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UNIVERSITY OF TORONTO

2024 WASTE AUDIT REPORT

January 2024

GOLD REPORT

Prepared for
University of Toronto
UofT St George
255 McCaul Street
Toronto, Ontario
M5T 1W7

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EXECUTIVE SUMMARY

Waste Solutions conducted a waste audit at UofT St George for University of Toronto to achieve compliance with *Ontario Regulation 102/94: Waste Audits and Waste Reduction Work Plans* (Ontario Regulation 102/94) and *Ontario Regulation 103/94* set by the Ministry of the Environment, Conservation and Parks (MECP).

The audit was conducted on January 18, 2024, and followed the Recycling Council of Ontario's (RCO) Standard Waste Audit Methodology (SWAM). Waste Solutions analyzed a 24-hour sample of waste that consisted of all the non-hazardous, solid waste generated from regular activities at the site, including waste destined for reuse, recycle, and disposal. Table 1 provides a summary of the audit findings.

Table 1. Summary of audit findings.

	SAMPLE VALUE	ANNUAL VALUE
TOTAL WASTE GENERATED	453.45 kg	4,314,716.00 kg
TOTAL WASTE SENT TO LANDFILL	180.54 kg	1,542,310.00 kg
TOTAL WASTE DIVERTED FROM LANDFILL	247.82 kg	2,732,090.93 kg
TOTAL CONTAMINATION	25.09 kg	40,315.07 kg
OVERALL CONTAMINATION RATE	1.45%	
OVERALL DIVERSION RATE	63.32%	
OVERALL CAPTURE RATE	82.15%	

*See **Appendix C: Waste Audit Calculations** for the definitions and formulas for the various rates calculated within this table.*

In addition, Waste Solutions observed the site's current waste collection, handling, and storage practices, as well as the organization's culture and attitude towards sustainability and waste diversion.

Using the information gathered through the site observations and the waste audit, Waste Solutions created meaningful recommendations to increase the site's diversion and capture rates; improve on-site waste collection and handling processes; and inspire change within the culture of the organization. The following recommendations were created for University of Toronto:

1. Optimize Diversion Streams
2. Reduce Waste Generated Onsite
3. Employee Education and Engagement

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1.0 INTRODUCTION

On January 18, 2024, Waste Solutions conducted a waste audit of UofT St George, located at 255 McCaul Street, Toronto, Ontario, on behalf of University of Toronto. Table 2 provides a description of the site.

The purpose of the audit and this waste audit report is to achieve compliance with *Ontario Regulation 102/94: Waste Audits and Waste Reduction Work Plans* (Ontario Regulation 102/94), and assess compliance with *Ontario Regulation 103/94: Industrial, Commercial and Institutional Source Separation Programs* (Ontario Regulation 103/94). Additionally, Waste Solutions evaluated whether UofT St George complies with the acceptance criteria set by the site's waste haulers.

The waste audit was completed as per the Standard Waste Audit Methodology (SWAM) set by the Recycling Council of Ontario (RCO).

Table 2. Description of the site.

	DESCRIPTION
Name of Site	UofT St George
Site Address	255 McCaul Street, Toronto, Ontario
Type of Establishment	Educational Institution

The following audit was designed to exceed the minimum guidelines for waste audits as set forth by Canadian provincial regulatory authorities. The conclusions, observations, and recommendations contained in the report represent the opinions of Waste Solutions. The information in this report was provided to Waste Solutions by the client, its representatives, and partners. As a result, Waste Solutions has relied on the information to be accurate and for which no assurances are intended, and no representations or warranties are made. This report and the information contained herein is produced for the expressed use of University of Toronto and the Ministry of the Environment, Conservation and Parks. Waste Solutions prohibits redistribution of this report and the material contained herein in whole or part without expressed written permission of Waste Solutions.

1.1 AUDIT SCOPE

Waste Solutions conducted a waste audit of UofT St George, located at 255 McCaul Street, Toronto, Ontario, on January 18, 2024. Waste Solutions analyzed a 24-hour sample of waste that consisted of all the non-hazardous, solid waste generated from regular activities at the site between 7:00 a.m. on January 17 and 7:00 a.m. on January 18, 2024.

Waste excluded from the audit included:

1. hazardous waste;
2. non-solid waste; and
3. temporary waste generation not representative of a typical day at the site.

1.2 AUDIT OBJECTIVES

The main objectives of the audit were to:

1. Achieve compliance with Ontario Regulation 102/94 by conducting a waste audit on a representative sample of waste generated at the site under normal operating conditions.
2. Confirm effective implementation of a source separation program in compliance with Ontario Regulation 103/94.
3. Identify if the site meets the waste hauler's acceptance criteria, including the allowable contamination limits and storage methods.
4. Recommend initiatives to increase the site's diversion and capture rates; improve on-site waste collection and handling processes; and inspire change within the culture of the organization.

1.3 AUDIT CRITERIA: ONTARIO REGULATION 102/94 AND 103/94

Ontario Regulation 102/94 requires operator of an educational institution that at any time during the calendar year, more than 350 persons are enrolled to annually complete a waste audit and implement a waste reduction work plan.

Under Ontario Regulation 102/94, the audit must address:

a) the amount, nature, and composition of the waste;
b) the manner by which the waste gets produced, including management decisions and policies that relate to the production of waste; and
c) the way in which the waste is managed (Ontario Regulation 102/94, s. 2.).

Ontario Regulation 103/94 requires the operator of an educational institution that at any time during the calendar year, more than 350 persons are enrolled to implement a source separation program for the following materials:

1. Aluminum food or beverage cans (including cans made primarily of aluminum)
2. Cardboard (corrugated)
3. Fine paper
4. Glass bottles and jars for food or beverage
5. Newsprint
6. Steel food or beverage cans (including cans made primarily of steel)

1.4 WASTE STREAMS OPERATING ONSITE

The current waste collection and handling equipment utilized at the site are outlined in Table 3.

Table 3. The site's waste collection and handling equipment.

EQUIPMENT	STREAM	HAULER
40 x various sized bins	Waste to Landfill	Reliable Waste Management
3 x various sized bins	Energy from Waste (Incineration)	Waste Reduction Group
67 x various sized bins	Cardboard Recycling Stream	
1 x 40-yard bin	Container Recycling Stream	
Many various sized bins	Paper Recycling Stream	
1 x 40-yard bin	Wood Recycling Stream	
1 x 20-yard bin	Scrap Metal Recycling	
144 x 32-gallon totes	Composting Stream	
1 x 40-yard bin	Styrofoam Recycling Stream	
1 x 20-yard bin	Clear Glass Recycling Stream	
15 x 64-gallon totes	Amber Glass Recycling Stream	
2-yard bins	Light Bulb Recycling	Greentec
2-yard bins	Electronic Waste Recycling	
2-yard bins	Toner Recycling	

2.0 SOURCE SEPARATION PROGRAM

University of Toronto has implemented a source separation program in compliance with Ontario Regulation 103/94. Table 4 indicates what materials are currently source separated for diversion at the site.

Table 4. Material categories that are source separated at the site.

DIVERTIBLE MATERIAL CATEGORIES	IS SOURCE SEPARATION REQUIRED BY ONTARIO REGULATION 103/94?	IS THE MATERIAL CURRENTLY SOURCE SEPARATED?
PET #1		✓
HDPE #2		✓
LDPE #4		✓
PP #5		✓
PS-C #6		✓
PS-E #6		✓
Aluminum	✓	✓
Steel	✓	✓
Glass	✓	✓
Gable Top Containers		✓
Tetra Pak Containers		✓
Scrap Metal		✓
Scrap Wood		✓
OCC	✓	✓
Boxboard		✓
Fine Paper	✓	✓
Newsprint	✓	✓
Food Waste	✓	✓
Electronic Waste		✓
Toner, Light Bulbs, Batteries, Clear Glass, Amber Glass		✓

3.0 METHODOLOGY

3.1 COLLECTION PERIOD

From 7:00 a.m. on January 17 to 7:00 a.m. on January 18, 2024, staff collected all the non-hazardous, solid waste generated at UofT St George.

Staff were instructed to label each bag of waste with:

1. the collection location (i.e., the area of the building the bag was collected from); and
2. the waste stream (i.e., waste to landfill, container recycling, composting).

3.2 SITE REVIEW

Waste Solutions conducted a site review with University of Toronto management to gain a better understanding of how waste is generated and managed at UofT St George.

3.3 WASTE ANALYSIS

Once on-site, Waste Solutions weighed and analyzed the 24-hour waste sample to determine the amount, nature, and composition of the waste generated at UofT St George. Waste during the audit process is classified into the material categories stated in Table 5. The middle column of Table 5, “Colour,” indicates the colour used to represent each material category in the graphs within the Waste Audit Result figures.

Table 5. The material categories used to classify waste at the audit.

TYPE OF WASTE	COLOUR	MATERIAL CATEGORY
Recyclable Material		Polyethylene terephthalate (PET #1)
		High-density polyethylene (HDPE #2)
		Low-density polyethylene (LDPE #4)
		Polypropylene (PP #5)
		Condensed polystyrene (PS-C #6)
		Aluminum
		Steel
		Glass
		Polycoat materials
		Cardboard (OCC)
		Boxboard
		Paper
Organic Material		Tissue/paper towel
		Solid food waste (Food waste)
		Other organics
Mixed Waste		Polyvinyl chloride (PVC #3)
		Expanded polystyrene (PS-E #6)
		Other plastic (P #7)
		Black plastic
		Disposable food packaging (DFP)
		Coffee cups
		Textiles
		Personal protective equipment
		Non-recyclable packaging
		Hazardous waste
		Other waste[1]

[1]*The "Other Waste" category is comprised of: lab waste, ethernet wires/cables, dental waste, sanitary waste, P7 cutlery, vacuum bags, J-cloths, and coffee pods.*

3.4 ANNUAL CALCULATIONS

Following the on-site visit, Waste Solutions calculated the annual amount (in kilograms) of waste generated, diverted, and disposed of at UofT St George.

The annual weights of the following streams were calculated using data provided by the hauler. The data represents the waste generated from April 2022 to March 2023.

- Waste to Landfill
- Energy from Waste (Incineration)
- Cardboard Recycling Stream
- Containers Recycling Stream
- Paper Recycling Stream
- Organics Composting Stream
- Wood Recycling Stream
- Scrap Metal Recycling Stream
- Light Bulb Recycling Stream
- Electronic Waste Recycling Stream
- Toner Recycling Stream
- Styrofoam Recycling Stream
- Clear Glass Recycling Stream
- Amber Glass Recycling Stream

*See **Appendix B: Annual Data Calculations** for a specific breakdown of Waste Solutions data annualization methods.*

3.5 CREATION OF RECOMMENDATIONS

Lastly, Waste Solutions created unique recommendations to increase the site's diversion and capture rates; improve on-site waste collection and handling processes; and inspire change within the culture of the organization.

3.6 STATEMENT OF SAMPLING LIMITATIONS

Data collected during the on-site audit are based on the samples analyzed and information reviewed. While effort was taken to ensure data was representative of a typical day, it must be noted that the accuracy of all data is limited by these assumptions and cannot be absolute.

Specifically, cardboard generation is dependent on product delivery to the tenants and the dates in which those deliveries coincide, because of this, a representative sample is difficult to obtain in a 24-hour period.

4.0 WASTE AUDIT RESULTS

4.1 SUMMARY OF RESULTS

Table 6 provides a summary of the audit findings.

Table 6. Summary of audit findings.

	SAMPLE VALUE	ANNUAL VALUE
TOTAL WASTE GENERATED	453.45 kg	4,314,716.00 kg
TOTAL WASTE SENT TO LANDFILL	180.54 kg	1,542,310.00 kg
TOTAL WASTE DIVERTED FROM LANDFILL	247.82 kg	2,732,090.93 kg
TOTAL CONTAMINATION	25.09 kg	40,315.07 kg
OVERALL CONTAMINATION RATE	1.45%	
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*See **Appendix C: Waste Audit Calculations** for the definitions and formulas for the various rates calculated within this table.*

4.1.1 General Observations

- Auditors recommend auditing the 40-yard recycling bin that was on one site in a gated lot as they were unable to access the bin.
- Many waste bags were labelled as “containers.” Washroom bags were full of paper towels and labelled as “containers” as well.
- The containers recycling stream had a contamination rate of 47.81% (33,081.90 kg annually).
    - Tissue/paper towel, food waste, disposable food packaging (DFP), coffee cups, and other waste made up most of this contamination. Food soiled tissue/paper towels and food waste should be properly source separated into the composting stream while the rest should go in the landfill stream.
    - Please see sections ***5.1 Optimize Diversion Streams*** and ***5.3 Employee Education and Engagement*** for more information.
- DFP was the largest material category of waste sent to landfill, with an estimated 849,557.54 kg sent annually (figure 3).
    - Please see section ***5.2 Reduce Waste Generated Onsite*** for more recommendations.

4.2 TOTAL WASTE GENERATED

The total amount of waste generated at UofT St George in a 12-month period was 4,314,716.00 kg. This weight includes:

- The total annual amount of waste sent to landfill.
- The total annual amount of waste diverted through the:
  - Cardboard Recycling Stream
  - Paper Recycling Stream
  - Container Recycling Stream
  - Wood Recycling Stream
  - Scrap Metal Recycling Stream
  - Composting Stream
  - Toner Recycling Stream
  - Electronic Waste Recycling Stream
  - Light Bulb Recycling Stream
  - Styrofoam Recycling Stream
  - Clear Glass Recycling Stream
  - Amber Glass Recycling Stream
- The total annual amount of contamination in the various diversion streams.

