waste	2.2%	0.0%	10.7%	-1.0%	5.3%
Hazardous / Non-Hazardous Municipal Waste	1.8%	0.2%	4.1%	0.8%	2.9%
Non-Hazardous Municipal Waste	1.4%	0.0%	6.9%	-0.6%	3.4%
Fines (<20mm)	1.3%	0.0%	3.4%	0.3%	2.4%
Wood	0.8%	0.0%	1.6%	0.4%	1.1%
Nappies	0.5%	0.0%	0.9%	0.2%	0.7%
Total	100%	N/A	N/A	N/A	N/A

The composition of public street litter bins is illustrated in **Figure 3-2**.

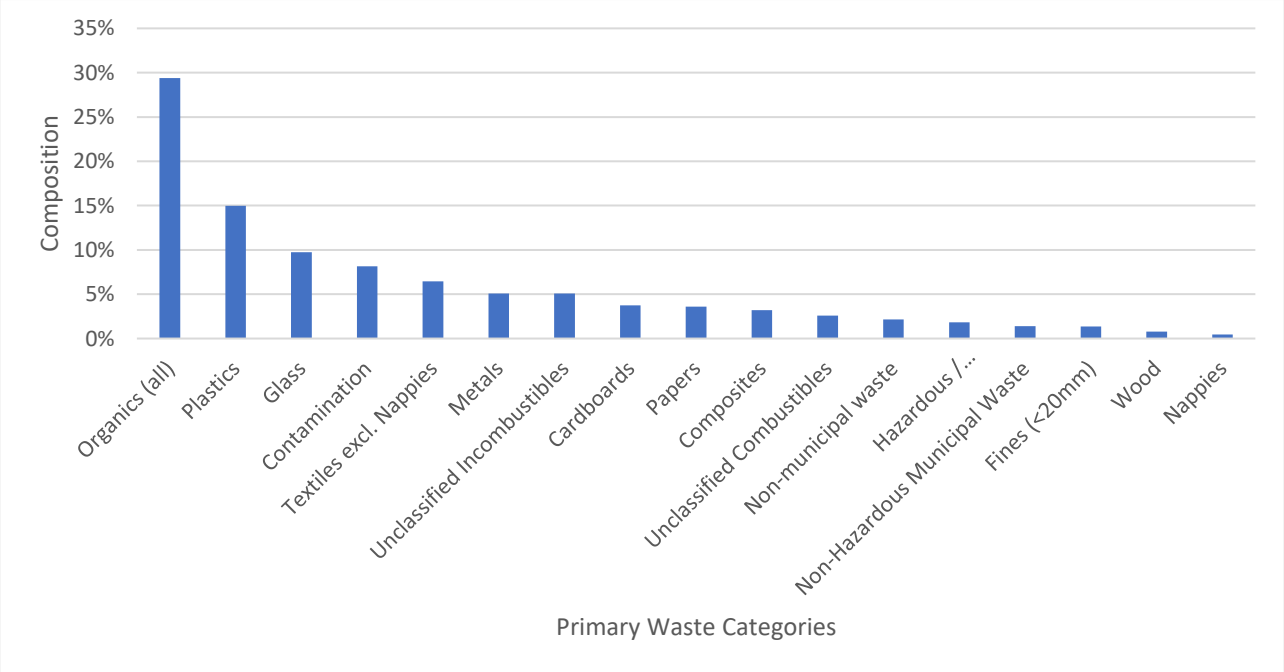

Figure 3-4: Composition of Litter Clean-up

The three largest primary categories in litter clean-up events were organics, plastics, and glass. These three categories comprise over half (54%) of the litter clean-up event stream.

The largest primary waste category was organics (29%). This category is comprised of biodegradable waste from gardens & parks (26%) from 'weeding' of public spaces. It also comprised liquid fit or human consumption (2%) and food waste (2%).

The second largest primary waste category was plastics (15%). This primary waste category includes PET SUP packaging drinking bottles including their caps and lids (4%), hard plastic packaging other than SUP packaging drink bottles (incl. caps and lids) (4%), plastic non-packaging (3%), soft plastic packaging (bags and films) (2%) and SUP tobacco products (1%).

Glass was the third largest primary category (10%). Within this category glass (packaging) and glass (non-packaging) comprised 9% and 1% respectively.

The remaining primary categories each comprised less than 10% of the total composition of waste in public litter bins. Detailed results are available in **Appendix D**.

4 ANALYSIS AND DISCUSSION

4.1 Packaging Waste

Table 4-1 and **Figure 4-1** present the composition of packaging materials[7] in each of the three litter streams as determined by surveys. These are corrected for contamination.

Table 4-1: Composition of Packaging waste in each Public Litter Stream

Packaging Primary Subcategories	Public Litter Bins	Street Sweepings	Community Clean-up
Recyclable paper packaging	1.1%	0.0%	0.2%
Unrecyclable paper packaging	1.2%	0.2%	0.3%
Recyclable cardboard packaging	2.9%	0.2%	1.6%
Unrecyclable cardboard packaging.	1.1%	0.0%	1.4%
Composite SUP drinking bottles incl. caps and lids (packaging)	0.8%	0.0%	0.1%
Other composites (packaging)	0.8%	0.1%	1.4%
Coffee cups	2.4%	0.2%	1.6%
Textiles Packaging	0.0%	0.0%	0.2%
PET SUP packaging drinking bottles including their caps and lids	2.6%	0.2%	3.8%
Other than PET SUP packaging drinking bottles including their caps and lids	0.6%	0.0%	0.4%
Hard Plastic packaging other than SUP packaging drink bottles (incl. caps and lids).	3.2%	0.1%	3.8%
Soft plastic packaging (bags and films)	3.7%	0.7%	2.4%
Glass (packaging)	6.4%	0.2%	9.1%
Ferrous metal packaging	0.5%	0.0%	0.5%
Aluminium drinking cans (packaging)	1.7%	0.2%	3.7%
Other aluminium packaging	0.2%	0.0%	0.1%
Other non-ferrous metal (packaging)	0.0%	0.0%	0.1%
Wood Packaging	0.0%	0.0%	0.0%
Aerosols (packaging)	0.1%	0.0%	0.0%
Unclassified combustibles (packaging)	0.3%	0.0%	0.6%
Unclassified incombustibles (packaging)	0.4%	0.0%	0.0%
Total	30.1%	2.1%	31.3%

The composition of packaging waste in each of the three public litter streams is illustrated in **Figure 4-1**.

[7] Paper (Packaging), Cardboard (Packaging), Composite SUP drinking bottles incl. caps and lids (Packaging), Other composites (Packaging), Coffee cups, Textiles (Packaging), PET SUP packaging drinking bottles including their caps and lids, Other than PET SUP packaging drinking bottles including their caps and lids , Hard Plastic (Packaging) other than SUP packaging drink bottles (incl. caps and lids), Soft Plastic (Packaging) (bags and films), Glass (Packaging), Ferrous metal (Packaging), Aluminium drinking cans (Packaging), Other aluminium (Packaging), Other non-ferrous metal (Packaging), Wood (Packaging), Aerosols (Packaging), Unclassified combustibles (Packaging), Unclassified incombustibles (Packaging)

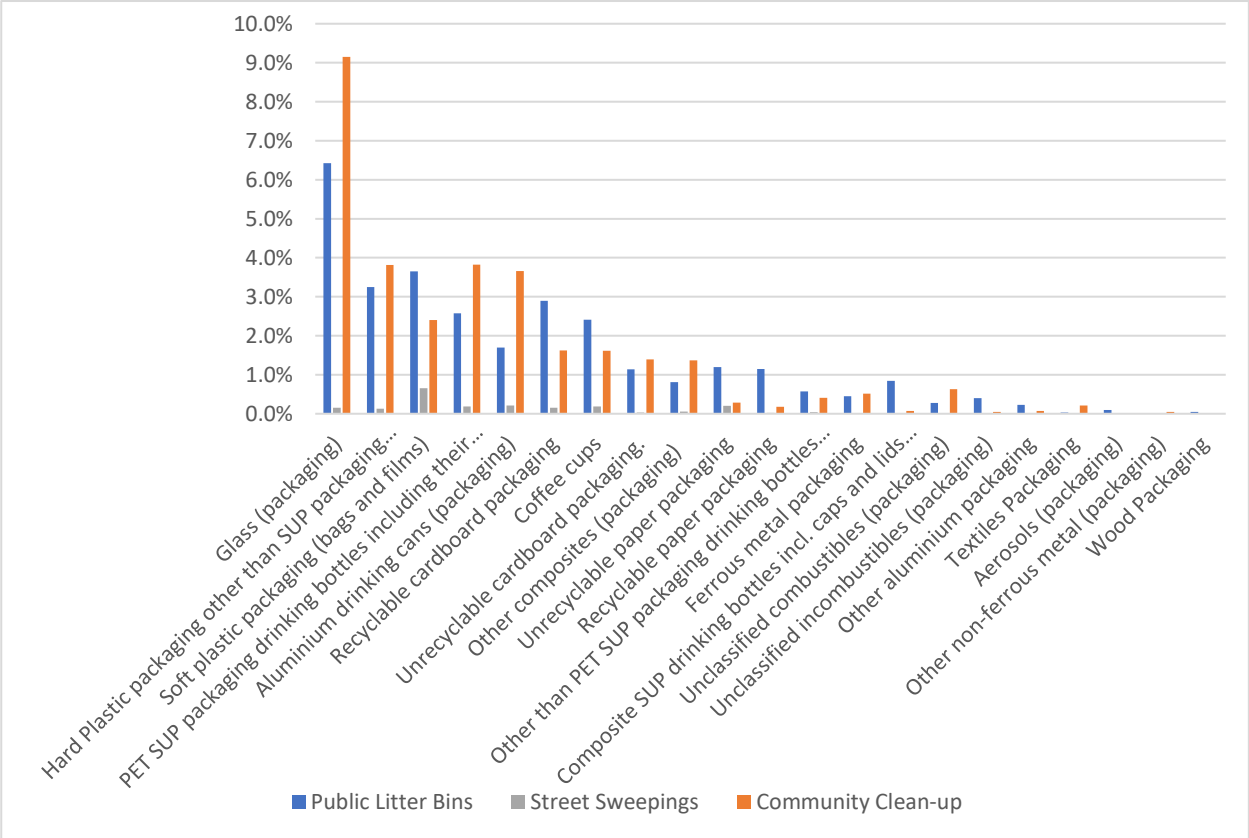

Figure 4-1: Composition of packaging waste in the three litter streams

4.1.1 Public Street Litter Bins (20 03 99A)

Packaging materials comprised 30% of items in public street litter bins, as shown in **Table 4-1** and **Figure 4-1**. The most common primary packaging sub-category items found in public litter bins were plastic packaging (10%), glass packaging (6%) and composite packaging (4%).

The most prominent plastic packaging items were soft plastic packaging (bags and films) (4%), hard plastic packaging other than SUP packaging drink bottles (incl. caps and lids) (3%), PET SUP packaging drinking bottles including their caps and lids (3%) and other than PET SUP packaging drinking bottles including their caps and lids.

Despite nationwide glass collections at bring centre networks and associated messaging, glass packaging was present in every public litter bin. Alcohol glass packaging was the most common type found in public litter bins, see **Figure 4-2**.

