2022 Commercial Municipal Waste Characterisation

SEPTEMBER 2023

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Glossary of Terms

Authorised waste collector means a waste collector who has a valid permit issued by the National Waste Collection Permit Office.

Biodegradable Municipal Waste (BMW) is the fraction of municipal waste that will rot or degrade biologically. The main constituents of the biodegradable proportion of municipal waste are typically parks and garden waste, food waste, timber, paper, card and textiles. BMW is as defined by EPA, 2011, Protocol for The Evaluation of Biodegradable Municipal Waste Sent To Landfill. Each waste type that was characterised is assigned as being either 100% BMW, 50% BMW or 0% BMW:

- 100% BMW   Organics (Food), Organics (Garden), papers, and cardboard.
- 50% BMW   Textiles (including nappies), and wood, unclassified combustibles, and fines.
- 0% BMW   Other categories such as glass, plastics, and metals.

Bring Centres includes Civic Amenity Sites, Recycling Centres, Bring Bank & WEEE recycling points.

Brown Bin is a reference to an organic waste collection. Where garden waste is excluded, this bin may be termed a food waste collection.

Characteristic means a property, which helps to identify or differentiate between items of a given population.

Civic Amenity Site are designated centres that accept household and some commercial items such as bulky items, hazardous wastes and WEEE that should not be placed in kerbside bins.

Commercial waste, in the context of this report, is a term used to describe the non-household fraction of municipal waste, which is produced by commercial premises such as shops, offices and restaurants, as well as municipal premises such as schools, hospitals etc. It also includes non-process industrial waste arising from factory canteens, offices etc. Commercial waste is broadly similar in composition to household waste, consisting of a mixture of paper and cardboard, plastics, organics, metal and glass.

Composite sample means two or more increments/sub-samples mixed together in appropriate proportions, either discretely or continuously (blended composite sample), from which the average value of a desired characteristic may be obtained.

Compostable refers to compostable wares (knives, spoons, plates) and packaging containers that bear the Cré Certification Scheme Logo to prove the product is certified by Cré that it is compostable in Ireland or the EN 13432 mark to prove the product is certified in industrially compostable according to the European Standard EN 13432.

Combustible materials refers to waste materials that cannot be classified according to individual material descriptions. They are broken down according to whether they can be burned (unclassified combustibles) or not (unclassified incombustibles).

Contamination refers to 2 main types of contamination – residual contamination and cross-contamination.

- **Residual contamination** typically refers to food (or dirt) that is left over on paper, cardboard, plastic, composites and metal materials after discarding. This is particularly important where the container may be segregated for recycling as contamination can lower the potential recyclability of the material.

- **Cross-contamination** (including moisture) occurs when materials segregated at source are contaminated by other waste materials present in a particular waste stream (e.g. garden or food waste contaminating mixed dry recyclables) or liquids (e.g. coffee, water, soft drinks, oils, paints). Moisture can also be due to rain getting into bins which, although not directly related to the waste materials present, can increases contamination levels.

CSO means the Central Statistics Office.

European Waste Catalogue (EWC), now known as the List of Wastes (LoW), is a list 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. The catalogue is available for download from the EPA website at: www.epa.ie/pubs/reports/waste/stats/epawastecataloguehazardouslist2002.pdf.html

Fines (<20mm), refers to material that would pass through a 20mm sieve.

Heterogeneity is the degree to which a property or a constituent is not uniformly distributed throughout a quantity of material.

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.

Kerbside collection is a common reference for the practice of collecting household or commercial waste directly from its source, often, though not necessarily, from the pavement or front door.

MDR means Mixed Dry Recyclables.

MRW means Mixed Residual Waste.

N/A means not applicable.

NACE (Nomenclature of Economic Activities) is the European statistical classification of economic activities.

Non-Household waste - see commercial waste

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.

Non-target material is material that is capable of being recycled but is not being targeted by the collector for separation and sale. This may be because they do not have a buyer (e.g. for beverage cartons) or because the materials recycling facilities or reprocessor excludes it from their specification (e.g. card in a consignment of newspapers which can cause problems in paper mills).

NWCPO means National Waste Collection Permit Office operated by Offaly County Council.

Organic waste is biodegradable food, garden and landscaping waste, and where the context permits, will also include industrial organic sludges (e.g. from the food and drink production sector). These materials are typically accepted into the biodegradable waste bin ('brown bin'), as listed in www.brownbin.ie. Some collections vary from the website list by primarily targeting food waste, to the exclusion of garden waste.

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 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. In the non-household surveys a sample is a minimum of 5kgs.

Sample size means the number of samples taken to generate a profile for a specific waste stream.

Scale is the stated size or volume that is considered appropriate for assessing the material

Single Use Plastics (SUPs) are products are made wholly or partly of plastic and are typically intended to be used just once or for a short period of time before they are thrown away.

Special Wastes are waste materials that should not be placed in kerbside collection bins (e.g. hazardous wastes) and instead should be segregated and managed through alternative collection systems such as Civic Amenity Sites, Bring Centres or through dedicated waste material collections (e.g. textiles, batteries, WEEE). Businesses should refer to MyWaste.ie & WEEE Ireland for guidance on how to manage/dispose of these wastes correctly.

Target material is any material that identified as needing to be separated from other types of material.

- For the purposes of this study, 'target material' means the materials and designated waste management methods listed on the national guide to managing waste (www.mywaste.ie). (e.g. a metal drink can should be placed in MDR bin). Waste collector guidance has been used if waste management guidance for a specific material is not available on Mywaste.
- **Non-target material** is waste that has been placed in the wrong bin (e.g. recyclable cardboard placed in the MRW bin or compostable beverage cups placed in the MDR bin) or that should be brought to bring centres (e.g. bulky waste).

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 refer 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 Waste Category is a high level waste category e.g. plastics, organics, metals etc.
- Primary Waste Sub-Category is a more specific sub-category within a Primary Waste Category, e.g. Polyethylene (PET) packaging bottles, food waste, ferrous metal etc.
- Secondary Waste Sub-Category includes specific wastes including Single Use Plastics (SUP), compostable wastes and 'special interest items' which includes wastes that could be targeted for

alternative collections, and/or has a potential reuse alternative.

Waste composition profile is the percentage of materials in a certain waste stream. This profile will differ according to each source of waste.

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 after-care of disposal sites, and including actions taken as a dealer or broker.

2-bin or 3-bin system refers to a source segregated collection system where dry recyclables (MDR) and residual wastes (MRW) are separately collected (2-bin system), or where dry recyclables (MDR), organics waste and residuals are separately collected (3-bin system). The reference to 'black bin' in this document is a reference to a single bin collection or to the residuals bin from a 2-bin or 3-bin system. The reference to 'green bin' in this document is a reference to a dry recyclables collection, and 'brown bin' is a reference to an organics bin collection.

ACKNOWLEDGEMENTS

Executive Summary

Accurate and up-to-date information on the composition of waste is required for effective waste management planning and implementation, in addition to monitoring and reporting. The basis of waste characterisation work, which forms the basis of Ireland's national waste statistics, is that, by assessing representative samples of waste from targeted sub-sets, these profiles can then be combined to generate a statistically robust national profile.

This report summarises the results and findings of the assessment of municipal waste from the non-household sector. The non-household (commercial) sector refers to NACE sectors G (retail) to S (other activities) inclusive. It does not include industry, primary producers or households. This work builds on the 2018 national municipal waste characterisation work and provides an updated profile of non-household municipal waste produced nationally.

In terms of understanding and assessing waste production in the commercial sector, it is assumed that there is a degree of consistency in the generation of waste within specific sectors. For example, the profile of waste from food retailers will be relatively consistent, though it will be significantly different from waste generated by office-based activities. Therefore, to ensure that the national waste profile generated for the non-household sector is as accurate as possible, the methodology used considers waste on both sectoral and sub-sectoral levels.

However, waste characterisation campaigns are a time consuming and costly exercise so, to build on the work of previous campaigns, and develop a more statistical dataset from which to generate our national commercial waste profile, the 2022 sectoral data was combined with the results from 2018. The method by which these two datasets were combined is outlined in Chapter 2.

Fourteen NACE sub-sectors were assessed during this campaign, with 38 on-site surveys carried out in total. The waste profiles from this work, in addition to the six sectors incorporated from 2018, accounted for an estimated 78.6% of the non-household waste generated in Ireland in 2022. These included all the main commercial NACE sectors: wholesale and retail (garages and supermarkets), accommodation and food services (hotels, restaurants, and fast-food outlets), offices, telecommunications, hospitals, education, public services and sports facilities. More information on how the main sectors for this study were chosen, as well as the volumes of waste attributed to them, is given in Chapter 2.

The process of generating sectoral profiles involves assessing a representative volume of waste from as large a range of businesses as possible from that sector. From these, a sectoral profile is statistically generated. These sectoral profiles are then applied to the volume of waste generated by each of the respective non-household sectors and from this a representative national profile is then produced. The surveying methodology remained unchanged since 2018 though the number of materials assessed rose from 56 to 81. This was to address additional reporting requirements on different materials (e.g. Single Use Plastics (SUPs)) and in order to gain a deeper understanding of potentially reusable waste streams (e.g. beverage cups and milk bottles).

Chapter 3 provides the survey results for the eight main NACE sectors assessed during this campaign with results presented for the mixed residual waste (MRW) and mixed dry recyclables (MDR) streams separately. The results provide information on the relative proportions of the primary waste materials found in the respective waste streams. In addition, each is examined to identify how the materials found should have been managed based on correct segregation practices. Separately collected Organic Waste

(OW) was also examined from those businesses that had this service in place, regardless of sector, with OW results presented in Chapter 5.

As part of the surveying work, random samples of a range of recyclable materials were assessed in order to determine the levels of 'contamination' associated with them. Contamination refers to food or moisture that is additional to the actual weight of the materials and is typically related to these contaminants being left in the waste materials or through cross-contamination from being mixed with other wastes. These contamination and moisture factors, presented in Chapter 4, are applied to the final national profile produced to account for this issue.

The main national results are presented in Chapter 5 which provides information on the individual national MRW, MDR and OW profiles as well as the combined national results. A review of the national results found:

- Overall, there has been little change since 2018 with the majority of commercial wastes, 73%, managed through the MRW collection services, 18% managed as MDR and only 9% managed through OW collection services.
- The tonnage of kerbside collected commercial waste is down since 2018 from 715,223 to 687,897 tonnes in 2021 (latest available validated data). This decrease is due to drops in the volumes of MDR and separately collected OW which went down by 24,500 and 10,000 tonnes respectively. While this may be expected (due to Covid related changes and less people in the work place) MRW actually went up by 7,500 tonnes.
- The most prominent category of the national non-household municipal waste stream was organic wastes at 32.8% of the total (the next largest was paper at 17.4%). Of the total organics found, 70% remains in the MRW bins with 5% in the MDR bins and only 25% of the national total organic waste generated collected by OW bin services.
- Though organics is still the largest individual waste material, it did decrease by 1.2% since 2018 which equates to over 17,500 tonnes when applied to national waste data. This was related to a reduction in overall food waste (-21,000 tonnes), though this decrease was offset by increases in vegetable oil (5,035 tonnes) and liquid wastes (3,600 tonnes). This reduction may also be a consequence of post Covid changes to work practices.
- While most food service and food retail businesses now have an OW collection service (either a brown bin or other separate food waste collection service), many of the other sectors do not have such a service. However, even in those sectors that are legislatively required to have separate food waste collection service, and those businesses examined that had OW services, correct food waste segregation is still, in general, very poor.
- The most significant change to a primary material since 2018 was the overall decrease in paper which decreased by 2.3% (which equates to 21,500 tonnes). This was related to significant drops in magazines and glossies (-6,300 tonnes), tissue paper (-5,100 tonnes), office paper (-4,600 tonnes), and newspapers (-3,400 tonnes). These changes may be related to the shift to more 'working from home practices' which would contribute to the reduced office paper. Additionally, the drops in newspapers and magazines and glossies may be related to increased digitalisation.
- Plastic wastes decreased by 0.6% (8,400 tonnes). This was due to reductions in plastic bags and films (-16,700 tonnes), unrecoverable plastic packaging (-3,100 tonnes) and PP packaging materials (-2,200 tonnes). These were offset by increases in other plastic non-packaging (+9,600 tonnes), PE packaging (2,500 tonnes) and other non-packaging plastics (2,000 tonnes)
- Contamination (including moisture), increased by 7,200 tonnes since 2018 to 37,200 tonnes.

Though it is not possible to determine the reason for this difference, it is clear more needs to be done to ensure that materials are segregated correctly and are 'dry, clean and loose'. In addition, there was an estimated 17,200 tonnes of liquid waste left in bottles and disposable cups that could have been emptied before being disposed.

- SUPs were examined during this campaign for the first time and were found to contribute ~ 20% to both the MRW and MDR streams resulting in 126,000 tonnes of these materials generated.
- Almost 5,000 tonnes of special wastes, including hazardous wastes, were identified and these were largely related to WEEE and medicines.

These results, as well as recommendations on how to improve the methodology, are discussed in more detail in Chapter 6. However, the key take away must be that there is significant scope to improve the current management of wastes from the commercial sector through improved segregation and better use of the existing systems in place. Through simply improving segregation in line with correct procedures the amount of MRW generated nationally can potentially drop from 73% of the total to 21% with associated increases in the MDR from 18% to 36% and the proportion of waste managed as OW increasing from 9% to 39%. Additionally, 4% of waste can be managed through alternative collection services for special wastes (e.g. textiles, batteries, WEEE).

1 Introduction

Accurate and up-to-date information on the composition of waste is required for effective waste management planning and implementation, in addition to monitoring and reporting. Information from national waste characterisation studies is used for a variety of tasks including:

- Internationally, for reporting international and specifically European Union (EU) law requirements
- Nationally, for assessing the feasibility of various collection, recycling and treatment options
- Determining the level of Repak packaging subsidies
- Assessing the proportion of biodegradable waste in residual waste in monitoring compliance with the Landfill Directive
- The calculation of Renewable Energy Feed-in Tariff (REFIT) subsidies
- National and regional wastes for strategic waste management planning

While these functions are largely related to regulatory or compliance requirements, the data gathered through waste characterisation studies has a much broader, and practical use from a prevention and circular economy perspective. For example, after the 2008 national waste characterisation study the extent to which organic waste was present in domestic bins was very evident and the following year the Stop Food Waste programme was launched. Additionally, the EPA's Circular Economy Implementation Team availed of these data to support and target specific waste materials and commercial sectors through programmes such as the Local Authority Prevention Network (LAPN), Green Healthcare, and Green Business. More recently the 2018 results were used to aid the recovery of the hospitality sector post the Covid-19 pandemic, through development of waste and food waste factsheets[1] by the EPA's Circular Economy Programme.

However, the profile of waste changes over time, in response to changes in economic activities, production/consumption patterns and behaviours, evolving waste management practices and policy measures and interventions. These fluctuations mean that regular waste characterisation surveys are essential to aid understanding and allow accurate reporting on the generation and management of waste in Ireland. In addition, new statutory targets and reporting obligations arising from the EU's Circular Economy Plan bring extra requirements for waste characterisation, including information on single-use plastics, food waste, and the re-use of second-hand products including textiles, furniture, WEEE and construction materials. Regular waste characterisation also allows for tracking of waste quantities and measuring the impact of interventions, such as waste prevention, on specific waste types.

In light of the international commitments that Ireland has signed up to, in terms of the UN Sustainable Development Goals, and our expectations in terms of the EU Circular Economy and

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[1] Food Waste Charter Resources

the national Waste Action Plan for a Circular Economy, waste characterisation is essential in terms of identifying priority waste streams, targeting specific sectors and monitoring progress against the targets that we have committed to reaching. In many ways, waste characterisation has historically been an undervalued national resource. Hence, with the demands that the next decade poses in terms of reduced resource consumption, accurate waste characterisation information has never been more important.

1.1 Project Objectives

The main objective of this project[2] is to build on the recent national municipal waste characterisation work that was completed in 2018 and update the profile of non-household municipal waste produced nationally. Specifically, this project entailed the following:

- developing a national characterisation sampling plan for non-household municipal waste in line with the published national methodology
- conducting waste characterisation surveys on statistically valid samples in accordance with the sampling plan produced
- quantifying the composition of three main waste streams (mixed residual waste (MRW), mixed dry recyclables (MDR) and organic waste (OW)) collected at kerbside in accordance with agreed categories and, based on this, identifying the amount of non-target materials in the various waste streams
- quantifying the amount of contamination[3] in municipal packaging waste streams in accordance with the national methodology
- based on the above, delivering this report that includes relevant background information on the sampling methodology and procedure, sample analysis and composition results, and the application of the scale-up methodology to produce the national profile for municipal waste from the non-household (commercial) sector.

To achieve these objectives, the waste profiles for the six commercial sectors assessed in 2018 (wholesale, general retail, offices, food retail, hotels and restaurants) were added to, through the generation of new waste profiles for additional NACE sectors not examined in 2018. In addition, contamination studies on the main packaging materials were again carried out to allow the national results to be normalised/standardised, taking into account the contamination present in the wastes analysed.

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[2] Request for Mini-Tender_ 1 CCCEP-2021-06, EPA , 2021
[3] **Contamination** refers to 2 main types of contamination:
Residual contamination typically refers to food (or dirt) that is left over on paper, cardboard, plastic, composites and metal materials after discarding. This is particularly important where the container may be segregated for recycling as contamination can lower the potential recyclability of the material.
Cross-contamination (including moisture) occurs when materials segregated at source are contaminated by other waste materials present in a particular waste stream (e.g. garden or food waste contaminating mixed dry recyclables) or liquids (e.g. coffee, water, soft drinks, oils, paints). Moisture can also be due to rain getting into bins which, although not directly related to the waste materials present, can increases contamination levels.

1.2 Background Information on non-household waste characterisation in Ireland

Ireland was one of the first countries (if not the first) to acknowledge, through its commercial waste characterisation methodology, the heterogeneity of waste generated by businesses in the various commercial sectors. In 2002, CTC, in collaboration with the EPA, developed the original sector-based commercial waste characterisation procedure. The nature of waste characterisation work, which forms the basis of Ireland's national waste statistics, is that, by taking a representative sample of waste, and applying its waste profile to an appropriately homogenous sub-set of the total, you can generate a profile for that sub-set. Then, by aggregating the profiles for the different sub-sets identified, a waste profile for the total can be produced. Due to the relative heterogeneity of waste generated by different business types, the characterisation of the non-household (commercial) fraction of municipal waste is typically carried out based on different NACE codes. Non-household municipal wastes are mainly collected from NACE codes G (Wholesale and Retail) to R (Sports, Arts, Entertainment and other services).

This methodology, which entailed doing very detailed surveys in a small number of businesses within the largest waste producing commercial sectors in the country, was applied in the 2002, 2004 and 2008 characterisation campaigns. However, a major issue with this method was the limited data set used to determine the character of waste for each of the sectors examined. While the data from the individual business surveys was very comprehensive (one week's waste was assessed), typically between two and five surveys were used to generate the profile for the main sectors. Cognisant of this limitation, an updated methodology developed in 2014 was designed to bring a higher degree of statistical robustness to the characterisation of commercial waste. This methodology was essentially a trade-off between very accurate individual site data and statistically robust sectoral data. This method was applied, for the first time, in the 2018 National Waste Characterisation Study.

1.3 Changes since the 2018 waste characterisation campaign

As the 2018 campaign was the first since 2008, the focus of that study was on the most significant waste producing sectors (which were estimated to contribute close to 80% of the total waste produced). Based on the allocated 50 surveys, the six major waste producing sectors were identified and waste profiles were produced for each. These were then used to characterise the non-household municipal waste generated nationally (as reported to the NWCPO). While this approach was appropriate given the limited surveys available and the time since the previous campaign, there were obvious issues relating to the limited number of sub-sectors used to produce a national profile. This campaign, while consistent in terms of the overall approach, is different and will aim to address some of the fundamental issues identified in 2018, while also building on the results produced in the previous campaign.

As the number of surveys conducted within a characterisation campaign has always been a limiting factor (due to the cost and time entailed), the current methodology is built around developing, over time, a series of statistically robust profiles for as many of the significant waste producing sectors as possible. While waste management practices changed significantly between 2008 and 2018 (e.g. roll out of a brown bin service), since 2018 there have been no significant infrastructural changes in this regard. However, since then there have been many changes in the wider world. The Covid-19 pandemic undoubtedly will have altered the volumes of waste produced by some sectors (e.g. offices), though whether this translates into changes in the

character of waste is unknown. That said, heightened consumer awareness of the impacts of waste, in particular high carbon impact wastes such as food, textiles and Single Use Plastics (SUPs) may well have changed people's perceptions and practices when it comes to waste management. Therefore, while this campaign will aim to close some of the main sectoral and material data gaps that exist, it will do so while also refining the profiles for the major sectors. These are discussed in more detail in the sampling plan outlined in Section 2.

The surveying element of this campaign is based on the national methodology developed in 2015[4] (referred herein as the 2015 methodology) and an updated version of this methodology is presented in Appendix 1. Survey work consisted of a physical waste compositional analysis of the following main waste streams, where available, collected at kerbside:

- Mixed Residual Waste (MRW)
- Mixed Dry Recyclables (MDR)
- Organic Waste (sometimes referred as brown-bin waste)

Throughout this report the sectoral data is presented at the primary category level[5] though, where appropriate, primary and secondary sub-categories may be discussed. Detailed data of the sectoral results, including all primary waste categories and sub-categories[6] and secondary[7] waste categories in percentages, are included in the associated data files and given in Appendix 2.

In parallel, a similar study on the characterisation of household municipal waste was carried out. This also built on the recent 2018 national waste characterisation of household municipal waste and the results of this most recent campaign will be combined with those reported here to provide Ireland with its updated municipal waste statistics.

Therefore, this Report includes:

- A description of the background data gathered which informed the sampling plan and methodology used
- The final results of the sectoral characterisations including the sectoral profiles for the different materials streams and an analysis of the composition of the main material streams
- Up-to-date contamination factors for the main packaging materials categories
- A comparison of the results of this campaign with 2018 and identification of some of the main waste categories of interest to national policy
- A series of recommendations to improve the current methodology based on the findings from the current work programme
- A number of observations from the on-site surveys carried out during this campaign.

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[4] Updated Methodology for the Characterisation of Non-household Municipal Solid Waste in Ireland, CTC, 2015
[5] Primary Waste Category is a high level waste category e.g. plastics, organics, metals etc.
[6] Primary Waste Sub-category is a more specific waste category within a Primary Waste Category, e.g. Polyethylene (PET) packaging bottles, food waste, ferrous metal etc.
[7] Secondary Waste categories includes specific wastes including Single Use Plastics (SUP), compostable wastes and 'special interest items' which includes wastes that could be targeted for alternative collections, and/or has a potential reuse alternative

2 Methodology

2.1 Sectoral Sampling Methodology

Due to the heterogeneity of waste produced by different commercial sectors, the national waste characterisation methodology is based on firstly identifying the main waste producing non-household sectors, and then developing a sectoral waste profile for each. Once these sectoral profiles have been produced, they are applied to the wastes collected from each sector and then aggregated to generate a national non-household municipal waste characterisation (NHMWC) model.

The first step in this process is to identify the main sectors where waste sampling should occur. As noted previously, 2018 was the first time in a decade that a full waste characterisation took place, and the focus of that campaign was on the main waste producing NACE sub-sectors (as identified through surveying waste collectors) which were:

- Food retail
- General retail
- Food wholesale

- Hotels
- Restaurants
- Offices

These accounted for an estimated 80% of the total waste produced by commercial sectors and the 50 waste surveys were split between these to produce a waste profile for each. Subsequently, these waste survey results were applied proportionally to the total waste generated by the commercial sector to produce the overall national profile. This campaign aims to build on the six sectoral profiles produced in 2018 and to ensure that the sampling methodology applied incorporates the recommendations made in the 2018 report.

A key recommendation from 2018 was addressing the main weaknesses in the national approach, namely, the accurate identification and quantification of the commercial municipal waste producing sectors in Ireland. This is a hugely important part of the background information as it provides:

- the basis by which the size of the sub-sectors are identified and subsequently chosen for investigation, and
- once the profiles are generated, they are applied to the proportion of the total municipal waste allocated to these sectors to produce our national statistics.

Heretofore the method used to identify these sectoral sizes has been, more or less, the same since 2002. This involved issuing a questionnaire survey to national waste collectors at the beginning of the waste characterisation campaign asking them to apportion the wastes they collect to a series of NACE sub-sectors, with the results reported as a percentage of total non-household waste that they collect. Previously, regardless of the size of the waste collectors (in terms of overall quantity of waste collected) and the sectors they serviced, these results were combined to identify the largest sectors – this calculation being based on an average of the percentage results. Both the limited returns (often no higher than 15% of those surveyed) and the calculation method (i.e. the average of percentages) resulted in these sub-sectoral sizings being an unreliable dataset. This was identified as an area for improvement in the 2018 report.

Consequently, in 2020, this aspect of the overall methodology was reviewed in a separate study[8]. Initially, in consultation with the waste collection industry, the full list of NACE sub-sectors relevant to commercial waste characterisation were reviewed. Based on input from the waste collection industry, a refined list of sub-sectors within the main NACE sectors (i.e. NACE G – S) was identified. These reflected the sectoral nomenclature and categorisation used by the industry itself and this refined list which was then used in a survey questionnaire that was sent out to individual waste collectors.

The top 30 waste collectors (accounting for 85% of all commercial waste collected by weight as reported to the NWCPO) were targeted with the survey asking them to assign the proportion of municipal wastes that they collect from the updated sub-sector listings. The returns by the individual waste collectors were then combined with their annual returns (in tonnes, as reported to the NWCPO), providing a weight-based breakdown of the waste collected from the different sub-sectors. These individual datasets were then combined to produce a weight-based summary of the total waste attributed to the different NACE sub-sectors.

This methodology is considered a much-improved means of identifying the main waste contributing sub-sectors and it was recommended that, as new campaigns take place, or additional waste characterisation work is carried out linked to other projects, these results should be incorporated into the NHMWC model developed in 2018. The current sampling plan is based on this recommendation.

2.2 Sector and Sub-Sector identification

Table 1 shows the results from the background work conducted in 2020. This lists all the primary NACE categories, the contributing sub-categories and the associated municipal waste tonnages as estimated from the waste collector responses.

Table 1: 2020 Results of the NACE sub-sectors survey

NACE Sector	Commercial Sub-Sectors	% Contribution
G - WHOLESALE AND RETAIL		**28.2%**
	Garages (auto repairs and motor sales)	6.4%
	Filling stations (petrol stations with and without shops)	1.3%
	Wholesale of Food & Beverages	1.8%
	Wholesale - General (excluding food and beverages)	1.5%
	Supermarkets & Grocery retail (any retailer that sells food)	6.9%
	All other retailers - (any retail that doesn't involve selling food)	7.3%
	Shopping Centres	2.9%
H - TRANSPORTATION AND STORAGE		**2.8%**
	Rail Transport - including rail stations	0.0%
	Road Transport - including haulage & logistics	0.7%

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[8] 2020 Commercial Sectors Project, CTC, 2021

NACE Sector	Commercial Sub-Sectors	% Contribution
	Sea Transport - including ports	0.0%
	Air Transport - including airports	0.0%
	Postal and Courier Services	0.2%
	Storage and warehousing facilities	1.8%
I - ACCOMMODATION AND FOOD SERVICES		**23.5%**
	Hotels and B&Bs	7.7%
	Mobile home parks and camping grounds	0.7%
	Food service - pubs, restaurants and cafes	11.2%
	Fast Food	3.9%
J, K, L, M & N - BUSINESS SERVICES		**9.7%**
	Offices	6.4%
	Telecommunications (e.g. local & national broadcasting, internet services)	2.9%
	Landscaping Activities	0.3%
	Professional, Scientific and Technical Services	0.0%
O - PUBLIC SERVICES		**3.7%***
	Public Offices - including local authority offices and government departments/agencies	2.0%
	Other local authorities services - garda, fire stations, etc.	0.6%
P - EDUCATION		**5.5%***
	Pre Primary Education	1.2%
	Schools (Primary)	1.6%
	Schools (Secondary)	1.0%
	3rd level Education & adult education	1.1%
Q - HEALTH AND SOCIAL CARE		**6.6%**
	Hospitals (acute)	2.2%
	Community Hospitals, nursing homes & residential healthcare facilities	1.7%
	Medical Practices - Doctors, medical centres, dentists, physio and chemists/pharmacy	1.2%
	Social care services	1.2%
	Veterinary Activities	0.3%
R - SPORT, ARTS & ENTERTAINMENT		**3.4%**
	Arts - Theatres, Libraries, Museums and Other Culture Activities	0.2%
	Large Sporting Venues (e.g. racecourses, stadiums)	0.3%
	Sporting Activities and clubs (e.g. sports clubs, gyms, swimming pools)	2.5%
	Other entertainment services (e.g. cinemas, children's play centres)	0.5%

NACE Sector	Commercial Sub-Sectors	% Contribution
		16.7%
	Other services e.g. hairdressers, dry cleaners, beauticians	1.2%
	Events and festivals	0.1%
	Management Companies (mixed commercial activities)	4.6%
S - OTHER ACTIVITIES	Apartments (incl. student accommodation)	3.2%
	Manufacturing sites (20 03 01, 20 01 08)	6.8%
	Building Industry	0.1%
	Charities	0.5%
	Other services	0.1%
Total		**100%**

* Note: as some waste collectors only reported waste collected according to Primary NACE codes (e.g. Education) as opposed to the specific sub-sectors (e.g. primary schools), this Primary Sector percentage will be incorporated proportionally into the relevant sub-sectors

Based on these data, the main waste producing subsectors, accounting for 86% of the estimated total, have been identified and are shown in Table 2. As there were only a limited number of surveys available for this campaign, the main waste producing sectors – in terms of volume and strategic importance – were identified for potential inclusion. Each of these is discussed in the comment's column of Table 2 with a rationale of whether surveys were included in this campaign. Typically a minimum of 3 site surveys would be recommended for each sector, especially the larger waste producing sectors. However, considering the limited number of surveys available, an additional 2 or 3 were included for the larger sectors examined in 2018 and 2 or more were carried out for some of the smaller sectors. The total number of surveys available is 38, and the allocations in the final column assign the number of surveys per sub-sector. Note that a number of the sub-sectors, though classified as commercial waste by waste collectors, are deemed to be outside the scope of this current work. These are highlighted in grey in Table 2.

Table 2: Commercial Sub-sectors under consideration for the 2021/22 campaign based on results from 2020 study

Sub-Sector	Cumulative Total	Comments	Proposed Surveys (2021/22)
Food service - pubs, restaurants and cafes	11.2%	This is the largest waste producing sector and with its production of food waste and reliance on SUPs it should be revisited to build on the 2018 profile.	2
Hotels and B&Bs	18.9%	As with food service, a large waste producing sector. With its production of food waste and reliance on SUPs post Covid it should be revisited to build on the 2018 profile.	2
All other retailers - (any retail that doesn't involve selling food)	26.3%	While this is a large waste producer, the profile of waste tends to be relatively consistent. However, due to its size, a number of surveys will be carried out to keep the profile up to date.	2
Supermarkets & Grocery retail (any retailer that sells food)	33.1%	As with food service and hotels, a large waste producing sector with a focus on food. High proportions of food waste found in general waste in 2018 though unlikely Covid has had much impact.	2

Sub-Sector	Cumulative Total	Comments	Proposed Surveys (2021/22)
Manufacturing sites (LoW codes 20 03 01, 20 01 08)	40.0%	This is technically outside the scope of the non-household municipal waste stream so it should be addressed separately.	0
Garages (incl. auto repairs and motor sales)	46.4%	Based on the data for NACE G, this sub-sector amounts to 23% and is important in terms of the potentially hazardous nature of its wastes. In order to get a profile for this, need a minimum of 3 sites.	3
Offices	52.8%	While this is a large waste producer, the profile of waste tends to be relatively consistent. Likely that, with Covid restrictions and limited workplace activity, the waste volumes related to this sub-sector will have reduced. However, due to its size, a number of surveys will be carried out to keep the profile up to date.	2
Management Companies (mixed commercial activities)	57.4%	This was a sub-sector categorisation that was introduced by the waste collectors. It reflects a sub-sector that has no defined NACE categorisation but is an important one for the sector. Reflects a mix of offices, retail and apartments that ultimately will be reflected in the overall final profile.	0
Fast Food	61.3%	Fast food was not examined during 2018 but, with the increased use of fast food (due to Covid) and the importance of food waste and SUP this is a potentially important gap in NACE I to fill.	2
Apartments (incl. student accommodation)	64.5%	Another sub-sector categorisation is noted by waste collectors as many apartments are billed as commercial entities. However, waste is household based and not to be included.	0
Telecommunications (e.g. local & national broadcasting, internet services)	67.4%	This, based on the estimated is an important gap in the combined NACE J – N which reflects overall business services. In order to get a profile for this need a minimum of 3 sites.	2
Shopping Centres	70.3%	Shopping centres, part of NACE G contain a mix of retail based activities. Due to the variance in business make up within such locations, it would be very difficult to get a consistent profile. They should be covered by the profiles of general retail, food retail and food service.	0
Transportation, storage, warehousing facilities	73.1%	This is a primary NACE category where there are no current profiles so it is an important gap to fill. While the total weight associated with NACE H is relatively low, it may be that this does not reflect reality (e.g. there are no weights associated with air travel). There is also a lot of potential variance within this NACE sector.	4
Sporting Activities and clubs (e.g. sports clubs, gyms, swimming pools)	75.5%	This is a NACE category with no current profile and, while there are a number of different types of locations within this category, it is an important gap to fill. Much of the waste associated with this NACE category will be related to public based wastes so should be relatively consistent.	3
Hospitals (acute)	77.7%	An important gap that needs to be addressed. Contains significant volumes of food waste, Personal Protective Equipment (PPE) and Single Use Plastic (SUP) materials.	3
Public Offices - including local authority offices &	79.7%	During 2018 a number of public offices were included in the office categorisation. Due to the similarity with other offices in terms of the types and volumes of waste	0

Sub-Sector	Cumulative Total	Comments	Proposed Surveys (2021/22)
government departments & agencies		generated, these will be combined with the overall office profile applied.	
Wholesale of Food & Beverages	81.5%	This sector was examined in 2018. Relatively small sector in terms of the number of businesses and the profile was quite consistent.	0
Community Hospitals, nursing homes & residential healthcare facilities	83.2%	Similar to acute hospitals, an important gap that needs to be addressed. Contains significant volumes of food waste, PPE and SUP materials.	3
Other Local Authority Services (libraries, garda stations, fire services)	84.9	As noted by waste collectors, local authorities have a multitude of different services other than their main buildings and these should be accounted for.	2
Schools (pre-primary, primary & secondary)	90.4%	The education sector (NACE P) does not have a current profile. This includes pre-primary, primary, secondary and tertiary. 3rd level is unique in that these sites are akin to small towns and are being examined by the EPA in a separate project. Therefore, the other 3 sub-sectors will be examined.	6
Wholesale - General (anything excluding food and beverage)	91.7%	This sector is assumed to produce wastes that are largely similar to those produced by other retailers and will therefore be included with that sector when scaling the final results.	0
Filling Stations (petrol stations with and without food beverage)	93.2%	Due to its similarity to food retail units (albeit on a smaller scale) due to the number of such services in the country, they will be included with food retail.	2

* - Please note that a number of the sub-sectors, though classified as commercial waste by waste collectors, are deemed to be outside the scope of this current work. These are highlighted in grey.

Table 3 summarises the surveys that were proposed for this campaign. As can be seen, these surveys aim to, in this instance, ensure that all primary NACE sectors will have an associated profile and the sectors that are the major waste contributors will have their 2018 profiles further developed through adding extra surveys to their current profiles.

Table 3: *Proposed surveys based on primary NACE sectors*

NACE	Sub-sector	Number of Surveys
G: Wholesale and retail	Garages	3
	Supermarkets & grocery retail (incl. filling stations)	3
H: Transport & Storage	Mix	4
I: Accommodation and food services	Hotels and B&B's	3
	Food Service	2
	Fast Food	2
J – N: Business services	Offices	2
	Telecommunications	2
O: Public services	Other services	2

P: Education	Pre-primary	2
	Primary	2
	Secondary	2
Q: Health and social care	Acute hospitals	3
	Community hospitals & nursing homes	3
R: Sports, arts and entertainment	Mix	3
Total		**38**

2.3 On-site Sampling Procedure

The methodology for the on-site commercial waste assessments applied during this campaign is in accordance with the updated 2015 methodology and aligns with that used in 2018. Similar to the previous methodology this includes contacting management in advance, identifying the waste management facilities in place and the collection days for each waste collection service, scheduling on-site survey work to ensure sufficient waste is available, informing on-site staff in advance, selecting an appropriate survey location on-site and then the actual assessment of waste.

The 2015 methodology involved a shift from studies where 4-5 days were spent on-site (in order to ensure that a full week's waste was captured and analysed) to one where just one day on-site was spent at participating businesses. This allows data to be gathered from more businesses which in turn leads to better sectoral profiles. One-day surveys are, however, challenging as there needs to be sufficient waste from each of the main waste streams to ensure the minimum weight requirements are met. Therefore, planning and communication with the business prior to a site visit is critical.

As with the 2018 campaign, random waste samples were taken from each of the mixed municipal waste streams in place at each businesses. These includes wastes from all areas serviced on-site (e.g. offices, public areas, canteens) with a sample being a minimum of 5kgs. It is important to note that while MRW and MDR services were consistently in place, OW services were intermittent. Therefore, the MRW and MDR samples are used to generate specific sectoral profiles while the OW samples were combined to produce an overall national OW profile.

A full outline of the on-site methodology is given in Appendix 1.

2.4 2022 Waste Categories

Since 2018, there have been a number of changes made to the waste categories list applied during the on-site survey work. These changes were required to address new reporting requirements, especially in regard to Single Use Plastics (SUP), but also to provide insights into specific materials of interest, especially those where alternative collection and reuse options are available or could be developed.

The updated list applied during this 2022 campaign aligns with that of 2018 in that the primary waste categories (e.g. Plastics, Paper etc.) remained the same as did many of the primary waste sub-categories. However, for this campaign, the list was expanded from 51 to include 81 materials in total with the changes largely related to plastic and other packaging materials. An example of this change is PET Packaging which was one of the primary material sub-categories under plastic

in 2018. During this campaign, PET packaging was split to include three different types of PET packaging – PET bottles, PET Packaging Containers (SUP) and PET non-packaging (SUP).

Though the final reporting of the national profile will be consistent and use the same primary waste categories used in 2018, the new waste category list will be used to inform SUP reporting and provide insights on a number of other materials of special interest. This updated list is given in Appendix 2.

2.5 2022 Sectoral Profiles

The revised commercial waste characterisation methodology that was developed in 2015, and applied in the 2018 campaign, was based on the development of a live database that can be updated on a continuing basis as more data becomes available. One of the main issues with national waste characterisation studies is the limited data that is typically used to produce national statistics. This is a consequence of the time and cost involved in carrying out such campaigns. Therefore, by incorporating data from consecutive campaigns, the national waste profiles have access to a larger number of data points from a wider range of NACE sectors which, in turn, improves the statistical validity of the overall national waste profile.

As the 2018 campaign was the first to use the new national approach, and the first such study in a decade, there was no earlier data to incorporate into the generation of the national profile. Consequently, this campaign is the first time that data from more than one campaign will be used to generate the national profile. Based on the surveys allocated in this campaign, and those carried out in 2018, Table 4 provides a summary of the datasets used to generate the final profile for the various subsectors covered thus far. Please note that some of the smaller sub-sectors identified in Section 2.1 have not been examined as of yet. Also, NACE sector S has not been examined during this campaign. This is related to the heterogeneity of the sources of these wastes from within this sector (e.g. household, commercial, industrial and C&D) and is an area for consideration in future work.

Table 4: Data sets associated with the different NACE sub-sectors used for generating the national characterisation profile

NACE Sector	Commercial Sub-Sectors	Data Source (Year)
G - WHOLESALE AND RETAIL	Garages (in auto electricians, repairs and motor sales)	2022
	Filling stations (petrol stations with and without shops)	Merged with food retail
	Wholesale of Food & Beverages	2018
	Wholesale - General (anything excluding food and beverage)	Combined with All Other Retailers
	Supermarkets & Grocery retail (any retailer that sells food)	2018 & 2022
	All other retailers - (any retail that doesn't involve selling food)	2018
	Shopping Centres	Combined with food retail, general retail and supermarkets
H -		

NACE Sector	Commercial Sub-Sectors	Data Source (Year)
TRANSPORTATION AND STORAGE	Rail Transport - including rail stations	2022 data
	Road Transport - including haulage & logistics	
	Sea Transport - including ports	
	Air Transport - including airports	
	Postal and Courier Services	
	Storage and warehousing facilities	
I - ACCOMMODATION AND FOOD SERVICES		
	Hotels and B&Bs	2018 & 2022
	Mobile home parks and camping grounds	-
	Food service - pubs, restaurants and cafes	2018 & 2022
	Fast Food	2022
J, K, L, M & N - BUSINESS SERVICES		
	Offices	2018
	Telecommunications (e.g. local & national broadcasting, internet services)	2022
	Landscaping Activities	-
	Professional, Scientific and Technical Services	2022
O - PUBLIC SERVICES		
	Public Offices - including local authority offices and government departments/agencies	2018
	Other local authorities services - garda, fire stations, etc.	2022
P - EDUCATION		
	Pre-Primary Education	2022
	Schools (Primary)	2022
	Schools (Secondary)	2022
	3rd level Education & adult education	-
Q - HEALTH AND SOCIAL CARE		
	Hospitals (acute)	2022
	Community Hospitals, nursing homes & residential healthcare facilities	2022
	Medical Practices - Doctors, medical centres, dentists, physio and chemists/pharmacy	-
	Social care services	-
	Veterinary Activities	-
R - SPORT, ARTS & ENTERTAINMENT		
	Arts - Theatres, Libraries, Museums and Other Culture Activities	2022
	Large Sporting Venues (e.g. racecourses, stadiums)	
	Sporting Activities and clubs (e.g. sports clubs, gyms, swimming pools)	
	Other entertainment services (e.g. cinemas, children's play centres)	
S - OTHER		

NACE Sector	Commercial Sub-Sectors	Data Source (Year)
ACTIVITIES	Other services e.g. hairdressers, dry cleaners, beauticians	-
	Events and festivals	
	Management Companies (mixed commercial activities)	
	Apartments (incl. student accommodation)	
	Manufacturing sites (20 03 01, 20 01 08)	
	Building Industry	
	Charities	
	Other services	

2.6 Data Combination Methodology (2018 & 2022)

As noted in the previous section, the final dataset used to produce the national non-household profile uses a combination of 2022 and 2018 data. This process involves combining data from sectors that were surveyed in only one of the two campaigns (e.g. general retail was examined in 2018 but not in 2022 while the education sector was explored only in 2022) and combining data where the same sector was examined in both years (e.g. food retail, food service).

This combination process was, however, complicated by the changes made to the material list used in 2022 (see Section 2.4). To address this issue, the approach developed by the project team ensured that the national waste profile produced is based on the most up-to-date data while also availing of as many data points as possible. The following outlines the procedure developed:

- As 2018 is the base year, with the lowest number of material sub-categories, this is the basis by which the data will be combined to generate the final national profile. Therefore, all 2022 material sub-categories (81 materials) will be aggregated to correspond to the 2018 list (51 materials). For example, in 2018, PET packaging materials were assessed as one material sub-category whereas in 2022 there were three PET material sub-categories (PET bottles, PET containers and PET Cups).
- Where a new NACE sub-category has been examined in 2022 (and not in 2018), then the 2022 data will simply be converted to the 2018 waste categories.
- Where data is to be combined (e.g. food retail) then the individual samples from 2022 will first be converted into the 2018 list and then the updated sectoral profile will be generated from the combination of the 2022 and 2018 samples. For example, in 2022 there were 29 MRW food retail samples and these will be combined with the 82 samples from 2018 to produce a waste profile based on 111 samples in total.
- To take account of the age of the data, a time-discounted weighting is applied to any data that is used from previous studies (which is only includes NACE G Food Retail, Hotels and Food Services). So, to take into account that the municipal waste composition gradually changes over time, for every year since the old data was compiled, a negative weighting (of -1%) is applied per annum. This is the first year of this estimated time-discounted weighting has been applied and it will be refined over time. Therefore, for any data used from 2018, a weighting of -4% is applied (adjusting for the 4 years between the two NHMWC campaigns).

- Data from sectors that were examined only in 2018 will be used in their existing format.

Based on this approach, the final sectoral profiles used in developing the national profile have been produced.

2.7 Contamination (including moisture) Methodology 2022

The contamination and moisture levels of municipal waste (in both the mixed residual waste and mixed dry recyclables streams) are important factors to consider when compiling waste data. Depending on the materials found, and the waste management systems in place, contamination and moisture levels can have significant impacts on the final results for packaging materials, especially when considering the large volumes involved in national waste figures. Therefore, the purpose of a contamination study, as part of a wider waste characterisation survey, is to determine statistically robust contamination correction factors for the main types of packaging waste collected in the mixed and recyclable waste streams. These factors can then be applied to the final data to provide corrected packaging and SUP data.

Typically, there are 2 main types of contamination under consideration – **residual contamination** and **cross-contamination**.

- **Residual contamination** typically refers to food (or dirt) that is left over on paper, cardboard, plastic, composites and metal materials after discarding. This is particularly important where the container may be segregated for recycling as contamination can lower the potential recyclability of the material.

- **Cross-contamination** (including moisture) occurs when materials segregated at source are contaminated by other waste materials present in a particular waste stream (e.g. garden or food waste contaminating mixed dry recyclables) or liquids (e.g. coffee, water, soft drinks, oils, paints). Moisture can also be due to rain getting into bins which, although not directly related to the waste materials present, can increases contamination levels.

By virtue of the nature of the waste materials assessed (i.e. taken randomly from waste survey materials), and the procedure by which the contamination and moisture levels are calculated, it is not possible to differentiate between these two forms of contamination. Therefore, when reporting contamination and moisture levels in the final national results, the overall weight associated with contamination will be kept as a separate item as it may be associated with residual organic/inorganic contamination, cross-contamination and/or moisture with the true origins of the contaminants indeterminable.

2.7.1   Contamination sampling methodology

As part of this waste characterisation campaign, 22 separate materials were examined for contamination and moisture levels – these are shown in Table 5. This was primarily to assess the contamination factors for packaging materials but, with SUP reporting now an important part of national reporting, a number of SUP materials were also examined. The methodology used for the contamination and moisture studies is the same as that used in the 2018 national campaign with a detailed outline of the methodological approach provided in the 2022 Contamination Report.

Table 5: Materials assessed for Contamination and Moisture levels during the 2022 campaign

Primary Waste Category	Packaging waste primary sub-categories
Papers	Recyclable paper packaging
	Unrecyclable paper packaging
Cardboards	Cardboard (Packaging)
	Unrecyclable flat and corrugated card. (packaging)
Composites	Composite cups for beverages, including their covers and lids (packaging)
	Composite packaging
Plastics	PET packaging beverage bottles
	PET packaging containers
	PET cups for beverages, including their covers and lids
	PE plastic packaging bottles including their lids
	PP packaging containers (other than bottles and lids) including their covers.
	EPS & Styrofoam packaging food & beverage containers (SUP)
	EPS & Styrofoam (other than SUP) Packaging non-food
	Other plastic cups for beverages, including their covers and lids
	Other plastic packaging containers
	Other plastic packaging bottles
	Other plastic packaging
	Supermarket bags, plastic bags and films, wrappers, including compostable bags (packaging)
Glass	Glass (packaging)
Metals	Aluminium Cans (packaging)
	Ferrous metal (packaging)
	Other non-ferrous metal (packaging)

Note: materials highlighted in grey are those that are consistent with the materials assessed for contamination levels in the 2018 study

The samples used for this contamination study were materials that had been separated and weighed during the on-site surveys carried out during this campaign. Though the materials were collected from both 2-bin and 3-bin systems, and are reported separately for comparison purposes (see Chapter 4), the final results used for generating the national profile are a combined dataset. Unlike national household waste data, where wastes can be attributed to 2 or 3-bin systems, this process cannot be replicated for the commercial sector where bin services vary greatly. Therefore, the final contamination factor dataset combines the 2 and 3-bin results from 2022.

2.7.2   2022 Contamination Factors

As noted previously, the materials examined during this campaign's contamination study are an expanded list compared with 2018. Like the waste material categories, this expansion allowed for

more granular information on materials of special interest, in particular SUPs. To maximise the impact of these data in the compilation of the final results, a number of approaches were applied.

2.7.3   2022 Contamination Factors (SUP)

As 2022 was the first time that SUP materials were examined specifically, it is only these data that can be used for the SUP estimations. Though there were six waste categories from the 2018 contamination studies that could be combined with the 2022 samples, as they were consistent between both campaigns, these common materials highlighted in grey in Table 5, do not relate to SUPs . Therefore, **only** the specific 2022 SUP contamination figures were used to calculate the final proportions of SUPs.

2.7.4   2022 Contamination Factors (National Profile)

Due to the changes in the waste categories in the two NHMWC campaigns, the waste categories list from 2018 was used to generate the national profile. Therefore, all 2022 data was converted to align with the 2018 waste category list. In order to incorporate the contamination factors accordingly, a similar combination of 2018 and 2022 contamination samples was required. Table 6 presents the consolidated 2022 contamination factors that were applied when generating the national results. These include a simple combination of 2018 and 2022 contamination data where the waste categories were consistent (shown in grey e.g. paper packaging) and merged data shown in white where they were different at primary category level (e.g. PET containers and bottles from 2022 are merged and then combined with PET packaging materials from 2018).

Table 6: Materials used for the estimation of the final 2022 Contamination and Moisture factors

Packaging waste primary category
Paper Packaging
Cardboard Packaging
Glass Packaging
PET Packaging
PE Packaging
PP Packaging
Plastic Bags and Films
Other Plastic Packaging
Unrecoverable Plastic Packaging
Aluminium Cans Packaging
Aluminium Foil Trays Packaging
Ferrous Metal Packaging
Used beverage containers

Note: materials highlighted in grey are those that are consistent with the materials assessed for contamination levels in the 2018 study

2.8 National Waste Profile

To generate the national profile for the surveys carried out during the 2022 campaign, first the tonnages of waste generated by the different sectors were estimated. This was achieved by applying the sectoral sizes (see Section 2.1) to national waste data from the NWCPO on the quantities for kerbside collected MRW, MDR and Organic Wastes (collected from the non-household sector in Ireland[9]. Once the quantities of waste collected from each commercial sub-sector have been estimated, the sectoral profiles produced (see Section 3) were applied to generate weight-based profiles for each relevant sector. These were then aggregated to produce the national profile (based on weights). The contamination factors outlined previously were then applied to the appropriate materials to correct the material weights, with the difference referred to as a separate 'contamination' primary material (where contamination refers to both food, dirt (e.g. sweepings) and moisture related materials). Based on this process the national waste profiles were produced.

This methodology is described in more detail in the following sections.

2.8.1   National Waste Data

Table 7 outlines the tonnages, provided by the NWCPO, for the non-household MDR, MRW and OW municipal wastes collected at kerbside in 2021. These are the tonnage basis by which the national profile is calculated.

Table 7: NWCPO tonnages for the non-household municipal wastes (MRW, MDR and OW) collected at kerbside in 2021

Waste Type	LOW Waste Code	Tonnages
Organic Waste (OW)	20 01 08	60,022
Mixed Municipal Waste (MDR)	20 03 01 MDR	122,741
Mixed Residual Waste (MRW)	20 03 01 RES	505,135

These weights were applied to the breakdown of the sub-sectors (as outlined previously in Table 1) to determine the weights of municipal waste generated by each of the NACE sub-sectors. The results of this process are given in Table 8. The relevant sub-sectoral waste profiles (see Section 3) are applied to these estimated tonnages to produce weight-based sectoral profiles. These are then aggregated to generate the final weight based national waste profile for the non-household sector.

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[9] NWCPO provided 2021 national data on specific EWC codes including 15 01 06, 20 01 03 and 20 01 08

Table 8: Relative size of each of the main NACE sectors and the associated MRW and MDR tonnages

Commercial Sub-Sector	% of Total Estimated Weight	MRW	MDR
Food service - pubs, restaurants and cafes	12.15%	61,397	14,919
Hotels and B&Bs	7.72%	39,014	9,480
All other retailers - (any retail that doesn't involve selling food)	9.79%	49,474	12,022
Supermarkets & Grocery retail (any retailer that sells food)	9.19%	46,447	11,286
Manufacturing sites (20 03 01, 20 01 08)		-	-
Garages (incl. auto repairs and motor sales)	6.41%	32,387	7,869
Offices**	8.37%	42,291	10,276
Management Companies (mixed commercial activities)		-	-
Fast Food	3.88%	19,601	4,763
Apartments (incl. student accommodation)		-	-
Telecommunications (e.g. local & national broadcasting, internet services)	2.91%	14,680	3,567
Shopping Centres*		-	-
Transport, Storage and warehousing facilities	2.77%	13,967	3,394
Sporting Activities and clubs (e.g. sports clubs, gyms, swimming pools)	2.47%	12,492	3,035
Hospitals (acute)	2.17%	10,943	2,659
Public Offices - including local authority offices and government departments/agencies		-	-
Wholesale of Food & Beverages	1.80%	9,095	2,210
Community Hospitals, nursing homes & residential healthcare facilities	1.72%	8,696	2,113
Other local authorities services - garda, fire stations, etc.	1.68%	8,489	2,063
Schools (Primary)	2.17%	10,972	2,666
Pre Primary Education*****	1.74%	8,802	2,139
Schools (Secondary)	1.60%	8,096	1,967
Filling stations (petrol stations with and without shops) ***		-	-
Wholesale - General (anything excluding food and beverage)****		-	-
Totals	**78.6%**	**396,843**	**96,427**

* - note that the shopping centre tonnage will be split evenly between general retail, food service and supermarkets
** - Due to the similarity in waste profiles, public offices are included with offices
*** - Filling stations have been included with food retail
****- General wholesale has been included with general retail
***** - the education subsectors have been scaled up to reflect waste collected to the education sector in general (rather than specific sub-sectors)

As the sectoral information used to generate the national profile produced represents only 74.0% of the total, the weight-based material proportions are converted to percentages. These percentages are then applied to the total non-household municipal waste to produce a scaled up weight based national profile.

2.8.2 SUPs

Though the final non-household waste profile will use both 2022 and 2018 data, as this was the first time SUP materials were examined specifically as part of the NHMWC, only the 2022 sampling results could be used in their calculation.

Therefore, the method by which the proportion of SUPs produced nationally was estimated is as follows:

- The 2022 sectoral waste profiles only were applied to the estimated weights of municipal waste produced by each sector (see the previous section)
- From this a national profile was produced which provided weights for all the individual materials examined in 2022
- The 2022 contamination factors (SUP) were applied to these weights to allow the generation of a corrected weight-based national profile
- This was then used to produce a percentage based national profile from which the relative contribution of the various SUP materials were extracted.

3 Results: Sectoral Profiles

The final 2022 sectoral profiles are presented in this section. Information on the data used to generate these profiles can be found in Section 2.2 (see Table 4). There are three sub-sectors in this section where 2022 data is combined with 2018 – food retail, food service and hotels. The 2022 data profiles for these three sub-sectors are provided in Appendix 3 for reference.

For each sector the following are included:

- Mixed Residual Waste (MRW) surveys results and discussion
- Mixed Dry Recyclable (MDR) survey results and discussion

Additionally, Organic Wastes (OW) were surveyed at sites where municipal organic waste collection services were provided. As these services are not consistently in place across all sectors, it was not possible to generate sector specific profiles for organic wastes. Therefore, all organic waste samples analysed were combined to produce a generic commercial sector profile and this is presented in Section 5.3.

The composition results throughout are presented as the average percentage content by weight.

3.1 NACE G: Wholesale and Retail Sector

NACE sector G covers all forms of retail and wholesale businesses including garages (auto repairs and motor sales), filling stations (petrol stations with and without shops), food retailers and wholesalers and all other forms of retail and wholesale. During this campaign surveys were carried out in garages and food retailers.

3.1.1 Garages MRW

The results of the MRW analysis of 24 samples from the Garages sector are summarised in Table 9 and presented graphically in Figure 1.

Table 9: Composition of MRW bin from the Garages Sector

Primary category	Average % Content
Plastic	30.6%
Metal	12.9%
Organic Waste	11.7%
Cardboard	11.5%
Unclassified Combustibles	11.4%
Paper	10.9%
Composites	3.2%
Special/Irregular Waste	2.6%
Textiles	2.5%
Fines	1.9%
Unclassified Incombustibles	0.4%
Glass	0.3%
Compostable	0.1%

Primary category	Average % Content
Wood	0.0%
Nappies & Incontinence Wear	0.0%
Healthcare Textiles	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
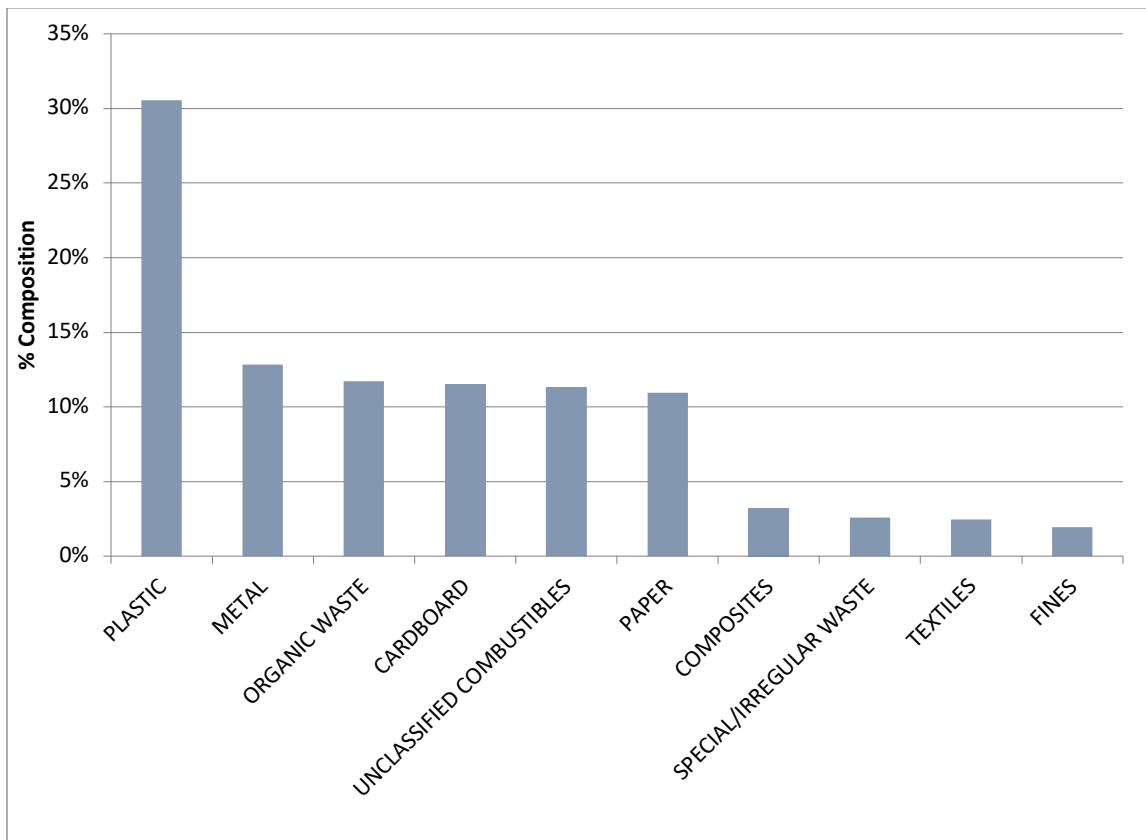
Figure 1: Composition of mixed residual wastes (MRW) bin from the Garages Sector

The main material category found in the MRW bin from garages was plastics (30.6%). This waste category was made up of:

- Other plastics non-packaging (mainly related to vehicle part) - 12.2%, s
- Other plastics packaging - 6.4%
- PE containers - 3.2%
- PET bottles - 1.9%
- PP containers – 1.6%
- PE bottles – 1.6%

Metals, at 12.9% was the next largest material category and was almost exclusively other ferrous metals non-packaging, mainly related to vehicle parts.

Organics, 11.7% consisted of food waste (7.5%) and liquid wastes (3.3%).

Cardboard wastes (11.5%) was exclusively packaging materials (11.4%) while the unclassified combustibles was exclusively non-packaging materials.

Paper wastes (10.9%) was made up of tissue paper (4.5%), recyclable paper (2.5%), office paper 2.2%) and magazines and glossies (1.0%)
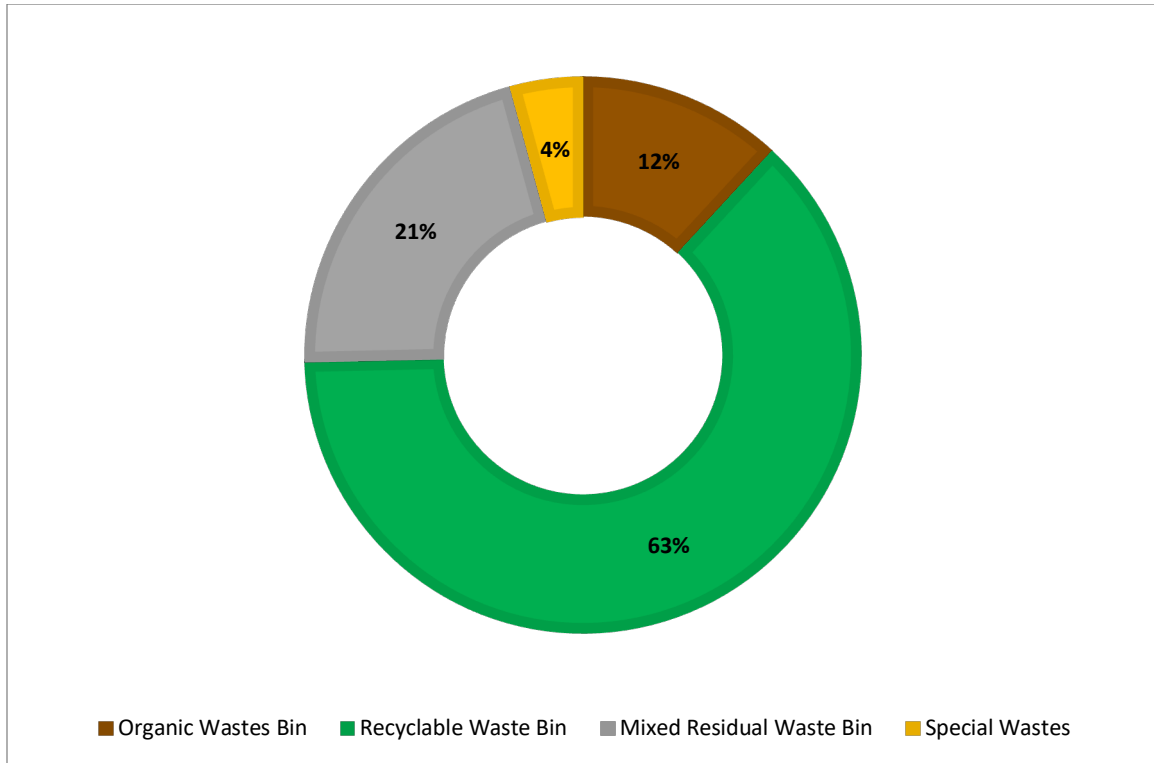
Figure 2: Breakdown of MRW bin materials from the Garages Sector based on correct segregation of materials

Figure 2 shows a review of the different materials found in the MRW bin in order to identify which bins the materials could have been segregated into. This assessment indicates only 21% of the materials in the MRW were in the correct bin. Of the remainder, 63% should have been segregated into the MDR bin, 12% into organic waste bin and 4% segregated and managed through the different channels available for special wastes. In summary, this bin should only contain the 21% of MRW and all other wastes should be placed in the MDR, OW bin or managed as a special waste.

3.1.2   Garages MDR

The results for the 5 MDR samples analysed from garages sector are summarised in Table 10 and presented graphically in Figure 3.