A breakdown of how the waste generated at UofT St George was source separated on-site, including what percentage of generated waste was sent to landfill, what percentage of generated waste was contamination, what percentage of generated waste was diverted and what diversion streams were utilized are provided in Figure 1 on the next page. Figure 2 after the next page displays the total amount of waste generated by material category.

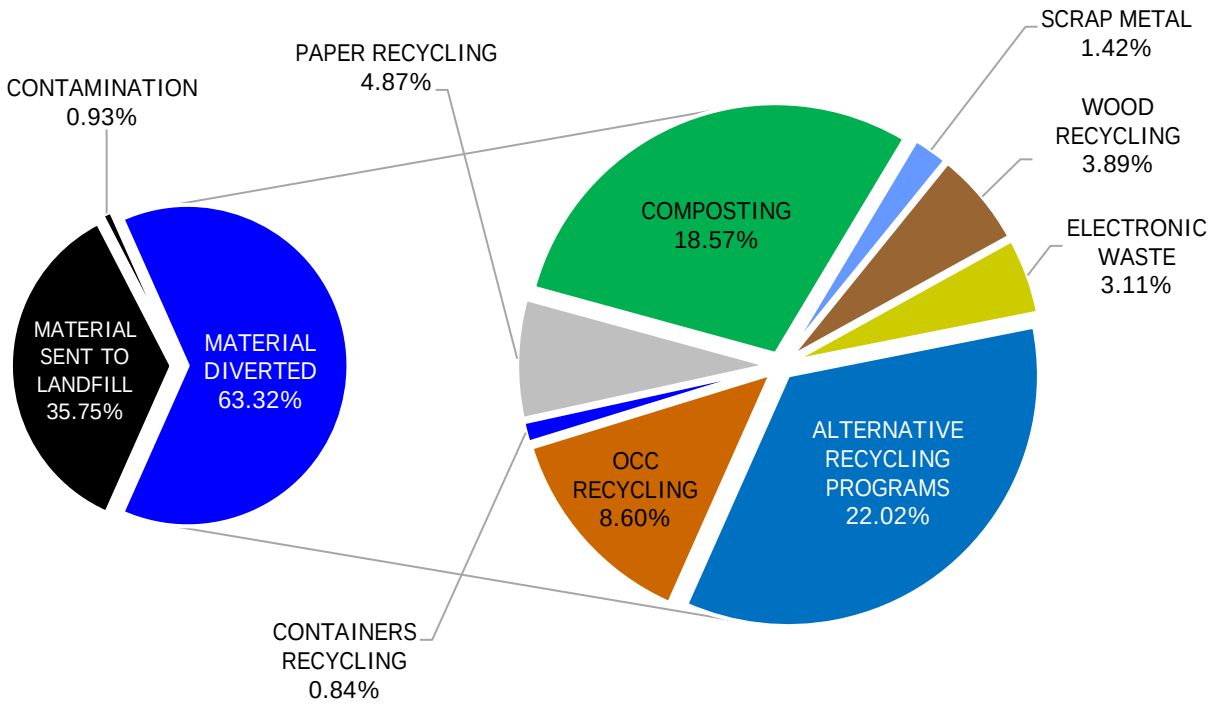


Figure 1. A breakdown of how waste was source separated at the site.

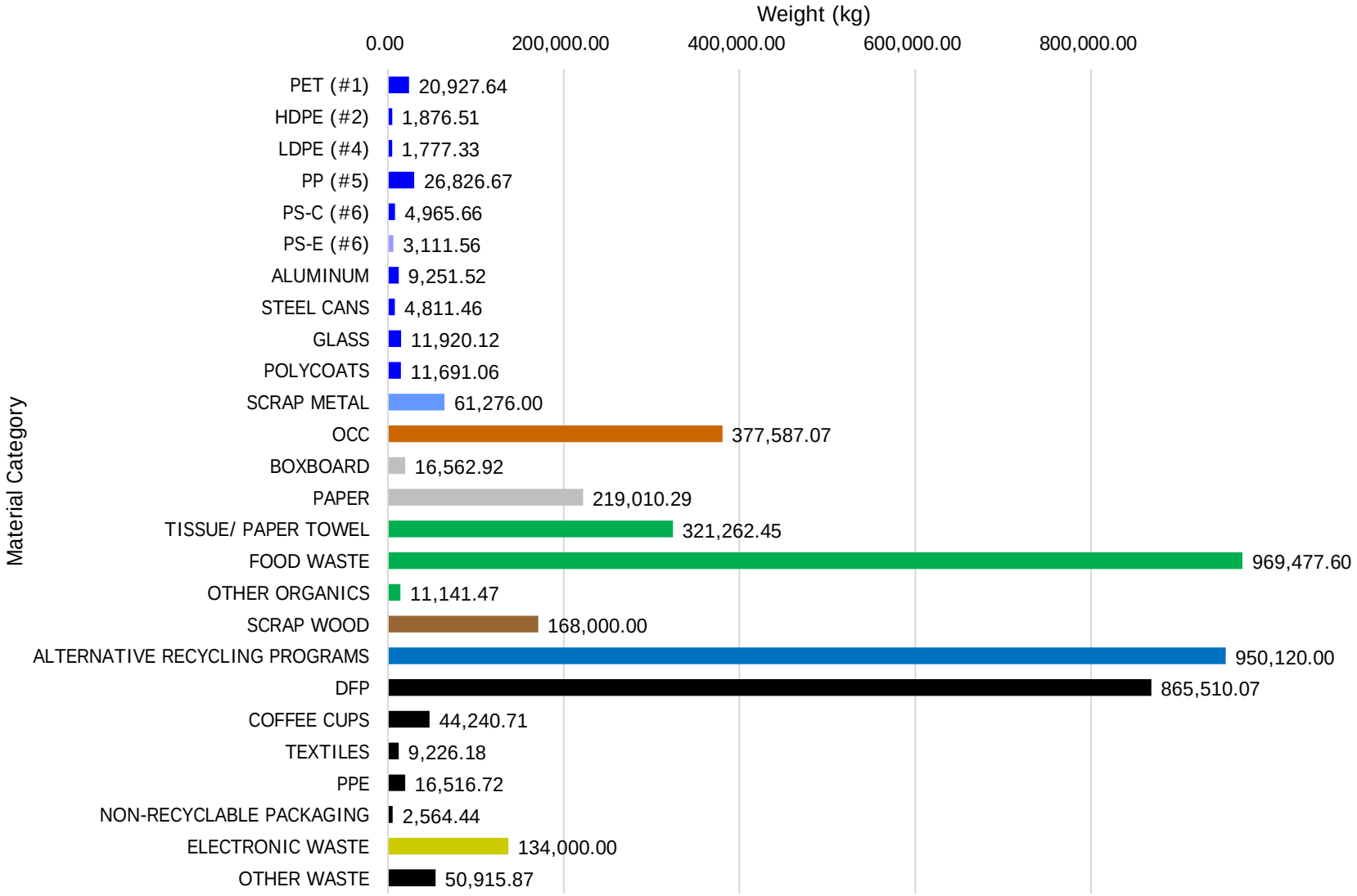


Figure 2. Waste generated by material category, shown in kilograms.

4.3 TOTAL WASTE SENT TO LANDFILL

The total amount of waste sent to landfill at UofT St George in a 12-month period was 1,542,310.00 kg. Figure 3 displays the total amount of waste sent to landfill by material category.

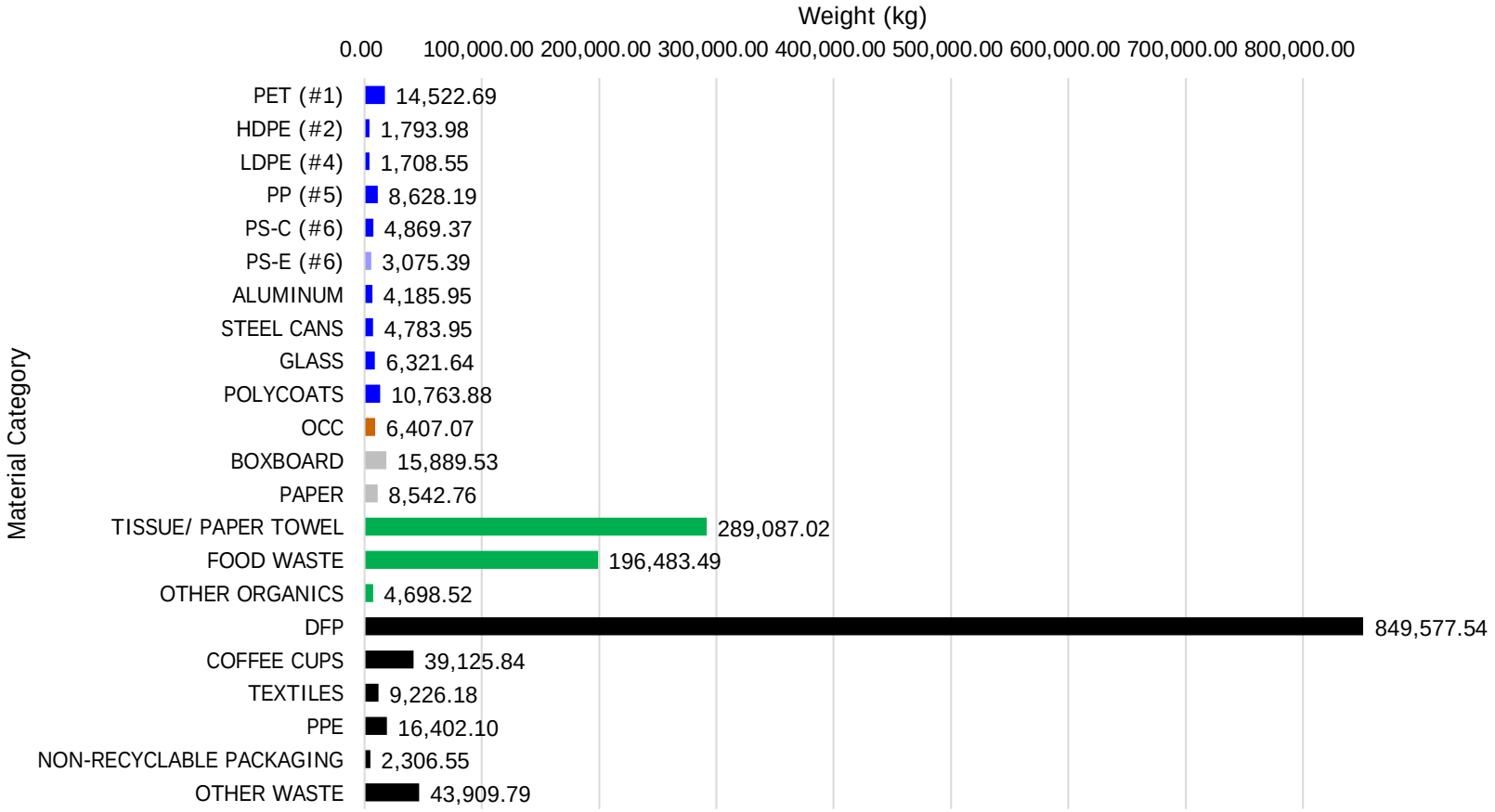


Figure 3. Waste sent to landfill by material category, shown in kilograms.

4.3.1 Waste Sent to Landfill: Breakdown by Area

Figure 4 illustrates how much waste each area is contributing to the overall disposal of waste to landfill, providing that they generated waste during the 24-hour sample period and their waste bags were correctly labelled. Please note that areas with less than a 2% contribution were excluded from the figure for clarity.

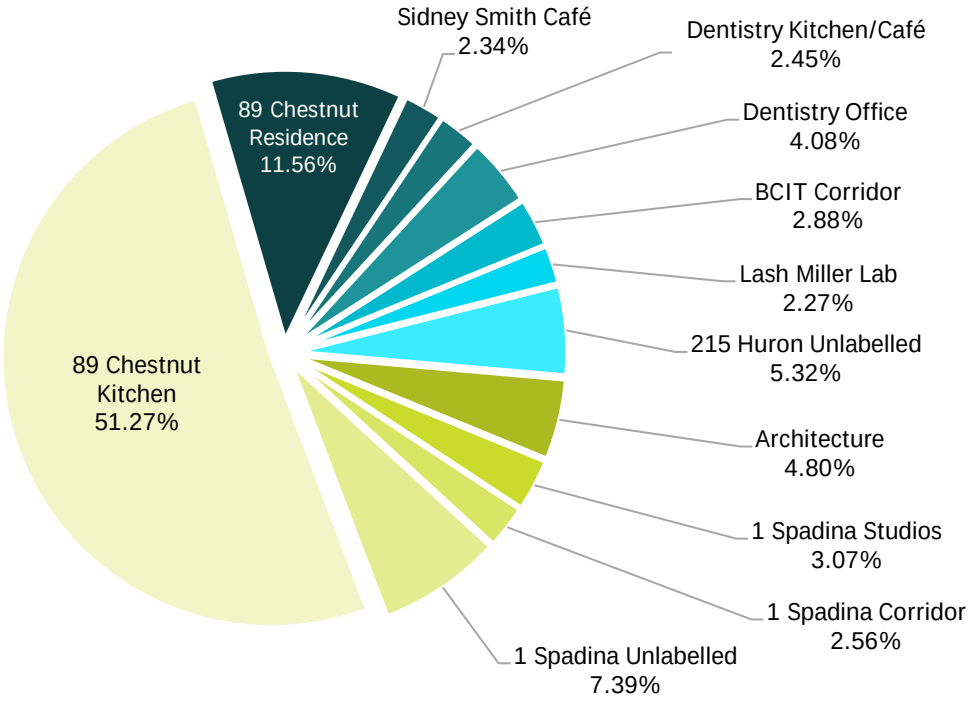


Figure 4. Area contribution to the waste to landfill stream, shown in percent.