Figure 4-2: Glass Packaging, present in all litter bin samples

The third largest packaging category was composite packaging (4%). Coffee cups (2%) comprised over half (62%) of the composite packaging in public litter bins and were found in all but one of the 14 samples, varying

from 2% to 9%. Other composite packing items in public litter bins included other composite packaging (1%) and composite SUP drinking bottles incl. caps and lids (packaging) (1%).

4.1.2 Local Authority Street Sweepings (20 03 03)

Packaging items accounted for a small portion (2%) of material in LA street sweepings. Soft plastic packaging (bags and films) (1%) represented the largest proportion of packaging items, with the other packaging items together comprising the remaining 1%.

4.1.3 Litter Clean-up Events (20 03 99B)

The packaging waste items identified in litter clean-up events accounted for 31%, as shown in **Table 4-1** and **Figure 4-1**. The most prominent packaging materials were plastic packaging (11%), glass packaging (9%) and metal packaging (4%). These three packaging categories comprised over two thirds (76%) of packaging waste in litter clean-up event samples.

Plastic packaging was comprised of PET SUP packaging drinking bottles including their caps and lids (4%), hard plastic packaging other than SUP packaging drink bottles (incl. caps and lids) (4%) and soft plastic packaging (bags and films) (2%).

Similar, to public street litter bin samples glass packaging represented a large portion of packaging, with most of it being alcohol packaging.

4.2 Organics

Organics was the largest primary waste category in each of the **three public litter streams**, as detailed in **Table 3-1, Table 3-2** and **Table 3-3**. The composition of organics materials differed between each stream.

Organic material comprised 26% of the waste in **public street litter bins**. Food waste was the largest organic primary subcategory at 21% and was present in all 14 samples, with proportions ranging from 6% to 43%. The remaining organic material consisted of biodegradable waste from garden & park (4%) and liquid fit for human consumption (3%).

LA **street sweepings** contained the highest levels of organics, with 94% organic content. The LA street sweeping surveys were scheduled to avoid bias from dead-leaf litter, which is at high levels from autumn to late winter. Despite this, biodegradable waste from garden & park vegetation (albeit heavily decomposed and compost-like rather than as leaf litter) constituted all the organic fraction in street sweeping samples, along with a soil/grit.

Organics waste was the largest primary waste category from **litter clean-up events**, constituting 29%. Most of this comprised of biodegradable waste from gardens & parks (26%). This proportion is skewed upwards by a single sample containing 80% biodegradable waste from gardens & parks.

4.3 Household Mixed Municipal Waste

Household mixed municipal in black bin bags were identified in both public litter bin and clean-up event samples (**Figure 4-3**) but not in sweepings. To verify the contents as household waste, the bags were opened, briefly inspected, and then weighed. The appropriate municipal waste factors from the EPA's 2022 Household Kerbside Municipal Waste Characterisation[8] study were applied to the waste quantities. The resulting waste quantities were then included in the total values for the litter samples.

Mixed household municipal waste constituted 18% of the waste in **public litter street bins**. The proportion of household waste varied widely between samples, ranging from 0% in some samples to comprising 76% in others. This was often in small packages, possibly to fit in litter bin apertures, but frequently in larger black bags. These materials may enter the litter stream at or after the street bin.

[8] www.epa.ie/publications/monitoring--assessment/waste/national-waste-statistics/2022-household-municipal-waste-characterisation-report.php

LA clean-up event litter contained low levels of mixed household municipal waste (3%). This waste type was encountered in one sample (11%), possibly as fly tipped material.

Figure 4-3: Municipal waste

4.4 Non-Municipal Waste

There was one instance of apparently non-municipal waste in a public litter bin sample, see **Figure 4-4**. This waste, in multiple bags, appeared to be from a garage/panel beater/workshop and comprised 66% of that public litter bin sample. As for household black bin waste, the contents of the bin bag were examined upon opening and then weighed. The relevant non-municipal waste factors from the EPA's 2022 Commercial Waste Characterisation[9] study were applied to the weight of the bag. The resulting waste quantities were then incorporated into the total value for the public litter sample.

Figure 4-4: Non-municipal waste

These bagged materials were so large that they likely entered the litter stream after the street bin.

[9] www.epa.ie/publications/monitoring--assessment/waste/national-waste-statistics/2022-commercial-municipal-waste-characterisation-report.php

4.5 Unclassified Combustibles

A significant proportion of the waste in public street litter samples was unclassified combustible (non-packaging) category (13%). A large portion of this primary waste subcategory was bagged dog waste - Some bin bags were nearly full of it, see **Figure 4-5**. The prevalence of unclassified combustibles (non-packaging) did not differ significantly between urban (13%) and rural (12%) public litter bin samples.

Unclassified combustibles (non-packaging) comprised 5% of clean-up event samples. As with public litter, bagged dog waste made up a notable portion of unclassified combustibles (non-packaging).

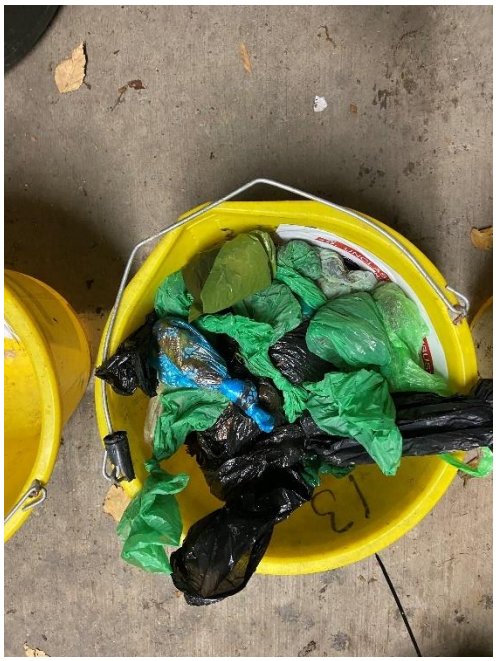

Figure 4-5: Unclassified incombustibles (non-packaging)

4.6 Vapes

Vapes were a new primary waste subcategory that had not been categorised in previous public litter waste characterisation studies. Vapes are a concern for waste management as these items contain a battery that should be recycled and that can ignite under certain circumstances. In addition, the e-liquid contained in nicotine vapes is flammable and can ignite under certain circumstances. This can cause a fire if placed with combustible materials in the waste. It is therefore preferable that vapes not be disposed of in litter bins.

Vapes constituted a very small portion of both the public litter bin (1%) and clean-up event (1%) samples. Packaging from vapes was present in large numbers in one sample, as demonstrated in **Figure 4-7**.

Figure 4-6: Spent vapes

Figure 4-7: Vape packaging

4.7 Waste Composition Trend Analysis

In this section, comparisons are made with the 2020 surveys to identify trends and highlight any potential areas for action.

The data presented to this point in the report has been 'corrected for contamination' adhering to certain packaging categories. This contamination fraction is accounted for in a separate standalone category. The data presented in the previously published 2020 report was not corrected for contamination. To allow for a like-for-like comparison to be made with the 2020 data, the comparisons in this section are made with 2024 data that has not been corrected by removal of contamination into a separate category.

The appropriate municipal and non-municipal waste factors were used to adjust the waste characterisation data for both 2020 and 2024.

4.7.1 Public Street Litter Bins (20 03 99A)

A comparison of the public street litter bin composition for the years 2020 and 2024 is shown in **Figure 4-8**.

The organics category remains the largest primary waste category. The proportion of organics in public litter bins decreased by 4% between 2020 (28%) and 2024 (26%).

Plastics was the second largest primary waste category in public litter bins in 2024. The composition of plastics has increased slightly (0.4%) from 2020 (14%) and 2024 (14%).

The proportion of unclassified combustibles has increased substantially (10%) since 2020 (3%).

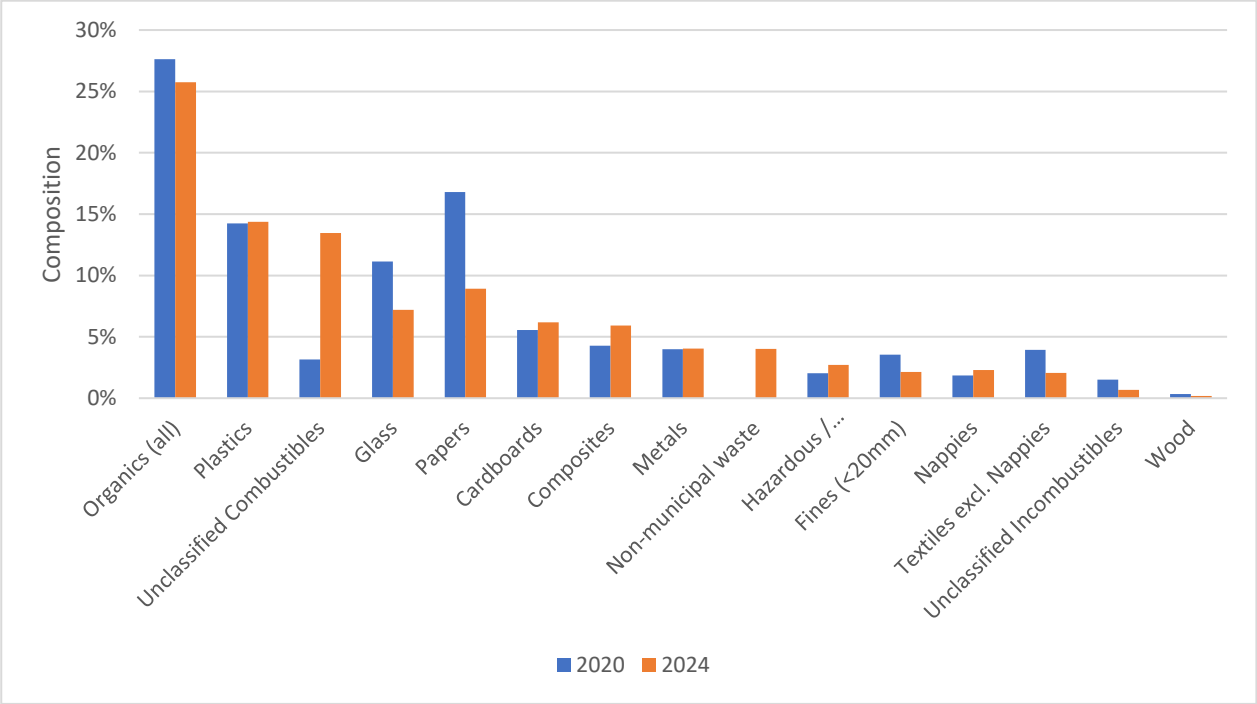

Figure 4-8: Public Litter Bin Composition (2020 and 2024)

The other public litter bin categories of note included:

- Glass waste fell by 4% between 2020 (11%) and 2024 (7%).
- Papers decreased by half from 2020 (17%) and 2024 (9%).
- The proportion of cardboard remained unchanged between 2020 (6%) and 2024 (6%).

The share of BMW within public street litter bins fell 3% since 2020 (50%) as shown in **Figure 4-9**.

