

March 27,

2024



# NOVA SCOTIA'S LANDFILL WASTE AUDIT 2023

Divert NS

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## LIST OF ACRONYMS

CBF	Colchester Balefill Facility
CCL	Cumberland Central Landfill
C&D	Construction and Demolition
GWMF	Guysborough Waste Management Facility
HDPE	High-density Polyethylene
HRM	Halifax Regional Municipality
OLWF	Otter Lake Waste Facility
ICI	Industrial, Commercial, Institutional
KMEM	Kaizer Meadow Environmental Management
LDPE	Low-density Polyethylene
MHSW	Municipal Hazardous or Special Waste
PET	Polyethylene terephthalate
PP	Polypropylene
PPE	Personal Protective Equipment
PS	Polystyrene
QML	Queens Municipal Landfill
RES	Residential
SCW	Special Care Waste
UOMA	Used Oil Management Association
WHL	West Hants Landfill



# 1. EXECUTIVE SUMMARY

Divert NS is the registered operating name of Resource Recovery Fund Board, Inc., a not-for-profit corporation created in 1996 under the Nova Scotia Solid Waste-Resource Management Regulations. Its mission is to improve the province's environment, economy, and quality of life by working with Nova Scotians to reduce, reuse, recycle, and recover resources.

To fulfill its mission, Divert NS requires an in-depth understanding of landfill composition and the quantities of material sent to landfills in the province. This knowledge enables Divert NS to identify opportunities for resource recovery and develop targeted waste reduction strategies. In 2023, Divert NS retained Stratzer to conduct a province-wide waste audit for Nova Scotia, following similar audits conducted in 2011, 2012 and 2017.

Sampling was conducted at each of the seven landfills in Nova Scotia. Transfer stations were also open to auditors as a secondary collection point and utilized as necessary to ensure a representative sampling of each area. Transfer stations function to allow residential (RES) and Industrial, Commercial, and Institutional (ICI) waste from local areas to be condensed in larger containers before being transported to an end point of disposal, therefore reducing long distance traveling for smaller trucks. This audit faced challenges due to rampant wildfire and flooding over the summer in Nova Scotia. Therefore, transfer stations were utilized in some instances where auditors were unable to sample at the landfill due to the impact of the fires and flood.

Sampling protocol required collecting 6 RES and 9 ICI samples per landfill. In total, 105 samples were collected: 42 were RES weighing 100 kilograms each, and 63 were ICI samples weighing 135 kilograms each. Samples were then sorted according to a comprehensive list of 22 broad categories and 154 sub-categories.

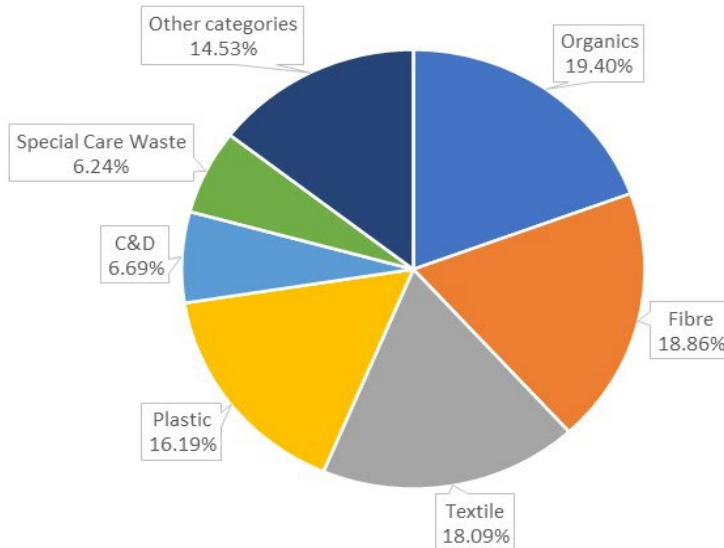
See **Appendix 1** for the full list of material categories and sub-categories with examples.

**Table 1. 22 Broad Material Categories**

Fibre	Plastic	Municipal Hazardous Special Waste	Textiles	Regulated Paint	Regulated Electronics
Organics	Disposable Cups	Automotive (Regulated)	Construction & Demolition	Non-Regulated Paint	Non-Regulated Electronics
Dairy	Glass Excl. Beverage	Automotive (Non-Regulated)	Bulky Items	Regulated Tires	
Dairy Substitutes	Metal	Special Care Waste	Regulated Beverage	Non-Regulated Tires	

Overall findings of the 2023 audit are presented in **Figure 1** which shows the province-wide composition of combined RES and ICI waste. **Figure 1** illustrates the six dominant material categories, with a seventh (Other) representing the remaining 16 groupings of materials sorted. The prominent categories include Organics (19.40%), Fibre (18.86%), Textile (18.09%), and Plastic (16.19%).

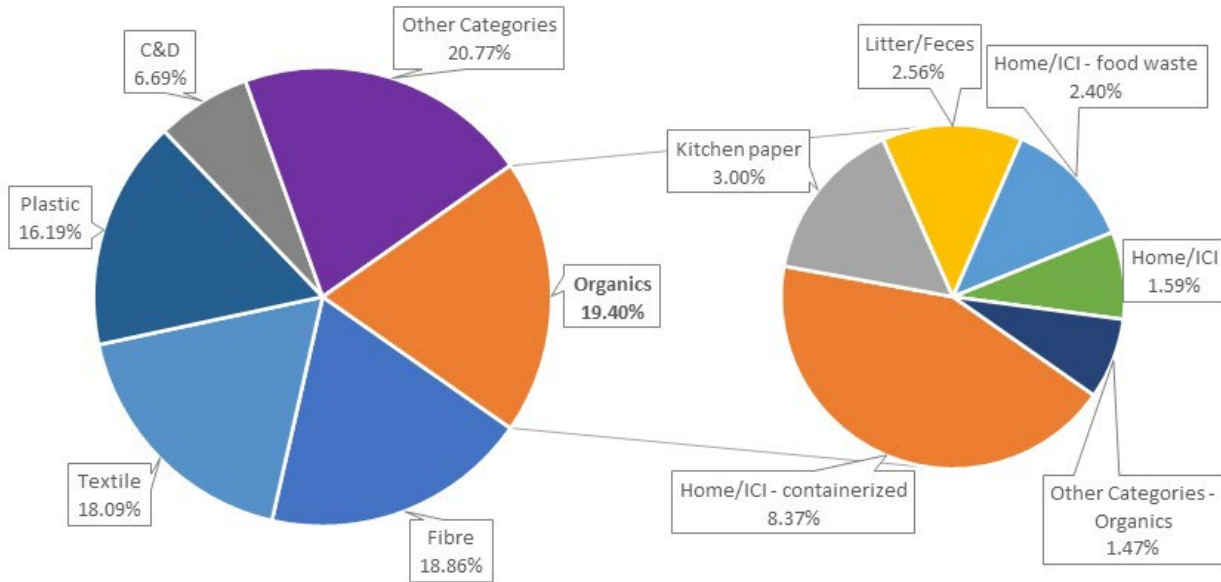
**Figure 1. Province-Wide Combined Residential and ICI Waste**



*\* Plastic Category – plastic percentage would have a greater value if it included the amount of plastic found within the other various categories.*

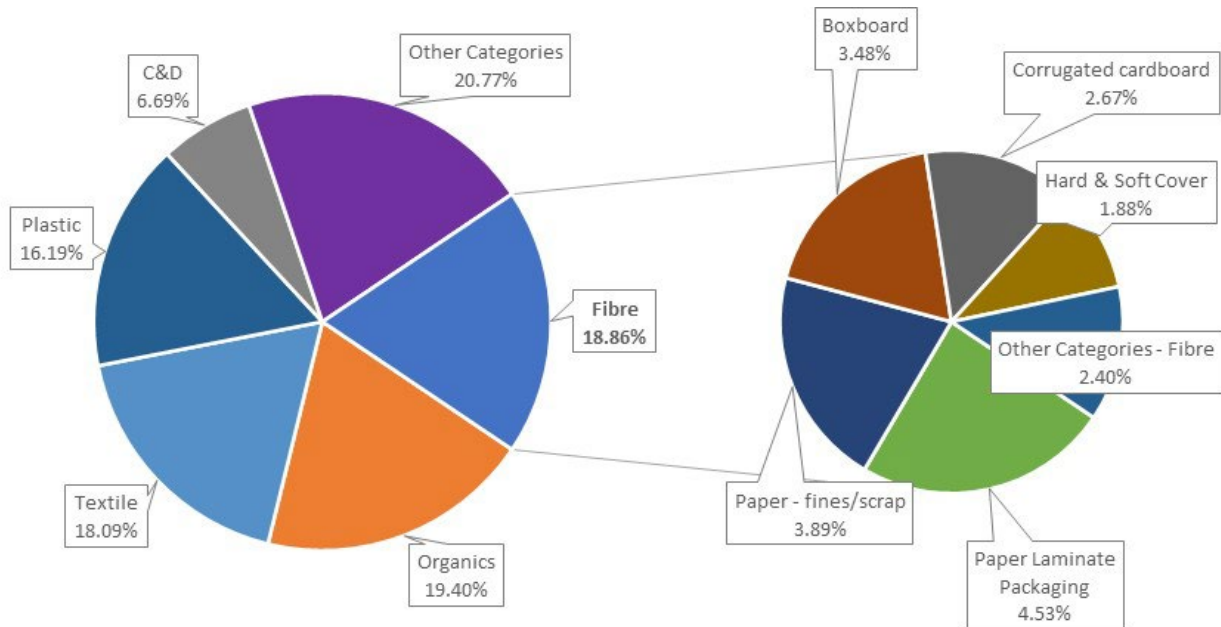
Province-wide RES and ICI results help highlight key areas for more focused waste diversion efforts. For example, Organics and Fibre represent 38.26% of all waste despite easily accessible diversion programs. This report also includes a high-level comparison of results from the previous audit. Comparing results to the previous audit is helpful in identifying areas for improvement. For example, the Textile category increased significantly in 2023 when compared to the 2017 audit, showcasing a need for a renewed effort in textile diversion programs. Each major category found in **Figure 1** was broken into sub-categories. **Figures 2, 3, 4, 5** and **6** below show composition of the major categories broken down by sub-category.

**Figure 2. Organics – Residential + ICI**



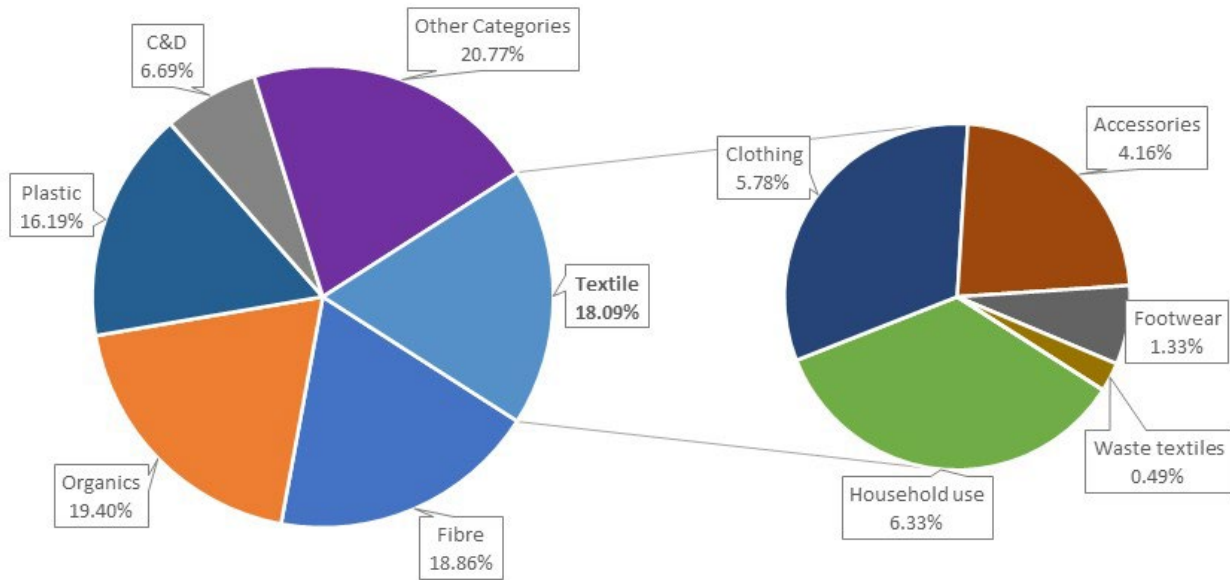
**Note:** Other Categories – Organics: Other paper = 1.27%; Wax = 0.14%; Small wooden items/packaging = 0.06%; Carcasses < 0.005%.

**Figure 3. Fibre – Residential + ICI**

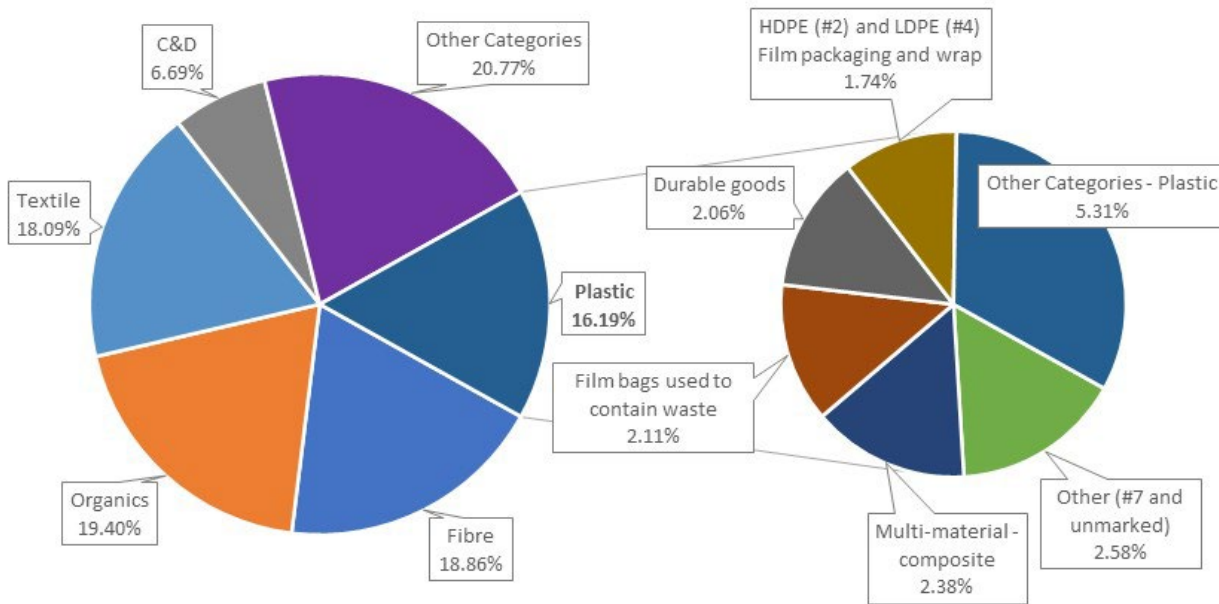


**Note:** Other Categories – Fibre: Dailies/Weeklies = 0.16%; Magazines = 0.29%; Flyers/inserts = 0.35%; Telephone Books/Catalogues/Calendars = 0.22%; Paper - special purpose = 0.14%; Waxed corrugated cardboard = 0.04%; Molded Pulp = 0.21%; Kraft paper bags/wrap = 0.85%; Spiral Wound Containers = 0.06%; Bleached Long Polycoat Fibre (excluding cups) = 0.05%; Gable Top = 0.03%; Aseptic = 0.01%.

**Figure 4. Textile – Residential + ICI**

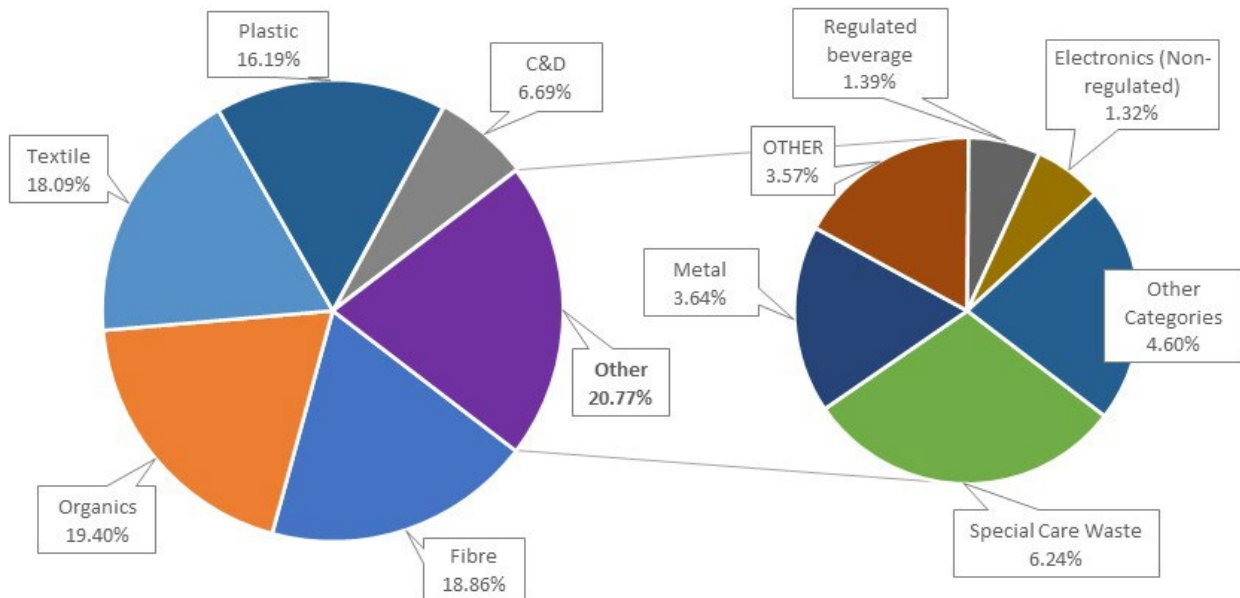


**Figure 5. Plastic – Residential + ICI**



**Note:** Other Categories - Plastic: PET (#1) - rigid containers and jars = 0.61%; PET (#1) - thermoform - clear, coloured and black = 0.01%; HDPE (#2) - rigid containers & jugs - natural, coloured and black = 0.55%; HDPE (#2) - pails, buckets & drums > 5L = 0.16%; Film wrap products = 0.50%; Grocery/retail carry out bags - unused = 0.02%; LDPE (#4) - squeezable bottles & containers = 0.06%; PP (#5) - bottles, containers and caps (all colours), buckets > 5L = 0.72%; PP (#5) - woven bags = 0.38%; PS (#6) - expanded foam - white, coloured and black = 0.44%; PS (#6) - extruded containers - clear and opaque = 0.29%; Laminates - film and bags (85% plastic plus other bonded materials) = 1.49%; Silage Wrap = 0.08%.

**Figure 6. Other Categories – Residential + ICI**



**Note:** Other Categories: Dairy = Dairy = 0.40%; Dairy Substitute = 0.07%; Disposable Cups = 1.22%; Glass = 0.66%; Tires (Regulated) = 0.09%; Tires (Non-regulated) = 0.36%; MHSW = 0.50%; Paint (Regulated) = 0.25%; Paint (non-regulated) = 0.01%; Electronics (Regulated) = 0.82%; Automotive (Regulated) = 0.18%; Automotive (Non-regulated) = 0.05%.

This report includes detailed results providing combined totals for RES and ICI waste as well as individual results for RES and ICI waste. Throughout the report, certain nuances are noted. For example, the 'Plastics' category does not account for the plastics that may be found in other categories such as Electronics. Therefore, the 'Plastics' category may not be a full representation of the amount of plastics in landfills province-wide. This report compares the results from the 2023 audit to the previous 2017 audit.

## 2. CONTEXT AND OBJECTIVES OF THE STUDY

The primary objective of this study is to quantify the composition of waste that is being disposed of in Nova Scotia's landfills. Understanding what is in Nova Scotia's landfills will allow for informed decision-making that supports education, policy, and compliance initiatives across the province. Additionally, the data resulting from this audit will support the development of practical strategies to divert more materials from the waste stream and will be crucial as the province strives to reach a disposal goal of 300 kg per person per year by 2030.

It is important to note that every waste audit only captures a snapshot of the waste composition during the period analyzed. Seasonal or even weekly changes, or other variations, can impact the composition and quantities generated. The extrapolations made using the materials sampled are assumed to be representative of the wastes generated at the site for one year, but differences from actual composition could occur.

Cumulative data from every waste audit conducted over time demonstrates trends, changes, and credibility that is essential for future decision-making. For instance, historical data shows very few changes in waste composition over the years, indicating that the results are robust and accurate.

## 3. METHODOLOGY

The waste audit was completed within a twenty-week period, spanning from mid-May to the end of September 2023. There was a total of 105 samples collected and analyzed during that period, consisting of 42 RES samples and 63 ICI samples.

In the following sections, a description of the methodology is presented, starting with the sampling and sorting objectives, then describing the planning of the study, the sorting site used, and the a step-by-step presentation of the sampling approach. A section is then dedicated to the characterization protocol.

**Appendix 9** details the methodological observations and recommendations to be considered in future audits.

### 3.1 SAMPLING AND SORTING OBJECTIVES

Sampling was conducted at each of the seven landfills in Nova Scotia. Transfer stations were also open to auditors as a secondary collection point and utilized as necessary to ensure a representative sampling of each area. The transfer stations listed in **Table 2** are included in sample locations for this audit.

For each of the seven landfills, fifteen samples were targeted, precisely:

- Six samples from RES sources weighing 100 kg each.
- Nine samples from ICI sources weighing 135 kg each.

Sampling methodology was designed to be as objective and unbiased as possible. When collecting samples at the landfill locations, technicians used a 16-part sampling method. Sample collection methods are discussed in greater detail in section 3.3 Sampling Approach.

The objective of the sorting methodology was to create a sorting area that was as efficient as possible to reduce the need to move or travel around the facility. The sorting site design is discussed further in section 3.5 Sorting Site.

The total weight of the 105 samples collected and analyzed during the audit was approximately 12,705 kg. There was a total of 42 RES samples, weighing 4,200 kg and a total of 63 ICI samples, weighing 8,505 kg.