Please refer to ***Appendix G: Waste to Landfill Stream Breakdown by Area*** for figures that illustrate the composition of each individual area's waste to landfill stream, providing that they disposed of waste during the 24-hour sample period and their waste bags were correctly labelled. Material categories that contributed less than 1.00% of an area's total disposal of waste to landfill were not labelled in these figures.

4.3.2 Divertible Materials Found in the Waste to Landfill Stream

578,686.60 kg or 37.52% of the material found in the waste to landfill stream had the potential to be diverted through a diversion stream. The percentage of recyclable materials and compostable (organic) materials sent to landfill can be seen in Figure 5.

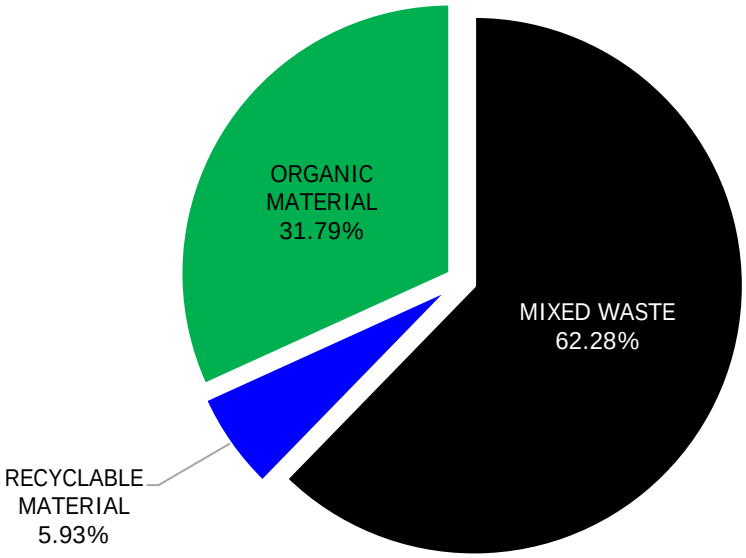


Figure 5. The composition of the waste to landfill stream, shown in percent.

Photographs of recyclable materials and compostable materials found in the waste to landfill stream during the waste audit can be found in ***Appendix D: Photo Log***.

88,417.57 kg or 5.73% of the material found in the waste to landfill stream was recyclable. If disposed of correctly, this material could have been diverted through the recycling streams. A breakdown of the recyclable material found in the waste to landfill stream is shown in Figure 6.

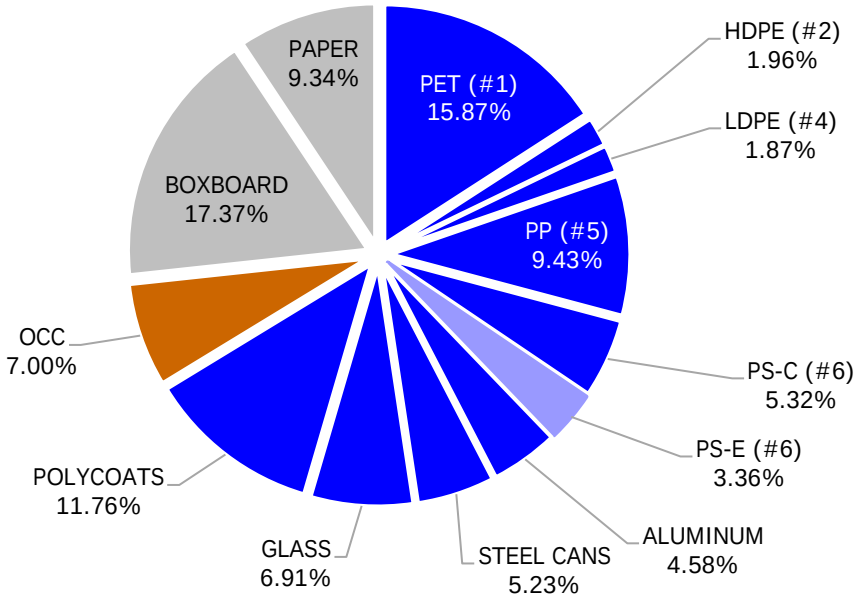


Figure 6. Recyclable materials found in the waste to landfill stream, shown in percent.

490,269.03 kg or 31.79% of the material found in the waste to landfill stream was compostable. If disposed of correctly, this material could have been diverted through a composting stream. A breakdown of the organic material found in the waste to landfill stream is shown in Figure 7.

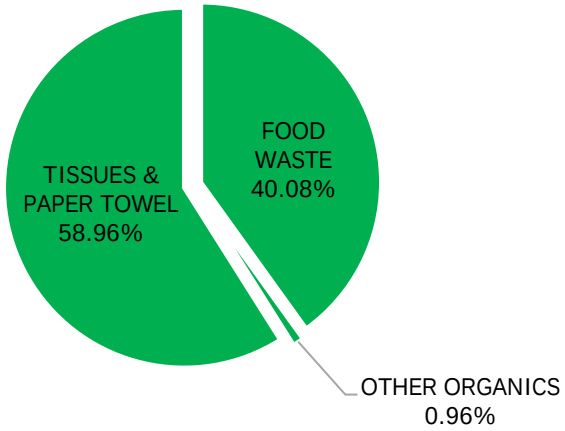


Figure 7. Organic materials found in the waste to landfill stream, shown in percent.

4.4 TOTAL WASTE DIVERTED FROM LANDFILL

The total amount of waste diverted from landfill at UofT St George in a 12-month period was 2,732,090.93 kg. Figure 8 displays the total amount of waste diverted from landfill by material category.

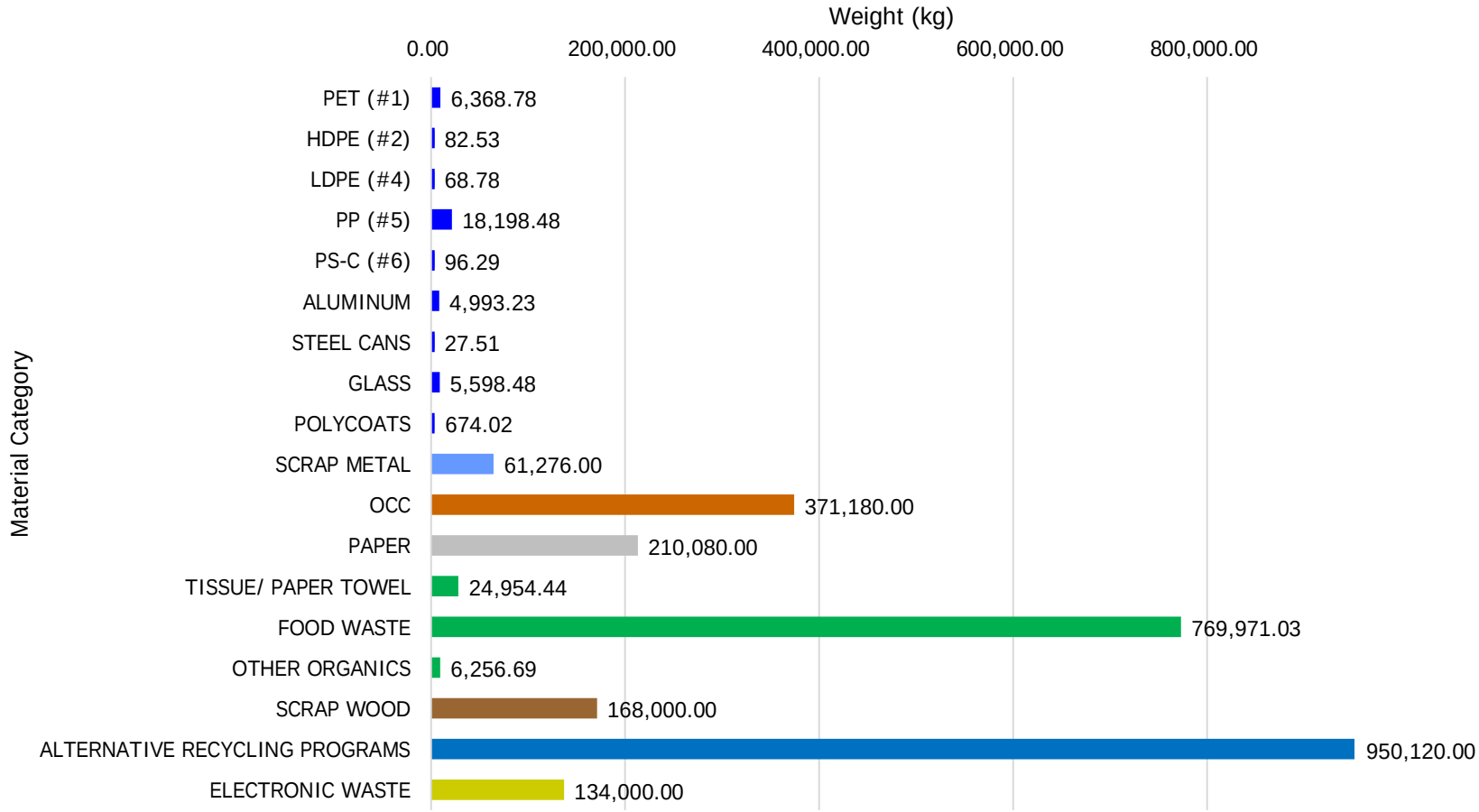


Figure 8. Waste diverted from landfill by material category, shown in kilograms.

4.4.1 Waste Diverted from Landfill through Container Recycling: Breakdown by Area

Figure 9 illustrates how much recyclable material each area is contributing to the container recycling stream, providing that they generated waste during the 24-hour sample period and their waste bags were correctly labelled. Please note that areas with less than a 1% contribution were excluded from the figure for clarity.

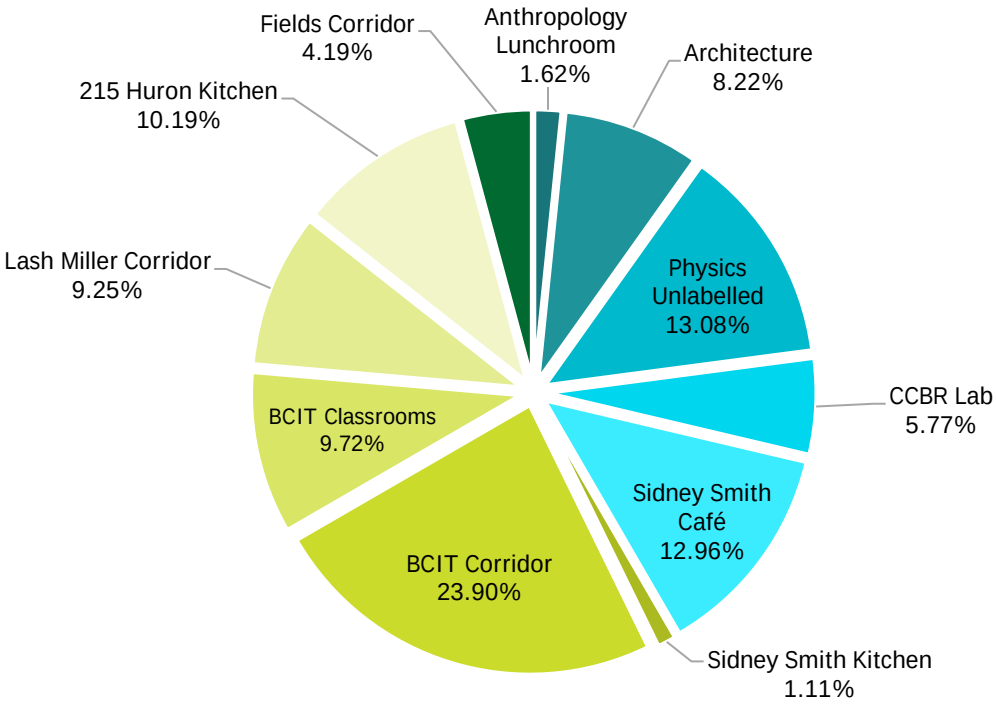


Figure 9. Area contribution to the container recycling stream, shown in percent.

4.4.2 Waste Diverted from Landfill through Composting Stream: Breakdown by Area

Figure 10 illustrates how much organic material each area is contributing to the composting stream, providing that they generated waste during the 24-hour sample period and their waste bags were correctly labelled.