Table 10: Composition of MDR bin from Garages Sector

Primary category	Average % Content
Paper	28.2%
Cardboard	23.1%
Unclassified Combustibles	19.0%
Plastic	18.9%
Composites	8.2%
Organic Waste	1.0%
Textiles	0.9%
Special/Irregular Waste	0.6%
Metal	0.1%
Wood	0.0%
Nappies & Incontinence Wear	0.0%
Healthcare Textiles	0.0%
Glass	0.0%
Compostable	0.0%
Unclassified Incombustibles	0.0%
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
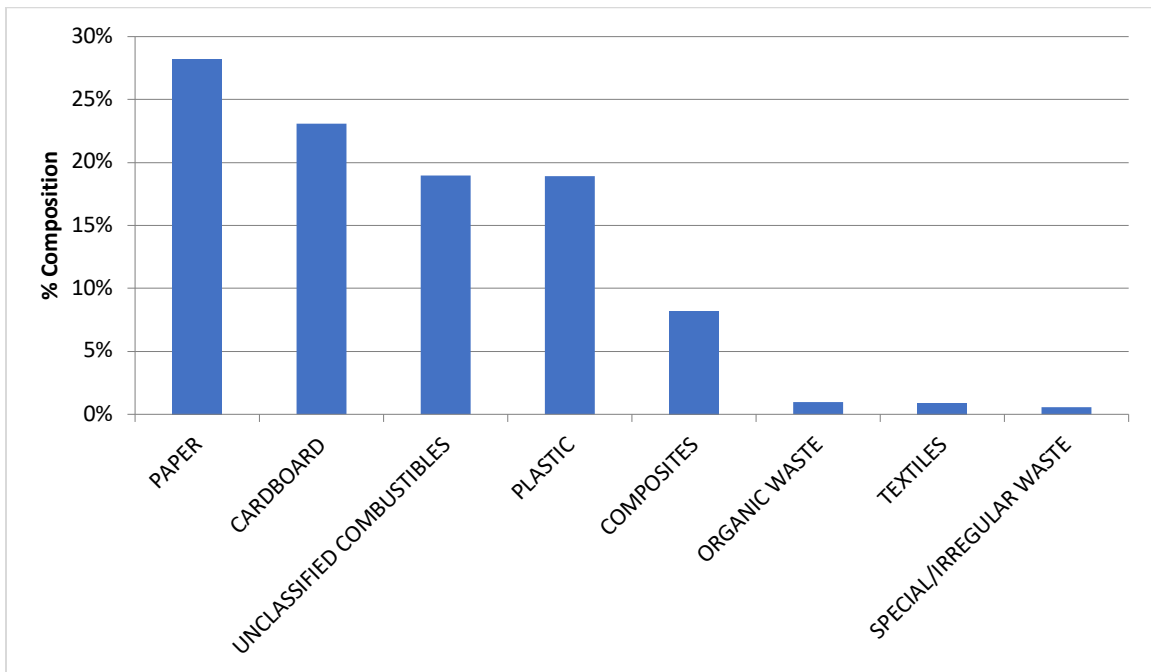
Figure 3: Composition of MDR bin from the Garages Sector

Paper materials were identified as the largest individual category in the MDR bin at 28.2%. This consisted of tissue paper (18.3%) and recyclable paper (8.8%).

Cardboard (23.1%) was almost exclusively cardboard packaging.

Unclassified combustibles (19.0%) was made up of non-packaging materials.

Plastic wastes (18.9%) consisted of PET bottles (6.6%), Styrofoam and EPS (3.9%), non-packaging plastics (3.3%), plastic bags and films (2.4%) and PE bottles (1.9%).

Metal waste (9.4%) consisted of ferrous metal/steel cans (7.7%), and aluminium cans (1.1%).

Composites (8.2%) was made up of 6.1% nonpackaging materials and 2.0% hot beverage cups.

Figure 4: Breakdown of MDR bin materials from the Garages Sector based on correct segregation

As with the MRW, the MDR materials were assessed to identify how effective waste segregation practices were (see Figure 4). Based on this 75% of the materials in the MDR were in the correct bin. Of the remainder, 23% of the materials could have been segregated into the MRW bins with 1% organic and 1% special waste materials also present.

3.1.3   Food Retail MRW

Food retail was one of the main sectors examined in 2018 and, due to the importance of the sector, three additional surveys were carried out during this campaign. The results for the 111 MRW samples (82 from 2018 and 29 from 2022) are summarised in Table 11 and presented graphically in Figure 5.

Table 11: Composition of MRW bin from the Food Retail Sector

Primary category	Average % Content
Organic Waste	44.6%
Plastic	19.0%
Paper	17.0%
Cardboard	3.8%
Textiles	3.4%
Composites	2.7%
Metal	2.6%
Unclassified Combustibles	2.3%
Unclassified Incombustibles	1.7%
Glass	1.5%
Special/Irregular Waste	0.8%
Fines	0.3%
Wood	0.3%
Compostables	0.1%
Total	**100%**
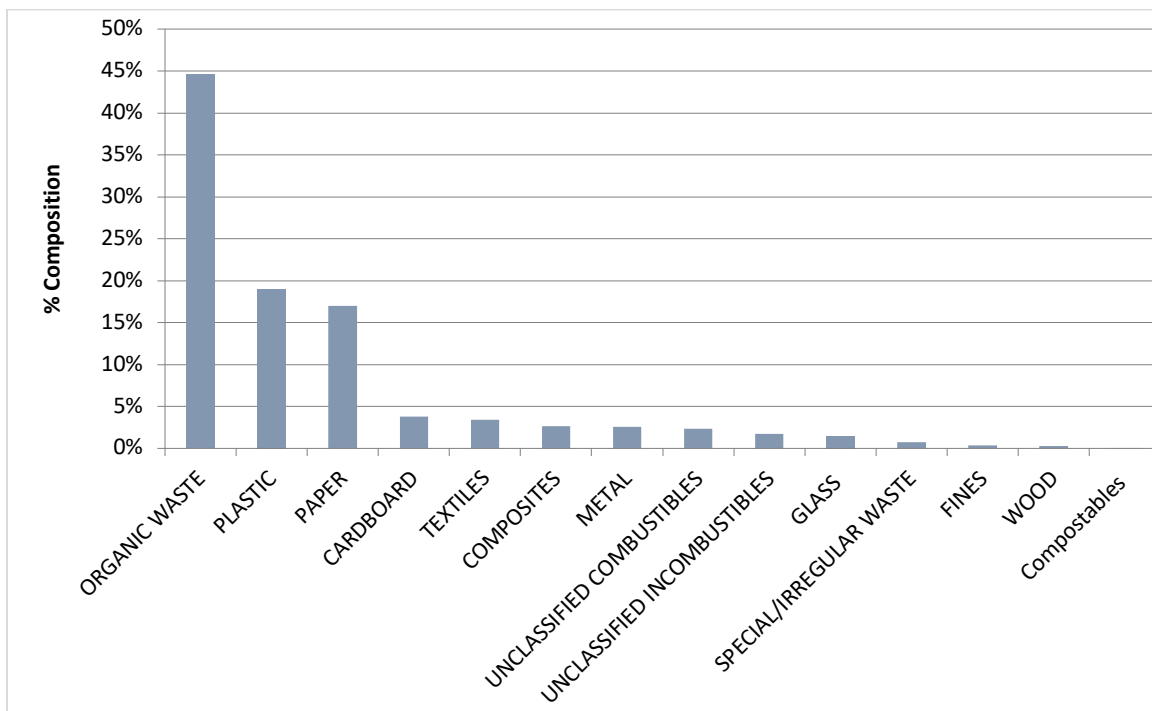
Figure 5: Composition of mixed residual wastes (MRW) from the Food Retail Sector

Organic waste was the largest individual waste category in the MRW bin at 44.6%, despite separate food waste collection services being mandatory for this sector. This included 39.4% food waste and 4.4% liquid wastes.

Plastic waste, 19.0%, consisted of other plastic non-packaging (5.2%), plastic bags and films (4.1%), other plastic packaging (2.6%), PET Packaging (2.5%), PP packaging (1.5%), unrecyclable plastic packaging (1.4%) and 1.0% of PE packaging.

The next largest primary waste category was paper at 17.0%. The most significant individual material was tissue paper (8.2%) with the rest consisting of other paper (2.3%), unrecyclable paper packaging (1.8%), magazines and glossies (1.6%), paper packaging (1.5%) and office paper (1.1%).

Cardboard, 3.8%, was made up of 3.4% packaging and 0.4% unrecyclable packaging materials.

Textiles (3.4%) was mainly non-packaging based materials (2.5%) and 0.7% clothes.

Composites, 2.7%, was made up of hot beverage cups (1.5%) and other compostable packaging (0.9%).

Metals (2.6%) was made up of 0.8% aluminium cans, 0.8% other metals and 0.5% of both ferrous metal/steel cans and aluminium foils and trays.

Figure 6: Breakdown of MRW materials from the Food Retail sector based on correct segregation

The assessment of the segregation practices of the materials in the MRW bin, shown in Figure 6, identified that only 20% of the materials found in this stream were in the correct bins. The majority (44%) of materials could have been in organic waste bins, with 32% MDR materials present and 4% of the materials were special wastes.

3.1.4   Food Retail MDR

The results for the 23 MDR samples from 2022 and the 40 samples from 2018 from Food Retail sector are summarised in Table 12 and presented graphically in Figure 7.

Table 12: Composition of MDR bin from Food Retail sector

Primary category	Average % Content
Plastic	40.3%
Paper	22.2%
Cardboard	15.4%
Organic Waste	12.3%
Metal	4.4%
Composites	1.6%
Textiles	1.4%
Fines	0.9%
Glass	0.7%
Unclassified Combustibles	0.5%
Compostables	0.1%
Wood	0.1%
Unclassified Incombustibles	0.0%
Special/Irregular Waste	0.0%
Total	**100%**
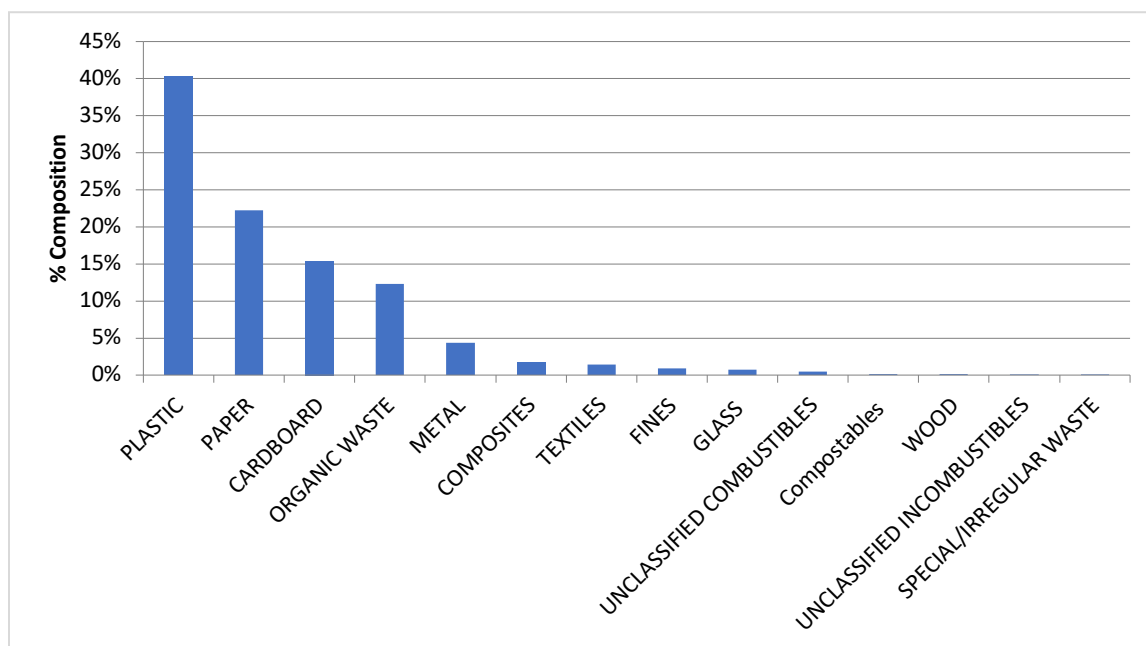
Figure 7: Composition of MDR bin from the Food Retail Sector

Plastic materials were identified as the largest individual stream in the MDR bin at 40.3%. The main materials were other plastic packaging (8.6%), plastic bags and films (6.8%), other plastic non-packaging (6.0%), PET Packaging (5.0%), PP packaging (3.7%), PE Packaging (2.3%) and PS Packaging (1.3%).

Paper waste, at 22.2% of the total consisted of other paper non-recyclable (5.7%), tissue paper (5.0%), office paper (4.3%), newspapers (2.3%), magazines and glossies (2.0%), and recyclable packaging (1.8%).

Cardboard (15.4%) was almost exclusively cardboard packaging.

Organic wastes, 12.3%, was mainly food waste (10.2%) and liquid wastes (2.0%).

Metal waste (6.5%) consisted of ferrous cans (1.7%), aluminium cans (1.2%) and 1% of other metal waste.

Figure 8: Breakdown of MDR materials from the Food Retail sector based on correct segregation

As with the MRW bin, the MDR materials were assessed to identify how effective waste segregation practices were (Figure 8). Based on this, it was found that 77% of the materials were in the correct bin with 12% organic waste bins materials and 10% of the materials that could have been segregated into the MRW bins. 1% special waste materials were also present.

3.2 NACE H: Transportation and Storage Sector

NACE sector H covers all forms of transportation including air, road, rail and freight. Additionally, it includes postal and courier services and storage and warehousing facilities. During this campaign, the main focus was on transportation with surveys carried out in a railway station, airport and at road-based transportation locations. In total, 29 MRW and 28 MDR samples were assessed from the 4 sites involved.

3.2.1   Transportation MRW

The results of the MRW analysis of 29 samples from the Transportation sector are summarised in Table 13 and presented graphically in Figure 9.

Table 13: Composition of MRW bin from the Transportation Sector

Primary category	Average % Content
Organic Waste	31.9%
Plastic	16.6%
Paper	14.4%
Textiles	10.6%
Unclassified Incombustibles	6.3%
Fines	5.6%
Unclassified Combustibles	4.6%
Composites	2.3%
Glass	2.1%
Metal	2.0%
Special/Irregular Waste	1.6%
Cardboard	1.4%
Nappies & Incontinence Wear	0.4%
Compostable	0.1%
Healthcare Textiles	0.1%
Wood	0.1%
Non- Municipal Waste	0.0%
Total	**100%**
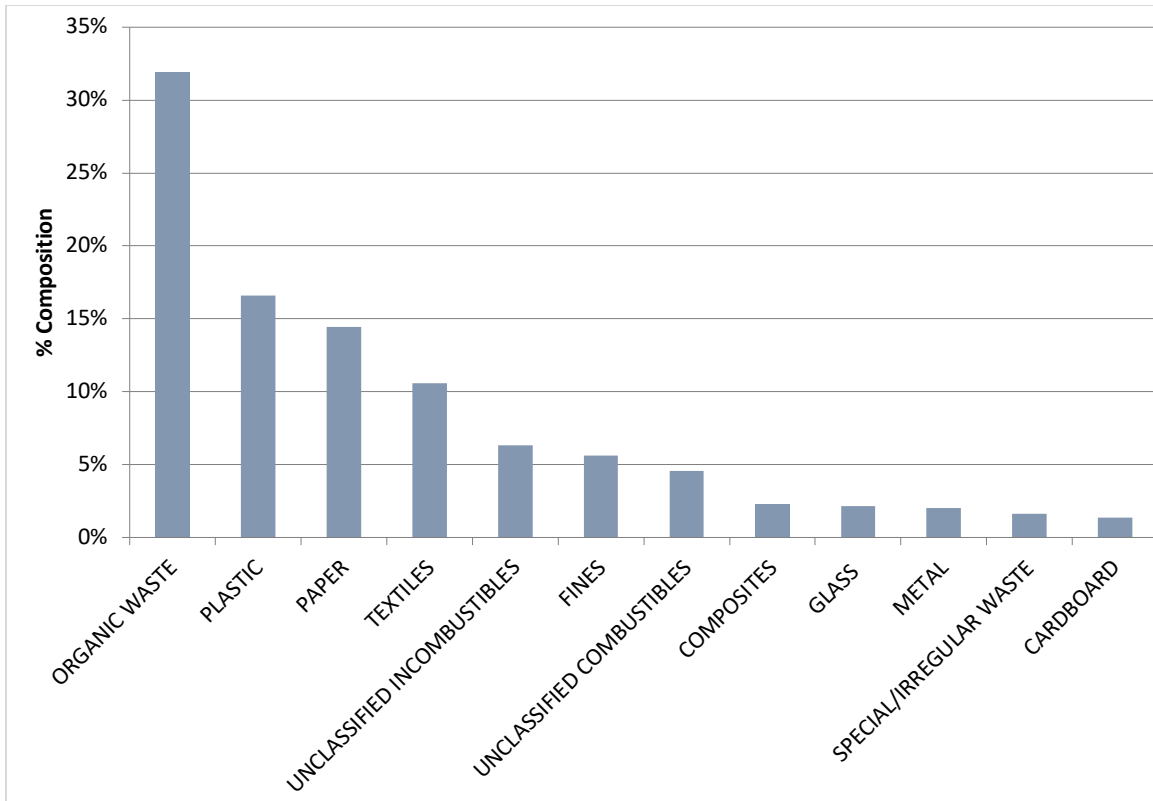
Figure 9: Composition of mixed residual wastes (MRW) bin from the Transportation Sector

The main material category found in the MRW bin from the Transportation sector was organics (31.9%) which consisted of food waste (17.4%), liquid wastes (10.0%) and garden wastes (4.5%).

The second largest material category was plastics (16.6%). This waste category was made up of PET bottles (5.4%), Other plastics non-packaging (4.7%), plastic bags and films (2.1%), Other plastics packaging (1.7%) and shrink wrap (1.3%).

Paper wastes (10.9%) was made up of tissue paper (7.4%), non-recyclable non-packaging paper (3.4%), recyclable paper (1.3%) and other paper (0.8%).

Textiles (10.6%) consisted of non-packaging textiles (9.1%) and clothes (1.5%).

Unclassified incombustibles (6.3%) was related to non-packaging based materials with fines accounting for 5.6% and unclassified combustibles again non-packaging based amounting to 4.5% of the total.
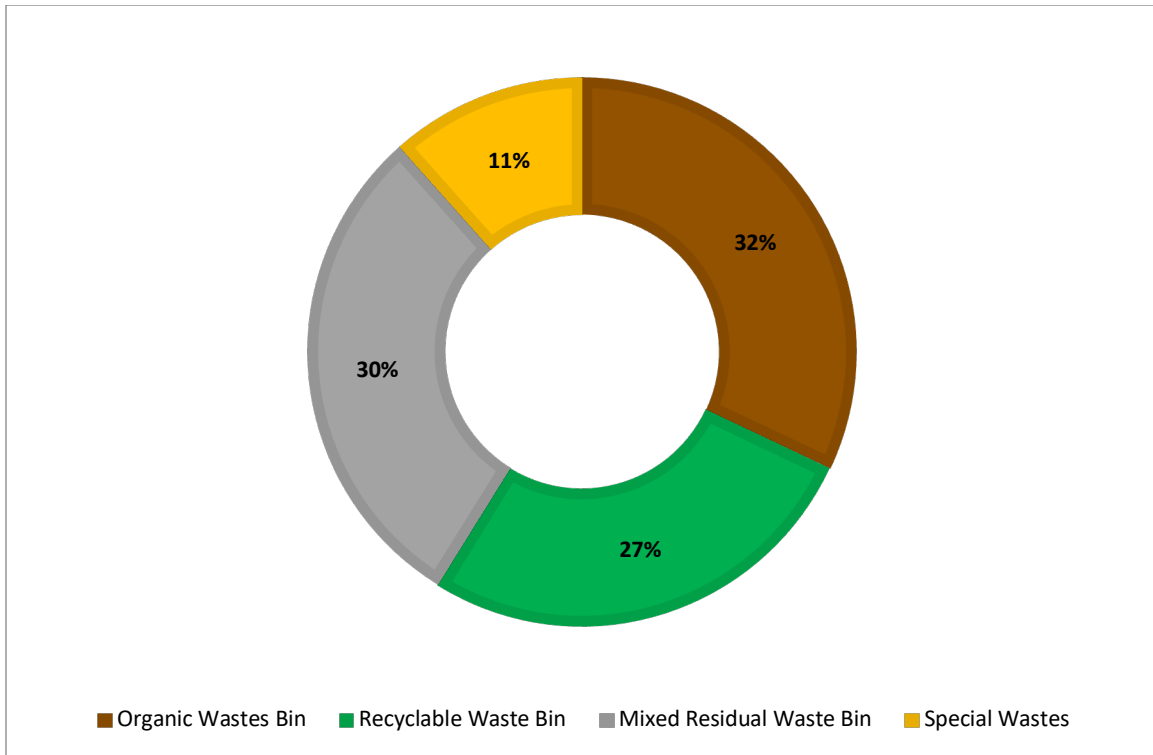
Figure 10: Breakdown of MRW bin materials from the Transportation Sector based on correct segregation

A review of the materials found in the MRW bin, shown in Figure 10, was carried out to identify which bins the materials should have been segregated into. Based on this assessment, only 30% of the materials in the MRW bin were in the correct bin. Of the remainder, 32% of the materials could have been segregated into organic waste bins, 27% could have been segregated into the MDR bins, and 11% segregated and managed through the different channels available for special wastes.

3.2.2   Transportation MDR

The results of the 28 MDR samples analysed from Transportation sector are summarised in **Error! Reference source not found.** and presented graphically in Figure 11.

Table 14: Composition of MDR bin from Transportation Sector

Primary category	Average % Content
Cardboard	32.7%
Organic Waste	25.3%
Plastic	18.1%
Paper	10.6%
Composites	3.5%
Metal	3.2%
Glass	2.0%
Textiles	1.6%
Unclassified Combustibles	1.6%
Wood	0.7%

Primary category	Average % Content
Compostable	0.4%
Unclassified Incombustibles	0.2%
Special/Irregular Waste	0.1%
Nappies & Incontinence Wear	0.0%
Healthcare Textiles	0.0%
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
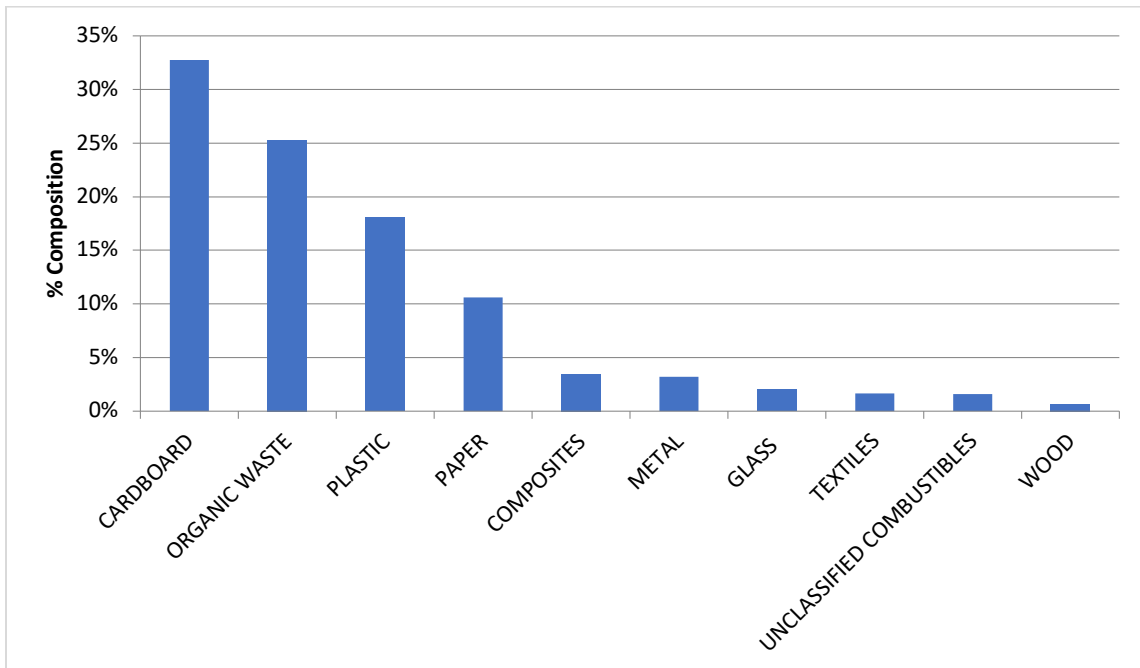
Figure 11: Composition of MDR bin from the Transportation Sector

Cardboard (32.7%), almost exclusively cardboard packaging, was the main primary category materials found in the MDR bin from the transportation sector.

The next largest material waste organics (25.3%) and this was related to primarily liquid wastes (15.1%) followed by food waste (9.7%).

Plastic materials (18.1%) consisted of consisted of PET bottles (7.5%), other non-packaging plastics (2.7%), other plastic packaging materials (2.3%), plastic bags and films (1.8%) and PE milk bottles (1.5%).

Paper materials (10.6%) was made up of tissue paper (2.8%), office paper (2.2%), recyclable paper (1.6%), newspapers (1.4%) and smaller quantities (0.9%) of magazines and glossies as well as unrecyclable paper.
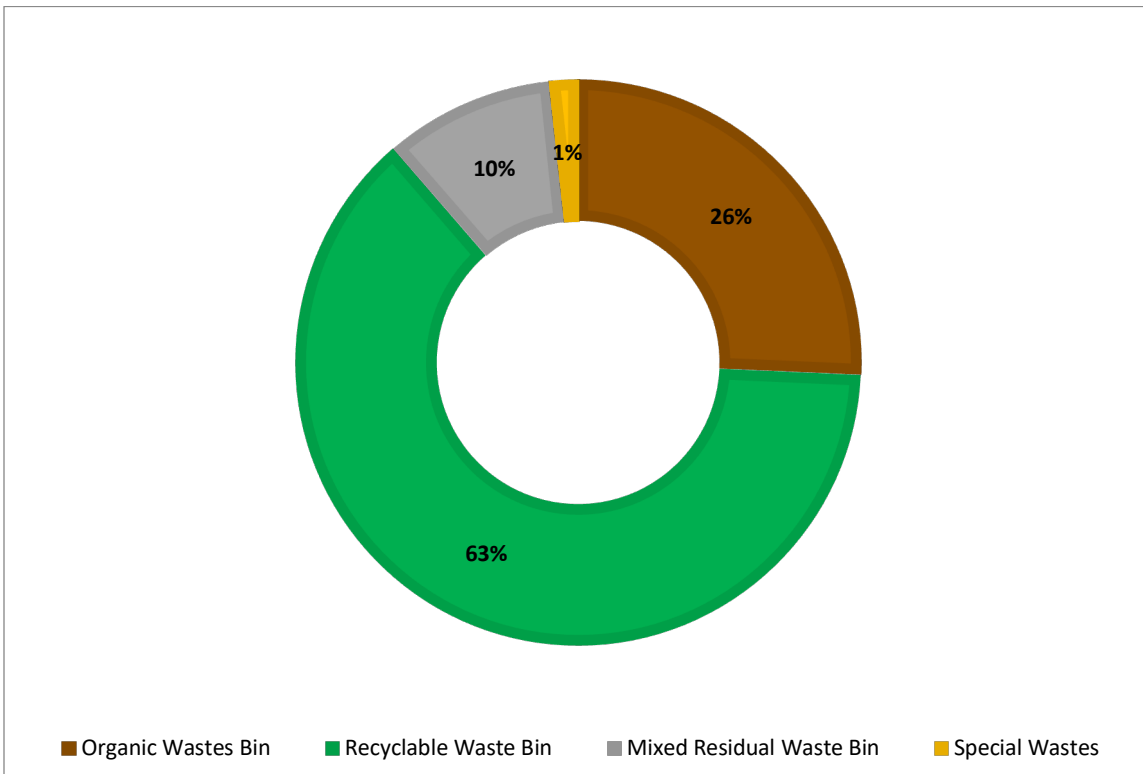
Figure 12: Breakdown of MDR bin materials from the Transportation Sector based on correct segregation

As with the MRW, the MDR materials were assessed to identify how effective waste segregation practices were and this is shown in Figure 12. 63% of the materials were correctly segregated, with 26% that could have been segregated into organic waste bins, 10% into the MRW bins and 1% of special waste materials also present.

3.3 NACE I: Accommodation and Food Service

The accommodation and food service sector is a significant waste contributor to the overall commercial waste stream and, with the volumes of food waste generated, one of particular national interest. NACE I covers hotels, B&Bs, restaurants, cafes, pubs, fast food and caravan parks. Hotels and restaurants were surveyed during the 2018 campaign and while additional surveys were carried out in these sub-sectors during this campaign, the fast food sub-sector was also examined.

3.3.1 Hotels MRW

The results of the 25 MRW samples from 2022 and the 64 samples from 2018 assessed in the hotel sector are summarised in Table 15 and presented graphically in Figure 13.

Table 15: Composition of MRW bin from Hotels sector

Primary category	Average % Content
Organic Waste	31.7%
Paper	21.5%
Cardboard	18.8%
Composites	6.0%
Textiles	5.2%
Plastic	4.5%
Glass	4.5%
Metal	3.3%
Wood	1.7%
Special/Irregular Waste	1.1%
Compostables	0.7%
Unclassified Combustibles	0.7%
Unclassified Incombustibles	0.2%
Fines	0.2%
Total	**100%**
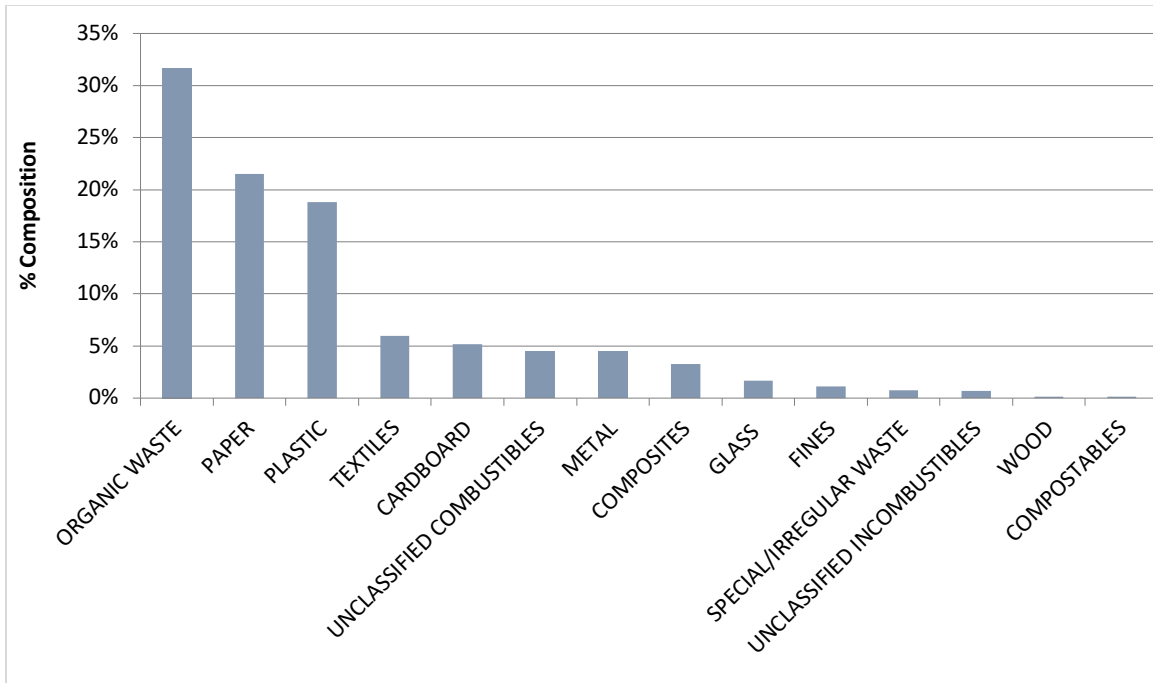
Figure 13: Composition of MRW bin from the Hotels Sector

The largest material streams in the MRW bin, accounting for 31.7%, was organic wastes. This consisted of food waste (27.8%) and liquid wastes (3.3%).

Paper was the next largest primary category material present at 21.5%. This consisted of tissue paper (12.0%), newspapers (2.5%), office paper (2.2%), other nonrecyclable non-packaging paper (1.8%) and 1.2% of both magazines and glossies and recyclable paper packaging.

Plastic waste (18.8%) consisted of plastic bags and films (4.3%), PET packaging (3.7%), other plastic packaging (2.9%), other plastic non-packaging (2.7%), PP packaging (2.3%), unrecyclable plastic packaging (1.7%) and PE packaging (1.1%).

Textiles, 6.0%, was the next material category consisting of 3.4% non-packaging materials and 1.5% nappies.

Cardboard (5.2%) was predominantly made up of packaging materials as was the glass (4.0%).
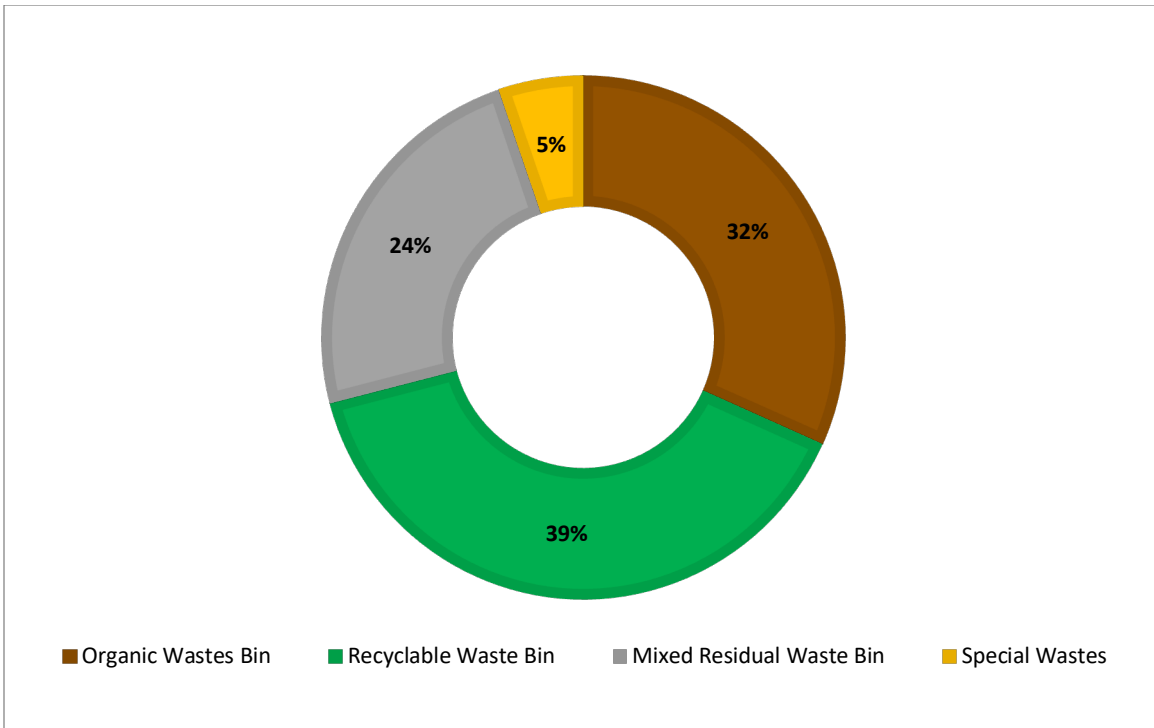
Figure 14: Breakdown of MRW materials from the Hotels sector based on correct segregation

The assessment of the segregation practices of the materials in the MRW bins from hotels, shown in Figure 14, indicated that only 24% of the materials were correctly segregated. Of the remaining materials 39% could have been in the MDR stream, 32% segregated into organic waste bins and 5% managed through other waste management routes such as Bring Banks, Civic Amenity sites and separate collections where applicable.

3.3.2 Hotels MDR

The results of the 26 MDR samples from 2022 and the 60 samples from 2018 analysed from the Hotels sector are summarised in Table 16 and presented graphically in Figure 15.

Table 16: Composition of MDR bin from Hotels sector

Primary category	Average % Content
Paper	27.3%
Plastic	20.9%
Cardboard	20.5%
Organic Waste	10.4%
Metal	5.0%
Unclassified Combustibles	4.7%
Composites	4.3%
Textiles	2.6%
Glass	1.9%
Wood	0.9%

Primary category	Average % Content
Fines	0.8%
Special/Irregular Waste	0.4%
Unclassified Incombustibles	0.2%
Compostables	0.1%
Total	**100%**
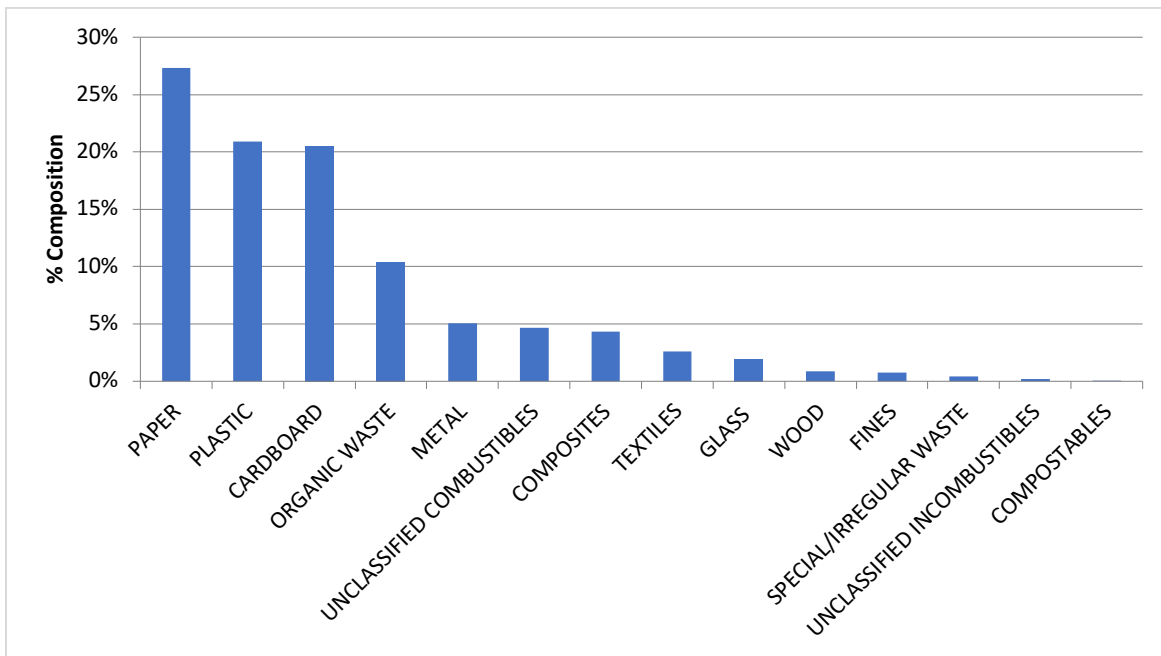
Figure 15: Composition of MDR bin from the Hotels sector

Paper waste was identified as the largest individual material at 27.3%. These materials consisted mainly of tissue papers (11.6%), office paper (4.1%), newspaper (4.0%), other paper (2.8%) paper packaging (2.5%) and magazines and glossies (2.0%).

Of the plastic waste (20.9%) the main materials were plastic bags and films (6.5%), PET packaging (5.4%), other plastic packaging (2.9%), other plastic non-packaging (2.1%), PP packaging (1.3%) and PP Packaging (1.1%).

Cardboard was the next largest category accounting for 20.5%, with this being almost exclusively packaging materials.

The organic wastes (10.4%) was due to food waste (5.2%) and liquid wastes (5.1%).

The metals (5.0%) was predominantly ferrous metal packaging cans (3.5%) with small volumes of other ferrous non-packaging materials (0.6%) and aluminium cans (0.5%).

Composites (4.3%) was related to beverage cartons (2.3%), other packaging materials (1.3%) and hot beverage cups (0.7%).
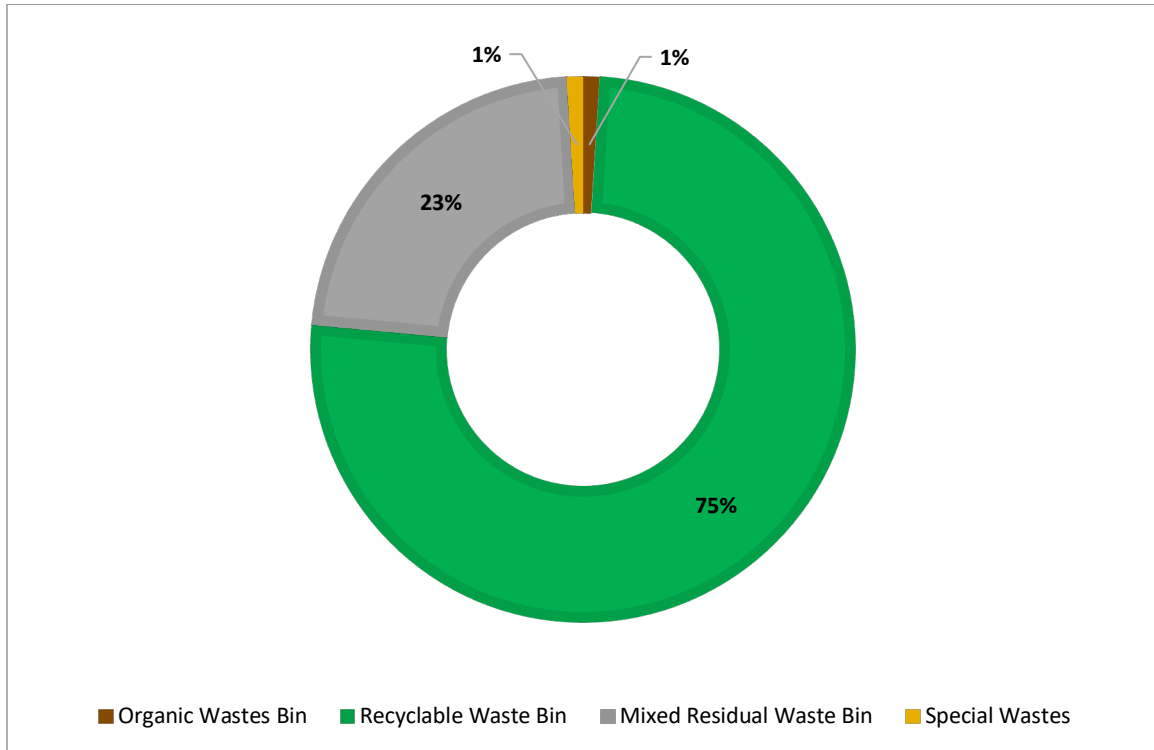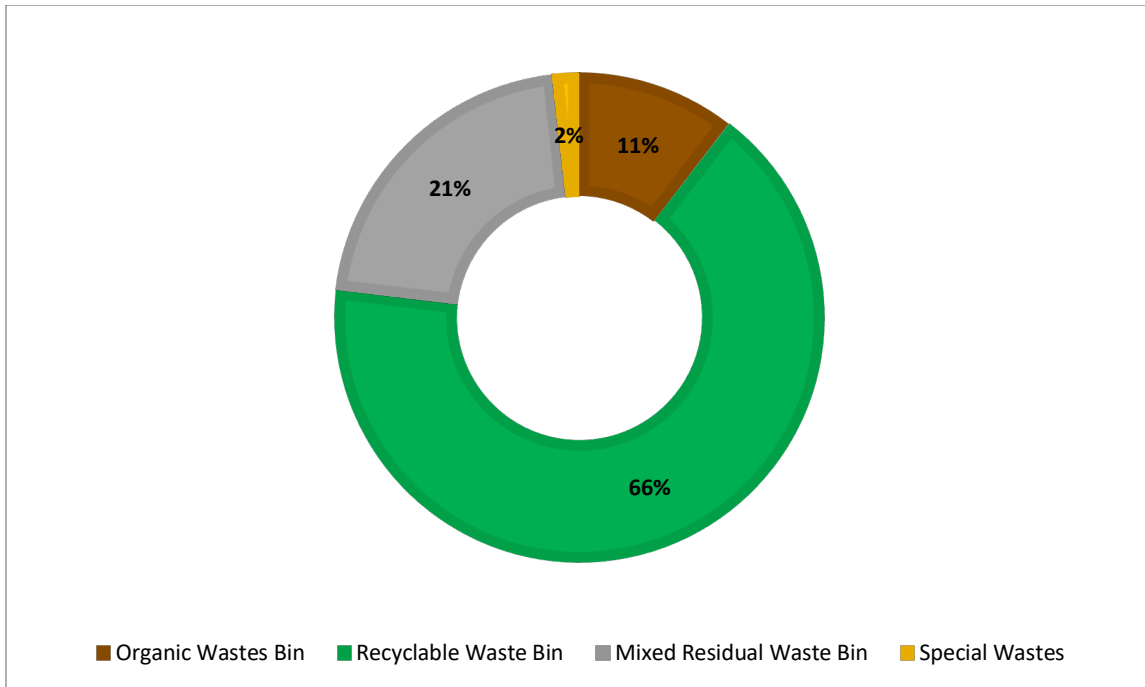
Figure 16: Breakdown of MDR materials from the Hotels sector based on correct segregation

As with the MRW bin, the MDR materials were assessed to identify how effective waste segregation practices were. As shown in Figure 16, 66% are correctly managed in the MDR stream, with 21% that could have been segregated into the MRW stream and 11% that could have been segregated into organic waste bins and 2% of the materials were identified as special wastes.

3.3.3   Food Service MRW

The results of the 17 food services MRW samples assessed in 2018 combined with the 55 from 2018 are summarised in Table 17 and presented graphically in Figure 17.

Table 17: Composition of MRW bin from Food Services sector

Primary category	Average % Content
Organic Waste	34.2%
Paper	21.3%
Plastic	13.3%
Composites	5.9%
Cardboard	5.3%
Textiles	4.8%
Unclassified Incombustibles	4.8%
Metal	3.0%
Unclassified Combustibles	2.3%
Compostables	1.9%
Fines	1.6%
Wood	0.6%

Primary category	Average % Content
Glass	0.6%
Special/Irregular Waste	0.4%
Total	**100%**
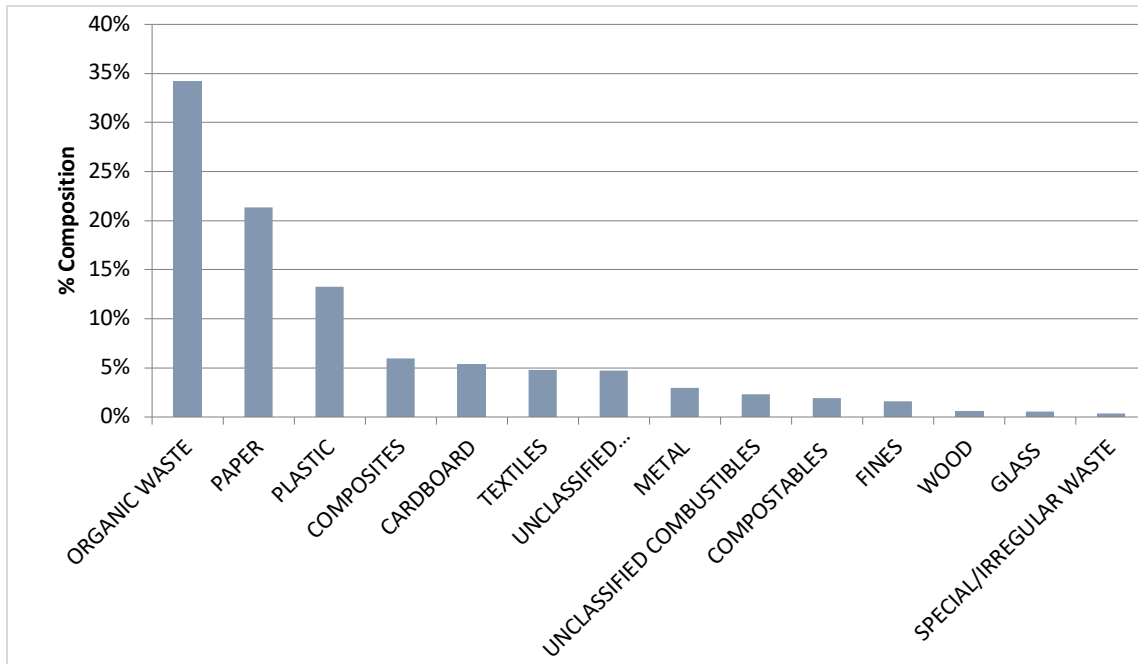
Figure 17: Composition of MRW bin from the Food Services sector

Organic waste (34.2%) was the largest material stream found in the MRW bin from the food services sector and was made up 31.5% food waste and 1.5% liquid wastes.

Paper was the next largest primary category material present at 21.3%. This was made up of tissues (14.6%), magazines and glossies (2.1%) and paper packaging (1.5%).

Plastic waste (13.3%) consisted of other plastic packaging (3.1%), plastic bags and films (2.9%), 1.9% of both other plastic non-packaging and PET packaging, 1.4% of PE packaging and 1.1% of PP packaging.

Composites (5.9%) consisted of hot beverage cups (3.2%) and other composite packaging (2.1%).

Cardboard (5.3%) was mainly packaging materials (4.2%) with 1% of non-packaging materials present.

Textiles, 4.8%, consisted of 3.1% nappies and 1.2% non-packaging materials.
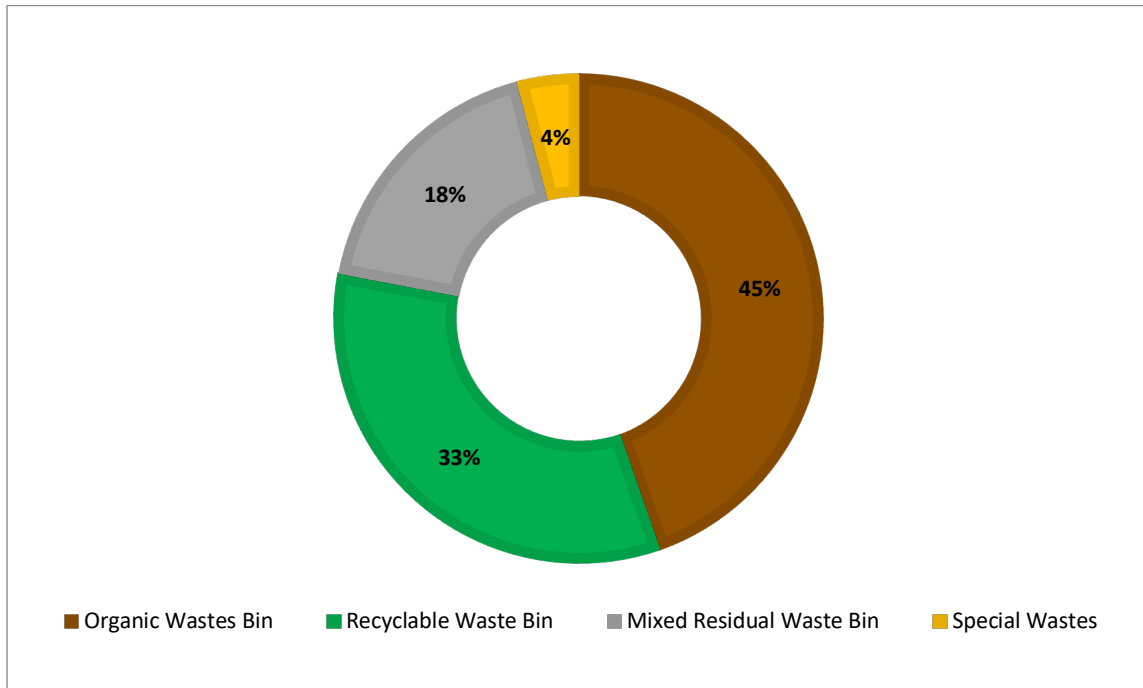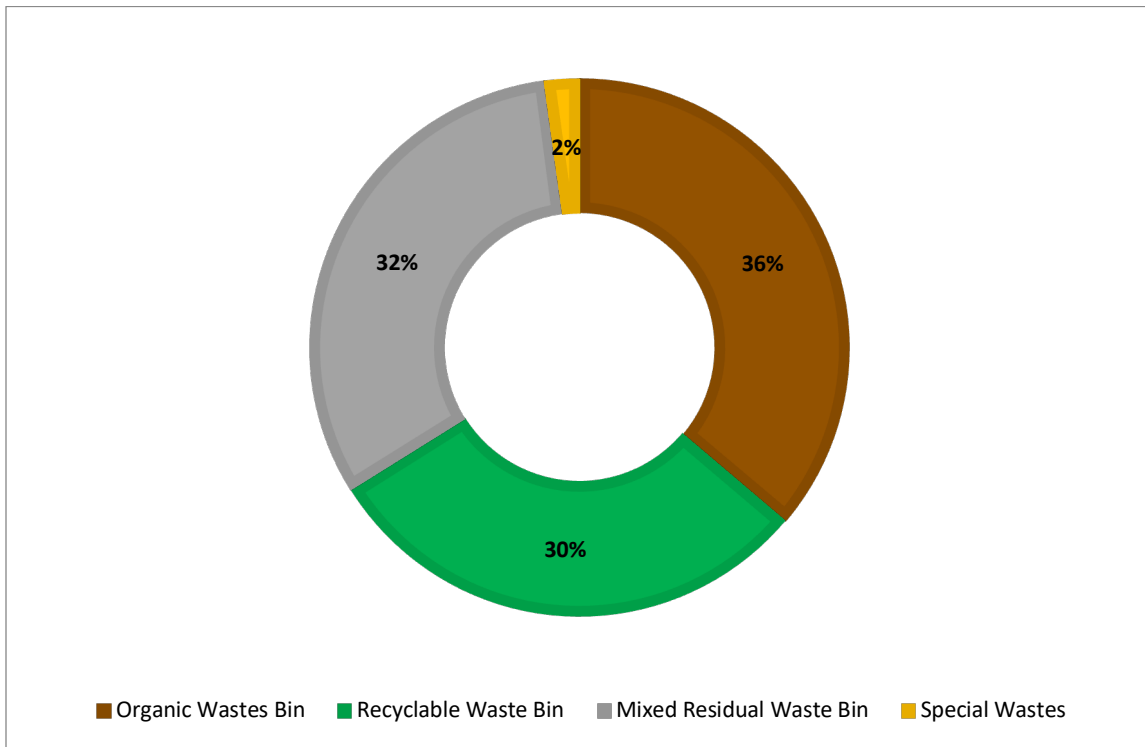
Figure 18: Breakdown of MRW materials from the Food Services sector based on correct segregation

The assessment of the segregation practices of the materials in the MRW bins, shown in Figure 18, indicates that 34% of the materials are being managed correctly. Of the remaining materials 34% could have been segregated into both the organic waste bins and MDR bins. Also, 2% special waste materials were present.

3.3.4 Food Services MDR

The results of the 19 MDR samples from 2022 and the 46 samples form 2018 analysed from the Food Services sector are summarised in Table 18 and presented graphically in Figure 19.

Table 18: Composition of MDR bin from the Food Services sector

Primary category	Average % Content
Cardboard	28.3%
Plastic	22.9%
Organic Waste	19.9%
Paper	12.2%
Metal	8.4%
Composites	4.1%
Wood	1.3%
Compostables	1.1%

Primary category	Average % Content
Glass	0.9%
Textiles	0.4%
Unclassified Combustibles	0.4%
Special/Irregular Waste	0.1%
Unclassified Incombustibles	0.0%
Fines	0.0%
Total	**100%**
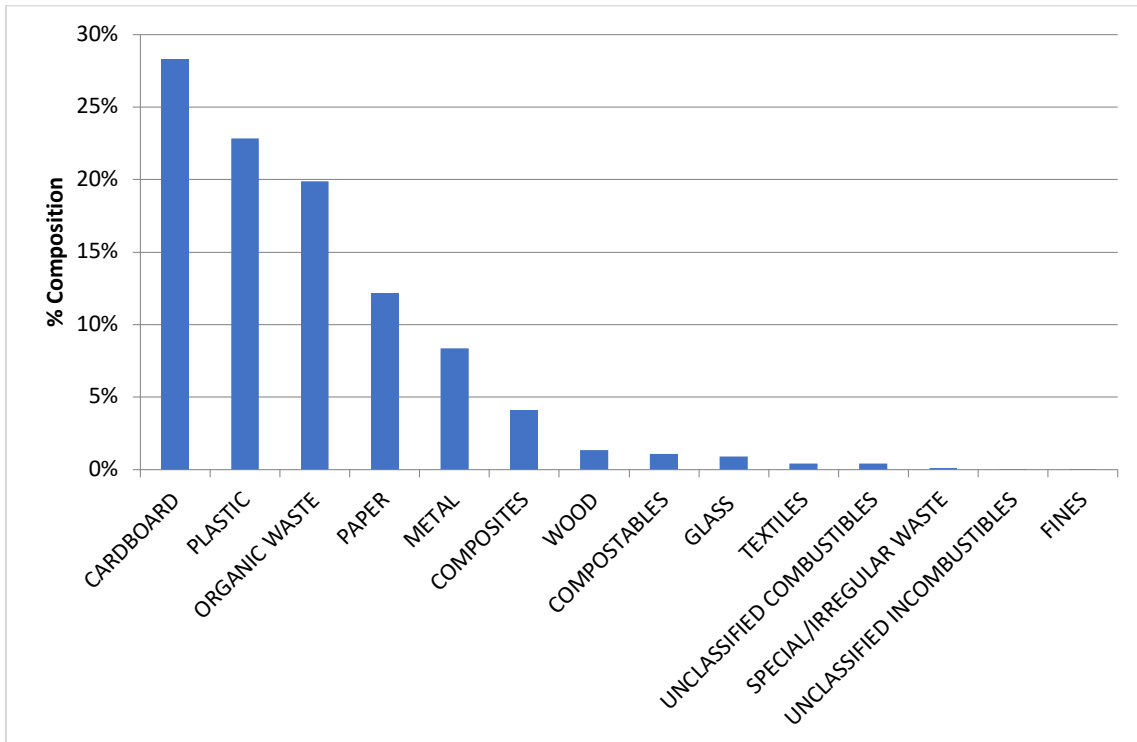
Figure 19: Composition of MDR bin from the Food Services sector

Cardboard was the largest primary materials in the MDR bins accounting for 28.3% and was made up exclusively of cardboard packaging.

Of the plastic materials (22.9%) the main materials were plastic bags and films (5.5%), PE packaging (4.2%), PET packaging (3.7%), other plastic packaging (3.2%), PP packaging (2.8%) and other plastic non-packaging (2.3%).

Organic waste, which obviously contaminates the MDR stream was present at 19.9% and consisted of food waste 18.8% with 1.1% liquids also present.

Paper waste (12.2%) was largely made up of tissue paper (7.2%) with small volumes of paper packaging (1.5%) and office paper (1.0%).

Of the metal wastes (8.4%), the main materials were ferrous packaging cans (6.7%) and aluminium cans (1.3%).
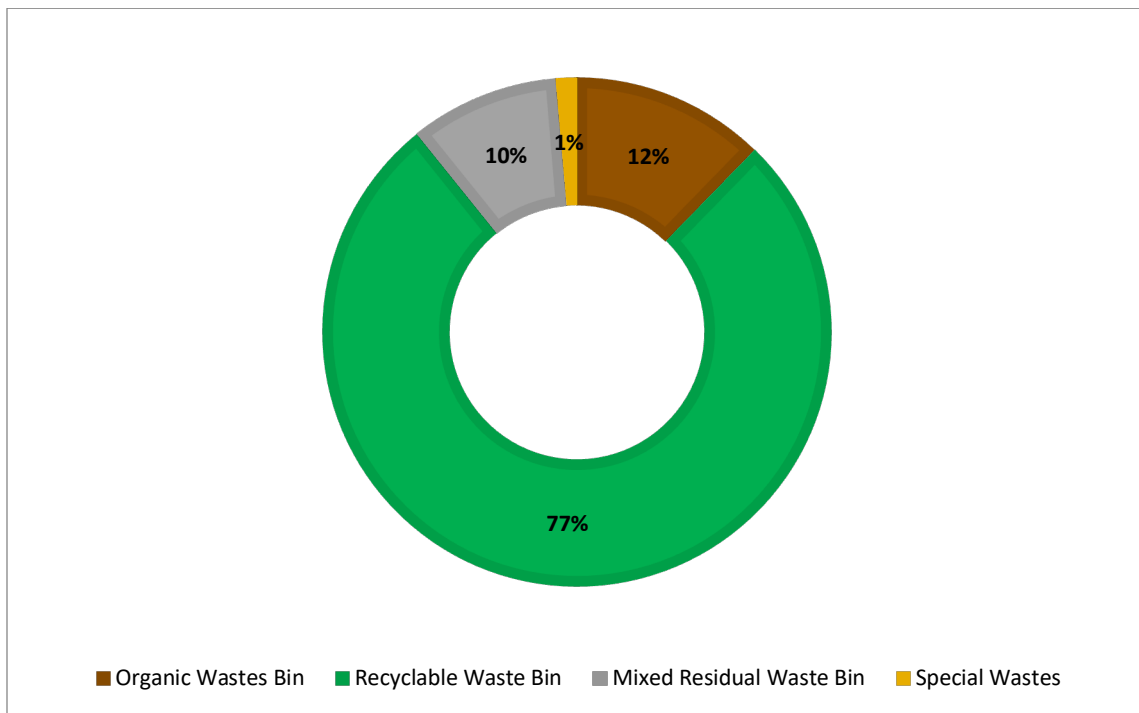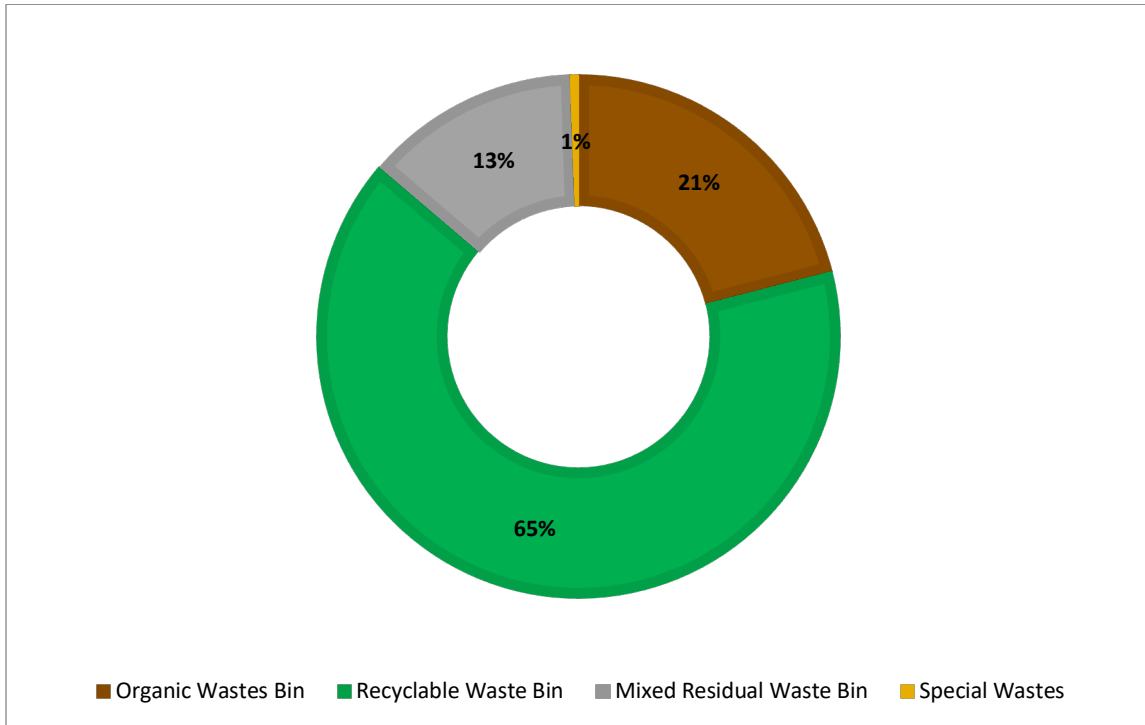

Figure 20: Breakdown of MDR materials from the Food Services sector based on correct segregation

As with the MRW bin, the MDR materials were assessed to identify how effective waste segregation practices. As shown in Figure 20, 65% of material are being correctly managed in the MDR stream, with 21% that could have been segregated into the organic wastes bin, 13% into the MRW bin and 1% special wastes.

3.3.5   Fast Food MRW

The results for the 14 MRW samples assessed from the Fast Food sector are summarised in Table 19 and presented graphically in Figure 21.

Table 19: Composition of MRW bin from Fast Food sector

Primary category	Average % Content
Organic Waste	56.5%
Plastic	19.6%
Paper	12.7%
Cardboard	9.0%
Healthcare Textiles	0.8%
Composites	0.7%
Compostable	0.2%
Metal	0.2%
Wood	0.1%
Unclassified Combustibles	0.0%
Textiles	0.0%
Nappies & Incontinence Wear	0.0%
Glass	0.0%
Special/Irregular Waste	0.0%
Unclassified Incombustibles	0.0%
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**

Organic waste (56.5%) was the predominant material stream in the MRW bin and consisted of mainly food waste (41.8%) and with 14.8% vegetable oil.

The plastic wastes (19.6%) consisted mainly of other plastic packaging (7.6%), PET bottles (5.0%), PET packaging containers (2.5%), other plastic non-packaging (2.4%) and 1.1% of PE packaging containers.

Paper waste (12.7%) was largely made up of tissue paper (8.4%) with small volumes of recyclable (1.8%) and unrecyclable paper packaging (1.9%).