**Table 2. Landfills Sampled and List of Areas**

Landfills	Address	Municipalities Accepted at Landfills		Transfer Stations Visited
Colchester Balefill Facility	188 Mingo Rd, Kemptown, NS B6L 2K4	Truro Stewiacke Colchester		
Cumberland Central Landfill	2052 Little Forks Rd, Nappan, NS B0L 1C0	Amherst Oxford Cumberland		
Guysborough Waste Management Facility	151 Waste Management Rd E, Boylston, NS B0H 1G0	Inverness Port Hawkesbury CBRM Victoria Richmond	Pictou County St. Mary`s Antigonish Mulgrave Guysborough	
West Hants Landfill	1569 Walton Woods Rd, Centre Burlington, NS B0N 1E0	East Hants West Hants Windsor Annapolis		East Hants Waste Management Centre
Queens Municipal Landfill	3750 Nova Scotia Trunk 8, Caledonia, NS B0T 1B0	Shelburne Clark`s Harbour Barrington Digby Yarmouth	Argyle Clare Lockeport Queens	
Kaizer Meadow Environmental Management	450 Kaizer Meadow Rd, Chester, NS B0J 1J0	Annapolis Royal Berwick Kentville Middleton Wolfville	Kings Lunenburg Mahone Bay Bridgewater Chester	Valley Waste-Resource Management
Otter Lake Waste Facility	600 Otter Lake Dr, Lakeside, NS B3Z 1B5	Halifax Regional Municipality		

## 3.2 PLANNING

The planning phase of the project followed these steps:

Project initiation telephone meeting with Divert NS to validate the methodology.

- Divert NS provided a Waste Audit Categorization Guide. See **Appendix 1** for reference.
- A global collection schedule for the whole project was created. See **Appendix 8** for the sampling calendar.
- Validation of the collection schedule to finalize a daily sampling plan for each location.
- Contacted landfill managers to finalize coordination.
- Planning for the fieldwork at each location.
- Divert NS sent a formal introduction letter to landfill contacts. See **Appendix 2** for reference.



- Stratzer sent a brief introduction and questionnaire form through email to the landfill contacts. See **Appendix 3** for an example.
- Stratzer sent an advanced notice email to landfill contacts prior to arrival. The email provided further details to the selected landfill location, confirming arrival date or any unforeseen complications. See **Appendix 4** for an example.

### 3.3 SAMPLING APPROACH

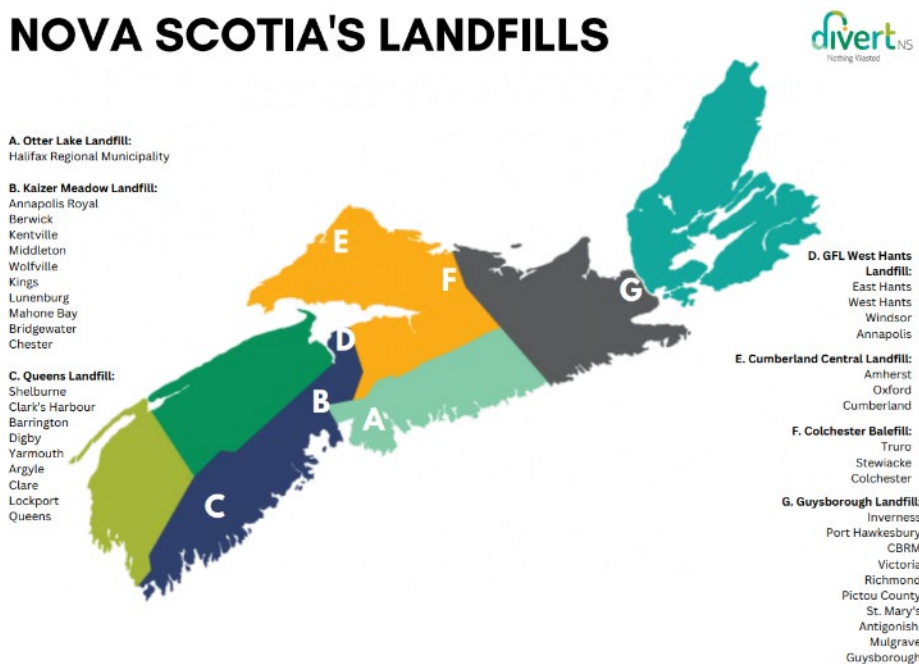
For sampling, the steps presented below were followed:

#### Step 1 – Inquiry and selection

When trucks arrived at the scales, the technicians would correspond with the scale house and truck drivers to confirm the truck number, the truck weight, the area the truck collected from, and whether the truck material was RES or ICI waste.

An area map was provided to the technicians. The map was a useful visual aid to keep track of samples collected from each landfill. Additionally, it helped the technicians to be as representative as possible when collecting from various locations.

## NOVA SCOTIA'S LANDFILLS



#### Step 2 – Unloading the truck

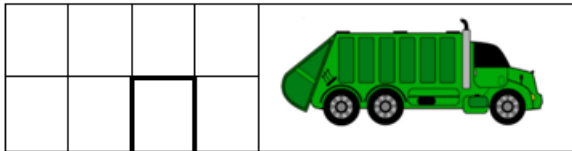
Drivers unloaded their truck in a designated area. While material was unloading from the truck, the driver would slowly drive forward. As a result, the material formed a rectangular log shape.



Step 3 – Sampling by the 16 parts method

After material was unloaded from the truck, sampling was carried out using to the following method:

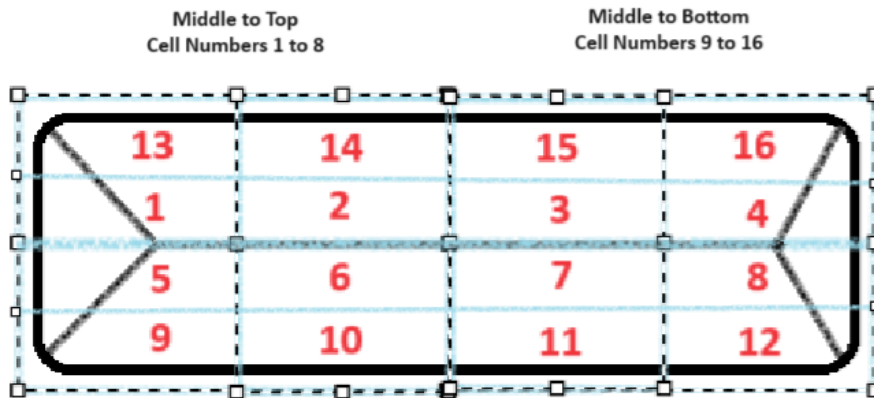
The unloaded rectangular shape of material from the truck was visually sectioned into grids or cells. There are 16 cells total.



Cell numbers 1 to 8 represent areas starting from the middle to the top of the load. Cell numbers 9 to 16 represent areas starting from the middle to the bottom of the load.



The aerial overhead design below was created as an example of material from a truck load, divided into cells 1 to 16.

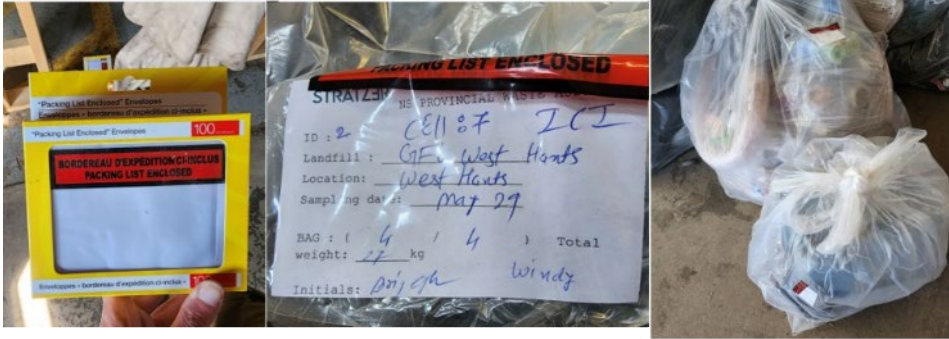


A cell number was generated to determine the sample collection area. A random number generator app or website was used. A number of steps were followed after a cell number was generated:

1. Orange cones were placed to mark the area of the cell.



2. Technicians took before and after pictures of the cell during the sample collection process. The manual removal of material in the cell continued until the weight of 100 kg for RES or 135 kg for ICI was achieved. Technicians collected an additional 5 kg per sample (making the total 105 kg for RES and 140 kg for ICI), as a buffer. For example, the wind may affect scale weights during the weighing process.
3. Labeling samples and every bag used in a sample was important for record keeping and for organizational purposes. Every label was put in a protected plastic adhesive envelope to stick on each bag.



4. Technicians returned to the landfill until all 15 samples were collected ensuring there were 6 RES (100 kg per sample) and 9 ICI (135 kg per sample).
5. Samples collected from the landfills were then transported to the sorting site. Please refer to section 3.5 Sorting Site, for further details of site operational flow.

### 3.4 SAMPLING DISRUPTION

Despite natural weather events occurring over the summer, the audit was successful in its completion. Mid-audit, certain areas were avoided due to wildfire and flood damage. Collection at Otter Lake in HRM was delayed by several weeks when the flooding events occurred, causing the waste audit to end in September instead of August. The towns of Shelburne and Barrington were avoided because of wildfire damage. Lunenburg, Mahone Bay, and Bridgewater were avoided because of the amount of waste material that had water damage from the flooding. The Municipal Joint Services Board Lunenburg region transfer station was not visited due to the extensive water damage.

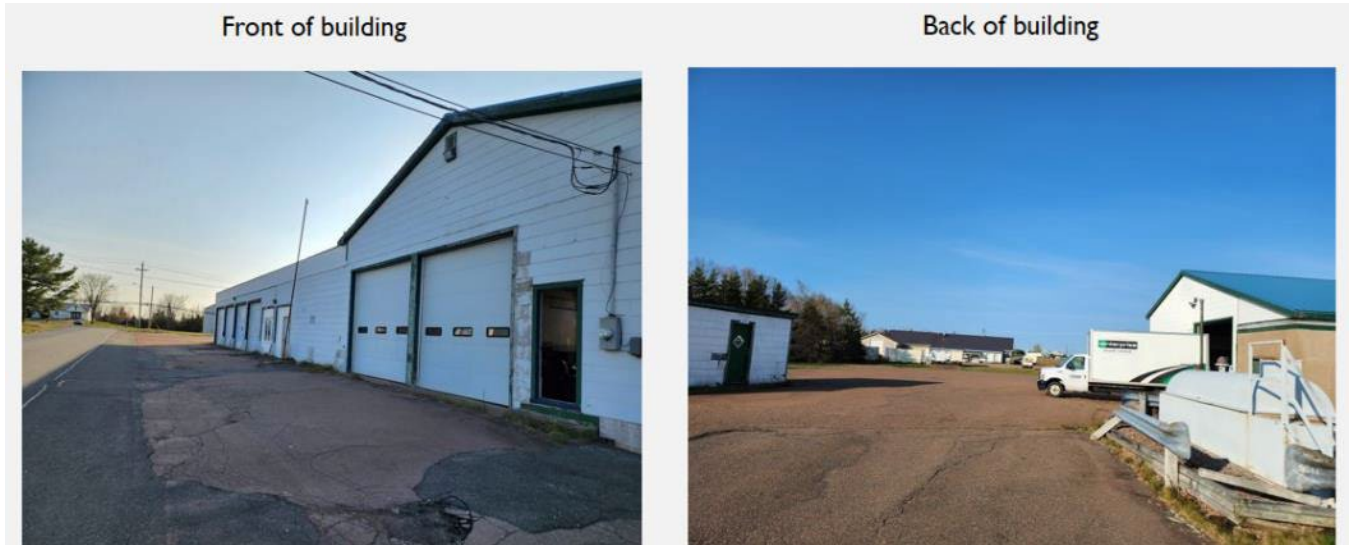
Stratzer was able to collect from Barrington after some weeks had passed. Also, samples from Lunenburg were collected either from Kaizer Meadow Landfill or the Valley Waste Resource Management transfer station.

As for HRM, careful planning between Stratzer and the Otter Lake site operators allowed most areas to be collected, despite wildfire and flood damage. The sample collection was done on a two-week schedule, to allow area diversity and only Area 6 (Cole Harbour/Eastern Passage) and Area 7 (North Preston/Porters Lake/Chezzetcook) were not sampled.

It was important, before collecting from any avoided areas, that the waste material was assessed by technicians to visibly inspect for either potential flood or fire damage once the truck unloaded. If the waste material was viable, it was collected.

### 3.5 SORTING SITE

The sorting site was located at 15 Ventura Drive, Debert, Nova Scotia. Usage of this site was granted by the Municipality of the County of Colchester for the purpose of the waste audit. The building served as a home base for the storage and sort needs of the 2023 Nova Scotia Waste Audit. The sorting site layout was designed to receive and unload samples at the front garage of the building and discard finished samples at the back of the building with effortless, transitional flow in mind.



**Site Operational Flow:**



<p>Step 1 – Received samples on-site and unloaded truck through the front garage door of the building.</p>	<p>A photograph showing a white U-Haul truck with its rear door open, parked in front of a white industrial building. Two green bins are visible near the truck's rear door.</p>
------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Step 2 – Placed samples in designated storage area. Kept different landfill locations separate and organized. Created rows and ensured every bag had a label on it.



Step 3 – Brought the next sample to sort in the designated sorting area. Had all the supplies, safety equipment and materials stored in the open concept closet close to the sorting area.

The material categories list was used. Other specific materials (bulky, unusual materials) were noted separately. Full description of material categories in **Appendix 1.**



Step 4 – Once the sample was sorted in bins, the bins were brought to the designated weighing area for detailed analysis and for quality control purposes.

The weight of each category was measured using an Anyload E-100 -30kg electronic scale accurate at  $\pm 0.005$  kg and the data was compiled for each sample.



Step 5 – Once the sample was weighed, the material was then properly discarded in the separated bins for organics, garbage, recycling (plastic and metal) and paper recycling located at the back of the building. If there were hazardous waste items, bullets and batteries found in a sample, they were stored in a separate container inside the building for further disposal when needed.



### 3.6 CHARACTERIZATION PROTOCOL

The pictures below are examples taken from Steps 3 and 4 of sorted characterized material from the waste audit:

Sub-category 65 – Single-serve



Sub-category 129 - E-cigarette/ Vape



Sub-category 89 - Waste textiles



Sub-category 62 – Beverage (hot & cold)





Sub-category 20 – Kitchen paper



Sub-category 1 - Dailies/ Weeklies



Sub-category 48 - Film wrap products



Sub-category 12 - Kraft paper bags



## 4. DATA FINDINGS AND ANALYSIS

### 4.1 PROVINCE-WIDE WASTE COMPOSITION

The data presented in **Appendix 10** shows the 22 major categories of all RES and ICI samples taken from the seven landfills.

The table called "Composition of Major Categories in % for Residential and ICI Waste by Landfill" represents the average percentage of each landfill's samples and the relative proportion of each category. The columns under "All Sites" show total RES, ICI, and total combined percentages (%) for each category, from all seven landfills combined. This has been calculated from the actual quantities landfilled in each site.

The table called "Composition of Major Categories in tons (t) for Residential and ICI Waste by Landfill" represents the results in tonnage (t) instead of percentages. For the HRM, the ICI tonnage shown includes material directed to Guysborough, West Hants, and Kaizer Meadow. The ICI material generated in HRM was not disposed of in HRM but exported to other landfills. For further details on HRM, please refer to the Important Notes section below.

In Appendix 10, the "All Sites" results have been calculated by applying the composition of waste for each landfill (as per the characterization) to the annual tonnage of the landfill, and then by adding the quantities of every landfill for each category. Therefore, the larger the tonnages received at a specific landfill, the more its waste composition will impact the province-wide composition.

In addition, although there is a dedicated Plastic category, this does not necessarily mean that all plastic materials have been included, as plastic is found in many items classified in non-plastic categories. For example, in the Electronics category (#15), there is a certain percentage of plastic composition within electronic items found. Therefore, there is more plastic landfilled than just the sum of the Plastic category.

#### **IMPORTANT NOTES:**

- HRM RES material was disposed of at the Otter Lake Landfill. ICI waste was generated in HRM and disposed in either Guysborough, West Hants, or Kaizer Meadow landfills. These samples were collected from the Otter Lake Waste Facility prior to being disposed of in other landfills.
- The total combined tonnages for Guysborough, West Hants, and Kaizer Meadow do not include ICI tonnages generated in HRM. ICI tonnage has been attributed to the Otter Lake Landfill for the purposes of this report.
- The 'Uncategorized Waste' Category includes any other items, particles, or undefined materials that do not fit elsewhere.

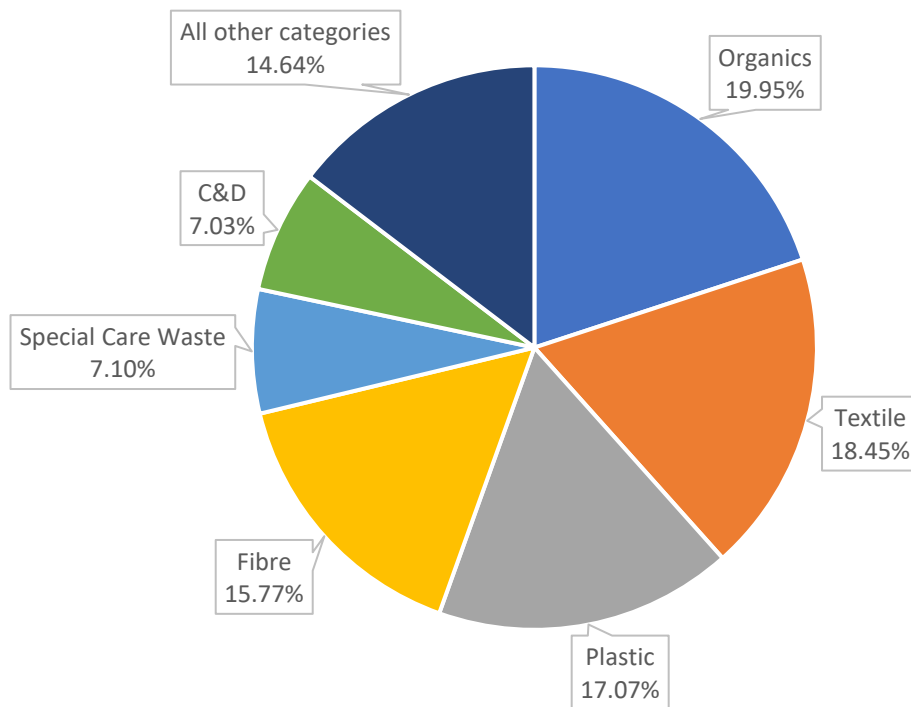
## 4.2 WASTE COMPOSITION FOR RESIDENTIAL AND ICI SAMPLES

The province-wide waste composition is presented in **Figure 7** (RES only), **Figure 8** (ICI only) and **Figure 9** (RES and ICI combined) below<sup>1</sup>. The percentages represent the relative proportion of each category. To simplify the analysis, the material categories have been grouped together and are presented in the figures below.

Complete landfill tables and graphs for this section are shown in **Appendix 5**.

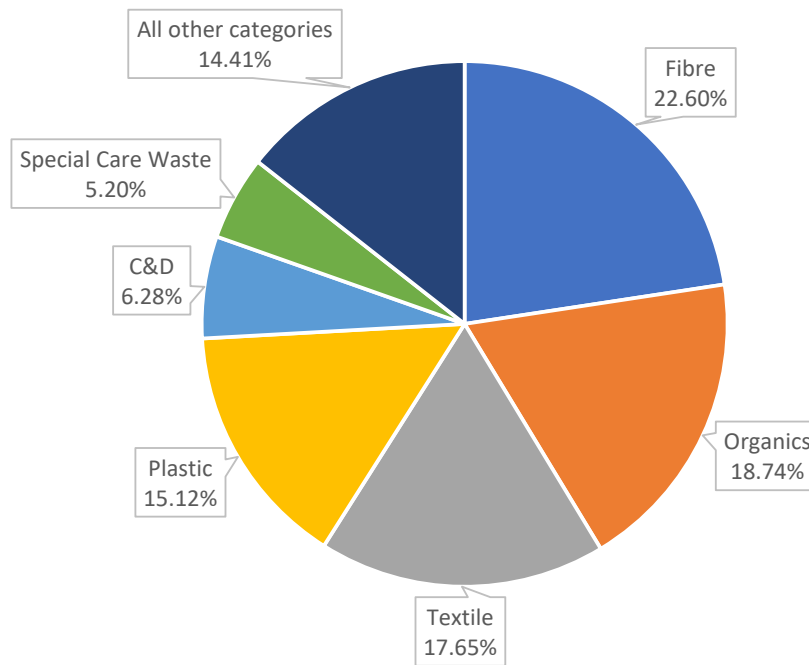
Refer to **Appendix 7** for total count of items from the twenty-two categories. The unit count is from 105 samples of RES and ICI materials.

**Figure 7. Province-wide Composition of Residential Waste**

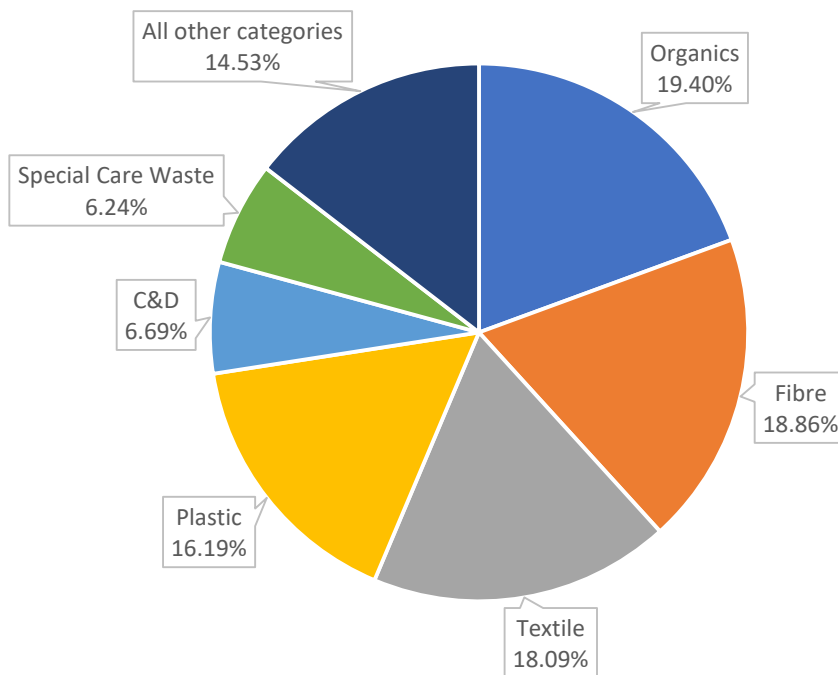


<sup>1</sup> In this document, totals may not add to 100 percent due to rounding of cell data.