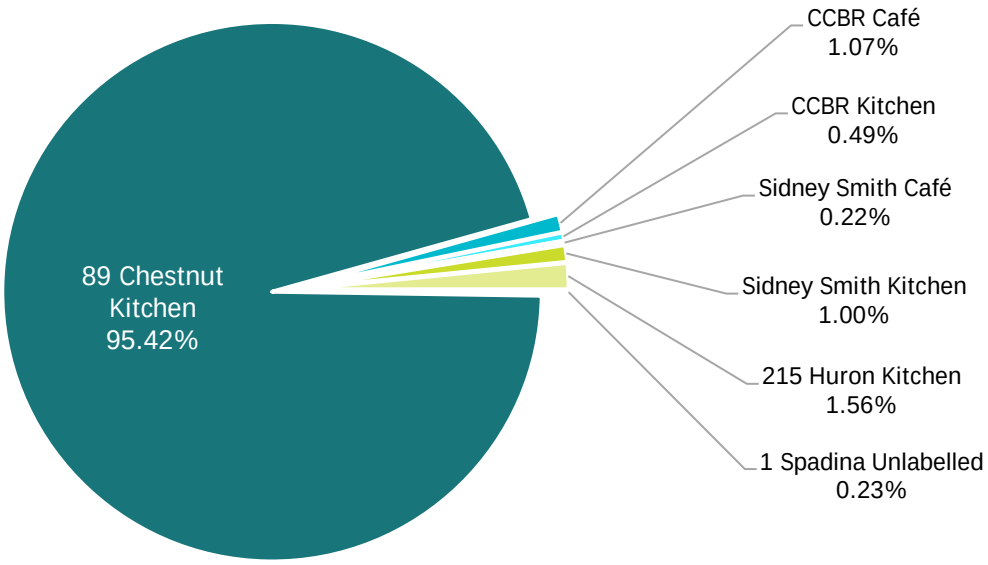
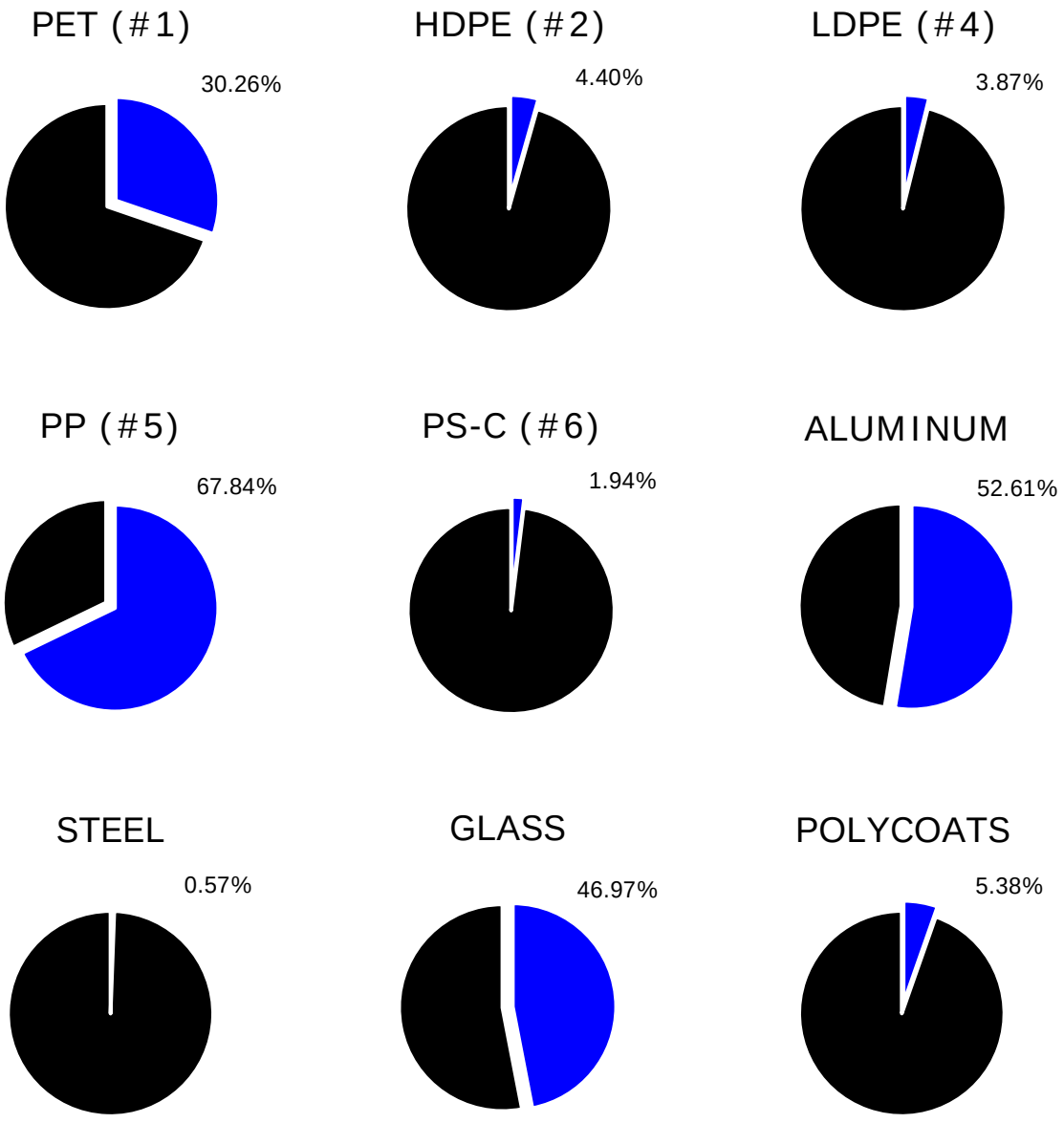


Figure 10. Area contribution to the composting stream, shown in percent.

4.5 CAPTURE RATES

Capture rate provides an indication of how well a site's diversion streams are operating. The overall capture rate at UofT St George was 82.21%, meaning that 82.21% of all the divertible materials generated on-site were correctly source separated and diverted from landfill. The remaining 17.79% of divertible materials were incorrectly source separated and sent to landfill, even though they could have been diverted through one of the diversion streams currently operating at the site. Figure 11 identifies the capture rates for each divertible material category of waste.



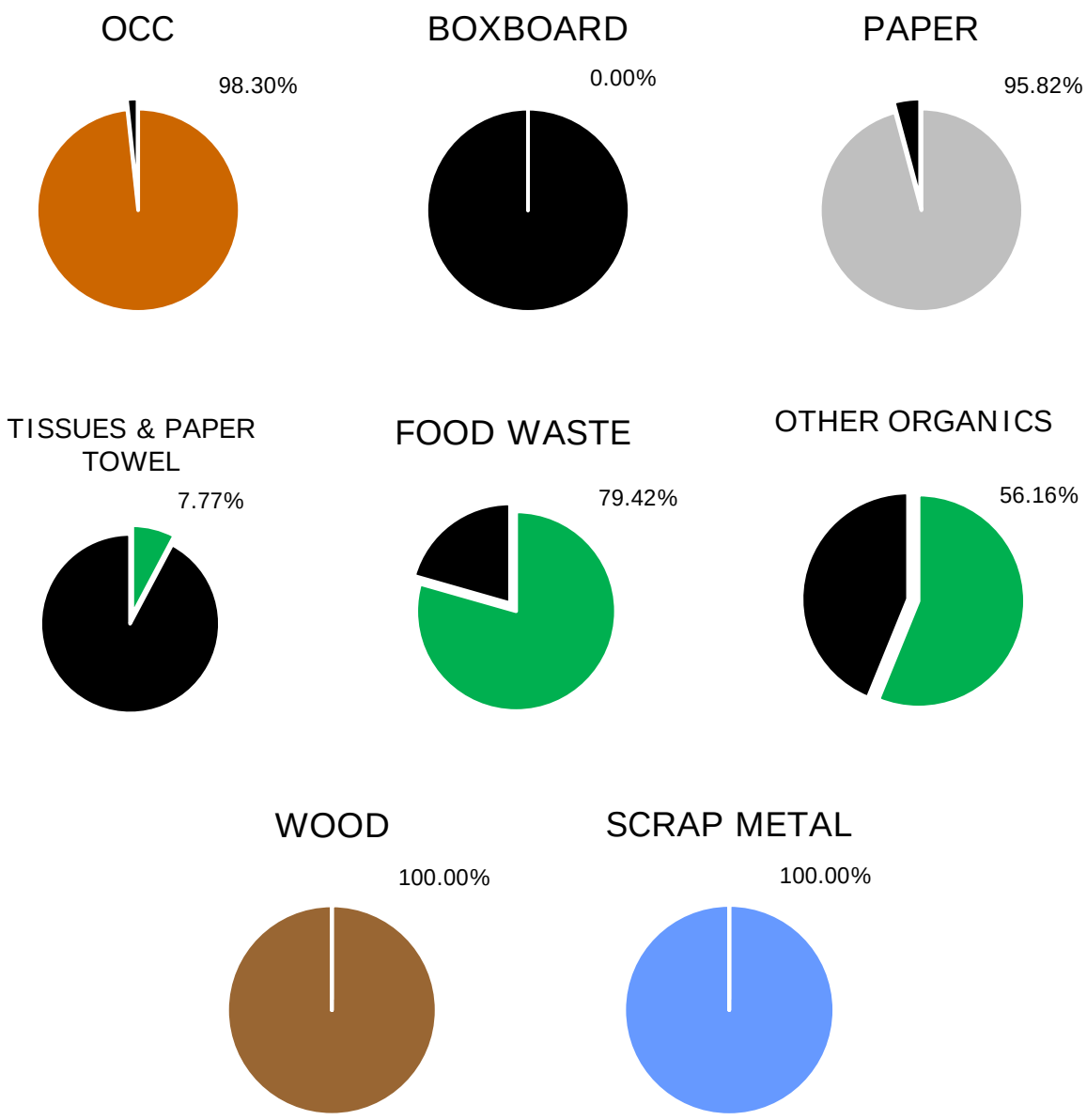


Figure 11. The capture rates for each divertible material category, shown in percent.

4.6 TOTAL CONTAMINATION FOUND IN THE DIVERSION STREAMS

In total, 40,315.07 kg of material was incorrectly disposed of in a diversion stream. Therefore, the overall contamination rate at UofT St George is 1.45%. Figure 12 displays the total amount of contamination found in the diversion streams by material category.

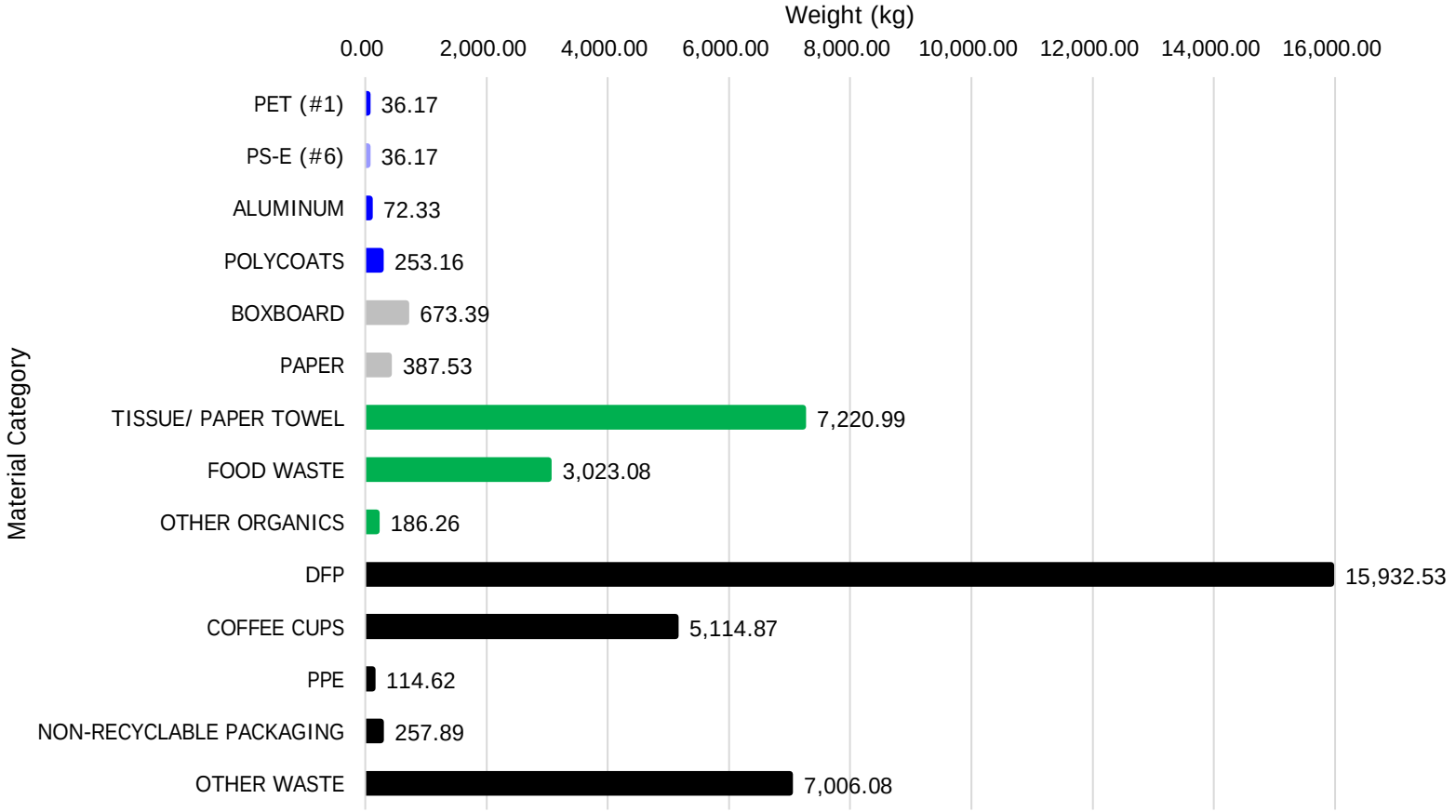


Figure 12. Contamination by material category, shown in kilograms.

4.6.1 Contamination Found in the Containers Recycling Stream

33,081.90 kg or 47.81% of the material found in the containers recycling stream did not meet the hauler's acceptance criteria. Although effort was made to divert this material, items in the containers recycling stream that do not meet the hauler's acceptance criteria are not recycled. Instead, this material reduces the efficiency and effectiveness of the recycling process and ultimately is disposed of in a landfill.

Additionally, high levels of contamination may result in new environmental charges and contamination fees on your waste invoices due to recent changes in international recycling markets. Addressing contamination at the site may reduce the risk of incurring these additional fees. A breakdown of the contamination found in the containers recycling stream is shown in Figure 13. Recommendations to optimize the recycling programs onsite are given in Section 5.0 of this report.