The cardboard content of the MRW bin (9.0%) was exclusively due to packaging based materials.
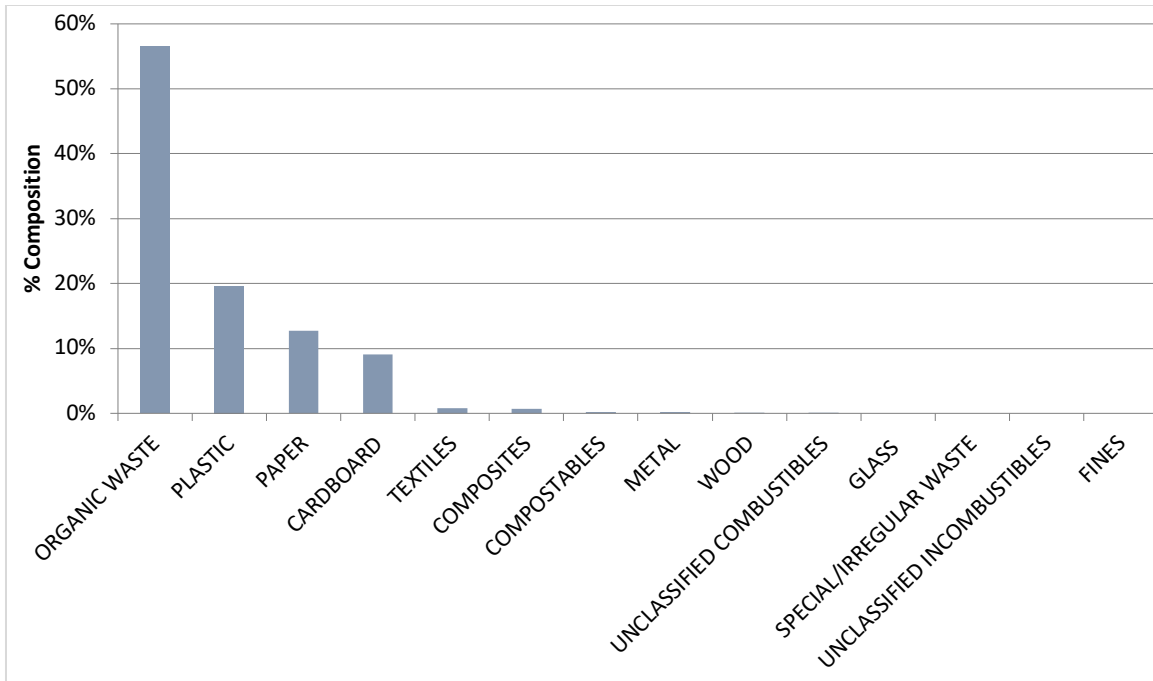
Figure 21: Composition of MRW bin from the Fast Food sector
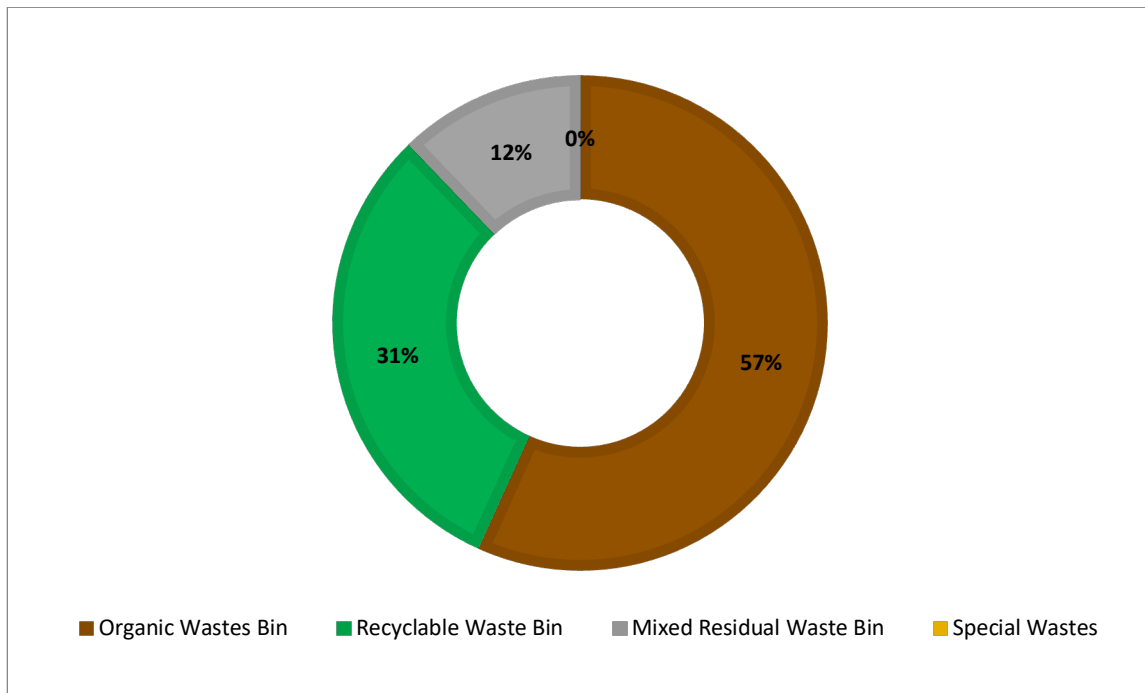
Figure 22: Breakdown of materials found in the MRW bin from the Fast Food sector based on correct segregation

The assessment of the segregation practices in the MRW bin from fast food businesses shown in Figure 22 indicates that only 12% of the wastes were segregated correctly, with 57% of the materials that could have been segregated into the organic waste bin and 31% into the MDR bins.

3.3.6   Fast Food MDR

The results of the 16 MDR samples analysed from the Fast Food sector are summarised in Table 20 and presented graphically in Figure 23.

Table 20: Composition of MDR bin from Fast Food sector

Primary category	Average % Content
Cardboard	31.6%
Plastic	22.2%
Paper	20.5%
Composites	12.8%
Organic Waste	9.4%
Textiles	1.7%
Metal	1.4%
Healthcare Textiles	0.4%
Wood	0.0%
Compostable	0.0%
Nappies & Incontinence Wear	0.0%
Glass	0.0%
Special/Irregular Waste	0.0%
Unclassified Combustibles	0.0%
Unclassified Incombustibles	0.0%
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
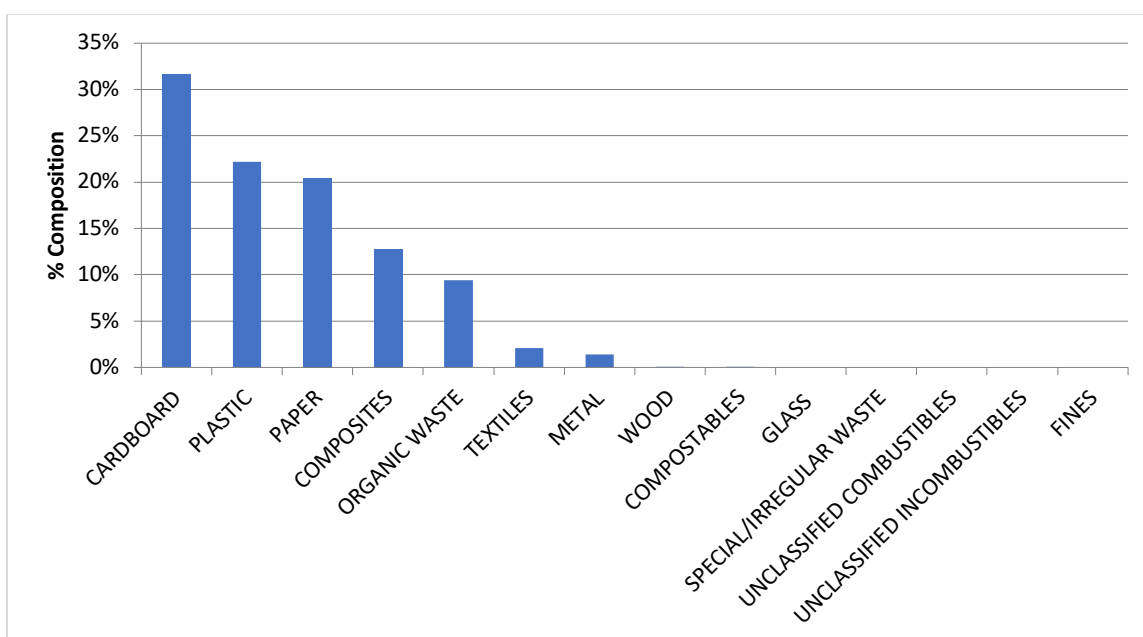
Figure 23: Composition of MDR bin from the Fast Food sector

Cardboard was the main primary material in the MDR bins accounting for 31.6% and was exclusively related to cardboard packaging.

Plastic waste (22.2%) was the next largest material stream and was made up of other plastic packaging (7.6%), other plastic non-packaging (7.5%), Styrofoam and EPS packaging (2.3%), PET bottles (2.1%) and PE milk bottles (1.1%).

Paper waste (20.5%) consisted of tissue paper (9.4%), unrecyclable paper packaging (4.7%), recyclable paper packaging (3.4%) and other non-recyclable non-packaging based paper (2.9%).

Composites was exclusively related to beverage cups at 12.8% and the organic wastes (9.4%) consisted of food waste (8.2%) and liquid wastes (1.2%).
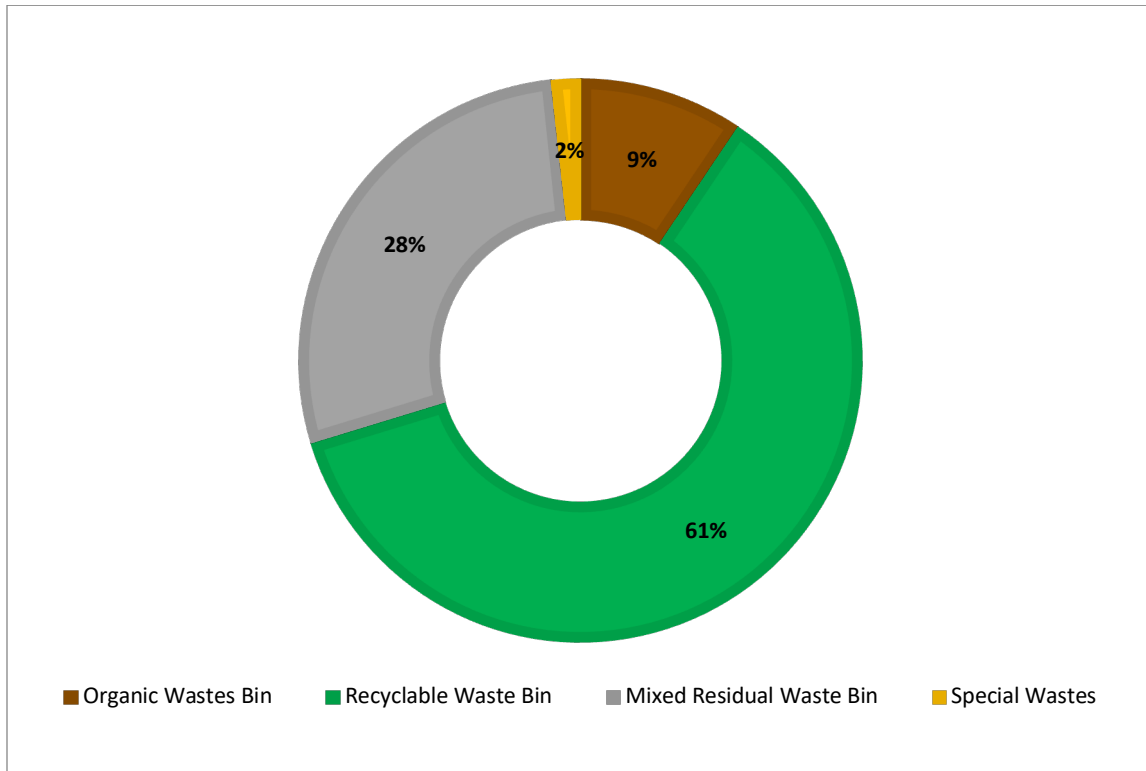
Figure 24: Breakdown of MDR bin materials from the Fast Food sector based on correct segregation

As with the MRW bin, an assessment of the segregation practices in the MDR bin was carried out and is shown in Figure 24. This identified that 61% of these materials were segregated correctly with 28% MRW materials, 9% organic waste bin materials and 2% special wastes that could have been managed differently.

3.4 NACE J - N: Business Services

Business services covers a wide range of businesses including commercial offices across different sectors (e.g. financial service, real estate agents) as well as telecommunications and broadcasting. During this campaign, three businesses from these sectors were surveyed. In total, 26 MRW samples and 28 MDR samples were examined.

3.4.1   Business Services MRW

The results for the 26 MRW samples from the Business Services sector are summarised in Table 21 and presented graphically in Figure 25.

Table 21: Composition of MRW bin from the Business Services sector

Primary category	Average % Content
Organic Waste	30.3%
Paper	28.9%
Plastic	12.8%
Composites	8.0%
Compostable	6.6%
Cardboard	5.0%
Metal	2.3%
Special/Irregular Waste	1.5%
Glass	1.4%
Wood	1.0%
Unclassified Incombustibles	1.0%
Unclassified Combustibles	0.6%
Textiles	0.6%
Healthcare Textiles	0.0%
Nappies and Incontinence Wear	0.0%
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**

Organic waste was the largest individual waste category in the MRW bin at 30.3%. This included 26.7% food waste and 3.6% liquid wastes.

The second largest primary waste category was paper at 28.9%. The most significant individual material was tissue paper (15.7%) with the rest comprising mainly of office paper (4.5%), paper newspapers (3.4%) and magazines (2.1%).

Plastic waste, 12.8%, consisted of other non-packaging plastics (3.8%), PET bottles (3.7%), other plastic packaging (1.9%) and PET containers (1.1%).

The following is a summary of the smaller waste fractions:

- Composites (8.0%) was mainly hot beverage cups
- Compostables (6.6%) consisted mainly of food containers (3.9%) and compostable cups

(1.4%)

- Cardboard (5%) was mainly cardboard packaging (4.2%)
- Metals (2.3%) included other non-packaging metals (1.3%) and aluminium cans (0.7%)
- There was 0.9% of electronic waste and 0.4% coffee pods included in the special waste category (1.5%))
-
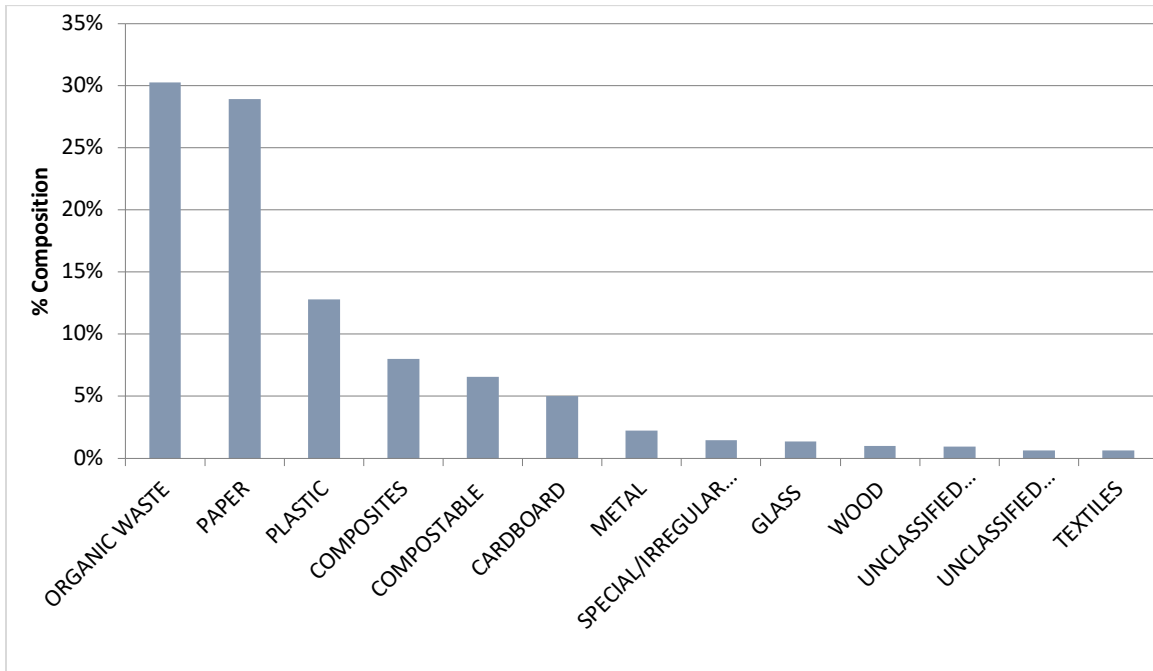
Figure 25: Composition of MRW bin from the Business Services sector
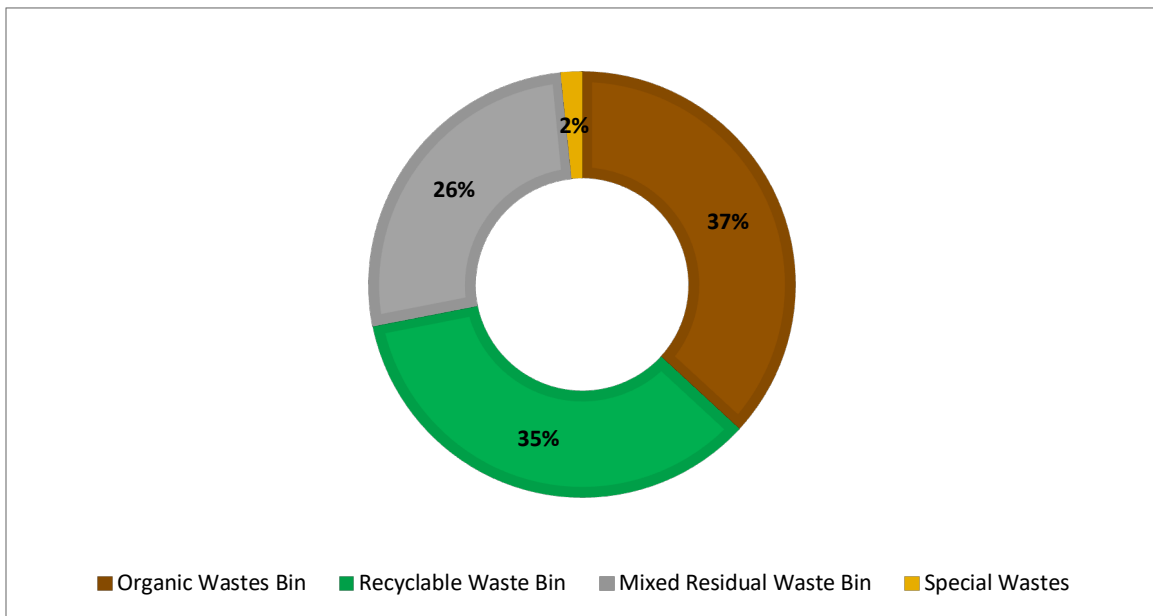
Figure 26: Breakdown of the MRW bin materials from the Business Services sector based on correct segregation

An assessment of the segregation practices in the MRW bin is shown in Figure 26. Based on this it is estimated that over 70% of these materials could be diverted from the MRW stream if segregated properly with 37% going to organic waste bins, 35% going into MDR and a further 2% of special wastes managed through other waste management routes such as Bring Banks, Civic Amenity sites and separate collections, where applicable.

3.4.2 Business Services MDR

The results of the 28 MDR samples analysed from the businesses involved from Business Services sector are summarised in Table 22 and presented graphically in Figure 27.

Table 22: Composition of MDR bin from Businesses Services sector

Primary Category	Average % Content
Paper	66.1%
Cardboard	8.2%
Organic Waste	7.3%
Plastic	6.0%
Compostable	4.4%
Composites	3.6%
Metal	1.7%
Glass	0.7%
Special/Irregular Waste	0.6%
Non- Municipal Waste	0.5%
Textiles	0.3%
Wood	0.3%
Unclassified Combustibles	0.2%
Unclassified Incombustibles	0.0%
Healthcare Textiles	0.0%
Nappies & Incontinence Wear	0.0%
Fines	0.0%
Total	**100%**
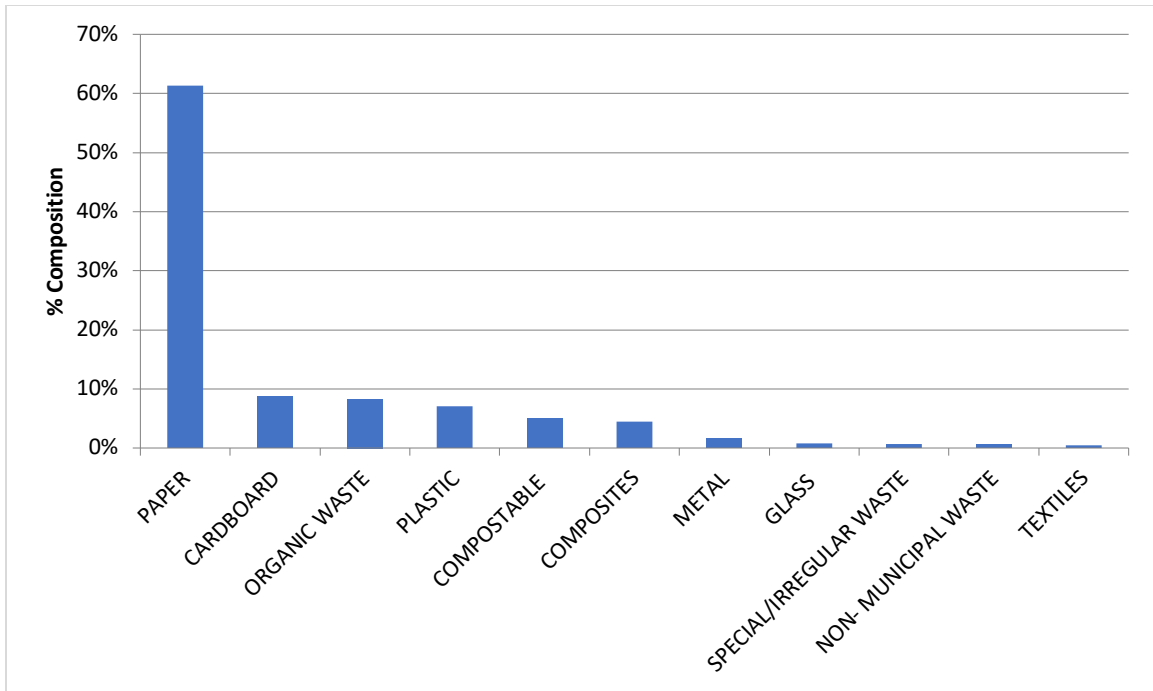
Figure 27: Composition of MDR bin from the Businesses Services sector

Paper, the dominant recyclable material (66%) in the MDR bin, consisted of newspapers (42.3%), magazines and glossies (7.4%), office paper (5.9%) and tissue papers (2.6%).

Cardboard, at 8%, consisted of mainly packaging based materials.

Organic waste (7.3%), which contaminates recyclables, was made op of food waste (6.6%) and residual liquid in cups and bottles (1.7%).

Of the plastic waste (6%) the main materials were PET bottles (2.4%), other plastic non-packaging (2.2%), other plastic packaging (0.8%) and PET containers (0.26%).

Compostable materials consisting of containers (2.6%) and cups (2%) account for 4.4% of the MDR stream with composites making up 3.6%.
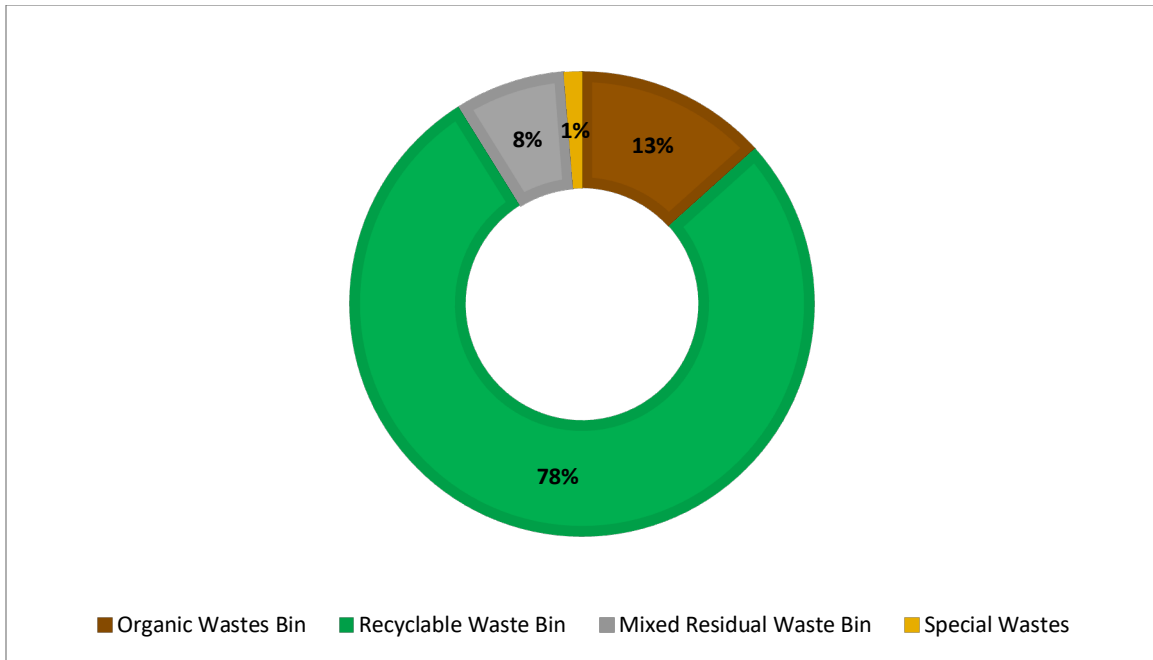
Figure 28: Breakdown of MDR materials from the Businesses Services sector based on correct segregation

As with the MRW bin, an assessment of these materials based on how they should be managed was carried out (see Figure 28). Based on this assessment 78% of these materials are in the correct stream with 13% that could be in the organic waste bin, 8% in the MRW and 1% that could be managed through alternative collection routes for special wastes.

3.5 NACE O: Public Service

Public services cover a wide range of different activities, from local authority offices and yards to public swimming pools, libraries and fire services. As part of this campaign two sites, a library and a fire station were surveyed and in total there were 20 MRW and 19 MDR samples examined.

3.5.1 Public Service MRW

The results for 20 MRW samples are summarised in Table 23 and presented graphically in Figure 29.

Table 23: Composition of MRW bin from Public Services

Primary category	Average % Content
Organic Waste	36.1%
Paper	15.6%
Textiles	14.2%
Plastic	12.9%
Cardboard	7.3%
Metal	5.5%
Unclassified Combustibles	2.4%

Primary category	Average % Content
Glass	2.3%
Composites	1.9%
Wood	0.6%
Nappies & Incontinence Wear	0.5%
Special/Irregular Waste	0.4%
Unclassified Incombustibles	0.3%
Fines	0.0%
Healthcare Textiles	0.0%
Compostable	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
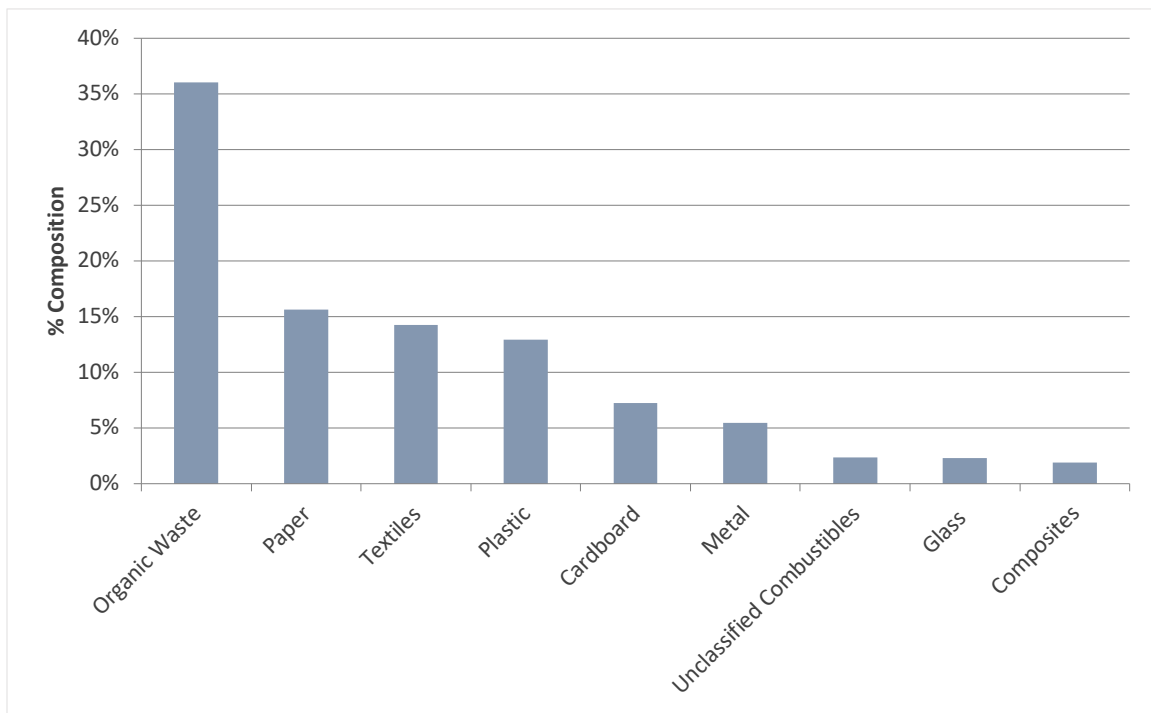
Figure 29: Composition of mixed residual wastes (MRW) from the Public Services sector

Organic waste was the largest individual waste category in the MRW bin at 36.1%. this was made up of food waste (21.9%) and garden wastes (12.3%).

The next largest primary waste category was paper at 15.6%. The main individual material was tissue paper (11.6%) with the rest comprising of mainly office paper (1.3%) and unrecoverable paper packaging materials (1.1%).

Textiles (14.2%), consisting of mainly clothing (11.1%) was the next most significant category.

Plastic waste, 12.9%, consisted of other plastic packaging (5.4%), PET bottles (2.1%), plastic bags and films (1.7%) and PET containers (1.1%).

The following is a summary of some of other waste fractions of significance:

- Cardboard (7.3%) was exclusively packaging materials
- Metals (5.5%) included non-ferrous non-packaging materials (3.4%), aluminium (1%) and metal (0.6%) cans
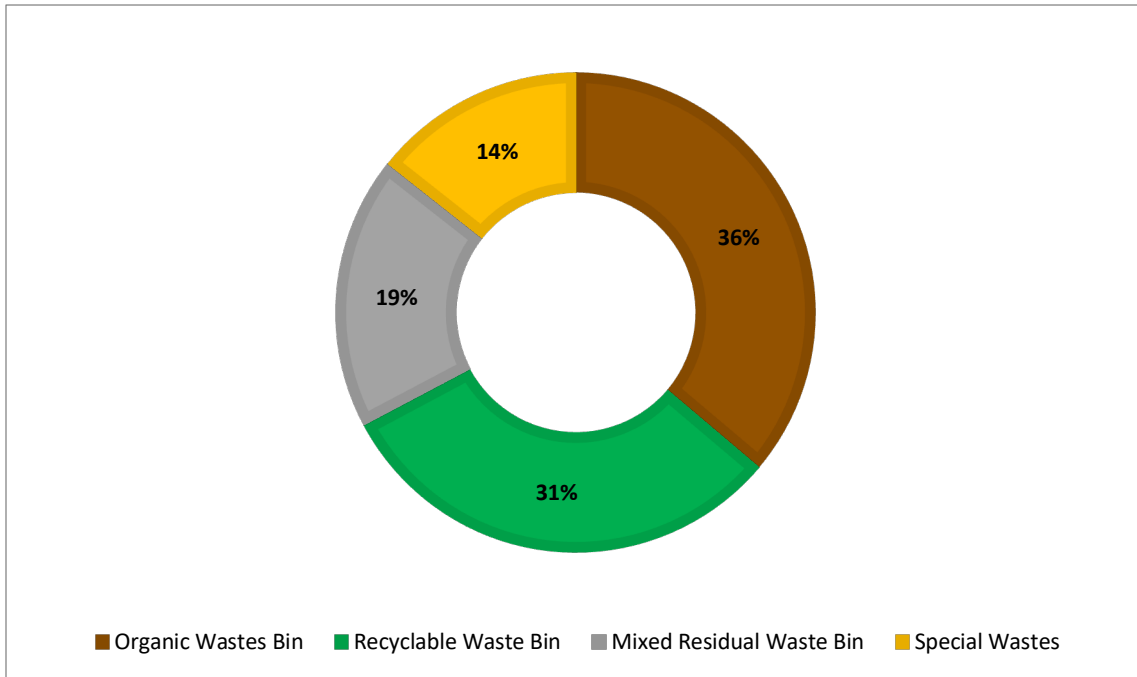
Figure 30: Breakdown of MRW materials from Public Services based on correct segregation

To better understand the scope for improved management of the materials in the MRW stream, they were assessed based on correct waste segregation. This assessment, shown in Figure 30, indicates that only 19% of the materials in the MRW should be managed this way. Of the remaining materials 36% could have been segregated into organic waste bins, 31% managed in the MDR stream and 14% managed through other waste management routes such as Bring Banks, Civic Amenity sites and separate collections where applicable.

3.5.2   Public Service MDR

The results of the 19 MDR samples analysed from Public Services are summarised in Table 24 and presented graphically in Figure 31.

Table 24: Composition of MDR bin from Public Service sector

Primary category	Average % Content
Cardboard	40.3%
Plastic	30.6%
Paper	21.2%
Wood	2.8%
Organic Waste	2.3%

Primary category	Average % Content
Metal	1.8%
Nappies And Incontinence Wear	0.7%
Composites	0.3%
Unclassified Combustibles	0.1%
Special/Irregular Waste	0.0%
Compostable	0.0%
Textiles	0.0%
Healthcare Textiles	0.0%
Glass	0.0%
Unclassified Incombustibles	0.0%
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
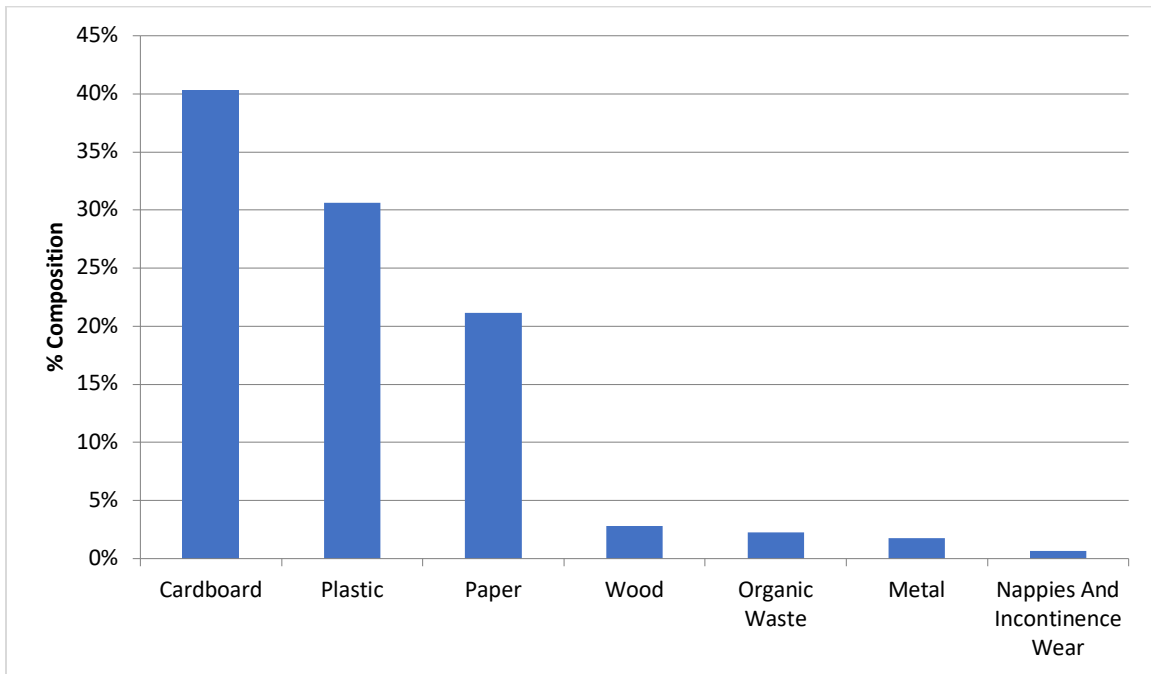
Figure 31: Composition of MDR bin from the Public Services sector

Cardboard materials were the largest individual category at 40.3% and consisted of 38.4% or recyclable packaging and 1.8% of unrecoverable materials.

Of the plastic waste (30.6%) the main materials were non-packaging other plastics (11.4%), plastic bags and films (5.7%), PET bottles (5.2%) and other plastic packaging (4.7%).

Paper materials, 21.2%, was made up of newspapers (7.5%), other paper materials (4.7%), magazines and glossies (2.9%), paper packaging (2.6%) and office paper (1.8%).

Wood packaging materials accounted for 2.8%.

Of the organic wastes found (2.3%), liquid wastes (2.1%) from drink bottles was the main component.

Metal waste (1.8%) was mainly aluminium (1.3%) and ferrous metal/steel cans (0.5%).

Nappies accounted for 0.7%.
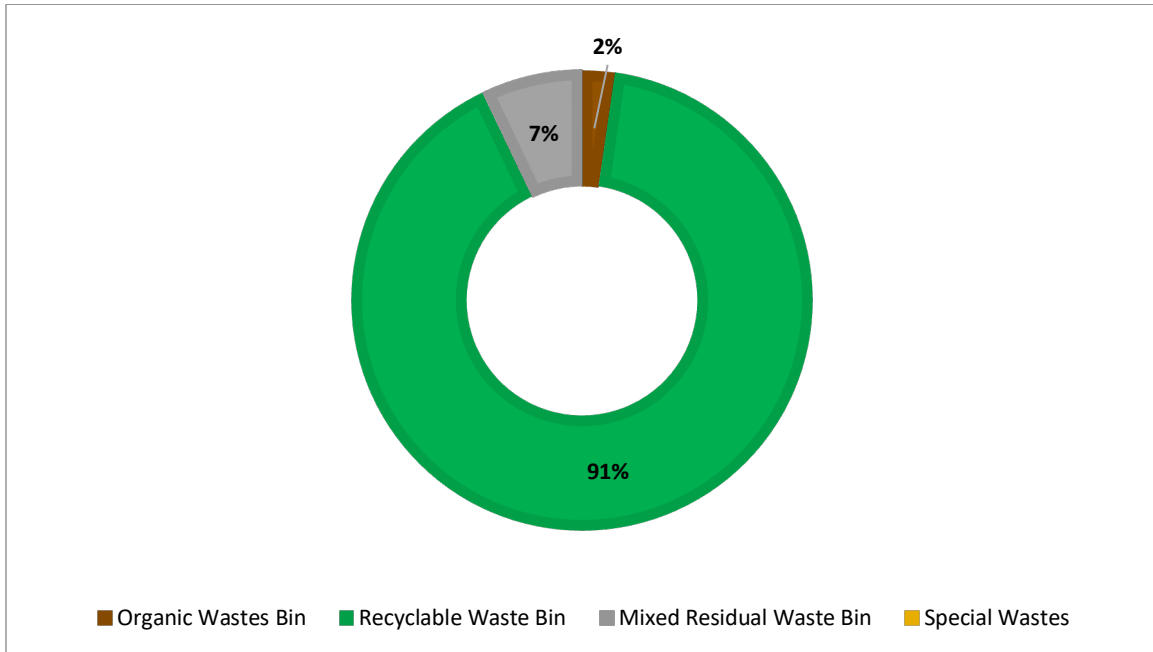
Figure 32: Breakdown of MDR materials from the Public Services sector based on correct segregation

As with the MRW bin, an assessment of the materials in the MDR bin based on how they should be segregated was carried out. Based on this assessment, shown in Figure 32, 91% of these materials are in the correct stream with 7% MRW materials and 2% organic bin materials being present.

3.6 NACE P: Education

The education sector is a diverse NACE sector including pre-primary care all the way to third level education. In this campaign, six surveys were carried out across the education sector. Surveys were carried out in two pre-primary locations with 20 samples from both the MRW and MDR streams examined. Two primary schools were also examined, with 19 samples from the MRW stream and 17 samples from the MDR stream assessed. Surveys were carried out as well in two secondary schools with 16 samples from both the MRW and MDR streams.

3.6.1 Pre-primary MRW

The results for the 20 MRW samples surveyed from the pre-primary school sector are summarised in Table 25 and presented graphically in Figure 33.

Table 25: Composition of MRW bin from Pre-Primary school sector

Primary category	Average % Content
Organic Waste	40.0%
Nappies & Incontinence Wear	29.4%
Paper	16.6%
Plastic	6.5%
Cardboard	2.1%
Unclassified Combustibles	1.8%
Composites	1.2%
Textiles	1.0%
Metal	0.6%
Unclassified Incombustibles	0.3%
Special/Irregular Waste	0.3%
Compostable	0.2%
Wood	0.0%
Healthcare Textiles	0.0%
Glass	0.0%
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
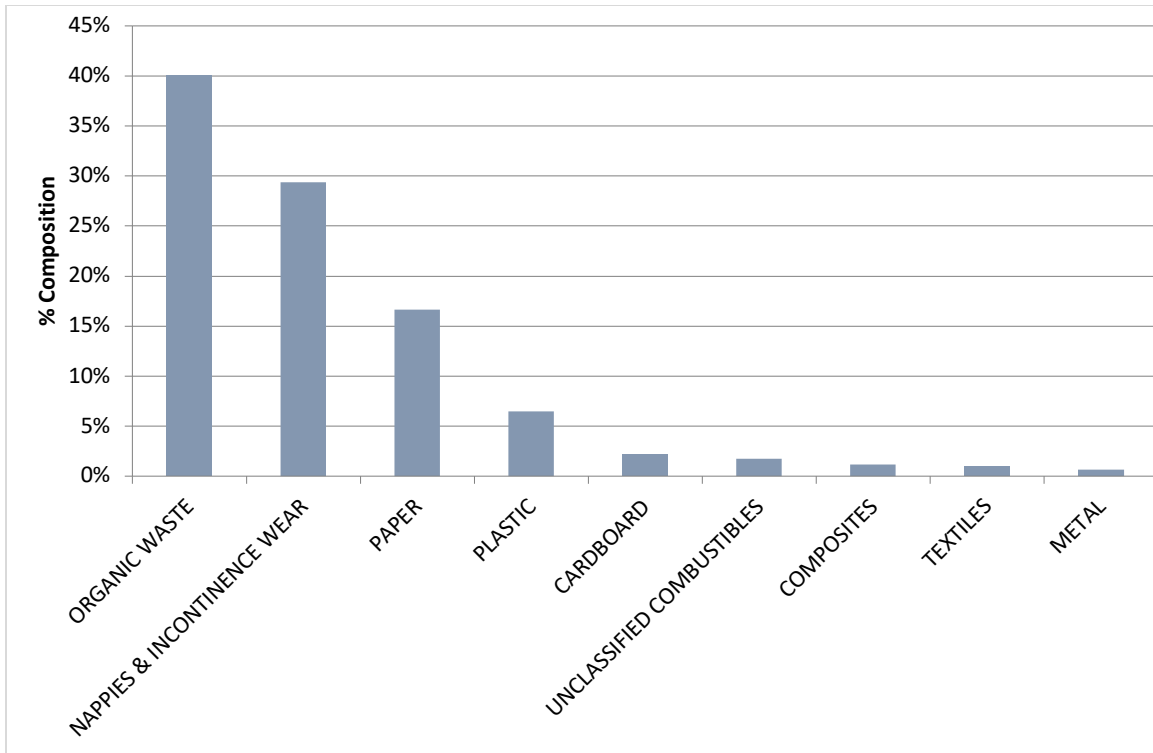
**Figure 33: Composition of MRW bin from the Pre-Primary Sector**

The largest two material streams in the MRW bin, accounting for 70%, were organics (40.0%) and nappies (29.4%). The organic waste was made up almost exclusively of food waste (39.4%).

Paper was the next largest primary category material present at 16.6%. This consisted of tissue paper (14.4%) and other paper (1.1%).

Plastic waste (6.5%) consisted mainly of other plastic non-packaging (4.0%) and smaller quantities of other plastic packaging (0.7%), plastic bags and films (0.6%), PP packaging (0.4%) and PET packaging containers (0.3%).

An assessment of the segregation practices in the MRW bin is shown in Figure 34. Based on this, only 47% of the materials in the MRW should be managed in this way. Of the remaining materials 40% could have been segregated into organic waste bins, 12% managed in the MDR stream and 1% managed through other waste management routes such as Bring Banks, Civic Amenity sites and separate collections where applicable.
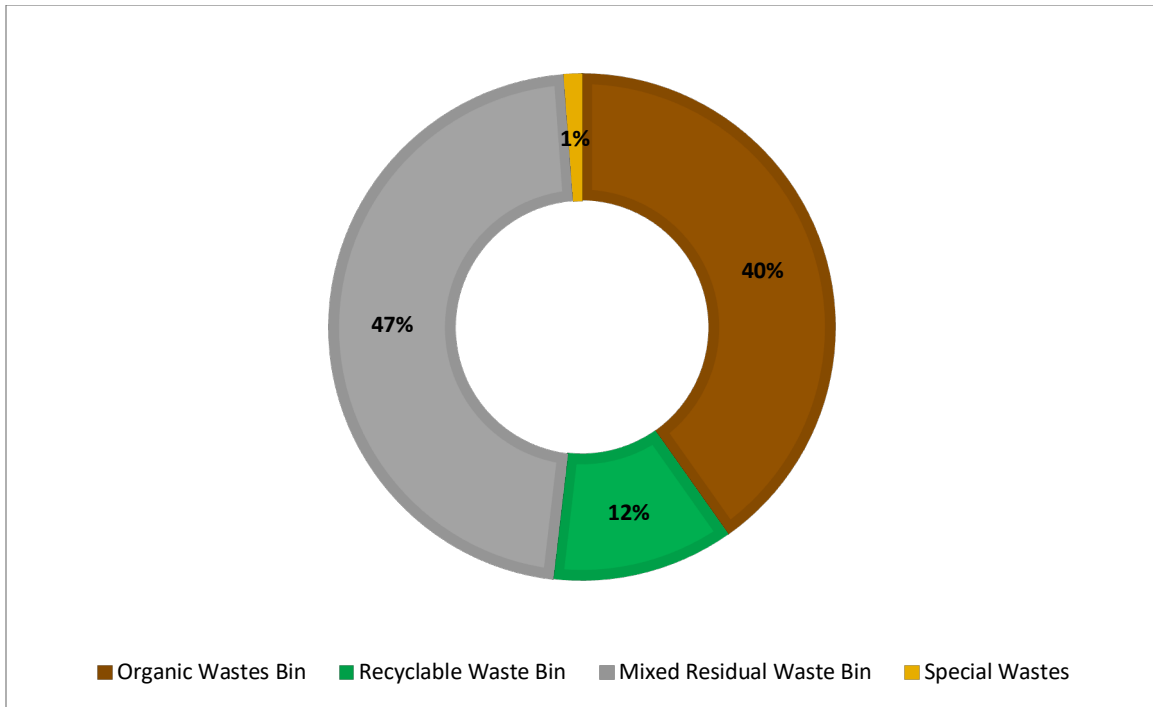
Figure 34: Breakdown of MRW materials from the Pre-Primary Education sector based on correct segregation

3.6.2 Pre-primary MDR

The results of the 20 MDR samples analysed from the Pre-Primary Sector are summarised in Table 26 and presented graphically in Figure 35.

Table 26: Composition of MDR bin from Pre-Primary school sector

Primary category	Average % Content
Cardboard	37.3%
Paper	20.6%
Plastic	17.9%
Glass	11.5%
Wood	4.8%
Metal	3.7%
Composites	2.3%
Organic Waste	1.6%
Textiles	0.2%
Unclassified Combustibles	0.0%
Nappies & Incontinence Wear	0.0%
Healthcare Textiles	0.0%
Special/Irregular Waste	0.0%
Compostable	0.0%
Unclassified Incombustibles	0.0%

Primary category	Average % Content
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
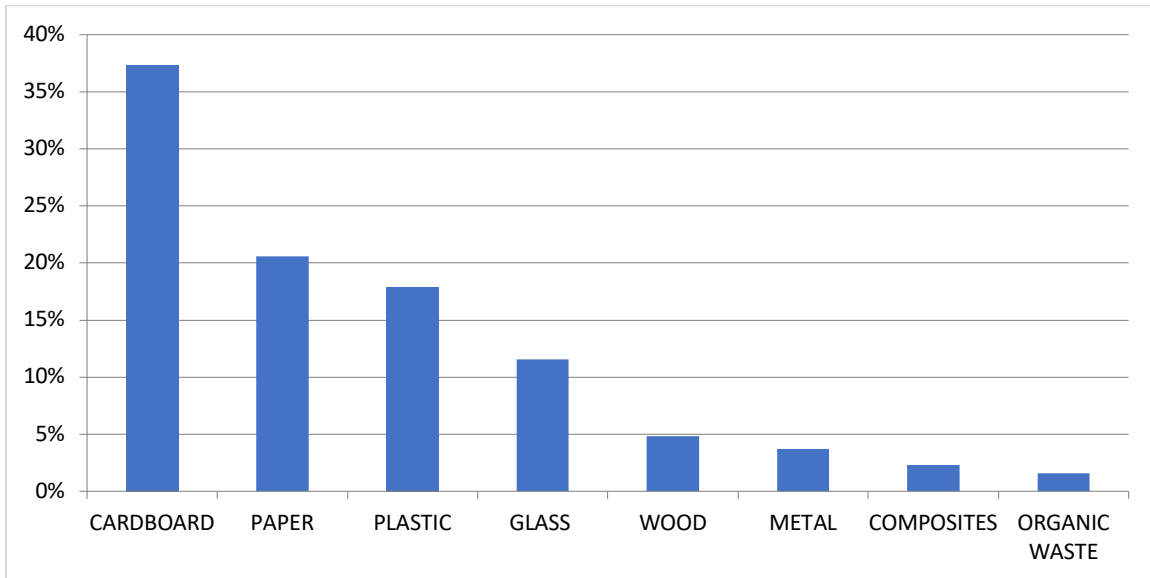
Figure 35: Composition of MDR bin from the Pre-Primary sector

Cardboard was the largest category recycled accounting for 37.3% of the MDR bin, with this being almost exclusively packaging materials.

Paper waste was identified as the next largest individual stream at 20.6% and consisted of magazines and glossies (10.3%), office paper (3.7%), recyclable paper (3.1%) and tissue paper (2.9%).

Of the plastic waste (17.9%) the main materials were other plastic packaging (4.7%), other plastic non-packaging (3.5%), PET containers (3.4%), PE milk bottles (1.7%), other PE packaging (1.3%) and plastic bags and films (1.3%).

Glass packaging (11.5%), non-packaging wood (4.8%) and metals (3.7%) – made up primarily of ferrous metal/steel cans – were the remaining materials of note from this sector.

Based on an examination of these materials, shown in Figure 36, it appears that 90% of the materials are being correctly managed in the MDR bin. 8% of the materials found in the MDR could have been managed through the MRW bin with 2% organic bin materials being present.
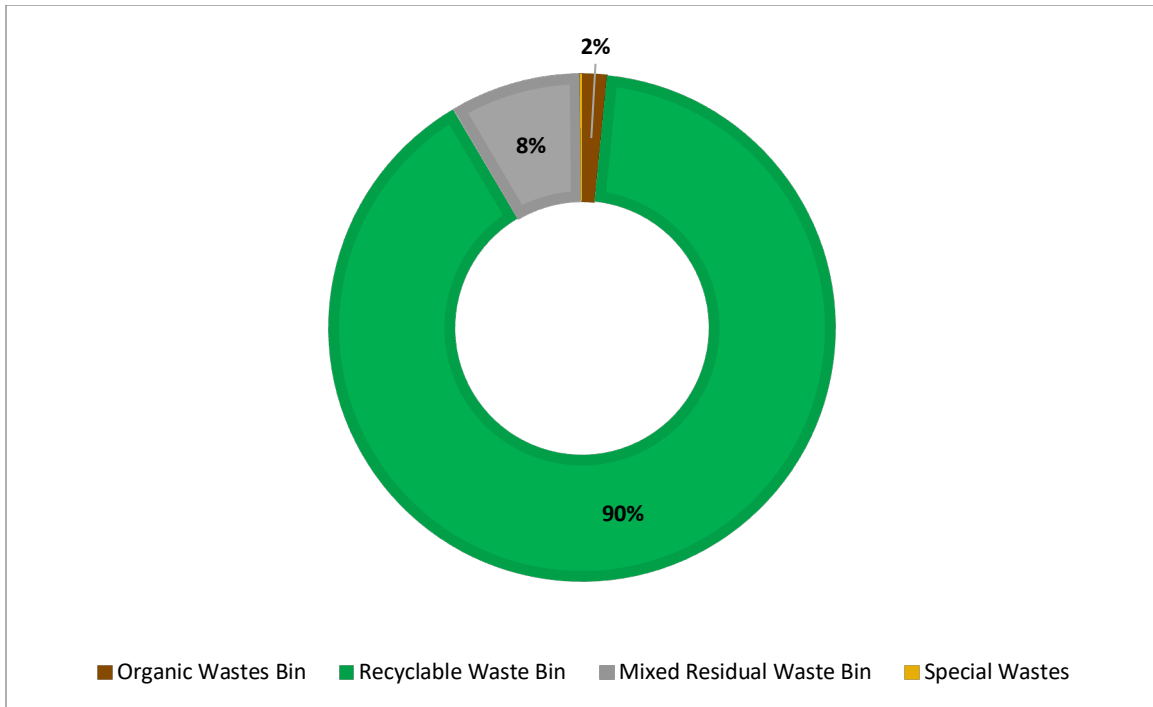
Figure 36: Breakdown of MDR materials from the Pre-Primary Education sector based on correct segregation

3.6.3 Primary Schools MRW

The results for the 19 samples assessed from the MRW of primary schools are summarised in Table **27** and presented graphically in Figure 37.

Table 27: Composition of MRW bin from Primary School sector

Primary category	Average % Content
Organic Waste	29.8%
Paper	26.0%
Plastic	14.4%
Nappies & Incontinence Wear	5.7%
Metal	4.3%
Special/Irregular Waste	3.2%
Composites	3.1%
Cardboard	3.0%
Unclassified Combustibles	3.0%
Wood	2.3%
Compostable	2.2%
Fines	1.8%
Textiles	0.8%
Glass	0.4%
Healthcare Textiles	0.0%

Primary category	Average % Content
Unclassified Incombustibles	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
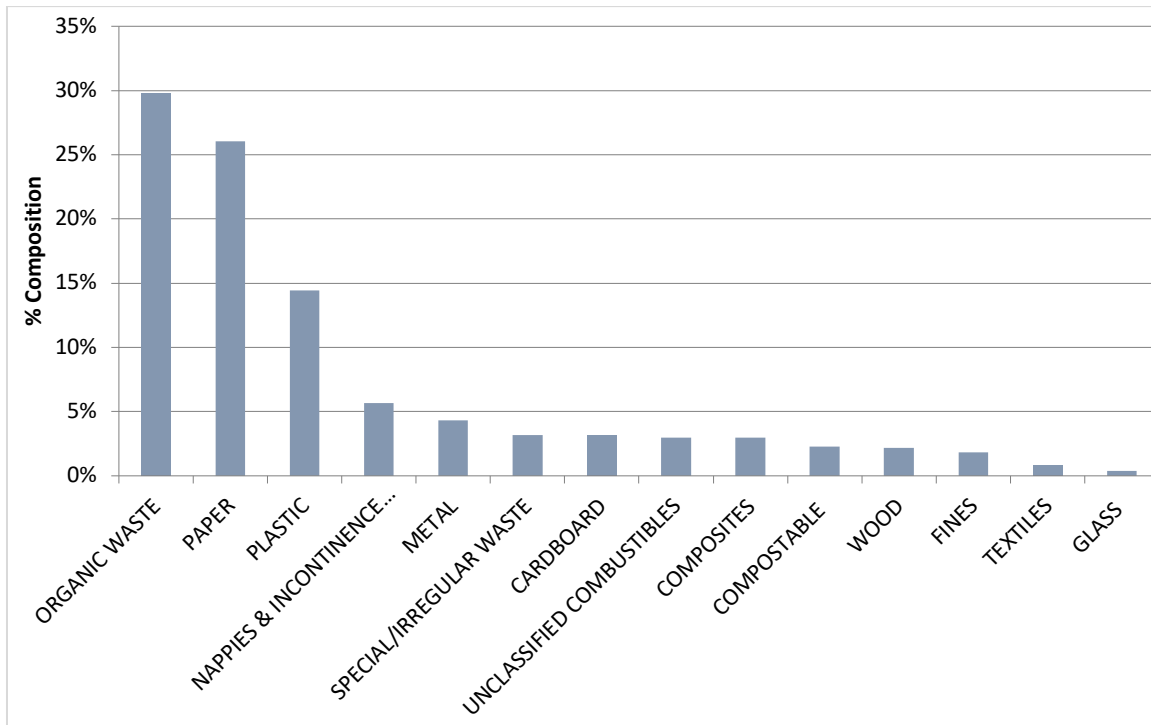
Figure 37: Composition of MRW bin from the Primary Schools sector

Organic waste (29.8%) was the largest material in the MDR bin consisting of mainly food waste (27.2%) and with 2.6% liquid wastes.

Paper was the next largest primary category material present at 26.0%. This was made up of tissues (20.2%), office paper (2.7%), other paper (1.9%) and recyclable paper (1.3%).

Plastic waste (14.4%) consisted mainly of other plastic non-packaging (4.7%), PET bottles (3.1%), other plastic packaging (1.7%) and plastic bags and films (1.6%).

5.7% of the MRW was due to nappies.

Metals accounted for 4.3%, was mainly made up of non-ferrous packaging (1.6%) and non-packaging materials (1.7%).

Of the special wastes (3.2%), 1.3% was related to waste electrical equipment, 1.0% from face masks and 0.4% coffee pods.
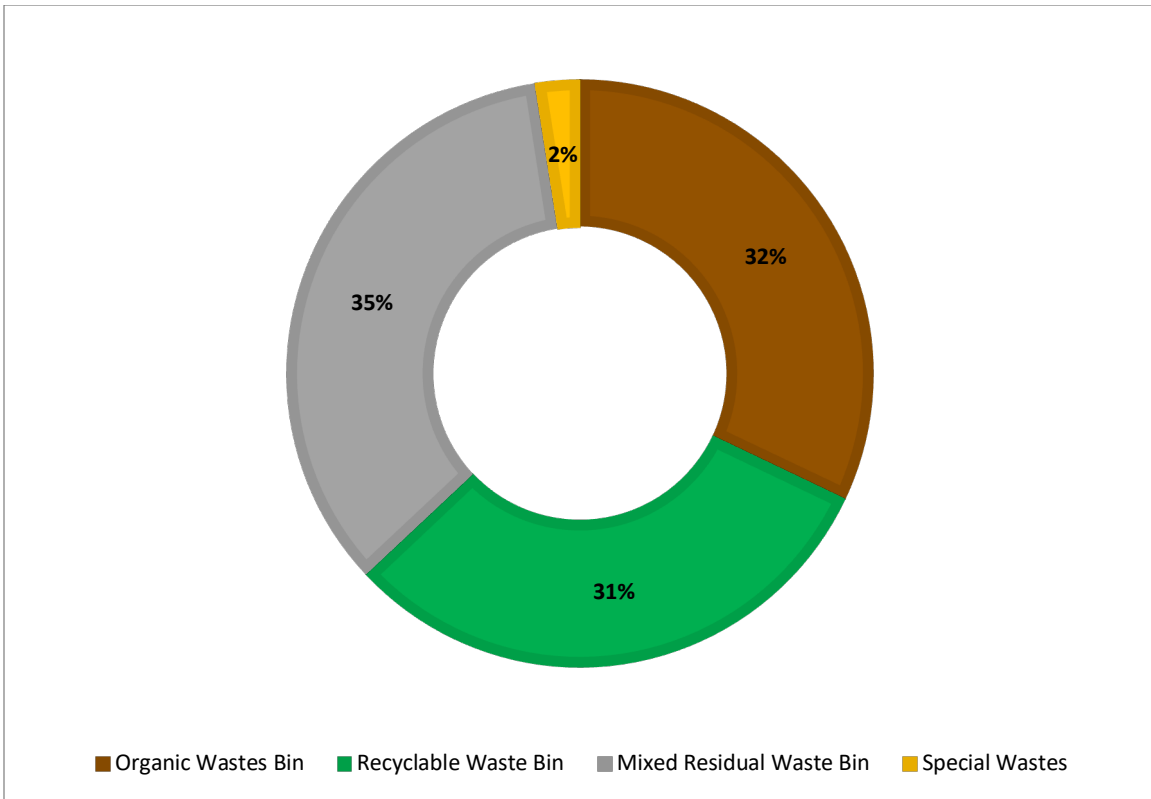
Figure 38: Breakdown of MRW materials from the Primary Education sector based on correct segregation

An assessment of the segregation practices in the MRW bin is shown in Figure 38. This indicates that only 35% of the materials in the MRW are being managed correctly. Of the remaining materials 32% could have been segregated into the organic waste bins, 31% managed in the MDR bins and 2% managed through other waste management routes such as Bring Banks, Civic Amenity sites and separate collections where applicable.

3.6.4   Primary School MDR

The results of the 17 MDR samples analysed from the Primary School sector are summarised in Table 28 and presented graphically in Figure 39.

Table 28: Composition of MDR bin from Primary School sector

Primary category	Average % Content
Paper	56.9%
Plastic	20.6%
Cardboard	12.3%
Organic Waste	3.2%
Nappies & Incontinence Wear	1.6%
Unclassified Combustibles	1.4%
Composites	1.4%
Metal	0.9%

Primary category	Average % Content
Special/Irregular Waste	0.8%
Wood	0.5%
Glass	0.2%
Compostable	0.1%
Textiles	0.1%
Healthcare Textiles	0.0%
Unclassified Incombustibles	0.0%
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
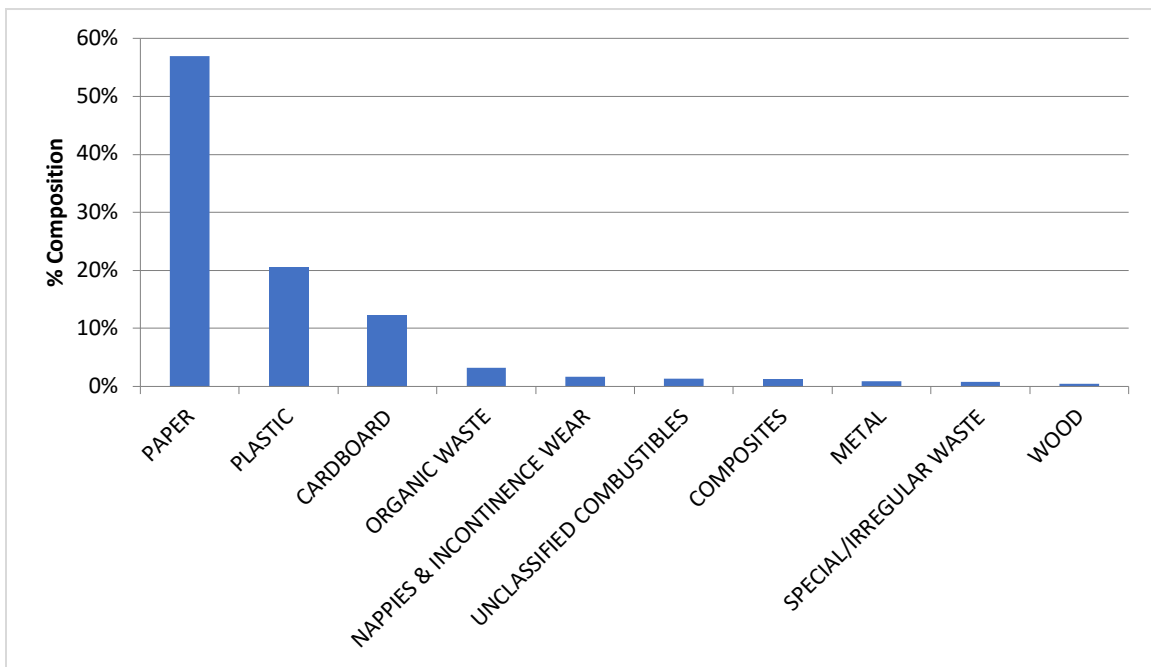
Figure 39: Composition of MDR bin from the Primary School sector

Paper waste was identified as the largest individual material category at 56.9% and consisted of office paper (20.1%), other paper (16.1%), magazines and glossies (9.1%), tissue paper (7.8%) and recyclable paper (2.9%).

Of the plastic waste (20.6%) the main materials were PE milk bottles (6.5%), other plastic non-packaging (4.6%), shrink and pallet wrap (4.1%), PET bottles (1.2%) and PET containers (1.0%).

Cardboard was the next largest primary materials in the MDR bins accounting for 12.2% and made up of cardboard packaging (9.9%) and other non-packaging cardboard materials (2.3%).

Other materials of note included:

- Organic waste (3.2%) was mainly food waste (3.0%)
- Nappies (1.6%)
- Unclassified combustibles (1.4% - this was non-packaging based materials), and
- Composites which were made up of hot drink cups (0.7%) and packaging materials (0.6%)

Based on an examination of these materials, 84% are being correctly managed in the MDR stream. 12% of the materials found could have been segregated into the MRW stream with 3% organic bin materials being present and 1% special wastes. These results are shown in Figure 40.
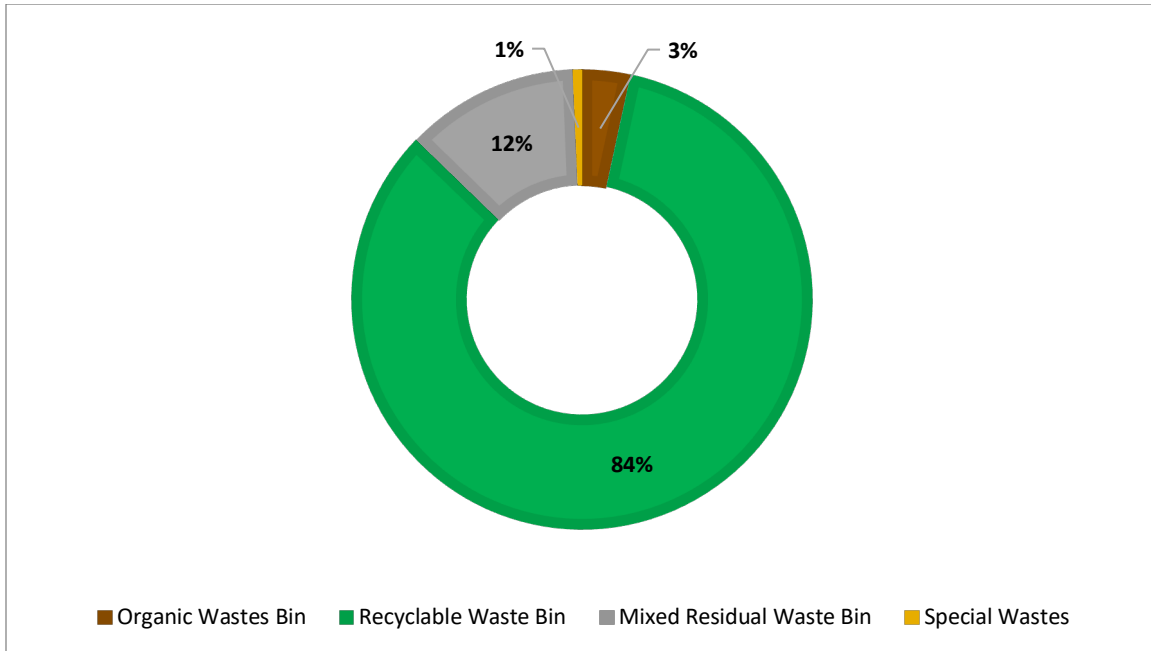
Figure 40: Breakdown of MDR materials from the Primary Education sector based on correct segregation

3.6.5   Secondary Schools MRW

The results for the 16 MRW samples assessed from secondary schools are summarised in Table 29 and presented graphically in Figure 41.