**Figure 8. Province-wide Composition of ICI Waste**



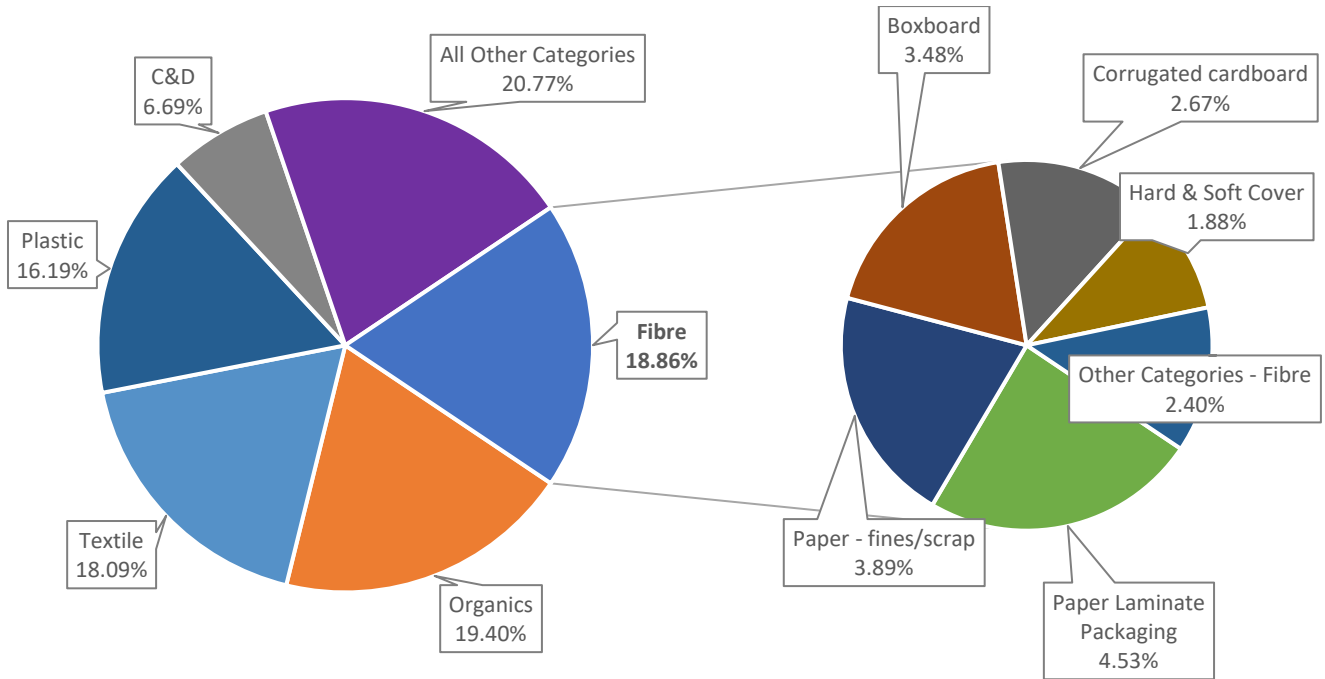
**Figure 9. Province-wide Composition of Residential and ICI Waste**



### 4.3 MAJOR WASTE CATEGORY BREAKDOWNS

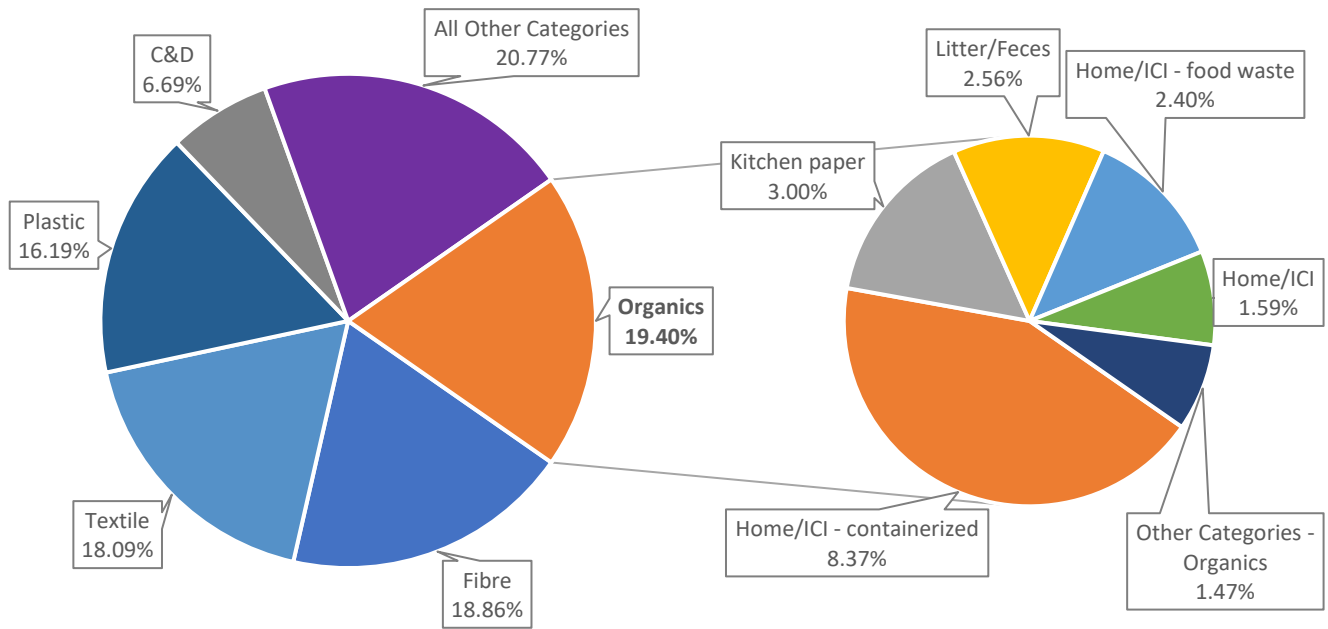
The following graphs are from the top six province-wide RES and ICI categories and the further breakdown into subcategories.

**Figure 10. Fibre - Residential + ICI**



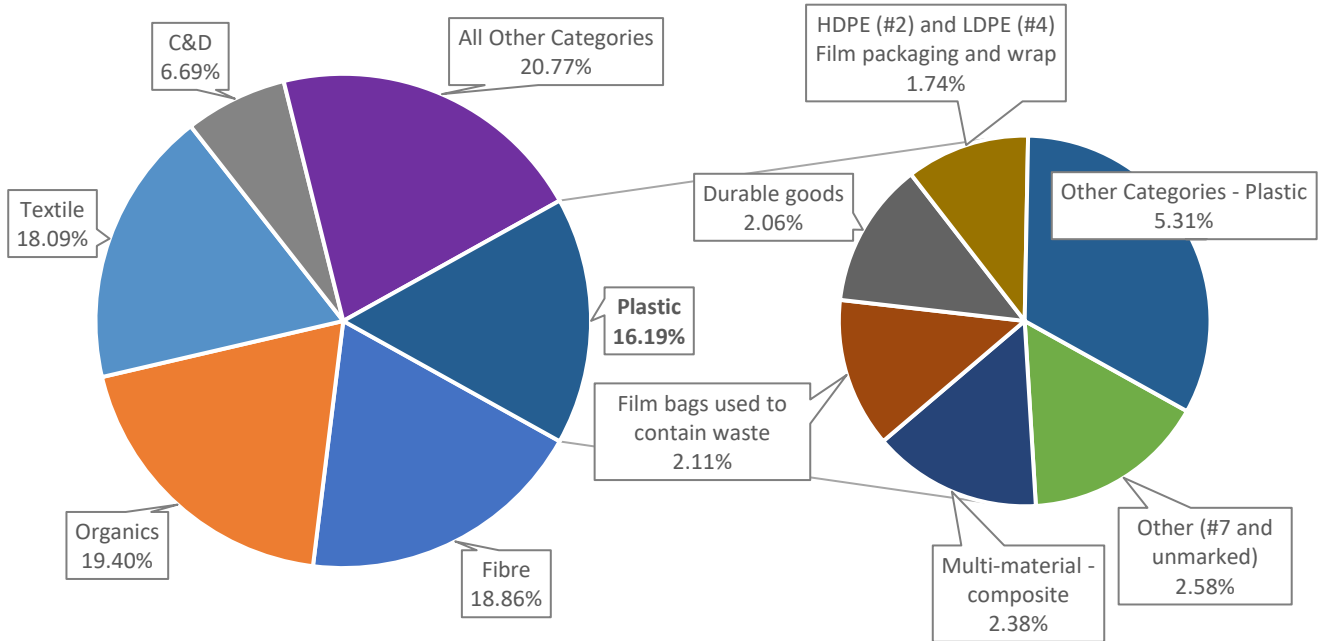
**Note:** Other Categories – Fibre: Dailies/Weeklies = 0.16%; Magazines = 0.29%; Flyers/inserts = 0.35%; Telephone Books/Catalogues/Calendars = 0.22%; Paper - special purpose = 0.14%; Waxed corrugated cardboard = 0.04%; Molded Pulp = 0.21%; Kraft paper bags/wrap = 0.85%; Spiral Wound Containers = 0.06%; Bleached Long Polycoat Fibre (excluding cups) = 0.05%; Gable Top = 0.03%; Aseptic = 0.01%.

**Figure 11. Organics - Residential + ICI**



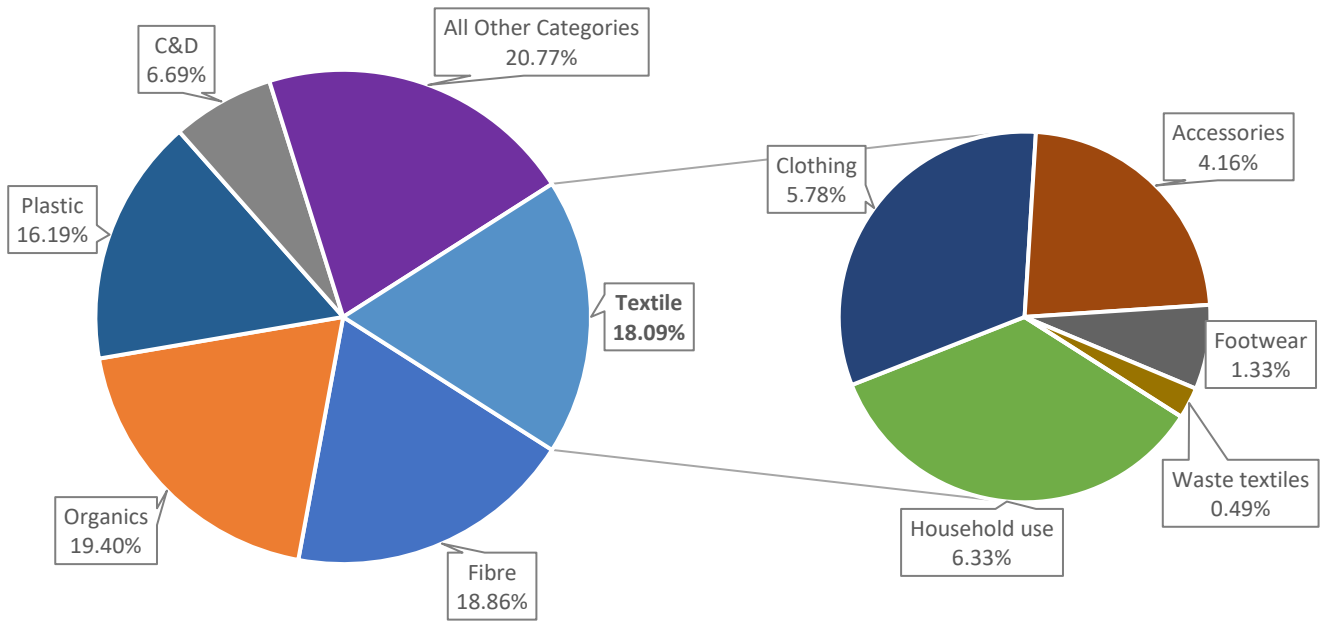
**Note:** Other Categories – Organics: Other paper = 1.27%; Wax = 0.14%; Small wooden items/packaging = 0.06%; Carcasses < 0.005%.

**Figure 12. Plastic - Residential + ICI**



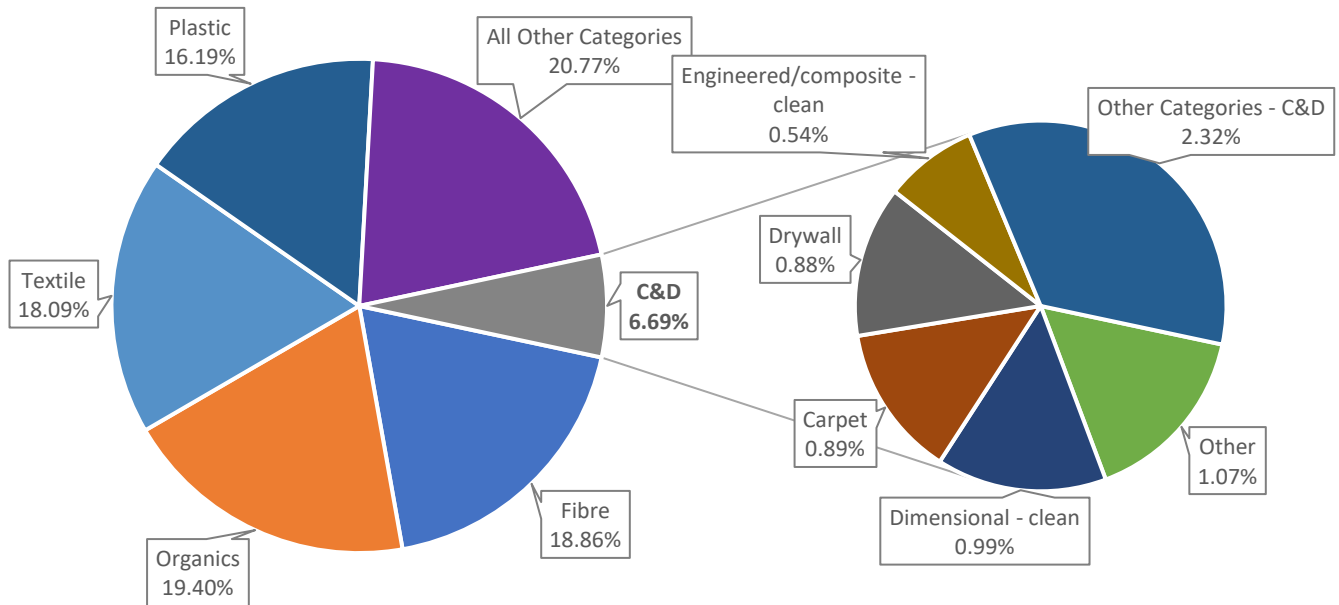
**Note:** Other Categories - Plastic: PET (#1) - rigid containers and jars = 0.61%; PET (#1) - thermoform - clear, coloured and black = 0.01%; HDPE (#2) - rigid containers & jugs - natural, coloured and black = 0.55%; HDPE (#2) - pails, buckets & drums > 5L = 0.16%; Film wrap products = 0.50%; Grocery/retail carry out bags - unused = 0.02%; LDPE (#4) - squeezable bottles & containers = 0.06%; PP (#5) - bottles, containers and caps (all colours), buckets > 5L = 0.72%; PP (#5) - woven bags = 0.38%; PS (#6) - expanded foam - white, coloured and black = 0.44%; PS (#6) - extruded containers - clear and opaque = 0.29%; Laminates - film and bags (85%) plastic plus other bonded materials = 1.49%; Silage Wrap = 0.08%.

**Figure 13. Textile - Residential + ICI**



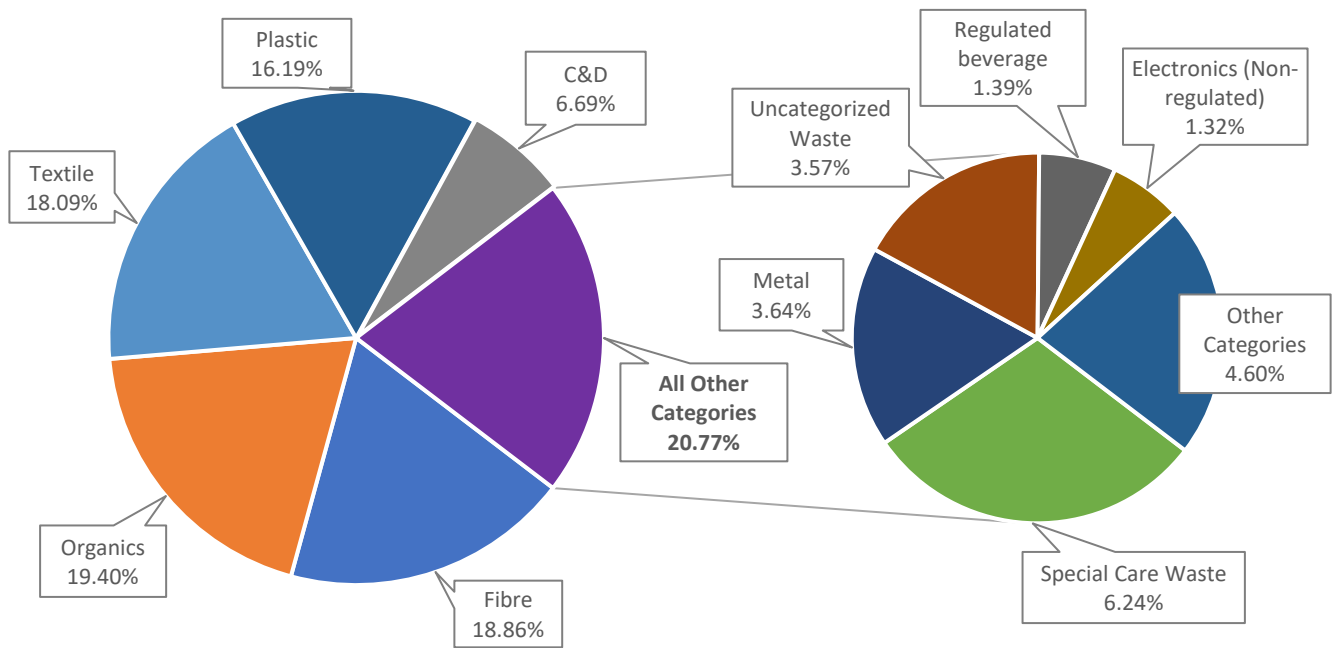


**Figure 14. C&D - Residential + ICI**



**Note:** Other Categories - C&D: Dimensional - painted/stained = 0.42%; Engineered/composite - painted/stained = 0.36%; Pressure-treated = 0.44%; Plastic wood = 0.02%; Asphalt = 0.09%; Other = 0.03%; Wood and Composite = 0.09%; Insulation = 0.48%; Window and Door (decorative & non decorative) = 0.03%; Fibreglass/Cork/Other = 0.16%; Inerts = 0.19%. Countertops < 0.005%.

**Figure 15. All Other Categories - Residential + ICI**



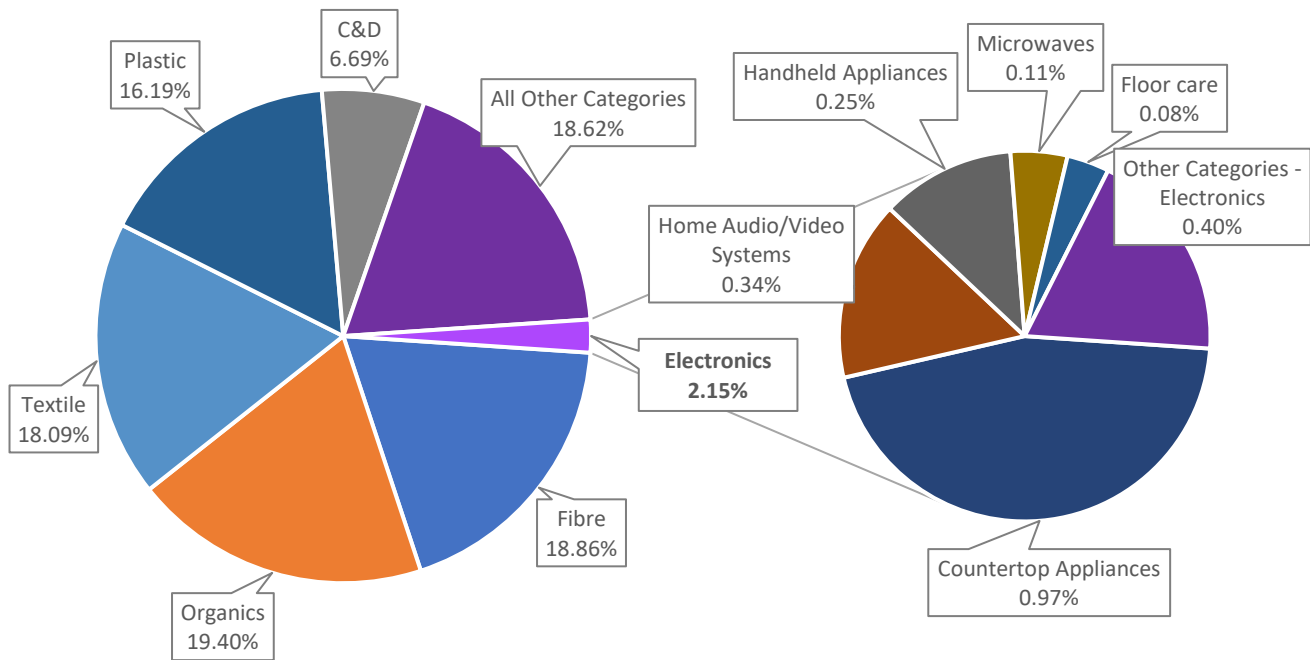
**Note:** Other Categories: Dairy = 0.40%; Dairy Substitute = 0.07%; Disposable Cups = 1.22%; Glass = 0.66%; Tires (Regulated) = 0.09%; Tires (Non-regulated) = 0.36%; MHSW = 0.50%; Paint (Regulated) = 0.25%; Paint (non-regulated) = 0.01%; Electronics (Regulated) = 0.82%; Automotive (Regulated) = 0.18%; Automotive (Non-regulated) = 0.05%.

## 4.4 REGULATED PRODUCT BREAKDOWN

This section presents subcategories breakdown for regulated products: electronics, paint, automotive, beverage, tires, and dairy.