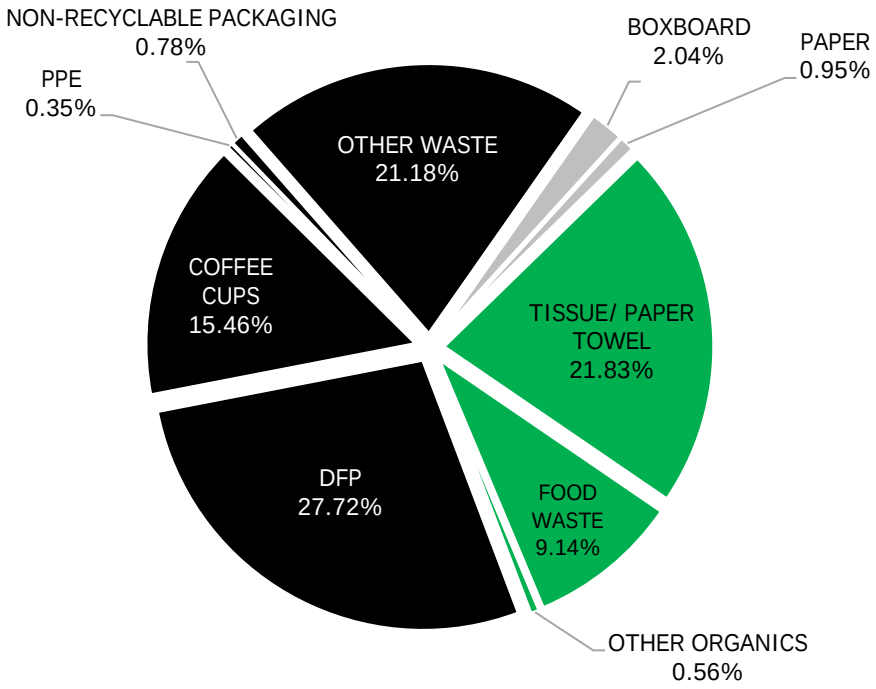


Figure 13. Contamination found in the containers recycling stream, shown in percent.

Figure 14 illustrates how much contamination each area is contributing to the overall generation of contamination in the containers recycling stream. Please note that areas with less than a 1% contribution were excluded from the figure for clarity.

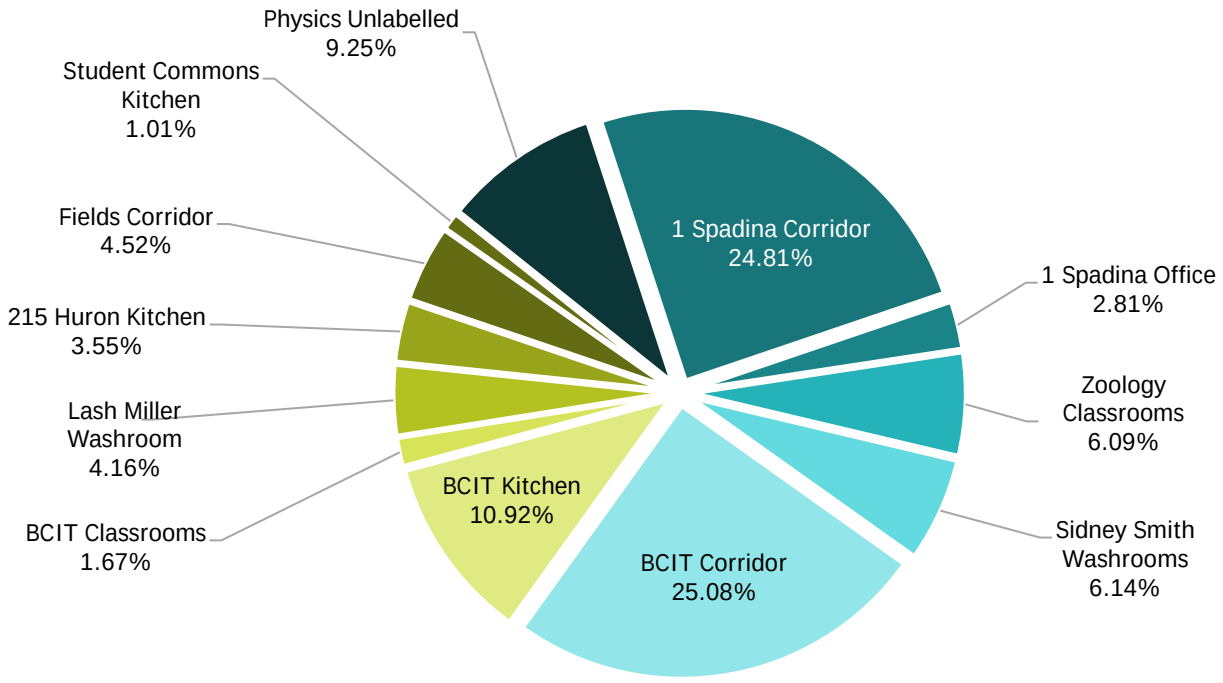


Figure 14. Area contribution to contamination in the containers recycling stream, shown in percent.

4.6.2 Contamination Found in the Composting Stream

7,233.17 kg or 0.89% of the material found in the composting stream did not meet the hauler's acceptance criteria. It is very important to understand the acceptance criteria of the composting program onsite. When incorrect materials are disposed of in the composting bin, this decreases the quality of the compost created, and especially decreases the efficiency and effectiveness of the diversion stream. A breakdown of the contamination found in the composting stream is shown in Figure 15. Recommendations to optimize the composting program operating onsite are given in Section 5.0 of this report.

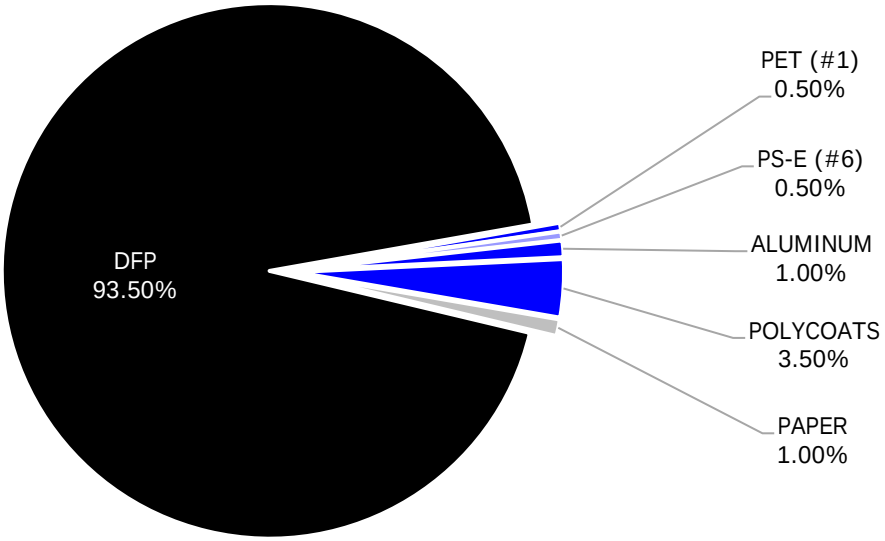


Figure 15. Contamination found in the composting stream, shown in percent.

Figure 16 illustrates how much contamination each area is contributing to the overall generation of contamination in the composting stream.

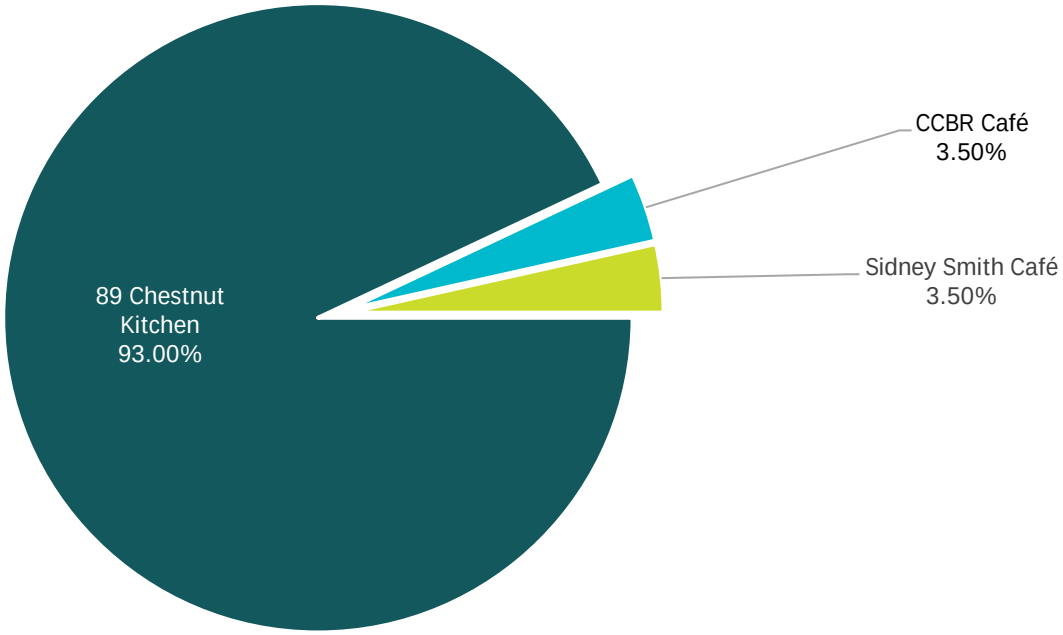


Figure 16. Area contribution to contamination the composting stream, shown in percent.

4.7 GREENHOUSE GAS EMISSIONS

The waste management sector is considered one of the largest contributors of greenhouse gas (GHG) emissions due to the transportation to, and the disposal and decay of waste in landfills. According to the National Inventory Report[1], the waste sector was responsible for 4.1% of the total emissions in Canada in 2020. The most prominent greenhouse gases are methane (CH_4) and carbon dioxide (CO_2) which are a primary result of the decomposition of various divertible materials, as seen in the graphic below. Landfill gas emissions can be captured and destroyed through flares or recovered to produce energy, but those that are not captured are released into the atmosphere as unwanted emissions.

When recycled, materials such as cardboard, paper and plastics can reduce emissions by decreasing the need to extract natural resources to make new products and by avoiding gas emission that would have occurred if these materials were sent to landfill. Diverting organics from landfill can also achieve significant GHG reductions as large quantities of methane emissions are avoided. Therefore, a life-cycle evaluation provides the most accurate quantification of the GHG reduction benefits associated with recycling and composting inside this complex system of variables.

[1] National Inventory Report 1990-2020: Greenhouse Gas Sources and Sinks in Canada
https://publications.gc.ca/site/eng/9.816345/publication.html

The U.S Environmental Protection Agency (EPA) has created the Waste Reduction Model (WARM) which enables users to calculate the GHG emission from a life-cycle perspective. By analyzing the amount of waste generated and the method of disposal (landfill, recycling, and composting), Waste Solutions can calculate the GHG emissions produced at UofT St George. The value refers to CO_2 equivalent (CO_2e) which is the most common unit used to measure GHG emissions.

Using the WARM method, it was determined that the overall GHG emission at UofT St George is **-545.84 MT CO_2e** with the largest contributor being mixed waste.

For further reductions in GHG emissions, if 50% of the food waste that was sent to landfill was correctly composted, the site's food waste related GHG emissions would be 5.45 times less than the current emissions generated onsite, from 4.37 $MTCO_2e$ to -25.75 $MTCO_2e$.

Additionally, the site could improve the recycling programs currently operating on site. If 50% of the paper sent to landfill was correctly source separated, the site's GHG emissions would reduce from the current emissions generated of -372.31 $MTCO_2e$ to -404.17 $MTCO_2e$.

Figure 17 illustrates the potential GHG reduction by applying the recommendations presented in **Section 5.0** of this report. Please note that negative values mean that gases were avoided from being released into the atmosphere due to diversion practices.

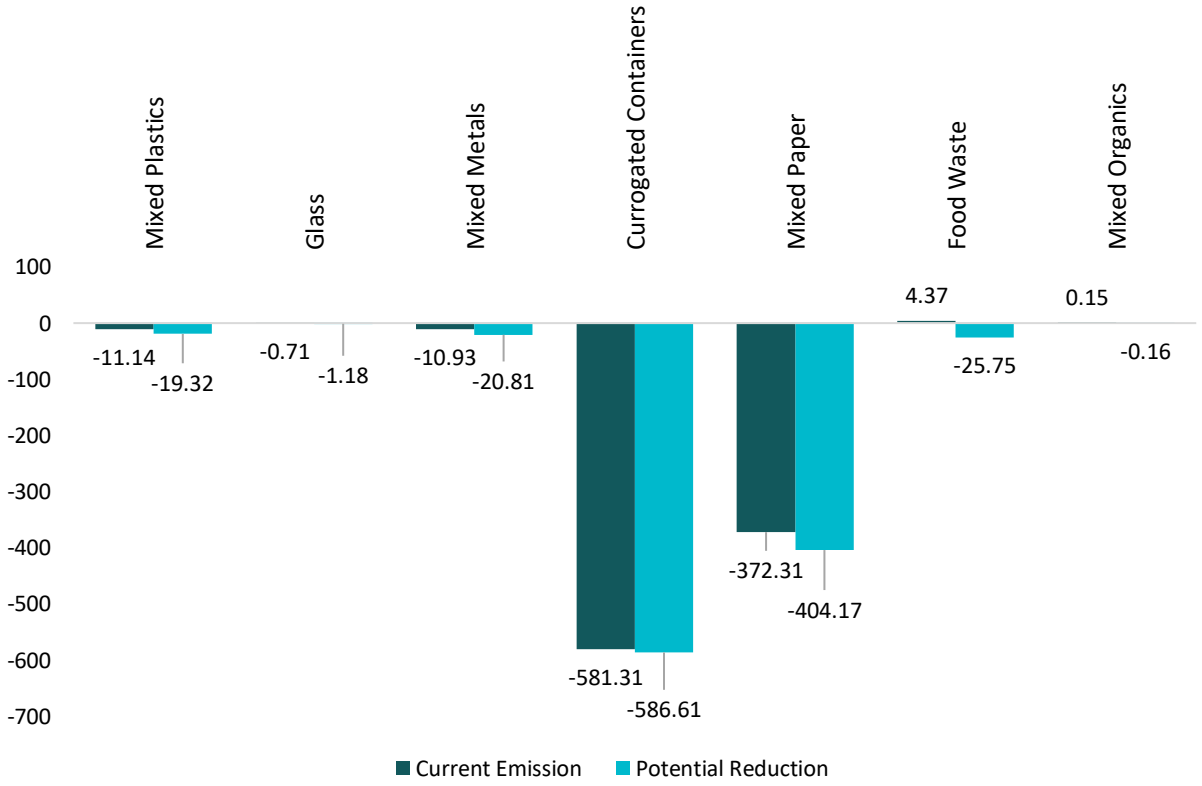


Figure 17: Potential reduction of GHG emission per divertible material category in $MTCO_2e$.