Table 29: Composition of MRW bin from Secondary School sector

Primary category	Average % Content
Paper	47.8%
Organic Waste	24.0%
Plastic	9.1%
Cardboard	3.9%
Unclassified Combustibles	2.9%
Textiles	2.2%
Non- Municipal Waste	2.0%
Metal	2.0%

Primary category	Average % Content
Composites	1.4%
Special/Irregular Waste	1.3%
Fines	1.0%
Glass	0.8%
Unclassified Incombustibles	0.7%
Wood	0.4%
Compostable	0.2%
Healthcare Textiles	0.2%
Nappies & Incontinence Wear	0.0%
Total	**100%**

Paper was the largest primary category material present at 47.8%. This was made up of other paper (27.3%), tissues (11.4%), office paper (6.2%), and recyclable paper (1.6%).

Organic waste (24.0%) was the next most significant material stream consisting of mainly food waste (20.1%) and with 3.9% liquid wastes.

The plastic wastes (9.1%) consisted mainly of other plastic non-packaging (2.3%), PET bottles (1.7%), other plastic packaging (1.5%) and 1.0% of PP packaging and PE milk bottles.

Additionally, there was 2.9% of unclassified combustibles and 2.0% of textiles, non-municipal wastes and metals.
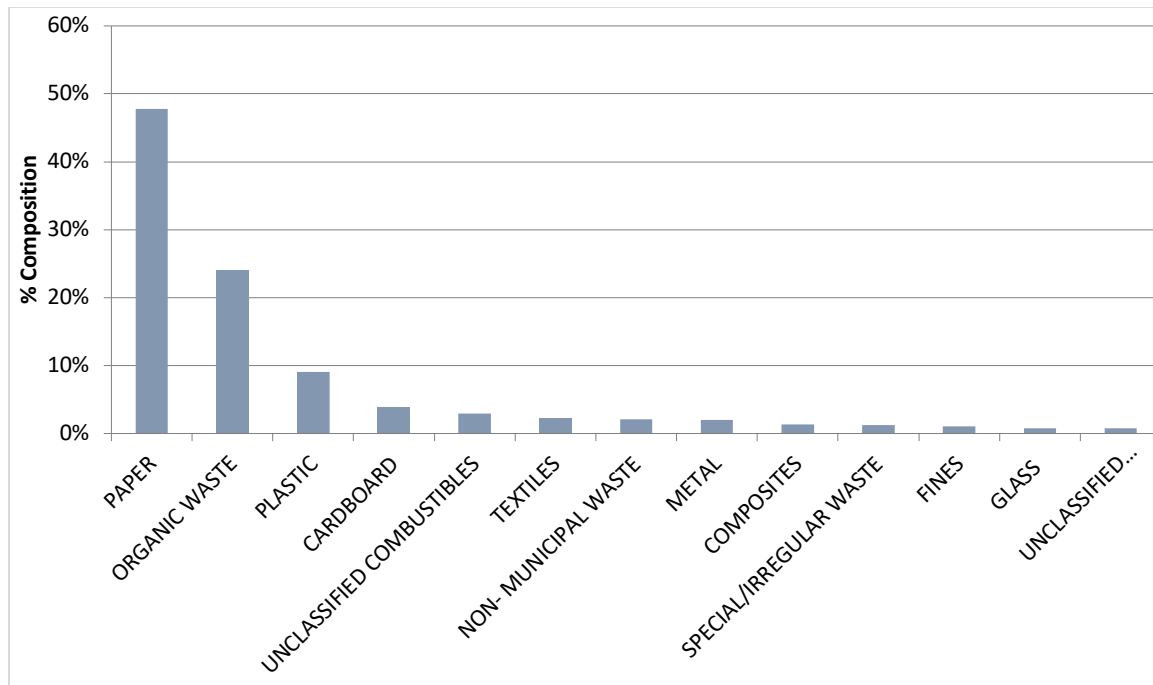
Figure 41: Composition of MRW bin from the Secondary Schools sector
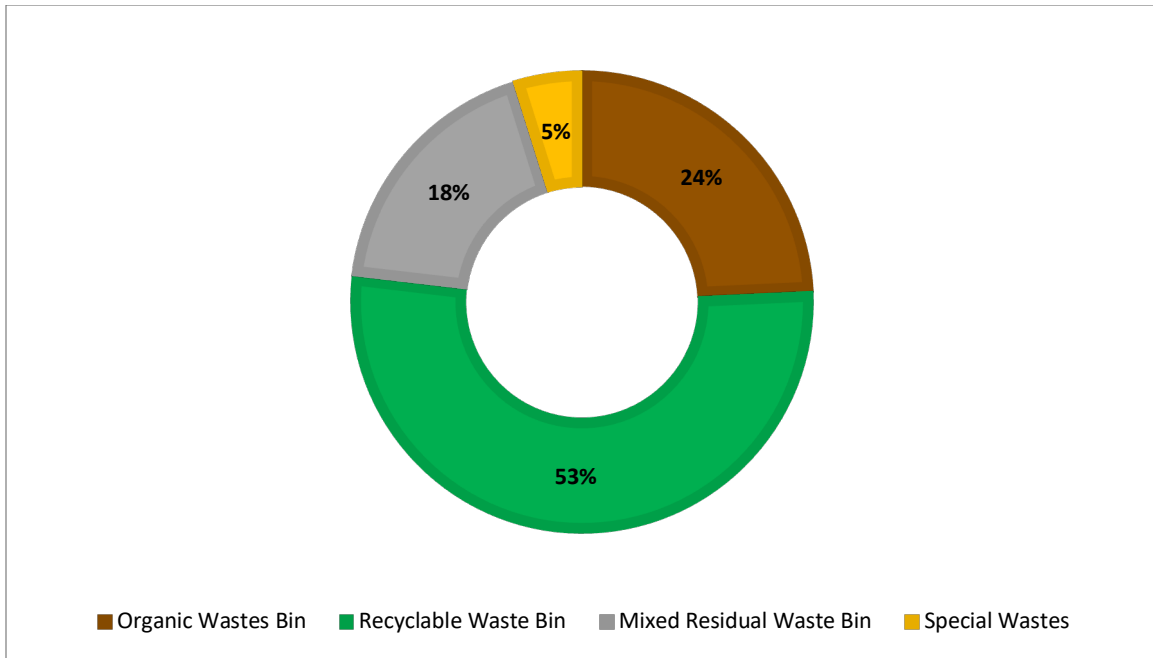
Figure 42: Breakdown of MRW materials from the Secondary Schools sector based on correct segregation

An analysis of the materials in the MRW bin, shown in Figure 42, indicated that only 18% of were segregated correctly. Of the other materials 53% could have been in the MDR bins, 24% in the organic waste bin and 5% segregated as special wastes.

3.6.6 Secondary Schools MDR

The results of the 16 MDR samples analysed from the Secondary School sector are summarised in Table 30 and presented graphically in Figure 43.

Table 30: Composition of MDR bin from Secondary School sector

Primary category	Average % Content
Paper	59.9%
Cardboard	15.6%
Plastic	11.8%
Wood	6.2%
Organic Waste	4.5%
Unclassified Combustibles	0.8%
Composites	0.6%
Special/Irregular Waste	0.2%
Metal	0.2%
Unclassified Incombustibles	0.1%
Textiles	0.1%
Compostable	0.0%
Nappies And Incontinence Wear	0.0%
Healthcare Textiles	0.0%
Glass	0.0%

Primary category	Average % Content
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
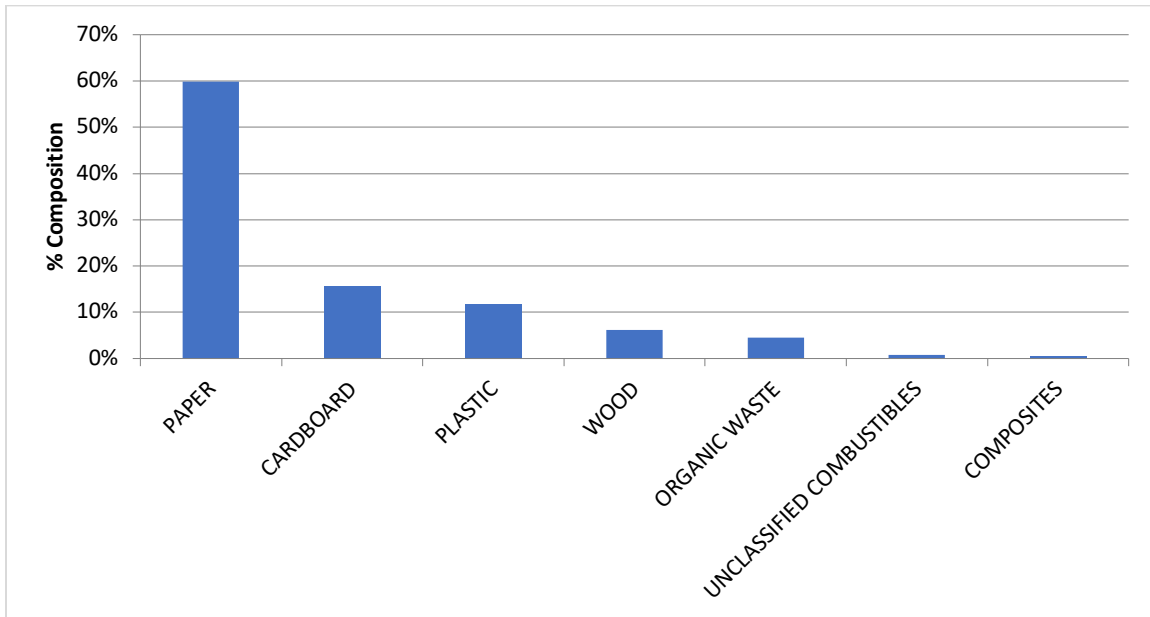
Figure 43: Composition of MDR bin from the Secondary School sector

Paper waste was identified as the largest individual stream at 59.9% and consisted of office paper (26.1%), magazines and glossies (14.8%), Newspapers (5.6%), other paper (5.2%), tissue paper (3.7%) and unrecyclable papers (3.1%).

Cardboard was the next largest primary materials in the MDR bins accounting for 15.6% and was mainly cardboard packaging.

Of the plastic waste (11.8%) the main materials were other plastic non-packaging (4.4%), PET containers (2.0%) and bottles (1.3%), other plastic packaging 1.8%) and PE milk bottles (1.1%).

Non-packaging wood (from woodwork) made up 6.2% while organics (4.5%) consisted of food waste 2.8% and liquids (1.6%).

Based on an assessment of these materials, shown in Figure 44, it was identified that 81% are being correctly managed in the MDR stream. Also, 14% of the materials found could have been segregated into the MRW stream and the 5% segregated into the organic waste stream.
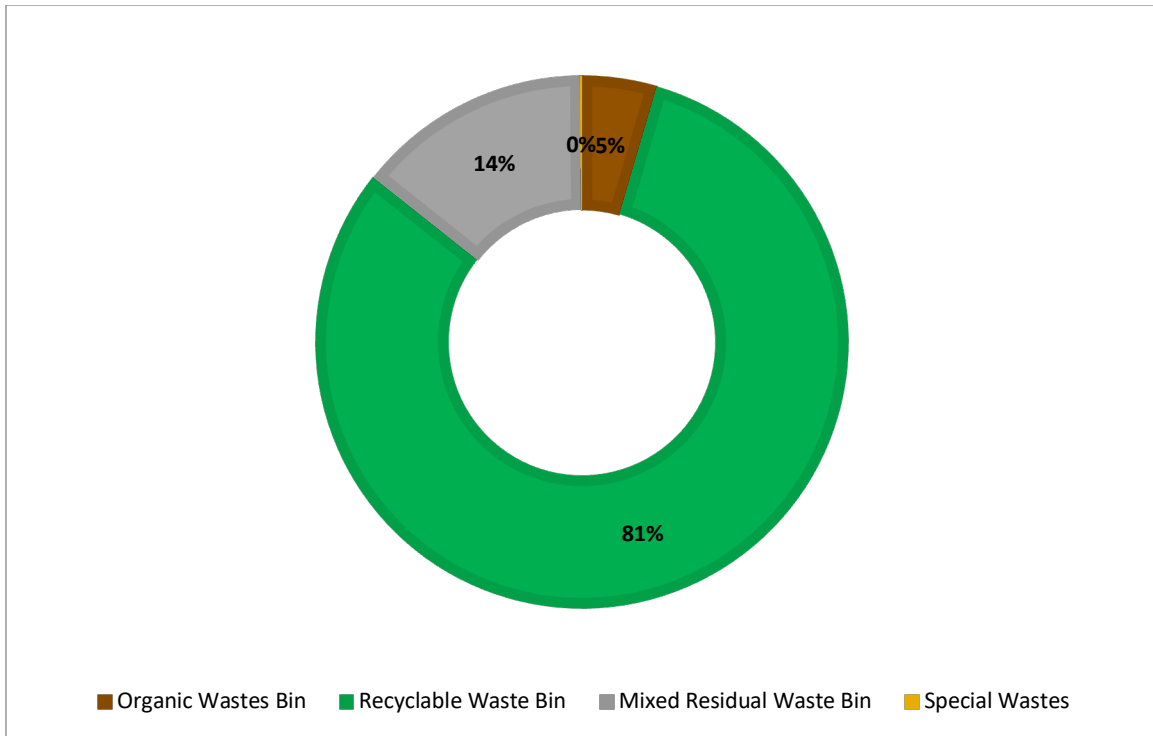
Figure 44: Breakdown of MDR materials from the Secondary Schools sector based on correct segregation

3.7 NACE Q: Health and Social Care

The Health and Social Care sector, NACE Q, comprises of hospitals (both acute and community), nursing homes, medical care practices, social care services and veterinary practices. As part of this campaign six surveys were carried out, three each in the acute and community nursing home sectors. sites were surveyed with 35 MRW and 23 MDR samples assessed. Clinical waste, which is managed as a separate waste stream and reported under a dedicated non-municipal List of Waste (LoW) code, was not included in the surveys within this NACE sector.

3.7.1   Acute Hospital MRW

The results for the 27 MRW samples from the three acute hospital sites surveyed are summarised in Table 31 and presented graphically in Figure 45.

Table 31: Composition of MRW bin from the Acute Hospital sector

Primary category	Average % Content
Plastic	21.2%
Paper	16.7%
Organic Waste	16.2%
Composites	10.4%
Special/Irregular Waste	10.2%
Textiles	9.6%
Cardboard	6.5%
Nappies & Incontinence Wear	6.2%

Primary category	Average % Content
Metal	1.4%
Unclassified Combustibles	1.1%
Glass	0.3%
Compostable	0.2%
Wood	0.1%
Fines	0.0%
Unclassified Incombustibles	0.0%
Healthcare Textiles	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
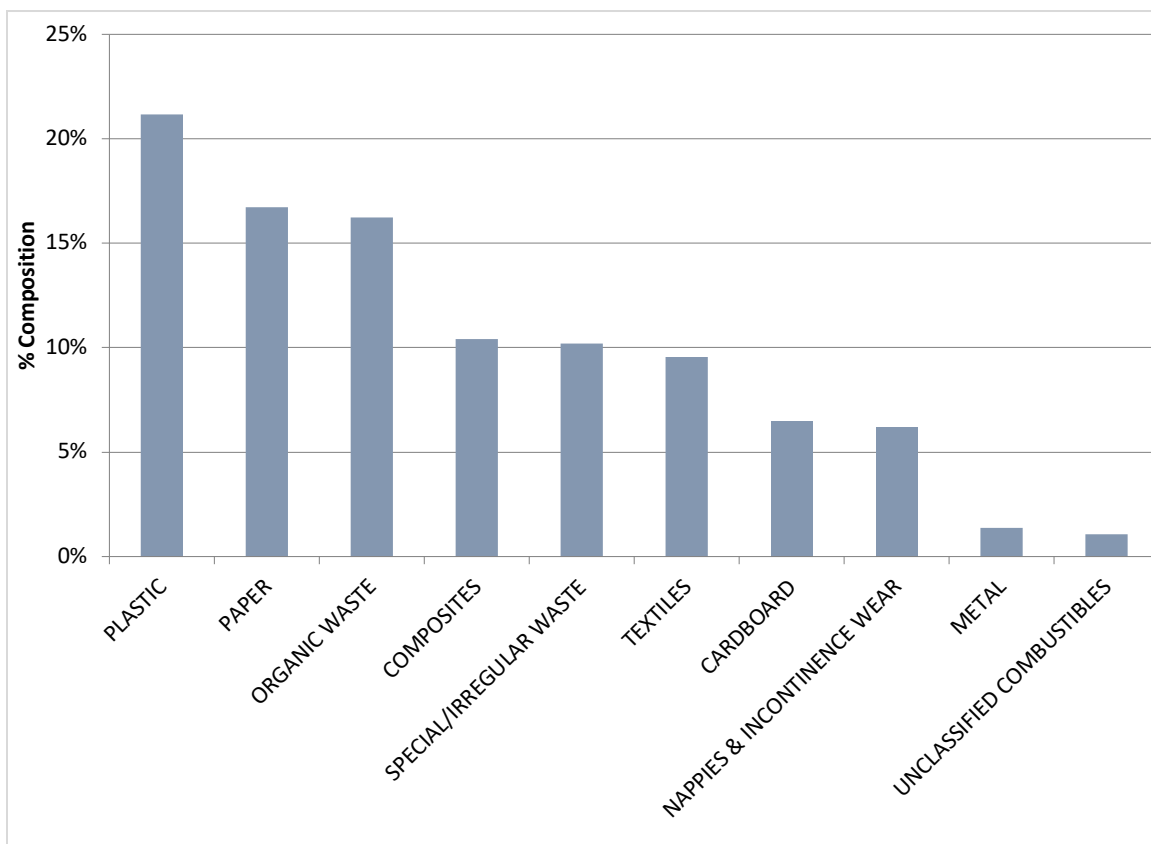
Figure 45: Composition of MRW bin from the Acute Hospital sector

Plastic waste, 21.2%, was the largest material category and consisted of other plastic non-packaging (11.0%), other plastic packaging (5.9%), PET bottles (1%), and smaller volumes (<0.5%) of plastic bags and films, shrink wrap, PE milk bottles and containers made of PE, PP and PET.

The next largest primary waste category was paper at 16.7%. The main individual material was tissue paper (12.3%) with smaller volumes of recyclable packaging (2.1%), other paper (non-packaging) 0.9% and unrecyclable paper packaging 0.5%).

Organic waste was the next largest individual waste category in the MRW stream at 16.2%. This was made up of food waste (15.0%) and liquid waste materials (1.3%).

Composites (10.4%) included packaging materials (6.3%), hot beverage cups (2.3%) and milk cartons (1.3%).

Special wastes, 10.2%, contained 9.3% of medicines and drugs and 0.6% of masks.

Textiles (9.6%) was made up of non-packaging based materials and cardboard (6.5%) was all packaging based though 1.9% was non-recyclable.

Nappies and incontinence wear accounted for 6.3% of the total.
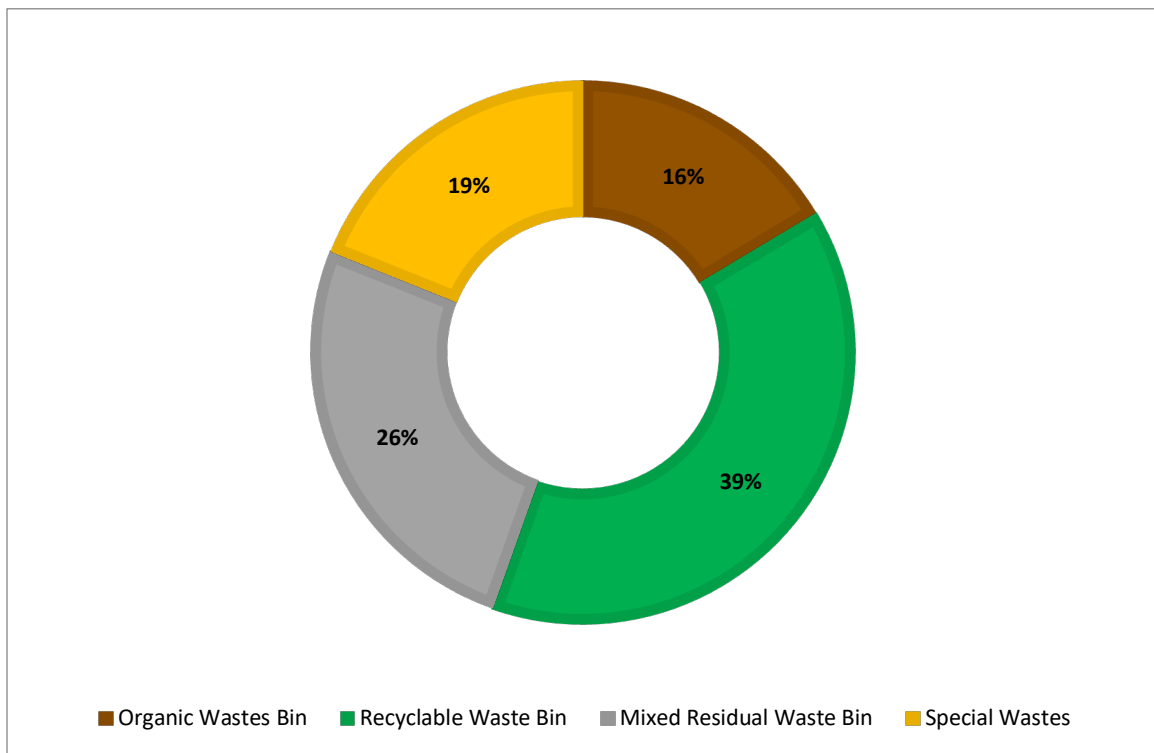
Figure 46: Breakdown of MRW materials from the Acute Hospitals sector based on correct segregation

The assessment of the segregation practices of materials in the MRW bin, shown in Figure 46, identified that only 26% were in the correct bin. Of the other materials 39% could have been segregated into the MDR bins, 16% into the organic waste bins and 19% segregated and managed through the channels available for special waste materials.

3.7.2   Acute Hospital MDR

The results of the 22 MDR samples analysed from the Acute Hospital sector are summarised in Table 32 and presented graphically in Figure 47.

Table 32: Composition of MDR bin from Acute Hospital sector

Primary category	Average % Content
Plastic	60.7%
Metal	13.2%
Paper	12.2%
Cardboard	8.1%
Composites	3.2%
Organic Waste	1.8%
Special/Irregular Waste	0.4%
Textiles	0.2%
Compostable	0.1%
Wood	0.1%
Unclassified Combustibles	0.1%
Nappies & Incontinence Wear	0.0%
Healthcare Textiles	0.0%
Glass	0.0%
Unclassified Incombustibles	0.0%
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
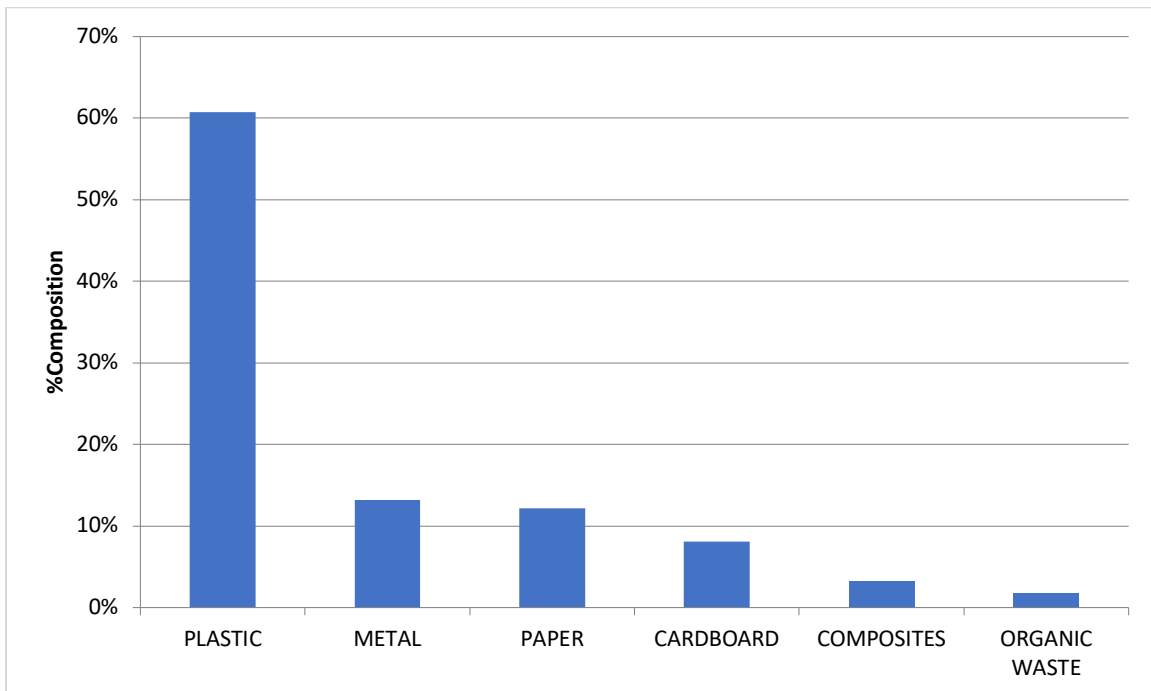
Figure 47: Composition of MDR bin from the Acute Hospital sector

Of the plastic materials which accounted for the majority of the MDR bin (60.7%), the main materials were PE containers (20.9%), other plastic packaging (18.0%), PE milk bottles (8.8% and non-packaging other plastics (3.9%). Smaller volumes of PET containers (2.6%), plastic bags and films (2.0%), PP bottles (1.7%) and PET bottles (5.2%) were also present.

Metal waste (13.2%) was mainly ferrous metal/steel cans (11.9%) and aluminium cans (1.3%).

The paper wastes (12.2%) was made up of office paper (6.0%), other paper materials (3.4%), magazines and glossies (1.3%) and recyclable paper packaging (0.8%).

Cardboard (8.1%) was exclusively recyclable packaging materials.
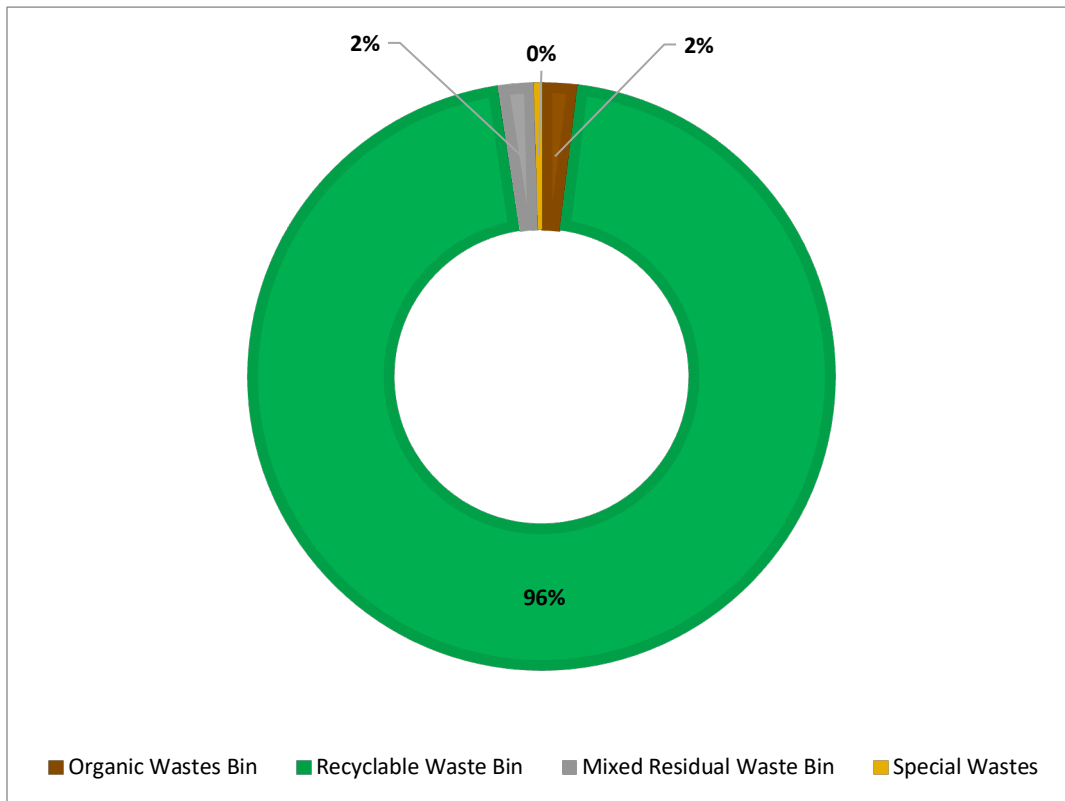
Figure 48: Breakdown of MDR materials from the Acute Hospitals sector based on correct segregation

As with the MRW bin, an assessment of the segregation practices of materials in the MDR bin was carried out. Based on this assessment, shown in Figure 48, 96% of these materials are in the correct bin. Of the remaining, 2% MRW materials and 2% organic bin materials were present which could have been segregated into their respective waste management streams.

3.7.3   Community Hospital MRW

The results for the 27 MRW samples from the three Community Hospital sites surveyed are summarised in Table 33 and presented graphically in Figure 49.

Table 33: Composition of MRW bin from the Community Hospital sector

Primary category	Average % Content
Nappies & Incontinence Wear	45.2%
Paper	13.7%
Plastic	13.0%
Textiles	11.6%
Organic Waste	10.5%
Composites	1.9%
Special/Irregular Waste	1.3%
Cardboard	1.1%
Metal	0.7%
Wood	0.5%
Non- Municipal Waste	0.2%
Unclassified Combustibles	0.1%
Compostable	0.1%
Fines	0.0%
Healthcare Textiles	0.0%
Glass	0.0%
Unclassified Incombustibles	0.0%
Total	**100%**
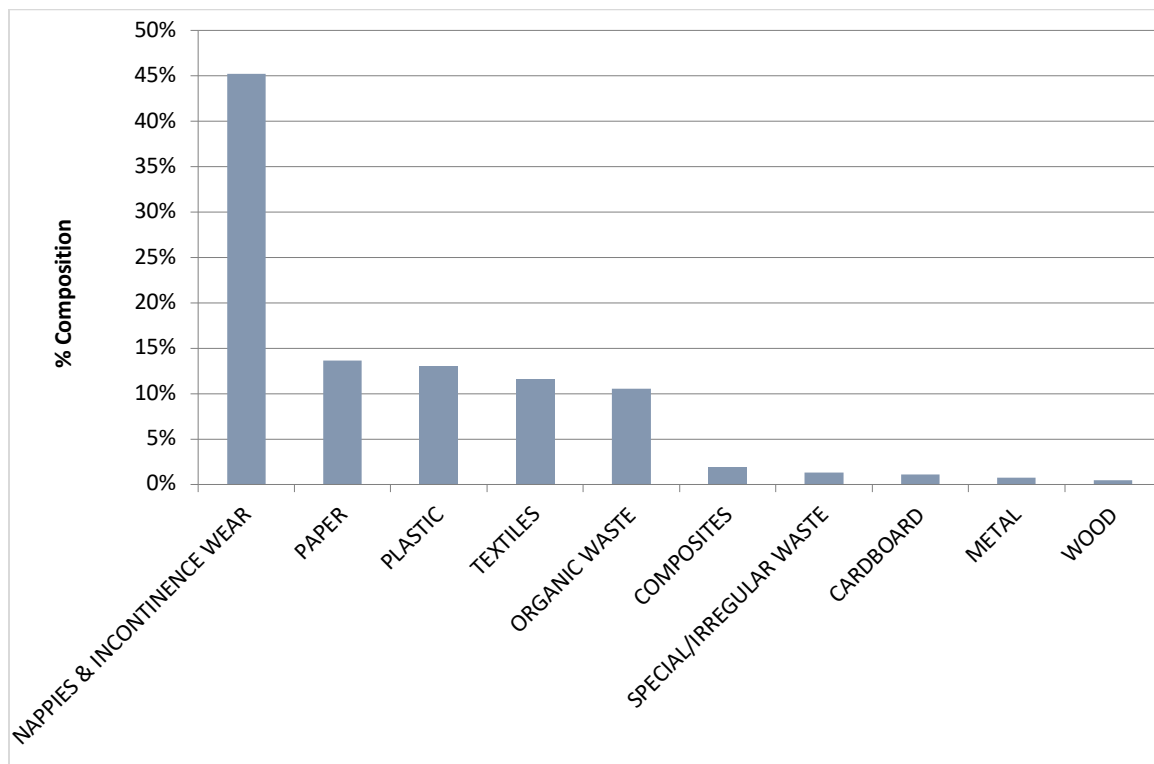
Figure 49: Composition of mixed residual wastes (MRW) from the Community Hospital sector

Incontinence wear was the largest individual category found in the MRW bin from the community hospitals at 45.2%. Due to the number and weight of these in the mixed waste, all other materials are significantly less.

The next largest primary waste category was paper at 13.7%. The main individual material was tissue paper (12.7%) with the rest largely due to recyclable paper packaging materials (0.6%).

Plastic waste, 13.0%, consisted mainly of other plastic non-packaging (8.8%) with smaller volumes of other plastic packaging (1.9%), PE containers (0.6%) and plastic bags and films (0.5%).

Textiles, 11.6%, was made up of 8.1% clothing and 3.5% non-packaging textiles.

Organic waste was the next largest waste category in the MRW stream at 10.5% and was made up exclusively of food waste.
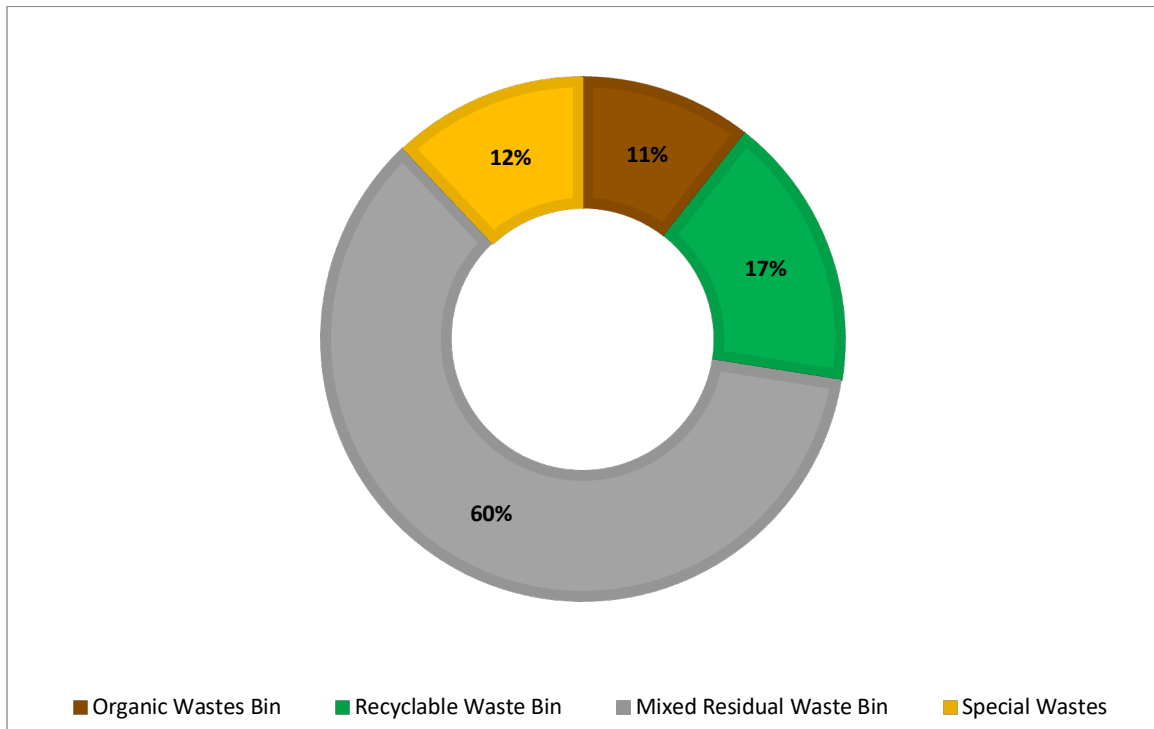
Figure 50: Breakdown of MRW materials from the Community Hospitals sector based on correct segregation

An assessment of the segregation practices of materials in the MRW bin (see Figure 50) identified that 60% were in the correct bin. Of the other materials 17% could have been segregated into the MDR bins, 11% into the organic waste bins and 12% segregated and managed through the channels available for special waste materials.

3.7.4   Community Hospital MDR

The results of the 32 MDR samples analysed from the Community Hospitals sector are summarised in Table 34 and presented graphically in Figure 51.

Table 34: Composition of MDR bin from Community Hospitals sector

Primary category	Average % Content
Cardboard	48.6%
Paper	23.0%
Plastic	19.3%
Composites	3.2%
Metal	2.9%
Organic Waste	1.5%
Special/Irregular Waste	0.5%
Glass	0.4%
Textiles	0.4%
Healthcare Textiles	0.0%
Nappies And Incontinence Wear	0.0%
Compostable	0.0%
Wood	0.0%
Unclassified Combustibles	0.0%
Unclassified Incombustibles	0.0%
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
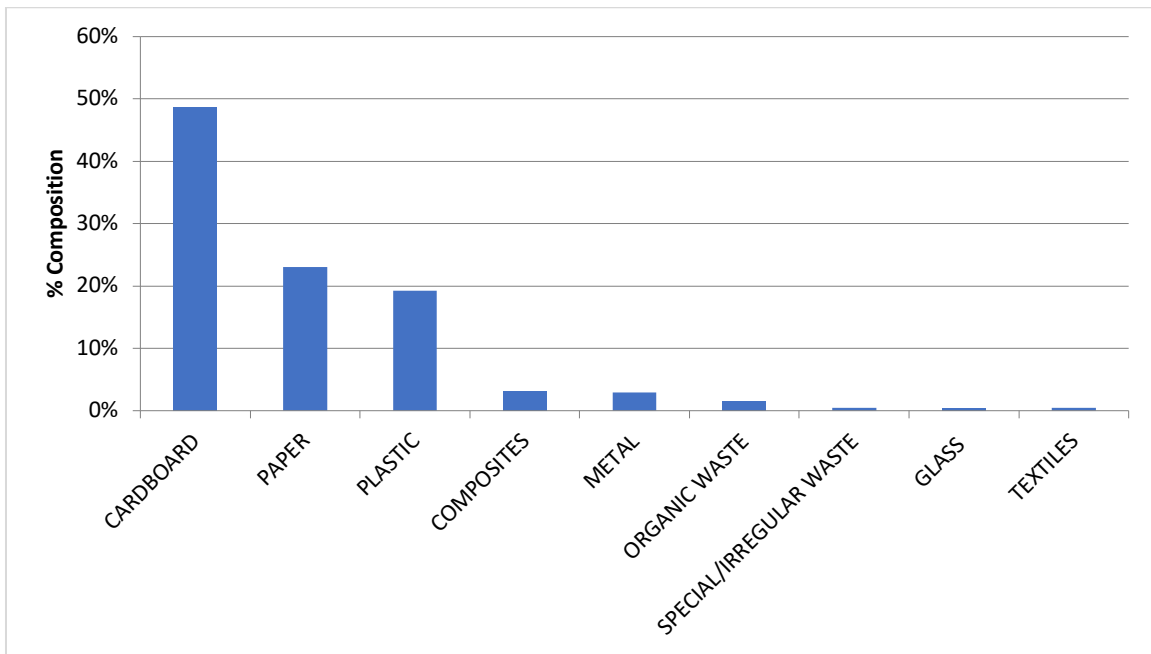
Figure 51: Composition of MDR bin from the Community Hospital sector

Cardboard materials were the largest individual material category at 48.6% and was exclusively related to recyclable packaging materials.

Paper materials, 23.0%, was made up of office paper (11.7%), newspapers (6.1%), tissue paper (1.6%) and other non-recyclable non-packaging papers (1.1%).

Of the plastic waste (19.3%) the main materials were other plastic packaging (4.2%), non-packaging other plastics (3.8%), PET bottles (2.8%), PE milk bottles (2.7%), containers made of PE (1.8%) and PP (1.5%) and plastic bags and films (1.0%).
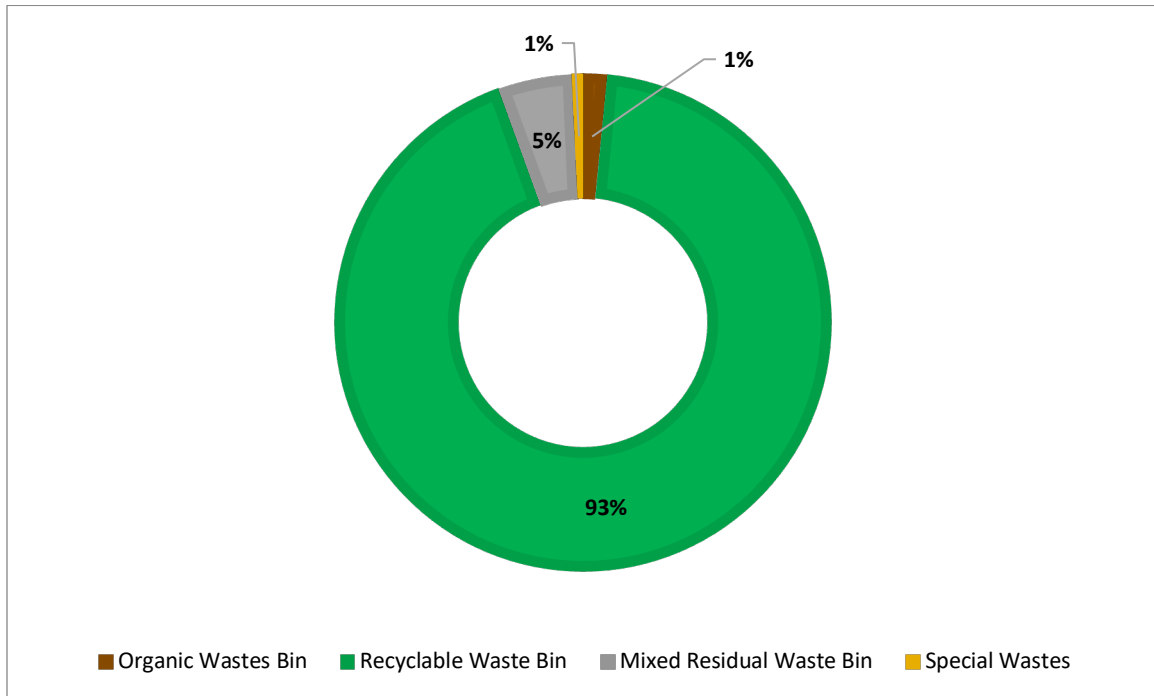
Figure 52: Breakdown of MDR materials from the Community Hospitals sector based on correct segregation

As with the MRW bin, an assessment of the segregation practices was carried out for MDR bins and the results are shown in Figure 52. Based on this it was noted that 93% of these materials are segregated correctly with 5% MRW materials and 1% of both organic bin materials and special wastes present.

3.8 NACE R: Sports, Art and Entertainment

NACE R covers all forms of sports, art and entertainment activities. As part of this campaign three sites were surveyed with 35 MRW and 23 MDR samples assessed. These sites included large sports and leisure venues and an arts and entertainment location.

3.8.1   Sports, Art and Entertainment MRW

The results for the 35 MRW samples are summarised in

Table **35** and presented graphically in Figure 53.

Table 35: Composition of MRW bin from the Sports, Arts and Entertainment sector

Primary category	Average % Content
Organic Waste	39.7%
Paper	20.4%
Plastic	17.7%
Compostable	6.1%
Composites	5.9%
Cardboard	3.2%
Metal	2.8%
Glass	1.3%
Unclassified Incombustibles	0.9%
Textiles	0.9%
Unclassified Combustibles	0.5%
Nappies & Incontinence Wear	0.2%
Special/Irregular Waste	0.2%
Healthcare Textiles	0.1%
Wood	0.0%
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
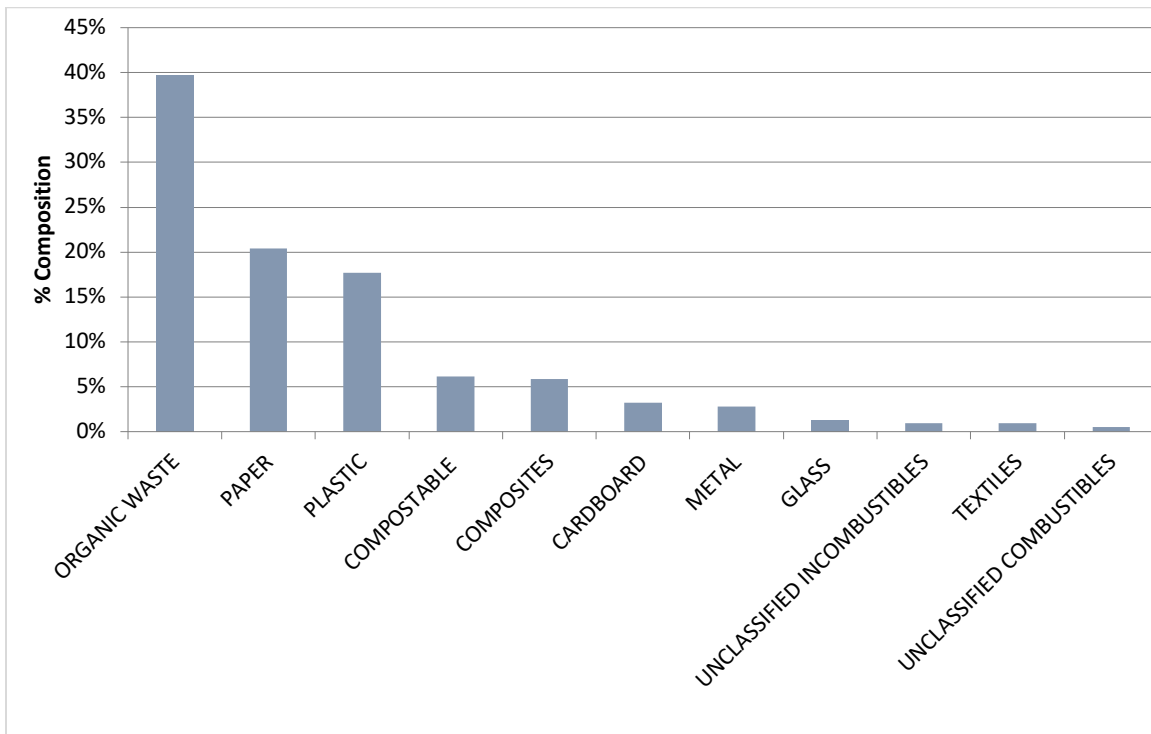
Figure 53: Composition of mixed residual wastes (MRW) from the Sports, Arts and Entertainment sector

Organic waste was the largest individual waste category in the MRW bin at 39.7%. This was made up of food waste (27.2%) and liquid waste materials (12.5%).

The next largest primary waste category was paper at 20.4%. The main individual material was tissue paper (13.8%) with the rest comprising of magazines and glossies (3.0%) and unrecyclable paper packaging materials (1.7%).

Plastic waste, 17.7%, consisted of other plastic non-packaging (5.7%), PET bottles (5.5%), other plastic packaging (2.5%) and plastic bags and films (1.2%).

Compostable materials (6.1%) was mainly made up of non-packaging (including plates and cutlery) at 3.9% and hot drink cups at 2.1%.

Composites (5.9%) included hot beverage cups (4.2%) and non-packaging materials (1.3%).

Cardboard (3.2%) and metals (2.8%) were predominantly packaging based materials.
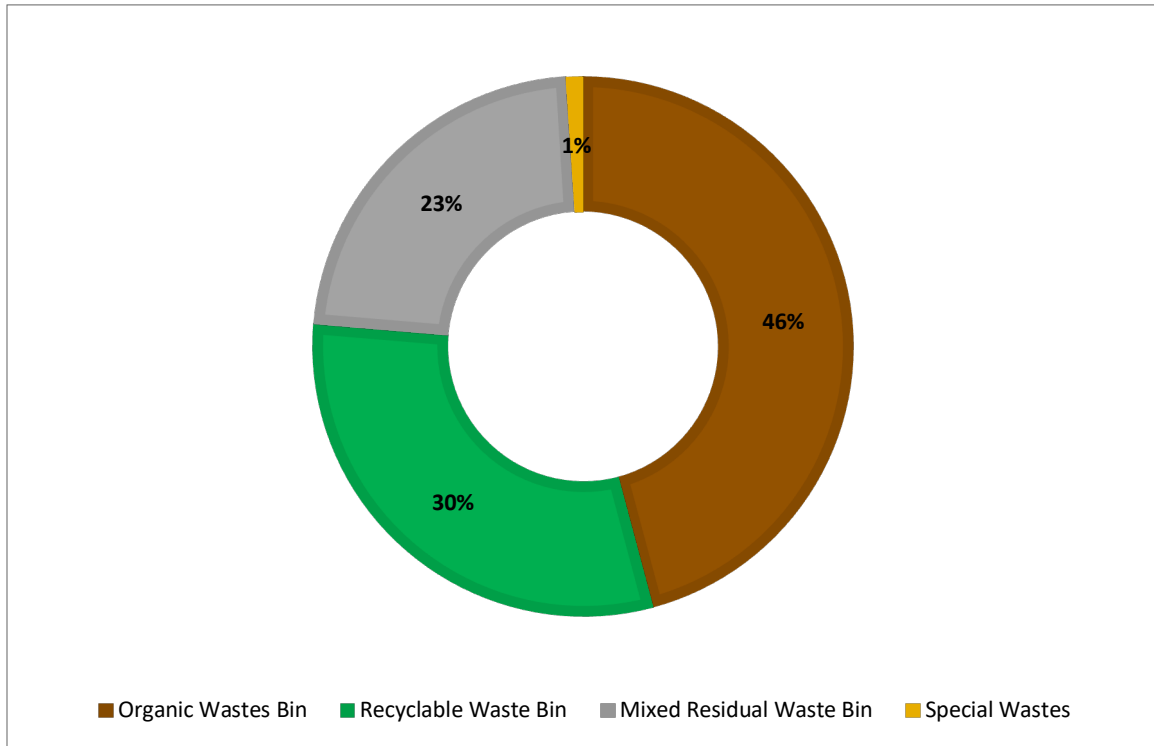
Figure 54: Breakdown of MRW materials from the Sports, Arts and Entertainment sector based on correct segregation

An assessment of the segregation practices of materials in the MRW bin found that only 23% were in the correct bin (shown in Figure 54). The other materials could have been segregated into organic waste bins (46%), the MDR stream (30%) and 1% special waste materials.

3.8.2   Sports, Art and Entertainment MDR

The results of the 23 MDR samples analysed from the Sports, Arts and Entertainment sector are summarised in Table 36 and presented graphically in Figure 55.

Table 36: Composition of MDR bin from the Sports, Arts and Entertainment sector

Primary category	Average % Content
Cardboard	53.8%
Organic Waste	13.1%
Paper	12.7%
Plastic	8.8%
Metal	3.8%
Textiles	3.1%
Nappies & Incontinence Wear	1.6%
Special/Irregular Waste	1.0%
Unclassified Combustibles	0.9%
Composites	0.4%
Compostable	0.4%
Healthcare Textiles	0.2%
Glass	0.2%
Unclassified Incombustibles	0.1%
Wood	0.0%
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
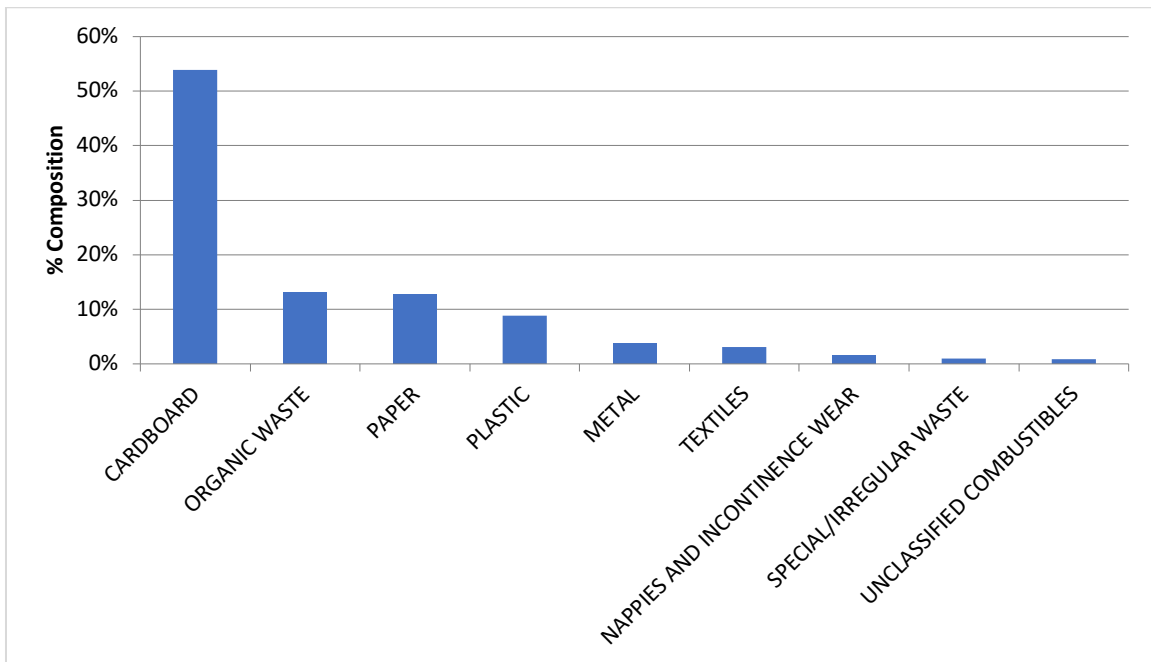
Figure 55: Composition of MDR bin from the Sports, Arts and Entertainment sector

Cardboard materials were the largest individual material category at 53.8% and was exclusively packaging related materials.

Of the organic wastes found (13.1%), liquid wastes (10.8%) from drink bottles was the main component with 2.3% food waste also present.

Of the paper materials (12.7%) the predominant material was tissue paper at 11.7% with small fractions of magazines and glossies and unrecoverable paper packaging also present.

Of the plastic waste (8.8%) the main materials were PET bottles (3.3%), non-packaging other plastics (1.8%), other plastic packaging (1.7%) and PET containers (0.8%).

Wood packaging materials accounted for 2.8%.

Metal waste (3.8%) was related to other non-ferrous non-packaging materials (2.5%) and aluminium cans (1.3%).

Textiles, 3.1%, consisted of non-packaging textiles (1.9%) and clothes (1.2%). Nappies accounted for 1.6% of the total.

■ Organic Wastes Bin   ■ Recyclable Waste Bin   ■ Mixed Residual Waste Bin   ■ Special Wastes
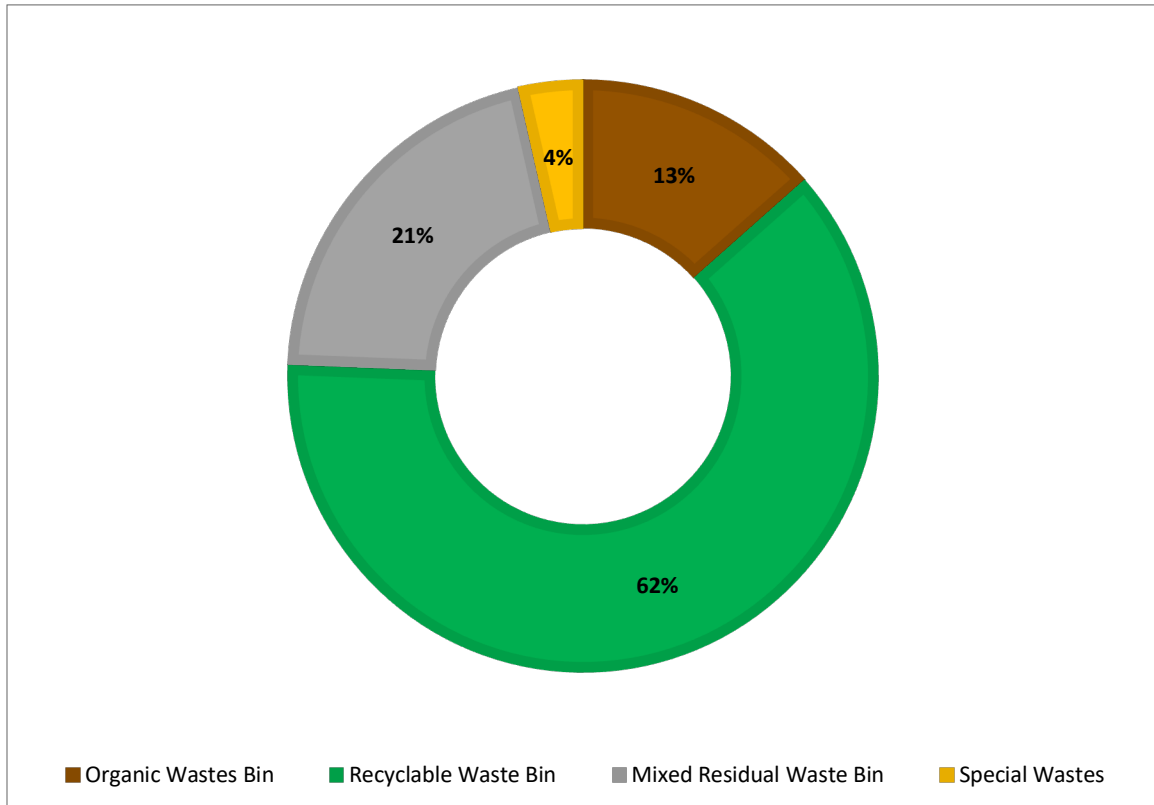
Figure 56: Breakdown of MDR materials from the Sports, Arts and Entertainment sector based on correct segregation

As with the MRW bin, an assessment of the segregation practices of materials in the MDR bin was carried out. Based on this assessment, shown in Figure 56, 62% of these materials are in the correct stream with 21% MRW materials and 13% organic bin materials that could have been segregated into their respective bins. Additionally, special wastes accounted for 4% of the total.

4 Results: Contamination (including moisture)

When conducting waste characterisation work, it is not possible to clean out every container and ensure that materials do not retain contaminants. Therefore, the purpose of a contamination study, as part of a wider waste characterisation survey, is to determine statistically robust contamination correction factors for the main types of packaging waste collected in the mixed and recyclable waste streams. These factors can then be applied to the final data to provide corrected packaging and SUP data.

The methodology used for determining the contamination and moisture factors is outlined in Section 2 and more details are provided in the separate 2022 Contamination report.

4.1 MRW Contamination Results - 2022

Table 37 outlines the contamination results for the 22 different materials assessed from the 2 and 3-bin MRW waste management systems analysed in the commercial sector. The results from these separate assessments are depicted graphically in Figure 57.

Table 37: Non-household contamination factors for MRW from 2 and 3 bin systems (2022)

Primary Category	Packaging waste category	2-bin MRW		3-bin MRW	
		No. of items	Contamination (%)	No. of items	Contamination (%)
Papers	Recyclable paper packaging	24	24.3%	16	17.3%
	Unrecyclable paper packaging	22	33.7%	15	19.5%
Cardboards	Cardboard (Packaging)	20	18.0%	20	22.5%
	Unrecyclable flat and corrugated card. (packaging)	20	27.7%	15	30.4%
Composites	Composite cups for beverages, including their covers and lids (packaging)	33	24.0%	20	30.8%
	Composite packaging	28	25.4%	20	15.8%
Plastics	PET packaging beverage bottles	20	11.0%	20	11.2%
	PET packaging containers	20	15.0%	20	6.3%
	PET cups for beverages, including their covers and lids	0	-	5	12.5%
	PE plastic packaging bottles including their lids	20	17.0%	20	14.1%
	PP packaging containers (other than bottles and lids) including their covers.	36	25.3%	23	17.7%
	EPS & Styrofoam packaging food & beverage containers (SUP)	20	17.5%	27	13.8%
	EPS & Styrofoam (other than SUP) Packaging non-food	3	10.7%	12	6.3%

Primary Category	Packaging waste category	2-bin MRW		3-bin MRW	
		No. of items	Contamination (%)	No. of items	Contamination (%)
	Other plastic cups for beverages, including their covers and lids	0	-	0	-
	Other plastic packaging containers	20	53.8%	20	25.6%
	Other plastic packaging bottles	3	3.3%	0	
	Other plastic packaging	21	20.9%	20	18.8%
	Supermarket bags, plastic bags and films, wrappers, including compostable bags (packaging)	12	36.3%	20	40.9%
Glass	Glass (packaging)	14	4.2%	11	9.9%
Metals	Aluminium Cans (packaging)	36	12.2%	22	10.1%
	Ferrous metal (packaging)	6	14.6%	12	9.3%
	Other non-ferrous metal (packaging)	2	8.2%	16	18.7%
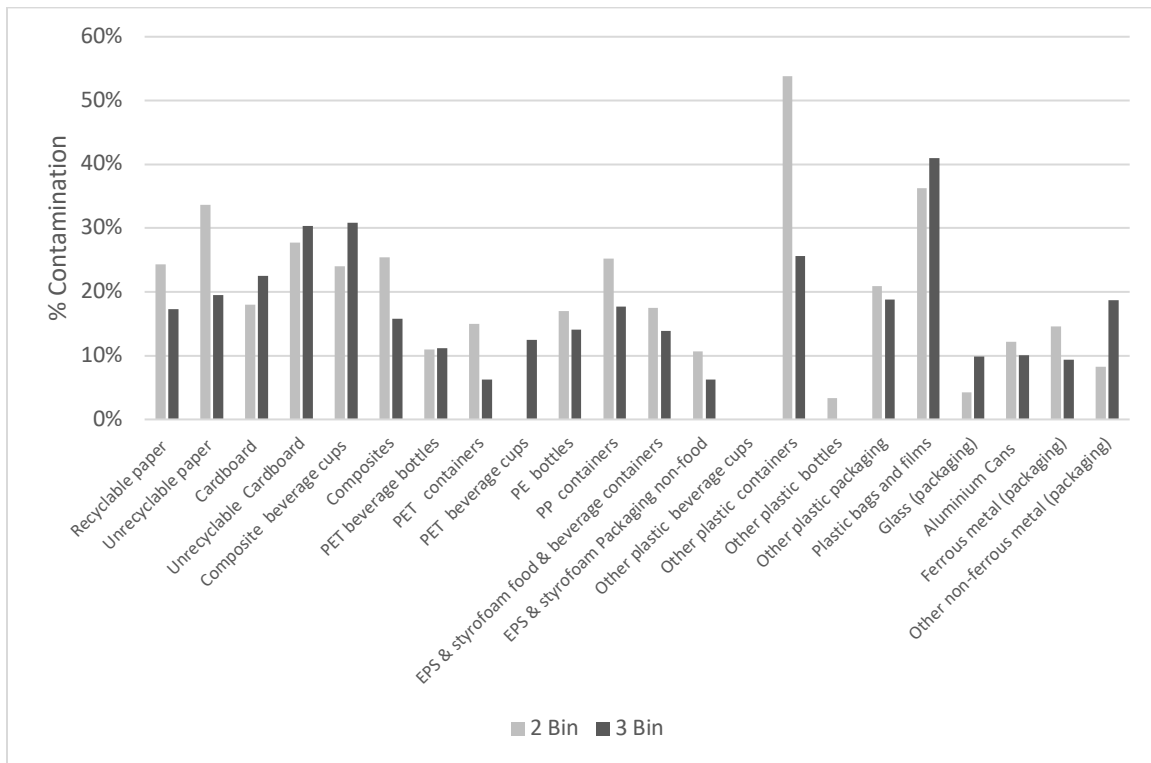
Figure 57: Comparison of the contamination factors determined for materials in the MRW from 2 and 3 bins waste collection systems

From these data it is apparent that the levels of contamination in the 2-bin system are generally higher than in the 3-bin system. Whether this was related to reduced cross-contamination or better waste management in sites with a 3-bin waste management system is not possible to

determine. However, based on the limited dataset available, the level of contamination in materials from the 2-bin system is, on average, 2.8% higher than in the same materials from the 3-bin system.

4.2 MDR Contamination Results - 2022

Table 38 outlines the contamination results for the 22 different materials assessed from the MDR waste management systems analysed in the commercial sector. The results from these separate assessments are depicted graphically in Figure 58.