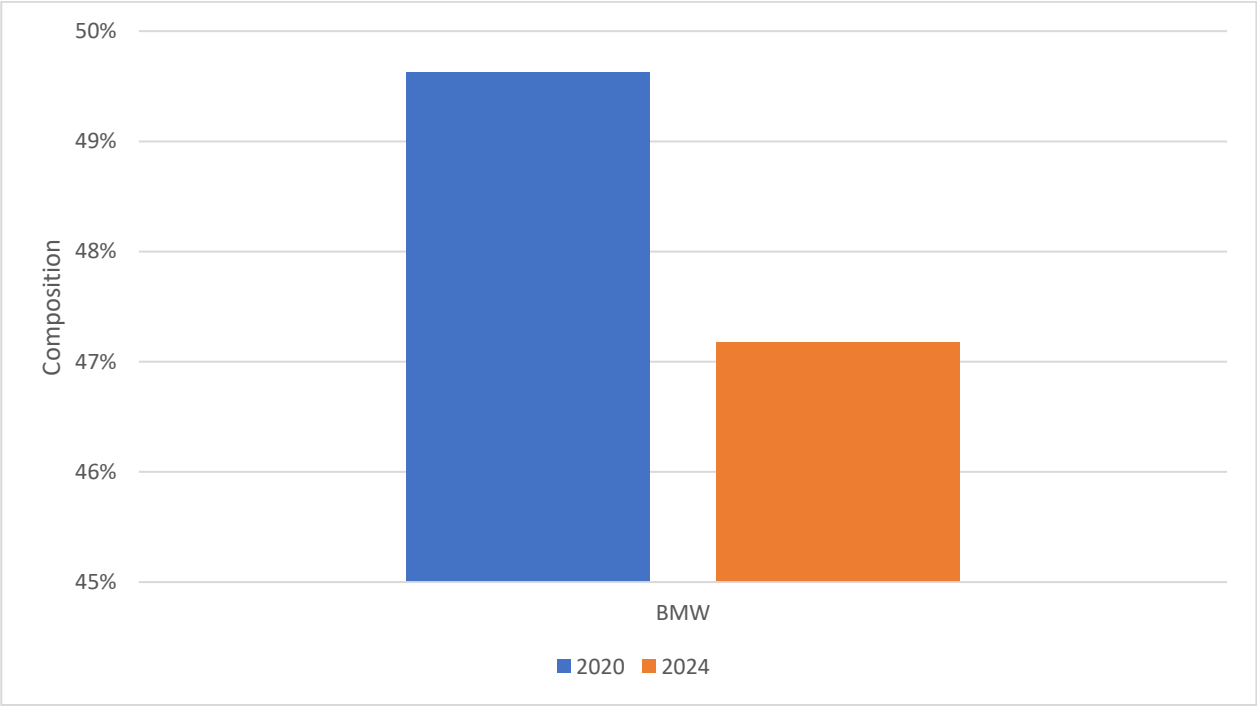

Figure 4-9: Proportions of BMW in Public Street Litter Bins (2020 and 2024)

Figure 4-10 shows the trend in packaging waste in public street litter bins.

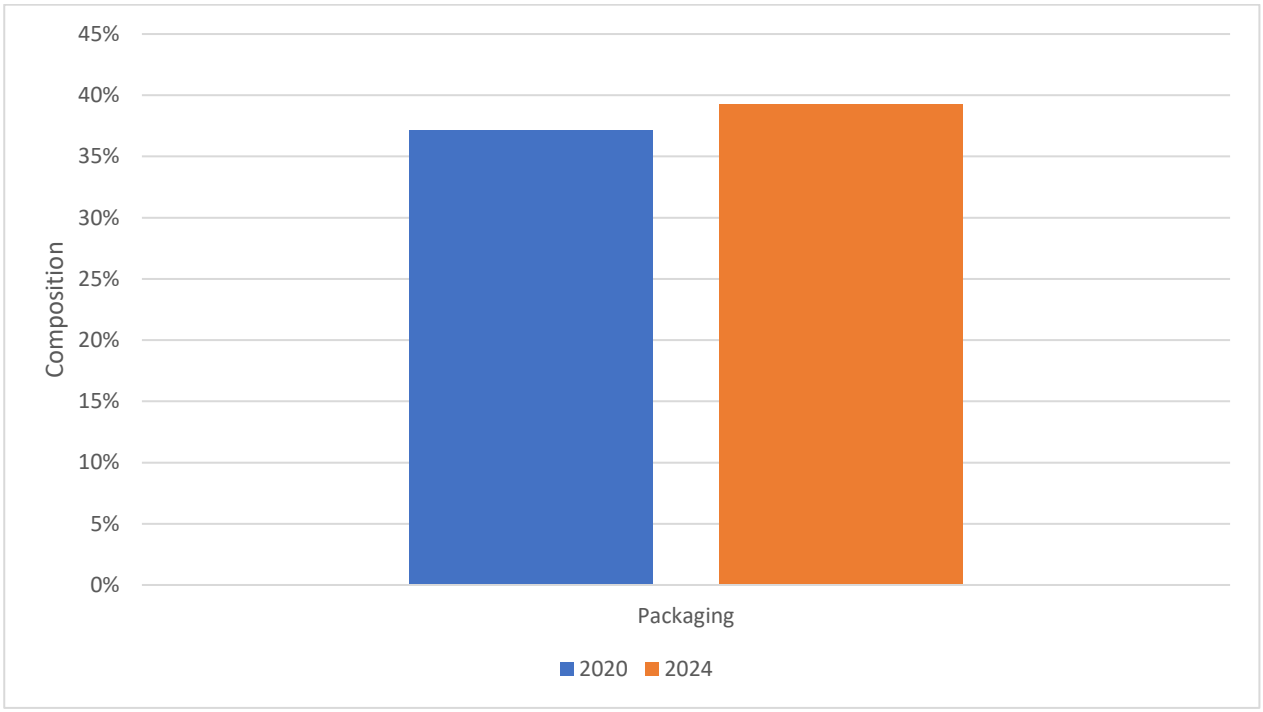

Figure 4-10: Proportion of Packaging in Public Street Litter Bins (2020 and 2024)

Packaging waste in public street litter bins increased by 6% between 2020 (37%) and 2024 (43%). The main changes in the fraction were as follows:

- Plastic packaging changed from 9% in 2020 to 11% in 2024.
- Composite packaging has decreased from 2020 (10%) and 2024 (8%)
- Cardboard packaging has increased between 2020 (4%) and 2024 (6%).

The proportion of recyclables in public litter bins increased (8%) between 2020 (20%) and 2024 (28%), as shown in **Figure 4-11**.

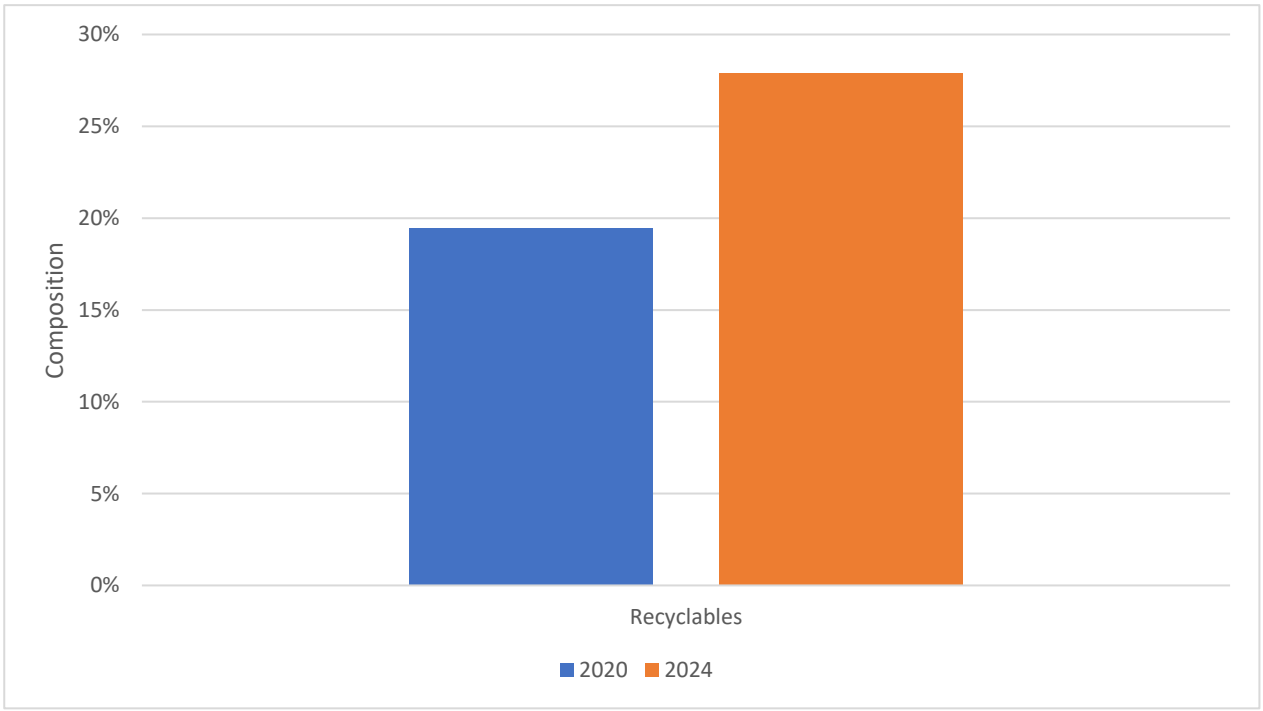

Figure 4-11: Proportion of Recyclables in Public Street Litter Bins (2020 and 2024)

The main changes in recyclable materials included:

- Recyclable plastics have increased (8%) since 2020 (6%).
- Recyclable metals are unchanged between 2020 (3%) and 2024 (3%).
- Recyclable papers have reduced (5%) between 2020 (9%) and 2024 (4%).

4.7.2 Local Authority Street Sweepings (20 03 03)

A comparison of the LA street sweepings composition for the years 2020 and 2024 is shown in **Figure 4-12**.

The most notable changes in LA street sweeping primary categories are:

- Organic waste has replaced fines (<20mm) as the largest primary waste category. It's proportion in LA street sweepings have increased significantly by 70% from 2020 (24%) to 2024 (94%).
- Fines (<20mm) is now the second largest primary waste category. It decreased significantly between 2020 (56%) to 2024 (3%).

These changes may reflect increased sampling of large truck-mounted machine suction sweeping waste in 2024, where 2020 may have sampled walking-operator sweepers.