To better understand what the total GHG emissions at UofT St George corresponds to, conversion factors can be applied to translate the CO_2e emission into relatable statistics. This analysis is based on the Greenhouse Gas Equivalencies Calculator from EPA.

Therefore, the current emission of -544.41 MT CO_2e from the landfill stream onsite is equivalent to:

Taking **121** gasoline-powered passenger vehicles off the road for **1** year.

69 homes' energy use for **1** year.

1,262 barrels of oil consumed.

If University of Toronto implement strategies to improve composting and recycling onsite, UofT St George could potentially reduce its GHG emission by 86.13 MT CO_2e. The reduction of GHG emissions due to this change would be equivalent to:

Taking **19** gasoline-powered passenger vehicles off the road for **1** year.

11 homes' energy use for **1** year.

199 barrels of oil consumed.

4.8 CONCLUSION

Table 7 below shows the results of this waste audit in comparison to benchmark data extrapolated from waste audits conducted by Waste Solutions at educational institutions across Canada in 2023.

- A **green** *% difference* indicates a rate at which this site is operating better than the benchmark.
- A **red** *% difference* is a rate at which this site is below the benchmark data and could be improved through the recommendations presented in this report.

Table 7. Waste data in comparison to 2023 national benchmark data collected by Waste Solutions.

	UOFT ST GEORGE	2023 BENCHMARK DATA	% DIFFERENCE
OVERALL CONTAMINATION RATE	1.45%	9.94%	**8.49%**
OVERALL DIVERSION RATE	63.32%	34.62%	**28.70%**
OVERALL CAPTURE RATE	82.15%	51.78%	**30.37%**

ORGANIC WASTE

Better utilization of UofT St George's composting program would result in the largest contribution to improving diversion from landfill performance. In total, **1,302,026.19 kg** of organic material was generated at the site, including: food waste, compostable food packaging, and tissue/paper towel. This represents **30.18%** of all the waste generated at the site.

Only **61.54%** of organic material was correctly source separated in the composting stream. The remaining **38.46%** was incorrectly source separated and sent to landfill.

If the management team at UofT St George implemented strategies to better utilize the composting program, the site's diversion and capture rates would likely increase. For example, if 50% of the organic material currently being sent to landfill was correctly diverted through the composting stream, the site's diversion rate would increase by **5.68%**, from **63.32%** to **69.00%**.

RECYCLABLE MATERIALS

The site's diversion from landfill performance could be improved by addressing the recyclable materials sent to landfill. In total, **2,020,604.25 kg** of recyclable material was generated at the site, including: PET #1, HDPE #2, LDPE #4, PP #5, PS-C #6, PS-E #6, aluminum, steel, glass, gable top containers, Tetra Pak containers, cardboard, boxboard, and paper.

95.55% of recyclable material was correctly source separated in the recycling streams. The remaining **4.45%** was incorrectly source separated and sent to landfill.

If the management team at UofT St George implemented strategies to better utilize the recycling programs, the site's diversion and capture rates would likely increase. For example, if 50% of the recyclable material currently being sent to landfill was correctly diverted through the recycling streams, the site's diversion rate would increase by **1.06%**, from **63.32%** to **64.38%.**

5.0 RECOMMENDATIONS

5.1 OPTIMIZE DIVERSION STREAMS

Improving waste collection efficiency can lead to cost savings and a reduced environmental impact. Here are some recommendations for increasing waste collection efficiency:

OPTIMIZE BIN AND SIGNAGE PLACEMENT

- Place waste bins strategically to maximize convenience for employees. Ensure that recycling and compost bins are easily accessible and well-marked to promote proper waste disposal.
- Instead of having waste bins standing alone, make sure all waste-to-landfill disposal locations are also accompanied by diversion streams. This will encourage source separation practices.
- If the contamination rate is high and/or capture rates are low, consider optimizing signage locations by placing them where employees and/or visitors frequent for better engagement, such as in elevators and washrooms.

RIGHT SIZE WASTE BINS

- Match the size of waste bins to the volume of waste generated in specific areas. Right-sizing bins can prevent unnecessary collections and reduce costs associated with waste removal.
- By continuously monitoring the waste bins before collection, it can be determined whether the bins are full on collection day.

EXPLORE TECHNOLOGY SOLUTIONS

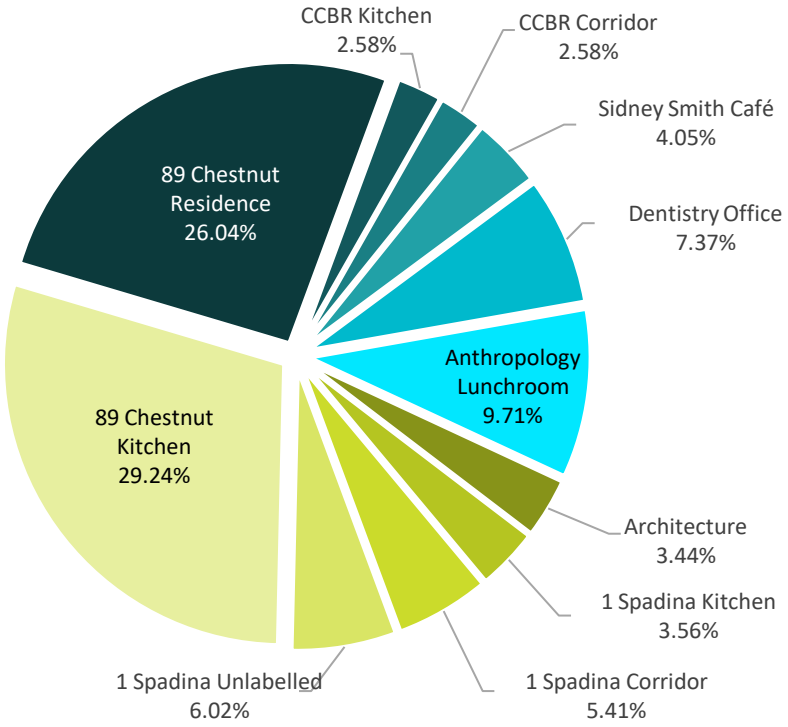
- Consider implementing smart waste management solutions that use sensors to monitor fill levels in front-end waste bins. This technology can optimize collection routes and timing, reducing unnecessary pickups.
- Waste Solutions provides smart sensors as a value add for our clients to ensure the highest level of efficiency for material collection. For more information follow this link: https://waste.solutions/technology/smart-sensors/

EVALUATE WASTE HAULER CONTRACTS

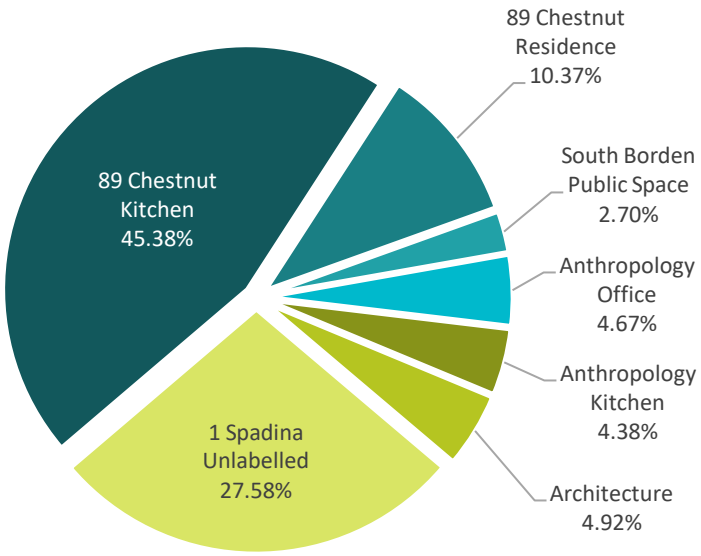
- Regularly review and negotiate waste hauling contracts to ensure they align with the specific needs of UofT St George. Look for opportunities to optimize costs and services based on changing waste generation patterns.
- Waste Solutions provides this service for our clients to find ways to improve the sustainability of waste management practices onsite while reducing costs. Please visit the following link if you are interested in an assessment of your current hauler contract: https://waste.solutions/get-started/

AREA SPECIFIC ANALYSES

While the audit team was onsite, they observed recycling in the waste-to-landfill stream, accounting for **5.93%** of the total waste being sent to landfill onsite despite having a recycling program operating onsite accepting these divertible materials. The chart below displays the percentage of recyclables that each area is discarding into the waste-to-landfill stream annually. Please note that areas with less than a 2% contribution were excluded from the figure for clarity.



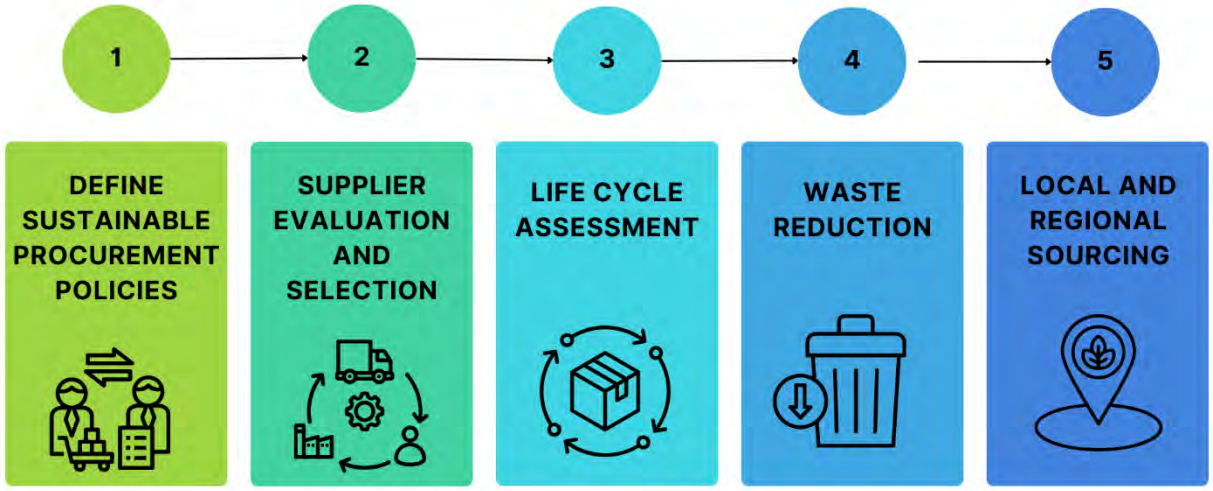
In addition, compostable materials accounting for **31.79%** of the total waste being sent to landfill onsite, despite having a composting program operating onsite accepting these divertible materials. The chart below displays the percentage of compostable materials that each area is discarding into the waste-to-landfill stream annually.



Therefore, it is recommended that the areas with the highest levels of divertible materials within their waste-to-landfill streams are specifically targeted to analyse the bin placement. As previously mentioned, by making sure all waste-to-landfill disposal locations are also accompanied by diversion streams, this will encourage source separation practices by employees onsite. When the waste-to-landfill stream is easier to access than diversion streams, this leaves little incentive for employees to divert materials.

5.2 REDUCE WASTE GENERATED ONSITE

Implementing sustainable procurement practices at UofT St George can significantly contribute to reducing the waste onsite and increasing environmental responsibility and social impact. Here are some recommendations for adopting sustainable procurement practices:



1. DEFINE SUSTAINABLE PROCUREMENT POLICIES

- Develop and implement clear sustainable procurement policies that prioritize environmentally friendly, ethically sourced, and socially responsible products and services.
- For example, some materials have a lower environmental impact, such as materials with recycled content, biodegradable materials, or those sourced from a sustainable renewable source.

2. SUPPIER EVALUATION AND SELECTION

- Evaluate and select suppliers based on their environmental and social performance. Consider factors such as their commitment to reducing carbon emissions, use of eco-friendly materials, and fair labor practices.
- Conducting a pilot program can test the performance of materials, ensuring they meet the standards of durability protection and other functional requirements.

3. LIFE CYCLE ASSESSMENT

- Conduct life cycle assessments of products and services to understand their environmental impact from production to disposal. This can help in making informed decisions about the sustainability of different options.
- A free life cycle assessment tool for beginners: https://www.openlca.org/

4. WASTE REDUCTION

- Opt for products with minimal packaging or those using recycled and recyclable materials. Encourage suppliers to adopt waste reduction practices and consider packaging waste in the procurement decision-making process.
- By using the results of this audit as a baseline for improvement, reduction targets can be implemented. Goals should be measurable, achievable, relevant, and time bound for reduction of waste. For example, setting a specific goal of reducing the overall waste of packaging by a certain percentage within a specific timeline.
- Consider the use of biodegradable or compostable materials for packaging. These materials break down naturally and can be accepted into specialized composting programs.