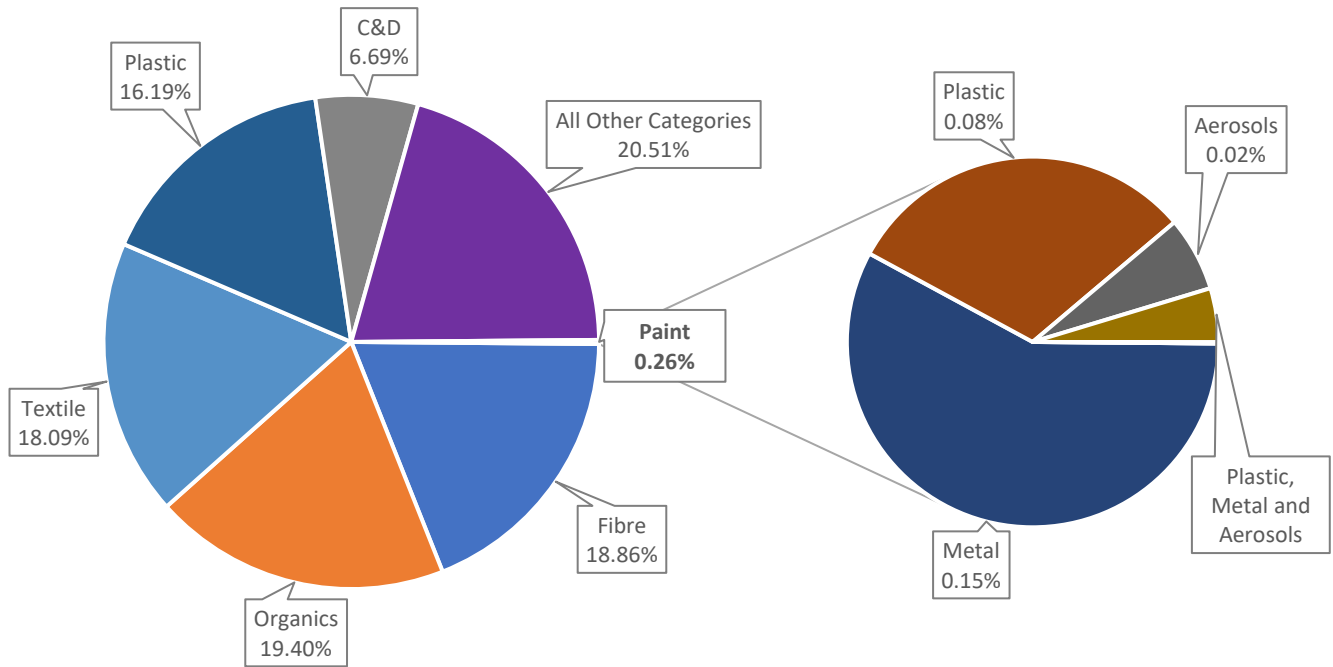
*Note: Not every subcategory within each category is regulated. For a breakdown of regulated vs non-regulated products within these categories, refer to **Appendix 1**.*

**Figure 16. Electronics - Residential + ICI**



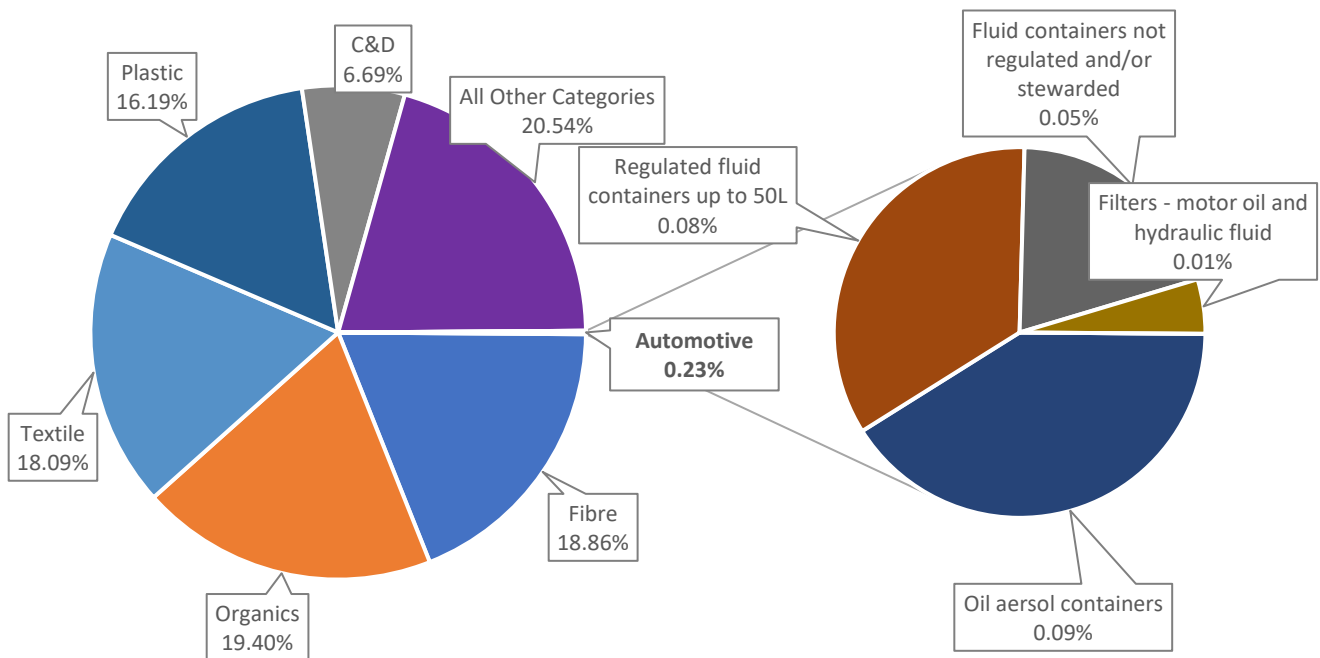
**Note:** Other Categories - Electronics: Computers = 0.05%; Computer Peripherals = 0.02%; Desktop Printers & Scanners = 0.03%; Display Devices = 0.07%; Cellular telephones = 0.05%; Non-cellular telephones = 0.05%; Personal or Portable Audio/Video Systems = 0.03%; Vehicle Audio/Video Systems = 0.02%; GPS, Personal Portable & Vehicle = 0.06%; E-cigarette/ vape = 0.02%. Video Gaming Systems & Peripheral < 0.005%.

**Figure 17. Paint – Empty and/or with contents (fluid or hardened) - Residential + ICI**



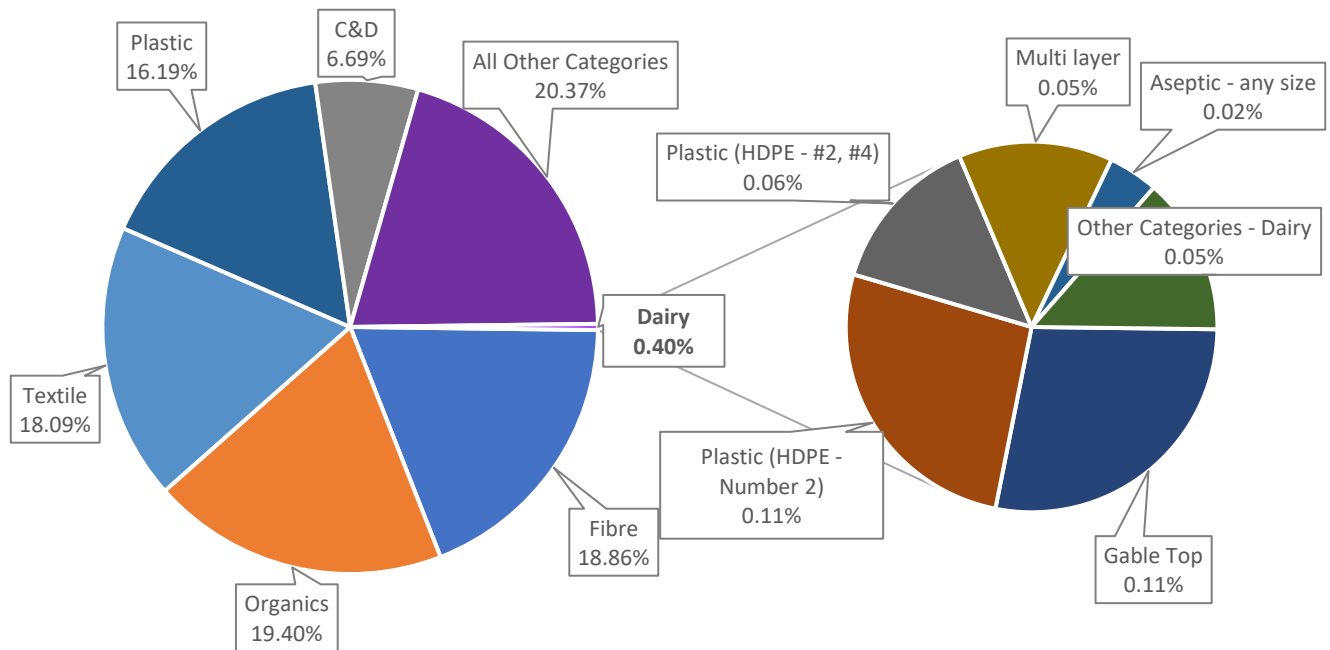
**Note:** Paint containers may include the weight of fluid or hardened paint product. For safety reasons, paint containers were never emptied.

**Figure 18. Automotive - Residential + ICI**



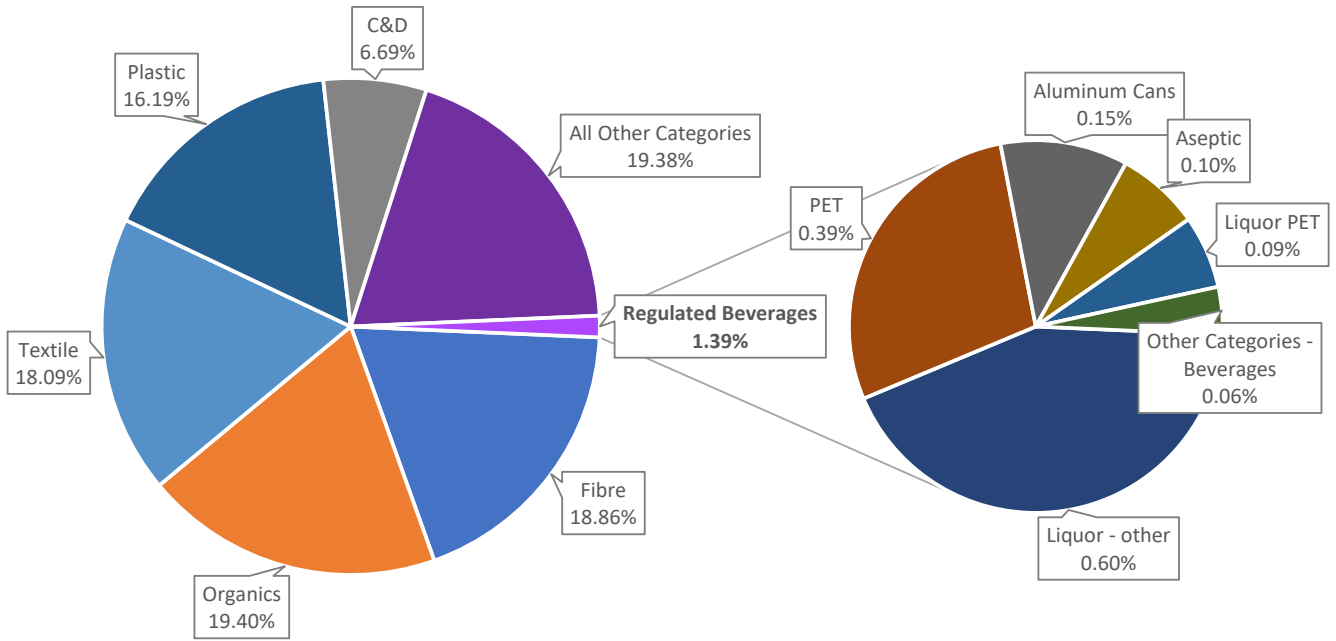
**Note:** MHSW containers may include the weight of leftover automotive fluid. For safety reasons, the containers were never emptied.

**Figure 19. Dairy - Residential + ICI**



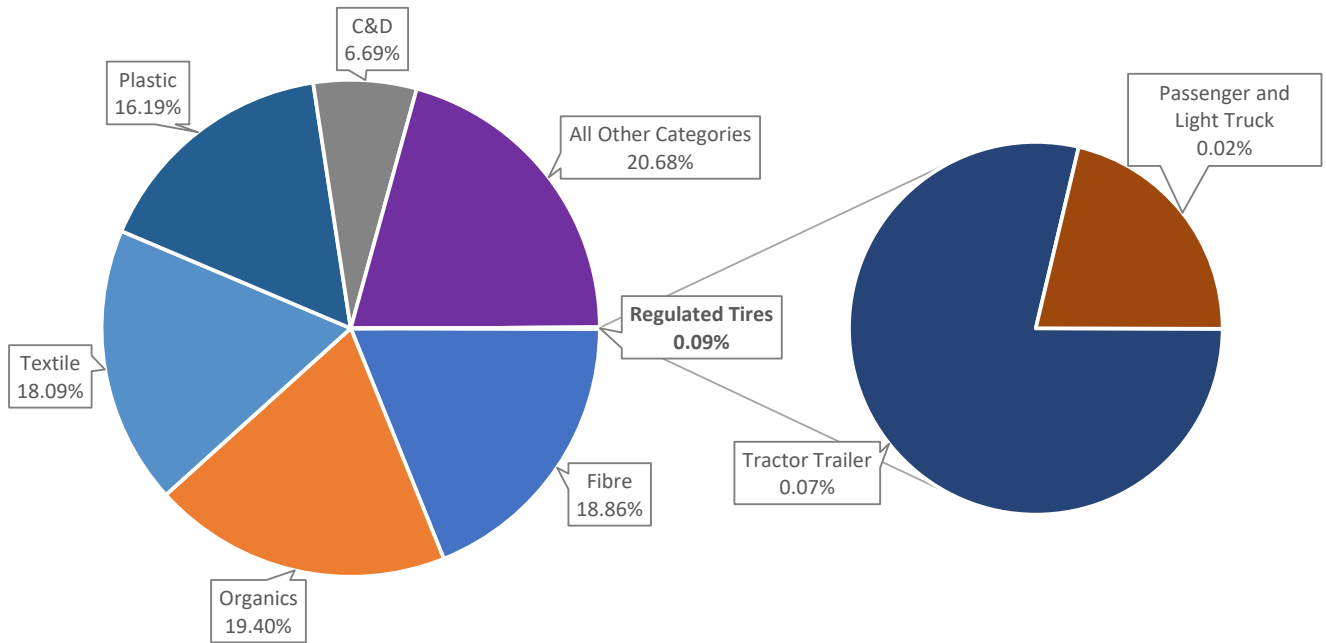
**Note:** Other Categories - Dairy: Plastic bag (LDPE film - Number 4) = 0.01%; Gable Top - any size = 0.01%; Plastic (HDPE - Number 2) - any size = 0.01%; Plastic (HDPE - Number 2) = 0.01%; Boxboard (with lining) = 0.01%; Plastic film = 0.01%. Aseptic - any size < 0.005%; Other Plastic Rigids < 0.005%.

**Figure 20. Regulated Beverage - Residential + ICI**



**Note:** Other Categories - Beverage: Glass = 0.05%; Gable Top = 0.01%; Other Plastic (#3, #5, #6 & #7) < 0.005%.

**Figure 21. Regulated Tires - Residential + ICI**



## 4.5 PROVINCE-WIDE RESULTS COMPARISON, 2011-2023

### **IMPORTANT NOTE ABOUT COMPARISONS WITH PREVIOUS AUDITS RESULTS**

Upon analyzing the 2011-2017 audits results, Stratzer found that the previous calculation method for the province-wide composition was done using a different methodology.

Previous audits calculation of province-wide composition was done in two steps (herein called Method 1) for each sorting category:

- 1- Calculation of the average percentage of that category based on results of the 7 landfills. More precisely, this means calculating the sum of the 7 percentage values (one per landfill), and dividing this sum by 7;
- 2- Application of the average percentage calculated in step 1 to the province-wide waste tonnages. By doing so, composition of each landfill has the same impact on the province-wide composition, no matter how much waste it receives.

Stratzer considers that the most statistically valid way to calculate province-wide composition is by using a different 2-step method (herein called Method 2), as follows:

- 1- For each landfill, application of the waste composition to the annual tons of waste received. This results in a specific tonnage per year for each sorting category and each landfill;
- 2- For each sorting category, summation of the quantity received at each landfill. This results in the province-wide quantities for each sorting category.

Using this second method, a landfill receiving more waste will have a greater impact on the province-wide composition.

#### Illustration of the difference of the two methods using fictional data

Landfill A: 800 tons per year, with 25 % of recyclables

Landfill B: 200 tons per year, with 75 % of recyclables

#### **Using Method 1**

- Average % of recyclables =  $(25\% + 75\%) / 2 = 50\%$

- Global quantities of recyclables: 50% of 1,000 tons = 500 tons

#### **Using Method 2**

Landfill A recyclables: 25% of 800 tons = 200 tons Landfill B

recyclables: 75% of 200 tons = 150 tons Global quantities of

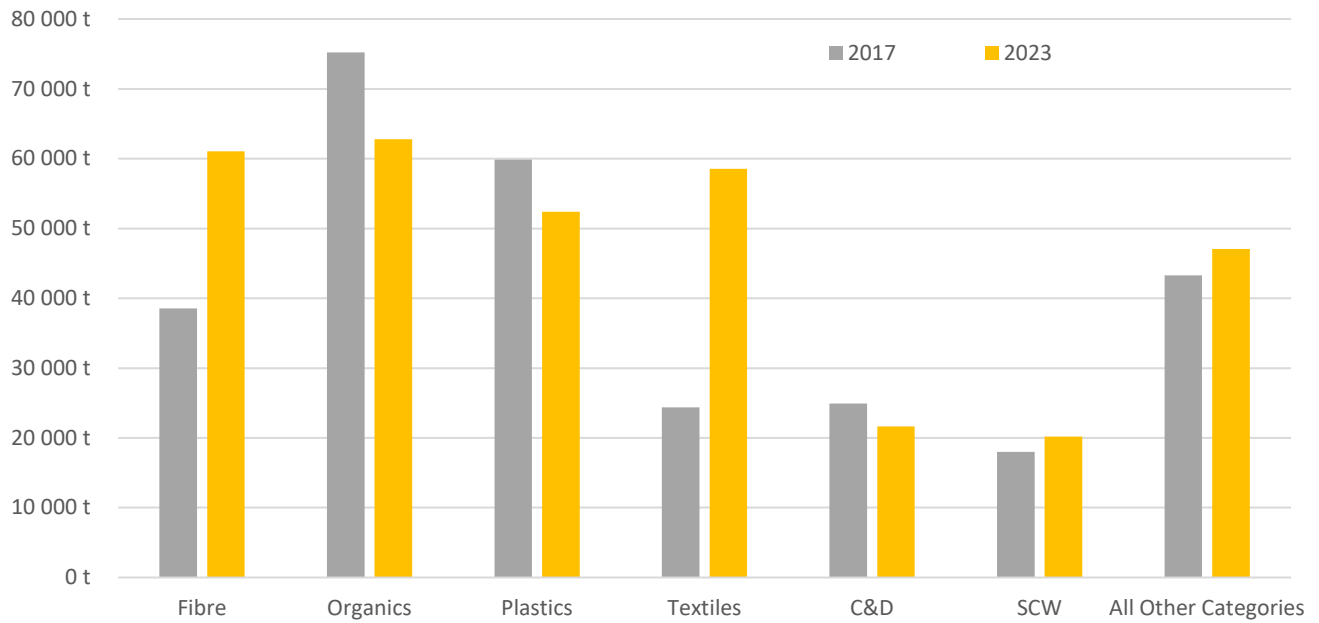
recyclables: 350 tons or 35 %

#### **Conclusion**

Method 1 does not provide the most statistically valid result.

Comparison of the composition for 2017 and 2023 are shown in percentages in **Figure 22** and **Table 3**. Comparison does not include 2011 and 2012 data, since the calculation method was different (as mentioned in the previous page). However, percentages for 2017 shown here were adjusted to use Method 2, to make sure they are on the same basis as 2023 results.

**Figure 22. Yearly Evolution of Landfilled Waste - Residential + ICI**



**Table 3. Percentages for 2017 and 2023 - Residential + ICI**

	2017	2023
Fibre	13.6%	18.9%
Organics	26.5%	19.4%
Plastics	21.1%	16.2%
Textiles	8.6%	18.1%
C&D	8.8%	6.7%
SCW	6.3%	6.2%
Other	15.2%	14.5%



The following observations can be made from this comparison:

- ◆ Although the Organics category continued as the highest value category in 2023 (19.4% of combined residential and ICI), the percentage has steadily decreased over the years, as it was 26.5% in 2017.
- ◆ The percentage of Textiles increased in 2023 (18.1%) compared to 2017 (8.6%).
- ◆ Plastics (as a category) in 2023 shows a decrease (16.2%) in percentages and is the lowest yet compared to previous years (21.1% in 2017). Since plastic is found in other categories, this does not necessarily mean that plastic is less present in landfills.
- ◆ The Fibre category in 2023 had risen to 18.9% compared to 13.6% in 2017.
- ◆ C&D has dropped in 2023 (6.7%), compared to 2017 (8.8%).
- ◆ The SCW category in 2023 (6.2%) has shown a decrease compared to 2017 (6.3%).
- ◆ The Other category slightly decreased in 2023 (14.5%), while it was 15.2% in 2017.

## 4.6 DETAILED RESULTS COMPARISON, 2017-2023

This study has revealed several interesting observations, and the methodology has shown to be appropriate to meet the objectives. It is important to note that to calculate provincial results, waste composition for a landfill has been applied to its annual tonnages received. Provincial composition reflects the sum of the weights of each category for the seven landfills. Percentages are then calculated using the total weights.

**Tables 4 to 6** present a comparison of the composition of waste between 2017 and 2023. Residential, ICI and province-wide results are successively presented. For each year, the tables show the tonnages and the percentage each category represents. The rightmost column indicates how the percentage of a category varies between 2017 and 2023. The variation presented is a proportion between the two results, not an addition or subtraction<sup>2</sup>.

Comparison for each landfill can be found in **Appendix 6**.

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<sup>2</sup> For example, if a value was 4,5% in 2017 and 9,0% in 2023, variation for 2023 would be +100%.