Table 38: Non-household contamination factors for MDR from 2 and 3 bin systems

Primary Category	Packaging waste category	2-bin MDR		3-bin MDR	
		No. of items	Contamination (%)	No. of items	Contamination (%)
Papers	Recyclable paper packaging	20	9.1%	23	15.2%
	Unrecyclable paper packaging	20	35.7%	20	24.4%
Cardboards	Cardboard (Packaging)	24	18.9%	20	17.0%
	Unrecyclable flat and corrugated card. (packaging)	27	23.1%	20	20.4%
Composites	Composite cups for beverages, including their covers and lids (packaging)	20	14.0%	20	11.9%
	Composite packaging	30	30.1%	20	19.3%
Plastics	PET packaging beverage bottles	29	13.3%	58	12.9%
	PET packaging containers	24	20.7%	25	8.3%
	PET cups for beverages, including their covers and lids	10	15.4%	7	13.2%
	PE plastic packaging bottles including their lids	9	4.9%	20	11.1%
	PP packaging containers (other than bottles and lids) including their covers.	20	22.2%	21	10.4%
	EPS & Styrofoam packaging food & beverage containers (SUP)	25	26.5%	11	24.7%
	EPS & Styrofoam (other than SUP) Packaging non-food	0		3	2.7%
	Other plastic cups for beverages, including their covers and lids	0		0	-
	Other plastic packaging containers	26	24.1%	20	28.3%
	Other plastic packaging bottles	0		0	
	Other plastic packaging	20	23.5%	22	27.5%
	Supermarket bags, plastic bags and films, wrappers, including compostable bags (packaging)	15	20.7%	20	18.5%
Glass	Glass (packaging)	3	9.7%	20	6.9%

Primary Category	Packaging waste category	2-bin MDR		3-bin MDR	
		No. of items	Contamination (%)	No. of items	Contamination (%)
Metals	Aluminium Cans Packaging	21	9.6%	20	8.4%
	Ferrous metal (packaging)	7	6.7%	18	2.8%
	Other non-ferrous metal (packaging)	0	-	15	14.8%
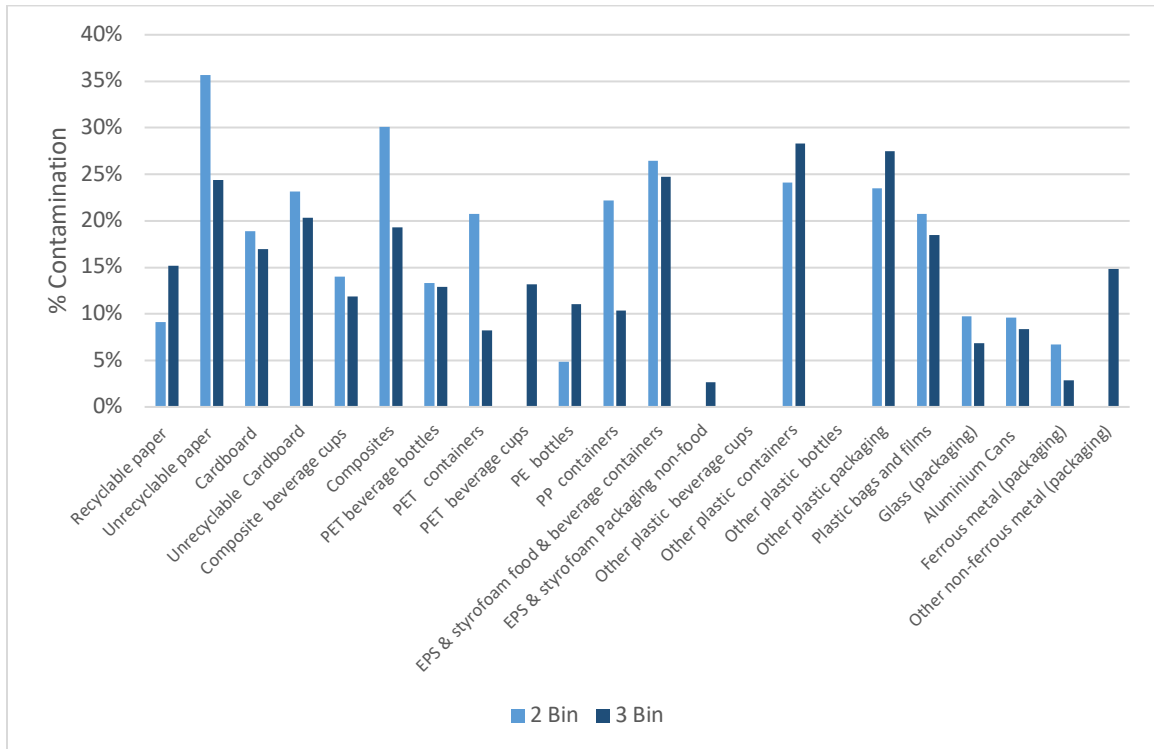
Figure 58: Comparison of the contamination factors determined for materials in the MDR from 2 and 3-bin waste collection systems

As with the MRW, these data indicate that the levels of contamination in the 2-bin system are generally higher than in the 3-bin system. Based on the limited dataset available, the level of contamination in materials from the 2-bin system is, on average, 2.0% higher than in the same materials from the 3-bin system. However, whether this was related to reduced cross contamination or better waste management in sites with a 3-bin waste management system is not possible to determine.

4.3 2022 Contamination Factors

4.3.1   2022 Contamination Factors Results (SUP)

As noted previously, a recommendation from 2018 NHMWC was to use that data (including the contamination factors) as a starting point from which additional data could be added to improve

the statistical validity of the datasets produced. However, as new reporting requirements have come into effect since then, resulting in changes to the waste categories assessed during this campaign, combining datasets is not straightforward. For example, in 2018, plastic packaging materials (e.g. PET, PP, PE) were examined as a whole regardless of whether the waste material was a food container or bottle. However, during this campaign, in response to SUP reporting requirements, PET, and the other main plastic packaging materials, were split into various primary sub-categories. Consequently, there were only six waste categories that were consistent between the two campaigns where the results could be merged.

The 2022 contamination factors, which incorporate the results for the six materials from 2018 (highlighted in grey), are presented in Table 39. These results, which are applied to the 2022 profiles, are used to calculate the national SUP results and are therefore referred to as 2022 Contamination Factors (SUP).

Table 39: 2022 Contamination Factors (SUP)

Primary Category	Packaging waste Primary subcategories	MRW		MDR	
		No. of items	Contamin ation (%)	No. of items	Contamin ation (%)
Papers	Recyclable paper packaging	109	24.0%	75	14.7%
	Unrecyclable paper packaging	37	27.9%	40	30.0%
Cardboards	Cardboard (Packaging)	137	20.3%	74	17.0%
	Unrecyclable flat and corrugated card. (packaging)	35	28.8%	47	22.0%
Composites	Composite cups for beverages, including their covers and lids (packaging)	53	26.6%	40	12.9%
	Composite packaging	48	21.4%	50	25.8%
Plastics	PET packaging beverage bottles	40	11.1%	87	13.0%
	PET packaging containers	40	10.6%	49	14.4%
	PET cups for beverages, including their covers and lids	5	12.5%	17	14.5%
	PE plastic packaging bottles including their lids	40	15.5%	29	9.1%
	PP packaging containers (other than bottles and lids) including their covers.	59	22.3%	41	16.1%
	EPS & Styrofoam packaging food & beverage containers (SUP)	47	15.4%	36	25.9%
	EPS & Styrofoam (other than SUP) Packaging non-food	15	7.2%	3	2.7%
	Other plastic cups for beverages, including their covers and lids	0	0.0%	0	0.0%
	Other plastic packaging containers	40	39.7%	46	25.9%
	Other plastic packaging bottles	3	3.3%	0	0.0%
	Other plastic packaging	41	19.8%	42	25.6%

Primary Category	Packaging waste Primary subcategories	MRW		MDR	
		No. of items	Contamination (%)	No. of items	Contamination (%)
	Supermarket bags, plastic bags and films, wrappers, including compostable bags (packaging)	88	20.6%	67	12.0%
Glass	Glass (packaging)	65	3.5%	32	6.4%
Metals	Aluminium Cans (packaging)	171	13.4%	71	9.8%
	Ferrous metal (packaging)	42	11.4%	70	6.5%
	Other non-ferrous metal (packaging)	18	17.6%	15	14.8%

As can be seen in Figure 59, the contamination factors calculated for materials in the MRW stream are, in the main, higher than those calculated for MDR (with the exception of EPS and Styrofoam packaging). While this is to be expected, the close similarity in the values is somewhat surprising (the average contamination value across all the materials was 17.0% for MRW and 14.5% for MDR). Unlike household waste, where waste samples were taken from post-collected waste, the non-household samples are taken closer to the point of generation. Therefore, cross-contamination of these wastes should be much less of an issue. These results suggest that the behaviour of people prior to disposing of the wastes is similar regardless of whether they dispose of the waste in an MRW or MDR bin.
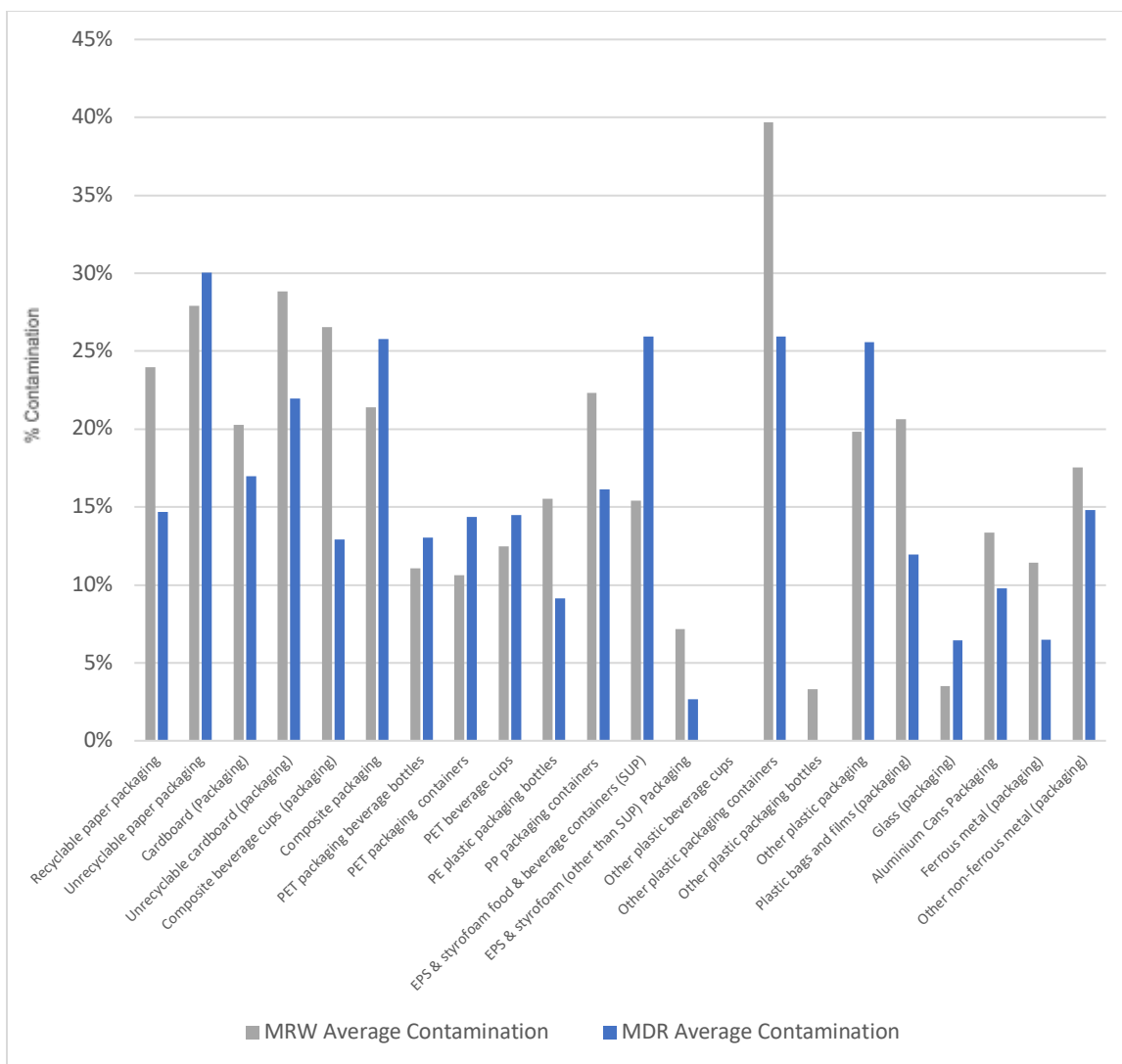
Figure 59: Comparison of the MRW and MDR 2022 primary subcategory non-household contamination factors (SUP)

4.3.2 2022 Contamination Factors (National Profile)

The final waste categories list used to generate the national waste profile in Section 6 involves a combination of results from 2018 and 2022. However, due to the changes in the waste categories used in the two NHMWC campaigns, the primary waste categories list from 2018 forms the basis for generating this campaign's national profile. Therefore, all 2022 sectoral data was converted to align with the 2018 waste category list.

In order to incorporate the contamination factors accordingly, a similar combination of 2018 and 2022 contamination samples was required. Table 40 presents the consolidated 2022 contamination factors that were applied to the national results in Section 6. These include a simple combination of 2018 and 2022 contamination data where the waste categories were consistent (shown in grey e.g. paper packaging) and merged data (shown in white e.g. PET containers and bottles from 2022 are merged and then combined with PET packaging materials

from 2018) where they were different at subcategory level. These data are shown graphically in Figure 60.

Table 40: 2022 Primary Category non-household contamination factors applied to national profile

Packaging waste primary category	MRW		MDR	
	No. of items	Contamination (%)	No. of items	Contamination (%)
Paper Packaging	109	24.0%	75	14.7%
Cardboard Packaging	137	20.3%	74	17.0%
Glass Packaging	65	3.5%	32	6.4%
PET Packaging	186	11.2%	116	12.7%
PE Packaging	97	13.5%	39	11.8%
PP Packaging	112	18.6%	94	15.4%
Plastic Bags and Films	88	20.6%	67	12.0%
Other Plastic Packaging	157	21.8%	56	22.1%
Unrecoverable Plastic Packaging	32	27.5%	16	48.4%
Aluminium Cans Packaging	171	13.4%	71	9.8%
Aluminium Foil Trays Packaging	112	21.8%	94	17.9%
Ferrous Metal Packaging	42	11.4%	70	6.5%
Used beverage containers	94	23.8%	155	26.2%
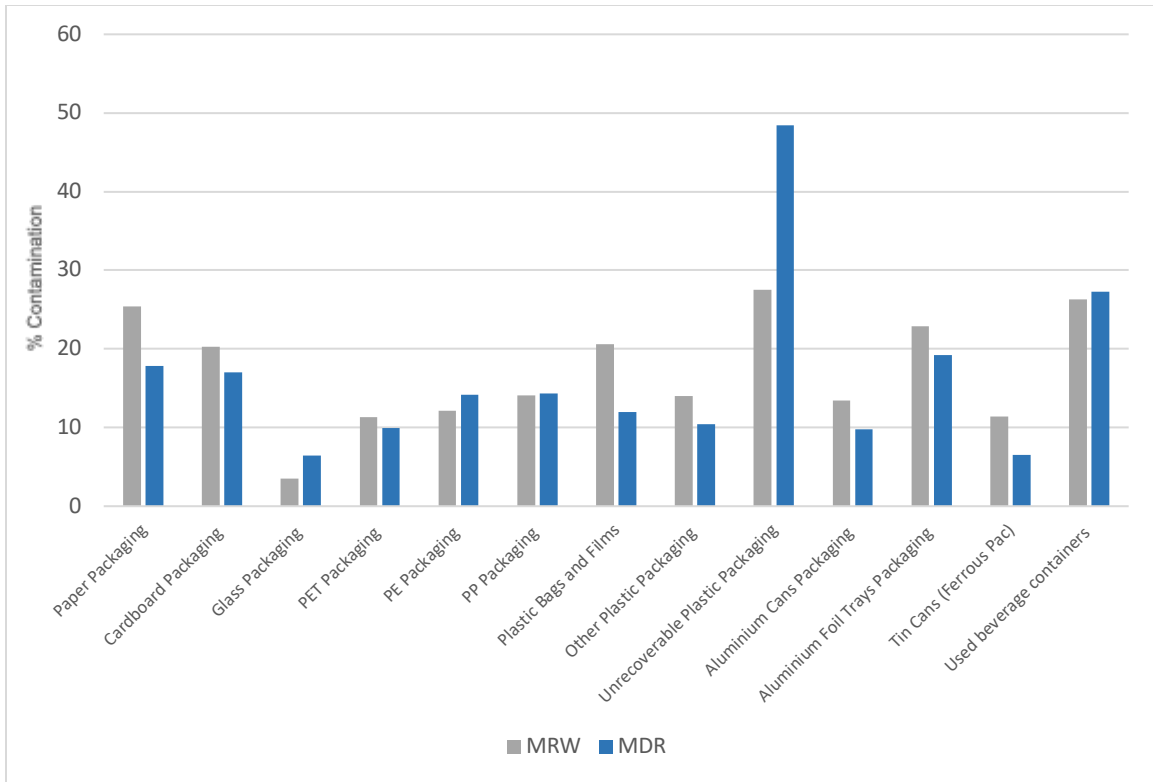
Figure 60: Comparison of the MRW and MDR 2022 primary category non-household contamination factors

As expected, the level of contamination in materials from the MRW is, in general, slightly higher than for the MDR with the average contamination levels being 17.8% and 17.0% respectively. Please note that the high contamination factor for unrecoverable plastic packaging in the MDR skews this comparison considerably.

4.4 Contamination Factor Discussion

4.4.1 2 and 3 Bin System

As with the production of the national profile, every effort has been made when generating the contamination factors outlined here to ensure that the samples taken were randomly chosen, yet representative of what was encountered during the on-site surveys. Though the dataset used to produce the '2 and 3 bin' results in this campaign was somewhat limited, the results do point to a reduction in contamination levels when a food waste collection service is in place. However, at a national level it is not possible to determine what proportion of non-household municipal waste is collected through 2 or 3 bin systems as it is reported only according to List of Waste (LoWs) codes. Therefore, for the purpose of this study, these results were combined and then applied to the total waste reported.

4.4.2 Combining 2018 and 2022 Contamination Data

By combining the 2022 and 2018 contamination data a larger dataset is available which provides a stronger statistical basis for the factors ultimately generated. However, in 2018, the differentiation between 2 and 3 bin systems was not made. In order to validate the 2018 and 2022

combination approach used, a scatter plot of the individual contamination samples (2-bin, 3-bin and 2018) was generated for all materials examined. An example of one of these is shown in Figure 61 with others available in the accompanying Contamination Report. The scatter plots illustrate that the combination of data for the 2022 2 and 3 bin system samples covers a range of contamination levels that is comparable to that of the 2018 results.
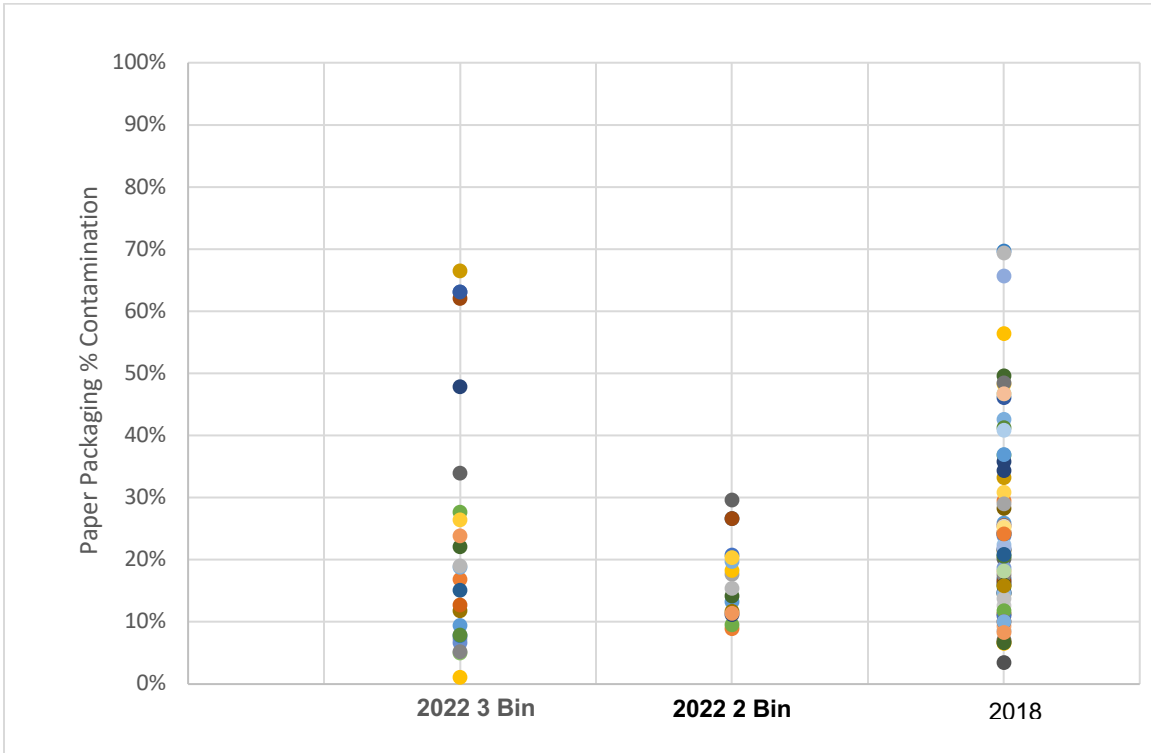
Figure 61: Scatter profile of individual contamination samples of paper packaging materials from 2 and 3 bins systems in 2022 and general approach used in 2018

5 National Results

The data modelling process by which the 2022 national results were produced was outlined in Section 2. This process involves the following stages:

- Initially the sectoral profiles presented in Section 3 were applied to the estimated MRW and MDR tonnages assigned to the respective sectors to produce weight-based profiles for each sector.
- These sectoral weight-based profiles were then aggregated to produce national profiles for MRW and MDR, based on weights, and these were then converted to percentages. These are the final 2022 percentage profiles.
- As the sectors covered by the 2022 results accounted for only 78.5% of the total, the estimated percentages were applied to the total non-municipal MRW and MDR tonnages.
- The contamination factors outlined in Section 4 were then applied to the appropriate materials to correct the material weights. While the estimated contamination and moisture weight is largely related to organic wastes, to allow differentiation with the organic materials identified through survey work, this material is reported separately throughout.
- Due to the inconsistent provision of separately collected organic wastes (OW) across the commercial sector, the 2022 organic waste assessment results were not compiled by sector but for the commercial sector as a whole. These were then combined with the 2018 data to produce the final national OW profile and this was applied to the total organic waste collected to generate a weight-based profile.
- Finally, by combining the national weight-based profiles for MRW, MDR and OW the 2022 weight-based national profile was produced.

The results in the following sections reflect this process.

5.1 National MRW Profile

The results of the national assessment of MRW collected from the non-household sector are given in Table 41 and shown graphically in Figure 62.

Table 41: National composition of kerbside collected MRW from the non-household sector

Waste Category	Total	% Packaging	% Non-Packaging
Organic Waste	31.4%	0.0%	31.4%
Paper	20.0%	2.0%	18.0%
Plastic	15.3%	10.9%	4.3%
Textiles	7.0%	1.2%	5.8%
Contamination	5.3%	0.0%	5.3%
Cardboard	4.7%	4.0%	0.7%
Composites	3.5%	3.4%	0.1%
Metal	3.5%	1.7%	1.8%

Waste Category	Total	% Packaging	% Non-Packaging
Unclassified Combustibles	3.0%	0.1%	2.9%
Unclassified Incombustibles	1.6%	0.0%	1.6%
Compostables	1.1%	0.6%	0.5%
Glass	1.1%	1.0%	0.1%
Fines	0.9%	0.0%	0.9%
Special/Irregular Waste	0.9%	0.1%	0.8%
Wood	0.6%	0.0%	0.6%
Total	**100.0%**	**25.1%**	**74.9%**
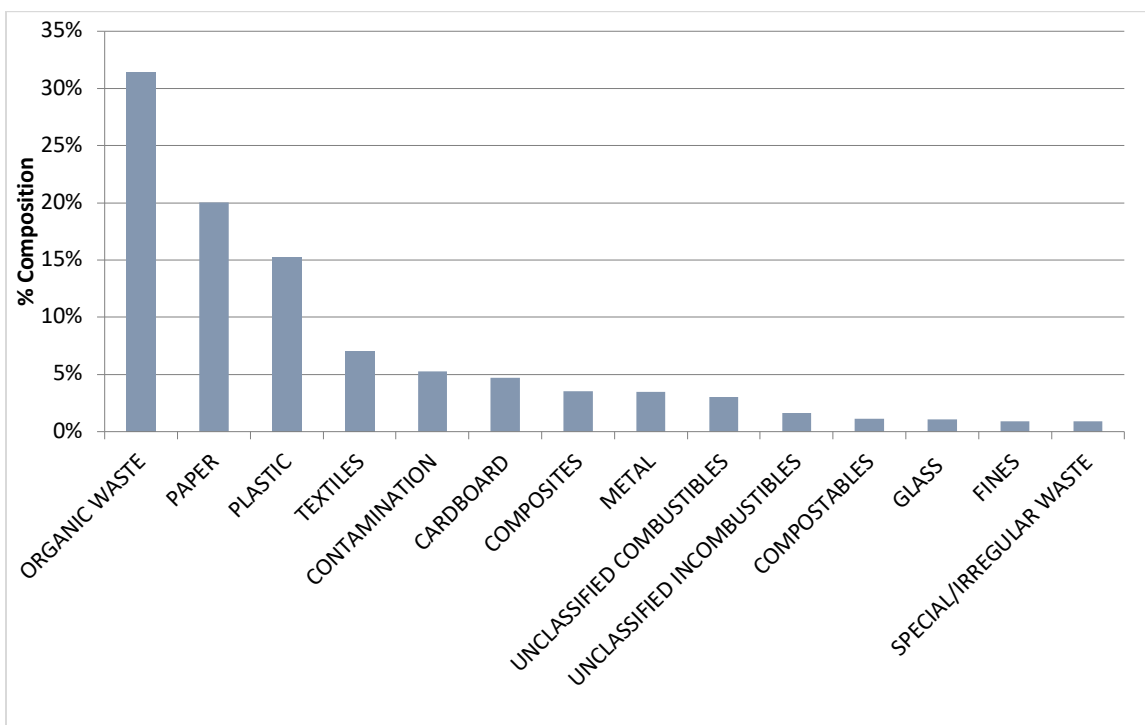
Figure 62: Profile of the national composition of kerbside collected MRW bins from non-household sector

Of the organic waste (31.7%), which was the main material found in the MRW bins, 26.9% was food waste, 2.8% liquid wastes and 1.0% garden waste and vegetable oil.

Paper waste (20.0%) was the next largest material stream. Of this, tissue paper was the main waste material at 11.7% with other paper (non-packaging) and office paper accounting for 2.0% and 1.9% respectively. Magazines and glossies, Paper packaging and unrecyclable paper packaging were present at levels close to 1%.

Of the plastic waste (15.3%), other plastic (non-packaging) was the largest plastic waste at 4.3% followed by PET packaging (2.7%), other plastic packaging (2.7%), plastic bags and films at 2.3% and PE packaging (1.3%).

Textiles, 7.0% of the total, consisted of nappies and incontinence wear (2.9%), non-packaging textiles (2.0%), textiles packaging (1.2%) and clothing (1.0%).

Contamination, which was estimated through applying the contamination factors developed in Section 4 to the relevant materials before developing the national profile, accounted for 5.3%.

Cardboard (4.7%) consisted mainly of packaging materials (3.8%) with small amounts of non-packaging cardboards (0.7%) and unrecyclable packaging (0.2%) also present. Of the composites found (3.5%), coffee cups (1.8%) and composite packaging (1.3%) were the main contributors with 0.4% due to beverage containers.

Metal, 3.5%, included other metal waste (1.8%), ferrous metal/steel cans (0.7%) and aluminium cans (0.5%).

Unclassified combustibles (3.0%) was predominantly related to non-packaging materials (2.9%). Compostable materials accounted for 1.1% of the total. Small quantities of glass (1.1%), fines (1.0%), unclassified incombustibles (1.6%) and wood (0.6%) were found and the special wastes (0.9%), included medicines (0.4%), WEEE (0.3%) and chemicals (0.1%).

Of the total materials found in the MRW bin, 25% was classed as packaging[10] though 1.8% of this was related to unrecyclable packaging materials.

Figure 63: Profile of the national kerbside collected MRW bin from non-household sector based on correct segregation

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[10] Paper Packaging, Flat Card and Corrugated Cardboard (Packaging), Beverage carton (packaging) (tetrapak), Textiles Packaging, PET packaging, PE packaging, PP Packaging, EPS Styrofoam Packaging, Supermarkets bags and films (packaging), Other plastic (packaging), Glass packaging, Ferrous metal packaging, Aluminium cans, Aluminium foil, Other metal packaging, Wood packaging, Aerosols, composite packaging

Similar to the individual sector profiles, an assessment of the materials in the national kerbside MRW bin was carried out to identify how they should be segregated and these results are shown in Figure 62. From this, it is clear that there is significant scope for improvements to be made with only 26% of the materials found in MRW bins in the correct waste stream with 74% that could be managed through better segregation via other waste management routes. 32% of the MRW materials could be segregated into organic waste bins and 37% recyclables present in this mixed waste stream. Additionally, there were 5% special wastes that could be managed through alternative management routes.

5.1.1 Comparison with 2018

Table 42 provides a comparison of the main results, based on percentage composition and tonnage, from the current study with those of 2018. The percentage and tonnage profiles are shown graphically in Figure 64 and Figure 65 respectively.

The percentage composition profile is based on the application of the sectoral profiles to the relevant weights assigned to each sector, aggregating the resulting values and, from the total, determining the percentage contribution by each waste category. As the sectors involved in this calculation represent an estimated 78.5% of the commercial sector, the weight-based tonnages are calculated by applying the national percentages to the total non-household municipal MRW collected as reported to the NWCPO. For 2021 this is 505,135 tonnes which is a slight increase from the 497,667 tonnes reported in 2018.

Table 42: Comparison of 2022 and 2018 composition of kerbside collected MRW from the non-household sector

Waste Category	2022 (%)	2018 (%)	2022 (Tonnes)	2018 (Tonnes)	Δ (%)	Δ (Tonnes)
Organic Waste	31.4%	32.6%	158,808	162,062	-1.1%	-3,253
Paper	20.0%	22.3%	101,233	110,761	-2.2%	-9,528
Plastic	15.3%	15.0%	77,036	74,816	0.2%	2,220
Textiles	7.0%	5.5%	35,355	27,474	1.5%	7,881
Contamination	5.3%	4.2%	26,536	20,819	1.1%	5,717
Cardboard	4.7%	4.5%	23,869	22,467	0.2%	1,402
Composites	3.5%	2.8%	17,851	13,954	0.7%	3,897
Metal	3.5%	3.0%	17,654	14,923	0.5%	2,732
Unclassified Combustibles	3.0%	2.8%	15,164	13,714	0.2%	1,449
Unclassified Incombustibles	1.6%	2.0%	8,115	9,845	-0.4%	-1,730
Compostables	1.1%	2.0%	5,653	10,128	-0.9%	-4,475
Glass	1.1%	1.2%	5,455	5,910	-0.1%	-455
Fines	0.9%	0.8%	4,670	3,850	0.2%	820
Special/Irregular Waste	0.9%	0.6%	4,523	2,857	0.3%	1,666
Wood	0.6%	0.8%	3,214	4,089	-0.2%	-875
Total	**100.0%**	**100.0%**	**505,135**	**497,667**		**7,467**
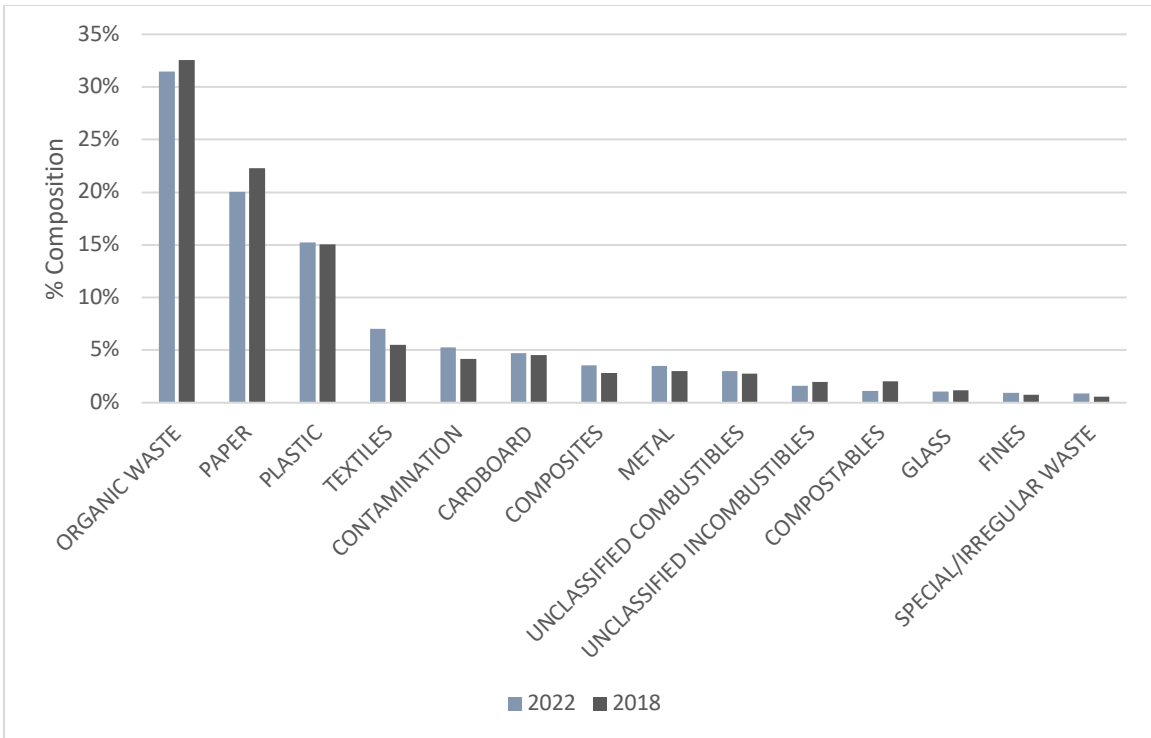
Figure 64: Comparison of MRW profiles of non-household kerbside collected waste from 2018 and 2022 (based on percentages)
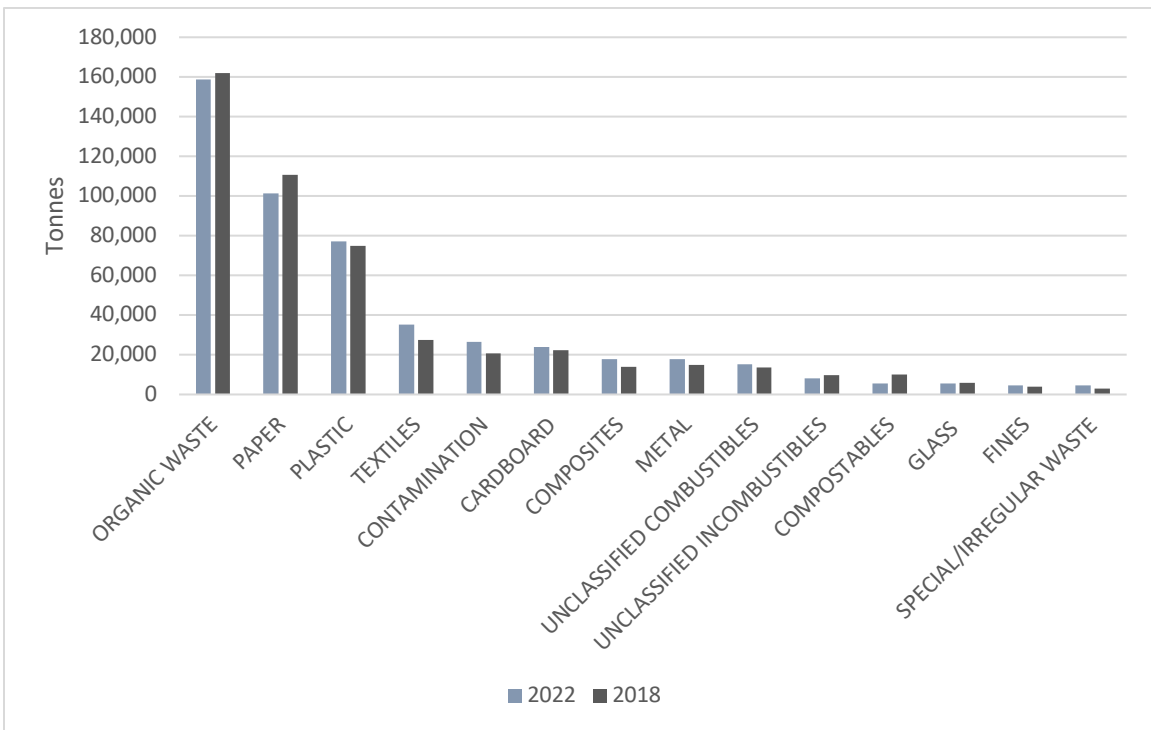
Figure 65: Comparison of MRW profiles of non-household kerbside collected waste from 2018 and 2022 (based on weights – scaled up)

It is important to note when comparing 2022 to 2018 that, while the percentage proportions of the various waste materials have changed, there was also a slight increase in the overall weight of MRW (from 497,667 tonnes in 2018 to 505,135 tonnes in 2021) which will impact any comparisons. The following provides a summary of some of the main differences identified in the primary waste categories:

- The most significant change is the decrease in paper in the MRW bins by 2.2% (or -9,500 tonnes) since 2018. This was due to decreases in magazines and glossies (-6,010 tonnes), newspapers (-2,780 tonnes) and office paper (-1,770 tonnes).
- Textiles increased by 1.5% (7,880 tonnes) since 2018 and this was related to the increase in nappies and incontinence wear (9,740 tonnes) though this was offset by a decrease in packaging textiles (-1,620 tonnes). The increase in nappies and incontinence wear can be explained by the improved coverage of sub-sectors which now includes community nursing units and pre-primary schools.
- Within the organics category, which decreased by 1.1% (-3,250 tonnes), the changes were related to a decrease in food waste (-8,600 tonnes) with offset increases in vegetable oil (3,600 tonnes) and residual liquids (1,800 tonnes).
- The levels of contamination and moisture estimated to be present on packaging materials increased by 1.1% since 2018 resulting in an additional 5,700 tonnes of organic related materials present in the overall municipal waste streams.

While all other changes in the primary material categories were less than 1% there were a number of significant changes to the volumes of individual waste materials contributing to the primary waste categories. These are not always obvious as they are offset by other changes within the overall primary category. Whether these changes, outlined below, are related to specific trends, or changes resulting from the improved profile, is not possible to determine at this stage.

- Metal wastes increased by 0.5% and this was mainly related to increases in other non-packaging metals (5,150 tonnes). However, there was a decrease in the overall estimate of ferrous/metal/steel cans by 2,120 tonnes.
- Though plastics only increased by 0.2%, there were significant decreases in plastic bags and films (-8,890 tonnes) and unrecoverable plastic packaging (-2,550 tonnes). This was offset by the increases in other non-packaging plastics (9,370 tonnes) and PET packaging (2,530 tonnes).
- Within the composite waste category, which increased by 0.6%, coffee cups decreased by 3,420 tonnes. This was offset by a 6,640 tonne increase in composite packaging.

5.2 National MDR Profile

The results of the national assessment of kerbside collected MDR from the non-household sector are given in Table 43 and shown graphically in Figure 66.

Table 43: National composition of kerbside collected MDR from non-household sector

Waste Category	Total	% Packaging	% Non-Packaging
Paper	28.7%	4.2%	24.4%
Plastic	20.5%	16.7%	3.8%
Cardboard	19.8%	19.4%	0.4%
Organic Waste	9.3%	0.0%	9.3%
Contamination	8.7%	0.0%	8.7%
Composites	3.4%	2.9%	0.5%
Metal	3.3%	2.8%	0.4%
Unclassified Combustibles	2.4%	0.1%	2.3%
Textiles	1.1%	0.1%	1.0%
Glass	0.9%	0.8%	0.1%
Compostables	0.8%	0.6%	0.1%
Wood	0.7%	0.3%	0.4%
Fines	0.2%	0.0%	0.2%
Special/Irregular Waste	0.2%	0.1%	0.1%
Unclassified Incombustibles	0.1%	0.0%	0.1%
Total	**100.0%**	**48.1%**	**51.9%**

The most prominent primary category in the national MDR bins was paper at 28.7% of the total. This consisted of office paper (9.5%), tissue paper (5.8%), newspapers (3.9%), other paper (2.7%) paper packaging (3.7%) and magazines and glossy papers (2.6%). There was also 0.5% of unrecoverable paper packaging.

The next largest primary waste category was plastics which accounted for 20.5% of the total MDR bin composition. This comprised of plastic films and bags (5.3%), other plastic non-packaging (3.8%), PET packaging (3.6%), other plastic packaging (3.3%), PE packaging (2.6%) and PP packaging (1.2%).

Cardboard at 19.8%, was mostly cardboard packaging at 19.4%, though 0.5% of this was unrecoverable.

Organic waste, mainly food (7.0%) and liquid (2.3%) wastes, accounted for 9.3% of the total.

Contamination (including moisture), which was estimated through applying the contamination factors developed in Section 4 to the relevant materials before developing the national profile, accounted for 8.7%.

Composites (3.4%) included coffee cups (1.8%), used beverage containers (0.4%), and composite packaging and non-packaging materials (0.6% and 0.5% respectively).

Metals, mainly ferrous metal/steel (2.0%) and aluminium cans (0.6%), accounted for 3.3% of the total in the MDR bin.

Unclassified combustibles (2.4%) consisted of mainly non-packaging based materials (2.3%).

Of the total materials found in the MDR bin, 48.5% was classed as packaging[11] though 1.2% of this was related to unrecyclable packaging materials.
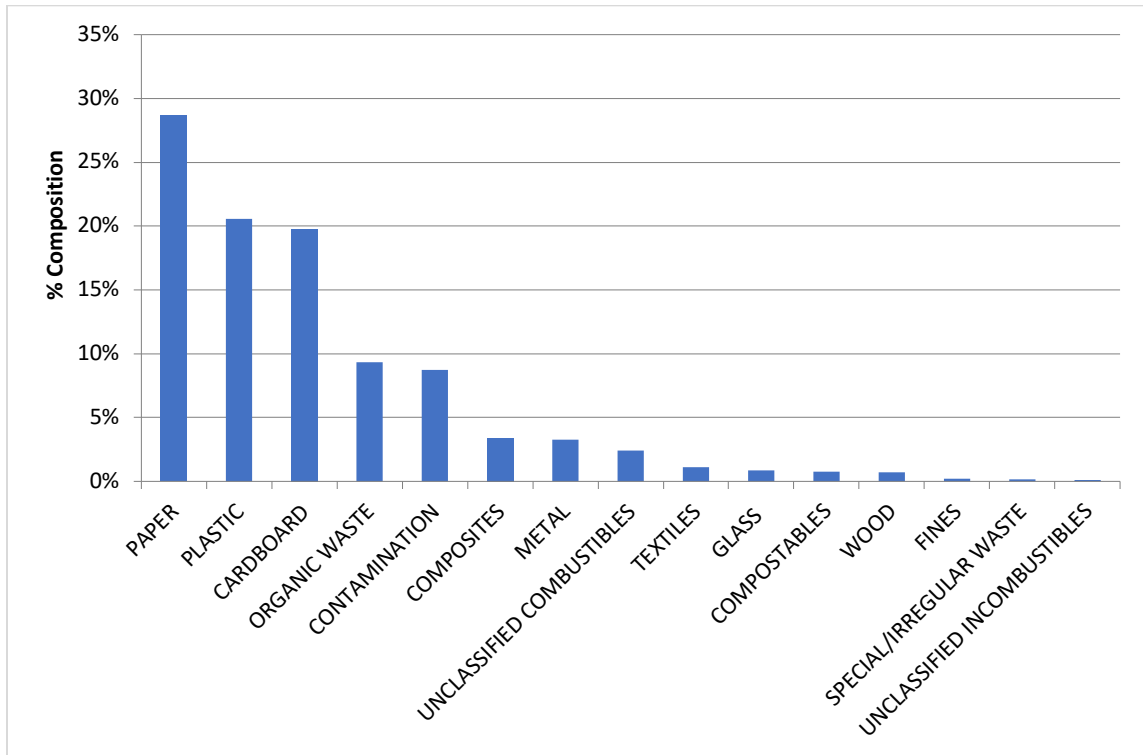
Figure 66: Profile of the national composition of kerbside collected MDR from non-household sector

Similar to the individual sector profiles, the national kerbside MDR bin profile was assessed to identify which bins the materials could have been segregated into and these results are depicted graphically in Figure 67.

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[11] Paper Packaging, Flat Card and Corrugated Cardboard (Packaging), Beverage carton (packaging) (tetrapak), Textiles Packaging, PET packaging, PE packaging, PP Packaging, EPS Styrofoam Packaging, Supermarkets bags and films (packaging), Other plastic (packaging), Glass packaging, Ferrous metal packaging, Aluminium cans, Aluminium foil, Other metal packaging, Wood packaging, Aerosols, composite packaging
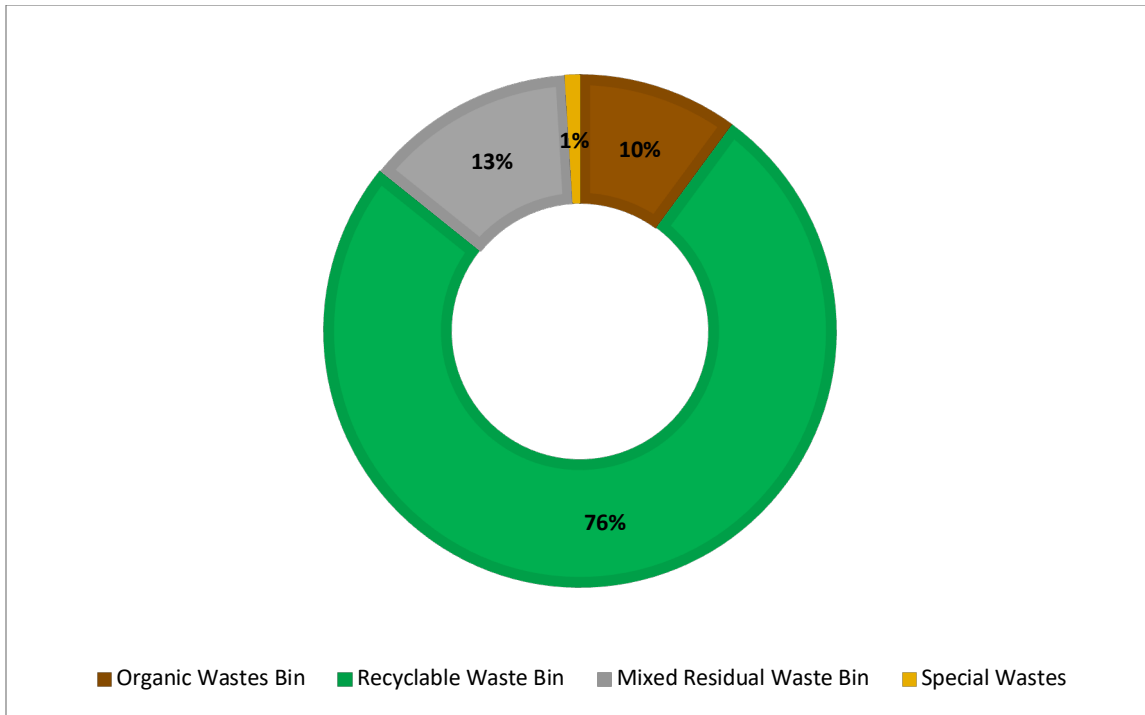
Figure 67: Profile of the national kerbside collected MDR bin from non-household sector based on correct segregation

As can be seen from this assessment, currently 76% of the materials in the MDR bins are in the correct waste stream though 24% could be managed through better segregation into other waste management routes. 10% of the MDR materials could be directed into organic waste bins through better segregation, improved cleaning of materials and the draining of liquids prior to disposal. General waste bin materials were also present (13%) with only small quantities of special wastes found (1%).

5.2.1   Comparison with 2018

Table 44 provides a comparison of the main results, based on % composition and tonnage, from the current study with those of 2018. The percentage and tonnage profiles are shown graphically in Figure 68 and Figure 69 respectively.

Table 44: Comparison of 2022 and 2018 composition of kerbside collected MDR from the non-household sector

Waste Category	2022 (%)	2018 (%)	2022 (Tonnes)	2018 (Tonnes)	Δ (%)	Δ (Tonnes)
Paper	28.7%	31.2%	35,194	45,924	-2.5%	-10,730
Plastic	20.5%	23.9%	25,220	35,150	-3.3%	-9,930
Cardboard	19.8%	16.3%	24,299	24,067	3.5%	233
Organic Waste	9.3%	10.1%	11,436	14,875	-0.8%	-3,440
Contamination	8.7%	6.2%	10,689	9,203	2.5%	1,486
Composites	3.4%	2.0%	4,181	2,979	1.4%	1,201

Waste Category	2022 (%)	2018 (%)	2022 (Tonnes)	2018 (Tonnes)	Δ (%)	Δ (Tonnes)
Metal	3.3%	3.4%	3,991	4,967	-0.1%	-975
Unclassified Combustibles	2.4%	1.9%	2,939	2,866	0.4%	73
Textiles	1.1%	0.9%	1,344	1,321	0.2%	23
Glass	0.9%	1.0%	1,047	1,510	-0.2%	-463
Compostables	0.8%	1.5%	956	2,263	-0.8%	-1,308
Wood	0.7%	0.7%	865	1,032	0.0%	-167
Fines	0.2%	0.4%	226	637	-0.2%	-411
Special/Irregular Waste	0.2%	0.1%	216	204	0.0%	12
Unclassified Incombustibles	0.1%	0.2%	138	266	-0.1%	-129
Total	**100.0%**	**100.0%**	**122,741**	**147,265**		**-24,524**

As with the MRW comparison, the percentage composition profile is based on the application of the sectoral profiles to the relevant weights assigned to each sector, aggregating the resulting values and, from the total, determining the percentage contribution by each waste category. As the sectors involved in this calculation represent an estimated 78.5% of the commercial sector, the weight-based tonnages are calculated by applying the national percentages to the total non-household municipal MDR collected as reported to the NWCPO. For 2022 this is 122,741 tonnes which is a decrease from the 147,265 tonnes reported in 2018.
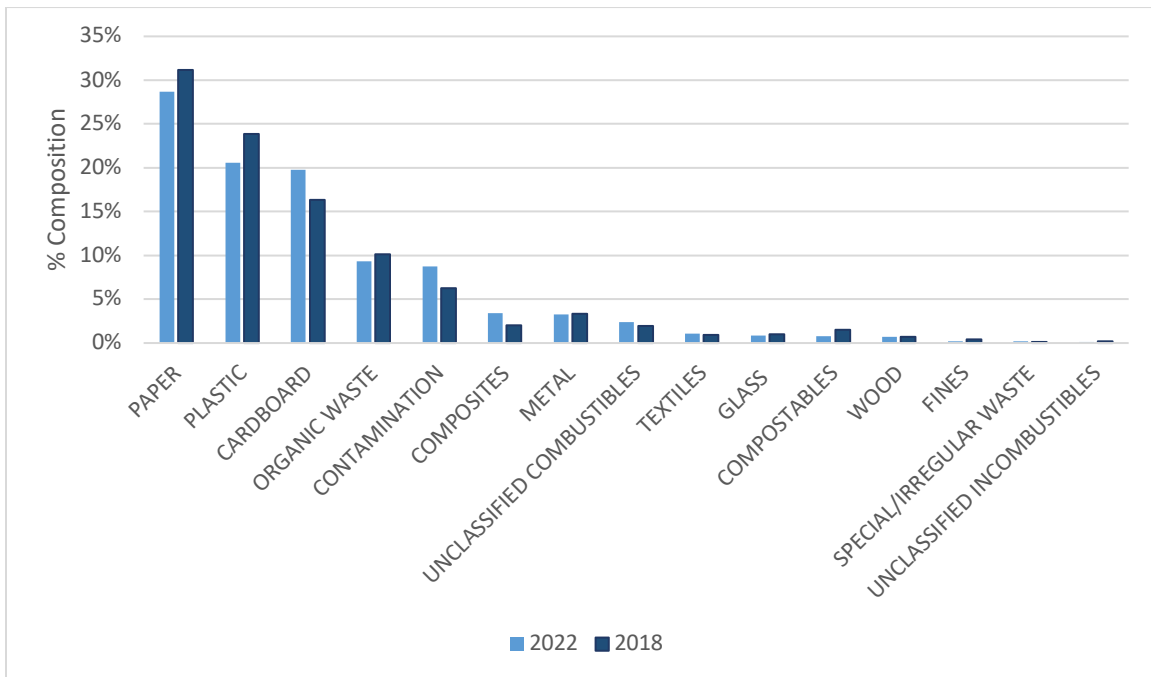
Figure 68: Comparison of MDR profiles of non-household kerbside collected waste from 2018 and 2022 (based on percentages)
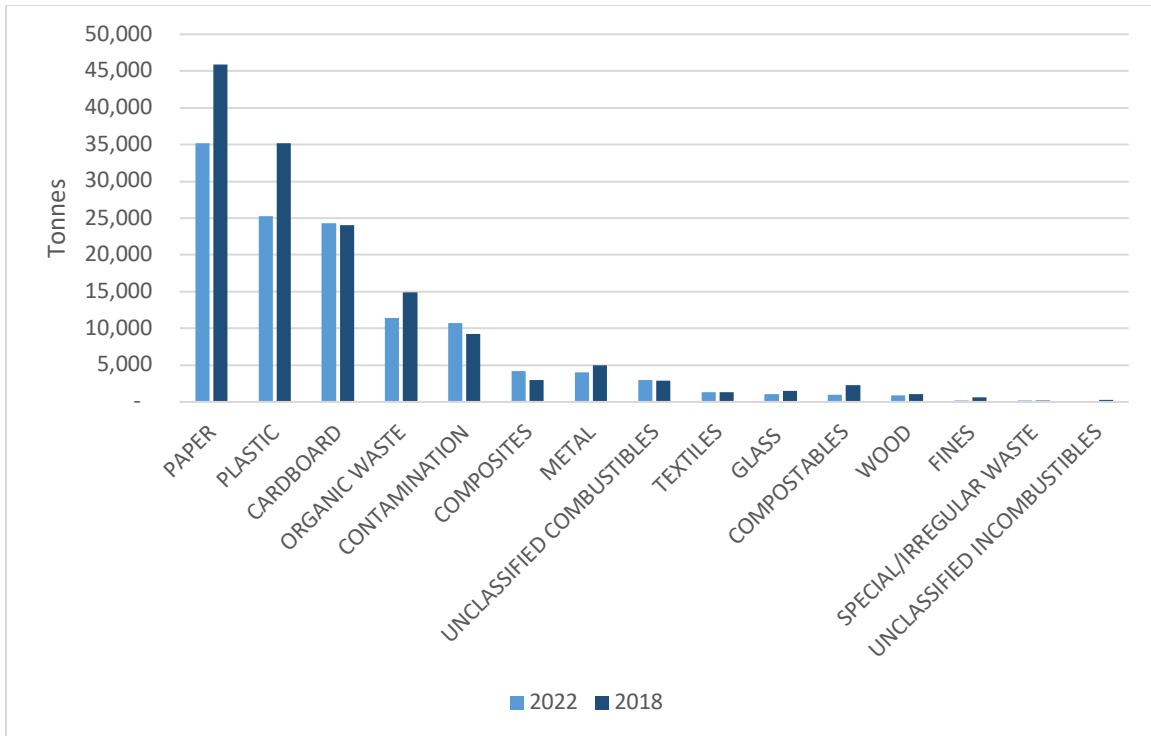
Figure 69: Comparison of MDR profiles of non-household kerbside collected waste from 2018 and 2022 (based on tonnages)

As with the MRW results, it is important to note when comparing 2022 to 2018 that, while the percentage proportions of the various waste materials have changed, there was also a significant reduction in the overall weight of MDR reported (from 147,265 tonnes in 2018 to 122,741 tonnes in 2022) which will impact any comparisons. The following provides a summary of some of the main differences identified in the primary waste categories:

- The most significant change is the decrease in paper. This 2.5% reduction is due to decreases in tissue paper (4,280 tonnes), office paper (2,870 tonnes), other non-packaging paper (1,590 tonnes) and paper packaging (1,030 tonnes).
- The decrease in plastics (-3.3%) was largely due to the reduced volume of plastic bags and films (7,000 tonnes), PET packaging (1,720 tonnes) and PP packaging (1,200 tonnes).
- Cardboard increased by 3.5% but, due to the changes in overall tonnages of MDR collected there was little change of note to the individual materials.
- The levels of contamination (including moisture) in the MDR increased by 2.5% and, notwithstanding the reduced volume of MDR materials collected, there was still an increase of 1,500 tonnes.

5.3 Organic Wastes

Separately collected Organic Waste (OW) was examined from those businesses that had this service in place, regardless of sector. While most food service and food retail businesses now have an organic waste collection service (either a brown bin or other separate food waste collection service), many of the other sectors do not have such a service. During this work, the brown bin waste from 8 businesses, which included 32 samples, was combined with the results from 14

businesses in 2018 to generate the 2022 Organic Waste bin profile. The sites assessed during this campaign included food service locations, public services, food retail, hotels and transport hubs.

The results of the national assessment of brown bin waste collected from the non-household sector are summarised in Table 45 and presented graphically in Figure 70.

Table 45: Composition of kerbside collected Organic Wastes from non-household sector

Primary Category	Mean
Organic Waste	92.2%
Unclassified Combustibles	2.3%
Cardboard	2.1%
Compostables	1.8%
Paper	1.2%
Plastic	0.2%
Composites	0.1%
Unclassified Incombustibles	0.1%
Metal	0.0%
Wood	0.0%
Special/Irregular Waste	0.0%
Glass	0.0%
Textiles	0.0%
Fines	0.0%
Total	**100%**

As expected organic waste (92.2%) is the main constituent of brown bins. This consisted of 84.1% food waste and 7.6% liquid wastes.

Unclassified combustibles, related to non-packaging materials, was the main contaminant within this stream accounting for 2.3%.

Cardboard, mainly packaging materials, accounted for 2.1% of the total with compostable wares accounting for 1.8% of the total. Paper (1.2%) consisted mainly of tissue paper (1.0%). These materials are, generally, accepted in organic waste collections.

Other materials present at trace levels included plastics, unclassified combustibles and composites.

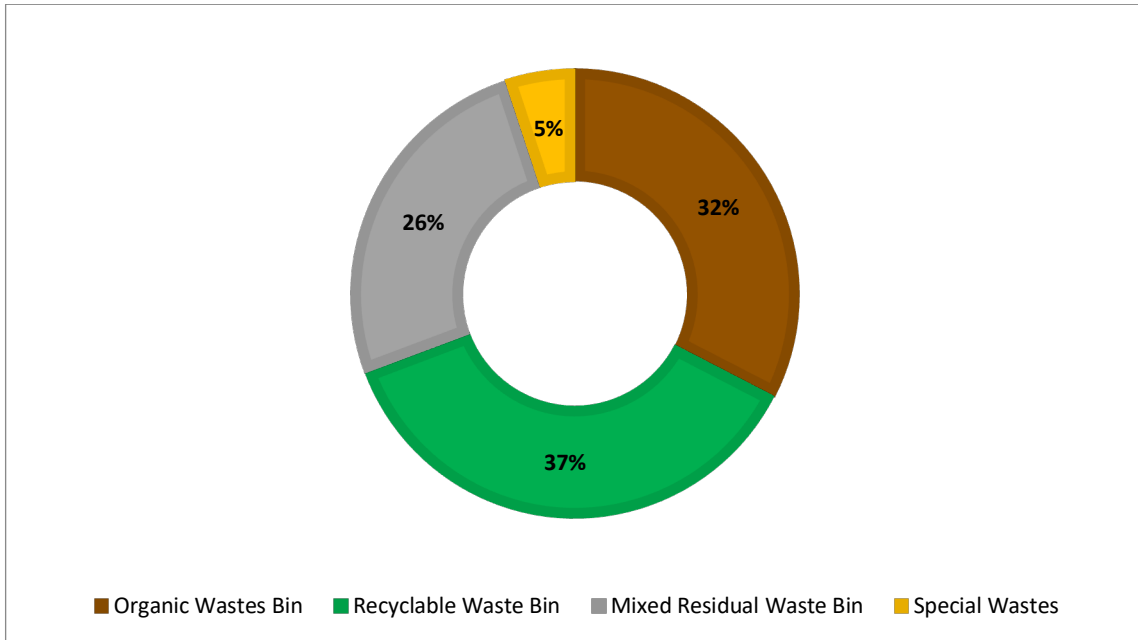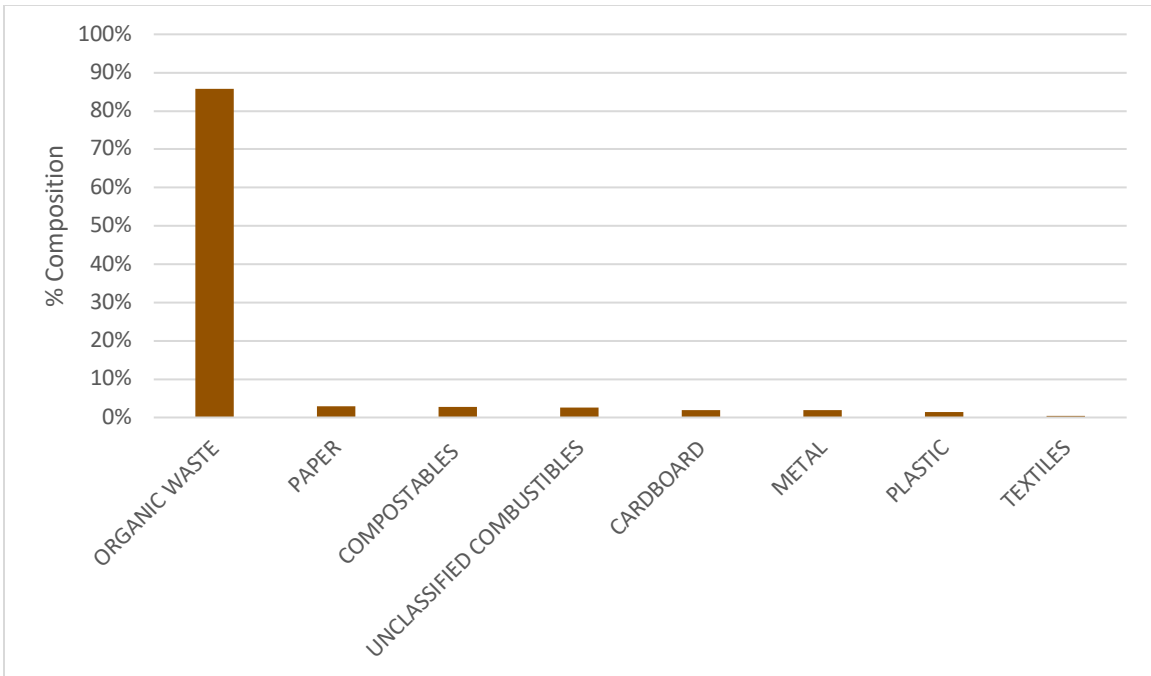**Figure 70: Composition of kerbside collected organic waste from the non-household sector**
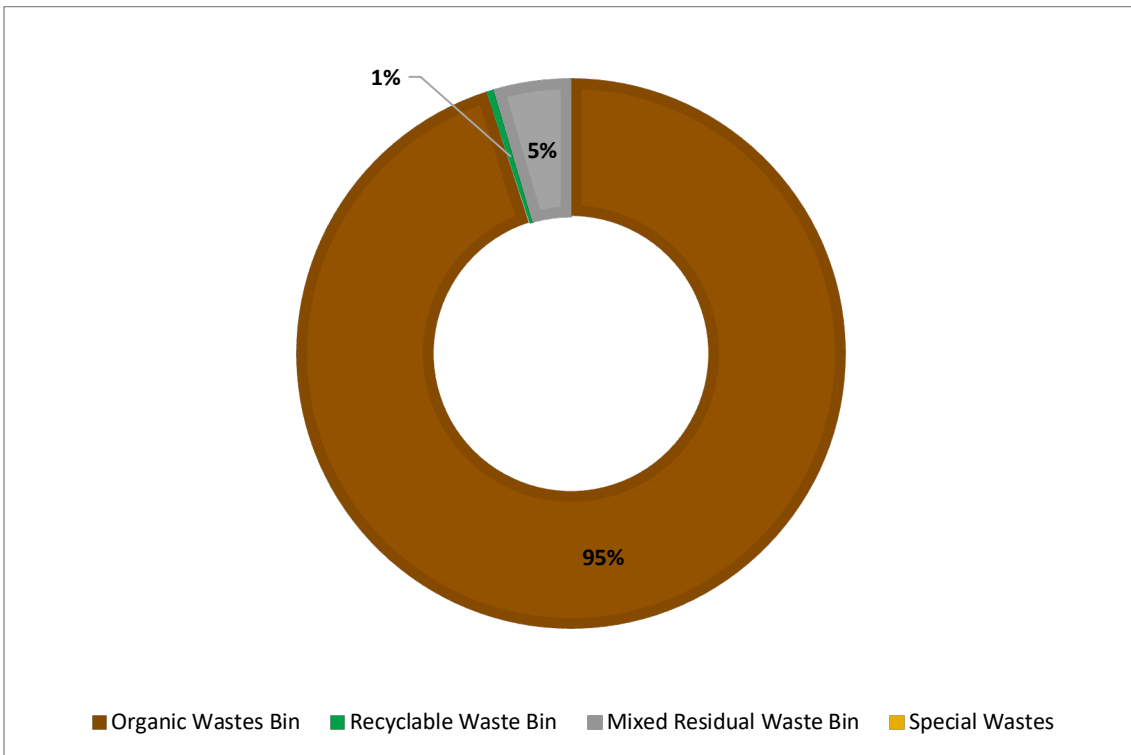
Figure 71: Profile of the national kerbside collected OW bin from non-household sector based on correct segregation

As with the other waste collection streams, an assessment of the materials in the brown bin was carried out to identify which bins the materials could have been segregated into. By and large, the level of contamination of separate food waste collection services is low (i.e. segregation within those businesses using such services in the commercial sector is very good). This is reflected in the relatively small quantities of non-compostable materials present with 5% of that materials that could have been diverted into MRW. However, it is important to note that the presence of a dedicated food waste collection service does not preclude these businesses from also having food waste in the MRW and MDR waste streams – a scenario that was consistently encountered during this campaign.