5. LOCAL AND REGIONAL SOURCING

- Give preference to local and regional suppliers to reduce the environmental impact of transportation and support the local economy. This can also enhance relationships with nearby businesses.
- Fostering collaboration with suppliers and engaging stakeholders at various levels enables your organization to create a more inclusive and impactful approach to sustainable procurement and ensures that all key participants in the supply chain are aligned with your organization’s environmental goals.

SITE-SPECIFIC ANALYSES

While onsite, the audit team observed some low hanging fruit for waste materials that can be reduced through sustainable procurement and waste reduction efforts. These include packaging, paper towels, plastics and coffee cups observed onsite. The materials and annual weights are listed in Table 8 below.

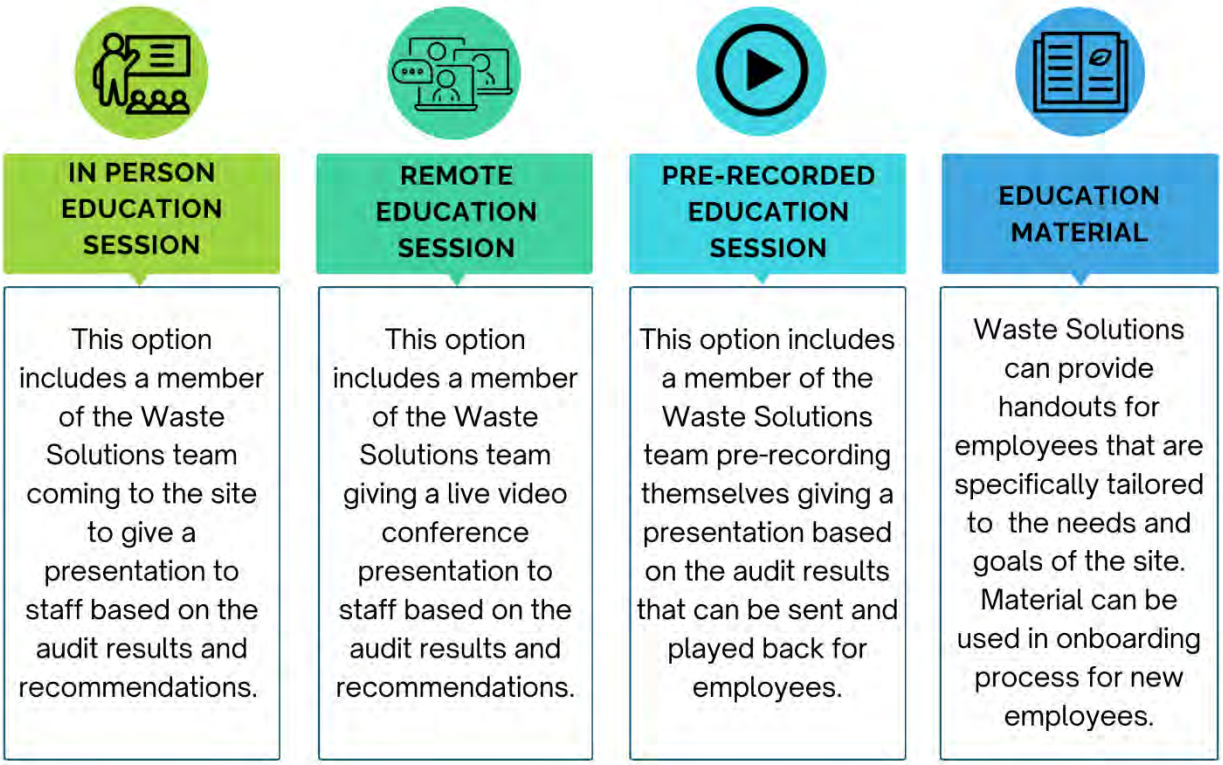
Table 8. Annual amount of waste materials sent to the landfill.

WASTE MATERIAL	ANNUAL AMOUNT SENT TO LANDFILL (KG)
PET (#1)	14,522.69
HDPE (#2)	1,793.98
LDPE (#4)	1,708.55
PP (#5)	8,628.19
PS-C (#6)	4,869.37
PS-E (#6)	3,075.39
Disposable Food Packaging (DFP)	849,577.54
Coffee Cups	39,125.84
Tissue Toweling	289,087.02
Non-Recyclable Packaging	2,306.55
TOTAL	**1,212,388.58 kg**

5.3 EMPLOYEE EDUCATION AND ENGAGEMENT

5.3.1 EDUCATION OPPORTUNITIES

Waste Solutions recommends that UofT St George provide employees with a waste education session. Waste Solutions are experts in waste and can provide educational materials to improve the company culture around waste management as well as give a better understanding of the importance of sustainable waste disposal practices. The options Waste Solutions provides are listed below:



If you are interested in one of the options listed above, please contact the Waste Solutions team at the following address: wasteaudit@waste.solutions to get started on your journey towards a more sustainable culture within UofT St George.

5.3.2 IMPLEMENTING SIGNAGE

The easiest way to engage staff in diversion programs is to clearly communicate the acceptance criteria of these programs through clear signage accompanying waste receptacles. The benefits of implementing waste signage onsite are listed below.

REDUCED CONTAMINATION

- **Proper Disposal Guidance:** Clear waste signage helps prevent contamination of recycling and composting streams by guiding users on what items are accepted in each bin. This improves the quality of recycled and composted materials.

ENHANCED DIVERSION RATE

- **Promoting Recycling:** Informative waste signage encourages individuals to participate in recycling programs by clearly indicating which items are recyclable. This can lead to increased recycling rates within a community, workplace, or public space.

POTENTIAL COST SAVINGS

- **Efficient Waste Collection:** Proper waste signage contributes to efficient waste collection processes, reducing the time and resources required for sorting at later stages. This can result in cost savings for waste management operations.

ADAPTABILITY TO MULTILINGUAL ENVIRONMENTS

- **Inclusivity:** Multilingual friendly waste signage accommodates diverse populations, ensuring that individuals who speak different languages can understand and follow proper waste disposal procedures. This includes the use of pictures and graphics to convey the message.

Waste Solutions can curate specific signage for the site, which will increase the employee understanding of the waste management practices onsite. Examples of waste signage include:

Please contact Waste Solutions at wasteaudit@waste.solutions if you are interested in learning more about these additional services.

APPENDIX A: DEFINITIONS

ACCEPTANCE CRITERIA

Specifications set by the process for materials management that when met, facilitate optimum processing results as planned, such as commingling and contamination thresholds.

ANNUALIZE

To calculate the mass of materials generated for an entire year based on any sample size.

BLACK PLASTICS

Plastic that has been dyed black. This material can be difficult to recycle, as many Material Recovery Facilities use optical sensors in their processes, and these sensors cannot easily detect materials that have been dyed black.

CAPTURE RATE

The proportion of a divertible waste, expressed as a percentage, which is successfully diverted from disposal.

CONDENSED POLYSTYRENE (PS-C #6):

A type of plastic commonly used to make compact disc cases, coffee cup lids, yogurt cups, coffee pods, and disposable plastic plates and cups.

CONTAINERS RECYCLING

A diversion program where containers are source separated on-site, placed in designated bins, and collected by a waste hauler to be recycled and diverted from landfill disposal. This program can also be referred to as a "cans and bottles" recycling stream. Although the acceptance criteria for these programs can change from region to region, a container recycling stream typically accepts the following materials: PET #1, HDPE #2, LDPE #4, PP #5, PS-C #6, aluminum, steel, glass, gable top containers, and Tetra Pak containers.

CONTAMINATION

Material found in a diversion stream that is not considered divertible as it does not meet the acceptance criteria outlined by the site's waste hauler. This material reduces the efficiency and effectiveness of the diversion process and ultimately is disposed of in a landfill.

DISPOSABLE FOOD PACKAGING (DFP)

Single-use, disposable, packaging material often originating from fast food restaurants, takeout restaurants, and catering establishments. The disposable food packing material category is typically comprised of: poly coated paper plates and bowls; wax coated fountain drink cups; cardboard and boxboard packaging soiled with food waste or grease (i.e. soiled pizza box, French fry holders, etc.); chip bags; and assorted wrappers from burgers, sandwiches, granola bars, and candy bars.

DIVERSION

The following activities are considered diversion actions: actions to prevent waste materials from being generated, actions to reduce material generation, reuse (internal or external), source-separated recycling, composting (on-site or off-site). Post-collection sorting, such as recyclable material removed from a commingled waste bin at the transfer station, does not qualify as a source-separated diversion activity for the original generator of the waste even though the hauler or processor may ultimately diver the discarded material from disposal.

DIVERSION RATE

The proportion by weight of all material diverted from disposal to the total weight of all waste material generated, expressed as a percentage.

EXPANDED POLYSTYRENE (PS-E #6)

A type of plastic commonly referred to as "Styrofoam," that is used to make take-out food containers, packing peanuts, and other foam packaging inserts used to protect product during shipping and handling processes.

HIGH-DENSITY POLYETHYLENE (HDPE #2)

A type of plastic commonly used to make milk jugs, household cleaner containers, meal-replacement bottles, protein powder containers, shampoo bottles, detergent bottles, and toiletries bottles.

LOW-DENSITY POLYETHYLENE (LDPE #4)

A type of plastic commonly used to make squeezable bottles, shopping bags, shrink wrap, bread bags, and food wraps. Also referred to as "soft plastics."

MIXED RECYCLING STREAM

A diversion program where recyclable materials are source separated on-site, placed in designated bins, and collected by a waste hauler to be recycled and diverted from landfill disposal. Mixed recycling programs accept both containers and fibre-based materials in a single stream. Although the acceptance criteria for these programs can change from region to region, a mixed recycling stream typically accepts the following materials: PET #1, HDPE #2, LDPE #4, PP #5, PS-C #6, aluminum, steel, glass, polycoats, cardboard, boxboard, and mixed paper.

MIXED WASTE

The category of waste comprised of materials that are not typically considered to be recyclable, and therefore are usually disposed of in a waste to landfill or waste-to-energy (incineration) stream.

ORGANIC COMPOSTING STREAM

A diversion program where organic materials are source separated on-site, placed in designated bins, and collected by a waste hauler to be composted and diverted from landfill disposal. Although the acceptance criteria for these programs can change from region to region, an organic composting stream typically accepts the following material: food waste, yard waste, paper towel, compostable food packaging, and small quantities of wood (i.e. wooden stir sticks and chop sticks).

OTHER PLASTIC (P #7)

The generic name for other plastic material usually comprised of a variety of other types of plastics. This material is commonly used to make blister packaging, sunglasses, toys, and single-use plastic items like straws, cutlery, and single pots that hold milk, cream, and butter.

PAPER RECYCLING STREAM

A diversion program where fibre-based materials are source separated on-site, placed in designated bins, and collected by a waste hauler to be recycled and diverted from landfill disposal. Although the acceptance criteria for these programs can change from region to region, a paper recycling stream typically accepts the following materials: cardboard, boxboard, and mixed paper.

POLYETHYLENE TEREPHTHALATE (PET #1)

A type of plastic commonly used to make water bottles, soda bottles, salad dressing containers, mouthwash bottles, clamshell food packaging, and peanut butter containers.

POLYPROPYLENE (PP #5):

A type of plastic commonly used to make yogurt containers, ketchup bottles, syrup bottles, iced coffee cups, and medicine bottles.

APPENDIX B: ANNUAL DATA CALCULATIONS

Annual Data Calculations

Hauler Data

After bins are emptied, material collected is disposed of at local waste facilities, and this material is weighed and reported monthly by the haulers.
Waste Solutions sums a 12-month period of hauler weights to annualize the 24-hour sample of waste audited at the site.

Service Schedule

Annual weight of waste streams are calculated multiplying the following variables:

- Number of Bins
- Bin Size
- Waste Solutions Standardized Waste Estimate
- Pick-ups per Week
- # Weeks per Year
- Bin Fullness (%)

Operating Days

Annual weight of waste streams is calculated by multiplying the 24-hour sample of waste audited by the number of operating days onsite.

APPENDIX C: WASTE AUDIT CALCULATIONS

Waste Audit Calculations

Diversion Rate

The percentage of waste diverted from the landfill through the diversion streams operating onsite.

$$\left\{ \frac{\text{Total Waste Diverted}}{\text{Total Waste Generated}} \right\} \text{X } 100$$

Capture Rate

Proportion of all waste diverted from the landfill to the total of all waste material that could have been diverted.

$$\left\{ \frac{\text{Total Waste Diverted}}{\text{Total Divertible Materials Generated}} \right\} \text{X } 100$$

Contamination Rate

Proportion of all unacceptable materials found in diversion streams onsite.

$$\left\{ \frac{\text{Total Contamination}}{\text{Total Contamination + Total Waste Diverted}} \right\} \text{X } 100$$

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APPENDIX D: PHOTO LOG

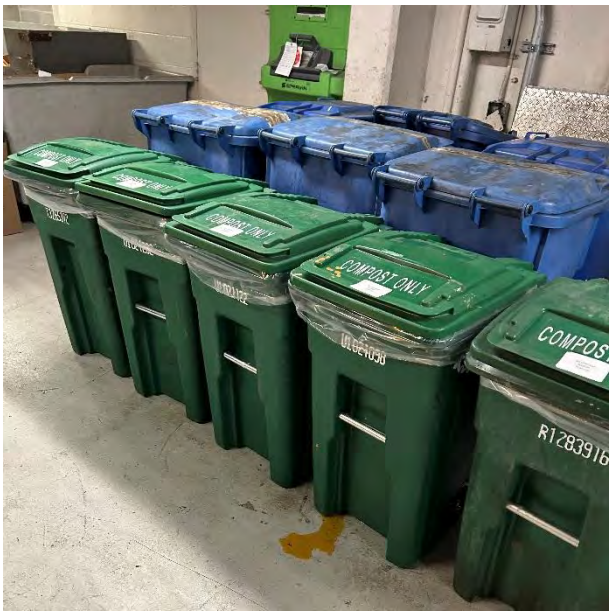
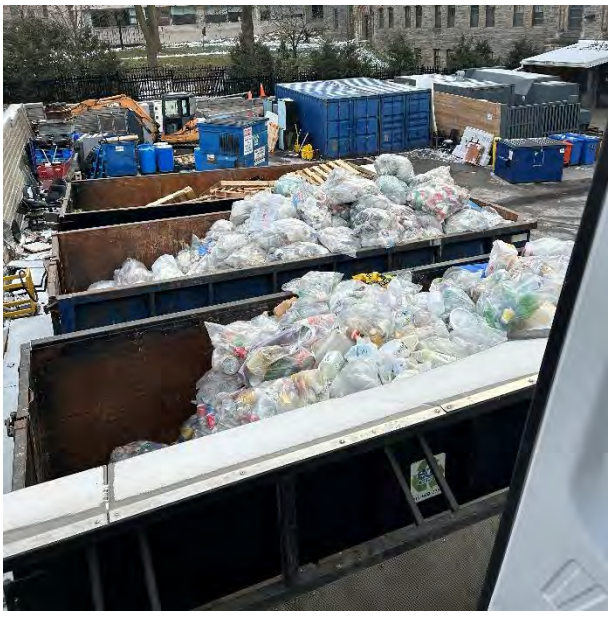


Image 1. On-site methods to handle, collect, and store waste.