**Table 4. Composition Comparison of Major Categories in tons (t) and % for Residential + ICI Waste Between 2017 and 2023**

Material Category	TOTAL				
	2023		2017		Variation of % in 2023
	Tonne	%	Tonne	%	
1. Fibre	61,049 t	18.86%	38,526 t	13.56%	+39.10%
2. Organics	62,808 t	19.40%	75,221 t	26.47%	-26.70%
3. Dairy	1,291 t	0.40%	2,561 t	0.90%	-55.76%
4. Dairy Substitute	212 t	0.07%	364 t	0.13%	-48.95%
5. Plastic	52,417 t	16.19%	59,879 t	21.07%	-23.16%
6. Disposable Cups	3,941 t	1.22%	8,224 t	2.89%	-57.94%
7. Glass	2,125 t	0.66%	4,110 t	1.45%	-54.62%
8. Metal	11,783 t	3.64%	11,707 t	4.12%	-11.65%
9. Regulated beverage	4,512 t	1.39%	3,828 t	1.35%	+3.45%
10. Special Care Waste	20,194 t	6.24%	17,987 t	6.33%	-1.45%
11. Textile	58,561 t	18.09%	24,364 t	8.57%	+110.98%
12-a. Tires (Regulated)	292 t	0.09%	170 t	0.06%	+51.35%
12-b. Tires (Non-regulated)	1,165 t	0.36%	1,259 t	0.44%	-18.79%
13. MHSW	1,616 t	0.50%	2,153 t	0.76%	-34.12%
14-a. Paint (Regulated)	813 t	0.25%	580 t	0.20%	+23.11%
14-b. Paint (non-regulated)	41 t	0.01%	23 t	0.01%	+55.91%
15-a. Electronics (Regulated)	2,670 t	0.82%	1,358 t	0.48%	+72.53%
15-b. Electronics (Non-regulated)	4,288 t	1.32%	2,050 t	0.72%	+83.62%
16-a. Automotive (Regulated)	591 t	0.18%	N/A	N/A	N/A
16-b. Automotive (Non-regulated)	147 t	0.05%	N/A	N/A	N/A
17. C&D	21,653 t	6.69%	24,904 t	8.76%	-23.68%
18. Bulky Item	N/A	N/A	4,461 t	1.57%	N/A
Uncategorized Waste	11,563 t	3.57%	442 t	0.16%	+2,195.62%
<b>TOTAL</b>	<b>323,733 t</b>	<b>100%</b>	<b>284,172 t</b>	<b>100%</b>	

**Note:** Data from 2017 was adjusted to use the sum of quantities disposed of in each landfill.

**Note:** Uncategorized waste represents all small particles, undefined material, and any material that does not fit into any other category. This includes 2017 categories that were not used in 2023. The 2017 report did not report uncharacterized waste. In the comparison, the 2017 “uncategorized” quantities only include the 2017 categories that were not used in 2023.

**Table 5. Composition Comparison of Major Categories in tons (t) and % for Residential Waste Between 2017 and 2023**

Material Category	Residential				
	2023		2017		Variation of % in 2023
	Tonne	%	Tonne	%	
1. Fibre	27,943 t	15.77%	14,175 t	11.21%	+40.65%
2. Organics	35,351 t	19.95%	33,969 t	26.86%	-25.75%
3. Dairy	654 t	0.37%	990 t	0.78%	-52.88%
4. Dairy Substitute	107 t	0.06%	195 t	0.15%	-60.88%
5. Plastic	30,258 t	17.07%	28,205 t	22.31%	-23.46%
6. Disposable Cups	2,334 t	1.32%	2,735 t	2.16%	-39.12%
7. Glass	935 t	0.53%	2,760 t	2.18%	-75.84%
8. Metal	6,187 t	3.49%	5,265 t	4.16%	-16.16%
9. Regulated beverage	2,444 t	1.38%	957 t	0.76%	+82.25%
10. Special Care Waste	12,580 t	7.10%	8,937 t	7.07%	+0.42%
11. Textile	32,696 t	18.45%	15,192 t	12.01%	+53.55%
12-a. Tires (Regulated)	0 t	0.00%	0 t	0.00%	N/A
12-b. Tires (Non-regulated)	642 t	0.36%	85 t	0.07%	+439.04%
13. MHSW	883 t	0.50%	928 t	0.73%	-32.09%
14-a. Paint (Regulated)	450 t	0.25%	365 t	0.29%	-11.97%
14-b. Paint (non-regulated)	17 t	0.01%	23 t	0.02%	-46.56%
15-a. Electronics (Regulated)	1,872 t	1.06%	344 t	0.27%	+287.69%
15-b. Electronics (Non-regulated)	2,145 t	1.21%	805 t	0.64%	+90.09%
16-a. Automotive (Regulated)	508 t	0.29%	N/A	N/A	N/A
16-b. Automotive (Non-regulated)	89 t	0.05%	N/A	N/A	N/A
17. C&D	12,454 t	7.03%	8,147 t	6.44%	+9.07%
18. Bulky Item	N/A	N/A	2,124 t	1.68%	N/A
Uncategorized Waste	6,675 t	3.77%	243 t	0.19%	+1,863.12%
<b>TOTAL</b>	<b>177,223 t</b>	<b>100%</b>	<b>126,443 t</b>	<b>100%</b>	

**Note:** Data from 2017 was adjusted to use the sum of quantities disposed of in each landfill.

**Note:** Uncategorized waste represents all small particles, undefined material, and any material that does not fit into any other category. This includes 2017 categories that were not used in 2023. The 2017 report did not report uncharacterized waste. In the comparison, the 2017 “uncategorized” quantities only include the 2017 categories that were not used in 2023.

**Table 6. Composition Comparison of Major Categories in tons (t) and % for ICI Waste Between 2017 and 2023**

Material Category	ICI				Variation of % in 2023
	2023		2017		
	Tonne	%	Tonne	%	
1. Fibre	33,106 t	22.60%	24,351 t	15.44%	+46.36%
2. Organics	27,457 t	18.74%	41,252 t	26.15%	-28.34%
3. Dairy	637 t	0.43%	1,571 t	1.00%	-56.34%
4. Dairy Substitute	105 t	0.07%	169 t	0.11%	-33.25%
5. Plastic	22,160 t	15.12%	31,674 t	20.08%	-24.68%
6. Disposable Cups	1,607 t	1.10%	5,489 t	3.48%	-68.48%
7. Glass	1,190 t	0.81%	1,350 t	0.86%	-5.09%
8. Metal	5,596 t	3.82%	6,442 t	4.08%	-6.48%
9. Regulated beverage	2,068 t	1.41%	2,871 t	1.82%	-22.48%
10. Special Care Waste	7,615 t	5.20%	9,050 t	5.74%	-9.41%
11. Textile	25,864 t	17.65%	9,172 t	5.82%	+203.58%
12-a. Tires (Regulated)	292 t	0.20%	170 t	0.11%	+85.63%
12-b. Tires (Non-regulated)	524 t	0.36%	1,175 t	0.74%	-52.01%
13. MHSW	733 t	0.50%	1,226 t	0.78%	-35.60%
14-a. Paint (Regulated)	363 t	0.25%	215 t	0.14%	+81.73%
14-b. Paint (non-regulated)	24 t	0.02%	0 t	0.00%	N/A
15-a. Electronics (Regulated)	798 t	0.54%	1,014 t	0.64%	-15.24%
15-b. Electronics (Non-regulated)	2,143 t	1.46%	1,245 t	0.79%	+85.34%
16-a. Automotive (Regulated)	83 t	0.06%	N/A	N/A	N/A
16-b. Automotive (Non-regulated)	58 t	0.04%	N/A	N/A	N/A
17. C&D	9,199 t	6.28%	16,757 t	10.62%	-40.90%
18. Bulky Item	N/A	N/A	2,336 t	1.48%	N/A
Uncategorized Waste	4,888 t	3.34%	200 t	0.13%	+2,537.09%
<b>TOTAL</b>	<b>146,510 t</b>	<b>100%</b>	<b>157,728 t</b>	<b>100%</b>	

**Note:** Data from 2017 was adjusted to use the sum of quantities disposed of in each landfill.

**Note:** Uncategorized waste represents all small particles, undefined material, and any material that does not fit into any other category. This includes 2017 categories that were not used in 2023. The 2017 report did not report uncharacterized waste. In the comparison, the 2017 “uncategorized” quantities only include the 2017 categories that were not used in 2023.

The following observations listed below have been made from the comparisons:

◆ **Residential observations:**

- o Most significant increases of percentages in 2023 compared to 2017 are Non-regulated Tires (+439.04%), Regulated Electronics (+287.69%), Non-regulated Electronics (+90.09%) and Regulated Beverages (+82.25%);
- o Categories showing greatest decreases in percentages are Glass (-75.84%), Dairy Substitute (-60.88%), Dairy (-52.88%) and Non-regulated Paint (-46.56%).

◆ **ICI observations:**

- o Increases of percentages in 2023 are the greatest for Textile (+203.58%), Regulated Tires (+85.63%), Non-regulated Electronics (+85.34%) and Regulated Paint (+81.73%);
- o As for the most important decreases in 2023, they concern Disposable Cups (-68.48%), Dairy (-56.34%), Non-regulated Tires (-52.01%) and C&D (-40.90%).

◆ **Total (RES + ICI) observations:**

- o Greatest increases of percentages in 2023 are for Textile (+110.98%), Regulated Electronics (+72.53%), Non-regulated Electronics (+83.62%) and Non-regulated Paint (+55.91%);
- o Decreases are most significant in 2023 for Disposable Cups (-57.94%), Glass (-54.62%), Dairy (-55.76%) and Dairy Substitute (-48.95%).

## 5. CONCLUSION

The 2023 Nova Scotia Waste Audit shows trends that are intriguing and worth consideration for future waste management initiatives.

Organics has shown the biggest improvement, meaning there is less recoverable organic material that has been landfilled over time. There has also been a slight improvement in the C&D category compared to 2017, staying below ten percent. Plastics as a category has also shown improvement in 2023. However, it is important to understand that plastic is present in many other categories, so this does not necessarily mean there is less plastic sent to landfill.

The two categories that have the most potential for diversion are Fibre and Textiles. Percentages have risen in 2023, which is understandable since efficient recycling programs have decreased the presence of other materials such as organics and plastics. This demonstrates the need to focus more on these categories for future awareness and education campaigns.

Non-regulated Tires, Regulated Paint, and Electronics (both regulated and non-regulated) are more present in the waste stream in 2023 than in 2017. Due to their negative impact on the environment, these categories also require consideration to help decrease their occurrence in Nova Scotia's landfills.

For Nova Scotia Waste Audits moving forward, it is recommended that more frequent waste audits should be conducted. Thus far, the time between waste audits (2011, 2012, 2017, 2023), has gaps of five or six years. It is recommended that a waste audit is conducted every two or three years to yield better, more consistent results.

# APPENDIX 1 — DEFINITION OF MATERIAL CATEGORIES

## APPENDIX 1 - DEFINITION OF MATERIAL CATEGORIES

Material Category		Examples
<b>1. Fibre</b>		
1	Uncoated Paper	Dailies/ Weeklies Herald, Cape Breton Post, Metro News/Advocate, The Casket, The Guardian
2		Magazines Auto Trader, TV Guide, Enquirer, Maclean's, Canadian Living, Chatelaine, Time, Sports Illustrated
3		Flyers/inserts Superstore, Sobeys, Canadian Tire, Shoppers Drug Mart, Greco, McDonald's, KFC
4		Telephone Books/ Catalogues/ Calendars Bell Aliant Directories, Nice Little Phonebook, Yellow Pages, wall calendars, Cabela's Catalogues
5	Books	Hard & Soft Cover Novels, cookbooks, encyclopedias, comic books, pocket dictionaries
6	Mixed - recyclable	Paper - fines/scrap Paper gift wrap, Loose leaf, note pads, copier paper, utility bills
7	Mixed - non-recyclable	Paper - special purpose photographs, wall paper, label backing, foil gift wrap
8	Packaging - foodstuffs and other consumables /goods	Boxboard Cereal, cracker, toilet paper rolls, frozen pizza, fast food boxes (KFC, McDonald's)
9		Corrugated cardboard Boxes for larger consumer items (TVs, appliances), storage, filing, (delivery) pizza boxes
10		Waxed corrugated cardboard Waxed boxes for food shipment - bananas, other fruit
11		Molded Pulp Egg cartons, drink trays, flower pots/trays
12		Kraft paper bags/wrap Liquor store and food take-out paper bags, potato bags
13		Paper Laminate Packaging Paper with aluminum foil, paper with plastic, multi-layered paper - Includes microwave popcorn bags, some cookie bags, dog food bags, paper granola bar wrappers, laminated paper carry out bags, etc.



14		Spiral Wound Containers	Polycoat or paper containers with steel bottoms include chip containers, frozen concentrate juices, pre-packaged cookie dough, hot chocolate containers, pringles containers etc. May also have foil and/or plastic on ends.
15		Bleached Long Polycoat Fibre (excluding cups)	Food containers with white fibre and a rolled or folded rim, includes Michelina's frozen food, KFC tubs, soup cups/bowls, chili cups.
16		Gable Top	Sugar, molasses
17		Aseptic	Soup, broth
<b>2. Organics</b>			
18	Food Waste	Home/ICI - food waste	Whole vegetable, fruit, meat, fish, food scraps, half eaten food
19		Home/ICI - containerized	Foods packaged in pouches, boxes, jars or cans
20	Paper Waste	Kitchen paper	Paper towel, napkin, wax, parchment
21		Other paper	Facial tissue (Kleenex), gift wrap tissue
22	Yard Waste	Home/ICI	Grass clippings, leaves, brush, branches, wood chips, soil, etc.
23	Animal/Pet Waste	Litter/Feces	Cat liter, dog feces, bird cage droppings
24		Carcasses	Cats, porcupines, rabbit
25	Other	Wax	Candles, food wax
26		Small wooden items/packaging	Berry boxes, orange crates, popsicle sticks, small crafted items
<b>3. Dairy (deposit exempt products only)</b>			
27	Beverage - Dairy milk only - includes flavoured	Gable Top	1 litre, 2 litre containers, 250 ml, 500 ml containers
28		Plastic (HDPE - Number 2)	1 litre, 2 litre, 4 litre containers/jugs, 500 ml containers
29		Aseptic - any size	200 ml containers - chocolate milk
30		Plastic bag (LDPE film - Number 4)	Outer wrap - 4 litre bag, 1.33 litre bag
31	Other Fluid Dairy Product	Gable Top - any size	250 ml, 500 ml, 1 litre, 2 litre - coffee cream, egg nog, buttermilk
32		Plastic (HDPE - Number 2) - any size	Carnation Breakfast Essentials, Rollo milkshake, Oh Henry milkshake
33		Aseptic - any size	200 ml containers – milkshakes
34	Ice Cream/Frozen	Plastic (HDPE - Number 2)	500 ml, 1 litre, 2 litre, 4 litre containers
35	Yogurt	Boxboard (with lining)	2 litre box - Chapman's, No-Name

36		Multi layer	1.5 litre, 1.89 litre - Scotsburn, Farmers, Compliments, Breyers
37	Non-fluid Dairy Product	Plastic (HDPE - #2, #4)	Cottage cheese, sour cream, yogurt, butter containers
38		Other Plastic Rigids	
39		Plastic film	Single serve frozen yogurt tube, cheese - block, shredded, slices
<b>4. Dairy Substitute (deposit exempt products only)</b>			
40	Beverage - Dairy substitutes that are FORTIFIED and DO NOT have the mentioned "NOT A SOURCE OF PROTEIN"	Gable Top	Soy Drink, Rice Drink
41		Aseptic	Soy Drink, Rice Drink
42	Meal Replacements	Plastic (HDPE #2 - natural and coloured)	Meal Replacements-Ensure, Boost, Equate/Formulated Liquid Diets-Pediasure, Isosource, Resource
43		Aseptic	Meal Replacements-Ensure, Boost, Equate/Formulated Liquid Diets-Pediasure, Isosource, Resource
<b>5. Plastic</b>			
44	Packaging - foodstuffs and other consumables / goods	PET (#1) - rigid containers and jars	Heinz Ketchup, Kraft Miracle Whip, Hellmans Mayonnaise, cooking oil, dish soap, honey, Listerine
45		PET (#1) - thermoform - clear, coloured and black	Clamshells, sealable cake trays, microwave dinner trays, blister packs
46		HDPE (#2) - rigid containers & jugs - natural, coloured and black	Margarine tubs, laundry detergent, bleach, household cleaner/spray containers
47		HDPE (#2) - pails, buckets & drums $\geq$ 5L	Soap and gels in bulk, cat litter, fertilizer, milk (shipping) crates
48		Film wrap products	Cling Wrap, Ziploc Bags, Freezer bags, sandwich bags
49		HDPE (#2) and LDPE (#4) Film packaging and wrap	Shrink wrap, dry cleaner garment bags, bread bags, frozen food bags, toilet paper overwrap

50		Grocery/retail carry out bags - unused	Sobeys, Superstore, Walmart, Shoppers, Canadian Tire
51		LDPE (#4) - squeezable bottles & containers	Mustard, some Tupperware
52		PP (#5) - bottles, containers and caps (all colours), buckets > 5L	Margarine tubs, yogurt tubs, medicine bottles, pop bottle caps, shampoo bottles, some Tupperware, mop buckets.
53		PP (#5) - woven bags	Bulk potato bags, feed bags
54		PS (#6) - expanded foam - white, coloured and black	Meat trays, poultry trays, packing foam for durable goods, plates, bowls, egg cartons
55		PS (#6) - extruded containers - clear and opaque	Berry containers, muffin containers, clamshell take-out containers, utensils
56		Other (#7 and un-marked)	Coffee cup lids, non-PET blister packs, some Tupperware, plant packaging and trays
57		Multi-material - composite	Toothpaste tubes, toy packaging, plastic/foil pouches, beverage jug caps
58		Laminates - film and bags (85% plastic plus other bonded materials)	Meat, poultry and fish wrap, bacon and cheese packaging, chip bags
59	Non-packaging	Film bags used to contain waste	Garbage and other bags used to contain waste (blue bag, orange bag, grocery bags)
60		Durable goods	Plastic lawn chairs, Rubbermaid tubs, toys, mud flaps, garden hose
61	Agriculture	Silage Wrap	
<b>6. Disposable Cups</b>			
62	Fibre/Paper	Beverage (hot & cold)	Coffee, tea, hot chocolate, e.g. Tim Horton's, MacDonald's, soft drinks
63	Plastic	Rigid	Ice coffee, lemonade, smoothie, solo cups
64		Polystyrene	Hot or cold beverages
65	K-Cups	Single-serve	Keurig, Maxwell House
<b>7. Glass (exclude all beverage)</b>			
66	Packaging - foodstuffs and consumables	Clear glass	Pickles, olives, relish, salsa, spices
67		Coloured glass	
68	Non-packaging goods	Non-packaging goods	Drinking glasses, cookware, vases, scented candles, light bulbs, automotive (clear & tinted) glass, windshield, sun roof

8. Metal (exclude all electronics and beverage)					
69	Packaging - foodstuffs and other consumables/ goods	Aluminum - food containers			Canned goods, pet food, foil, pie plates
70		Aluminum durable goods/other			Cook pots, bakeware
71		Steel - food containers			Canned goods, pet food, mixed nuts, coffee tins
72		Steel durable goods/other			Cook pots, bakeware, coat hangers, screws, nails, hinges, barbeque, bicycle frame, bed rails, copper pipe
73	Non-Regulated Pressurized Containers	Aerosol containers			Hairspray, mousse, deodorant, air freshener
9. Regulated beverage (Unit count required)					
74	Redeemable Containers - DEPOSIT APPLICABLE	Aluminum Cans	Count:		Soft drinks, beer
75		Glass	Count:		
76		PET	Count:		Soft drinks, Slim-Fast, Atkins Advantage, Nutribar, Nestle Carnation Breakfast, water
77		Other Plastic (#3, #5, #6 & #7)	Count:		
78		Steel Cans	Count:		
79		Gable Top	Count:		Water, juices, and certain dairy alternatives (e.g. Almond, cashew, coconut, oat, flax, potato, hemp, quinoa) if not fortified
80		Aseptic	Count:		Water, juices, and certain dairy alternatives (e.g. Almond, cashew, coconut, oat, flax, potato, hemp, quinoa) if not fortified
81		Liquor PET	Count:		
82		Liquor - other	Count:		
10. Special Care Waste					
83		Diapers			Diapers, pull-ups, training pants for children, adult diapers/incontinence protection
84		PPE/Other			First-aid residuals - bandages, gauze, feminine hygiene items, Q-Tips, latex gloves, masks.