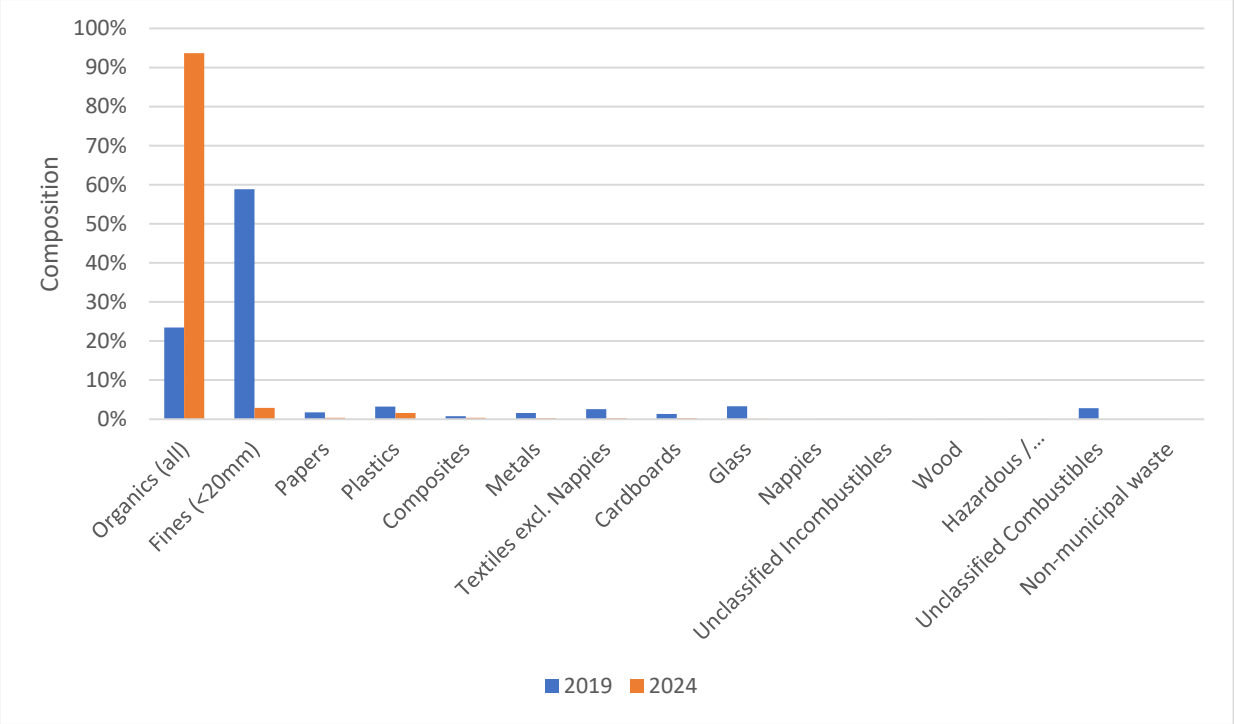

Figure 4-12: LA Street Sweeping Composition (2020 and 2024)

The other main changes in LA street sweepings were as follows:

- Plastic waste decreased between 2020 (3%) and 2024 (2%).
- Paper waste decreased between 2020 (1.8%) and 2024 (0.4%).
- Composites decreased slightly from 2020 (0.8%) and 2024 (0.4%).

The share of BMW in LA street sweepings increased between 2020 (59%) and 2024 (96%), as shown in **Figure 4-13**.

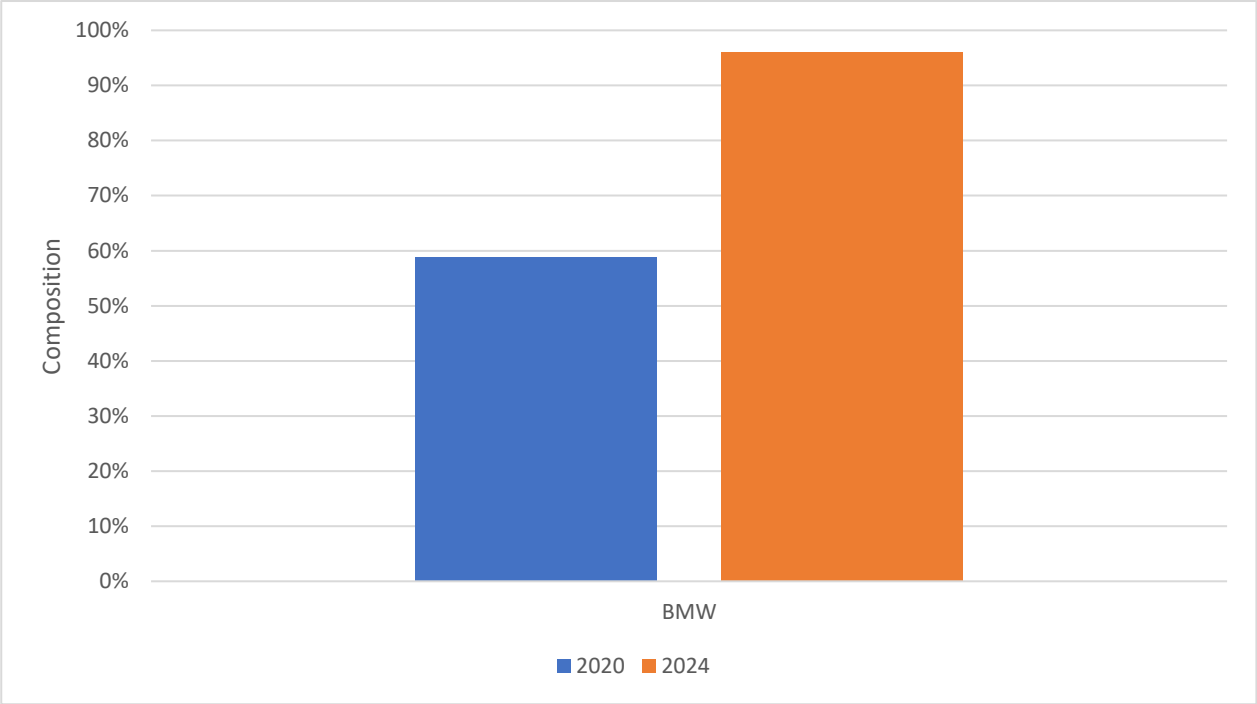

Figure 4-13: Proportions of BMW in Local Authority Street Sweepings (2020 and 2024)

Figure 4-14 shows the change in packaging waste in LA street sweepings between 2020 (10%) and 2024 (3%).

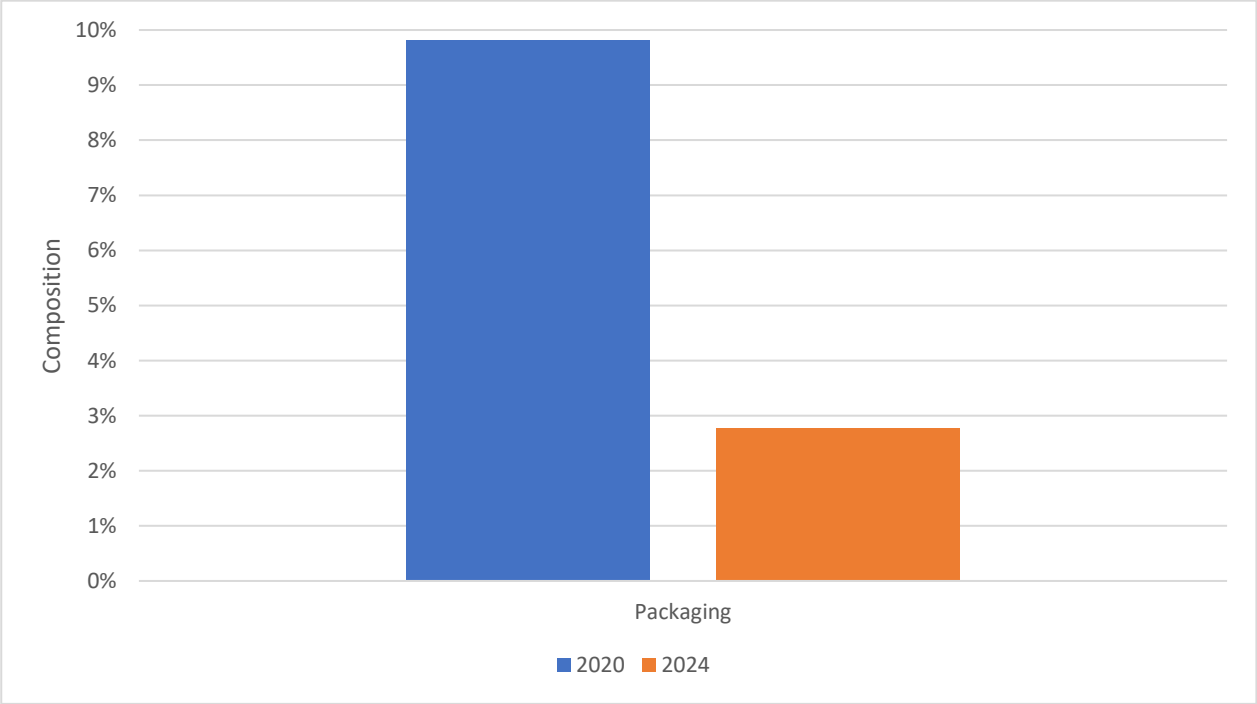

Figure 4-14: Proportions of Packaging in Local Authority Street Sweepings (2020 and 2024)

The packaging waste categories of note include:

- Plastic packaging has decreased by 1% since 2020 (2%).
- Cardboard packaging has increased between 2020 (1.4%) and 2024 (0.3%).
- Paper packaging reduced between 2020 (1%) and 2024 (0.4%).
- Composite packaging has decreased from 2020 (0.8%) and 2024 (0.4%).

Figure 4-15 shows the proportions of recyclables in LA street sweepings. The composition of recyclables has decreased by 1% since 2020 (3.4%).

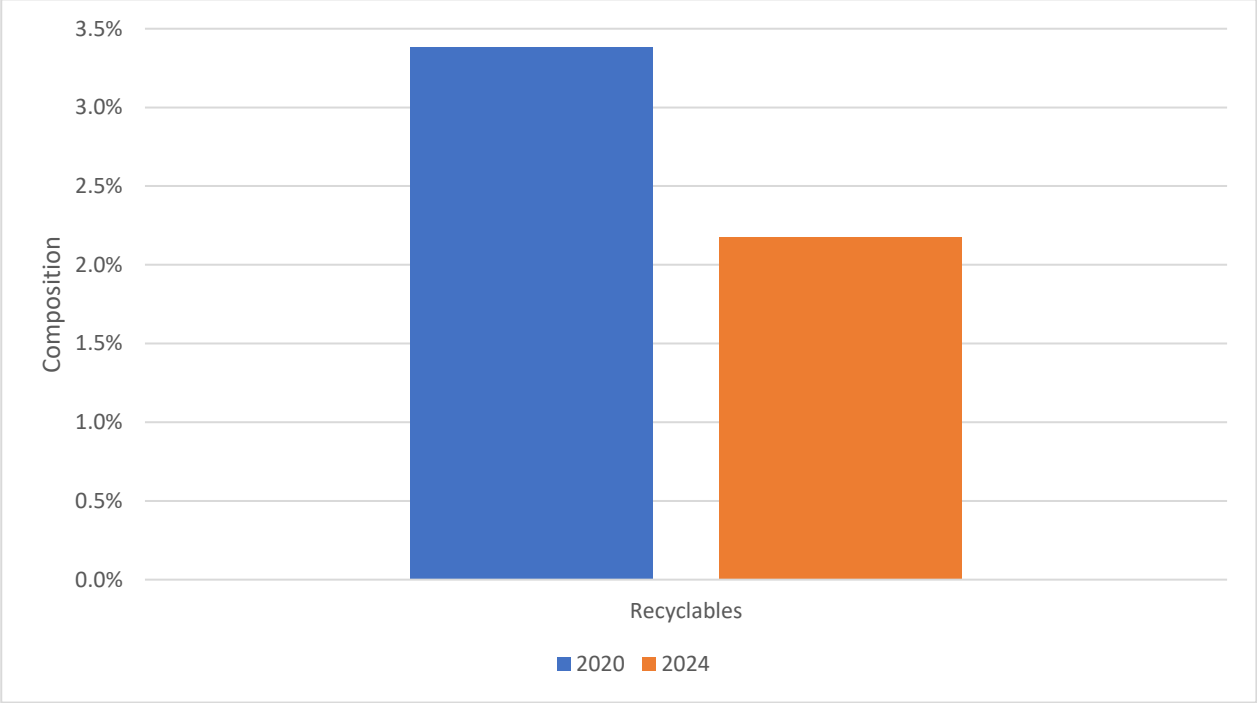

Figure 4-15: Proportions of Recyclables in Local Authority Street Sweepings (2020 and 2024)

The recyclable materials that saw the greatest reduction are recyclable metals (1%) and papers (0.6%). There was a small increase in recyclable plastics between 2020 (1.3%) and 2024 (1.6%).