5.3.1 Weight Based OW Results

To calculate the weight based content of the OW waste stream, the composition profile (Table 45) was applied to the total organic waste collected nationally as provided to the EPA by the NWPCO. For 2021 this was reported to be 60,021 tonnes. These results are given in Table 46.

Table 46: Composition of kerbside collected Organic Wastes waste from non-household sector in percentage and tonnes

Primary Category	Average %	Weight (tonnes)
Organic Waste	92.2%	55,335
Unclassified Combustibles	2.3%	1,385
Cardboard	2.1%	1,276
Compostables	1.8%	1,107
Paper	1.2%	706
Plastic	0.2%	96
Composites	0.1%	47
Unclassified Incombustibles	0.1%	35
Metal	0.0%	13
Wood	0.0%	11
Special/Irregular Waste	0.0%	5
Glass	0.0%	5
Textiles	0.0%	1
Fines	0.0%	-
Total	**100%**	**60,021**

5.4 National Profile

In order to determine the overall national profile, the weight based national results for each waste stream (MRW, MDR and OW) were aggregated. These results, outlined in the previous sections, are presented in Table 47 and shown graphically in Figure 72. In addition, Table 48 and Figure 73 give the overall percentage of each waste category collected in three kerbside collected non-household waste streams (MRW, MDR, OW).

Table 47: National Profile for kerbside collected Non-Household Waste (tonnes)

Primary Waste Categories	MRW (t)	MDR (t)	OW (t)	National Profile (t)	% Weight
Organic Waste	158,808	11,436	55,335	225,579	32.8%
Paper	101,233	35,194	706	137,134	19.9%
Plastic	77,036	25,220	96	102,352	14.9%
Cardboard	23,869	24,299	1,276	49,445	7.2%
Contamination	26,536	10,689	-	37,225	5.4%
Textiles	35,355	1,344	1	36,700	5.3%
Composites	17,851	4,181	47	22,079	3.2%
Metal	17,654	3,991	13	21,658	3.1%
Unclassified Combustibles	15,164	2,939	1,385	19,488	2.8%
Unclassified Incombustibles	8,115	138	35	8,288	1.2%
Compostables	5,653	956	1,097	7,706	1.1%
Glass	5,455	1,047	5	6,507	0.9%
Fines	4,670	226	-	4,896	0.7%
Special/Irregular Waste	4,523	216	5	4,744	0.7%
Wood	3,214	865	11	4,089	0.6%
Total	**505,135**	**122,741**	**60,024**	**687,900**	**100%**
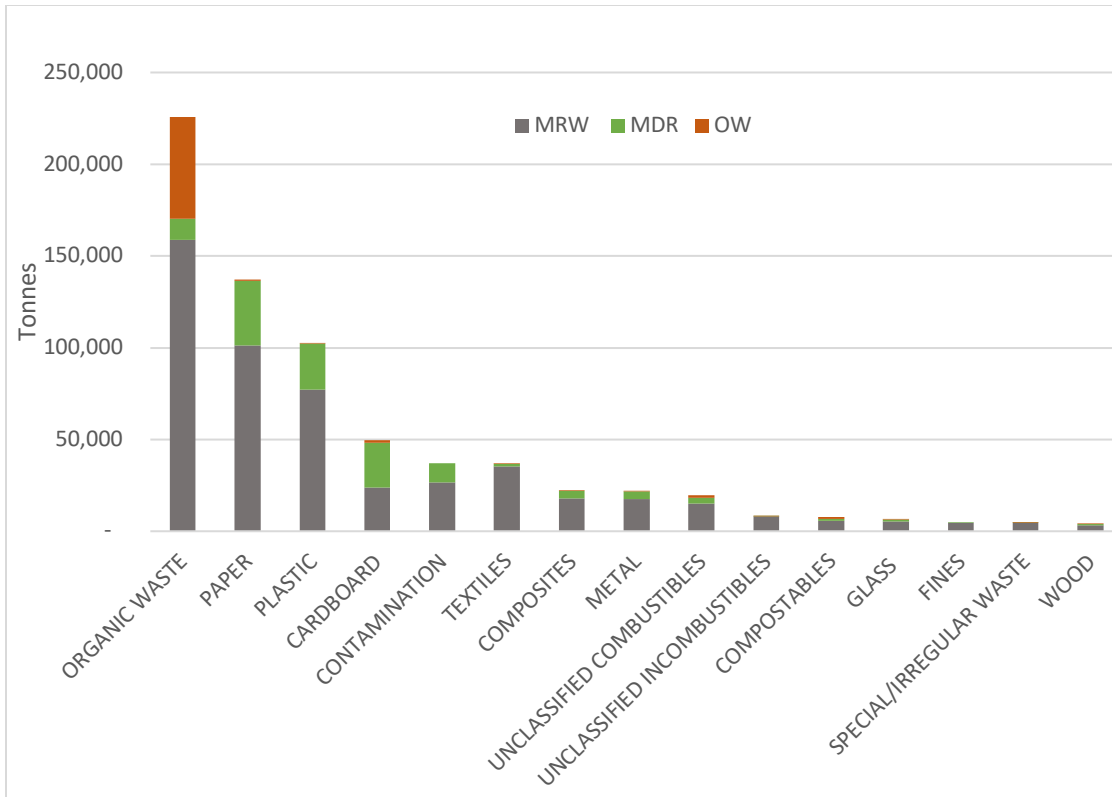
Figure 72: National Profile for kerbside collected non-household waste (tonnes)

Table 48: National Profile for kerbside collected Non-Household Waste per waste stream (percentage)

Primary Waste Categories	Waste Stream			% Total
	MRW	MDR	OW	
Organic Waste	23.1%	1.7%	8.0%	32.8%
Paper	14.7%	5.1%	0.1%	19.9%
Plastic	11.2%	3.7%	0.0%	14.9%
Cardboard	3.5%	3.5%	0.2%	7.2%
Contamination	3.9%	1.6%	0.0%	5.4%
Textiles	5.1%	0.2%	0.0%	5.3%
Composites	2.6%	0.6%	0.0%	3.2%
Metal	2.6%	0.6%	0.0%	3.1%
Unclassified Combustibles	2.2%	0.4%	0.2%	2.8%
Unclassified Incombustibles	1.2%	0.0%	0.0%	1.2%
Compostables	0.8%	0.1%	0.2%	1.1%
Glass	0.8%	0.2%	0.0%	0.9%
Fines	0.7%	0.0%	0.0%	0.7%
Special/Irregular Waste	0.7%	0.0%	0.0%	0.7%
Wood	0.5%	0.1%	0.0%	0.6%
Total	**73%**	**18%**	**9%**	**100%**
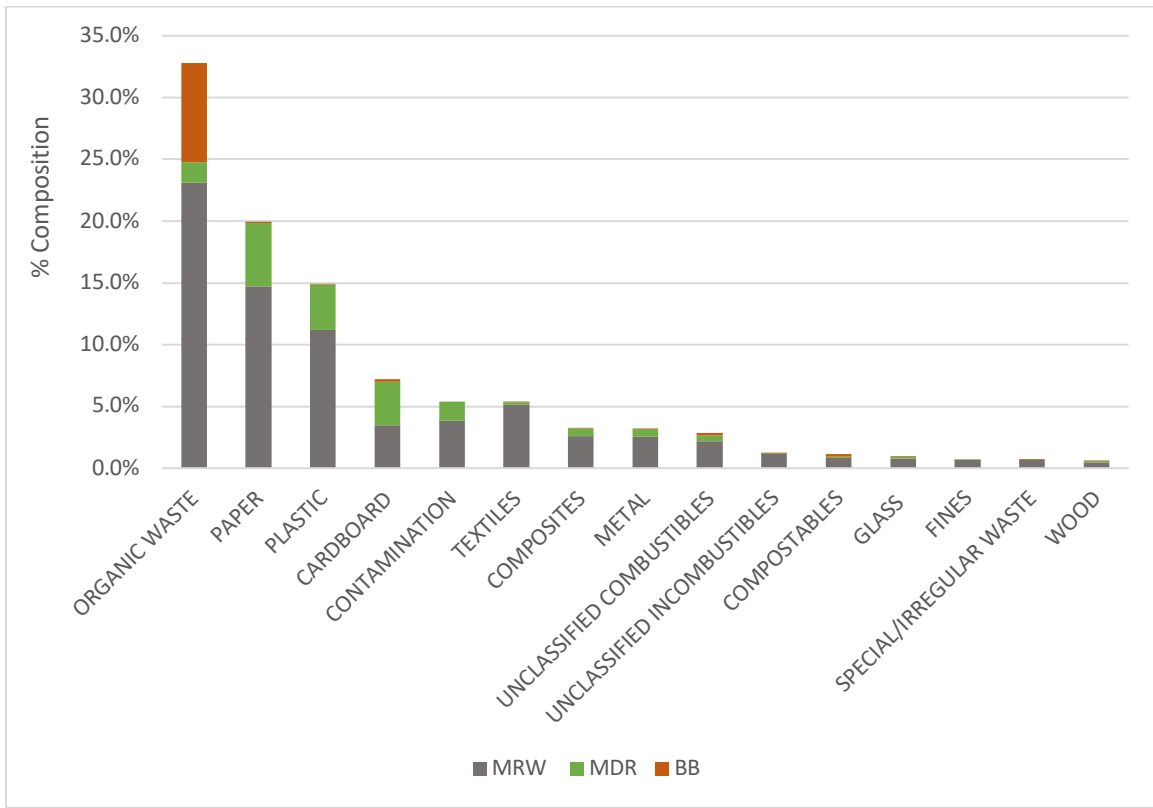
Figure 73: National Profile for kerbside collected non-household waste (percentage)

Based on the results outlined in Table 47 and Table 48, the most prominent category of the national non-household municipal waste stream was **organic wastes** at 32.8% of the total. Of this, 70% remains in the MRW bins with 5% in the MDR bins with only 25% of the national total organic waste generated collected by organic waste bin services.

The second largest waste category was **paper waste** which comprised 19.9% of the total composition. Of this 74% remains in the MRW bins with 23% captured by MDR collections.

Plastic waste accounts for 14.9% of the total with 75% of plastics are in the MRW bins with 25% in the MDR bins.

Cardboard waste, 7.2% of the total composition, is split between MDR (49%) and MRW (48%) bin collection services with small volumes in the organic waste bins (1%).

Contamination accounts for 5.4% of the total with the majority, 71%, from the MRW bins with 29% due to the MDR bins.

The vast majority of **Textile** wastes (5.3% of the total), which includes nappies and incontinence wear, was found in the MRW bins (96%).

Composites made up 3.2% of the total and was captured mainly in the MRW bin collection (78%) and MDR collection (22%).

Metal waste, 3.1%, was found mainly in the MRW bins (82%) with 18% in the MDR bins.

Of the **Unclassified Combustibles** (2.8%), 78% was found in the MRW bins with 15% in the MDR bins and 7% in the OW bins.

Unclassified Incombustibles (1.2%) was mainly in the MRW bins (98%).

Compostables, which account for 0.8% of the national waste stream, was found largely in the MRW bins (73%) with 14% in the OW bins and 12% in the MDR bins.

All other materials were similarly distributed with ~ 90% found in the MRW bins.
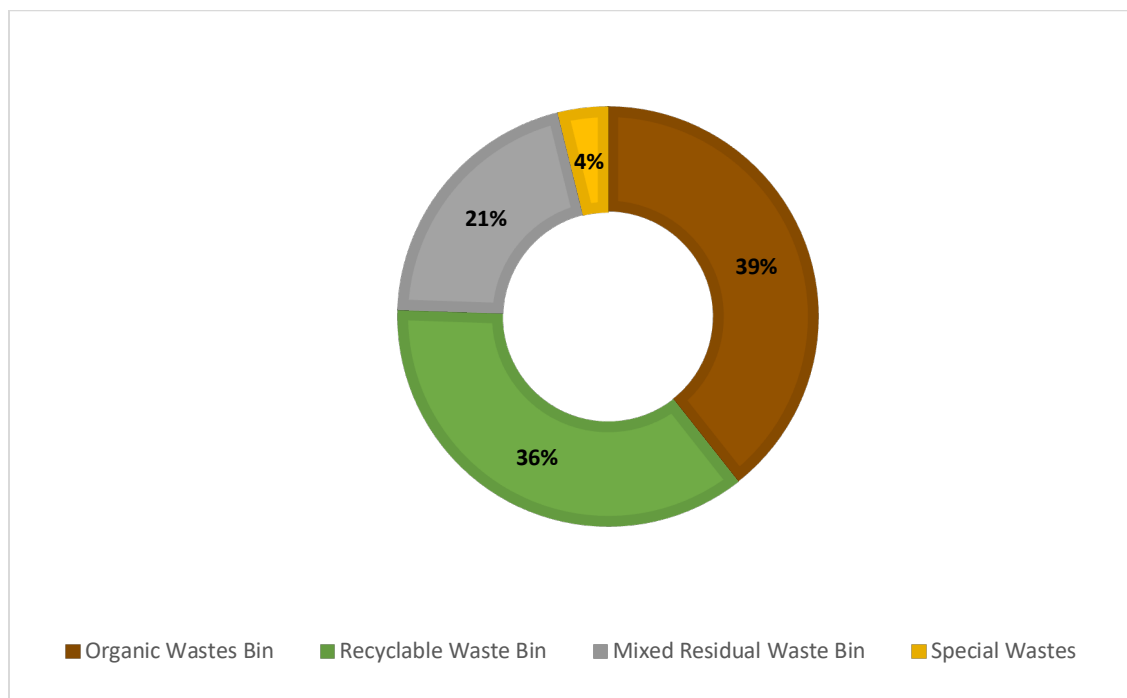
Figure 74: Profile of the national kerbside collected non-household waste bins based on correct segregation

As with the individual sectoral profiles, an assessment of the waste materials contained in the national profile of non-household waste bins (MRW, MDR and OW), based on their correct segregation, was carried out. These results are shown in Figure 74 and clearly identify the potential for improved segregation of wastes. Currently, though 73% of all non-household wastes are managed as MRW. However, if wastes were being segregated properly, the true amount of MRW generated by the non-household sector is actually only 21%.

Through improved segregation practices, the proportion of waste managed as MDR could increase from 18% to 36% and the proportion of waste managed as OW could increase from 9% to 39%. This potential difference is shown graphically in Figure 75.
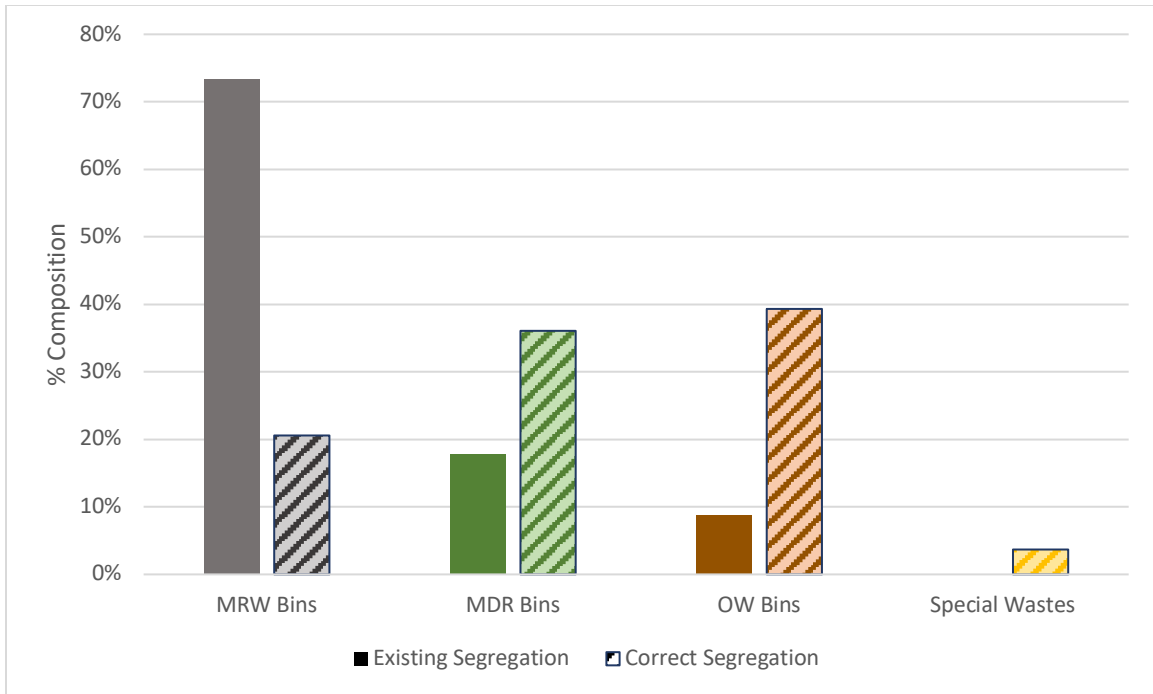
Figure 75: Comparison of the current distribution of waste with the potential situation based on correct segregation of the materials found

5.4.1   Comparison with 2018

A comparison of the data used to generate the overall national profile for kerbside collected non-household waste for 2022 and 2018 are given in Table 49. This provides both the percentage and weight based data and comparison profiles of these are shown in Figure 76 and Figure 77 respectively.

Table 49: Comparison of 2022 and 2018 composition of kerbside collected MRW from the non-household sector

Waste Category	2022 (%)	2018 (%)	2022 (Tonnes)	2018 (Tonnes)	Δ (%)	Δ (Tonnes)
Organic Waste	32.8%	34.0%	225,579	243,137	-1.2%	-17,558
Paper	19.9%	22.2%	137,134	158,700	-2.3%	-21,566
Plastic	14.9%	15.5%	102,352	110,751	-0.6%	-8,399
Cardboard	7.2%	6.5%	49,445	46,674	0.7%	2,770
Contamination	5.4%	4.2%	37,225	30,029	1.2%	7,197
Textiles	5.3%	4.0%	36,700	28,795	1.3%	7,905
Composites	3.2%	2.4%	22,079	17,151	0.8%	4,928
Metal	3.1%	2.8%	21,658	19,889	0.4%	1,769
Unclassified Combustibles	2.8%	2.2%	19,488	15,417	0.7%	4,070

Waste Category	2022 (%)	2018 (%)	2022 (Tonnes)	2018 (Tonnes)	Δ (%)	Δ (Tonnes)
Unclassified Incombustibles	1.2%	1.4%	8,288	10,112	-0.2%	-1,824
Compostables	1.1%	1.9%	7,706	13,317	-0.7%	-5,611
Glass	0.9%	1.0%	6,507	7,439	-0.1%	-932
Fines	0.7%	0.6%	4,896	4,487	0.1%	409
Special/Irregular Waste	0.7%	0.6%	4,744	4,205	0.1%	539
Wood	0.6%	0.7%	4,089	5,121	-0.1%	-1,032
Total	100.0%	100.0%	687,897	715,223		-27,326
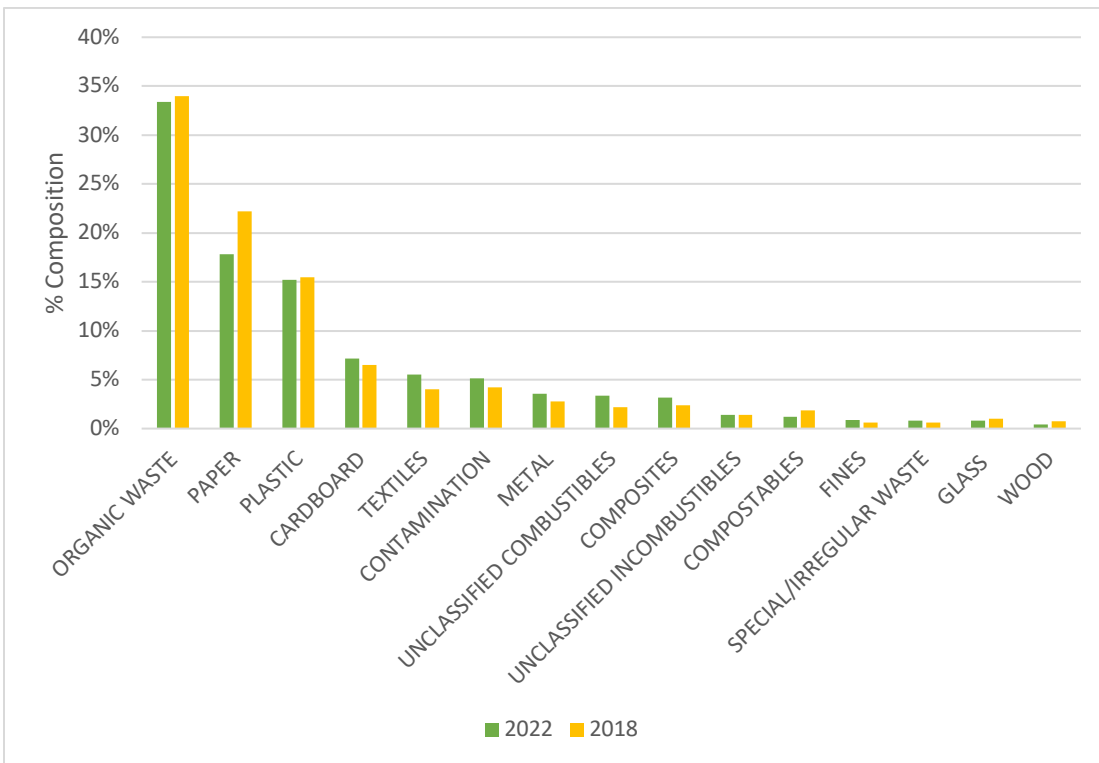
Figure 76: Comparison of national profiles of non-household kerbside collected waste from 2018 and 2022 based on percentage composition
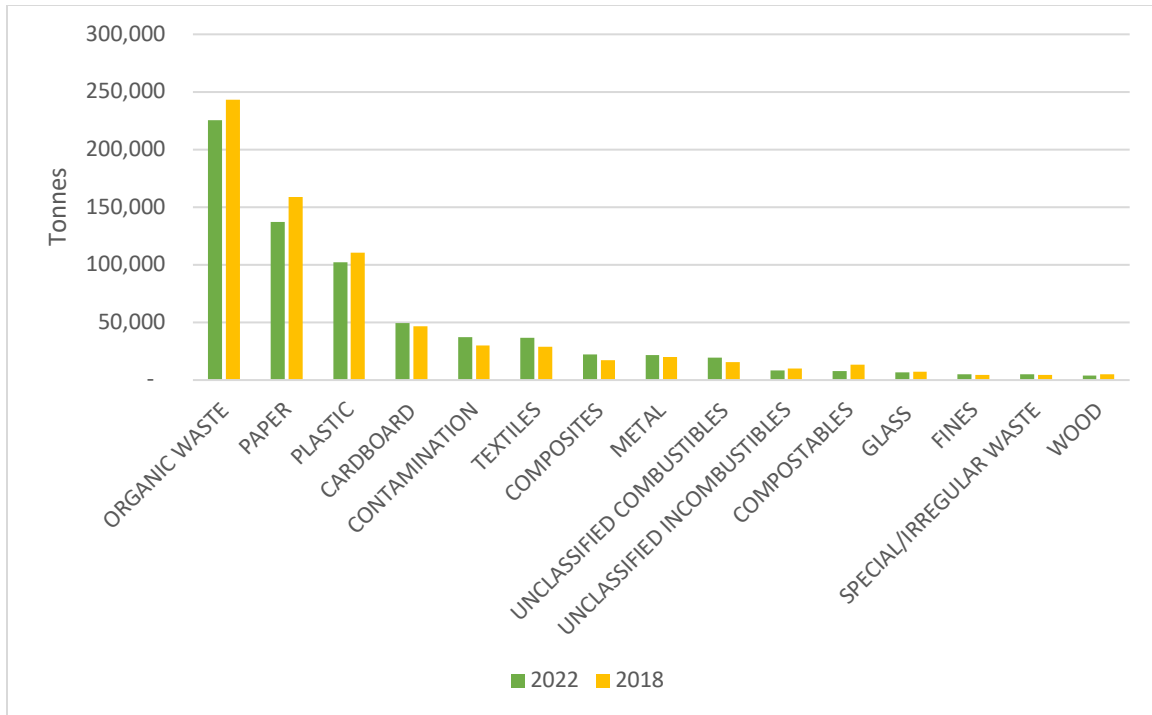
Figure 77: Comparison of national profiles of non-household kerbside collected waste from 2018 and 2022 based on tonnages

The main change was related to paper which decreased by 2.3%. A number of other materials also decreased with organics (-1.2%) and plastic (-0.6%) being the other changes of note. In terms of increases, textiles increased by 1.3%. This is likely related to the increase in incontinence wear and nappies which are more accurately reflected in the improved national profile used in this campaign. There were also small increases in the proportions of contamination (+1.3%), metals (+0.8%) and composites (0.7%).

When comparing the national results from 2018 with those from 2022 based on tonnes generated, the results are slightly different though, as the overall volume of non-household waste has decreased from 715,227 tonnes in 2018 to 687,900 in 2021, the differences shown in Figure 77 may or may not reflect any trends.

Of these differences between 2022 and 2018, the most significant changes occurred for:

- **Paper**, which decreased by 21,500 tonnes, was related to significant drops in magazines and glossies (-6,300 tonnes), tissue paper (-5,100 tonnes), office paper (-4,600 tonnes), and newspapers (-3,400 tonnes). These changes may be related to the shift to more 'working from home practices' which would contribute to the reduced office paper. Additionally, the drops in newspapers and magazines and glossies may be related to increased digitalisation.
- **Organics**, still the largest individual waste material in the national commercial waste decreased by over 17,500 tonnes. This was related to a reduction in overall food waste (-21,000 tonnes), though this decrease was offset by increases in vegetable oil (5,035 tonnes) and liquid wastes (3,600 tonnes).

- **Plastic wastes** decreased overall by 8,400 tonnes. This was due to reductions in plastic bags and films (-16,700 tonnes), unrecoverable plastic packaging (-3,100 tonnes) and PP packaging materials (-2,200 tonnes). These were offset by increases in other plastic non-packaging (+9,600 tonnes), PE packaging (2,500 tonnes) and other non-packaging plastics (2,000 tonnes)
- **Textiles** increased by 7,900 tonnes and, though this was mainly due to a significant increase in the proportion of nappies and incontinence wear (9.760 tonnes) it was offset somewhat by a decrease in textile packaging-based materials (-1,600 tonnes).
- **Contamination** (including moisture), which increased by 7,200 tonnes, was largely linked to the MRW stream with the levels of contamination in the MDR unchanged. At this time, it is not possible to determine whether this difference is attributable to a better dataset being used in 2022 and/or that there was a shift towards higher tonnages for materials with higher contamination percentages.
- The decrease in **compostables** (-5,600 tonnes) was mainly related to decreases within the MRW stream. This may indicate either an improvement in how these materials are being managed or a reduction in their overall use (and disposal).
- **Composites**, which increased by 4,900 tonnes, was related to increases in composite packaging and non-packaging materials (7,280 and 1,200 tonnes respectively and this was offset by a decrease in coffee cups by 3,670 tonnes)
- **Unclassified combustibles** decreased by 4,070 tonnes

5.5 Sectoral Breakdown

To get a better understanding of where wastes are arising from in the commercial sector, the estimated distribution of both MRW and MDR wastes, in tonnes, are shown in Figure 78. These show that the food service sector is the largest generator of waste followed by other retailers (non-food), food retail, offices and hotels. Please note that the sectors covered in this profile account for 78.6% of the total commercial municipal waste reported.

Additionally, as **food waste** is the most significant waste material produced by the commercial sector, the origins of this food waste were also extracted from the data, and these are shown in Figure 79. As expected, the food service industry is the largest producer of food waste followed by food retail, offices, hotels and fast food. It is important to note that these figures are for the MRW and MDR waste streams only and do not include separately collected organic waste (kerbside brown bin or other separate food waste collection service).
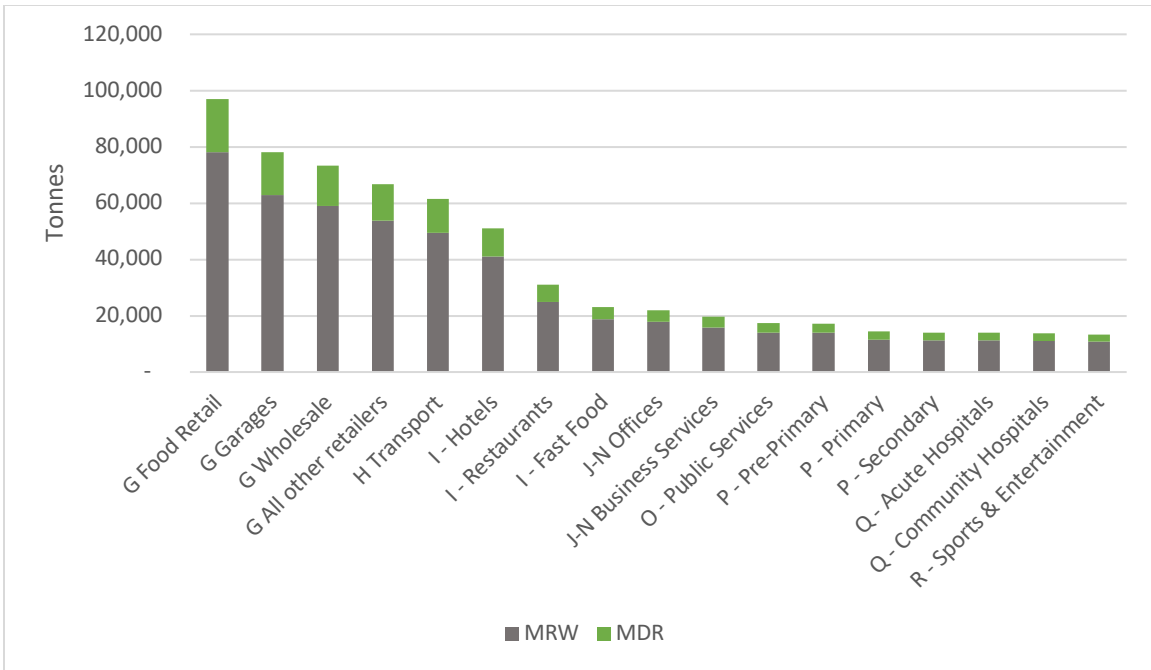
Figure 78: Weight of municipal waste (both MRW and MDR) produced by the different commercial sectors in Ireland
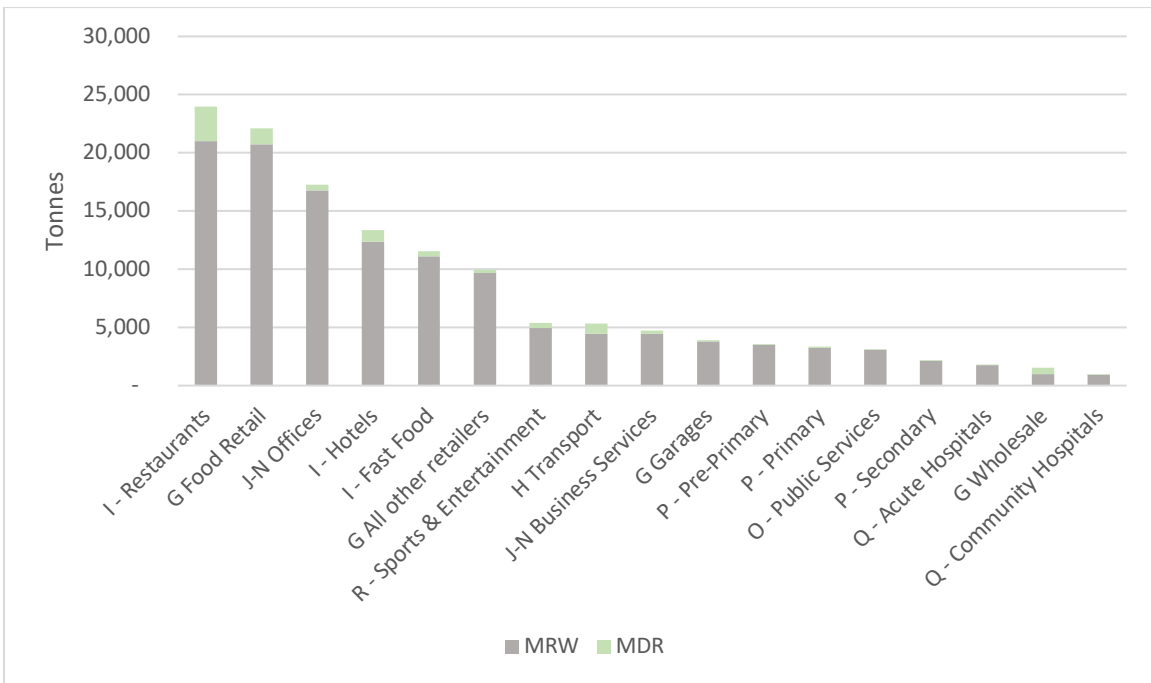
Figure 79: Weight of food waste (both MRW and MDR) produced by the different commercial sectors in Ireland

5.6 Single Use Plastics (SUPs)

This is the first time that Single Use Plastics were looked at specifically as part of a national waste characterisation campaign. The following Table outlines the full list of SUPs that were examined as a material sub-set during this campaign.

Table 50: Single Use Plastic materials assessed during waste characterisation campaign 2022

SUP Category	LOW CODE	Primary sub-categories Description
Composite Cups	15 01 02	Cups for beverages, including their covers and lids (packaging)
Other Composites	15 01 02	Beverage cartons (packaging)
		Other composites (packaging)
		Other composites (non- packaging)
Plastic Bottles	15 01 02	PET packaging bottles including their lids
		PE plastic packaging bottles including their lids
		PP plastic packaging bottles including their lids
		Other plastic packaging bottles including their lids
Plastic SUPs	20 01 39	PET packaging containers (other than bottles and lids) including their covers.
		PE packaging containers (other than bottles and lids) including their covers.
		PP packaging containers (other than bottles and lids) including their covers.
		PET cups and other containers non-packaging, including their covers and lids
	15 01 02	PE cups and other containers non-packaging, including their covers and lids
		PP cups and other containers non-packaging, including their covers and lids
	20 01 39	Styrofoam and EPS (non-packaging)
PS SUPs	15 01 02	Styrofoam and EPS (packaging)
Plastic Bags and films	15 01 02	Supermarket bags, plastic bags and films, wrappers, including compostable bags (packaging)
Other Plastics	15 01 02	Other plastic, including packaging containers (other than bottles, including compostable (packaging)
	20 01 39	Other plastic, including non-packaging cups and other containers, including compostable (non-packaging)
		Unrecoverable Plastic Pac

As this was the first time SUPs were examined at part of the NHMWC, only the 2022 results could be used in their calculation. The process by which the proportion of SUPs produced nationally was estimated is as follows:

- The profiles developed during 2022 only were applied to the estimated weights of municipal waste produced by each sector
- From this a weight based national profile was produced which provided weights for all the individual materials, including all SUPs noted in Table 50
- The 2022 contamination factors (see Section 4) were applied to these weights to allow the generation of a corrected weight-based national profile
- These weights were then used to produce a percentage based national profile from which the relative contribution of the SUP materials was extracted

Based on this methodology, the following results were generated.

5.6.1   Single Use Plastics (SUPs) in MRW

The proportion of primary category SUPs in the MRW from the 2022 results are given in Table 51 and graphically shown in Figure 80. In total, these materials accounted for 19.3% of the national total.

Table 51: Proportion of primary SUP categories found in the 2022 MRW national waste characterisation results

Primary SUP Categories	Relative %
Other plastic	8.8%
Plastic bottles	3.9%
Plastic SUPs	2.4%
Other Composites	2.0%
Composite Cups	1.1%
Plastic bags and films	0.9%
PS SUPs	0.2%
Total	**19.3%**
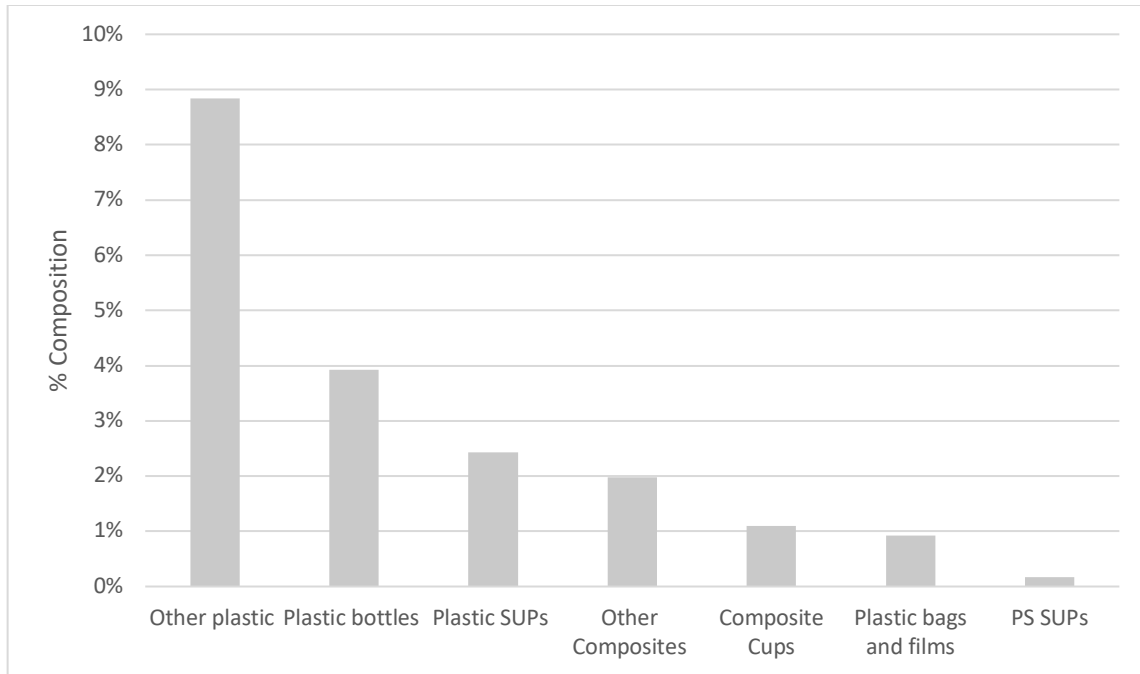
Figure 80: Percentage of primary SUP categories found in the 2022 MRW national waste characterisation results

Other plastic SUPs (8.8%) were the largest SUP category found in the national waste profile. This included 5.8% of non-packaging plastics and 2.8% of other plastic packaging materials.

Plastic bottles (3.9%) was largely made up of PET bottles (2.3%) and PE bottles (1.5%).

Plastic SUPs (PET, PP and PE packaging and non-packaging containers and cups) amounted to 2.5%. The largest contributors to this were PP packaging containers (1.0%), PET packaging containers (0.8%) and PE packaging containers (0.5%).

Other composites (2.0%) was mainly made up of packaging materials (1.3%) and beverage cartons (0.6%).

Composite cups for hot beverages amounted to 1.1% of the total with plastic bags and films (0.9%) and PS SUPs (0.2%) present in low relative proportions.

5.6.2   Single Use Plastics (SUPs) in MDR

The proportion of primary category SUPs in the MDR from the 2022 results are given in Table 52 and graphically shown in Figure 81. In total, these materials accounted for 22.9% of the national total municipal MDR materials managed nationally.

Table 52: Percentage of primary SUP categories (based on weight based proportion) found in the 2022 MDR national waste characterisation results

Primary SUP Categories	Relative %
Other plastic	9.4%
Plastic bottles	4.9%
Plastic SUPs	3.1%
Other Composites	2.1%
Composite Cups	1.6%
Plastic bags and films	1.5%
PS SUPs	0.4%
Total	**22.9%**
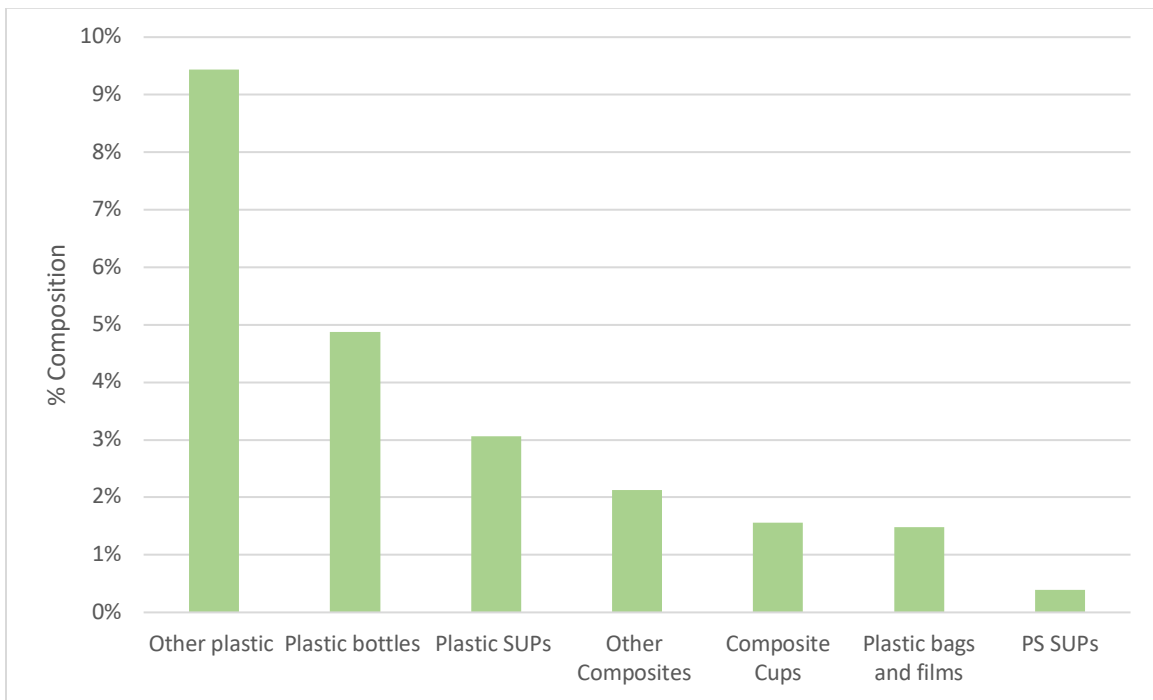
Figure 81: Proportion of primary SUP categories found in the 2022 MDR national waste characterisation results

As with the MRW, Other plastic SUPs (9.4%) were the largest primary SUP category found in the national MDR waste profile. This included 5.0% of other plastic packaging materials and 3.9% non-packaging plastics.

Plastic bottles (4.9%) was made up of PET bottles (2.6%) and PE bottles (2.2%).

Of the Plastic SUPs (3.1%) the largest contributors were PP packaging containers (0.9%), PE packaging containers (0.9%) and PET packaging containers (0.8%).

Other composites (2.1%) was made up of non-packaging materials (0.8%%), beverage cartons (0.7%) and packaging materials (0.6%).

Composite cups for hot beverages amounted to 1.6% of the total with plastic bags and films (1.5%) and PS SUPs (0.4%) present in low relative proportions.

5.6.3 Comparison of Single Use Plastics (SUPs) in MRW and MDR

To estimate the weight of SUPs in the national non-household municipal waste, the relative proportions of the SUPs identified in the preceding sections were applied to the total MRW and MDR waste collected (which was 505,135 and 122,741 tonnes respectively). These results are presented in Table 53 and shown graphically in Figure 82.

Table 53: Weight (tonnes) of primary SUP categories estimated for the 2022 MRW and MDR national waste characterisation results

Primary SUP Categories	MRW (%)	MRW (tonnes)	MDR (%)	MDR (tonnes)	Total (tonnes)
Other plastic	8.8%	44,658	9.4%	11,586	56,244
Plastic bottles	3.9%	19,799	4.9%	5,983	25,782
Plastic SUPs	2.4%	12,255	3.1%	3,763	16,019
Other Composites	2.0%	9,980	2.1%	2,609	12,589
Composite Cups	1.1%	5,522	1.6%	1,913	7,434
Plastic bags and films	0.9%	4,654	1.5%	1,823	6,477
PS SUPs	0.2%	858	0.4%	477	1,335
Total	**19.3%**	**97,725**	**22.9%**	**28,154**	**125,879**
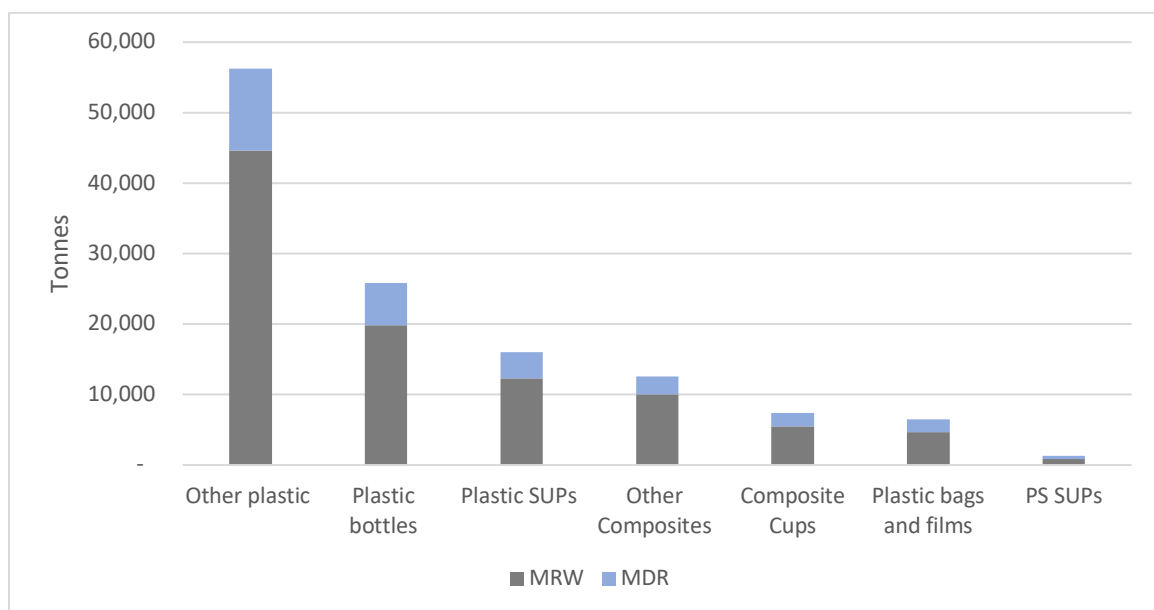
Figure 82: Volume of SUPs (tonnes) in the national MRW and MDR waste streams

Though the relative proportions of SUPs in each waste stream are relatively similar, the significantly larger volume of MRW results in much more SUP, by weight, being present in the MRW than MDR stream. In total SUPs account for an estimated 18.3% of the total municipal waste, or 125,880 tonnes.

5.7 Other Special Interest Materials

In addition to examining SUPs for the first time, a number of materials of special interest were also assessed. These were chosen based on the experiences of encountering such materials during the 2018 campaign (e.g. coffee pods) or the potential strategic policy importance from a materials perspective (e.g. compostables) or a potential infrastructural perspective (e.g. milk containers that could benefit from a return scheme).

The full list of materials, along with their relative percentage proportions and scaled up weights (tonnes) are given in Table 54 and shown graphically in Figure 83.

Table 54: Weight (tonnes) of special interest materials estimated for the 2022 MRW and MDR national waste characterisation results

Special Interest Materials	MRW (%)	MRW (tonnes)	MDR (%)	MDR (tonnes)	Total (tonnes)
Beverage Cups*	1.37%	6,879	1.71%	2,013	9,006
Milk bottles (PE)	1.27%	6,415	2.00%	2,455	8,870
Compostables *	1.60%	8,082	0.50%	614	8,696
Shrink wrap	0.10%	505	0.40%	491	996
Milk cartons	0.10%	505	0.20%	245	751
Cardboard Delivery Packaging	0.02%	107	0.50%	619	726
Coffee pods	0.10%	505	0.03%	37	542
Washing up bottles	0.10%	505	0.00%	0	505
Total*		23,503		6,474	28,403

* – Please note that compostable cups have been included in both Beverage Cups and Compostables though they have only been counted once in the results presented here. The weight of compostable cups in the MRW and MDR is 1,359 and 216 tonnes respectively.
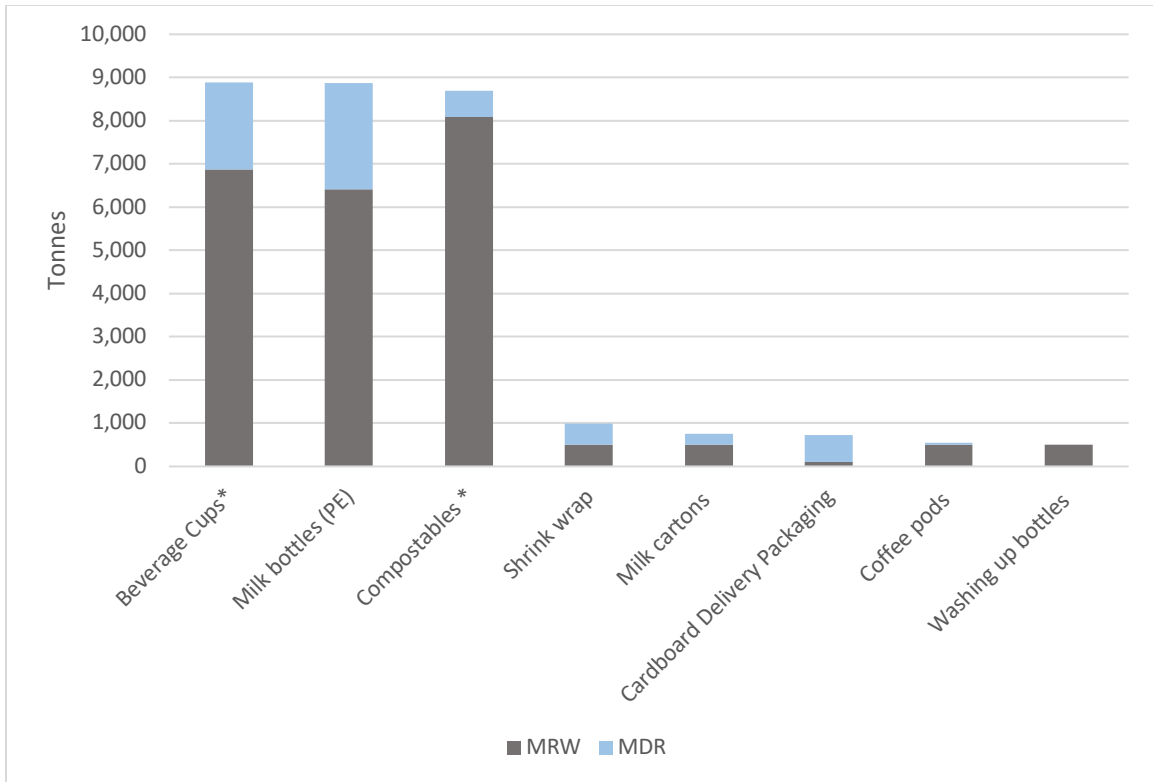
Figure 83: Special interest materials (tonnes) in the national MRW and MDR waste streams

Of the target materials, the single largest stream was related to **milk bottles** (~9,000 tonnes) and **milk cartons** (1,200 tonnes).

Disposable beverage cups (including compostables) was the next largest of the target materials. These amounted to ~9,000 tonnes nationally.

Compostables, mentioned earlier, is another significant target material (~8,300 tonnes).

There were an estimated 505 tonnes of **Coffee pods** found. Based on an average weight of 16.5 gms (based on an average between the weights assessed during this campaign (13 gms) and nationally reported weight of 20gms[12]) this equates to an estimated 30,606,000 pods arising in the municipal waste from the commercial sector.

5.8 Special wastes including hazardous wastes

Special Wastes are waste materials that should not be placed in kerbside collection bins (e.g. hazardous wastes) and instead should be segregated and managed through alternative collection systems such as Civic Amenity Sites, Bring Centres or through dedicated waste material collections (e.g. textiles, batteries, WEEE). While many businesses have dedicated facilities for certain waste materials (e.g. fluorescent lights) there is a lack of a consistent approach to these materials across

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[12] https://www.newstalk.com/news/over-56-billion-coffee-capsules-to-go-to-landfill-this-year-492445

the commercial sector resulting in an estimated 4,700 tonnes disposed of incorrectly through the municipal waste collection services (with 95% present in the MRW stream).

Table 55 provides the weight based volumes of these materials found in the three municipal waste streams in 2022. As can be seen, electrical equipment and medicines made up the majority of the total weight identified. These results are presented graphically in Figure 84.

Table 55: Weight (tonnes) of special wastes, which includes hazardous waste, for the three municipal waste streams in 2022

Special Interest Materials	MRW (tonnes)	MDR (tonnes)	OW (tonnes)	Total (tonnes)
Electrical Equipment	1,742	39	-	1,782
Medicines	1,642	11	-	1,653
Aerosols	527	93	5	626
Waste Chemicals	275	31	-	306
Paint	168	1	-	169
Batteries	92	38	-	130
Fluorescent Bulbs	75	3	-	78
Waste Mineral Oil	2	-	-	2
Total	**4,523**	**216**	**5**	**4,744**
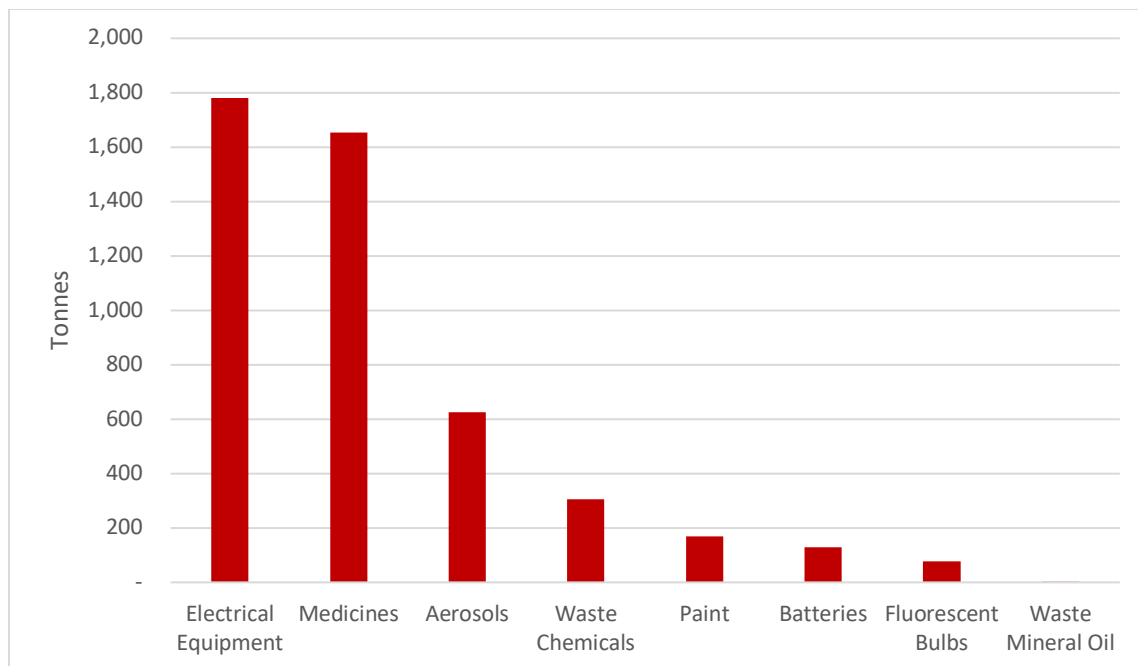
Figure 84: Special wastes, which includes hazardous waste, in the national commercial municipal waste stream in 2022

6 Discussion and Recommendations

The EPA is responsible for producing national statistics on waste generation and management, as well as leading the National Circular Economy Programme. Accurate and up-to-date information on the nature and composition of Ireland's waste can, and should, be used constructively to inform national waste and circular economy policy, identify infrastructure planning and regulatory and enforcement activities, design intervention and support initiatives, establish and track targets and communicate options to improve Irish households and businesses' waste management performance.

The profile of waste changes over time in response to changes in economic activities, production/consumption patterns and behaviours, evolving waste management practices and policy measures and interventions. These fluctuations mean that regular waste characterisation surveys are essential to aid understanding and allow accurate reporting on the generation and management of waste in Ireland. In addition, new statutory targets and reporting obligations arising from the EU's Circular Economy Package bring extra requirements for waste characterisation, including information on single-use plastics, food waste, the re-use of second-hand products including textiles, furniture, WEEE and construction materials. Regular waste characterisations also allow tracking of waste quantities and measuring the impact of interventions, such as for waste prevention, on specific waste types.

To inform future areas of work, and further develop the national non-household characterisation methodology, a series of observations and recommendations, based on the experiences of the project team in both the gathering of required information, as well as applying the methodology in practice, are outlined in the following sections.

6.1 National Results – discussion and recommendations

38 waste surveys were carried out during this campaign across a range of NACE sectors and from a diverse variety of businesses in terms of their size, waste management systems and underlying ethos when it comes to waste. While the results outlined in Chapter 5 indicate that some small improvements have been made nationally, it is clear that the commercial sector is still far from achieving the targets that we have committed to nationally. With the ever-growing appreciation of the work that we all need to do to mitigate the impacts of climate change, it is important that the on-the-ground observations gained through doing 38 site visits carried out are collated and used constructively. Through developing a better understanding of the common issues that lead to the poor waste segregation levels that are evident from the results, policy and practical solutions can developed.

Some of the main observations relating to the results and onsite work are collated here and presented in Table 56.

Table 56: Discussion on some of the key issues relating to the results of the 2022 non-household municipal waste campaign

Campaign Aspect	Observation	Comments & Recommendations
Overall National Waste Results	Poor segregation of waste is still very common across all businesses sectors and this is reflected in the national data which identifies that MRW currently accounts for 73% of the total municipal non-household waste collected.	The results, and their relative similarity with those from 2018, paint a bleak picture. However, there is significant scope for improvement and, with improved practices, the current high level of MRW could be reduced to 21% of the total. This would entail a potential increase in OW from its current level of 9% of the total to 39% and MDR increasing from 18% to 36%. **Recommendation:** National communication and support/enforcement programmes should use these results to target improved segregation. The recent incentivised waste collection charges for the commercial sector that reward waste segregation and waste reduction will assist in this regard. However, as different sectors have different waste issues, future initiatives should target **specific materials** within the **different sectors**, and be coordinated across key stakeholders, including waste collectors. Additionally, these results can assist to improve compliance, especially through targeting enforcement of the food waste regulations that require specified producers to use a segregated collection service for food waste.
Organic Wastes	Organic wastes are still the most significant waste material in the non-household waste municipal stream - in businesses with and without BB services. Organic wastes are typically heavy and consistently found in both the MRW and MDR streams. These materials contribute significantly to the overall weight of wastes managed as well as having significant climate impacts.	The high levels of organic wastes are mainly related to food waste and these are found in businesses with and without separate food collection services. In those with brown bins, this high level of food waste is down to poor segregation practices whereas in businesses that don't have brown bin services (e.g. offices with kitchenettes), there are no consistent alternatives other than the general waste bins (though some sites compost their organic waste on-site, these are not very common). Additionally, large quantities of residual liquids left in bottles and cups (17,200 tonnes across all three waste collection routes) are contributing to the organic waste issue. **Recommendations:**

Campaign Aspect	Observation	Comments & Recommendations
		The new regulations for incentivised waste collection charging require all waste collectors to provide **OW (brown) bins to all commercial customers**. While the food waste regulations already require major commercial producers of food waste to segregate all food waste, there are those businesses outside the remit of the regulations. In order to reduce the volumes of food waste disposed of in the wrong bins nationally, all businesses, regardless of regulatory requirements, should be encouraged to **separate food waste** as a key climate action that they can take.

A communication campaign on **emptying residual liquids** from bottles and cups before disposal should be considered.

Though there are regulatory requirements, **on-site composting/biodigesters** should be considered as part of an integrated solution, particularly in the absence of food waste collection services. |
| Waste Segregation (external waste management areas) | Poor segregation issues appear to be related to both the internal and external waste management services. External bins and waste management areas are often poorly managed with different coloured bins being used for the same waste streams, inconsistent and a lack of signage on the bins (often new ones next/on top of older ones), difficulties accessing bins, a lack of or broken lids (leading to rain wetting wastes and increasing contamination and moisture levels) and disordered placement of the bins once they had been collected. | While significant effort typically goes into the provision of good internal bin services in businesses, without a properly designed and accessible waste management area, good segregation will continue to be an issue, regardless of what is happening within businesses.

Recommendations:

A well designed external waste management area should consider the following:

- Bin colours and signs – have all MRW, MDR and OW bins a **consistent colour with the same bin signs** (these should align with signage used internally)
- Bin positioning – ensure that MRW, MDR and OW bins are always **kept together and in the same place** after the waste has been collected. Having bin signs on the wall above bins helps this process
- Accessibility – make sure that **all bins** are **easily accessible**. If some bins are difficult to access then wastes usually go in the easiest to access bin, regardless of what the bin is
- Ensure that all bins **have lids that are not broken**. With the amount of rain we traditionally get in Ireland broken or non-existent bin lids contributes to contamination and moisture levels |

Campaign Aspect	Observation	Comments & Recommendations
		Better engagement between waste collectors and business on improvements to internal and external waste management services is recommend to support better source segregation of waste materials.
Waste Segregation (internal waste management services)	Internal segregation practices across the board were poor. In certain instances this was down to human behaviour and in others it was down to poor internal infrastructure, including the lack of appropriate bins and bin signage.	While segregation internally in businesses was, in general poor, in certain sectors (e.g. hospital sector) segregation was good. In this instance, these good practices may be related to the continual provision of awareness and staff training in relation to infection control. This, in the first instance, requires good segregation at source but within the health sector there is now an established expectation of high standards when it comes to the segregation of, in particular, risk materials. Additionally, with the provision of well signed bins and consideration of correct bin placement, the approach taken by the HSE shows that high levels of segregation are possible in businesses.

Recommendations:

Training of all staff, including cleaning staff, should be carried out regularly. Every business is different and with the changes in materials that are acceptable to different waste collectors, regularly updating staff on the complete waste management system is crucial. This is especially important for cleaning staff where turnover can occur more frequently.

Staff in businesses still seem confused about what to segregate into which bins. **Mywaste.ie/business** assets are good but generic and at times contain more or less materials than individual businesses (or areas within a business) need. This could be addressed through a responsive online system that allows tailoring these.

Clear bags are now much more frequently used than they used to be. This is an improvement on the traditional black bags as it allows people to see what's in the waste bags. However, the **use of clear bags for both MRW and MDR can cause problems** as the wastes can often look similar which leads to confusion when disposing of in the external bins. Colour coding of bin bags for the internal MRW and MDR bins would make segregation practices more streamlined with less chances of contamination externally. |

Campaign Aspect	Observation	Comments & Recommendations
Specific waste materials	The results of this national waste campaign are based on combining large sets of data from multiple businesses with national statistics and information provided by waste collectors. The results are typically viewed from a high level but there are, within the data, material specific observations that can be used to reduce our wastes and improve the volume of materials reused.	Through examining the national results, and compiling associated observations from the on-site surveys, the project team identified a number of material specific areas for consideration. An area that should be addressed is the volume of **liquid wastes in bottles and cups**. This impacts both MRW and MDR streams and nationally amounts to ~17,200 tonnes. In many instances these could and should be drained before being disposed of. The project team encountered many **different types of coffee cups** during the different surveys. Some were compostable (with and without plastic), others biodegradable and, regardless of what the cup was made of, the lids usually were a different material. With the introduction of the latte levy it is hoped that the number of coffee cups used will decrease. However, consistency in the materials they are composed of would also help. Hazardous wastes accounted for 4,700 tonnes of the overall national commercial waste generated in 2022. This was largely made up of waste electrical equipment (38% of these wastes) and medicines (35%). The **increased use of compostable materials**, especially in certain businesses and scenarios, is positive. However, some of the materials encountered during the surveys are not always fully compostable (e.g. compostable container with plastic lids) and, notwithstanding their intended use, the majority of these materials were found in the MRW waste stream. There needs to be consideration of how best to use compostables in different settings (e.g. events and festival compared with day-to-day services). This should ensure consistency in terms of the compostables but also access to organic waste collection services and the environmental benefits of composting specific materials.
SUPs	In response to the EU's Directive on Single Use Plastics, different measures are being taken with these, ideally being tailored to get the most effective results. As this is the first time that Single Use Plastics	It was estimated that 125,880 tonnes of SUPs (18.3% of the total commercial municipal waste) generated with the majority found in the MDR stream. The main materials found were: • Other plastics items which included both packaging and non-packaging (56,200 tonnes) • Plastic bottles made of PET, PP, PE and other plastics (25,780 tonnes) • SUP materials (including packaging containers (other than bottles and lids) and non-

Campaign Aspect	Observation	Comments & Recommendations
	were looked at specifically as part of a national waste characterisation campaign, they provide an important starting point from which to target proportionate national actions.	packaging containers and cups) made of PET, PP, PE and other plastics (16,020 tonnes) • Composite beverage containers as well as packaging and non-packaging items (12,590 tonnes) **Recommendations:** A shift towards sustainable packaging, including reusable items and items with high recyclable content to replace SUP needs to be accelerated. Implementation and monitoring (of the impact) of eco fee modulation by the national compliance scheme for the production of high-quality recyclable plastic packaging including setting recycling subsidies to incentivise the collection of plastic packaging and improve the recycling rates needs to be in place. The potential for fiscal measures to incentivise increased manufacturing and use of reusable plastic packaging and other packaging products also needs examining.
Special interest Materials	As with SUPs, a number of materials of special interest were assessed for the first time during this campaign. These were identified based on their presence during the 2018 campaign (e.g. coffee pods) or the potential strategic policy importance from a materials perspective (e.g. compostables) or an potential infrastructural perspective (e.g. milk containers that could benefit from a return scheme).	Of the target materials, the single largest stream was related to **milk bottles** (~9,000 tonnes) and **milk cartons** (750 tonnes). While the use of returnable milk bottles, once ubiquitous in Ireland, has been growing on small scale local levels, there is certainly potential in the commercial industry where daily deliveries are common. **Disposable beverage cups** (including compostables) were the next largest of the target materials. These amounted to ~9,000 tonnes nationally. With the growth in reusable cups schemes (within businesses and geographic areas) this is a material stream that could be reduced. **Compostables**, mentioned earlier, is another significant target material (~8,700 tonnes). The use of compostables in situations where they are the best option and end up in the brown bin stream (e.g. events, food service, festivals) seems to make sense. However, with the majority of these ending up in the MRW stream, the question remains whether these are really the best option in every day settings as they are still a single use item?