11. Textile				
85		Clothing		Shirts, pants, dresses, socks
86		Household use		Tablecloth, curtains, bedding, towels, blankets, pillows
87		Footwear		Sneakers, dress shoes, slippers
88		Accessories		Handbags, stuffed animals, bags & belts, wallets
89		Waste textiles		Contaminated rags, haz-mat suits, floor mats, area rugs, tents
12. Tires (Unit count required)				
Regulated				
90	Passenger and Light Truck	All passenger car tires and light truck	Count:	All passenger car tires (even those over 17") and light truck to 17"
91	Tractor Trailer	Up to 24.5" rim size	Count:	Up to 24.5" rim size
Non-regulated				
92	Off-the-Road	Small		All-terrain vehicle
93		Large		Farm tractor, skidder
94	Recreational	Mobility and Utility		Scooter, wheelbarrow, bicycle
95	Miscellaneous rubber	Durable goods		Conveyer, automotive belts, floor mats, balls
13. MHSW (excluding REG/Non REG automotive)				
96	Pressurized gas	Non-refillable containers		Non-refillable propane cylinders, helium tanks, fire extinguishers
97		Re-fillable containers		BBQ propane tanks
98		Marine Flares		Commercial and recreational use marine flares
99		Mercury containing products		Fluorescent lighting, thermostats, thermometers
100	Batteries (Unit count for larger battery over 2,5kg)	Non-rechargeable		AAA, AA, C, D, 9V - may contain mercury or cadmium
101		Rechargeable		AAA, AA, C, D, 9V, camera and power tool batteries
102		Lithium-ion		Button cell, power tool batteries
103		Lead acid		Lawn tractor, ride-on children's toys
104	Pharmaceuticals	Sharps		Lancets, syringes, medical needles, lancets, auto-injectors, infusion sets

105		Medications			Prescriptions, over-the-counter and expired drugs
106		MHSW for Lawn & Garden			Fertilizers, pesticides
107		MHSW for Building and Renovation			Latex, silicone, contact cement, wood adhesives, roofing tar, caulking
<b>14. Paint - Empty and or W/Contents (fluid or hardened) - (unit count required)</b>					
Regulated					
108		Plastic	Count:		
109		Metal	Count:		
110		Aerosols	Count:		
Non-regulated					
111	Items not captured under MHSW	Marine and Autopaint			Marine paint with pesticides, automotive paint
112	Unlabeled	Plastic, Metal and Aerosols			
<b>15. Electronics - (unit count required)</b>					
113	Regulated	Computers	Count:		Desktop or tower units
114		Computer Peripherals	Count:		Mouse, trackball, keyboard, external storage drives/ modems
115		Desktop Printers & Scanners	Count:		Multi-function printers, stand-alone fax machines or scanners
116		Display Devices			Televisions, computer monitors
117		Cellular telephones			Cell phones, blackberry, Bluetooth and other wireless devices
118		Non-cellular telephones			Telephones - corded or cordless, answering machines
119		Personal or Portable Audio/Video Systems			MP3 players, portable stereos, digital cameras, headphones & earbuds, e-readers
120		Home Audio/Video Systems			Vcrs, DVD players, clock radios, satellite receivers
121		Vehicle Audio/Video Systems			Amplifiers, speakers, in-dash stereo/video components
122		Microwaves			
123		Video Gaming Systems & Peripheral			

124		GPS, Personal Portable & Vehicle	
125	Non-Regulated	Countertop Appliances	Toaster, can opener, blender, coffee machine, air fryer, scales. Fans
126		Handheld Appliances	Shavers, hair clippers, toothbrushes, blow dryers
127		Floor care	Vacuum cleaners, carpet cleaners
128		Bulky electronics (UNIT COUNT ONLY)	Solar panels, e-bikes & scooters. Floor standing copiers & printers
129		E-cigarette/ vape	
<b>16. Automotive</b>			
130	Regulated UOMA	Regulated fluid containers up to 50L	Motor oil, brake fluid, gas line anti-freeze, glycol, DEF, the oily plastic containers and pails (and whether they are empty or contain oily liquids)
131		Filters - motor oil and hydraulic fluid	Car, truck, tractor-trailer, ATV, agriculture, forestry
132		Oil aerosol containers	Oily aerosol containers as well as aerosol containers used to contain automotive part cleaners
133	Non-Regulated UOMA	Fluid containers not regulated and/or stewarded	Gasoline, hydraulic fluid, grease, lubricants (e.g. Wd-40), solvents, de-greasers, corrosives
<b>17. Construction &amp; Demolition (C&amp;D)</b>			
134	Wood	Dimensional - clean	Studs, joists, trusses
135		Dimensional - painted/stained	Studs, joists, trusses
136		Engineered/composite - clean	Plywood, particle board, panelling
137		Engineered/composite - painted/stained	Plywood, particle board, panelling
138		Pressure-treated	Fence and decking lumber
139		Plastic wood	Decking lumber
140	Wallboard	Drywall	Gypsum, cement board
141	Shingles	Asphalt	
142		Other	Composite, fibreglass, rubber
143	Flooring	Wood and Composite	Hardwood, laminate
144		Other	Porcelain, ceramic, marble, granite, vinyl, linoleum
145		Carpet	Nylon, polyethylene
146	Insulation	Insulation	Fibreglass, foam (polystyrene), cellulose

147	Glass	Window and Door (decorative & non decorative)	
148	Countertops	Countertops	Slate/marble/granite/laminate
149	Ceiling Tile	Fibreglass/Cork/Other	Acoustical
150	Inerts	Inerts	Brick, stone, cement, concrete, wall tile
		<b>18. Bulky Item (description and unit count only - Exclude Metals)</b>	
151	Furniture	Mattresses/box spring	Coil, foam, futon, box spring
152		Furniture - upholstered & non upholstered	Chair, sofa, loveseat, office chair, wood chair, table, desk, bookcase, shelving, headboard
153		Other	Larger crafted and decorative products, pallets (wood & composite)
154	category added by CP	OTHER/ particles/ undefined	



# APPENDIX 2 — FORMAL LETTER

## APPENDIX 2 - FORMAL LETTER



STRATZER

April 21, 2023

To Landfill Facility Managers/Operators:

**RE: Nova Scotia's Landfill Waste Audit 2023**

Please be advised that Divert NS has contracted Stratzer, a leader in waste management consulting services, to conduct the fourth province-wide landfill audit. The last audit, conducted in 2017, has been used extensively by Divert NS, its municipal partners and Nova Scotia Environment and Climate Change (NSECC) to inform and support education, policy, and compliance initiatives. The data resulting from the 2023 audit will support the development of practical strategies to divert more materials from the waste stream. Information gathered from the upcoming audit will be crucial as the province strives to reach a disposal goal of 300 kg/person/year by the year 2030.

Stratzer will be reaching out to landfill managers/operators the week of April 24<sup>th</sup> to explain the workplan and coordinate operations. Divert NS is respectfully requesting the support of waste facility personnel to ensure the success of the Landfill Waste Audit. Please be assured that the audit methodology has been designed to minimize disruption to regular site operations. After confirming details with site managers, Stratzer's team of Waste Audit Technicians will begin sampling residential and industrial, commercial, and institutional (ICI) waste from each of the seven landfills, and from select transfers stations as required. Waste materials will be transported to the centralized sorting facility located in Debert for categorization.

Any confidential information disclosed to or obtained by Divert NS during the auditing process will be treated in a manner consistent with Divert NS' confidentiality protocols and policies. Please note that, consistent with the [Nova Scotia Freedom of Information and Protection of Privacy \(FOIPOP\) Act](#), compiled sampling data and any related reports produced over the course of this, and any future waste audit initiatives conducted by Divert NS are subject to public disclosure.

Thank you in advance for your cooperation. If you have any questions or concerns, please contact me at the coordinates below.

# APPENDIX 3 — QUESTIONNAIRE FORM

### APPENDIX 3 - QUESTIONNAIRE FORM

#### GENERAL INFORMATION

Name of site	Address	
City	Postal code	
Name of contact person	Phone	Email
On-site contact person 1	Phone	Email
On-site contact person 2	Phone	Email
Opening hours		
Week days:	Jours : De :	À :
	Jours :	De : À :
Weekends* :	De :	À :
*indicate opening days and any restrictions (eg. Only trucks with specific access rights, etc.)		

**SITE LAYOUT**

How many gates/scales are available at site entry?

1.	2.	3.	Other:
----	----	----	--------

Are all garbage vehicles weighed?

Yes	No
-----	----

If not, what types are not weighed? (eg. citizens, trucks on weekends, etc.)

What is your best estimated ratio of unweighed tonnages over total tonnages coming in annually (in %)?

Do truck drivers know the net weight of their load at their entry or their exit?    entry    exit

How do truck drivers know their load's net weight (coupons or other - explain)?

**TRAFFIC AND TONNAGES**

Based on your data or knowledge, does your site receive garbage from the following origins? If so, please provide details.

Origins	Garbage received??		Number of trucks or roll of containers (indicate weekly nb)	Tonnages (weekly average)
<b>1 - Residential</b> (municipal collects – may contain some IC&Is)		Yes		
		No		
<b>2 – IC&amp;I only</b> (municipal or private collects)		Yes		
		No		
<b>3 – Construction and demolition debris C&amp;D</b>		Yes		
		No		
<b>4 – Transfer stations</b> If yes, please indicate which ones 1. 2.		Yes		
		No		
<b>5 – Other origins</b>		Yes		
		No		
<b>TOTAL</b> (nb of trucks and tonnages)				

In the following table, please indicate seasonal variations observed regarding garbage quantities landfilled.

<b>Types of periods</b>	<b>Duration (indicate corresponding months)</b>	<b>Weekly average number of trucks</b>	<b>Weekly average tonnages</b>
Hi traffic			
Low traffic			

On a typical week, which are the 2 days with highest number of trucks, and what is the maximum number of daily trucks?

<b>First day with most traffic</b>	<b>Maximum number of trucks per hour for this day</b>	<b>Second day with most traffic</b>	<b>Maximum number of trucks per hour for this day</b>

## **APPENDIX 4 — ADVANCED NOTICE EMAIL**



## APPENDIX 4 - ADVANCED NOTICE EMAIL

Nova Scotia Waste Audit 2023

To whom it may concern,

Stratzer is excited to share that the next sampling area for the 2023 Nova Scotia Waste Audit will be at the \_\_\_\_\_ landfill, located at \_\_\_\_\_. The technicians will be arriving at the facility next week during the week of \_\_\_\_\_. The arrival will be during the facility opening hours.

Areas to target during this visit include; \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_. If material from smaller areas arrives during our visit, it could be collected if it meets the criteria. The amount of samples that will be collected during this time will be:

- 6 residential (RES) at 100 kg per sample
- 9 commercial (ICI) at 135 kg per sample

For the RES samples the preferred truck types would be a side, rear, or front unloading. For the ICI samples the preferred truck types would be front or rear unloading. Avoiding collecting samples from compactor containers, as it comes from a single source.

The on-site contacts listed are:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_

The technicians will check in with the on-site contacts upon arrival. During the visit, the technicians will check in and out each day. When they check in each morning, they will share the daily goal of samples to be collected. If walkie-talkies are used, they will return it at the end of the day.

If you have any questions, please feel free to reach out anytime! Thank you very much. We look forward to next week.

Sincerely,  
Stratzer

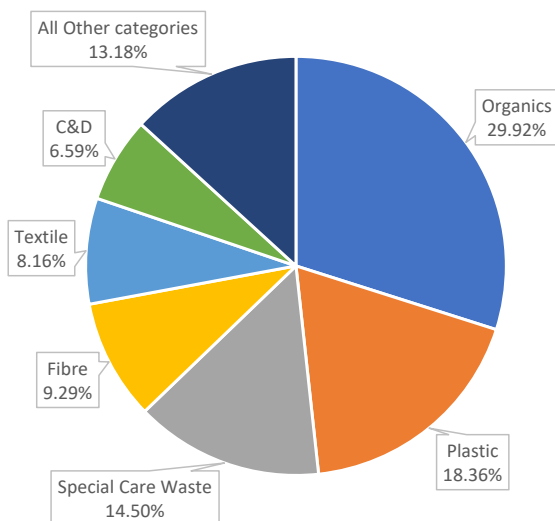
## APPENDIX 5 — COMPLETE TABLES

**APPENDIX 5 - COMPLETE TABLES**

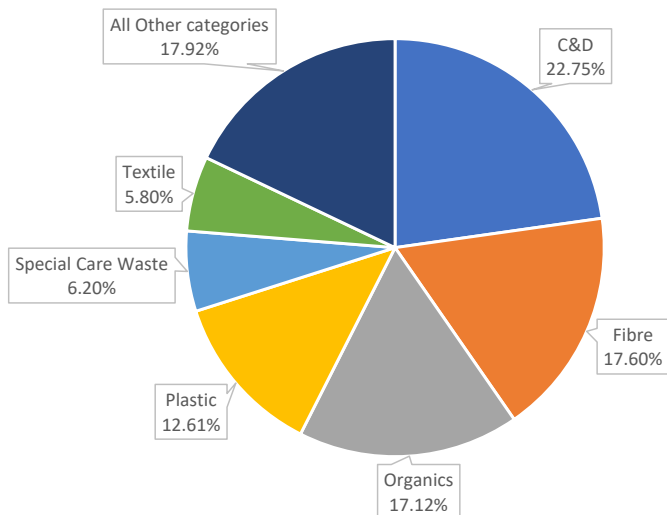
**1 - Colchester Balefill Facility (region 3)**

Material Category	Residential				ICI			
	Average	Sample Size	Confidence Interval		Average	Sample Size	Confidence Interval	
			95%	85%			95%	85%
1. Fibre	9.29%	6	3.00%	2.20%	17.60%	9	10.58%	7.77%
2. Organics	29.92%	6	14.37%	10.55%	17.12%	9	6.36%	4.67%
3. Dairy	0.31%	6	0.22%	0.16%	0.54%	9	0.34%	0.25%
4. Dairy Substitute	0.16%	6	0.22%	0.17%	0.10%	9	0.09%	0.07%
5. Plastic	18.36%	6	3.02%	2.22%	12.61%	9	4.39%	3.23%
6. Disposable Cups	0.94%	6	0.60%	0.44%	1.33%	9	0.97%	0.71%
7. Glass	0.89%	6	0.72%	0.53%	0.46%	9	0.34%	0.25%
8. Metal	3.49%	6	3.17%	2.33%	3.69%	9	2.55%	1.87%
9. Regulated beverage	0.76%	6	0.36%	0.26%	1.51%	9	0.86%	0.63%
10. Special Care Waste	14.50%	6	5.71%	4.19%	6.20%	9	3.38%	2.48%
11. Textile	8.16%	6	4.47%	3.28%	5.80%	9	4.63%	3.40%
12-a. Tires (Regulated)	0.00%	6	0.00%	0.00%	0.13%	9	0.25%	0.18%
12-b. Tires (Non-regulated)	0.80%	6	0.90%	0.66%	0.62%	9	0.86%	0.63%
13. MHSW	0.32%	6	0.34%	0.25%	0.37%	9	0.44%	0.32%
14-a. Paint (Regulated)	0.00%	6	0.00%	0.00%	1.62%	9	2.90%	2.13%
14-b. Paint (non-regulated)	0.05%	6	0.09%	0.07%	0.00%	9	0.00%	0.00%
15-a. Electronics (Regulated)	0.15%	6	0.23%	0.17%	1.61%	9	2.32%	1.71%
15-b. Electronics (Non-regulated)	1.19%	6	1.01%	0.74%	0.51%	9	0.59%	0.43%
16-a. Automotive (Regulated)	0.12%	6	0.22%	0.16%	0.00%	9	0.00%	0.00%
16-b. Automotive (Non-regulated)	0.00%	6	0.00%	0.00%	0.03%	9	0.06%	0.05%
17. C&D	6.59%	6	7.29%	5.35%	22.75%	9	15.23%	11.18%
18. Bulky Item	N/A	0	N/A	N/A	N/A	0	N/A	N/A
Uncategorized Waste	3.99%	6	2.13%	1.56%	5.40%	9	2.77%	2.03%

**Colchester Residential**



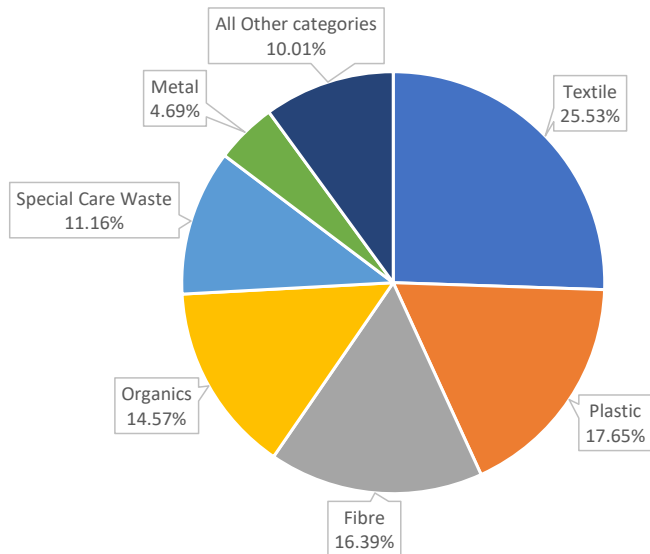
**Colchester ICI**



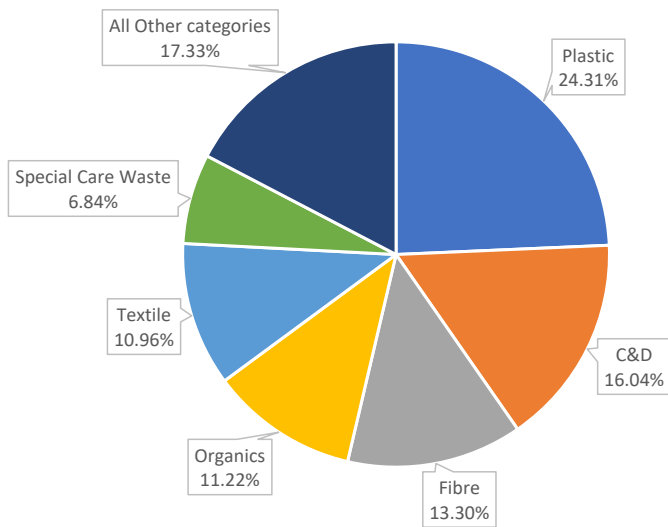
2 - Cumberland Central Landfill (region 3)

Material Category	Residential				ICI			
	Average	Sample Size	Confidence Interval		Average	Sample Size	Confidence Interval	
			95%	85%			95%	85%
1. Fibre	16.39%	8	9.01%	6.62%	13.30%	7	8.91%	6.55%
2. Organics	14.57%	8	6.58%	4.83%	11.22%	7	7.62%	5.60%
3. Dairy	0.56%	8	0.65%	0.48%	0.80%	7	0.75%	0.55%
4. Dairy Substitute	0.03%	8	0.04%	0.03%	0.02%	7	0.02%	0.02%
5. Plastic	17.65%	8	8.16%	5.99%	24.31%	7	12.78%	9.39%
6. Disposable Cups	0.34%	8	0.26%	0.19%	0.87%	7	0.74%	0.54%
7. Glass	1.07%	8	1.10%	0.81%	0.60%	7	0.54%	0.40%
8. Metal	4.69%	8	2.86%	2.10%	2.57%	7	2.11%	1.55%
9. Regulated beverage	0.20%	8	0.26%	0.19%	0.35%	7	0.32%	0.23%
10. Special Care Waste	11.16%	8	8.27%	6.07%	6.84%	7	5.27%	3.87%
11. Textile	25.53%	8	14.41%	10.58%	10.96%	7	6.81%	5.00%
12-a. Tires (Regulated)	0.00%	8	0.00%	0.00%	0.99%	7	1.93%	1.42%
12-b. Tires (Non-regulated)	1.25%	8	1.86%	1.37%	1.05%	7	1.33%	0.98%
13. MHSW	0.76%	8	0.95%	0.70%	0.22%	7	0.25%	0.19%
14-a. Paint (Regulated)	0.09%	8	0.12%	0.09%	0.00%	7	0.00%	0.00%
14-b. Paint (non-regulated)	0.03%	8	0.03%	0.02%	0.00%	7	0.00%	0.00%
15-a. Electronics (Regulated)	0.72%	8	0.53%	0.39%	1.45%	7	2.76%	2.03%
15-b. Electronics (Non-regulated)	0.58%	8	0.44%	0.32%	3.32%	7	3.06%	2.25%
16-a. Automotive (Regulated)	0.41%	8	0.42%	0.31%	0.40%	7	0.59%	0.44%
16-b. Automotive (Non-regulated)	0.00%	8	0.00%	0.00%	0.00%	7	0.00%	0.00%
17. C&D	1.70%	8	1.42%	1.04%	16.04%	7	15.89%	11.67%
18. Bulky Item	N/A	0	N/A	N/A	N/A	0	N/A	N/A
Uncategorized Waste	2.27%	8	0.86%	0.63%	4.69%	7	3.98%	2.92%

Cumberland Residential



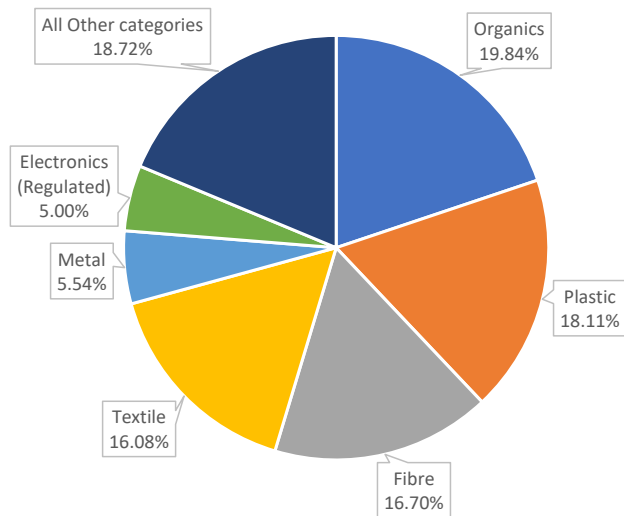
Cumberland ICI



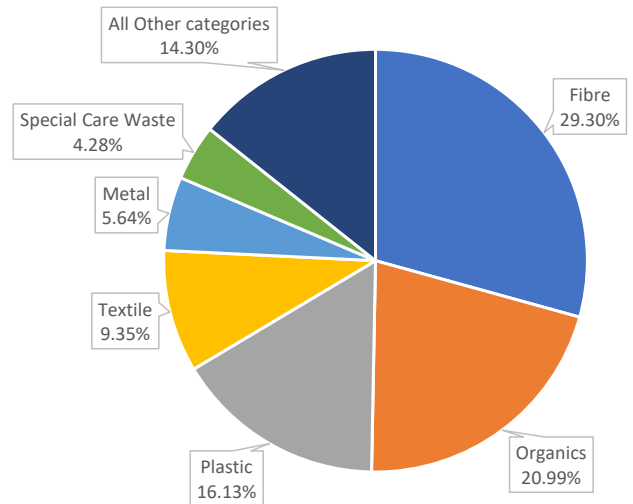
3 - West Hants Landfill (region 6)

Material Category	Residential				ICI			
	Average	Sample Size	Confidence Interval		Average	Sample Size	Confidence Interval	
			95%	85%			95%	85%
1. Fibre	16.70%	6	6.96%	5.11%	29.30%	9	7.73%	5.68%
2. Organics	19.84%	6	7.63%	5.61%	20.99%	9	6.18%	4.54%
3. Dairy	0.14%	6	0.10%	0.08%	1.14%	9	0.74%	0.54%
4. Dairy Substitute	0.12%	6	0.14%	0.10%	0.28%	9	0.38%	0.28%
5. Plastic	18.11%	6	6.30%	4.63%	16.13%	9	4.85%	3.56%
6. Disposable Cups	0.93%	6	0.50%	0.37%	0.63%	9	0.20%	0.15%
7. Glass	0.60%	6	0.45%	0.33%	0.29%	9	0.25%	0.19%
8. Metal	5.54%	6	2.98%	2.19%	5.64%	9	7.86%	5.77%
9. Regulated beverage	1.20%	6	0.96%	0.71%	1.83%	9	1.40%	1.03%
10. Special Care Waste	3.00%	6	1.68%	1.23%	4.28%	9	2.21%	1.62%
11. Textile	16.08%	6	7.84%	5.76%	9.35%	9	3.26%	2.40%
12-a. Tires (Regulated)	0.00%	6	0.00%	0.00%	2.31%	9	4.53%	3.33%
12-b. Tires (Non-regulated)	2.53%	6	2.25%	1.65%	0.72%	9	0.81%	0.59%
13. MHSW	1.23%	6	1.29%	0.95%	0.49%	9	0.66%	0.49%
14-a. Paint (Regulated)	1.39%	6	1.72%	1.26%	0.00%	9	0.00%	0.00%
14-b. Paint (non-regulated)	0.04%	6	0.08%	0.06%	0.00%	9	0.00%	0.00%
15-a. Electronics (Regulated)	5.00%	6	9.02%	6.62%	1.18%	9	1.53%	1.12%
15-b. Electronics (Non-regulated)	0.97%	6	1.20%	0.88%	1.35%	9	2.02%	1.48%
16-a. Automotive (Regulated)	0.21%	6	0.19%	0.14%	0.01%	9	0.03%	0.02%
16-b. Automotive (Non-regulated)	0.00%	6	0.00%	0.00%	0.00%	9	0.00%	0.00%
17. C&D	3.43%	6	3.57%	2.62%	2.17%	9	1.35%	0.99%
18. Bulky Item	N/A	0	N/A	N/A	N/A	0	N/A	N/A
Uncategorized Waste	2.94%	6	1.44%	1.06%	1.89%	9	0.63%	0.46%