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The aim of the project is to provide accurate up-to-date national information on the composition of waste derived from the three litter streams (Public Street litter bins, Local Authority (LA) Street litter sweeping activities and clean-up events, including beach clean-ups) to enable accurate waste statistics reporting and to inform national waste and circular economy policy, infrastructure planning and regulatory and enforcement activities.

The findings from this project are presented in two deliverables, this report and a model that contains and analyses the data reproduced in this report.

The main findings from this project include:

- **Biodegradable waste from garden & park**: Most LA street sweeping surveys were scheduled after winter to avoid bias from leaf litter from autumn to late winter. The LA litter managers were consulted to assess the leaf litter content within street sweepings. Garden & park vegetation, albeit frequently very decomposed, constituted much of the organic material in street sweeping samples analysed.

  The high levels of organics in LA street sweeping might be attributable to the sweepings collection method. Litter collected manually using a brush and shovel is typically gathered from footpaths and may contain a mix of drier materials including leaves, soil/grit, glass, paper, plastic, and cans, potentially collecting less soil or vegetation. The street sweepings samples collected for this study were mainly from road sweepers which may be more likely to contain higher levels of grit, water, as well as vegetation.

- **Food waste**: Food waste was the largest primary waste subcategory category in public litter bins (18%). A significant portion of food waste present in public litter bins consisted of unfinished on-the-go and fast food. The composition of food waste in public litter bin has reduced slightly (1%) since 2020.

- **Mixed municipal household waste**: Household mixed municipal waste in black bin bags were found in public litter bin and clean-up event samples. Mixed household municipal waste (often in black bags) constituted 18% of the waste in public litter street bin samples and 3% of waste from clean-up events. One public litter bin sample comprised of 76% household mixed municipal waste.

  The high proportion of household mixed municipal waste in public litter bins could be attributed in part to some members of the public choosing to dispose of their waste in public bins to avoid collection fees. Targeted campaigns on the importance of proper waste management and stricter monitoring and enforcement on those individuals discarding household waste as street waste.

  It is also possible that non-litter materials enter the stream after collection. During one of the litter bin surveys, non-municipal commercial waste was encountered in large bags. These bags were too large to fit in litter bins, suggesting they likely entered the litter bin stream post collection.

- **Recyclables materials**: A notable portion of items present in both public litter bins (22%) and community clean-up events (23%) had the potential to be recycled. Action is required – e.g. recycling bins combined with targeted education campaigns - to reduce the proportion of recyclable materials in public litter waste bins.

  A notable portion of the recyclable materials in public litter bins and clean-up event samples were on-the-go consumption items which included SUP drinks bottles, plastic bags, and drinks cans. The recent introduction of the deposit return scheme (DRS) may help to reduce the proportion of DRS target recyclable materials in public litter bins of being deposited as litter.

- **Glass packaging**: Despite the provision of nationwide glass collection at bring centre networks and associated messaging glass packaging was present in every public litter bin (7%) and clean-up event (10%) sample. Most of the glass packaging found in public litter bin and clean-up events was alcohol packaging.

- **Contamination:** This survey is the first litter project to publish data with contamination on packaging waste extracted into its own category. Comparisons with 2020 data are made without extracting this data, meaning that comparisons are ‘like-for-like’. It is important to understand the difference between the two types of data presented, corrected ('clean' with contamination accounted for separately) and uncorrected ('dirty' with contamination not accounted for separately and used in this report only for comparisons with 2020 data).

These findings emphasise the need for improved waste segregation and robust awareness campaigns. High levels of food waste and mixed municipal household waste in public street litter bins reveals issues in waste segregation practices and public understanding. Additionally, the prevalence of recyclable materials and glass packaging in public street litter bins and clean-up event samples highlights the necessity for improved access to recycling bins and bottle banks in public spaces.

To address these challenges and move towards a circular economy, targeted actions are recommended, see Section 5.1 following, such as awareness campaigns, infrastructure improvements, enforcement measures, and innovative technologies. By implementing these measures, Ireland can increase recycling rates, reduce environmental impact, enhance resource efficiency, and support the transition to a circular economy.

5.2 Recommendations

The following key actions are generated to assist in achieving the aim of improving waste management practices and segregation.

Areas for action

Key actions on waste streams of concern that require targeted action include:

1. Food waste is a priority due to its high prevalence in public street litter bins. To address this targeted, and co-ordinated awareness and education campaigns should be implemented to improve food waste segregation and promote behavioural change.
2. Action is required to reduce recyclable plastic waste content in public street litter bins and litter. The recent implementation of Deposit Return Scheme may help to minimise plastic, and metal, waste. Targeted awareness and education campaigns should focus on the importance of recycling. Infrastructure measures such as installing public recycling bins, as in Dublin City may assist in areas.
3. Household mixed municipal waste in litter bins is present in a high proportion in street litter bins. Targeted campaigns emphasising of proper waste management, coupled with stricter monitoring, enforcement and penalties are necessary to decrease household waste in public litter bins.
4. Nicotine vapes and other battery-operated devices are increasingly prevalent, losing valuable battery materials, and posing fire risk at waste management facilities. There is need for an information campaign to educate the public about the appropriate management and disposal methods for battery operated devices.
5. Further action is required to reduce the volume of coffee cups in street litter bins. Targeted campaigns at sales outlets, including promotion of reusable cups, would improve awareness and help reduce use of single-use cups.
6. The 2024 survey has identified materials that may require further attention to better manage their presence. These include vapes, coffee cups, composite SUP drinking bottles incl. caps and lids. Focus to search for new items can help identify trends early such those posed by vape batteries. Future litter studies should investigate the impact the DRS has had on the proportion of SUP plastic drinks bottles and aluminium drinks cans in the three litter streams.
7. This waste characterisation campaign quantified waste categories for the first time, including coffee cups, SUP wet wipes and SUP tobacco products. This forms a baseline to track arisings over time and to assess the effectiveness of policies and initiatives. SUPs are subject to legislation that requires monitoring for effectiveness; these SUPs should be re-examined in future surveys.

APPENDIX A

Litter Waste Categories

(Changes since 2020 Litter Waste Characterisation in red)

Primary Category	LOW CODE	Primary subcategory description	Examples	Packaging	Target bin
Organics	20 01 08 and 20 01 25	Food Waste	Unused or partially used packaged food that cannot easily be separated from packaging. e.g., Jar of honey, a tub of soft cheese, packet of ham, cheese in packaging. Vegetables, fruit, cheese, or sausages removed from packaging. e.g., Fruit & vegetables, block of cheese, sausages, bread Inedible food wastes. e.g., fruit & vegetables peelings, tea bags, meat carcasses.		OW
Organics	21 01 08	Liquid fit for human consumption	Liquid contained in drink or milk containers. e.g., Milk, soft drinks, juices. (NB: weigh without the packaging).		OW
Organics	20 02 01	Biodegradable waste from garden & park	Grass and bush cuttings, twigs, soil, flowers, leaves, tree branches, weeds		OW
Papers	15 01 01	Recyclable paper packaging	Brown or white paper bags, egg cartons, bread Wrappers.	Packaging	MDR
Papers	15 01 01	Unrecyclable paper packaging	Soiled/contaminated bags, cartons, and wrappers.	Packaging	MRW
Papers	20 01 01	Recyclable paper non-packaging	Newspapers, newsprint-type advertising publications, other newsprint, Magazines and advertisements on glossy paper, shop catalogues & supermarket flyers, Office type envelopes, letters, reports, print outs.		MDR
Papers	21 01 01	Unrecyclable paper non-packaging	Till receipts, books, telephone directories, nonglossy junk mail, loose leaf paper, non-glossy brochures and catalogues, notebooks, envelopes, Tissue paper, kitchen roll, disposable tissues, hand drying tissue sheets and blue paper roll		MRW

Cardboards	15 01 01	Recyclable cardboard packaging	Cereal boxes, toy boxes, washing powder containers, corrugated packaging cardboard used for household items packaging (tv, computer hardware, furniture etc.).	Packaging	MDR
Cardboards	15 01 01	Unrecyclable cardboard packaging.	Unrecyclable flat and corrugated card packaging e.g., ready packed meats, contaminated pizza box.	Packaging	MRW
Cardboards	20 01 01	Recyclable cardboard non-packaging.	Greeting cards, postcards, files and folders, tickets.		MDR
Cardboards	21 01 01	Unrecyclable cardboard non-packaging.	Contaminated greeting cards, postcards, files and folders, tickets.		MRW
Composites	15 01 05	Composite SUP drinking bottles incl. caps and lids (packaging)	SUP composite drinking bottles.	Packaging	MDR
Composites	15 01 05	Other composites (packaging)	Beverage/juice cartons (tetra Pak), soup, smoothie cups (NB: Covers and lids to be put into a plastics category if they are made from plastic), Packaging containers, wrappers, trays, pringles tubes, tablet packaging.	Packaging	MDR
Composites	15 01 05	Other composites (packaging) - Coffee Cups	Coffee cups.	Packaging	MRW
Composites		Other composites (non- packaging)	Composite cups (including covers and lids) and containers (including covers) bought in multipack for home use (e.g., children parties) (nonpackaging).		MRW
Textiles	15 01 09	Textiles Packaging	Shoe bag, handbag cover, potato sacks.		CAS
Textiles	20 01 11	Textiles Non-Packaging - clothes	Clothing, shoes (non-plastic).		CAS
Textiles	21 01 11	Textiles Non-Packaging - other than clothes	Rags, household soft furnishings (cushions) and upholstery, blankets, towels, carpets, curtains, rucksacks.		CAS
Textiles	20 01 99	Nappies, healthcare textiles and similar	Nappies, Dressings, plasters, linen, disposable clothing, bandages. Covid-19 PPE (PERSONAL PROTECTIVE EQUIPMENT) - masks, booties.		MRW