Though the overall volumes of commercial waste has reduced since 2018, it is important to note that MRW waste increased marginally and, importantly, MDR and OW volumes have decreased. Allied to the fact that poor segregation of waste is still very common, it is clear that the commercial sector is still far from achieving the targets committed to, nationally and internationally.

The recommendations in this report aim to provide insights on practical solutions to improve waste segregation levels, reduce contamination and improve Ireland's recycling rates. However, for these to be effective a concerted effort, with appropriate supports, interventions, incentives, and enforcement is required.

6.2 National Methodology – discussion and recommendations

To get accurate information on waste, an effective and transparent methodology is required for the characterisation of household and non-household (commercial) waste streams. The methodology now used by Ireland to generate its non-household waste statistics should be considered as international best practice. The Irish methodology was the first to deviate from the traditional coning and quartering technique that is used effectively for the relatively homogenous household characterisations. Due to the varied types of waste generated within commerce (e.g., the wastes coming from a large hospital will be very different to that coming from a retail unit, a school or an office block) and the disparate nature of the commercial sector (i.e. the difficulty in getting a large load of waste just from the hotel sector), the traditional coning and quartering approach was not considered appropriate. Hence the sector-specific approach first developed in 2001 is retained to this day, though the methodology applied in this campaign is significantly different from that first applied in 2002.

However, as national waste characterisation is an inexact science, it is imperative that a critical assessment and consideration of each step of the process is carried out at the end of any given campaign. Through applying such experiences we can ensure that our national methodology continuously evolves leading to more accurate and comprehensive waste data. This is reflected in the fact that even since the 2018 campaign a number of changes have even been implemented – in terms of determining the sectoral sizes and the combination of different datasets from different campaigns.

Table 57 provides a series of insights and recommendations based on the overall project teams (which includes the EPA and CTC) experiences from this campaign – from sectoral data through to data management.

Table 57: Overview of main challenges encountered and comments & recommendations for future work

Campaign Aspect	Challenge identified in 2018	Comments & Recommendations
National Waste Data	To generate an accurate national waste profile, accurate sectoral information is needed from waste collectors. It was one of the most challenging aspects of the work in 2018.	In 2020 a study was commissioned by the EPA that developed a consistent NACE sectoral list based on input from the waste industry. This was then used to collate data from national waste collectors to provide more granular NACE sectoral data. This information was crucial in identifying the sectors for study during this campaign as well as for the scale-up process. **Recommendation:** The sectoral breakdowns provided by waste collectors considered municipal waste as a whole and did not differentiate between MRW, MDR and organic waste. This should be addressed in future work.
Recruiting Businesses	To address the challenge of recruiting many businesses from the same sector, combine data from different campaigns. This will allow different sectors to be targeted and should reduce the work-load involved in recruiting such a high number of businesses.	This approach was applied during this campaign and, while recruitment was easier for some sectors where strong links existed (e.g. healthcare) or where aided by Steering Committee members, RWMOs and local authority officers, recruitment of businesses was still hugely challenging. For example, it took over 2 months of engagement with various contacts to get just 2 fast food outlets. **Recommendation:** Though there is a significant financial value associated with the waste surveys offered, and the reports that are produced for the businesses, recruitment was still difficult. Consider advertising these through select channels and through specific stakeholders.
Survey Planning	In order to ensure that all requirements are met it is best to visit the site prior to surveying. During this pre-visit make sure that there will be sufficient waste to work with and that the day chosen does not conflict with waste management collection.	Having gone through the 2018 campaign, the CTC team has refined the method by which surveys are organised, conducted and the reports developed.

Campaign Aspect	Challenge identified in 2018	Comments & Recommendations
Business Data	To generate sectoral factors, accurate waste data from businesses for a set period of time are required. This is also useful for producing reports and a better understanding of the challenges businesses encounter. To ensure access to this information, require one month's worth of data, prior to doing the surveys.	While technically this may work if there was a demand for the surveys, the approach taken during this campaign didn't lend itself to such an approach. With 38 surveys to organise, conduct and report on in a year, it just wasn't feasible to demand these data in advance. **Recommendation:** if the waste surveys were advertised as a free service, or as part of an existing programme, and submitting some data in advance was required, then this approach may work. Offering this service through, for example, the IWMA or other waste industry stakeholders, may also be an approach worth exploring.
Waste Management Systems	Because of the variation in waste services provided, it can be difficult to compare and contrast different bin systems (e.g. 2 or 3 bin systems). The waste from the sector should therefore be considered as a whole, though reporting on 2 and 3 bin systems, where feasible should be considered.	One of the biggest challenges in recruiting businesses in 2018 was trying to identify classic 2 and 3-bin systems. During this campaign, it was only the sectors required that influenced recruitment. This certainly made getting businesses for surveys easier. **Recommendation:** The waste surveys provide an excellent opportunity to potentially gather qualitative information from the businesses. If waste surveys were to be offered for free then including a qualitative questionnaire should be considered to gather information about perceptions, waste management services, business needs, etc.
Waste Categories	It is important that before any subsequent surveys, a thorough analysis of important waste categories be carried out to take into account recent changes in materials used or materials of national interest (e.g. nappies or coffee cups). These will likely be different for the household and non-household sectors.	This process was carried out for this campaign and, with both materials of special interest and SUPs, the original material list of 51 increased to 81. While this provides much more detailed information that can be used for subsequent statutory reporting obligations communication and policy influence, it proved very challenging to merge the datasets from 2018 and 2022 into the live and continuously updating database that was envisaged. **Recommendation:** It is likely that the materials included in future campaigns will continue to change. Having experienced the challenge of combining different datasets, it is important that the data combination

Campaign Aspect	Challenge identified in 2018	Comments & Recommendations
		methodology applied during this campaign is considered in advance should further changes occur prior to future campaigns.
Regular updating of the information	More regular surveying, with less businesses required, will facilitate the ongoing development of a non-household model. Because of how the new methodology works, including new data input into the final model, the results will be easier to produce and more statistically valid.	This was the approach applied during this work and it led to a more evolved and statistically accurate national profile which accounts for the types and origins of commercial waste from more sectors than in 2018. Therefore, it should be seen as more accurate than in 2018. Consequently, direct comparisons between the profiles need to be considered with this in mind. **Recommendation:** Continue to build on the database developed to this point, though with considered thought on how best to merge datasets.
Communication of sectoral results		A significant amount of work goes into the sectoral profiles that underpin the development of the national waste profile. These data are used at times for other purposes but, in general, they are not used constructively for sectoral based waste prevention/improvement based communications. One example of their use is the recent development of the waste hospitality factsheets by CTC on behalf of the EPA. An approach similar to this one should be considered for all the subsectors covered by this report.

Appendices

Appendix 1: Non-household Waste Characterisation Survey Method

1. Overview

The methodology for the commercial waste assessments is in accordance with the updated 2015 methodology[13]. Similar to the previous methodology this includes contacting management in advance, scheduling survey work to ensure sufficient waste is available, informing on-site staff in advance, selecting an appropriate survey location on-site and then the actual assessment of waste.

However, in previous studies 4-5 days were spent on-site in order to ensure that a full week's worth of waste was captured and analysed. This methodology involves spending just one day on site. One-day waste surveys are challenging so the communication with the business prior to visiting will be important. Also, it is recommended that two or three surveys are carried out together in a single geographical area. This will allow time to be spent at a number of sites, if required, over a number of days. While more difficult to organise, it will provide the project team the opportunity to re-visit sites to ensure sufficient data is recorded at each site.

2. Waste Volume Requirements

The new methodology requires that at least 100m^3 of unbagged waste should be analysed for the non-household sector in total. Based on 38 site surveys then the sample size for each should be at least 2 m^3 of unbagged waste to satisfy the 100 m^3 criterion.

Based on previous experience it has been found that approximately four 1100 litre wheelie bins of bagged waste is equivalent to two 1100 litre wheelie bins (i.e. 2m3) of unbagged waste. The four bins may be two each of MDR and MSW, or a different proportion depending upon the output from the premises. This is an important minimum requirement as it ensures that businesses producing very small volumes of waste do not skew results.

If there is a significant volume of waste (>four 1100 bins of bagged waste) then random sampling will be required. The revised methodology recommends that waste samples are lined up, numbered and, using a simple random sampling method, an appropriate number taken to satisfy the requirement.

Each waste sub-sample is taken as a minimum of 5kgs. If a bag of waste is less than 5kgs then it should be added to another (or others) until the combined weight is at least 5kgs.

Note: *Depending on the volumes of waste generated, the project team will always endeavour to analyse as much waste as possible.*

3. Before the Survey Begins

Before beginning the waste characterisation survey there are a number of tasks that need to be conducted. These are outlined below:

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[13] Updated Methodology for the Characterisation of Non-household Municipal Solid Waste in Ireland, CTC, 2015

1. **Contact management** of the enterprise whose waste is to be characterised. It is essential that management commitment is given to the waste characterisation study, so that necessary resources are assigned during the study period and relevant background information is provided. This can take some time to organise.

2. **Background information:** Prior to visiting each site as much background information on the business as well as waste generation volumes and patterns should be gathered. These would typically include all or some of the following, as relevant:

   - Days of collection of the different waste streams (so survey dates can be planned)

   - Type and number of waste management receptacles for the different waste streams

   - Annual mixed residual waste volumes/weights.

   - Mixed dry recyclable volumes/weights (ideally 1 year, minimum 3 months)

   - Separately collected fraction volumes/weights (e.g. cardboard, plastic film, organics, glass)

   - Number of employees (full time equivalent)

   - Other sector specific information (bed-nights, covers, etc.)

   This information will be used to plan the different surveys and, where appropriate, will be used to generate sectoral factors for the different businesses visited.

3. **Schedule** the waste characterisation survey period:

   - Arrange to conduct the waste characterisation study during **typical business activities/operations**. Avoid scheduling the survey on or around any special events that would produce wastes not representative of a normal workday/workweek. For example, surveys should not be conducted during bank holidays, Christmas, Easter or public holidays (or special orders in the case of industry).

   - Make sure that the surveys are conducted when there is sufficient waste. This will need to take into account **when waste is collected** by waste collectors, the numbers of bins on site and quantity of waste generated daily. Depending on dates it may be necessary for waste collection to be postponed.

4. **Inform relevant staff** of any requirements from them during the waste characterisation survey. They may be required to segregate waste, label waste arisings, put waste into separate containers, etc.

   - With the introduction of the brown bin the largest 'wet' contaminant should now be separated from the municipal and recyclable streams. However, in businesses where organics segregation is not occurring, this should be encouraged, as it will make the subsequent waste characterisation easier and more accurate. In addition, this can be used to encourage businesses to then comply with legislative requirements. If there is no brown bin in use, and the business then segregates the organic waste for the purpose of the surveys, ensure this waste is included in the mixed solid waste and not recorded as a separate waste.

   - Staff should be discouraged from disposing of non-routine waste during the course of the study, for example, stockpiled electronic waste, office clear-outs, etc.

5. If there is a serviced canteen on-site (i.e. providing hot food meals rather than a kitchenette) then this should be treated as a separate area. The waste from canteens will be analysed separately as such businesses are classed as a type of restaurant. If there are such facilities then the waste from this area will need to be separated by on-site staff prior to the assessment.

6. **Select a central 'waste collection area'** where all waste arisings can be collected, sorted, weighed, and characterised for the duration of the waste characterisation study. A parking garage, shipping area or other large flat area is preferable. This area should be covered, if possible, to provide shelter from adverse weather conditions. In case of nearby traffic, ensure that the area is secured using bollards.

7. **Gather the necessary equipment** to aid in the waste characterisation survey.

    - The main items required for the waste characterisation are the following:

        - **Weighing scales**. In order to weigh wheelie bins a flat one with a wide base capable of measuring up to 150kg will be required. Depending on the accuracy of this, another may be needed for weighing the sample fractions (with a range from 0 to 35+kg, with accuracy to 0.01kgs)

        - **Containers** for holding and sorting the waste. These should be made of a durable plastic, all the same type, in order to ensure that the tare weight is the same and stack easily.

        - **A clipboard, labels, pens and worksheets**. Several copies of the 'Waste Collection Worksheets' should be on hand for each survey.

        - **A sorting table** of at least 1.5m by 0.5m.

        - **A gazebo** for covering the sorting area if the weather is inclement.

        - **Shovel, a yard brush, a first aid kit, extra plastic bags, cable ties and a Stanley knife.**

        - **PPE – gloves and overalls as appropriate**

8. **Health and safety issues** should be considered at all times. All members of the waste characterisation team should wear protective clothing (such as rubber gloves, heavy duty shoes, safety glasses and coveralls) and precautions should be taken to ensure that the waste does not come into contact with food or drink. It is advisable that staff are appropriately inoculated and aware of manual handling issues, especially for heavy streams like brown bins.

    4. On-site tasks on arriving at the participating business

Once the surveys have been organised (assuming multiple surveys in one location), and depending on how waste is to be separated at each location, a plan for each area where surveys are to be conducted should be put in place. This should include:

- A timetable for the different sites, outlining at what time the survey team should be there (to ensure as much waste as possible is available)

- An allocation of the times to be spent at each site

- A list of information that may need to be collected from management

- What is required of on-site staff prior to, and during, the surveys

- Contact details for on-site point of contact

When the project team arrive on site the following should be clarified:

- Assigned point of contact and how to get in touch with them

- Fire evacuation procedures and meeting point

- First aid procedures

- Any other site specific H&S requirements

At each business the following are the main waste categories to be assessed:

- **Mixed Solid Waste** – this waste streams will be heterogeneous in nature, and consist of mixed waste of various types. The characterisation of this waste stream is more difficult and will require the majority of work. However, it has the added benefit that the main materials that could be managed in a more appropriate fashion (i.e. recovered) will be identified, and this will be reported to the participating business after the surveys have been completed. As with the other waste categories volumes (or weights) of these collected will be recorded (annual or for another defined period) and at least 1 m^3 of this material will be assessed for each site. However, every effort should be made to sample as much waste as possible in the time allocated to a participating business.

- **Mixed dry recyclables** – these are similar to mixed recyclables collected at home. The volumes (or weights) of these collected will be recorded (annual or for another defined period). A random sample of these materials will be taken for assessment and a key focus will be on identifying the level of contaminants (i.e. non-recyclable materials) within this stream. While no recommended sample size has been found in the literature, it is suggested that this stream be treated as per the residual, and samples of 1m^3 per business be taken.

5. Conducting the Survey

Once the assessment team are in place the following outlines the main survey steps:

1. Depending on how much waste is available, waste sub-samples will be taken using a simple random sampling method. This involves numbering all the sub-samples (i.e. bags weighing 5kg each) and then using a random number generator to choose those for subsequent analysis[14]. The materials found within each sample are then assessed as they are found.

2. It is important to note that each sub-sample should be a minimum of 5kgs. If bags of less than 5kg are encountered they should be combined with others until a combined weight of at least 5kgs is achieved.

   In some circumstances, waste is not presented in conventional bin bags, e.g. it is presented in cages or in very large bags. In these circumstances the materials should be spread out and

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[14] See https://www.random.org/ for an example of such a generator

random sub-samples should be taken, with a minimum of 5kg required, by bucket or shovel, and each sub-sample then characterised.

3. ***At least 2 m³ total of unbagged waste*** must be characterised from each business. This can be allocated proportionally between mixed and recyclable waste streams. Therefore, depending on how the waste is presented, it is likely that more than two 1100L wheelie bins of bagged waste may be required.

4. If possible, in order to determine the ***average weight/volume ratios*** required by the EPA, the weights of the different types of bins used on site, when full of waste, should be recorded at the start. This will require a large flatbed scales that is capable of weighing at least 150kgs (though ideally 300kgs). (A plywood sheet or block may be used to balance the bin on the scales).

5. Once the samples have been chosen they should be separated into the predefined categories as outlined in the Waste Collection Worksheet. The different materials should be placed in the containers and then weighed. Ensure to tare the scales with an empty container prior to recording the material weights.

    a. Survey each 5kg sub-sample and record the results on the results sheet.

    b. Repeat surveys of 5kg sub-samples until the target volume (2 m3 of unbagged waste) has been surveyed.

6. If multiple sheets are used ensure that they are numbered and stored away securely.

7. While a minimum of 1m³ of unbagged waste is recommended per stream (MDR and MSW), the greater the number of mixed waste sub-samples that are characterised, the more accurate the results will be. Attempt to characterise as many sub-samples as time allows.

    6. After the Survey

Once the survey is completed the following are the main actions to consider:

1. Clean the area where the waste sorting takes place. Ensure to leave this area as clean as it was when the project team arrived.

2. If possible wash and clean all sorting equipment prior to leaving

3. When leaving the site ensure to inform the relevant on-site staff

4. On returning to the office collate the data and generate a brief site report

5. This should be issued to the business ideally within 6 weeks of conducting the survey

Appendix 2: List of Primary and Secondary Materials

Primary Waste Categories	Secondary Waste Categories	Target
Organics	Kitchen & canteen waste	OW
Organics	Liquid fit for human consumption	OW
Organics	Biodegradable waste from garden & park	OW
Organics	Grass cuttings	OW
Organics	Vegetable oil	OW
Papers	Recyclable paper packaging	MDR
Papers	Unrecyclable paper packaging	MRW
Papers	Newspapers	MDR
Papers	Magazines & glossy paper	MDR
Papers	Office papers	MDR
Papers	Tissue Papers	MRW/OW
Papers	Other papers	MDR
Cardboards	Cardboard (packaging)	MDR
Cardboards	Cardboard packaging used for delivery (post or other)	MDR
Cardboards	Cardboard used to package milk in bags in a box (milk dispensers)	MDR
Cardboards	Unrecyclable flat and corrugated card. (packaging)	MRW
Cardboards	Other cardboards (non-packaging)	MDR
Composites	Cups for beverages (packaging)	MRW
Composites	Compostable cups for beverages, including their covers and lid	OW
Composites	Beverage cartons (packaging)	MDR
Composites	Milk cartons	MDR
Composites	Beverage cartons (packaging)	MDR
Composites	Compostable beverage cartons	OW
Composites	Other composites (packaging)	MRW
Composites	Other composites (packaging)	MRW
Composites	Compostable other composites (packaging)	OW
Composites	Other composites (non- packaging)	MRW
Composites	Other composites (non- packaging)	MRW
Composites	Compostable other composites (non-packaging)	OW
Textiles	Textiles Packaging	BC
Textiles	Textiles non-packaging	BC
Textiles	Clothes	BC
Textiles	Nappies (& incontinence wear)	MRW
Textiles	Healthcare textiles	MRW
Plastics	PET packaging bottles including their lids	MDR
Plastics	Milk bottles	MDR
Plastics	Washing up liquid bottles	MDR
Plastics	PET packaging bottles including their lids	MDR
Plastics	PE plastic packaging bottles including their lids	MDR
Plastics	PE packaging bottles including their lids	MDR
Plastics	PP plastic packaging bottles including their lids	MDR
Plastics	PP packaging bottles including their lids	MDR

Plastics	Other plastic packaging bottles including their lids	MDR
Plastics	Compostable plastic bottles including their lids	OW
Plastics	PET packaging containers (other than bottles and lids) including their covers.	MDR
Plastics	PET cups for beverages in this subcategory	MDR
Plastics	PET - Take-away trays/containers	MDR
Plastics	PE packaging containers (other than bottles and lids) including their covers.	MDR
Plastics	PE cups for beverages in this subcategory	MDR
Plastics	PE - Take-away trays/containers	MDR
Plastics	PP packaging containers (other than bottles and lids) including their covers.	MDR
Plastics	PP cups for beverages in this subcategory	MDR
Plastics	PP - Take-away trays/containers	MDR
Plastics	PET cups and other containers non-packaging, including their covers and lids	MDR
Plastics	PET - Disposable cups (non- packaging)	MDR
Plastics	PE cups and other containers non-packaging, including their covers and lids	MDR
Plastics	PE - Disposable cups (non- packaging)	MDR
Plastics	PP cups and other containers non-packaging, including their covers and lids	MDR
Plastics	PP - Disposable cups (non- packaging)	MDR
Plastics	Styrofoam and EPS (non-packaging)	BC
Plastics	Styrofoam, EPA and PS Cups	BC
Plastics	Styrofoam and EPS (packaging)	BC
Plastics	Food trays and coffee cups	BC
Plastics	Supermarket bags, plastic bags and films, wrappers (packaging)	MDR
Plastics	Compostable supermarket bags, plastic bags, films and wrappers	OW
Plastics	Shrink wrap and pallet wrap	MDR
Plastics	Compostable shrink wrap and pallet wrap	OW
Plastics	Other plastic, including packaging containers (other than bottles, including compostable (packaging)	MDR
Plastics	40.1.1. Other plastic cups for beverages in this subcategory	MDR
Plastics	40.1.2 Polyfilla (and similar containers)	MRW
Plastics	Food containers including lids. (as per SUP Annex Part A)	MDR
Plastics	Compostable 'other plastic' including packaging containers	OW
Plastics	Other plastic, including non-packaging cups and other containers (non-packaging)	MDR
Plastics	**Identify cutlery, stirrers, plates, straws balloon sticks, cotton buds as one class.**	MRW or MDR
Plastics	Compostable 'other plastic' including non-packaging cups and other containers	OW
Glass	Glass (packaging)	KC/BC
Glass	Glass (non-packaging)	KC/BC
Metals	Ferrous metal (packaging)	MDR
Metals	Ferrous metal (non-packaging)	BC
Metals	Aluminium cans (packaging)	MDR
Metals	Aluminium trays and foil (packaging)	MDR
Metals	Other non-ferrous metal (packaging)	BC
Metals	Other non-ferrous metal (non-packaging)	BC
Wood	Wood Packaging	BC

Wood	Untreated wood (non-packaging)	BC
Wood	Treated/composite wood (non-packaging)	BC
Non-Haz. Municipal Waste	Water based paints	BC
Haz. / Non-Haz. Municipal Waste	Other paint and associated products	BC
Haz. / Non-Haz. Municipal Waste	Batteries & Accumulators	BC
Non-Haz. Municipal Waste	Aerosols (packaging)	BC
Haz. / Non-Haz. Municipal Waste	Electronic equipment	BC
Haz. / Non-Haz. Municipal Waste	Fluorescent tubes and other mercury containing wastes.	BC
Haz. / Non-Haz. Municipal Waste	Medicines and Drugs	BC
Haz. / Non-Haz. Municipal Waste	Detergents	BC
Non-Haz. Municipal Waste	Garden chemicals	BC
Non-Haz. Municipal Waste	Healthcare risk waste	BC
Non-Haz. Municipal Waste	Other Haz. domestic waste	BC
Unclassified Combustibles	Unclassified combustibles (packaging)	MRW
Unclassified Combustibles	Nespresso aluminium pods	BC
Unclassified Combustibles	Nespresso plastic pods	MRW
Unclassified Combustibles	Unclassified combustibles (non-packaging)	MRW
Unclassified Incombustibles	Unclassified incombustibles (packaging)	BC
Unclassified Incombustibles	Unclassified incombustibles (non-packaging)	BC
Fines (<20mm)	Fines (<20mm)	MRW
Non-municipal waste	Non-municipal waste	BC

Table Notes		**Secondary subcategories: Special Interest Item**
MRW	**Mixed Residual Waste Bin**	**Secondary subcategories: Single Use Plastic (SUP)**
MDR	**Mixed Dry Recycling Bin**	
OW	**Organic Waste Bin**	**Secondary subcategories: Compostable**
BC	**Bring Centre**	
KC	**Kerbside Collection**	

Appendix 3: 2022 only Sub-Sector Results Food Retail, Hotels and Food Service

A3.1 Food Retail MRW 2022

Food retail was one of the main sectors examined in 2018 and, due to the importance of the sector, three additional surveys were carried out during this campaign. The results from the 29 MRW samples analysed during the 2022 campaign from the Food Retail sector are summarised in Table 58 and presented graphically in Figure 85.

Table 58: Composition of MRW bin from the Food Retail Sector

Primary category	Average % Content
Organic Waste	51.1%
Plastic	19.4%
Paper	12.0%
Composites	4.0%
Cardboard	4.0%
Metal	3.0%
Textiles	1.8%
Glass	1.7%
Unclassified Combustibles	1.2%
Wood	0.6%
Unclassified Incombustibles	0.4%
Special/Irregular Waste	0.4%
Compostable	0.3%
Fines	0.2%
Nappies & Incontinence Wear	0.0%
Healthcare Textiles	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
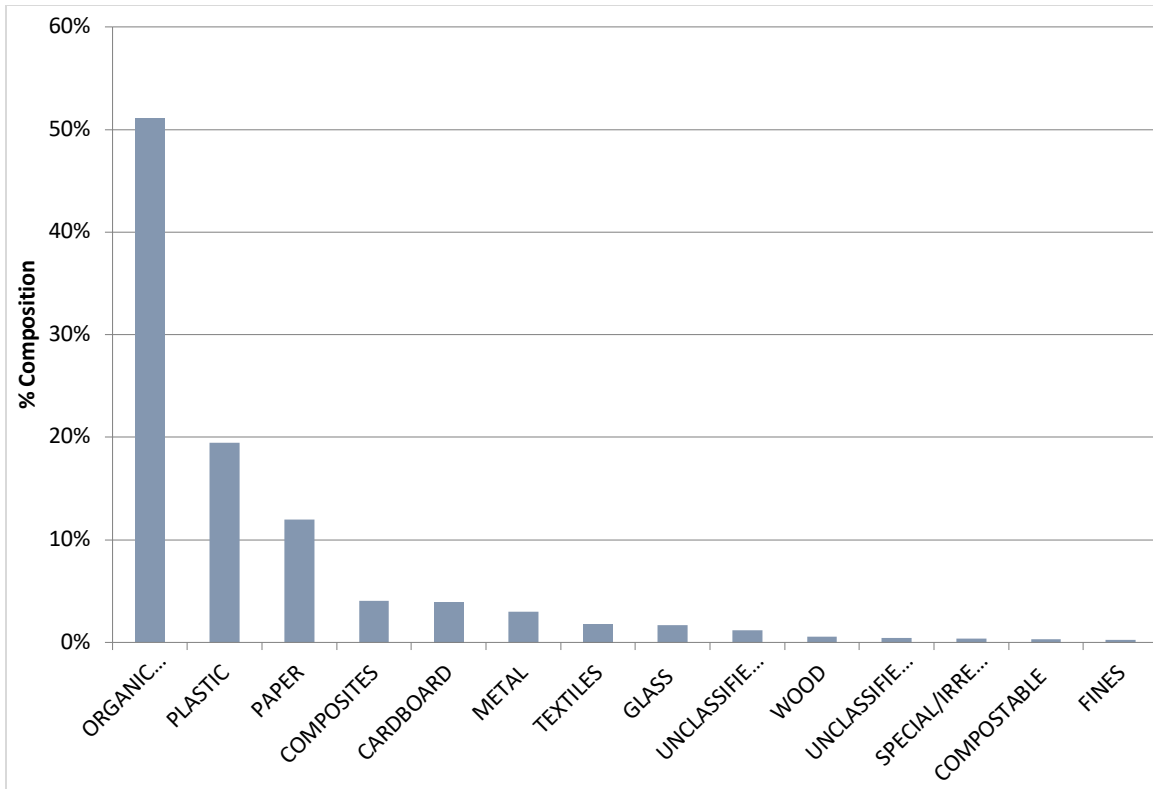
Figure 85: Composition of MRW bin from the Food Retail Sector

Organic waste was the largest individual waste category in the MRW bin at 51.1%. This included 47.6% food waste and 3.2% liquid wastes.

Plastic waste, 19.4%, consisted of other plastic non-packaging (7.3%), other plastic packaging (4.5%), PP containers (1.7%) and 1.6% of both PET bottles and plastic bags and films.

The next largest primary waste category was paper at 12.0%. The most significant individual material was tissue paper (6.7%) with the rest comprising mainly of unrecyclable paper (1.7%), newspapers (1.1%) and unrecyclable paper (0.9%).

Composites, 4.0%, was made up of hot beverage cups (2.5%) and other composting packaging (1.2%).

Metals (3.0%) was mainly made up of 1.5% aluminium cans and 0.9% non-ferrous non-packaging metal.
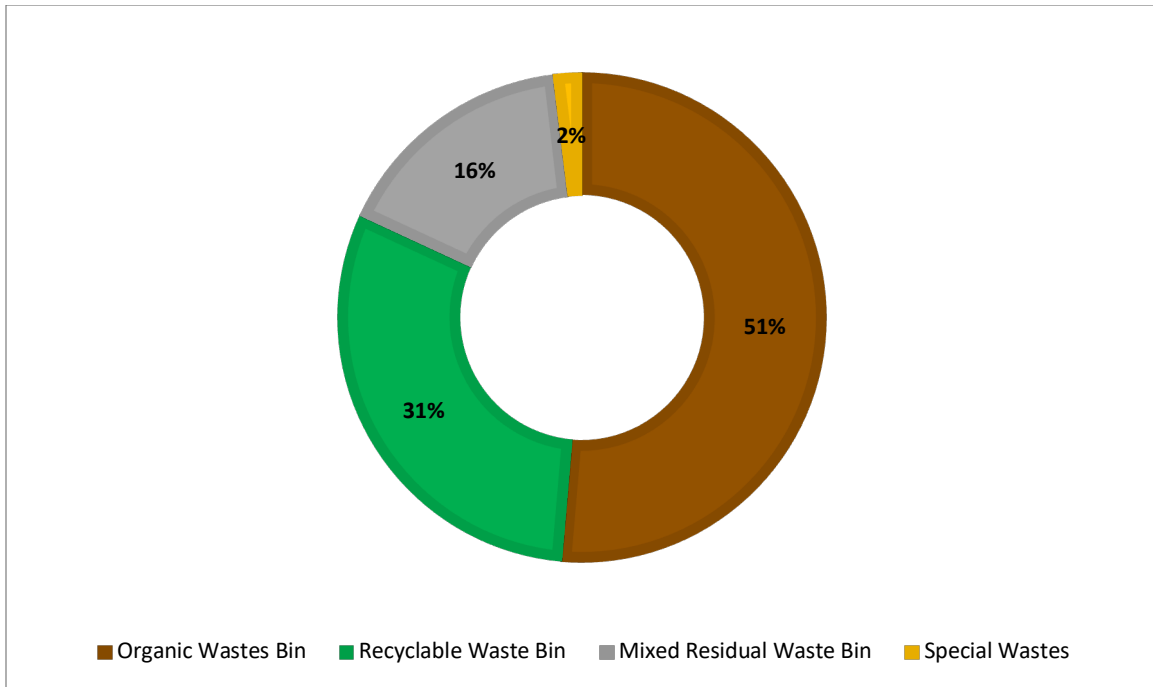
Figure 86: Breakdown of MRW bin materials from the Food Retail Sector based on correct segregation

Figure 86 shows the assessment of the segregation levels of the MRW materials identified that only 16% of the materials found in this stream were in the correct bins. The majority (51%) of materials should have been segregated into organic waste bins and 31% should have been placed in the MDR bins and 2% special waste materials were also present.

A3.2 Food Retail MDR 2022

The results for the 23 MDR samples analysed from Food Retail sector in 2022 only are summarised in Table 59 and presented graphically in Figure 87.

Table 59: Composition of MDR bin from Food Retail sector

Primary category	Average % Content
Plastic	50.1%
Cardboard	18.9%
Paper	14.3%
Metal	6.5%
Organic Waste	5.2%
Composites	2.1%
Textiles	1.9%
Compostable	0.4%
Fines	0.4%
Glass	0.3%
Unclassified Combustibles	0.1%
Special/Irregular Waste	0.0%

Wood	0.0%
Nappies & Incontinence Wear	0.0%
Healthcare Textiles	0.0%
Unclassified Incombustibles	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
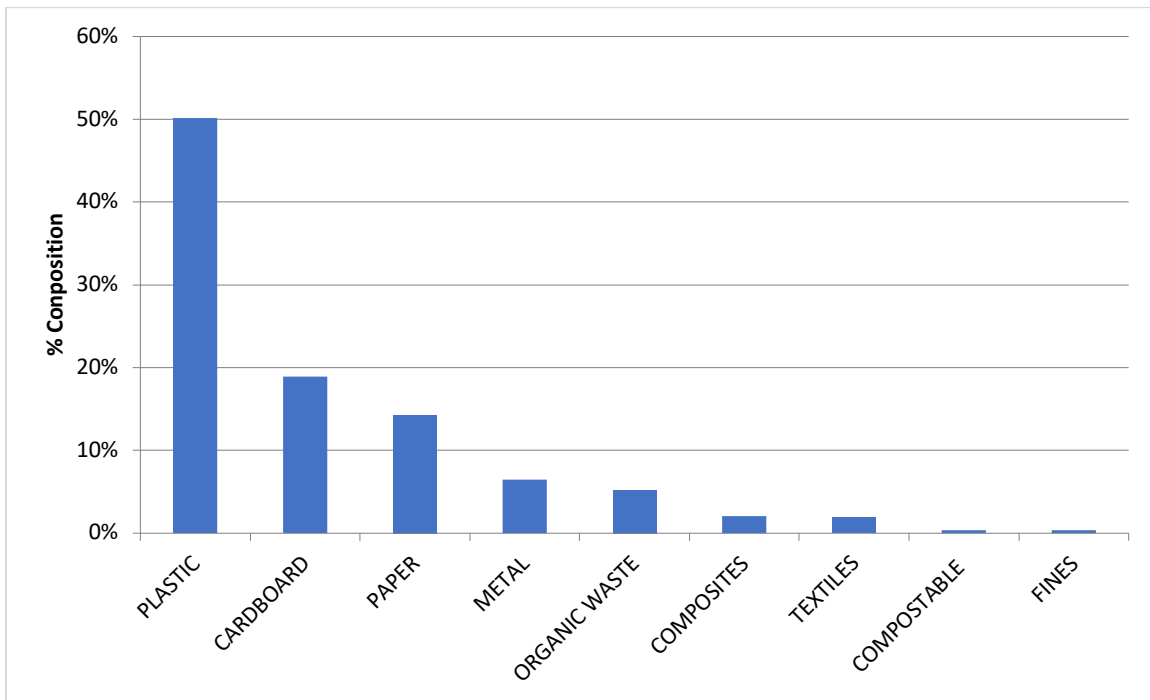
Figure 87: Composition of MDR bin from the Food Retail Sector

Plastic materials were identified as the largest individual stream in the MDR bin at 50.1%. The main materials were other plastic non-packaging (24.1%), PE milk bottles (4.7%), PP containers (4.3%), unrecyclable plastic packaging (2.8%), PET bottles (2.4%), PET containers (2.0%) and plastic bags and films (1.8%).

Cardboard (18.9%) was almost exclusively cardboard packaging.

Paper waste, at 14.3% of the total consisted of tissue paper (3.5%), recyclable packaging (2.6%), magazines and glossies (2.1%), other paper non-recyclable (1.9%), unrecyclable paper packaging (1.4%) and office paper (1.2%).

Metal waste (6.5%) consisted of non-packaging ferrous metals (2.5%), aluminium cans (2.3%) and ferrous cans (1.3%).

Organic wastes, 5.2%, was mainly food waste (4.5%) and liquid wastes (0.7%).
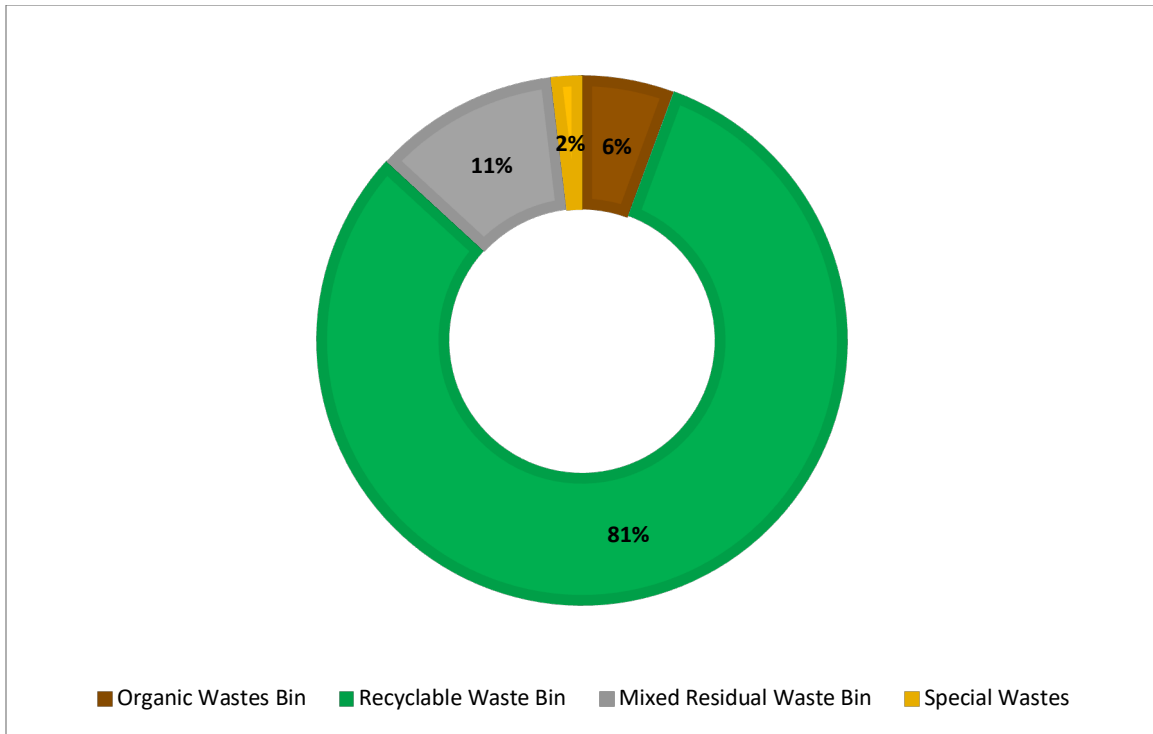
Figure 88: Breakdown of MDR bin materials from the Food Retail Sector based on correct segregation

As with the MRW, the MDR materials were assessed to identify how effective waste segregation practices were and these are shown in Figure 88. Based on this it was found that over 80% of the materials were in the correct bin with 11% of the materials that should have been segregated into the MRW bins, 6% into the organic waste bins and 2% special waste materials present.

A3.3 Hotels MRW 2022

The results for the 25 MRW samples surveyed from the Hotels sector in 2022 only are summarised in Table 60 and presented graphically in Figure 89.

Table 60: Composition of MRW bin from Hotels sector

Primary category	Average % Content
Organic Waste	26.0%
Plastic	23.4%
Paper	20.8%
Cardboard	7.3%
Glass	4.0%
Composites	3.8%
Metal	3.5%
Nappies & Incontinence Wear	2.6%
Unclassified Combustibles	2.2%
Textiles	2.1%
Unclassified Incombustibles	1.5%
Special/Irregular Waste	1.0%

Fines	0.7%
Wood	0.4%
Compostable	0.4%
Healthcare Textiles	0.4%
Non- Municipal Waste	0.0%
Total	**100%**
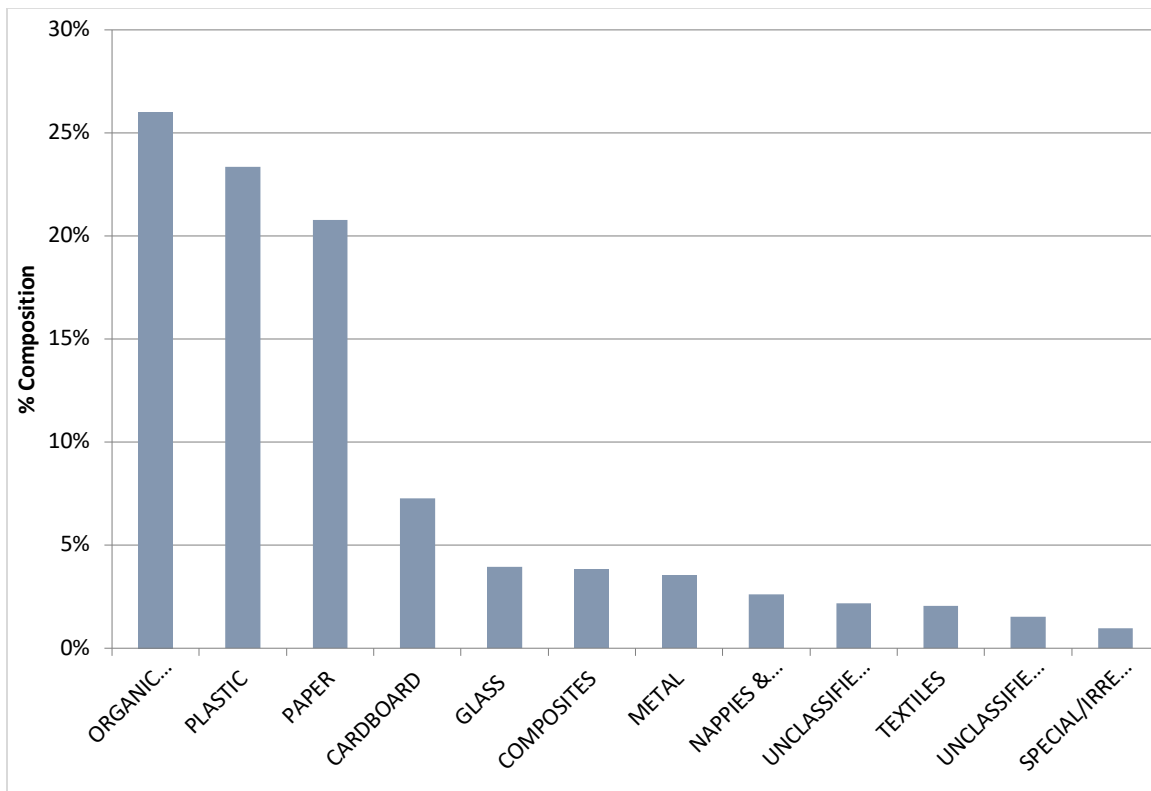
Figure 89: Composition of MRW bin from the Hotels Sector

The largest material category in the MRW bin, accounting for 26.0%, was organics. This consisted of food waste (19.9%) and liquid wastes (6.0%).

Plastic waste (6.5%) consisted mainly of other plastic non-packaging (4.9%), other plastic packaging (4.2%), PET bottles (3.7%), PP packaging containers (3.1%), plastic bags and films (2.4%), PE milk bottles (1.1%) and unrecyclable plastic packaging (1.0%).

Paper was the next largest primary category material present at 20.8%. This consisted of tissue paper (11.7%), office paper (2.5%), recyclable paper packaging (1.5%), unrecyclable paper packaging (1.2%), other nonrecyclable non-packaging paper (1.2%) and newspapers (1.1%).

Cardboard (7.3%) was related to packaging materials, as was the glass (4.0%).

Composites (3.8%) consisted of 2.0% packaging materials and 1.4% hot beverage cups.

Metal materials (3.5%) was made up of aluminium cans (1.2%) and ferrous packaging materials (0.9%) and other non-ferrous packaging metals (0.6%).

Nappies accounted for 2.6% followed by similar amounts of unclassified combustibles, textiles and unclassified incombustibles, all of which were predominantly relating to non-packaging materials.
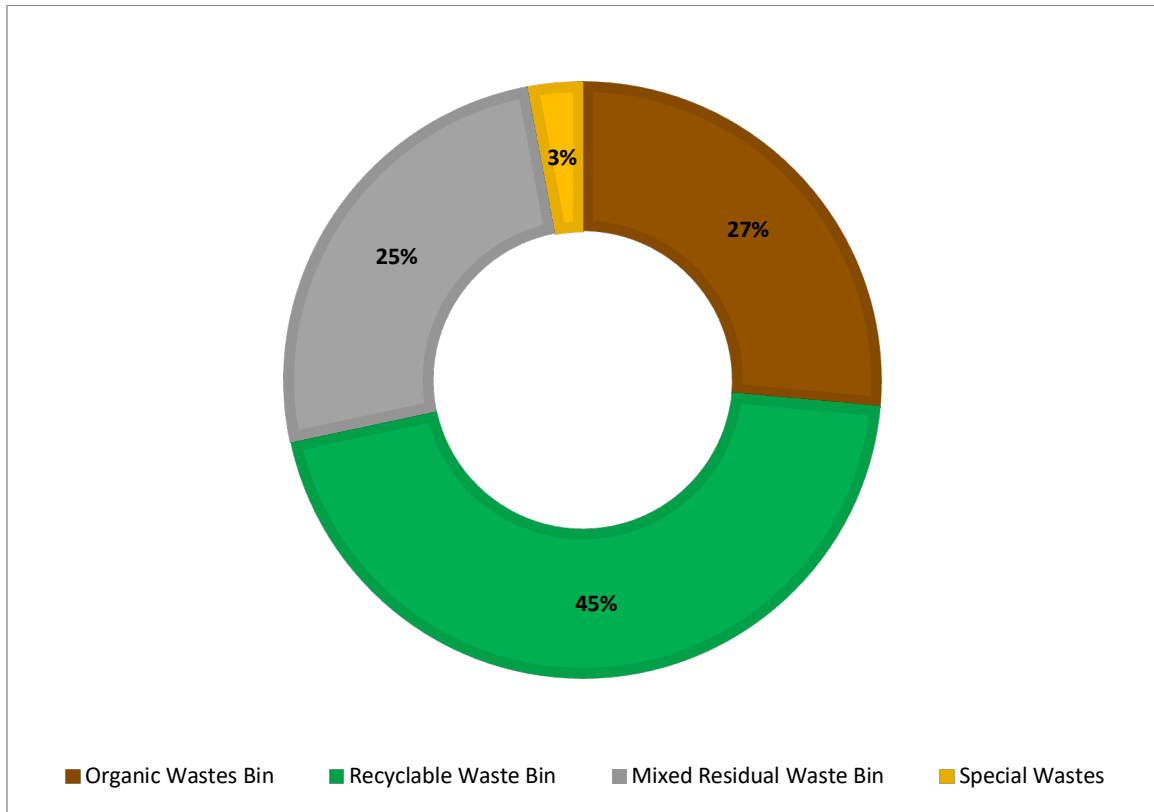
Figure 90: Breakdown of MRW bin materials from the Hotels Sector based on correct segregation

The assessment of the segregation levels from hotels, shown in Figure 90, indicates that only 25% of the materials were correctly segregated. Of the remaining materials, 45% should have been in the MDR bin, 27% segregated into organic waste bins and 3% managed through other waste management routes such as Bring Banks, Civic Amenity sites and separate collections where applicable.

A3.4 Hotels MDR 2022

The results of the 26 MDR samples analysed during the 2022 campaign only from the Hotels sector are summarised in Table 61 and presented graphically in Figure 91.

Table 61: Composition of MDR bin from Hotels sector

Primary category	Average % Content
Paper	23.6%

Primary category	Average % Content
Cardboard	22.7%
Plastic	19.4%
Organic Waste	11.7%
Composites	6.7%
Metal	5.8%
Glass	2.3%
Nappies & Incontinence Wear	2.2%
Textiles	2.1%
Fines	1.3%
Unclassified Combustibles	1.1%
Special/Irregular Waste	0.6%
Unclassified Incombustibles	0.3%
Compostable	0.2%
Wood	0.0%
Healthcare Textiles	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
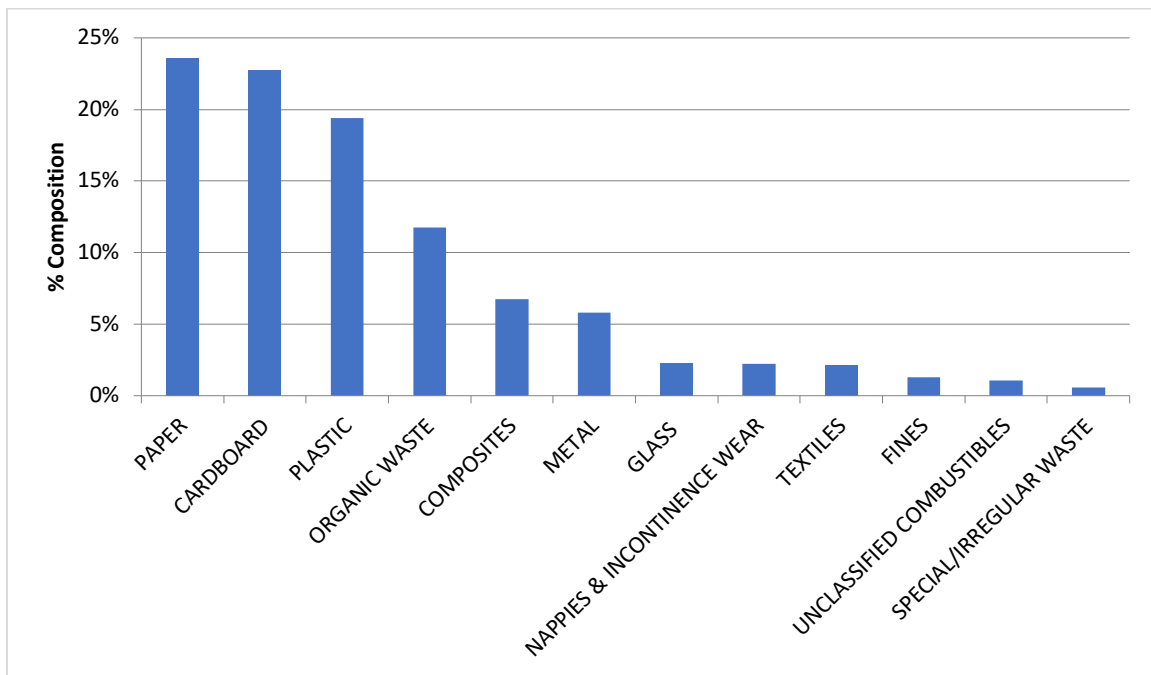
Figure 91: Composition of MDR bin from the Hotels sector

Paper waste was identified as the largest individual material in the MDR bin at 23.6%. These materials consisted mainly of tissue papers (16.0%), office paper (2.8%) and other paper (1.8%).

Carboard was the next largest category accounting for 22.7%, with this being almost exclusively packaging materials.

Of the plastic waste (19.4%) the main materials were other plastic packaging (4.3%), plastic bags and films (3.7%), PET bottles (3.5%), other plastic non-packaging (2.9%), PP containers (1.4%), PET containers (1.2%) and Styrofoam and EPS (1.1%).

The organic wastes (11.7%) was due to food waste (6.0%) and liquid wastes (5.7%).

Composites (6.7%) was related to beverage cartons (3.9%), other packaging materials (1.7%) and hot beverage cups (1%).

Metals (5.8%) was predominantly ferrous metal packaging cans (4.6%) with smaller volumes of aluminium cans.

Glass at 2.3% was due to mainly packaging materials (1.9%). There were also small volumes of nappies (2.2%) and textiles (2.1% of which 1.7% related to clothing) present.
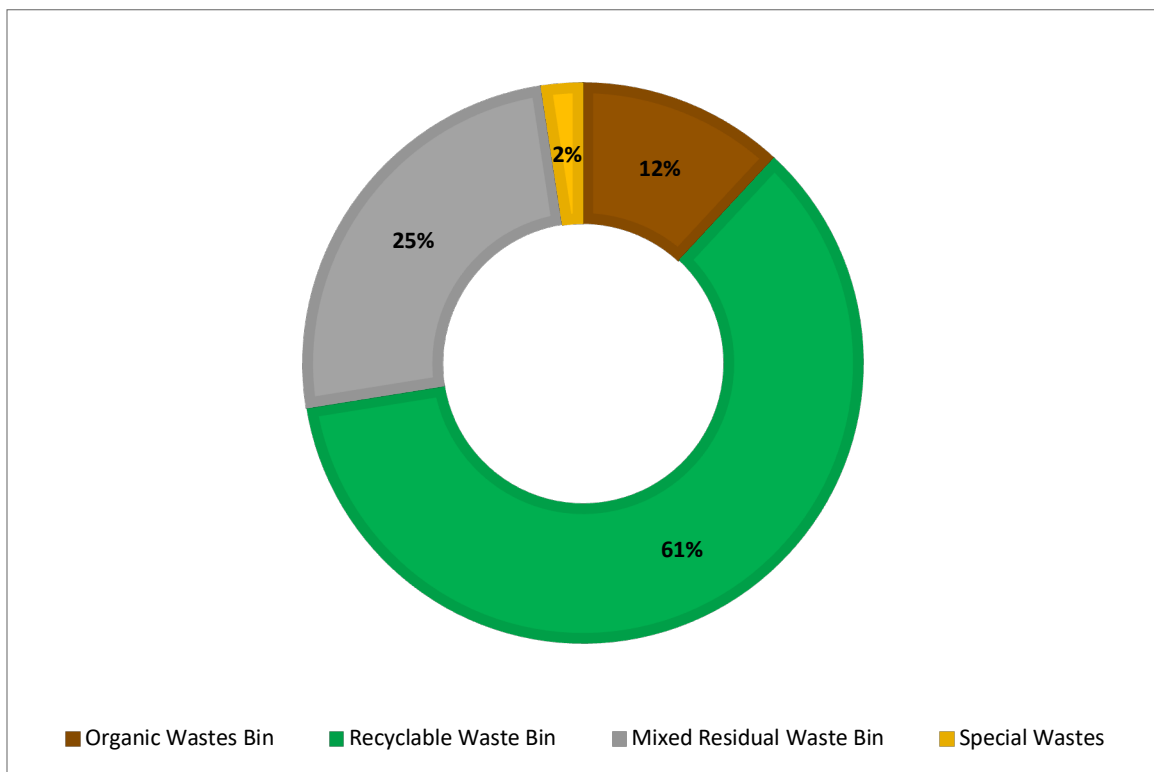
Figure 92: Breakdown of MDR bin materials from the Hotel sector based on correct segregation

Figure 92 presents the assessment of the segregation levels of the MDR bin materials. This indicates, 61% are being correctly managed in the MDR stream with 25% that should have been segregated into the MRW stream and 25% that should have been segregated into organic waste bins. 2% of the materials were identified as special wastes.

A3.5 Food Service MRW 2022

The results for the 17 samples assessed during 2022 from the MRW of the Food Services sector are summarised in Table 62 and presented graphically in Figure 93.

Table 62: Composition of MRW bin from Food Services sector

Primary category	Average % Content
Organic Waste	48.8%
Paper	19.4%
Plastic	14.7%
Compostable	3.7%
Cardboard	3.5%
Metal	3.1%
Composites	2.9%
Fines	2.4%
Wood	0.5%
Unclassified Incombustibles	0.4%
Special/Irregular Waste	0.4%
Nappies & Incontinence Wear	0.2%
Textiles	0.0%
Healthcare Textiles	0.0%
Glass	0.0%
Unclassified Combustibles	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
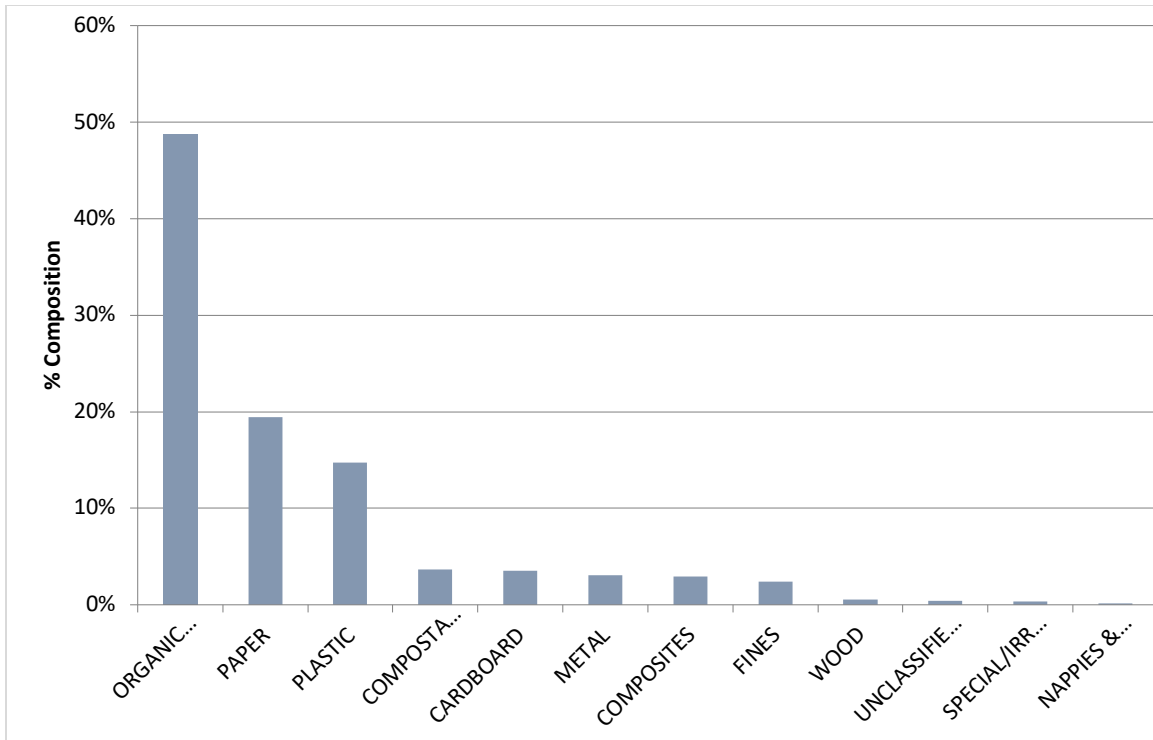
Figure 93: Composition of MRW bin from the Food Services sector

Organic waste (48.8%) was the largest material stream found in the MRW bin from the food services sector and was made up exclusively of food waste.

Paper was the next largest primary category material present at 19.4%. This was made up of tissues (14.7%), office paper (1.8%) and non-recyclable other paper (1.2%).

Plastic waste (14.7%) consisted of PE milk bottles (3.8%), %), other plastic packaging (3.7%), other plastic non-packaging (3.0%), PET bottles (1.2%) and PET containers (1.0%).

Compostable materials (3.7%) was almost exclusively related to food containers (3.6%).

Cardboard (3.5%) was exclusively packaging materials. Of the metal waste (3.1%), 2.1% was due to ferrous cans with 0.4% other non-ferrous non-packaging materials.

Composites (3.1%) consisted of beverage cartons (1.6%), other composite packaging (0.8%) and hot beverage cups (0.6%).
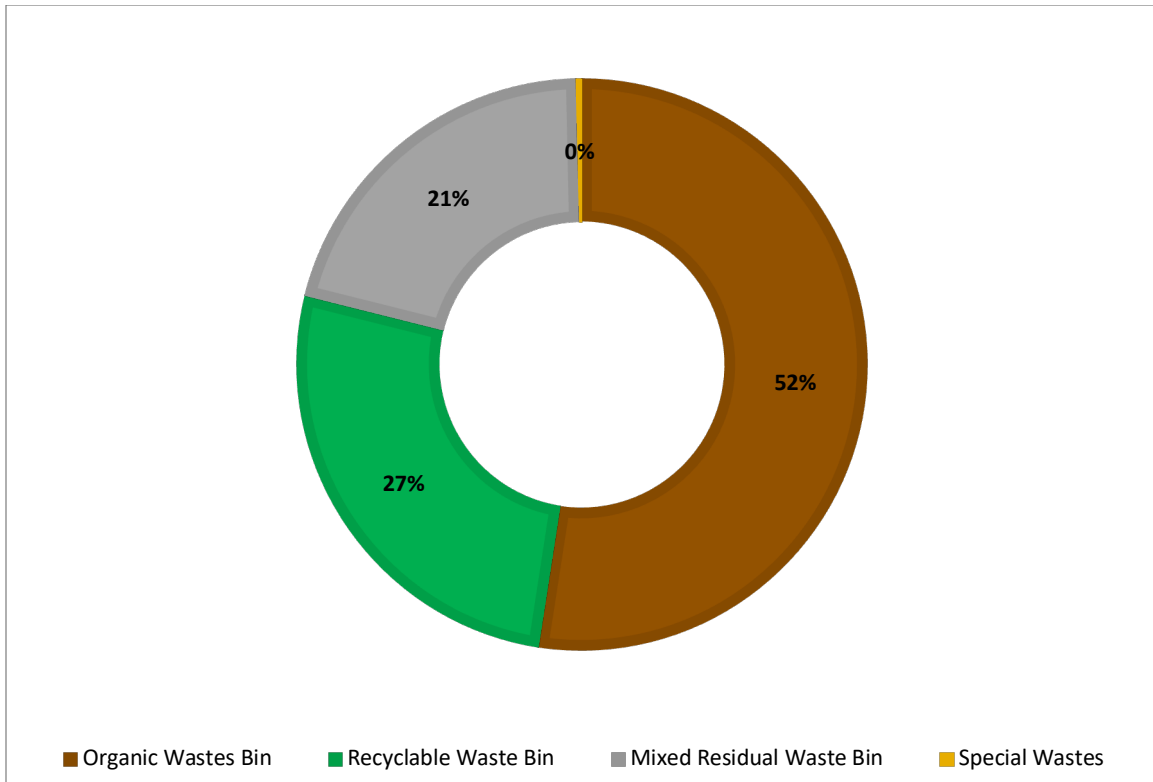
Figure 94: Breakdown of MRW materials from the Food Services sector based on correct segregation

The assessment of the segregation practices for the MRW bin material, shown in Figure 94, indicates that only 21% of the materials in the MRW bin are being managed correctly. Of the remaining materials, 52% should have been segregated into organic waste bins and 27% managed in the MDR bins.

A3.6 Food Services MDR 2022

The results of the 19 MDR samples analysed from the Food Services sector are summarised in Table 63 and presented graphically in Figure 95.

Table 63: Composition of MDR bin from the Food Services sector

Primary category	Average % Content
Organic Waste	46.9%
Cardboard	29.2%
Plastic	8.0%
Paper	7.7%
Metal	6.1%
Composites	1.2%
Compostable	0.6%
Textiles	0.1%
Special/Irregular Waste	0.0%
Unclassified Combustibles	0.0%

Wood	0.0%
Nappies & Incontinence Wear	0.0%
Healthcare Textiles	0.0%
Glass	0.0%
Unclassified Incombustibles	0.0%
Fines	0.0%
Non- Municipal Waste	0.0%
Total	**100%**
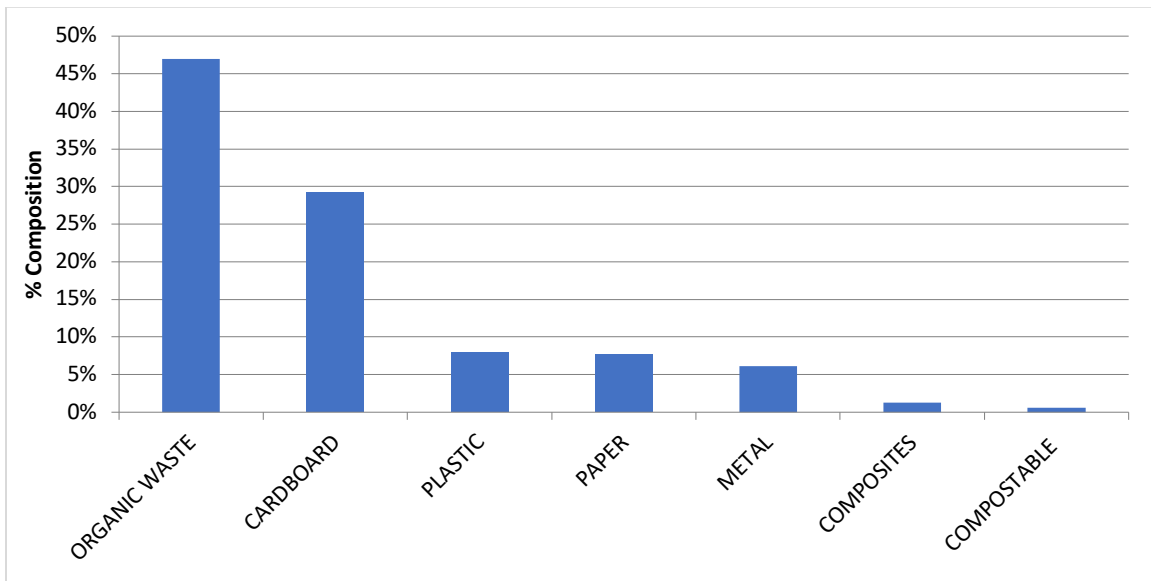
Figure 95: Composition of MDR bin from the Food Services sector

Though this is the MDR bin, the largest material category present was organics (46.9%). This was related to food waste only. It should be noted that three food service businesses were examined as part of this work and the segregation levels were particularly poor in two of the three.