West Hants Residential



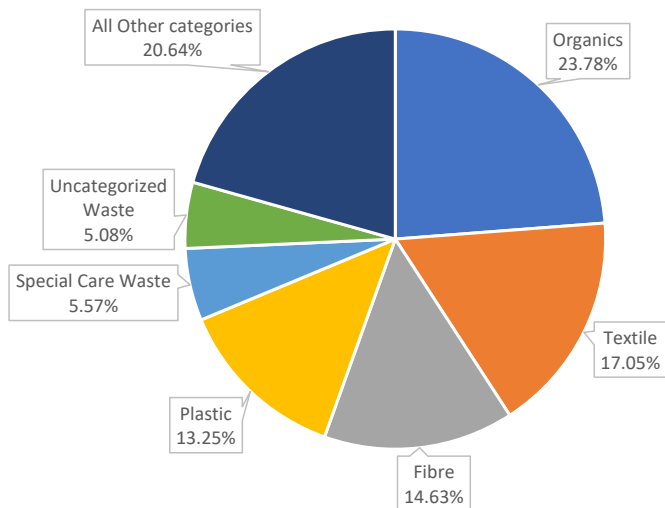
West Hants ICI



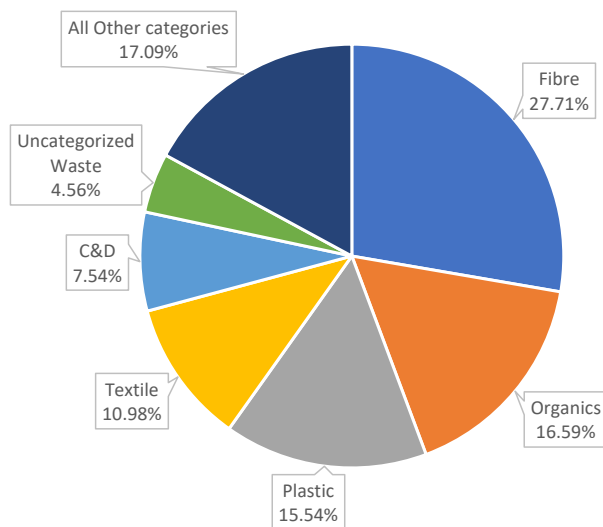
4 - Queens Municipal Landfill (region 6)

Material Category	Residential				ICI			
	Average	Sample Size	Confidence Interval		Average	Sample Size	Confidence Interval	
			95%	85%			95%	85%
1. Fibre	14.63%	6	4.84%	3.55%	27.71%	9	13.91%	10.22%
2. Organics	23.78%	6	11.08%	8.14%	16.59%	9	6.33%	4.65%
3. Dairy	0.42%	6	0.30%	0.22%	0.24%	9	0.12%	0.09%
4. Dairy Substitute	0.01%	6	0.01%	0.01%	0.02%	9	0.02%	0.02%
5. Plastic	13.25%	6	2.96%	2.18%	15.54%	9	4.56%	3.35%
6. Disposable Cups	1.30%	6	0.73%	0.54%	0.84%	9	0.62%	0.45%
7. Glass	0.58%	6	0.65%	0.48%	0.49%	9	0.35%	0.25%
8. Metal	4.30%	6	2.61%	1.92%	3.62%	9	1.50%	1.10%
9. Regulated beverage	2.78%	6	1.42%	1.04%	2.20%	9	2.42%	1.78%
10. Special Care Waste	5.57%	6	3.77%	2.77%	3.68%	9	1.40%	1.03%
11. Textile	17.05%	6	6.41%	4.71%	10.98%	9	3.70%	2.72%
12-a. Tires (Regulated)	0.00%	6	0.00%	0.00%	0.00%	9	0.00%	0.00%
12-b. Tires (Non-regulated)	0.67%	6	0.61%	0.44%	0.15%	9	0.15%	0.11%
13. MHSW	0.91%	6	0.92%	0.68%	1.14%	9	0.78%	0.58%
14-a. Paint (Regulated)	0.34%	6	0.52%	0.38%	0.41%	9	0.49%	0.36%
14-b. Paint (non-regulated)	0.00%	6	0.00%	0.00%	0.00%	9	0.00%	0.00%
15-a. Electronics (Regulated)	2.34%	6	4.40%	3.23%	2.32%	9	2.08%	1.53%
15-b. Electronics (Non-regulated)	2.00%	6	3.00%	2.21%	1.80%	9	1.31%	0.96%
16-a. Automotive (Regulated)	0.99%	6	0.95%	0.70%	0.17%	9	0.16%	0.12%
16-b. Automotive (Non-regulated)	0.35%	6	0.69%	0.51%	0.00%	9	0.00%	0.00%
17. C&D	3.64%	6	4.08%	2.99%	7.54%	9	5.96%	4.37%
18. Bulky Item	N/A	0	N/A	N/A	N/A	0	N/A	N/A
Uncategorized Waste	5.08%	6	5.58%	4.10%	4.56%	9	1.20%	0.88%

Queens Residential



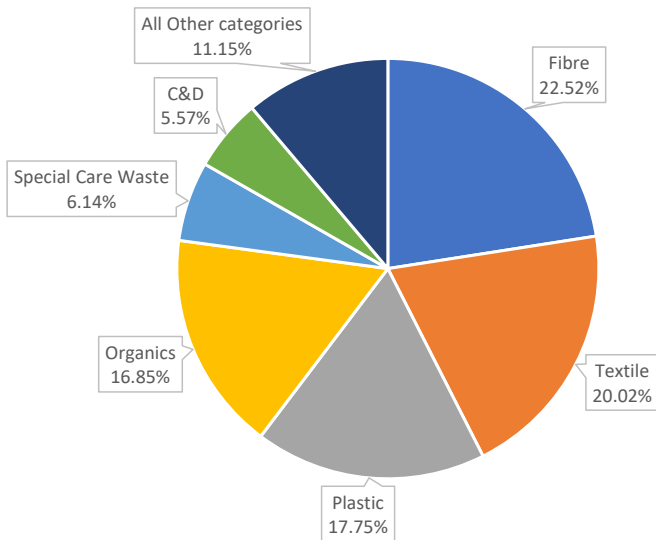
Queens ICI



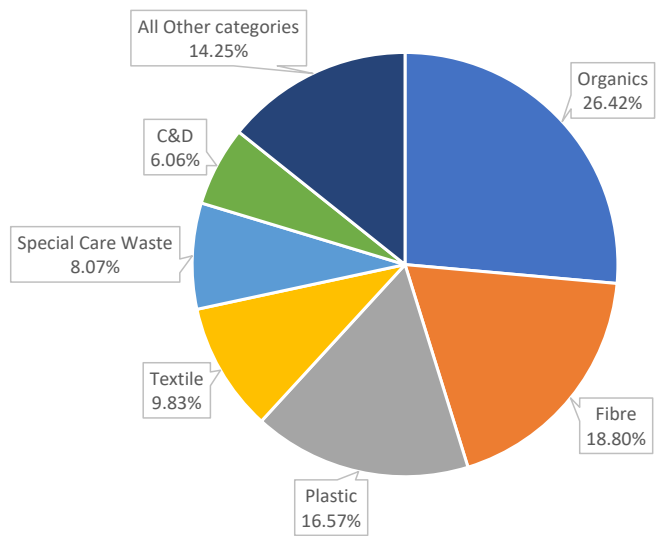
5 - Guysborough Waste Management Facility (Region 2)

Material Category	Residential				ICI			
	Average	Sample Size	Confidence Interval		Average	Sample Size	Confidence Interval	
			95%	85%			95%	85%
1. Fibre	22.52%	6	21.00%	15.42%	18.80%	9	7.77%	5.71%
2. Organics	16.85%	6	5.03%	3.70%	26.42%	9	8.53%	6.27%
3. Dairy	0.33%	6	0.27%	0.20%	0.56%	9	0.58%	0.43%
4. Dairy Substitute	0.03%	6	0.04%	0.03%	0.07%	9	0.09%	0.07%
5. Plastic	17.75%	6	7.04%	5.17%	16.57%	9	2.91%	2.14%
6. Disposable Cups	1.15%	6	0.80%	0.59%	1.63%	9	0.62%	0.45%
7. Glass	0.57%	6	0.38%	0.28%	0.45%	9	0.21%	0.15%
8. Metal	3.40%	6	2.71%	1.99%	3.70%	9	2.96%	2.17%
9. Regulated beverage	1.22%	6	0.80%	0.59%	1.24%	9	0.31%	0.23%
10. Special Care Waste	6.14%	6	3.51%	2.58%	8.07%	9	4.77%	3.50%
11. Textile	20.02%	6	12.94%	9.50%	9.83%	9	4.41%	3.24%
12-a. Tires (Regulated)	0.00%	6	0.00%	0.00%	0.00%	9	0.00%	0.00%
12-b. Tires (Non-regulated)	0.20%	6	0.10%	0.07%	0.71%	9	0.96%	0.71%
13. MHSW	0.17%	6	0.15%	0.11%	0.57%	9	0.33%	0.24%
14-a. Paint (Regulated)	0.05%	6	0.06%	0.04%	0.45%	9	0.68%	0.50%
14-b. Paint (non-regulated)	0.00%	6	0.00%	0.00%	0.01%	9	0.02%	0.02%
15-a. Electronics (Regulated)	0.82%	6	1.37%	1.01%	1.22%	9	1.63%	1.20%
15-b. Electronics (Non-regulated)	0.73%	6	0.79%	0.58%	0.82%	9	0.74%	0.54%
16-a. Automotive (Regulated)	0.02%	6	0.05%	0.03%	0.03%	9	0.05%	0.04%
16-b. Automotive (Non-regulated)	0.00%	6	0.00%	0.00%	0.00%	9	0.00%	0.00%
17. C&D	5.57%	6	6.04%	4.43%	6.06%	9	5.05%	3.71%
18. Bulky Item	N/A	0	N/A	N/A	N/A	0	N/A	N/A
Uncategorized Waste	2.45%	6	0.82%	0.60%	2.77%	9	1.29%	0.95%

Guysborough Residential



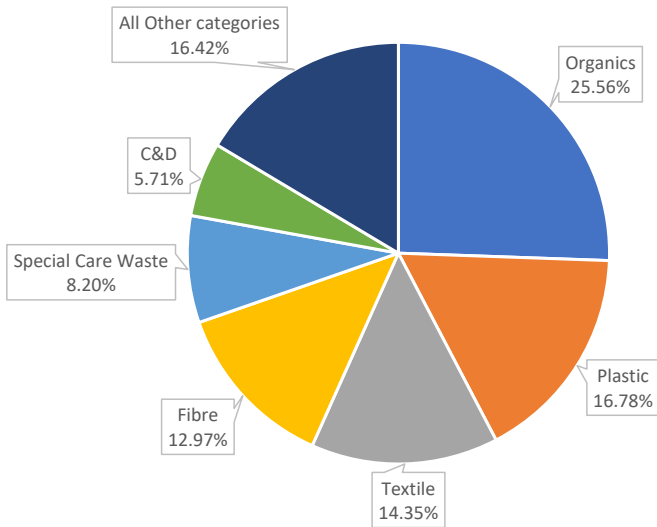
Guysborough ICI



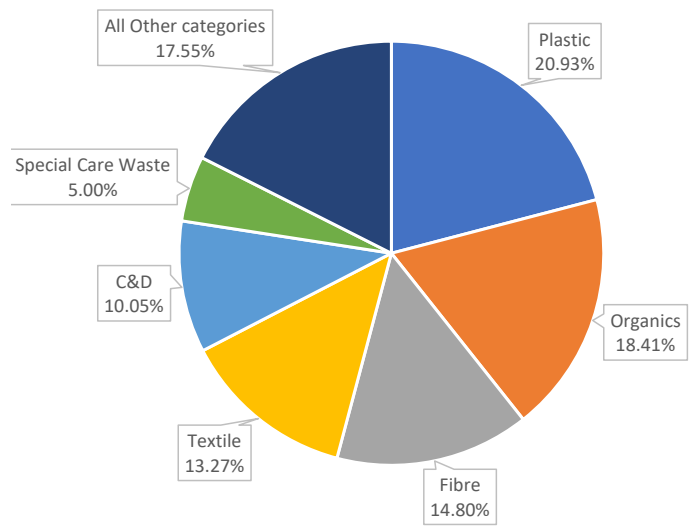
6 - Kaizer Meadow Environmental Waste Management (region 6)

Material Category	Residential				ICI			
	Average	Sample Size	Confidence Interval		Average	Sample Size	Confidence Interval	
			95%	85%			95%	85%
1. Fibre	12.97%	6	7.95%	5.84%	14.80%	9	3.81%	2.80%
2. Organics	25.56%	6	7.33%	5.39%	18.41%	9	4.88%	3.59%
3. Dairy	0.60%	6	0.27%	0.20%	0.37%	9	0.22%	0.16%
4. Dairy Substitute	0.13%	6	0.17%	0.12%	0.04%	9	0.02%	0.02%
5. Plastic	16.78%	6	2.58%	1.90%	20.93%	9	5.38%	3.95%
6. Disposable Cups	1.89%	6	0.53%	0.39%	1.87%	9	1.13%	0.83%
7. Glass	0.58%	6	0.22%	0.16%	0.61%	9	0.39%	0.28%
8. Metal	3.48%	6	1.14%	0.84%	4.43%	9	2.43%	1.78%
9. Regulated beverage	1.74%	6	1.43%	1.05%	1.08%	9	0.75%	0.55%
10. Special Care Waste	8.20%	6	4.90%	3.60%	5.00%	9	3.98%	2.92%
11. Textile	14.35%	6	6.76%	4.97%	13.27%	9	5.08%	3.73%
12-a. Tires (Regulated)	0.00%	6	0.00%	0.00%	0.00%	9	0.00%	0.00%
12-b. Tires (Non-regulated)	0.27%	6	0.24%	0.18%	0.83%	9	0.50%	0.37%
13. MHSW	0.87%	6	0.54%	0.40%	0.68%	9	0.32%	0.23%
14-a. Paint (Regulated)	0.47%	6	0.69%	0.50%	0.16%	9	0.18%	0.13%
14-b. Paint (non-regulated)	0.03%	6	0.06%	0.04%	0.00%	9	0.00%	0.00%
15-a. Electronics (Regulated)	0.30%	6	0.49%	0.36%	0.56%	9	0.62%	0.45%
15-b. Electronics (Non-regulated)	0.57%	6	0.44%	0.33%	1.16%	9	0.73%	0.54%
16-a. Automotive (Regulated)	0.17%	6	0.20%	0.15%	0.82%	9	0.59%	0.43%
16-b. Automotive (Non-regulated)	0.00%	6	0.00%	0.00%	0.43%	9	0.43%	0.31%
17. C&D	5.71%	6	5.45%	4.00%	10.05%	9	6.23%	4.57%
18. Bulky Item	N/A	0	N/A	N/A	N/A	0	N/A	N/A
Uncategorized Waste	5.32%	6	1.41%	1.04%	4.51%	9	1.66%	1.22%

Kaizer Meadow Residential



Kaizer Meadow ICI

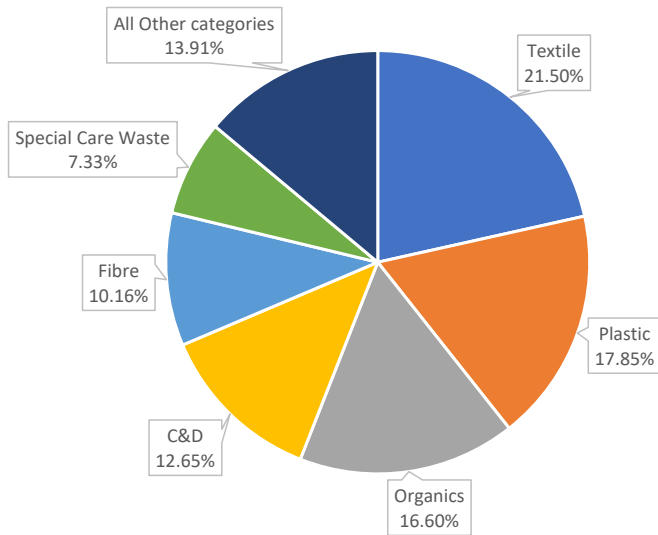




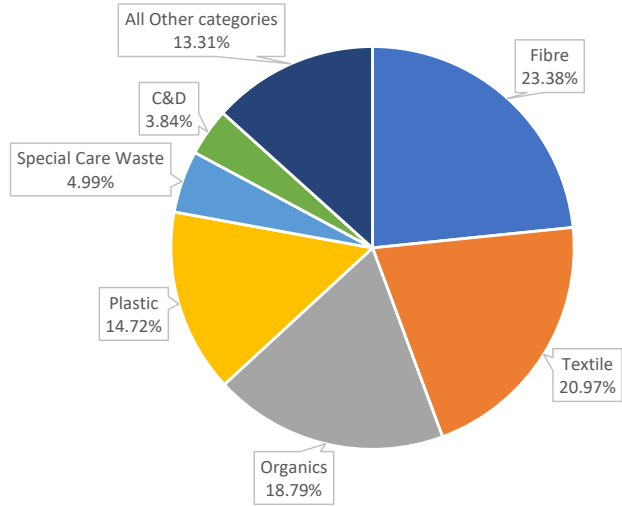
7 - HRM Otter Lake Waste Facility (region 4)

Material Category	Residential				ICI			
	Average	Sample Size	Confidence Interval		Average	Sample Size	Confidence Interval	
			95%	85%			95%	85%
1. Fibre	10.16%	6	2.10%	1.54%	23.38%	9	6.56%	4.82%
2. Organics	16.60%	6	5.11%	3.76%	18.79%	9	6.59%	4.84%
3. Dairy	0.20%	6	0.13%	0.10%	0.34%	9	0.15%	0.11%
4. Dairy Substitute	0.05%	6	0.06%	0.04%	0.05%	9	0.05%	0.03%
5. Plastic	17.85%	6	4.88%	3.58%	14.72%	9	2.97%	2.18%
6. Disposable Cups	1.18%	6	0.46%	0.34%	1.07%	9	0.20%	0.15%
7. Glass	0.31%	6	0.19%	0.14%	0.95%	9	0.51%	0.37%
8. Metal	2.95%	6	1.12%	0.82%	3.71%	9	1.47%	1.08%
9. Regulated beverage	0.81%	6	0.85%	0.62%	1.40%	9	0.77%	0.57%
10. Special Care Waste	7.33%	6	4.60%	3.38%	4.99%	9	1.57%	1.15%
11. Textile	21.50%	6	3.27%	2.40%	20.97%	9	4.35%	3.20%
12-a. Tires (Regulated)	0.00%	6	0.00%	0.00%	0.00%	9	0.00%	0.00%
12-b. Tires (Non-regulated)	0.20%	6	0.14%	0.11%	0.23%	9	0.19%	0.14%
13. MHSW	0.34%	6	0.14%	0.10%	0.51%	9	0.12%	0.08%
14-a. Paint (Regulated)	0.23%	6	0.25%	0.18%	0.08%	9	0.16%	0.12%
14-b. Paint (non-regulated)	0.00%	6	0.00%	0.00%	0.02%	9	0.04%	0.03%
15-a. Electronics (Regulated)	1.24%	6	1.68%	1.23%	0.23%	9	0.28%	0.21%
15-b. Electronics (Non-regulated)	2.19%	6	1.10%	0.81%	1.56%	9	1.00%	0.73%
16-a. Automotive (Regulated)	0.46%	6	0.47%	0.34%	0.03%	9	0.03%	0.02%
16-b. Automotive (Non-regulated)	0.05%	6	0.09%	0.07%	0.04%	9	0.03%	0.03%
17. C&D	12.65%	6	8.95%	6.58%	3.84%	9	1.85%	1.36%
18. Bulky Item	N/A	0	N/A	N/A	N/A	0	N/A	N/A
Uncategorized Waste	3.71%	6	1.55%	1.14%	3.09%	9	0.92%	0.67%

HMR Otter Lake Residential



HMR Otter Lake ICI



# APPENDIX 6 — RESULT COMPARISON BETWEEN 2017 AND 2023









# APPENDIX 7 — UNIT COUNT

**APPENDIX 7 - UNIT COUNT**

Material Category		Unit count
<b>9. Regulated beverage</b>		
Redeemable Containers - DEPOSIT APPLICABLE	Aluminum Cans	953
	Glass	24
	PET	1650
	Other Plastic (#3, #5, #6 & #7)	17
	Steel Cans	0
	Gable Top	52
	Aseptic	684
	Liquor PET	81
Liquor - other	946	
<b>12. Tires (Regulated)</b>		
Passenger and Light Truck	All passenger car tires and light truck	3
Tractor Trailer	Up to 24.5" rim size	1
<b>14. Paint - Empty and or W/Contents (fluid or hardened) - (unit</b>		
Regulated	Plastic	45
	Metal	52
	Aerosols	18
<b>15. electronics - (unit count required)</b>		
Regulated	Computers	3
	Computer Peripherals	20
	Desktop Printers & Scanners	16
Non-Regulated	Bulky electronics	29
<b>18. Bulky Item</b>		
Furniture	Mattresses/box spring	6
	Furniture - upholstered & non	3
	Other	40

**Unit count in 105 samples (Residential + ICI)**



## APPENDIX 8 — SAMPLING CALENDAR

## APPENDIX 8 - SAMPLING CALENDAR

Week	Date	Landfill	Sorting Week	Landfill Completed	RES	ICI	TOTAL
1	May 15th to May 19th	CBF					
2	May 22nd to May 26th	CCL					
3	May 29th to June 2nd	WHL					
4	June 5th to June 9th		Sorting				
5	June 12th to June 16th		Sorting				
6	June 19th to June 23rd	CBF					
7	June 26th to June 30th	CBF WHL		CBF	6	9	15
8	July 3rd to July 7th	QML					
9	July 10th to July 14th		Sorting				
10	July 17th to July 21st	GWMF					
11	July 24th to July 28th	GWMF					
12	July 31st to August 4th	CCL QML		CCL QML	6 6	9 9	15 15
13	August 7th to August 11th	KMEM					
14	August 14th to August 18th	GWMF					
15	August 21st to August 25th	KMEM GWMF		GWMF	6	9	15
16	August 28th to September 1st	OLWF					
17	September 4th to September 8th	WHL OLWF		WHL OLWF	6 6	9 9	15 15
18	September 11th to September 15th	KMEM		KMEM	6	9	15
19	September 18th to September 22nd		Sorting				
20	September 25th to September 29th		Sorting				
	<b>TOTAL</b>				<b>42</b>	<b>63</b>	<b>105</b>

# APPENDIX 9 — OBSERVATIONS AND RECOMMENDATIONS ON EXECUTION OF THE PROJECT

## APPENDIX 9 - OBSERVATIONS AND RECOMMENDATIONS ON THE EXECUTION OF THE PROJECT

The study revealed several interesting observations, and the methodology was shown to be appropriate to meet the objectives.