Plastics	15 01 02	PET SUP packaging drinking bottles including their caps and lids	SUP PET bottles e.g., soft drink, water bottles (NB: Lids to be put into another plastics category if they are made from a different polymer).	Packaging	MDR
Plastics	15 01 02	Other than PET SUP packaging drinking bottles including their caps and lids	SUP PP, PP, and other plastic bottles e.g., soft drink, water bottles (NB: Lids to be put into another plastics category if they are made from a different polymer).	Packaging	MDR
Plastics	15 01 02	Hard Plastic packaging other than SUP packaging drink bottles (incl. caps and lids).	PET, PP, PP and other plastic cups, packaging trays and containers (NB: Covers and lids to be put into another plastics category if they are made from a different polymer).	Packaging	MDR
Plastics	15 01 02	Soft plastic packaging (bags and films)	Lightweight supermarket shopping bags, crisp packets, sandwich bags from other than home use, compost/peatmoss bags, cling film from other than home use, biscuit wrappers.	Packaging	MDR
Plastics	20 01 39	Plastic non-packaging	Styrofoam and EPS (nonpackaging), Cutlery, stirrers, plates, straws, cotton buds, toys, CDs, buckets, clothes hangers, lighters, rulers, babies' bottles, shoes, reusable plastics bags (no supermarket logo) and similar, wet wipes, beakers, reusable bottles.		MDR
Plastics	20 01 39	SUP wet wipes	SUP wet wipes.		MRW
Plastics	20 01 39	SUP balloons	SUP balloon sticks		MRW
Plastics	20 01 39	SUP tobacco products			MRW
Glass	15 01 07	Glass (packaging)	Wine bottles, beer bottles, water bottles, jam jars and medicine bottles.	Packaging	CAS
Glass	20 01 02	Glass (non-packaging)	Mirrors, plate glass, flat glass, cookware (Pyrex), mixed broken glass, drinking glasses.		CAS
Metals	15 01 04	Ferrous metal packaging	Canned food, biscuit tins, tins of polish, beer bottle tops, glass jar lids.	Packaging	MDR
Metals	20 01 40	Ferrous metal non-packaging			MDR
Metals	15 01 04	Aluminium drinking cans (packaging)	Beverage cans - soft drinks, beer.	Packaging	MDR

Metals	15 01 04	Other aluminium packaging		Packaging	MDR
Metals	20 01 40	Aluminium non-packaging	Foil trays, some toothpaste/cosmetic products tubes.		MDR
Metals	15 01 04	Other non-ferrous metal (packaging)		Packaging	CAS
Metals	20 01 40	Other non-ferrous metal (non-packaging)			CAS
Wood	15 01 03	Wood Packaging	Bottle corks, cork packaging, pallets, ice-cream sticks, wooden boxes for wine/cheese/garden products/ slates, wooden separators between products e.g., slats used to separate windows in transport, wooden spools for cables).	Packaging	CAS
Wood	20 01 38	Untreated wood (non-packaging)	Wood fencing (unpainted/unvarnished), some wood from DIY.		CAS
Wood	20 01 37	Treated/composite wood (non-packaging)	Kitchen units, particle wood, toilet seats, skirting (chipboard, plywood, MDF), baskets.		CAS
Mixed household municipal waste (often in black bags)	20 03 01	Mixed household municipal waste (often in black bags)			
Hazardous / Non-Hazardous Municipal Waste	2 01 35* / 36	WEEE (including fluorescent tubes)	Household appliances (toasters etc.), electronic toys, remote controls, phone chargers, other mercury containing wastes, fluorescent tubes and other mercury containing wastes.		CAS
Hazardous / Non-Hazardous Municipal Waste	20 01 35*	Vapes			CAS
Hazardous / Non-Hazardous Municipal Waste	20 01 33* / 34	Batteries & Accumulators			CAS

Hazardous / Non-Hazardous Municipal Waste	15 01 04	Aerosols (packaging)	Deodorant, perfume, hairspray.	Packaging	CAS
Hazardous / Non-Hazardous Municipal Waste	20 03 99	Other municipal irregular/special waste (Hazardous)	Any other items e.g., hair dye, waste oil, oil filters, ink cartridges and toner, sharps, vials.		CAS
Non-Hazardous Municipal Waste	20 03 99	Municipal irregular/special waste (non-Hazardous)			CAS
Unclassified combustibles	15 XX XX	Unclassified combustibles (packaging)		Packaging	MRW
Unclassified combustibles	20 03 99	Unclassified combustibles (non-packaging)	Bagged dog dirt, animal hair, linoleum (lino), non-PPE household rubber gloves, candles, full tube body lotion, paint brush. Tobacco without filters.		MRW
Unclassified incombustibles	15 XX XX	Unclassified incombustibles (packaging)		Packaging	CAS
Unclassified incombustibles	20 03 99	Unclassified incombustibles (non-packaging)			CAS
Fines		Fines (<20mm)			MRW
Non-Municipal Waste	17 XX XX	C&D waste			CAS
Non-Municipal Waste		Non-municipal and non-C&D waste			CAS

APPENDIX B

Results - Public Litter Bin Waste

Results (%) - Public Litter Bins (Clean)

Contamination has been removed from the results

Sample number	1	2	5	6	7	8	9	11	12	13	14	16	17	19
Authorised Waste Collector (name)	DLRCC	DLRCC	KCC	KCC	KCC	KCC	GCC	CCC	CCC	CCC	CCC	KerryCC	KerryCC	GCOCO
Waste Region	EMR	EMR	EMR	EMR	EMR	EMR	CUR	SR	SR	SR	SR	SR	SR	CUR
Litter Type	Litter Bin	Litter Bin	Litter Bin	Litter Bin	Litter Bin	Litter Bin	Litter Bin	Litter Bin	Litter Bin	Litter Bin	Litter Bin	Litter Bin	Litter Bin	Litter Bin
LoW	20 03 99A	20 03 99A	20 03 99A	20 03 99A	20 03 99A	20 03 99A	20 03 99A	20 03 99A	20 03 99A	20 03 99A	20 03 99A	20 03 99A	20 03 99A	20 03 99A
Urban/Rural	Urban	Urban	Rural	Rural	Rural	Rural	Urban	Urban	Urban	Urban	Urban	Rural	Rural	Rural
Date of Sorting	10/11/2023	17/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	24/11/2023	22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024	29/02/2024

Number Category	Primary Waste Categories	Packaging	Single Use Plastics (SUP)	Secondary Categories	Primary Subcategory Waste Categories	%	%	%	%	%	%	%	%	%	%	%	%	%	%	Avg.	Min	Max	L. Limit	U. Limit	Std. Dev.	CI 90%	N	Target	Reference	Packaging
1	Organics	No	No		Food Waste	12%	12%	11%	14%	6%	13%	9%	35%	34%	43%	40%	19%	25%	24%	18%	6%	43%	13%	24%	12%	5%	14	OW	Panda	
2	Organics	No	No		Liquid fit for human consumption	3%	2%	6%	2%	2%	2%	3%	2%	3%	2%	2%	8%	5%	1%	3%	1%	8%	2%	4%	2%	1%	14	OW	Panda	
3	Organics	No	No		Biodegradable waste from garden & park	3%	14%	1%	1%	0%	5%	1%	1%	0%	0%	0%	5%	9%	10%	4%	0%	14%	2%	6%	4%	2%	14	OW	Panda	
4	Papers	Packaging	No		Recyclable paper packaging	1%	0%	1%	0%	3%	1%	2%	2%	3%	1%	0%	1%	0%	1%	1%	0%	3%	1%	2%	1%	0%	14	MDR	Mywaste	P
5	Papers	Packaging	No		Unrecyclable paper packaging	1%	0%	2%	2%	1%	2%	1%	1%	2%	1%	0%	0%	2%	1%	1%	0%	2%	1%	2%	1%	0%	14	MRW	Panda	P
6	Papers	No	No		Recyclable paper non-packaging	7%	1%	0%	1%	2%	2%	3%	1%	1%	1%	1%	9%	4%	3%	3%	0%	9%	2%	4%	2%	1%	14	MDR	Mywaste	
7	Papers	No	No		Unrecyclable paper non-packaging	3%	1%	3%	3%	1%	2%	3%	2%	3%	3%	2%	3%	3%	5%	3%	1%	5%	2%	3%	1%	0%	14	MRW	Mywaste	
8	Cardboards	Packaging	No		Recyclable cardboard packaging	3%	1%	2%	5%	1%	2%	7%	2%	5%	2%	2%	3%	2%	3%	3%	1%	7%	2%	4%	2%	1%	14	MDR	Mywaste	P
9	Cardboards	Packaging	No		Unrecyclable cardboard packaging.	0%	0%	2%	3%	0%	3%	0%	1%	1%	0%	0%	1%	1%	1%	1%	0%	3%	1%	2%	1%	0%	14	MRW	Panda	P
10	Cardboards	No	No		Recyclable cardboard non-packaging.	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	14	MDR	Mywaste	
11	Cardboards	No	No		Unrecyclable cardboard non-packaging.	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14	MRW	Mywaste	
12	Composites	Packaging	SUP	Secondary Categories	Composite SUP drinking bottles incl. caps and lids (packaging)	0%	1%	1%	6%	0%	1%	0%	0%	0%	0%	1%	0%	0%	0%	1%	0%	6%	0%	2%	2%	1%	14	MDR	Mywaste	P
13.1	Composites	Packaging	No		Other composites (packaging)	1%	1%	1%	1%	0%	1%	1%	0%	1%	1%	0%	1%	1%	1%	1%	0%	1%	1%	1%	0%	0%	14	MDR	Panda	P
13.2	Composites	Packaging	SUP	Secondary Categories	Coffee cups	4%	3%	3%	5%	2%	1%	2%	1%	7%	2%	2%	2%	2%	0%	2%	0%	7%	2%	3%	2%	1%	14	MRW	Mywaste	P
14	Composites	No	No		Other composites (non- packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14	MRW	Mywaste	
15	Textiles	Packaging	No		Textiles Packaging	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14	CAS	Mywaste	P
16	Textiles	No	No		Textiles Non-Packaging - clothes	2%	0%	0%	0%	0%	1%	0%	2%	1%	0%	0%	2%	2%	3%	1%	0%	3%	1%	1%	1%	0%	14	CAS	Mywaste	
17	Textiles	No	No		Textiles Non-Packaging - other than clothes	1%	1%	0%	1%	1%	2%	2%	0%	0%	0%	0%	1%	1%	2%	1%	0%	2%	1%	1%	1%	0%	14	CAS	Mywaste	
18	Textiles	No	No		Nappies, healthcare textiles and similar	5%	3%	0%	1%	0%	3%	0%	8%	0%	1%	2%	3%	2%	5%	2%	0%	8%	1%	3%	2%	1%	14	MRW	Panda	
19	Plastics	Packaging	SUP	Secondary Categories	PET SUP packaging drinking bottles including their caps and lids	2%	2%	5%	3%	2%	2%	2%	2%	4%	3%	2%	3%	3%	1%	3%	1%	5%	2%	3%	1%	0%	14	MDR	Mywaste	P
20	Plastics	Packaging	SUP	Secondary Categories	Other than PET SUP packaging drinking bottles including their caps and lids	1%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	1%	0%	5%	0%	1%	1%	1%	14	MDR	Mywaste	P
21	Plastics	Packaging	No		Hard Plastic packaging other than SUP packaging drink bottles (incl. caps and lids).	3%	2%	3%	4%	3%	3%	7%	2%	4%	2%	2%	3%	4%	4%	3%	2%	7%	3%	4%	1%	1%	14	MDR	Mywaste	P
22	Plastics	Packaging	No		Soft plastic packaging (bags and films)	4%	1%	5%	6%	1%	5%	4%	2%	2%	4%	2%	3%	3%	6%	4%	1%	6%	3%	4%	2%	1%	14	MDR	Mywaste	P
23.1	Plastics	No	SUP	Secondary Categories	Plastic non-packaging	1%	0%	0%	0%	0%	0%	8%	1%	0%	2%	0%	1%	0%	1%	1%	0%	8%	0%	2%	2%	1%	14	MDR	Mywaste	
23.2	Plastics	No	SUP	Secondary Categories	SUP Wet Wipes	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	14	MRW	Mywaste	
23.3	Plastics	No	SUP	Secondary Categories	SUP Balloons	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14	MRW	Mywaste	
23.4	Plastics	No	SUP	Secondary Categories	SUP Tobacco products	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14	MRW	Mywaste	
24	Glass	Packaging	No		Glass (packaging)	5%	5%	7%	3%	7%	7%	3%	12%	9%	4%	13%	8%	9%	5%	6%	3%	13%	5%	8%	3%	1%	14	CAS	Mywaste	P
25	Glass	No	No		Glass (non-packaging)	2%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	2%	0%	1%	1%	0%	14	CAS	Mywaste	
26	Metals	Packaging	No		Ferrous metal packaging	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	1%	1%	1%	0%	0%	1%	0%	1%	0%	0%	14	MDR	Mywaste	P
27	Metals	No	No		Ferrous metal non-packaging	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	14	MDR	Mywaste	
28	Metals	Packaging	No		Aluminium drinking cans (packaging)	2%	1%	2%	2%	1%	2%	2%	2%	3%	4%	1%	1%	1%	1%	2%	1%	4%	1%	2%	1%	0%	14	MDR	Mywaste	P
29	Metals	Packaging	No		Other aluminium packaging	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	14	MDR	Mywaste	P
30	Metals	No	No		Aluminium non-packaging	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	14	MDR	Mywaste	
31	Metals	Packaging	No		Other non-ferrous metal (packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14	CAS	Mywaste	P
32	Metals	No	No		Other non-ferrous metal (non-packaging)	0%	0%	0%	0%	0%	0%	8%	0%	0%	1%	0%	0%	0%	0%	1%	0%	8%	0%	2%	2%	1%	14	CAS	Mywaste	
33	Wood	Packaging	No		Wood Packaging	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14	CAS	Mywaste	P
34	Wood	No	No		Untreated wood (non-packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14	CAS	Mywaste	
35	Wood	No	No		Treated/composite wood (non-packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14	CAS	Mywaste	
37.1	Hazardous / Non-Hazardous Municipal Waste	No	No		WEEE (incl fluorsecent tubes)	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	1%	1%	0%	14	CAS	Mywaste	
37.2	Hazardous / Non-Hazardous Municipal Waste	No	No		Vapes	1%	0%	2%	2%	0%	1%	0%	0%	1%	1%	0%	0%	1%	0%	1%	0%	2%	0%	1%	1%	0%	14	CAS	Mywaste	
38	Hazardous / Non-Hazardous Municipal Waste	No	No		Batteries & Accumulators	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	14	CAS	Mywaste	
39	Hazardous / Non-Hazardous Municipal Waste	Packaging	No		Aerosols (packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14	CAS	Mywaste	P
40	Hazardous / Non-Hazardous Municipal Waste	No	No		Other municipal irregular/special waste (Hazardous)	1%	0%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	15%	0%	3%	4%	2%	14	CAS	Mywaste	
41	Non-Hazardous Municipal Waste	No	No		Municipal irregular/special waste (Non-Hazardous)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14	CAS	Mywaste	
44	Unclassified combustibles	Packaging	No		Unclassified combustibles (packaging)	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	2%	0%	0%	0%	0%	14	MRW	Panda	P
45	Unclassified combustibles	No	No		Unclassified combustibles (non-packaging)	13%	40%	15%	16%	13%	26%	11%	8%	1%	2%	10%	9%	4%	1%	13%	1%	40%	9%	18%	10%	4%	14	MRW	Panda	
46	Unclassified incombustibles	Packaging	No		Unclassified incombustibles (packaging)	0%	1%	0%	0%	0%	0%	0%	0%	0%	7%	1%	0%	0%	0%	0%	0%	7%	0%	1%	2%	1%	14	CAS	Panda	P
47	Unclassified incombustibles	No	No		Unclassified incombustibles (non-packaging)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%	0%	0%	0%	14	CAS	Panda	
48	Fines	No	No		Fines (<20mm)	2%	1%	1%	0%	0%	2%	1%	4%	0%	4%	9%	3%	3%	4%	2%	0%	9%	1%	3%	2%	1%	14	MRW	Mywaste	
42	Non Municipal Waste	No	No		C&D waste	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14	CAS	Mywaste	
43	Non Municipal Waste	No	No		Non-municipal and non-C&D waste	0%	0%	0%	0%	46%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%	46%	-1%	9%	12%	5%	14	CAS	Mywaste	
44	Contamination					9%	5%	12%	16%	6%	10%	11%	7%	13%	7%	6%	7%	9%	8%	9%	5%	16%	8%	10%	3%	1%	14			
					Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%											