Carboard was the next largest primary materials in the MDR bins accounting for 29.2% and was made up exclusively of cardboard packaging.

Of the plastic materials (8.0%) the main materials were PE milk bottles (1.5%), other plastic non-packaging (1.2%) and packaging (1.2%), shrink and pallet wrap (0.9%) and PET bottles (0.9%).

Paper waste (7.7%) was largely made up of tissue paper (6.7%) with small volumes of unrecyclable paper packaging and non-recyclable paper.

Of the metal wastes (6.1%), the main materials were ferrous packaging cans (4.5%) and aluminium cans (1.3%).
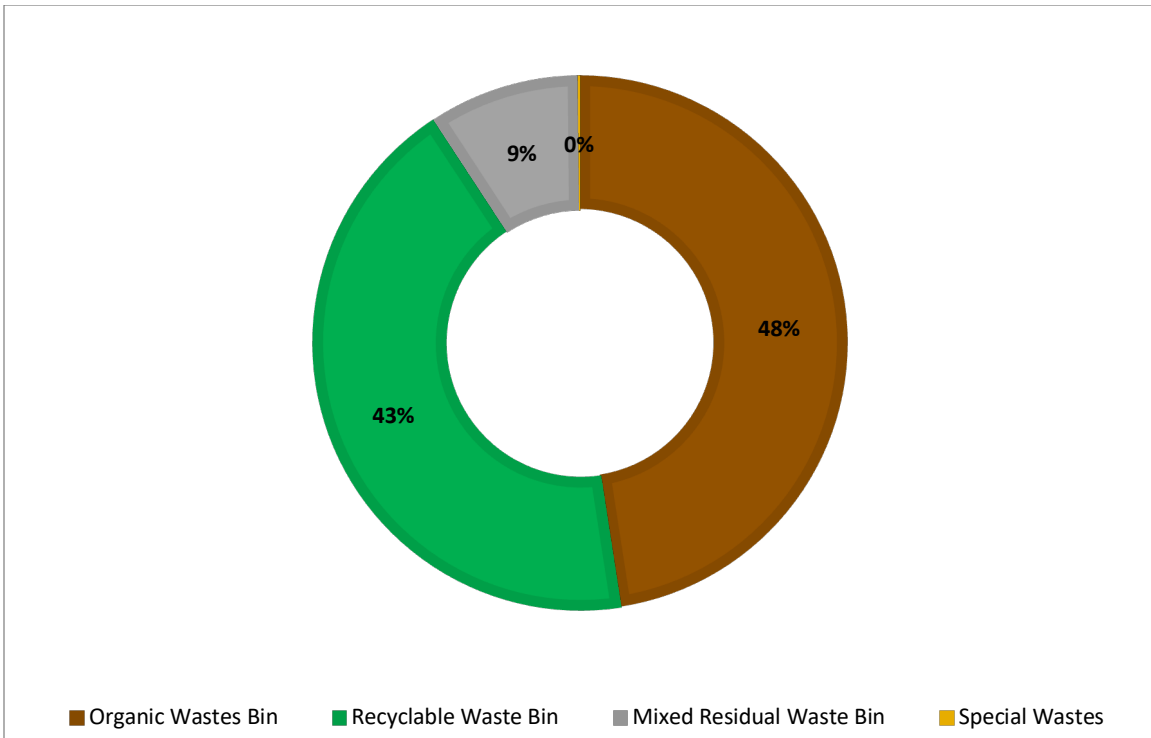
Figure 96: Breakdown of how materials found in the MDR stream from Food Services should be segregated

The assessment of the segregation practices, (see Figure 96), indicates only 43% are being correctly managed in the MDR stream with 48% of the materials found should have been segregated into the organic wastes bin and 9% should have been in the MRW bin.

Appendix 4: Sectoral results 2022

Sector	G Food Retail	
Waste Material	**MRW**	**MDR**
PAPER	**17.0%**	**22.2%**
Office Paper	1.1%	4.3%
Newspaper	0.6%	2.3%
Magazines & Glossy Paper	1.6%	2.0%
Tissue Paper	8.2%	5.0%
Paper Packaging	1.5%	2.1%
Unrecoverable Paper Pac	1.8%	0.8%
Other Paper	2.3%	5.7%
CARDBOARD	**3.8%**	**15.4%**
Cardboard Packaging	3.4%	14.9%
Unrecoverable Pac	0.4%	0.3%
Other Cardboard Non Packaging	0.1%	0.3%
GLASS	**1.5%**	**0.7%**
Glass Packaging	1.4%	0.7%
Other Glass (non-packaging)	0.1%	0.0%
PLASTIC	**19.0%**	**40.3%**
PET Packaging (1)	2.5%	5.7%
PE Packaging (2,4)	1.0%	2.7%
PP Packaging (5)	1.5%	4.3%
PS Packaging (6)	0.6%	1.7%
Plastic Bags & Film packaging	4.1%	7.7%
Other Plastic Packaging (7)	2.6%	11.0%
Unrecoverable Plastic Pac	1.4%	1.2%
Other Plastic (Non Pac)	5.2%	6.0%
METAL	**2.6%**	**4.4%**
Aluminium Cans (Pac)	0.8%	1.2%
Aluminium Foil & Trys (Pac)	0.5%	0.5%
Tin Can (Ferrous Pac)	0.5%	1.7%
Other Metal Packaging	0.0%	0.0%
Other metal waste	0.8%	1.0%
WOOD	**0.3%**	**0.1%**
Wood Packaging	0.0%	0.0%
Other Wood	0.1%	0.1%
Composite Wood	0.1%	0.0%
ORGANIC WASTE	**44.6%**	**12.3%**
Food Waste	36.1%	9.3%
Unused Packaged Food Waste**	3.3%	1.0%
Garden Waste	0.7%	0.0%
Liquid Waste*	4.4%	2.0%
Vegetable Oil	0.1%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**3.4%**	**1.4%**
Textiles Packaging	0.1%	0.8%
Textiles (Non Packaging)	2.5%	0.4%
Healthcare Textiles (Nappies, etc.)	0.1%	0.1%
Clothes	0.7%	0.1%
COMPOSITES	**2.7%**	**1.6%**
Coffee Cups	1.5%	0.6%
Tetra Pak Packaging	0.1%	0.4%
Composite Packaging	0.9%	0.6%
Non Packaging	0.0%	0.0%
Haz. MUNICIPAL WASTE	**0.8%**	**0.0%**
Electrical Equipment	0.2%	0.0%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.0%
Aerosols	0.4%	0.0%
Waste Chemicals	0.0%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.1%	0.0%
Paint	0.0%	0.0%
Compostables	**0.1%**	**0.1%**
Compostable Wares Pac	0.1%	0.1%
Compostable Wares Npac	0.0%	0.0%
UNCLASSIFIED COMBUSTIBLES	**2.3%**	**0.5%**
Unclassified combustible (Pac.)	0.1%	0.0%
Unclassified combustible (Non-Pac.)	2.2%	0.5%
UNCLASSIFIED INCOMBUSTIBLES	**1.7%**	**0.0%**
Unclassified incombustible	1.7%	0.0%
FINES	**0.3%**	**0.9%**
Fines smaller than 20 mm	0.3%	0.9%
Total	**100.0%**	**100.0%**

Sector	G Garages	
Waste Material	**MRW**	**MDR**
PAPER	**10.9%**	**28.2%**
Office Paper	2.2%	18.4%
Newspaper	0.1%	0.0%
Magazines & Glossy Paper	1.0%	0.3%
Tissue Paper	4.5%	0.7%
Paper Packaging	2.5%	8.8%
Unrecoverable Paper Pac	0.2%	0.0%
Other Paper	0.5%	0.0%
CARDBOARD	**11.5%**	**23.1%**
Cardboard Packaging	10.7%	22.6%
Unrecoverable Pac	0.8%	0.2%
Other Cardboard Non Packaging	0.0%	0.2%
GLASS	**0.3%**	**0.0%**
Glass Packaging	0.3%	0.0%
Other Glass (non-packaging)	0.0%	0.0%
PLASTIC	**30.6%**	**18.9%**
PET Packaging (1)	2.9%	6.6%
PE Packaging (2,4)	5.2%	2.0%
PP Packaging (5)	1.6%	0.2%
PS Packaging (6)	0.7%	0.0%
Plastic Bags & Film packaging	1.1%	2.4%
Other Plastic Packaging (7)	6.4%	0.4%
Unrecoverable Plastic Pac	0.0%	0.0%
Other Plastic (Non Pac)	12.7%	7.3%
METAL	**12.9%**	**0.1%**
Aluminium Cans (Pac)	0.3%	0.1%
Aluminium Foil & Trys (Pac)	0.0%	0.0%
Tin Can (Ferrous Pac)	0.0%	0.0%
Other Metal Packaging	0.0%	0.0%
Other metal waste	12.5%	0.0%
WOOD	**0.0%**	**0.0%**
Wood Packaging	0.0%	0.0%
Other Wood	0.0%	0.0%
Composite Wood	0.0%	0.0%
ORGANIC WASTE	**11.7%**	**1.0%**
Food Waste	7.5%	1.0%
Unused Packaged Food Waste**	0.0%	0.0%
Garden Waste	0.9%	0.0%
Liquid Waste*	3.3%	0.0%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**2.5%**	**1.0%**
Textiles Packaging	0.0%	0.0%
Textiles (Non Packaging)	2.4%	0.9%
Healthcare Textiles (Nappies, etc.)	0.0%	0.1%
Clothes	0.0%	0.0%
COMPOSITES	**3.2%**	**8.2%**
Coffee Cups	1.1%	2.0%
Tetra Pak Packaging	0.6%	0.0%
Composite Packaging	0.8%	0.1%
Non Packaging	0.7%	6.1%
Haz. MUNICIPAL WASTE	**2.4%**	**0.5%**
Electrical Equipment	1.4%	0.0%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.0%
Aerosols	0.5%	0.5%
Waste Chemicals	0.0%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.3%	0.0%
Paint	0.0%	0.0%
Compostables	**0.1%**	**0.0%**
Compostable Wares Pac	0.0%	0.0%
Compostable Wares Npac	0.1%	0.0%
UNCLASSIFIED COMBUSTIBLES	**11.6%**	**19.0%**
Unclassified combustible (Pac.)	0.2%	0.0%
Unclassified combustible (Non-Pac.)	11.3%	19.0%
UNCLASSIFIED INCOMBUSTIBLES	**0.4%**	**0.0%**
Unclassified incombustible	0.4%	0.0%
FINES	**1.9%**	**0.0%**
Fines smaller than 20 mm	1.9%	0.0%
Total	**100.0%**	**100.0%**

Sector	G Wholesale	
Waste Material	**MRW**	**MDR**
PAPER	**33.1%**	**43.5%**
Office Paper	4.7%	13.8%
Newspaper	7.6%	0.2%
Magazines & Glossy Paper	15.7%	0.5%
Tissue Paper	3.0%	26.8%
Paper Packaging	0.3%	1.3%
Unrecoverable Paper Pac	0.6%	0.0%
Other Paper	1.2%	0.7%
CARDBOARD	**18.6%**	**4.4%**
Cardboard Packaging	18.4%	4.1%
Unrecoverable Pac	0.0%	0.3%
Other Cardboard Non Packaging	0.1%	0.0%
GLASS	**0.5%**	**1.2%**
Glass Packaging	0.5%	1.1%
Other Glass (non-packaging)	0.0%	0.0%
PLASTIC	**14.5%**	**15.9%**
PET Packaging (1)	0.5%	3.7%
PE Packaging (2,4)	0.4%	2.7%
PP Packaging (5)	0.2%	1.4%
PS Packaging (6)	0.3%	1.5%
Plastic Bags & Film packaging	9.1%	1.0%
Other Plastic Packaging (7)	1.1%	1.5%
Unrecoverable Plastic Pac	0.4%	0.7%
Other Plastic (Non Pac)	2.5%	3.4%
METAL	**0.8%**	**2.2%**
Aluminium Cans (Pac)	0.4%	1.2%
Aluminium Foil & Trys (Pac)	0.3%	0.6%
Tin Can (Ferrous Pac)	0.2%	0.4%
Other Metal Packaging	0.0%	0.0%
Other metal waste	0.0%	0.0%
WOOD	**14.1%**	**0.9%**
Wood Packaging	0.4%	0.0%
Other Wood	7.9%	0.0%
Composite Wood	5.8%	0.9%
ORGANIC WASTE	**11.1%**	**22.9%**
Food Waste	6.0%	16.5%
Unused Packaged Food Waste**	3.6%	2.5%
Garden Waste	0.9%	0.0%
Liquid Waste*	0.7%	3.9%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**0.2%**	**0.2%**
Textiles Packaging	0.0%	0.0%
Textiles (Non Packaging)	0.0%	0.1%
Healthcare Textiles (Nappies, etc.)	0.0%	0.0%
Clothes	0.2%	0.2%
COMPOSITES	**0.8%**	**3.6%**
Coffee Cups	0.1%	2.0%
Tetra Pak Packaging	0.0%	0.3%
Composite Packaging	0.7%	1.2%
Non Packaging	0.0%	0.0%
Haz. MUNICIPAL WASTE	**0.6%**	**0.0%**
Electrical Equipment	0.1%	0.0%
Fluorescent Bulbs	0.3%	0.0%
Batteries	0.1%	0.0%
Aerosols	0.1%	0.0%
Waste Chemicals	0.0%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.0%	0.0%
Paint	0.0%	0.0%
Compostables	**0.0%**	**3.0%**
Compostable Wares Pac	0.0%	2.9%
Compostable Wares Npac	0.0%	0.1%
UNCLASSIFIED COMBUSTIBLES	**1.6%**	**1.3%**
Unclassified combustible (Pac.)	0.0%	0.0%
Unclassified combustible (Non-Pac.)	1.6%	1.3%
UNCLASSIFIED INCOMBUSTIBLES	**0.3%**	**0.8%**
Unclassified incombustible	0.3%	0.8%
FINES	**3.6%**	**0.0%**
Fines smaller than 20 mm	3.6%	0.0%
Total	**100.0%**	**100.0%**

Sector	G All other retailers	
Waste Material	**MRW**	**MDR**
PAPER	**24.4%**	**35.2%**
Office Paper	2.2%	9.1%
Newspaper	0.2%	2.5%
Magazines & Glossy Paper	0.1%	2.2%
Tissue Paper	16.8%	2.1%
Paper Packaging	0.9%	16.9%
Unrecoverable Paper Pac	3.5%	1.4%
Other Paper	0.6%	1.0%
CARDBOARD	**8.1%**	**31.5%**
Cardboard Packaging	4.2%	30.7%
Unrecoverable Pac	0.0%	0.2%
Other Cardboard Non Packaging	3.9%	0.6%
GLASS	**2.3%**	**0.6%**
Glass Packaging	2.1%	0.1%
Other Glass (non-packaging)	0.2%	0.5%
PLASTIC	**22.8%**	**28.2%**
PET Packaging (1)	2.8%	0.4%
PE Packaging (2,4)	2.5%	0.0%
PP Packaging (5)	0.5%	0.1%
PS Packaging (6)	1.3%	1.2%
Plastic Bags & Film packaging	4.1%	20.9%
Other Plastic Packaging (7)	5.9%	2.6%
Unrecoverable Plastic Pac	3.6%	0.4%
Other Plastic (Non Pac)	2.1%	2.6%
METAL	**5.3%**	**0.3%**
Aluminium Cans (Pac)	1.2%	0.1%
Aluminium Foil & Trys (Pac)	0.4%	0.1%
Tin Can (Ferrous Pac)	2.7%	0.0%
Other Metal Packaging	0.0%	0.0%
Other metal waste	0.9%	0.1%
WOOD	**0.1%**	**0.1%**
Wood Packaging	0.0%	0.1%
Other Wood	0.0%	0.0%
Composite Wood	0.0%	0.0%
ORGANIC WASTE	**19.6%**	**1.9%**
Food Waste	15.7%	0.7%
Unused Packaged Food Waste**	2.6%	0.4%
Garden Waste	0.0%	0.0%
Liquid Waste*	1.3%	0.9%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**9.6%**	**0.5%**
Textiles Packaging	8.8%	0.1%
Textiles (Non Packaging)	0.2%	0.1%
Healthcare Textiles (Nappies, etc.)	0.6%	0.0%
Clothes	0.0%	0.3%
COMPOSITES	**4.8%**	**0.6%**
Coffee Cups	4.3%	0.5%
Tetra Pak Packaging	0.3%	0.1%
Composite Packaging	0.3%	0.0%
Non Packaging	0.0%	0.0%
Haz. MUNICIPAL WASTE	**0.1%**	**0.0%**
Electrical Equipment	0.0%	0.0%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.0%
Aerosols	0.0%	0.0%
Waste Chemicals	0.0%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.0%	0.0%
Paint	0.0%	0.0%
Compostables	**0.4%**	**0.5%**
Compostable Wares Pac	0.0%	0.5%
Compostable Wares Npac	0.4%	0.0%
UNCLASSIFIED COMBUSTIBLES	**0.9%**	**0.1%**
Unclassified combustible (Pac.)	0.0%	0.0%
Unclassified combustible (Non-Pac.)	0.9%	0.1%
UNCLASSIFIED INCOMBUSTIBLES	**1.7%**	**0.3%**
Unclassified incombustible	1.7%	0.3%
FINES	**0.0%**	**0.0%**
Fines smaller than 20 mm	0.0%	0.0%
Total	**100.0%**	**100.0%**

Sector	H Transport	
Waste Material	**MRW**	**MDR**
PAPER	**14.4%**	**10.6%**
Office Paper	0.5%	2.2%
Newspaper	0.4%	1.4%
Magazines & Glossy Paper	0.4%	0.9%
Tissue Paper	7.4%	2.7%
Paper Packaging	1.3%	1.6%
Unrecoverable Paper Pac	0.2%	0.9%
Other Paper	4.2%	0.8%
CARDBOARD	**1.4%**	**32.7%**
Cardboard Packaging	1.3%	30.7%
Unrecoverable Pac	0.0%	1.4%
Other Cardboard Non Packaging	0.1%	0.7%
GLASS	**2.1%**	**2.0%**
Glass Packaging	2.0%	2.0%
Other Glass (non-packaging)	0.1%	0.0%
PLASTIC	**16.6%**	**18.1%**
PET Packaging (1)	5.7%	8.3%
PE Packaging (2,4)	0.6%	2.0%
PP Packaging (5)	0.1%	0.4%
PS Packaging (6)	0.2%	0.3%
Plastic Bags & Film packaging	3.3%	1.8%
Other Plastic Packaging (7)	1.7%	2.7%
Unrecoverable Plastic Pac	0.1%	0.1%
Other Plastic (Non Pac)	4.9%	2.5%
METAL	**2.0%**	**3.2%**
Aluminium Cans (Pac)	0.9%	1.0%
Aluminium Foil & Trys (Pac)	0.3%	0.1%
Tin Can (Ferrous Pac)	0.2%	0.6%
Other Metal Packaging	0.0%	0.0%
Other metal waste	0.6%	1.5%
WOOD	**0.1%**	**0.7%**
Wood Packaging	0.0%	0.0%
Other Wood	0.0%	0.0%
Composite Wood	0.1%	0.7%
ORGANIC WASTE	**31.9%**	**25.3%**
Food Waste	17.4%	9.7%
Unused Packaged Food Waste**	0.0%	0.0%
Garden Waste	4.5%	0.5%
Liquid Waste*	10.0%	15.1%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**11.5%**	**1.7%**
Textiles Packaging	0.0%	0.0%
Textiles (Non Packaging)	9.1%	1.2%
Healthcare Textiles (Nappies, etc.)	0.9%	0.0%
Clothes	1.5%	0.4%
COMPOSITES	**2.3%**	**3.5%**
Coffee Cups	0.8%	2.0%
Tetra Pak Packaging	0.3%	0.7%
Composite Packaging	1.1%	0.8%
Non Packaging	0.0%	0.0%
Haz. MUNICIPAL WASTE	**1.2%**	**0.1%**
Electrical Equipment	0.4%	0.0%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.0%
Aerosols	0.2%	0.1%
Waste Chemicals	0.0%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.6%	0.0%
Paint	0.0%	0.0%
Compostables	**0.1%**	**0.4%**
Compostable Wares Pac	0.0%	0.1%
Compostable Wares Npac	0.1%	0.3%
UNCLASSIFIED COMBUSTIBLES	**4.6%**	**1.6%**
Unclassified combustible (Pac.)	0.0%	0.4%
Unclassified combustible (Non-Pac.)	4.6%	1.3%
UNCLASSIFIED INCOMBUSTIBLES	**6.3%**	**0.2%**
Unclassified incombustible	6.3%	0.2%
FINES	**5.6%**	**0.0%**
Fines smaller than 20 mm	5.6%	0.0%
Total	**100.0%**	**100.0%**

Sector	I - Hotels	
Waste Material	**MRW**	**MDR**
PAPER	**21.5%**	**27.3%**
Office Paper	2.2%	4.1%
Newspaper	2.4%	4.0%
Magazines & Glossy Paper	1.2%	2.0%
Tissue Paper	12.0%	11.6%
Paper Packaging	1.2%	2.5%
Unrecoverable Paper Pac	0.7%	0.3%
Other Paper	1.8%	2.8%
CARDBOARD	**5.2%**	**20.5%**
Cardboard Packaging	4.6%	19.6%
Unrecoverable Pac	0.3%	0.3%
Other Cardboard Non Packaging	0.3%	0.6%
GLASS	**1.7%**	**1.9%**
Glass Packaging	1.6%	1.7%
Other Glass (non-packaging)	0.1%	0.2%
PLASTIC	**18.8%**	**20.9%**
PET Packaging (1)	3.1%	5.4%
PE Packaging (2,4)	1.4%	1.3%
PP Packaging (5)	2.3%	1.1%
PS Packaging (6)	0.3%	0.9%
Plastic Bags & Film packaging	4.3%	6.5%
Other Plastic Packaging (7)	2.9%	2.9%
Unrecoverable Plastic Pac	1.7%	0.7%
Other Plastic (Non Pac)	2.7%	2.1%
METAL	**4.5%**	**5.0%**
Aluminium Cans (Pac)	0.5%	0.5%
Aluminium Foil & Trys (Pac)	0.2%	0.2%
Tin Can (Ferrous Pac)	2.3%	3.5%
Other Metal Packaging	0.4%	0.2%
Other metal waste	1.0%	0.6%
WOOD	**0.2%**	**0.9%**
Wood Packaging	0.0%	0.8%
Other Wood	0.0%	0.1%
Composite Wood	0.1%	0.0%
ORGANIC WASTE	**31.7%**	**10.4%**
Food Waste	23.5%	4.7%
Unused Packaged Food Waste**	4.3%	0.5%
Garden Waste	0.6%	0.1%
Liquid Waste*	3.3%	5.1%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**6.0%**	**2.6%**
Textiles Packaging	0.1%	0.0%
Textiles (Non Packaging)	3.4%	0.5%
Healthcare Textiles (Nappies, etc.)	1.5%	1.3%
Clothes	1.0%	0.8%
COMPOSITES	**3.3%**	**4.3%**
Coffee Cups	1.0%	0.7%
Tetra Pak Packaging	0.8%	2.3%
Composite Packaging	1.3%	1.3%
Non Packaging	0.1%	0.0%
Haz. MUNICIPAL WASTE	**0.7%**	**0.4%**
Electrical Equipment	0.4%	0.2%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.0%
Aerosols	0.1%	0.1%
Waste Chemicals	0.2%	0.1%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.0%	0.0%
Paint	0.0%	0.0%
Compostables	**0.2%**	**0.1%**
Compostable Wares Pac	0.0%	0.0%
Compostable Wares Npac	0.1%	0.1%
UNCLASSIFIED COMBUSTIBLES	**4.5%**	**4.7%**
Unclassified combustible (Pac.)	0.0%	0.1%
Unclassified combustible (Non-Pac.)	4.5%	4.6%
UNCLASSIFIED INCOMBUSTIBLES	**0.7%**	**0.2%**
Unclassified incombustible	0.7%	0.2%
FINES	**1.1%**	**0.8%**
Fines smaller than 20 mm	1.1%	0.8%
Total	**100.0%**	**100.0%**

Sector	I - Restaurants	
Waste Material	**MRW**	**MDR**
PAPER	21.3%	12.2%
Office Paper	0.8%	1.0%
Newspaper	0.5%	0.7%
Magazines & Glossy Paper	2.1%	0.4%
Tissue Paper	14.6%	7.2%
Paper Packaging	1.5%	1.5%
Unrecoverable Paper Pac	0.9%	0.7%
Other Paper	1.0%	0.6%
CARDBOARD	5.3%	28.3%
Cardboard Packaging	4.2%	28.0%
Unrecoverable Pac	0.1%	0.3%
Other Cardboard Non Packaging	1.0%	0.1%
GLASS	0.6%	0.9%
Glass Packaging	0.6%	0.9%
Other Glass (non-packaging)	0.0%	0.0%
PLASTIC	13.3%	22.9%
PET Packaging (1)	1.9%	3.7%
PE Packaging (2,4)	1.4%	4.2%
PP Packaging (5)	1.1%	2.8%
PS Packaging (6)	0.4%	0.5%
Plastic Bags & Film packaging	2.9%	5.5%
Other Plastic Packaging (7)	3.1%	3.2%
Unrecoverable Plastic Pac	0.7%	0.8%
Other Plastic (Non Pac)	1.9%	2.3%
METAL	3.0%	8.4%
Aluminium Cans (Pac)	0.3%	1.1%
Aluminium Foil & Trys (Pac)	0.5%	0.3%
Tin Can (Ferrous Pac)	0.7%	6.7%
Other Metal Packaging	0.9%	0.2%
Other metal waste	0.6%	0.1%
WOOD	0.6%	1.3%
Wood Packaging	0.2%	1.1%
Other Wood	0.3%	0.2%
Composite Wood	0.1%	0.0%
ORGANIC WASTE	34.2%	19.9%
Food Waste	29.7%	18.8%
Unused Packaged Food Waste**	1.8%	0.1%
Garden Waste	1.2%	0.0%
Liquid Waste*	1.5%	1.0%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	4.8%	0.4%
Textiles Packaging	0.0%	0.0%
Textiles (Non Packaging)	1.2%	0.3%
Healthcare Textiles (Nappies, etc.)	3.1%	0.0%
Clothes	0.5%	0.1%
COMPOSITES	5.9%	4.1%
Coffee Cups	3.2%	2.4%
Tetra Pak Packaging	0.6%	0.7%
Composite Packaging	2.1%	0.9%
Non Packaging	0.0%	0.0%
Haz. MUNICIPAL WASTE	0.4%	0.1%
Electrical Equipment	0.1%	0.0%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.0%
Aerosols	0.0%	0.0%
Waste Chemicals	0.1%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.0%	0.0%
Paint	0.1%	0.0%
Compostables	1.9%	1.1%
Compostable Wares Pac	1.0%	1.0%
Compostable Wares Npac	1.0%	0.1%
UNCLASSIFIED COMBUSTIBLES	2.3%	0.4%
Unclassified combustible (Pac.)	0.0%	0.0%
Unclassified combustible (Non-Pac.)	2.3%	0.4%
UNCLASSIFIED INCOMBUSTIBLES	4.8%	0.0%
Unclassified incombustible	4.8%	0.0%
FINES	1.6%	0.0%
Fines smaller than 20 mm	1.6%	0.0%
Total	**100.0%**	**100.0%**

Sector	I - Fast Food	
Waste Material	**MRW**	**MDR**
PAPER	**12.7%**	**20.5%**
Office Paper	0.0%	0.0%
Newspaper	0.0%	0.0%
Magazines & Glossy Paper	0.0%	0.0%
Tissue Paper	8.4%	9.5%
Paper Packaging	1.8%	3.5%
Unrecoverable Paper Pac	1.9%	4.7%
Other Paper	0.6%	2.9%
CARDBOARD	**9.0%**	**31.6%**
Cardboard Packaging	8.6%	30.7%
Unrecoverable Pac	0.4%	0.9%
Other Cardboard Non Packaging	0.0%	0.0%
GLASS	**0.0%**	**0.0%**
Glass Packaging	0.0%	0.0%
Other Glass (non-packaging)	0.0%	0.0%
PLASTIC	**19.6%**	**22.2%**
PET Packaging (1)	7.4%	2.1%
PE Packaging (2,4)	1.3%	1.7%
PP Packaging (5)	0.2%	0.6%
PS Packaging (6)	0.1%	2.3%
Plastic Bags & Film packaging	0.5%	0.1%
Other Plastic Packaging (7)	7.6%	7.6%
Unrecoverable Plastic Pac	0.0%	0.0%
Other Plastic (Non Pac)	2.6%	7.8%
METAL	**0.2%**	**1.4%**
Aluminium Cans (Pac)	0.2%	0.4%
Aluminium Foil & Trys (Pac)	0.0%	0.0%
Tin Can (Ferrous Pac)	0.0%	1.0%
Other Metal Packaging	0.0%	0.0%
Other metal waste	0.0%	0.0%
WOOD	**0.1%**	**0.0%**
Wood Packaging	0.0%	0.0%
Other Wood	0.0%	0.0%
Composite Wood	0.1%	0.0%
ORGANIC WASTE	**56.5%**	**9.4%**
Food Waste	41.8%	8.2%
Unused Packaged Food Waste**	0.0%	0.0%
Garden Waste	0.0%	0.0%
Liquid Waste*	0.0%	1.2%
Vegetable Oil	14.8%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**0.8%**	**2.1%**
Textiles Packaging	0.0%	0.0%
Textiles (Non Packaging)	0.0%	1.7%
Healthcare Textiles (Nappies, etc.)	0.8%	0.4%
Clothes	0.0%	0.0%
COMPOSITES	**0.7%**	**12.8%**
Coffee Cups	0.5%	12.6%
Tetra Pak Packaging	0.0%	0.0%
Composite Packaging	0.2%	0.2%
Non Packaging	0.0%	0.0%
Haz. MUNICIPAL WASTE	**0.0%**	**0.0%**
Electrical Equipment	0.0%	0.0%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.0%
Aerosols	0.0%	0.0%
Waste Chemicals	0.0%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.0%	0.0%
Paint	0.0%	0.0%
Compostables	**0.2%**	**0.0%**
Compostable Wares Pac	0.2%	0.0%
Compostable Wares Npac	0.0%	0.0%
UNCLASSIFIED COMBUSTIBLES	**0.0%**	**0.0%**
Unclassified combustible (Pac.)	0.0%	0.0%
Unclassified combustible (Non-Pac.)	0.0%	0.0%
UNCLASSIFIED INCOMBUSTIBLES	**0.0%**	**0.0%**
Unclassified incombustible	0.0%	0.0%
FINES	**0.0%**	**0.0%**
Fines smaller than 20 mm	0.0%	0.0%
Total	**100.0%**	**100.0%**

Sector	J-N Offices	
Waste Material	**MRW**	**MDR**
PAPER	**24.4%**	**56.5%**
Office Paper	3.3%	32.9%
Newspaper	2.3%	7.0%
Magazines & Glossy Paper	0.8%	5.3%
Tissue Paper	10.8%	5.3%
Paper Packaging	2.8%	1.7%
Unrecoverable Paper Pac	1.2%	0.3%
Other Paper	3.2%	4.0%
CARDBOARD	**2.5%**	**12.4%**
Cardboard Packaging	2.3%	11.5%
Unrecoverable Pac	0.0%	0.0%
Other Cardboard Non Packaging	0.1%	0.9%
GLASS	**1.1%**	**0.1%**
Glass Packaging	0.9%	0.1%
Other Glass (non-packaging)	0.1%	0.0%
PLASTIC	**13.4%**	**16.1%**
PET Packaging (1)	3.0%	4.6%
PE Packaging (2,4)	0.7%	1.4%
PP Packaging (5)	1.0%	1.1%
PS Packaging (6)	0.6%	0.3%
Plastic Bags & Film packaging	3.6%	3.4%
Other Plastic Packaging (7)	2.0%	3.2%
Unrecoverable Plastic Pac	0.2%	0.2%
Other Plastic (Non Pac)	2.3%	1.9%
METAL	**2.4%**	**1.6%**
Aluminium Cans (Pac)	0.7%	0.9%
Aluminium Foil & Trys (Pac)	0.8%	0.2%
Tin Can (Ferrous Pac)	0.1%	0.3%
Other Metal Packaging	0.0%	0.2%
Other metal waste	0.8%	0.1%
WOOD	**0.2%**	**0.1%**
Wood Packaging	0.0%	0.0%
Other Wood	0.2%	0.1%
Composite Wood	0.0%	0.0%
ORGANIC WASTE	**39.7%**	**4.9%**
Food Waste	32.4%	3.8%
Unused Packaged Food Waste**	4.0%	0.4%
Garden Waste	1.6%	0.1%
Liquid Waste*	1.5%	0.6%
Vegetable Oil	0.1%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**3.6%**	**0.1%**
Textiles Packaging	0.1%	0.0%
Textiles (Non Packaging)	1.1%	0.0%
Healthcare Textiles (Nappies, etc.)	0.2%	0.0%
Clothes	2.2%	0.0%
COMPOSITES	**7.1%**	**5.2%**
Coffee Cups	4.8%	4.0%
Tetra Pak Packaging	0.5%	0.4%
Composite Packaging	1.7%	0.8%
Non Packaging	0.1%	0.0%
Haz. MUNICIPAL WASTE	**0.7%**	**0.1%**
Electrical Equipment	0.5%	0.1%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.0%
Aerosols	0.0%	0.1%
Waste Chemicals	0.0%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.0%	0.0%
Paint	0.0%	0.0%
Compostables	**1.9%**	**2.2%**
Compostable Wares Pac	1.8%	1.9%
Compostable Wares Npac	0.0%	0.2%
UNCLASSIFIED COMBUSTIBLES	**2.7%**	**0.4%**
Unclassified combustible (Pac.)	0.0%	0.0%
Unclassified combustible (Non-Pac.)	2.7%	0.4%
UNCLASSIFIED INCOMBUSTIBLES	**0.4%**	**0.1%**
Unclassified incombustible	0.4%	0.1%
FINES	**0.1%**	**0.0%**
Fines smaller than 20 mm	0.1%	0.0%
Total	**100.0%**	**100.0%**

Sector	J-N Business Services	
Waste Material	MRW	MDR
PAPER	28.9%	61.3%
Office Paper	4.5%	5.8%
Newspaper	3.4%	42.3%
Magazines & Glossy Paper	2.1%	7.4%
Tissue Paper	15.7%	2.6%
Paper Packaging	1.2%	2.0%
Unrecoverable Paper Pac	1.7%	0.6%
Other Paper	0.4%	0.6%
CARDBOARD	5.0%	8.8%
Cardboard Packaging	4.2%	8.8%
Unrecoverable Pac	0.7%	0.0%
Other Cardboard Non Packaging	0.1%	0.0%
GLASS	1.4%	0.8%
Glass Packaging	1.3%	0.8%
Other Glass (non-packaging)	0.1%	0.0%
PLASTIC	12.8%	7.1%
PET Packaging (1)	4.9%	3.0%
PE Packaging (2,4)	0.4%	0.2%
PP Packaging (5)	0.7%	0.3%
PS Packaging (6)	0.3%	0.2%
Plastic Bags & Film packaging	0.4%	0.1%
Other Plastic Packaging (7)	1.9%	0.7%
Unrecoverable Plastic Pac	0.1%	0.3%
Other Plastic (Non Pac)	4.3%	2.3%
METAL	2.3%	1.7%
Aluminium Cans (Pac)	0.7%	0.4%
Aluminium Foil & Trys (Pac)	0.1%	0.0%
Tin Can (Ferrous Pac)	0.1%	0.0%
Other Metal Packaging	0.1%	0.0%
Other metal waste	1.3%	1.3%
WOOD	1.0%	0.3%
Wood Packaging	0.1%	0.0%
Other Wood	0.0%	0.0%
Composite Wood	0.9%	0.3%
ORGANIC WASTE	30.3%	8.3%
Food Waste	26.7%	6.6%
Unused Packaged Food Waste**	0.0%	0.0%
Garden Waste	0.0%	0.0%
Liquid Waste*	3.6%	1.7%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	0.9%	1.1%
Textiles Packaging	0.0%	0.0%
Textiles (Non Packaging)	0.5%	0.5%
Healthcare Textiles (Nappies, etc.)	0.2%	0.6%
Clothes	0.2%	0.0%
COMPOSITES	8.0%	4.4%
Coffee Cups	5.1%	2.9%
Tetra Pak Packaging	1.0%	0.6%
Composite Packaging	1.5%	0.7%
Non Packaging	0.4%	0.3%
Haz. MUNICIPAL WASTE	0.9%	0.1%
Electrical Equipment	0.8%	0.0%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.1%
Aerosols	0.0%	0.0%
Waste Chemicals	0.0%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.0%	0.0%
Paint	0.0%	0.0%
Compostables	6.6%	5.1%
Compostable Wares Pac	5.2%	3.1%
Compostable Wares Npac	1.4%	1.9%
UNCLASSIFIED COMBUSTIBLES	1.0%	1.0%
Unclassified combustible (Pac.)	0.3%	0.0%
Unclassified combustible (Non-Pac.)	0.6%	1.0%
UNCLASSIFIED INCOMBUSTIBLES	1.0%	0.1%
Unclassified incombustible	1.0%	0.1%
FINES	0.0%	0.0%
Fines smaller than 20 mm	0.0%	0.0%
Total	100.0%	100.0%

Sector	O - Public Services	
Waste Material	MRW	MDR
PAPER	**15.6%**	**21.2%**
Office Paper	1.3%	1.8%
Newspaper	0.4%	7.5%
Magazines & Glossy Paper	0.0%	2.9%
Tissue Paper	11.6%	1.0%
Paper Packaging	0.2%	2.6%
Unrecoverable Paper Pac	0.9%	0.5%
Other Paper	1.2%	4.8%
CARDBOARD	**7.3%**	**40.3%**
Cardboard Packaging	7.2%	38.4%
Unrecoverable Pac	0.0%	1.8%
Other Cardboard Non Packaging	0.1%	0.0%
GLASS	**2.3%**	**0.0%**
Glass Packaging	2.3%	0.0%
Other Glass (non-packaging)	0.0%	0.0%
PLASTIC	**12.9%**	**30.6%**
PET Packaging (1)	3.1%	7.1%
PE Packaging (2,4)	0.8%	1.3%
PP Packaging (5)	0.8%	0.5%
PS Packaging (6)	0.2%	0.0%
Plastic Bags & Film packaging	1.7%	5.7%
Other Plastic Packaging (7)	0.7%	4.7%
Unrecoverable Plastic Pac	0.1%	0.0%
Other Plastic (Non Pac)	5.5%	11.4%
METAL	**5.5%**	**1.8%**
Aluminium Cans (Pac)	1.0%	1.2%
Aluminium Foil & Trys (Pac)	0.4%	0.0%
Tin Can (Ferrous Pac)	0.6%	0.5%
Other Metal Packaging	0.1%	0.0%
Other metal waste	3.4%	0.0%
WOOD	**0.6%**	**2.8%**
Wood Packaging	0.0%	2.8%
Other Wood	0.0%	0.0%
Composite Wood	0.6%	0.0%
ORGANIC WASTE	**36.1%**	**2.3%**
Food Waste	21.9%	0.2%
Unused Packaged Food Waste**	0.0%	0.0%
Garden Waste	12.3%	0.0%
Liquid Waste*	1.8%	2.1%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**14.9%**	**0.7%**
Textiles Packaging	1.7%	0.0%
Textiles (Non Packaging)	1.4%	0.0%
Healthcare Textiles (Nappies, etc.)	0.7%	0.7%
Clothes	11.1%	0.0%
COMPOSITES	**1.9%**	**0.3%**
Coffee Cups	0.8%	0.1%
Tetra Pak Packaging	0.6%	0.0%
Composite Packaging	0.4%	0.1%
Non Packaging	0.0%	0.0%
Haz. MUNICIPAL WASTE	**0.1%**	**0.0%**
Electrical Equipment	0.1%	0.0%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.0%
Aerosols	0.0%	0.0%
Waste Chemicals	0.0%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.0%	0.0%
Paint	0.0%	0.0%
Compostables	**0.0%**	**0.0%**
Compostable Wares Pac	0.0%	0.0%
Compostable Wares Npac	0.0%	0.0%
UNCLASSIFIED COMBUSTIBLES	**2.5%**	**0.1%**
Unclassified combustible (Pac.)	0.2%	0.1%
Unclassified combustible (Non-Pac.)	2.3%	0.0%
UNCLASSIFIED INCOMBUSTIBLES	**0.3%**	**0.0%**
Unclassified incombustible	0.3%	0.0%
FINES	**0.0%**	**0.0%**
Fines smaller than 20 mm	0.0%	0.0%
Total	**100.0%**	**100.0%**

Sector	P - Pre-Primary	
Waste Material	**MRW**	**MDR**
PAPER	**16.6%**	**20.6%**
Office Paper	0.7%	3.8%
Newspaper	0.0%	0.0%
Magazines & Glossy Paper	0.1%	10.0%
Tissue Paper	14.4%	2.9%
Paper Packaging	0.3%	3.2%
Unrecoverable Paper Pac	0.1%	0.0%
Other Paper	1.1%	0.7%
CARDBOARD	**2.1%**	**37.3%**
Cardboard Packaging	2.0%	36.8%
Unrecoverable Pac	0.2%	0.6%
Other Cardboard Non Packaging	0.0%	0.0%
GLASS	**0.0%**	**11.5%**
Glass Packaging	0.0%	11.5%
Other Glass (non-packaging)	0.0%	0.0%
PLASTIC	**6.5%**	**17.9%**
PET Packaging (1)	0.4%	4.2%
PE Packaging (2,4)	0.3%	3.1%
PP Packaging (5)	0.3%	0.8%
PS Packaging (6)	0.0%	0.1%
Plastic Bags & Film packaging	0.6%	1.3%
Other Plastic Packaging (7)	0.7%	4.7%
Unrecoverable Plastic Pac	0.1%	0.0%
Other Plastic (Non Pac)	4.1%	3.8%
METAL	**0.6%**	**3.7%**
Aluminium Cans (Pac)	0.0%	0.1%
Aluminium Foil & Trys (Pac)	0.1%	0.0%
Tin Can (Ferrous Pac)	0.2%	3.1%
Other Metal Packaging	0.0%	0.4%
Other metal waste	0.3%	0.1%
WOOD	**0.0%**	**4.8%**
Wood Packaging	0.0%	0.0%
Other Wood	0.0%	0.0%
Composite Wood	0.0%	4.8%
ORGANIC WASTE	**40.0%**	**1.6%**
Food Waste	39.4%	1.6%
Unused Packaged Food Waste**	0.0%	0.0%
Garden Waste	0.0%	0.0%
Liquid Waste*	0.7%	0.0%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**30.4%**	**0.2%**
Textiles Packaging	0.1%	0.0%
Textiles (Non Packaging)	0.5%	0.0%
Healthcare Textiles (Nappies, etc.)	29.4%	0.0%
Clothes	0.4%	0.2%
COMPOSITES	**1.2%**	**2.3%**
Coffee Cups	0.6%	0.0%
Tetra Pak Packaging	0.4%	1.7%
Composite Packaging	0.1%	0.6%
Non Packaging	0.0%	0.0%
Haz. MUNICIPAL WASTE	**0.3%**	**0.0%**
Electrical Equipment	0.2%	0.0%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.0%
Aerosols	0.1%	0.0%
Waste Chemicals	0.0%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.0%	0.0%
Paint	0.0%	0.0%
Compostables	**0.2%**	**0.0%**
Compostable Wares Pac	0.2%	0.0%
Compostable Wares Npac	0.0%	0.0%
UNCLASSIFIED COMBUSTIBLES	**1.8%**	**0.0%**
Unclassified combustible (Pac.)	0.0%	0.0%
Unclassified combustible (Non-Pac.)	1.8%	0.0%
UNCLASSIFIED INCOMBUSTIBLES	**0.3%**	**0.0%**
Unclassified incombustible	0.3%	0.0%
FINES	**0.0%**	**0.0%**
Fines smaller than 20 mm	0.0%	0.0%
Total	**100.0%**	**100.0%**

Sector	P - Primary	
Waste Material	**MRW**	**MDR**
PAPER	**26.0%**	**56.9%**
Office Paper	2.8%	20.0%
Newspaper	0.0%	0.7%
Magazines & Glossy Paper	0.7%	9.0%
Tissue Paper	19.0%	7.7%
Paper Packaging	1.3%	2.7%
Unrecoverable Paper Pac	0.3%	0.0%
Other Paper	1.9%	17.0%
CARDBOARD	**3.1%**	**12.3%**
Cardboard Packaging	3.0%	9.9%
Unrecoverable Pac	0.2%	0.0%
Other Cardboard Non Packaging	0.0%	2.3%
GLASS	**0.4%**	**0.2%**
Glass Packaging	0.4%	0.2%
Other Glass (non-packaging)	0.0%	0.0%
PLASTIC	**14.4%**	**20.6%**
PET Packaging (1)	4.0%	2.3%
PE Packaging (2,4)	1.0%	7.5%
PP Packaging (5)	0.7%	0.4%
PS Packaging (6)	0.4%	0.4%
Plastic Bags & Film packaging	1.7%	5.0%
Other Plastic Packaging (7)	1.8%	0.3%
Unrecoverable Plastic Pac	0.0%	0.0%
Other Plastic (Non Pac)	4.9%	4.8%
METAL	**4.3%**	**0.9%**
Aluminium Cans (Pac)	0.6%	0.0%
Aluminium Foil & Trys (Pac)	0.0%	0.0%
Tin Can (Ferrous Pac)	0.4%	0.0%
Other Metal Packaging	1.6%	0.0%
Other metal waste	1.7%	0.9%
WOOD	**2.2%**	**0.5%**
Wood Packaging	0.0%	0.0%
Other Wood	0.0%	0.0%
Composite Wood	2.2%	0.5%
ORGANIC WASTE	**29.8%**	**3.2%**
Food Waste	27.2%	3.0%
Unused Packaged Food Waste**	0.0%	0.0%
Garden Waste	0.0%	0.1%
Liquid Waste*	2.6%	0.1%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**7.5%**	**1.9%**
Textiles Packaging	0.0%	0.0%
Textiles (Non Packaging)	0.8%	0.1%
Healthcare Textiles (Nappies, etc.)	6.7%	1.9%
Clothes	0.0%	0.0%
COMPOSITES	**3.0%**	**1.4%**
Coffee Cups	0.9%	0.8%
Tetra Pak Packaging	0.6%	0.0%
Composite Packaging	1.5%	0.6%
Non Packaging	0.0%	0.0%
Haz. MUNICIPAL WASTE	**1.8%**	**0.6%**
Electrical Equipment	1.3%	0.0%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.6%
Aerosols	0.0%	0.0%
Waste Chemicals	0.3%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.0%	0.0%
Paint	0.1%	0.0%
Compostables	**2.3%**	**0.1%**
Compostable Wares Pac	0.5%	0.1%
Compostable Wares Npac	1.8%	0.0%
UNCLASSIFIED COMBUSTIBLES	**3.4%**	**1.4%**
Unclassified combustible (Pac.)	0.4%	1.4%
Unclassified combustible (Non-Pac.)	3.0%	0.0%
UNCLASSIFIED INCOMBUSTIBLES	**0.0%**	**0.0%**
Unclassified incombustible	0.0%	0.0%
FINES	**1.8%**	**0.0%**
Fines smaller than 20 mm	1.8%	0.0%
Total	**100.0%**	**100.0%**

Sector	P - Secondary	
Waste Material	**MRW**	**MDR**
PAPER	**47.8%**	**59.9%**
Office Paper	6.2%	26.1%
Newspaper	0.0%	5.6%
Magazines & Glossy Paper	0.9%	14.8%
Tissue Paper	11.3%	3.7%
Paper Packaging	1.6%	1.3%
Unrecoverable Paper Pac	0.3%	0.1%
Other Paper	27.5%	8.3%
CARDBOARD	**3.9%**	**15.6%**
Cardboard Packaging	3.8%	15.6%
Unrecoverable Pac	0.1%	0.0%
Other Cardboard Non Packaging	0.0%	0.0%
GLASS	**0.8%**	**0.0%**
Glass Packaging	0.7%	0.0%
Other Glass (non-packaging)	0.1%	0.0%
PLASTIC	**9.1%**	**11.8%**
PET Packaging (1)	2.0%	3.3%
PE Packaging (2,4)	1.6%	1.7%
PP Packaging (5)	1.0%	0.3%
PS Packaging (6)	0.1%	0.0%
Plastic Bags & Film packaging	0.3%	0.1%
Other Plastic Packaging (7)	1.5%	1.8%
Unrecoverable Plastic Pac	0.0%	0.0%
Other Plastic (Non Pac)	2.6%	4.5%
METAL	**2.0%**	**0.2%**
Aluminium Cans (Pac)	0.3%	0.0%
Aluminium Foil & Trys (Pac)	0.1%	0.0%
Tin Can (Ferrous Pac)	0.1%	0.0%
Other Metal Packaging	0.0%	0.0%
Other metal waste	1.5%	0.2%
WOOD	**0.4%**	**6.2%**
Wood Packaging	0.0%	0.0%
Other Wood	0.0%	0.0%
Composite Wood	0.4%	6.2%
ORGANIC WASTE	**24.0%**	**4.5%**
Food Waste	20.1%	2.8%
Unused Packaged Food Waste**	0.0%	0.0%
Garden Waste	0.0%	0.0%
Liquid Waste*	3.9%	1.6%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**2.5%**	**0.2%**
Textiles Packaging	0.0%	0.0%
Textiles (Non Packaging)	1.6%	0.1%
Healthcare Textiles (Nappies, etc.)	0.3%	0.1%
Clothes	0.6%	0.0%
COMPOSITES	**1.4%**	**0.6%**
Coffee Cups	0.5%	0.0%
Tetra Pak Packaging	0.2%	0.2%
Composite Packaging	0.7%	0.5%
Non Packaging	0.0%	0.0%
Haz. MUNICIPAL WASTE	**0.5%**	**0.1%**
Electrical Equipment	0.0%	0.0%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.0%
Aerosols	0.0%	0.0%
Waste Chemicals	0.5%	0.1%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.0%	0.0%
Paint	0.0%	0.0%
Compostables	**0.2%**	**0.0%**
Compostable Wares Pac	0.2%	0.0%
Compostable Wares Npac	0.0%	0.0%
UNCLASSIFIED COMBUSTIBLES	**5.6%**	**0.8%**
Unclassified combustible (Pac.)	0.8%	0.8%
Unclassified combustible (Non-Pac.)	4.7%	0.0%
UNCLASSIFIED INCOMBUSTIBLES	**0.7%**	**0.1%**
Unclassified incombustible	0.7%	0.1%
FINES	**1.0%**	**0.0%**
Fines smaller than 20 mm	1.0%	0.0%
Total	**100.0%**	**100.0%**

Sector	Q - Acute Hospitals	
Waste Material	**MRW**	**MDR**
PAPER	**16.7%**	**12.2%**
Office Paper	0.4%	6.0%
Newspaper	0.4%	0.0%
Magazines & Glossy Paper	0.0%	1.3%
Tissue Paper	12.3%	0.3%
Paper Packaging	2.1%	0.8%
Unrecoverable Paper Pac	0.5%	0.5%
Other Paper	1.1%	3.4%
CARDBOARD	**6.5%**	**8.1%**
Cardboard Packaging	4.4%	8.1%
Unrecoverable Pac	1.9%	0.0%
Other Cardboard Non Packaging	0.1%	0.0%
GLASS	**0.3%**	**0.0%**
Glass Packaging	0.0%	0.0%
Other Glass (non-packaging)	0.3%	0.0%
PLASTIC	**21.2%**	**60.7%**
PET Packaging (1)	1.4%	4.1%
PE Packaging (2,4)	0.9%	29.7%
PP Packaging (5)	0.4%	2.2%
PS Packaging (6)	0.1%	0.3%
Plastic Bags & Film packaging	0.8%	2.1%
Other Plastic Packaging (7)	5.8%	18.0%
Unrecoverable Plastic Pac	0.2%	0.0%
Other Plastic (Non Pac)	11.4%	4.4%
METAL	**1.4%**	**13.2%**
Aluminium Cans (Pac)	0.1%	1.3%
Aluminium Foil & Trys (Pac)	0.8%	0.0%
Tin Can (Ferrous Pac)	0.0%	11.9%
Other Metal Packaging	0.0%	0.0%
Other metal waste	0.4%	0.0%
WOOD	**0.1%**	**0.1%**
Wood Packaging	0.0%	0.0%
Other Wood	0.0%	0.0%
Composite Wood	0.1%	0.1%
ORGANIC WASTE	**16.2%**	**1.8%**
Food Waste	15.0%	1.5%
Unused Packaged Food Waste**	0.0%	0.0%
Garden Waste	0.0%	0.0%
Liquid Waste*	1.3%	0.3%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**16.6%**	**0.3%**
Textiles Packaging	0.0%	0.0%
Textiles (Non Packaging)	9.5%	0.1%
Healthcare Textiles (Nappies, etc.)	7.0%	0.1%
Clothes	0.0%	0.0%
COMPOSITES	**10.4%**	**3.2%**
Coffee Cups	2.3%	1.0%
Tetra Pak Packaging	1.7%	0.1%
Composite Packaging	6.3%	1.8%
Non Packaging	0.1%	0.3%
Haz. MUNICIPAL WASTE	**9.4%**	**0.2%**
Electrical Equipment	0.0%	0.0%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.0%
Aerosols	0.0%	0.0%
Waste Chemicals	0.0%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	9.3%	0.2%
Paint	0.0%	0.0%
Compostables	**0.2%**	**0.1%**
Compostable Wares Pac	0.2%	0.1%
Compostable Wares Npac	0.0%	0.0%
UNCLASSIFIED COMBUSTIBLES	**1.1%**	**0.1%**
Unclassified combustible (Pac.)	0.0%	0.1%
Unclassified combustible (Non-Pac.)	1.1%	0.0%
UNCLASSIFIED INCOMBUSTIBLES	**0.0%**	**0.0%**
Unclassified incombustible	0.0%	0.0%
FINES	**0.0%**	**0.0%**
Fines smaller than 20 mm	0.0%	0.0%
Total	**100.0%**	**100.0%**

Sector	Q - Community Hospitals	
Waste Material	**MRW**	**MDR**
PAPER	**13.7%**	**23.0%**
Office Paper	0.1%	11.7%
Newspaper	0.0%	6.0%
Magazines & Glossy Paper	0.0%	1.3%
Tissue Paper	12.7%	1.6%
Paper Packaging	0.6%	0.8%
Unrecoverable Paper Pac	0.1%	0.1%
Other Paper	0.2%	1.5%
CARDBOARD	**1.1%**	**48.6%**
Cardboard Packaging	1.0%	48.0%
Unrecoverable Pac	0.1%	0.6%
Other Cardboard Non Packaging	0.0%	0.1%
GLASS	**0.0%**	**0.4%**
Glass Packaging	0.0%	0.2%
Other Glass (non-packaging)	0.0%	0.2%
PLASTIC	**13.0%**	**19.3%**
PET Packaging (1)	0.4%	3.4%
PE Packaging (2,4)	0.8%	4.9%
PP Packaging (5)	0.3%	1.5%
PS Packaging (6)	0.0%	0.1%
Plastic Bags & Film packaging	0.4%	1.1%
Other Plastic Packaging (7)	1.9%	4.2%
Unrecoverable Plastic Pac	0.2%	0.0%
Other Plastic (Non Pac)	8.9%	4.0%
METAL	**0.7%**	**2.9%**
Aluminium Cans (Pac)	0.0%	0.3%
Aluminium Foil & Trys (Pac)	0.1%	0.0%
Tin Can (Ferrous Pac)	0.1%	1.5%
Other Metal Packaging	0.1%	0.7%
Other metal waste	0.4%	0.4%
WOOD	**0.5%**	**0.0%**
Wood Packaging	0.0%	0.0%
Other Wood	0.0%	0.0%
Composite Wood	0.5%	0.0%
ORGANIC WASTE	**10.5%**	**1.5%**
Food Waste	10.5%	1.0%
Unused Packaged Food Waste**	0.0%	0.0%
Garden Waste	0.0%	0.0%
Liquid Waste*	0.0%	0.5%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**57.7%**	**0.6%**
Textiles Packaging	0.0%	0.0%
Textiles (Non Packaging)	3.5%	0.4%
Healthcare Textiles (Nappies, etc.)	46.1%	0.1%
Clothes	8.1%	0.0%
COMPOSITES	**1.9%**	**3.2%**
Coffee Cups	0.3%	1.1%
Tetra Pak Packaging	0.3%	1.5%
Composite Packaging	1.3%	0.5%
Non Packaging	0.0%	0.0%
Haz. MUNICIPAL WASTE	**0.3%**	**0.4%**
Electrical Equipment	0.0%	0.3%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.0%	0.0%
Aerosols	0.0%	0.2%
Waste Chemicals	0.0%	0.0%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.2%	0.0%
Paint	0.0%	0.0%
Compostables	**0.1%**	**0.0%**
Compostable Wares Pac	0.1%	0.0%
Compostable Wares Npac	0.0%	0.0%
UNCLASSIFIED COMBUSTIBLES	**0.5%**	**0.0%**
Unclassified combustible (Pac.)	0.2%	0.0%
Unclassified combustible (Non-Pac.)	0.4%	0.0%
UNCLASSIFIED INCOMBUSTIBLES	**0.0%**	**0.0%**
Unclassified incombustible	0.0%	0.0%
FINES	**0.0%**	**0.0%**
Fines smaller than 20 mm	0.0%	0.0%
Total	**100.0%**	**100.0%**

Sector	R - Sports & Entertainment	
Waste Material	**MRW**	**MDR**
PAPER	**20.4%**	**12.7%**
Office Paper	0.9%	0.1%
Newspaper	0.0%	0.0%
Magazines & Glossy Paper	3.0%	0.5%
Tissue Paper	13.8%	11.7%
Paper Packaging	0.6%	0.1%
Unrecoverable Paper Pac	1.7%	0.2%
Other Paper	0.3%	0.1%
CARDBOARD	**3.2%**	**53.8%**
Cardboard Packaging	2.6%	48.5%
Unrecoverable Pac	0.3%	5.3%
Other Cardboard Non Packaging	0.3%	0.0%
GLASS	**1.3%**	**0.2%**
Glass Packaging	1.1%	0.2%
Other Glass (non-packaging)	0.2%	0.0%
PLASTIC	**17.7%**	**8.8%**
PET Packaging (1)	6.2%	4.0%
PE Packaging (2,4)	0.7%	0.4%
PP Packaging (5)	0.1%	0.3%
PS Packaging (6)	0.4%	0.0%
Plastic Bags & Film packaging	1.2%	0.5%
Other Plastic Packaging (7)	2.5%	1.7%
Unrecoverable Plastic Pac	0.8%	0.0%
Other Plastic (Non Pac)	5.9%	1.8%
METAL	**2.8%**	**3.8%**
Aluminium Cans (Pac)	0.6%	1.3%
Aluminium Foil & Trys (Pac)	0.1%	0.0%
Tin Can (Ferrous Pac)	0.3%	0.0%
Other Metal Packaging	1.7%	0.0%
Other metal waste	0.1%	2.5%
WOOD	**0.0%**	**0.0%**
Wood Packaging	0.0%	0.0%
Other Wood	0.0%	0.0%
Composite Wood	0.0%	0.0%
ORGANIC WASTE	**39.7%**	**13.1%**
Food Waste	27.2%	2.3%
Unused Packaged Food Waste**	0.0%	0.0%
Garden Waste	0.0%	0.0%
Liquid Waste*	12.5%	10.9%
Vegetable Oil	0.0%	0.0%
Contamination	0.0%	0.0%
TEXTILES	**1.3%**	**4.9%**
Textiles Packaging	0.0%	0.0%
Textiles (Non Packaging)	0.9%	1.8%
Healthcare Textiles (Nappies, etc.)	0.4%	1.8%
Clothes	0.0%	1.2%
COMPOSITES	**5.9%**	**0.4%**
Coffee Cups	4.2%	0.3%
Tetra Pak Packaging	0.3%	0.1%
Composite Packaging	1.3%	0.0%
Non Packaging	0.1%	0.0%
Haz. MUNICIPAL WASTE	**0.1%**	**0.9%**
Electrical Equipment	0.0%	0.0%
Fluorescent Bulbs	0.0%	0.0%
Batteries	0.1%	0.1%
Aerosols	0.0%	0.5%
Waste Chemicals	0.0%	0.3%
Waste Mineral Oil	0.0%	0.0%
Medicines	0.0%	0.0%
Paint	0.0%	0.0%
Compostables	**6.1%**	**0.4%**
Compostable Wares Pac	0.1%	0.0%
Compostable Wares Npac	6.0%	0.3%
UNCLASSIFIED COMBUSTIBLES	**0.5%**	**0.9%**
Unclassified combustible (Pac.)	0.0%	0.9%
Unclassified combustible (Non-Pac.)	0.5%	0.0%
UNCLASSIFIED INCOMBUSTIBLES	**0.9%**	**0.1%**
Unclassified incombustible	0.9%	0.1%
FINES	**0.0%**	**0.0%**
Fines smaller than 20 mm	0.0%	0.0%
Total	**100.0%**	**100.0%**

Appendix 5: 2022 Results for National Profiles for MRW, MDR and OW

Primary & Secindary Waste Categories	MRW	MDR	OW
PAPER			
Office Paper	1.9%	9.5%	0.0%
Newspaper	1.0%	3.9%	0.0%
Magazines & Glossy Paper	1.4%	2.6%	0.0%
Tissue Paper	11.7%	5.8%	1.0%
Paper Packaging	1.1%	3.7%	0.1%
Unrecoverable Paper Pac	0.9%	0.5%	0.1%
Other Paper	2.0%	2.7%	0.0%
CARDBOARD	-	-	
Cardboard Packaging	3.8%	19.0%	0.1%
Unrecoverable Pac	0.2%	0.4%	2.0%
Other Cardboard Non Packaging	0.7%	0.4%	0.0%
GLASS	-	-	
Glass Packaging	1.0%	0.8%	0.0%
Other Glass (non-packaging)	0.1%	0.1%	0.0%
PLASTIC	-	-	
PET Packaging (1)	2.7%	3.6%	0.1%
PE Packaging (2,4)	1.3%	2.6%	0.0%
PP Packaging (5)	0.8%	1.2%	0.0%
PS Packaging (6)	0.4%	0.6%	0.0%
Plastic Bags & Film packaging	2.3%	5.3%	0.0%
Other Plastic Packaging (7)	2.7%	3.3%	0.1%
Unrecoverable Plastic Pac	0.7%	0.2%	0.0%
Other Plastic (Non Pac)	4.3%	3.8%	0.0%
METAL	-	-	
Aluminium Cans (Pac)	0.5%	0.6%	0.0%
Aluminium Foil & Trys (Pac)	0.3%	0.1%	0.0%
Tin Can (Ferrous Pac)	0.7%	2.0%	0.0%
Other Metal Packaging	0.3%	0.1%	0.0%
Other metal waste	1.8%	0.4%	0.0%
WOOD	-	-	
Wood Packaging	0.0%	0.3%	0.0%
Other Wood	0.3%	0.1%	0.0%
Composite Wood	0.3%	0.3%	0.0%
ORGANIC WASTE	-	-	
Food Waste	24.9%	6.7%	84.1%
Unused Packaged Food Waste**	1.9%	0.3%	7.6%
Garden Waste	1.0%	0.0%	0.0%
Liquid Waste*	2.8%	2.3%	0.5%
Vegetable Oil	0.8%	0.0%	0.0%
Contamination materials	5.3%	8.7%	0.0%
TEXTILES	-	-	
Textiles Packaging	1.2%	0.1%	0.0%
Textiles (Non Packaging)	2.0%	0.5%	0.0%
Healthcare Textiles (Nappies, etc.)	2.9%	0.3%	0.0%
Clothes	1.0%	0.2%	0.0%
COMPOSITES	-	-	
Coffee Cups	1.8%	1.8%	0.0%
Tetra Pak Packaging	0.4%	0.4%	0.0%
Composite Packaging	1.3%	0.6%	0.0%
Composite non-packaging	0.1%	0.5%	0.0%
Haz. SPECIAL/IRREGULAR WASTE	-	-	
Electrical Equipment	0.3%	0.0%	0.0%
Fluorescent Bulbs	0.0%	0.0%	0.0%
Batteries	0.0%	0.0%	0.0%
Aerosols	0.1%	0.1%	0.0%
Waste Chemicals	0.1%	0.0%	0.0%
Waste Mineral Oil	0.0%	0.0%	0.0%
Medicines	0.3%	0.0%	0.0%
Paint	0.0%	0.0%	0.0%
COMPOSTABLES	0.0%	0.0%	0.0%
Compostables	1.1%	0.8%	1.8%
UNCLASSIFIED COMBUSTIBLES	-	-	
Unclassified combustible (Pac.)	0.1%	0.1%	0.0%
Unclassified combustible (Non-Pac.)	2.9%	2.3%	2.3%
UNCLASSIFIED INCOMBUSTIBLES	-	-	
Unclassified incombustible	1.6%	0.1%	0.1%
FINES	-	-	
Fines smaller than 20 mm	0.9%	0.2%	0.0%
Total	100%	100%	100%