For the next possible audit, the following points should be considered:

1. It is difficult to predict the weather and the damage natural weather events may cause. Allotting an additional two or three weeks onto the waste audit deadline is recommended. It would provide a safe buffer zone to ensure project completion, better financial planning, and having a longer contract deadline to ensure technicians are still available.
2. For technicians, it was difficult to keep staff during the first half of the 2023 waste audit. It should also be noted that the discomfort of sorting the sample material was a factor. Being short staffed near the beginning of the audit did cause a domino effect that slowed down the number of samples that should have been sorted by X number of days. The recommendation is to aim for a slower start, allowing easier training of fewer people. This will provide an opportunity to assess the performance of technicians. Another option would be to hire a larger team of technicians near the beginning of the audit. This is to ensure that the sortation of samples per day stays on track to get ahead of sorting samples during that time. This would be a low-risk decision due to the high probability of someone resigning.
3. Hiring more technicians that have a valid driver's license is recommended. At least three technicians should have a driver's license, so that there is an opportunity to cross train. This refers to the point mentioned above, in the case that a staff member resigns, and it happens to be the only driver out of all the technicians.
4. For technician training and to ensure proper record keeping, paper version document should be made available, so that technicians can write truck information, sample collection summary, etc. Submitted to the coordinator at the end of each workday, this would serve as an informative overview document to add to the protocols.
5. A clear definition of what should be considered a bulky item would help to standardize the audit and the results. If a bulky item was found in the randomly selected cell number of the truck load, the following options were created and decided upon to address the concern:
  - a. 0kg – 10kg: the item is approved to collect for the sample.
  - b. 10kg – 15kg: the technician should ask the coordinator or manager for approval before collecting the sample.
  - c. 15kg and above: the technician can make a note of the weight and take pictures of the item; however, it cannot be approved to be included in the sample.
6. Suggestions of improvement to the list of categories are as follows:
  - a. Discussed and further added category number 154 for Other was very helpful.
  - b. For material type Textiles, adding a category for specifically grocery store re-usable cloth bags. That way it can be compared to the material type under plastic, category number 50 - Grocery /retail carry out bags – unused. This comparison was briefly discussed in a meeting with the client. The data would be interesting.
  - c. For material type Metal, adding a category for specifically mixed metal items. Not to be confused with the material type Plastic, category number 57 – Multi-Material – composite. Category number 57 is when an item with the weight consisting of mostly plastic, has other material types present. Same premise for the proposed mixed metal

- category. For items where much of the weight is metal, with other material types present.
- d. For material type C&D, adding a sub-category for construction debris. There were multiple occurrences where ICI (Industrial, Commercial, and Institutional) samples had mixed debris that was too fine to sort. The weight was noticeable. With that said, it may be beneficial for the weight and data to stay under the material type C&D section.
  - e. For material type Plastic, adding a category for items that were identified as number 3. The amounts found were low, yet noticeable.
  - f. For material type Regulated Beverage, category number 82 – Liquor – other, it may be beneficial to have three categories. During the 2023 waste audit, there were liquor cans and bottles found. Additionally, a new observation was THC cans. It was observed there was more consumption of Cannabis beverages. Normal beverage types, such as coffee, tea, juice, and pop, that are infused with THC or CBD extracts of cannabis.

For the next possible audit, the following points should be considered:

- ◆ For any future campaign, prioritize the areas that were omitted from the 2023 waste audit due to damage from natural weather events.
- ◆ Daily random data verification performed by the coordinator is an effective method for controlling the quality of the results versus the twenty bins per week method.
- ◆ An effective characterization team must consist of at least six people; two for collecting samples at landfills and four for sorting materials. Hiring at least three people who has an active driver's license for cross training purposes.
- ◆ The high number of categories implies a longer learning time and duration. Therefore, it is preferable to keep the same sorters throughout the audit. Establishing an extended end date for contracted staff as a buffer will help.

In conclusion, we would like to express our gratitude to all the drivers, operators, landfill managers and professionals involved in the study.

# APPENDIX 10 — COMPOSITION OF MAJOR CATEGORIES IN % AND TONS FOR RES AND ICI WASTE PER LANDFILL

## APPENDIX 10 - COMPOSITION OF MAJOR CATEGORIES IN % AND TONS FOR RESIDENTIAL AND ICI WASTE PER LANDFILL

### Composition of Major Categories in % for Residential and ICI Waste by Landfill

Material Category	1 - Colchester Balefill Facility (region 3)		2 - Cumberland Central Landfill (region 3)		3 - West Hants Landfill (region 6)		4 - Queens Municipal Landfill (region 6)	
	Residential	ICI	Residential	ICI	Residential	ICI	Residential	ICI
1. Fibre	9.29%	17.60%	16.39%	13.30%	16.70%	29.30%	14.63%	27.71%
2. Organics	29.92%	17.12%	14.57%	11.22%	19.84%	20.99%	23.78%	16.59%
3. Dairy	0.31%	0.54%	0.56%	0.80%	0.14%	1.14%	0.42%	0.24%
4. Dairy Substitute	0.16%	0.10%	0.03%	0.02%	0.12%	0.28%	0.01%	0.02%
5. Plastic	18.36%	12.61%	17.65%	24.31%	18.11%	16.13%	13.25%	15.54%
6. Disposable Cups	0.94%	1.33%	0.34%	0.87%	0.93%	0.63%	1.30%	0.84%
7. Glass	0.89%	0.46%	1.07%	0.60%	0.60%	0.29%	0.58%	0.49%
8. Metal	3.49%	3.69%	4.69%	2.57%	5.54%	5.64%	4.30%	3.62%
9. Regulated beverage	0.76%	1.51%	0.20%	0.35%	1.20%	1.83%	2.78%	2.20%
10. Special Care Waste	14.50%	6.20%	11.16%	6.84%	3.00%	4.28%	5.57%	3.68%
11. Textile	8.16%	5.80%	25.53%	10.96%	16.08%	9.35%	17.05%	10.98%
12-a. Tires (Regulated)	0.00%	0.13%	0.00%	0.99%	0.00%	2.31%	0.00%	0.00%
12-b. Tires (Non-regulated)	0.80%	0.62%	1.25%	1.05%	2.53%	0.72%	0.67%	0.15%
13. MHSW	0.32%	0.37%	0.76%	0.22%	1.23%	0.49%	0.91%	1.14%
14-a. Paint (Regulated)	0.00%	1.62%	0.09%	0.00%	1.39%	0.00%	0.34%	0.41%
14-b. Paint (non-regulated)	0.05%	0.00%	0.03%	0.00%	0.04%	0.00%	0.00%	0.00%
15-a. Electronics (Regulated)	0.15%	1.61%	0.72%	1.45%	5.00%	1.18%	2.34%	2.32%
15-b. Electronics (Non-regulated)	1.19%	0.51%	0.58%	3.32%	0.97%	1.35%	2.00%	1.80%
16-a. Automotive (Regulated)	0.12%	0.00%	0.41%	0.40%	0.21%	0.01%	0.99%	0.17%
16-b. Automotive (Non-regulated)	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.35%	0.00%
17. C&D	6.59%	22.75%	1.70%	16.04%	3.43%	2.17%	3.64%	7.54%
18. Bulky Item								
Uncategorized Waste	3.99%	5.40%	2.27%	4.69%	2.94%	1.89%	5.08%	4.56%

**Note:** As mentioned in the Important notes on page 18, ICI waste from HRM but landfilled in other sites has been attributed to HRM landfill.

**Composition of Major Categories in % for Residential and ICI Waste by Landfill (continued)**

Material Category	5 - Guysborough Waste Management Facility (Region 2)		6 - Kaizer Meadow Environmental Waste Management (region 6)		7 - HRM Otter Lake Waste Facility (region 4)	
	Residential	ICI	Residential	ICI	Residential	ICI
1. Fibre	22.52%	18.80%	12.97%	14.80%	10.16%	23.38%
2. Organics	16.85%	26.42%	25.56%	18.41%	16.60%	18.79%
3. Dairy	0.33%	0.56%	0.60%	0.37%	0.20%	0.34%
4. Dairy Substitute	0.03%	0.07%	0.13%	0.04%	0.05%	0.05%
5. Plastic	17.75%	16.57%	16.78%	20.93%	17.85%	14.72%
6. Disposable Cups	1.15%	1.63%	1.89%	1.87%	1.18%	1.07%
7. Glass	0.57%	0.45%	0.58%	0.61%	0.31%	0.95%
8. Metal	3.40%	3.70%	3.48%	4.43%	2.95%	3.71%
9. Regulated beverage	1.22%	1.24%	1.74%	1.08%	0.81%	1.40%
10. Special Care Waste	6.14%	8.07%	8.20%	5.00%	7.33%	4.99%
11. Textile	20.02%	9.83%	14.35%	13.27%	21.50%	20.97%
12-a. Tires (Regulated)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
12-b. Tires (Non-regulated)	0.20%	0.71%	0.27%	0.83%	0.20%	0.23%
13. MHSW	0.17%	0.57%	0.87%	0.68%	0.34%	0.51%
14-a. Paint (Regulated)	0.05%	0.45%	0.47%	0.16%	0.23%	0.08%
14-b. Paint (non-regulated)	0.00%	0.01%	0.03%	0.00%	0.00%	0.02%
15-a. Electronics (Regulated)	0.82%	1.22%	0.30%	0.56%	1.24%	0.23%
15-b. Electronics (Non-regulated)	0.73%	0.82%	0.57%	1.16%	2.19%	1.56%
16-a. Automotive (Regulated)	0.02%	0.03%	0.17%	0.82%	0.46%	0.03%
16-b. Automotive (Non-regulated)	0.00%	0.00%	0.00%	0.43%	0.05%	0.04%
17. C&D	5.57%	6.06%	5.71%	10.05%	12.65%	3.84%
18. Bulky Item						
Uncategorized Waste	2.45%	2.77%	5.32%	4.51%	3.71%	3.09%

**Note:** As mentioned in the Important notes on page 18, ICI waste from HRM but landfilled in other sites has been attributed to HRM landfill.



**Composition of Major Categories in % for Residential and ICI Waste by Landfill (continued)**

Material Category	All sites*		
	Residential	ICI	All
1. Fibre	15.77%	22.60%	18.86%
2. Organics	19.95%	18.74%	19.40%
3. Dairy	0.37%	0.43%	0.40%
4. Dairy Substitute	0.06%	0.07%	0.07%
5. Plastic	17.07%	15.12%	16.19%
6. Disposable Cups	1.32%	1.10%	1.22%
7. Glass	0.53%	0.81%	0.66%
8. Metal	3.49%	3.82%	3.64%
9. Regulated beverage	1.38%	1.41%	1.39%
10. Special Care Waste	7.10%	5.20%	6.24%
11. Textile	18.45%	17.65%	18.09%
12-a. Tires (Regulated)	0.00%	0.20%	0.09%
12-b. Tires (Non-regulated)	0.36%	0.36%	0.36%
13. MHSW	0.50%	0.50%	0.50%
14-a. Paint (Regulated)	0.25%	0.25%	0.25%
14-b. Paint (non-regulated)	0.01%	0.02%	0.01%
15-a. Electronics (Regulated)	1.06%	0.54%	0.82%
15-b. Electronics (Non-regulated)	1.21%	1.46%	1.32%
16-a. Automotive (Regulated)	0.29%	0.06%	0.18%
16-b. Automotive (Non-regulated)	0.05%	0.04%	0.05%
17. C&D	7.03%	6.28%	6.69%
18. Bulky Item			
Uncategorized Waste	3.77%	3.34%	3.57%

**Note:** \* Percentages calculated from the actual quantities landfilled in each site.

### Composition of Major Categories in tons (t) for Residential and ICI Waste by Landfill

Material Category	1 - Colchester Balefill Facility (region 3)		2 - Cumberland Central Landfill (region 3)		3 - West Hants Landfill (region 6)		4 - Queens Municipal Landfill (region 6)	
	Residential	ICI	Residential	ICI	Residential	ICI	Residential	ICI
1. Fibre	447.54 t	2,593.61 t	605.61 t	589.19 t	722.57 t	2,915.62 t	2,884.64 t	615.33 t
2. Organics	1,441.25 t	2,521.68 t	538.15 t	496.85 t	858.68 t	2,088.82 t	4,688.99 t	368.54 t
3. Dairy	14.95 t	78.95 t	20.59 t	35.22 t	5.88 t	113.03 t	83.67 t	5.42 t
4. Dairy Substitute	7.54 t	14.37 t	1.21 t	0.79 t	5.34 t	27.93 t	1.23 t	0.45 t
5. Plastic	884.53 t	1,857.98 t	652.11 t	1,076.40 t	783.58 t	1,604.41 t	2,613.40 t	345.03 t
6. Disposable Cups	45.32 t	195.61 t	12.65 t	38.68 t	40.12 t	62.54 t	256.09 t	18.63 t
7. Glass	42.88 t	67.32 t	39.62 t	26.66 t	26.09 t	28.93 t	115.25 t	10.85 t
8. Metal	168.29 t	544.07 t	173.44 t	113.88 t	239.82 t	561.33 t	848.46 t	80.36 t
9. Regulated beverage	36.54 t	223.14 t	7.32 t	15.42 t	52.04 t	182.43 t	548.62 t	48.95 t
10. Special Care Waste	698.35 t	913.68 t	412.35 t	303.06 t	129.77 t	426.06 t	1,098.17 t	81.80 t
11. Textile	393.17 t	854.68 t	943.06 t	485.32 t	695.98 t	930.44 t	3,362.70 t	243.83 t
12-a. Tires (Regulated)	0.00 t	18.74 t	0.00 t	43.70 t	0.00 t	229.99 t	0.00 t	0.00 t
12-b. Tires (Non-regulated)	38.74 t	92.02 t	46.12 t	46.41 t	109.62 t	71.93 t	132.07 t	3.41 t
13. MHSW	15.38 t	53.78 t	28.21 t	9.83 t	53.05 t	48.69 t	179.97 t	25.33 t
14-a. Paint (Regulated)	0.00 t	238.11 t	3.29 t	0.00 t	60.04 t	0.00 t	67.65 t	9.18 t
14-b. Paint (non-regulated)	2.33 t	0.00 t	0.98 t	0.00 t	1.67 t	0.00 t	0.17 t	0.00 t
15-a. Electronics (Regulated)	7.22 t	237.79 t	26.60 t	64.12 t	216.33 t	117.11 t	461.32 t	51.48 t
15-b. Electronics (Non-regulated)	57.48 t	75.58 t	21.31 t	147.18 t	41.83 t	134.78 t	394.09 t	40.08 t
16-a. Automotive (Regulated)	5.88 t	0.00 t	15.09 t	17.83 t	9.24 t	1.29 t	194.48 t	3.67 t
16-b. Automotive (Non-regulated)	0.00 t	4.64 t	0.00 t	0.07 t	0.00 t	0.00 t	69.19 t	0.00 t
17. C&D	317.48 t	3,351.69 t	62.84 t	710.48 t	148.31 t	216.21 t	716.92 t	167.37 t
18. Bulky Item								
Uncategorized Waste	192.28 t	795.67 t	83.83 t	207.53 t	127.06 t	188.00 t	1,000.94 t	101.20 t
<b>TOTAL</b>	<b>4,817.16 t</b>	<b>14,733.09 t</b>	<b>3,694.38 t</b>	<b>4,428.62 t</b>	<b>4,327.02 t</b>	<b>9,949.54 t</b>	<b>19,717.98 t</b>	<b>2,220.89 t</b>

Bulky items = 3.40%

687.22 t	285.53 t	501.84 t	771.18 t
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**Note:** As mentioned in the Important notes on page 18, ICI waste from HRM but landfilled in other sites has been attributed to HRM landfill.

**Composition of Major Categories in tons (t) for Residential and ICI Waste by Landfill  
(continued)**

Material Category	5 - Guysborough Waste Management Facility (Region 2)		6 - Kaizer Meadow Environmental Waste Management (region 6)		7 - HRM Otter Lake Waste Facility (region 4)	
	Residential	ICI	Residential	ICI	Residential	ICI
1. Fibre	13,550.59 t	879.48 t	5,291.00 t	551.30 t	4,440.79 t	24,961.94 t
2. Organics	10,139.77 t	1,235.88 t	10,424.60 t	685.75 t	7,260.04 t	20,059.47 t
3. Dairy	196.41 t	26.13 t	246.50 t	13.71 t	85.56 t	364.79 t
4. Dairy Substitute	17.07 t	3.38 t	53.70 t	1.35 t	21.06 t	56.43 t
5. Plastic	10,675.68 t	774.92 t	6,843.30 t	779.65 t	7,805.13 t	15,721.18 t
6. Disposable Cups	692.72 t	76.19 t	769.42 t	69.84 t	517.44 t	1,145.30 t
7. Glass	341.14 t	20.92 t	235.81 t	22.86 t	133.85 t	1,012.69 t
8. Metal	2,048.11 t	173.22 t	1,418.80 t	164.86 t	1,290.19 t	3,958.48 t
9. Regulated beverage	732.70 t	58.21 t	710.94 t	40.36 t	355.65 t	1,499.20 t
10. Special Care Waste	3,693.24 t	377.56 t	3,343.45 t	186.27 t	3,204.21 t	5,326.15 t
11. Textile	12,046.36 t	459.95 t	5,853.08 t	494.45 t	9,401.74 t	22,395.79 t
12-a. Tires (Regulated)	0.00 t	0.00 t	0.00 t	0.00 t	0.00 t	0.00 t
12-b. Tires (Non-regulated)	118.76 t	33.16 t	108.12 t	30.88 t	88.24 t	245.74 t
13. MHSW	102.73 t	26.84 t	355.86 t	25.47 t	147.73 t	543.36 t
14-a. Paint (Regulated)	29.00 t	21.03 t	191.47 t	5.91 t	98.48 t	89.23 t
14-b. Paint (non-regulated)	0.00 t	0.53 t	12.21 t	0.00 t	0.00 t	23.29 t
15-a. Electronics (Regulated)	496.27 t	57.15 t	122.60 t	20.89 t	541.31 t	249.77 t
15-b. Electronics (Non-regulated)	440.22 t	38.55 t	232.63 t	43.22 t	957.74 t	1,663.71 t
16-a. Automotive (Regulated)	14.35 t	1.63 t	68.76 t	30.60 t	200.25 t	27.76 t
16-b. Automotive (Non-regulated)	0.00 t	0.00 t	0.00 t	15.86 t	19.87 t	37.52 t
17. C&D	3,348.80 t	283.40 t	2,329.17 t	374.26 t	5,530.48 t	4,095.13 t
18. Bulky Item						
Uncategorized Waste	1,476.09 t	129.75 t	2,170.60 t	168.21 t	1,624.28 t	3,297.82 t
<b>TOTAL</b>	<b>60,160.01 t</b>	<b>4,677.87 t</b>	<b>40,782.03 t</b>	<b>3,725.70 t</b>	<b>43,724.05 t</b>	<b>106,774.74 t</b>

Bulky items = 3.40% 

2,279.13 t	1,564.50 t	5,290.22 t
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**Note:** As mentioned in the Important notes on page 18, ICI waste from HRM but landfilled in other sites has been attributed to HRM landfill.

**Composition of Major Categories in tons (t) for Residential and ICI Waste by Landfill  
(continued)**

Material Category	All sites*		
	Residential	ICI	TOTAL
1. Fibre	27,942.74 t	33,106.48 t	61,049.22 t
2. Organics	35,351.48 t	27,456.99 t	62,808.47 t
3. Dairy	653.57 t	637.24 t	1,290.81 t
4. Dairy Substitute	107.15 t	104.70 t	211.84 t
5. Plastic	30,257.74 t	22,159.57 t	52,417.31 t
6. Disposable Cups	2,333.75 t	1,606.78 t	3,940.53 t
7. Glass	934.64 t	1,190.23 t	2,124.87 t
8. Metal	6,187.11 t	5,596.20 t	11,783.31 t
9. Regulated beverage	2,443.81 t	2,067.71 t	4,511.52 t
10. Special Care Waste	12,579.54 t	7,614.58 t	20,194.11 t
11. Textile	32,696.09 t	25,864.46 t	58,560.55 t
12-a. Tires (Regulated)	0.00 t	292.42 t	292.42 t
12-b. Tires (Non-regulated)	641.67 t	523.55 t	1,165.22 t
13. MHSW	882.93 t	733.29 t	1,616.22 t
14-a. Paint (Regulated)	449.94 t	363.46 t	813.40 t
14-b. Paint (non-regulated)	17.37 t	23.82 t	41.18 t
15-a. Electronics (Regulated)	1,871.65 t	798.31 t	2,669.96 t
15-b. Electronics (Non-regulated)	2,145.30 t	2,143.09 t	4,288.39 t
16-a. Automotive (Regulated)	508.05 t	82.77 t	590.82 t
16-b. Automotive (Non-regulated)	89.05 t	58.08 t	147.14 t
17. C&D	12,453.99 t	9,198.53 t	21,652.52 t
18. Bulky Item			
Uncategorized Waste	6,675.07 t	4,888.18 t	11,563.26 t
<b>TOTAL</b>	<b>177,222.63 t</b>	<b>146,510.45 t</b>	<b>323,733.08 t</b>