APPENDIX C

Results – Local Authority Street Litter Sweepings

Results (%) - Street Sweepings (Clean)

Contamination has been removed from the results

Sample number	3	4	20	21	22	23	24	25	26	27	28	29	30
Authorised Waste Collector (name)	DLRCC	DLRCC	GCOCO	GCC	DLRCC	KCC	KCC	KCC	KCC	CCC	CCC	KerryCC	KerryCC
Waste Region	EMR	EMR	CUR	CUR	EMR	EMR	EMR	EMR	EMR	SR	SR	SR	SR
Litter Type	Street Sweepings	Street Sweepings	Street Sweepings	Street Sweepings	Street Sweepings	Street Sweepings	Street Sweepings	Street Sweepings	Street Sweepings	Street Sweepings	Street Sweepings	Street Sweepings	Street Sweepings
LoW	20 03 03	20 03 03	20 03 03	20 03 03	20 03 03	20 03 03	20 03 03	20 03 03	20 03 03	20 03 03	20 03 03	20 03 03	20 03 03
Urban/Rural	Urban	Urban	Rural	Urban	Urban	Rural	Rural	Rural	Rural	Urban	Urban	Rural	Rural
Date of Sorting	17/11/2023	17/11/2023	29/02/2024	29/02/2024	01/03/2024	26/02/2024	26/02/2024	26/02/2024	26/02/2024	09/04/2024	09/04/2024	22/02/2024	23/02/2024

Number Category	Primary Waste Categories	Packaging	Single Use Plastics (SUP	Secondary Categories	Primary Subcategory Waste Categories	%	%	%	%	%	%	%	%	%	%	%	%	%	Avg.	Min	Max	L. Limit	U. Limit	Std. Dev.	CI 90%	N	Target	Reference	Packaging
1	Organics	No	No		Food Waste	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	OW	Panda	
2	Organics	No	No		Liquid fit for human consumption	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	OW	Panda	
3	Organics	No	No		Biodegradable waste from garden & park	87%	73%	89%	94%	100%	100%	100%	100%	100%	84%	98%	96%	96%	94%	73%	100%	90%	97%	8%	4%	13	OW	Panda	
4	Papers	Packaging	No		Recyclable paper packaging	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	MDR	Mywaste	P
5	Papers	Packaging	No		Unrecyclable paper packaging	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	2%	0%	0%	1%	0%	13	MRW	Panda	P
6	Papers	No	No		Recyclable paper non-packaging	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	MDR	Mywaste	
7	Papers	No	No		Unrecyclable paper non-packaging	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	13	MRW	Mywaste	
8	Cardboards	Packaging	No		Recyclable cardboard packaging	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	13	MDR	Mywaste	P
9	Cardboards	Packaging	No		Unrecyclable cardboard packaging.	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	MRW	Panda	P
10	Cardboards	No	No		Recyclable cardboard non-packaging.	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	MDR	Mywaste	
11	Cardboards	No	No		Unrecyclable cardboard non-packaging.	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	MRW	Mywaste	
12	Composites	Packaging	SUP	Secondary Categories	Composite SUP drinking bottles incl. caps and lids (packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	MDR	Mywaste	P
13.1	Composites	Packaging	No		Other composites (packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	MDR	Panda	P
13.2	Composites	Packaging	SUP	Secondary Categories	Coffee cups	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	13	MRW	Mywaste	P
14	Composites	No	No		Other composites (non- packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	MRW	Mywaste	
15	Textiles	Packaging	No		Textiles Packaging	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	CAS	Mywaste	P
16	Textiles	No	No		Textiles Non-Packaging - clothes	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	13	CAS	Mywaste	
17	Textiles	No	No		Textiles Non-Packaging - other than clothes	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	13	CAS	Mywaste	
18	Textiles	No	No		Nappies, healthcare textiles and similar	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%	13	MRW	Panda	
19	Plastics	Packaging	SUP	Secondary Categories	PET SUP packaging drinking bottles including their caps and lids	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	13	MDR	Mywaste	P
20	Plastics	Packaging	SUP	Secondary Categories	Other than PET SUP packaging drinking bottles including their caps and lids	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	MDR	Mywaste	P
21	Plastics	Packaging	No		Hard Plastic packaging other than SUP packaging drink bottles (incl. caps and lids).	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	13	MDR	Mywaste	P
22	Plastics	Packaging	No		Soft plastic packaging (bags and films)	0%	0%	2%	3%	0%	0%	0%	0%	0%	3%	0%	0%	0%	1%	0%	3%	0%	1%	1%	0%	13	MDR	Mywaste	P
23.1	Plastics	No	SUP	Secondary Categories	Plastic non-packaging	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	1%	1%	0%	13	MDR	Mywaste	
23.2	Plastics	No	SUP	Secondary Categories	SUP Wet Wipes	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	MRW	Mywaste	
23.3	Plastics	No	SUP	Secondary Categories	SUP Balloons	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	MRW	Mywaste	
23.4	Plastics	No	SUP	Secondary Categories	SUP Tobacco products	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	MRW	Mywaste	
24	Glass	Packaging	No		Glass (packaging)	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	13	CAS	Mywaste	P
25	Glass	No	No		Glass (non-packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	CAS	Mywaste	
26	Metals	Packaging	No		Ferrous metal packaging	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	MDR	Mywaste	P
27	Metals	No	No		Ferrous metal non-packaging	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	MDR	Mywaste	
28	Metals	Packaging	No		Aluminium drinking cans (packaging)	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%	13	MDR	Mywaste	P
29	Metals	Packaging	No		Other aluminium packaging	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	MDR	Mywaste	P
30	Metals	No	No		Aluminium non-packaging	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	MDR	Mywaste	
31	Metals	Packaging	No		Other non-ferrous metal (packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	CAS	Mywaste	P
32	Metals	No	No		Other non-ferrous metal (non-packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	CAS	Mywaste	
33	Wood	Packaging	No		Wood Packaging	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	CAS	Mywaste	P
34	Wood	No	No		Untreated wood (non-packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	CAS	Mywaste	
35	Wood	No	No		Treated/composite wood (non-packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	CAS	Mywaste	
37.1	Hazardous / Non-Hazardous Municipal Waste	No	No		WEEE (incl fluorsecent tubes)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	CAS	Mywaste	
37.2	Hazardous / Non-Hazardous Municipal Waste	No	No		Vapes	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	CAS	Mywaste	
38	Hazardous / Non-Hazardous Municipal Waste	No	No		Batteries & Accumulators	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	CAS	Mywaste	
39	Hazardous / Non-Hazardous Municipal Waste	Packaging	No		Aerosols (packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	CAS	Mywaste	P
40	Hazardous / Non-Hazardous Municipal Waste	No	No		Other municipal irregular/special waste (Hazardous)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	CAS	Mywaste	
41	Non-Hazardous Municipal Waste	No	No		Municipal irregular/special waste (Non-Hazardous)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	CAS	Mywaste	
44	Unclassified combustibles	Packaging	No		Unclassified combustibles (packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	MRW	Panda	P
45	Unclassified combustibles	No	No		Unclassified combustibles (non-packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	MRW	Panda	
46	Unclassified incombustibles	Packaging	No		Unclassified incombustibles (packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	CAS	Panda	P
47	Unclassified incombustibles	No	No		Unclassified incombustibles (non-packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13	CAS	Panda	
48	Fines	No	No		Fines (<20mm)	13%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	25%	0%	6%	7%	3%	13	MRW	Mywaste	
42	Non Municipal Waste	No	No		C&D waste	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	CAS	Mywaste	
43	Non Municipal Waste	No	No		Non-municipal and non-C&D waste	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	#NUM!	#NUM!	0%	#NUM!	13	CAS	Mywaste	
44	Contamination					0%	0%	2%	2%	0%	0%	0%	0%	0%	4%	0%	1%	1%	1%	0%	4%	0%	1%	1%	0%	13			
					Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%											

APPENDIX D

Results – Litter Clean-up Events

Results (%) - Community Clean-up

Contamination has been removed from the results

Sample number	10	15	18	31	32
Authorised Waste Collector (name)	DLTT	Bray TT	Kinvara TT	Kerry	Cork City
Waste Region	EMR	EMR	CUR	SR	SR
Litter Type	Clean-up Event	Clean-up Event	Clean-up Event	Clean-up Event	Clean-up Event
LoW	20 03 99 B	20 03 99 B	20 03 99 B	20 03 99 B	20 03 99 B
Urban/Rural	Urban	Rural	Rural	Rural	Urban
Date of Sorting	15/12/2023	26/02/2024	29/02/2024	19/04/2024	16/05/2024

Number Category	Primary Waste Categories	Packaging	Single Use Plastics (SUP	Secondary Categories	Primary Subcategory Waste Categories	%	%	%	%	%	Avg.	Min	Max	L. Limit	U. Limit	Std. Dev.	CI 90%	N	Target	Reference	Packaging
1	Organics	No	No		Food Waste	1%	1%	0%	4%	3%	2%	0%	4%	1%	3%	2%	1%	5	OW	Panda	
2	Organics	No	No		Liquid fit for human consumption	0%	2%	0%	1%	7%	2%	0%	7%	0%	4%	3%	2%	5	OW	Panda	
3	Organics	No	No		Biodegradable waste from garden & park	80%	7%	1%	11%	28%	26%	1%	80%	4%	47%	29%	21%	5	OW	Panda	
4	Papers	Packaging	No		Recyclable paper packaging	0%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%	5	MDR	Mywaste	P
5	Papers	Packaging	No		Unrecyclable paper packaging	0%	0%	0%	0%	1%	0%	0%	1%	0%	0%	0%	0%	5	MRW	Panda	P
6	Papers	No	No		Recyclable paper non-packaging	1%	0%	2%	2%	0%	1%	0%	2%	0%	1%	1%	0%	5	MDR	Mywaste	
7	Papers	No	No		Unrecyclable paper non-packaging	0%	3%	3%	2%	3%	2%	0%	3%	1%	3%	1%	1%	5	MRW	Mywaste	
8	Cardboards	Packaging	No		Recyclable cardboard packaging	1%	3%	1%	4%	0%	2%	0%	4%	1%	3%	1%	1%	5	MDR	Mywaste	P
9	Cardboards	Packaging	No		Unrecyclable cardboard packaging.	1%	4%	1%	0%	1%	1%	0%	4%	1%	2%	1%	1%	5	MRW	Panda	P
10	Cardboards	No	No		Recyclable cardboard non-packaging.	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5	MDR	Mywaste	
11	Cardboards	No	No		Unrecyclable cardboard non-packaging.	1%	0%	2%	0%	0%	1%	0%	2%	0%	1%	1%	1%	5	MRW	Mywaste	
12	Composites	Packaging	SUP	Secondary Categories	Composite SUP drinking bottles incl. caps and lids (packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5	MDR	Mywaste	P
13.1	Composites	Packaging	No		Other composites (packaging)	0%	1%	1%	3%	2%	1%	0%	3%	1%	2%	1%	1%	5	MDR	Panda	P
13.2	Composites	Packaging	SUP	Secondary Categories	Coffee cups	0%	2%	2%	2%	1%	2%	0%	2%	1%	2%	1%	1%	5	MRW	Mywaste	P
14	Composites	No	No		Other composites (non- packaging)	0%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%	5	MRW	Mywaste	
15	Textiles	Packaging	No		Textiles Packaging	0%	0%	1%	1%	0%	0%	0%	1%	0%	0%	0%	0%	5	CAS	Mywaste	P
16	Textiles	No	No		Textiles Non-Packaging - clothes	0%	4%	10%	4%	7%	5%	0%	10%	2%	7%	3%	2%	5	CAS	Mywaste	
17	Textiles	No	No		Textiles Non-Packaging - other than clothes	2%	2%	1%	2%	0%	1%	0%	2%	1%	2%	1%	1%	5	CAS	Mywaste	
18	Textiles	No	No		Nappies, healthcare textiles and similar	1%	1%	0%	1%	0%	0%	0%	1%	0%	1%	0%	0%	5	MRW	Panda	
19	Plastics	Packaging	SUP	Secondary Categories	PET SUP packaging drinking bottles including their caps and lids	1%	5%	7%	4%	2%	4%	1%	7%	2%	5%	2%	2%	5	MDR	Mywaste	P
20	Plastics	Packaging	SUP	Secondary Categories	Other than PET SUP packaging drinking bottles including their caps and lids	1%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	5	MDR	Mywaste	P
21	Plastics	Packaging	No		Hard Plastic packaging other than SUP packaging drink bottles (incl. caps and lids).	1%	2%	10%	3%	3%	4%	1%	10%	2%	6%	3%	2%	5	MDR	Mywaste	P
22	Plastics	Packaging	No		Soft plastic packaging (bags and films)	2%	4%	1%	4%	1%	2%	1%	4%	1%	4%	2%	1%	5	MDR	Mywaste	P
23.1	Plastics	No	SUP	Secondary Categories	Plastic non-packaging	0%	2%	5%	5%	4%	3%	0%	5%	2%	5%	2%	1%	5	MDR	Mywaste	
23.2	Plastics	No	SUP	Secondary Categories	SUP Wet Wipes	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	5	MRW	Mywaste	
23.3	Plastics	No	SUP	Secondary Categories	SUP Balloons	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5	MRW	Mywaste	
23.4	Plastics	No	SUP	Secondary Categories	SUP Tobacco products	1%	0%	0%	0%	3%	1%	0%	3%	0%	2%	1%	1%	5	MRW	Mywaste	
24	Glass	Packaging	No		Glass (packaging)	0%	17%	9%	14%	5%	9%	0%	17%	5%	14%	6%	5%	5	CAS	Mywaste	P
25	Glass	No	No		Glass (non-packaging)	1%	0%	2%	0%	0%	1%	0%	2%	0%	1%	1%	0%	5	CAS	Mywaste	
26	Metals	Packaging	No		Ferrous metal packaging	0%	0%	0%	2%	0%	1%	0%	2%	0%	1%	1%	1%	5	MDR	Mywaste	P
27	Metals	No	No		Ferrous metal non-packaging	0%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%	5	MDR	Mywaste	
28	Metals	Packaging	No		Aluminium drinking cans (packaging)	1%	10%	3%	4%	1%	4%	1%	10%	1%	6%	3%	2%	5	MDR	Mywaste	P
29	Metals	Packaging	No		Other aluminium packaging	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5	MDR	Mywaste	P
30	Metals	No	No		Aluminium non-packaging	0%	1%	0%	0%	0%	0%	0%	1%	0%	1%	1%	0%	5	MDR	Mywaste	
31	Metals	Packaging	No		Other non-ferrous metal (packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5	CAS	Mywaste	P
32	Metals	No	No		Other non-ferrous metal (non-packaging)	0%	0%	0%	0%	1%	0%	0%	1%	0%	0%	0%	0%	5	CAS	Mywaste	
33	Wood	Packaging	No		Wood Packaging	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5	CAS	Mywaste	P
34	Wood	No	No		Untreated wood (non-packaging)	0%	0%	0%	0%	1%	0%	0%	1%	0%	0%	0%	0%	5	CAS	Mywaste	
35	Wood	No	No		Treated/composite wood (non-packaging)	0%	1%	1%	1%	0%	1%	0%	1%	0%	1%	0%	0%	5	CAS	Mywaste	
37.1	Hazardous / Non-Hazardous Municipal Waste	No	No		WEEE (incl fluorsecent tubes)	0%	2%	1%	2%	0%	1%	0%	2%	0%	2%	1%	1%	5	CAS	Mywaste	
37.2	Hazardous / Non-Hazardous Municipal Waste	No	No		Vapes	0%	1%	1%	1%	1%	1%	0%	1%	0%	1%	0%	0%	5	CAS	Mywaste	
38	Hazardous / Non-Hazardous Municipal Waste	No	No		Batteries & Accumulators	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5	CAS	Mywaste	
39	Hazardous / Non-Hazardous Municipal Waste	Packaging	No		Aerosols (packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5	CAS	Mywaste	P
40	Hazardous / Non-Hazardous Municipal Waste	No	No		Other municipal irregular/special waste (Hazardous)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5	CAS	Mywaste	
41	Non-Hazardous Municipal Waste	No	No		Municipal irregular/special waste (Non-Hazardous)	0%	0%	7%	0%	0%	1%	0%	7%	-1%	3%	3%	2%	5	CAS	Mywaste	
44	Unclassified combustibles	Packaging	No		Unclassified combustibles (packaging)	0%	1%	2%	0%	0%	1%	0%	2%	0%	1%	1%	1%	5	MRW	Panda	P
45	Unclassified combustibles	No	No		Unclassified combustibles (non-packaging)	0%	0%	0%	4%	5%	2%	0%	5%	0%	4%	2%	2%	5	MRW	Panda	
46	Unclassified incombustibles	Packaging	No		Unclassified incombustibles (packaging)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5	CAS	Panda	P
47	Unclassified incombustibles	No	No		Unclassified incombustibles (non-packaging)	0%	4%	7%	2%	13%	5%	0%	13%	2%	8%	5%	3%	5	CAS	Panda	
48	Fines	No	No		Fines (<20mm)	0%	3%	1%	3%	0%	1%	0%	3%	0%	2%	1%	1%	5	MRW	Mywaste	
42	Non Municipal Waste	No	No		C&D waste	0%	0%	1%	0%	0%	0%	0%	1%	0%	1%	1%	0%	5	CAS	Mywaste	
43	Non Municipal Waste	No	No		Non-municipal and non-C&D waste	0%	0%	9%	0%	0%	2%	0%	9%	-1%	5%	4%	3%	5	CAS	Mywaste	
44	Contamination					3%	14%	9%	10%	6%	8%	3%	14%	6%	11%	4%	3%	5			
					Total	100%	100%	100%	100%	100%											