Images 2-3. The staged waste sample representing 24-hours of waste generation (continued on next page).

Images 4-6. The staged waste sample representing 24-hours of waste generation.

Images 7-10. Recyclable materials found in the waste to landfill stream that could have been diverted through a recycling stream.




Images 11-14. Organic materials found in the waste to landfill stream that could have been diverted through the composting stream.




Images 15-18. Mixed waste and recyclable material contaminating the recycling streams (continued next page).

Images 19-21. Mixed waste and recyclable material contaminating the recycling streams.

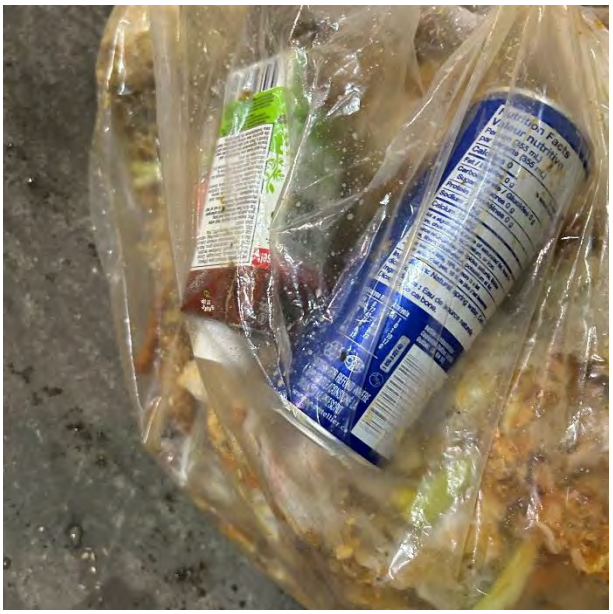


Image 22. Mixed waste and recyclable material contaminating the organics composting stream.

APPENDIX E: REPORT OF A WASTE AUDIT FORM

Ministry of the Environment, Conservation and Parks
Report of a Waste Audit
Industrial, Commercial and Institutional Establishments
As required by Ontario Regulation 102/94

I. General Information

Name of Owner and/or Operator of Entity(ies) and Company Name:		
UofT St George care of University of Toronto		
Name of Contact Person:	**Telephone Number:**	**Email Address:**
Chelsea Dalton	905-301-2252	chelsea.dalton@utoronto.ca
Street Address of Entity(ies):		
255 McCaul Street		
Municipality:		
Toronto, Ontario		
Type of Entity:		
Educational Institution		

II. Description of Entity

Provide a brief overview of the entity(ies):
The University of Toronto's St. George campus is a historic institution, founded in 1827 as King's College, predating the creation of Canada as a country. It is located in Toronto, Ontario

III. How Waste is Produced and Decisions Affecting the Production of Waste

Categories of Waste:	**How is the Waste Produced and What Management Decisions/Policies Affect Its Production?**
Polyethylene Terephthalate (PET #1)	Waste is generated when materials are brought to the site by students and employees, or when the material is purchased for daily operations onsite. Waste is commonly generated from water bottles or condiment bottles.
High-Density Polyethylene (HDPE #2)	Waste is generated when materials are brought to the site by students and employees, or when the material is purchased for daily operations onsite. Waste is commonly generated from cleaning bottles or soap bottles.
Low-Density Polyethylene (LDPE #4)	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite. Waste is commonly generated from shopping bags, clear food containers, squeezable bottles, and general "soft plastics".

Polypropylene (PP #5)	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite. Waste is commonly generated from yogurt containers or butter containers.
Condensed Polystyrene (PS-C #6)	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite. Waste is commonly generated from coffee cup lids, and disposable plates and cups.
Expanded Polystyrene (PS-E #6)	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite. Waste is commonly generated from packaging inserts, take-out containers, or packing peanuts.
Aluminum Food and Beverage Cans	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite.
Steel Food and Beverage Cans	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite.
Glass Bottles & Jars for Food & Beverage	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite.
Polycoats	Waste is generated when materials are brought to the site by students and employees. Waste is commonly generated from juice boxes, soup boxes or gable top cartons.
Scrap Metal	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite.
Cardboard (Corrugated)	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite. Waste is commonly generated through the packaging associated with the purchase or consumption of products.
Boxboard	Waste is generated when materials are brought to the site by students and employees. Waste is commonly generated through the packaging associated with the purchase or consumption of products.
Mixed Paper (Fine Paper & Newsprint)	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite.
Tissues & Paper Towel	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite. Waste is commonly generated when product is used for cleaning purposes onsite.
Solid Food Waste	Waste is generated during the consumption of food products onsite by employees and students.
Other Organics	Waste is generated when organic materials are brought to the site by students and employees.
Wood	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite.
Disposable Food Packaging	Waste is generated during the consumption of food products onsite by employees and students.

Coffee Cups	Waste is generated when single-use coffee cups are brought to the site by students and employees.
Clothing and Textiles	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite.
Personal Protective Equipment	Waste is generated when the material is purchased for protection against hazardous conditions at the site.
Non-Recyclable Packaging	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite.
Electronic Waste	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite.
Other Waste	Waste is generated when materials are brought to the site by students and employees or when the material is purchased for daily operations onsite.

IV. Management of Waste

Category:	Waste to be Disposed:	Reused or Recycled Waste:
Polyethylene Terephthalate (PET #1)	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees and students place this material in the recycling bins to be recycled.
High-Density Polyethylene (HDPE #2)	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees and students place this material in the recycling bins to be recycled.
Low-Density Polyethylene (LDPE #4)	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees and students place this material in the recycling bins to be recycled.
Polypropylene (PP #5)	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees and students place this material in the recycling bins to be recycled.
Condensed Polystyrene (PS-C #6)	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees and students place this material in the recycling bins to be recycled.
Expanded Polystyrene (PS-E #6)	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees place this material in the recycling bins to be recycled.

Aluminum Food and Beverage Cans	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees and students place this material in the recycling bins to be recycled.
Steel Food and Beverage Cans	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees and students place this material in the recycling bins to be recycled.
Glass Bottles & Jars for Food & Beverage	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees and students place this material in the recycling bins to be recycled.
Polycoats	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees place this material in the recycling bins to be recycled.
Scrap Metal	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees and students place this material in the recycling bins to be recycled.
Cardboard (Corrugated)	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees and students place this material in the recycling bins to be recycled.
Boxboard	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees and students place this material in the recycling bins to be recycled.
Mixed Paper (Fine Paper & Newsprint)	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees and students place this material in the recycling bins to be recycled.
Tissues & Paper Towel	This material is handled as mixed waste and is placed in a bin for disposal.	Employees and students place this material in the bins to be composted.
Solid Food Waste	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current composting program.	Employees and students place this material in the bins to be composted.

Other Organic Material	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current composting program.	Employees and students place this material in the bins to be composted.
Wood	This material is handled as mixed waste and is placed in a bin for disposal.	Not applicable.
Disposable Food Packaging	This material is handled as mixed waste and is placed in a bin for disposal.	Not applicable.
Coffee Cups	This material is handled as mixed waste and is placed in a bin for disposal.	This material cannot be recycled or reused. Occasionally, it is incorrectly disposed of in the recycling totes by employees and students.
Clothing and Textiles	This material is handled as mixed waste and is placed in a bin for disposal.	Not applicable.
Personal Protective Equipment	This material is handled as mixed waste and is placed in a bin for disposal.	Not applicable.
Non-Recyclable Packaging	This material is handled as mixed waste and is placed in a bin for disposal.	Not applicable.
Electronic Waste	Material is occasionally disposed of as waste by employees and students due to non-compliance with the current recycling program.	Employees and students place this material in the recycling bins to be recycled.
Other Waste	This material is handled as mixed waste and is placed in a bin for disposal.	Not applicable.

Part V	Estimated Amount of Waste Produced in Kilograms (kg)											
	Generated			Reused			Recycled			Disposed		
Waste Categories:	"A" Base Year	"B" Current Year	"C" Change (A-B)	"A" Base Year	"B" Current Year	"C" Change (A-B)	"A" Base Year	"B" Current Year	"C" Change (A-B)	"A" Base Year	"B" Current Year	"C" Change (A-B)
Polyethylene Terephthalate (PET #1)		20,927.64						6,368.78			14,558.86	
High-Density Polyethylene (HDPE #2)		1,876.51						82.53			1,793.98	
Low-Density Polyethylene (LDPE #4)		1,777.33						68.78			1,708.55	
Polypropylene (PP #5)		26,826.67						18,198.48			8,628.19	
Condensed Polystyrene (PS-C #6)		4,965.66						96.29			4,869.37	
Expanded Polystyrene (PS-E #6)		3,111.56						0.00			3,111.56	
Aluminum Food and Beverage Cans		9,251.52						4,993.23			4,258.28	
Steel Food and Beverage Cans		4,811.46						27.51			4,783.95	
Glass Bottles & Jars for Food & Beverage		11,920.12						5,598.48			6,321.64	
Polycoats		11,691.06						674.02			11,017.04	
Scrap Metal		61,276.00						61,276.00			0.00	
Cardboard (Corrugated)		377,587.07						371,180.00			6,407.07	
Boxboard		16,562.92						0.00			16,562.92	
Mixed Paper (Fine Paper & Newsprint)		219,010.29						210,080.00			8,930.29	
Tissues & Paper Towel		321,262.45						24,954.44			296,308.01	
Solid Food Waste		969,622.27						770,115.70			199,506.57	
Other Organic Materials		11,141.47						6,256.69			4,884.77	
Scrap Wood		168,000.00						168,000.00			0.00	
Alternative Recycling Programs		950,120.00						950,120.00			0.00	
Disposable Food Packaging		865,510.07						0.00			865,510.07	
Coffee Cups		44,240.71						0.00			44,240.71	
Clothing and Textiles		9,226.18						0.00			9,226.18	
Personal Protective Equipment		16,516.72						0.00			16,516.72	
Non-Recyclable Packaging		2,564.44						0.00			2,564.44	
Electronic Waste		134,000.00						134,000.00			0.00	
Other Waste		50,915.87						0.00			50,915.87	
Total		**4,314,716.00**						**2,732,090.93**			**1,582,625.07**	
Percent Change (total C/ total A x 100)												

VI. Extent to which Materials or Products used or sold by the Entity Consist of Recycled or Reused Materials or Products.

1.	**Do you have a management policy in place that promotes the purchasing and/or use of materials or products that consist of recycled and/or reused materials or products? If yes, please describe.**
	No, University of Toronto does not currently have a policy in place that promotes the purchasing or use of products that consist of recycled or reused materials.
2.	**Do you have plans to increase the extent to which materials or products used or sold* consist of recycled or reused materials or products? If yes, please describe.**
	No plans currently in place to increase the extent to which materials/products used consist of recycled or reused materials.

*Information regarding materials or products "sold" that consist of recycled or reused materials or products is only required from owners of retail shopping establishments and the owner(s) or operator(s) of large manufacturing establishments.

I hereby certify that the information provided in this Report of a Waste Audit is complete and correct.		
Signature of Authorized Official:	**Title:**	**Date:**

APPENDIX F: REPORT OF A WASTE REDUCTION WORK PLAN

Ministry of the Environment, Conservation and Parks
Report of a Waste Reduction Work Plan
Industrial, Commercial and Institutional Establishments
As required by Ontario Regulation 102/94

I. General Information

Name of Owner and/or Operator of Entity(ies) and Company Name:		
UofT St George care of University of Toronto		
Name of Contact Person:	**Telephone Number:**	**Email Address:**
Chelsea Dalton	905-301-2252	chelsea.dalton@utoronto.ca
Street Address of Entity(ies):		
255 McCaul Street		
Municipality:		
Toronto, Ontario		

Type of Entity:			
Retail Shopping Establishment		Hotel and Motel	
Retail Shopping Complex		Hospital	
Office Building		Educational Institution	X
Restaurant		Large Manufacturing Establishment	

II. Description of Entity

Provide a brief overview of the entity(ies):
The University of Toronto's St. George campus is a historic institution, founded in 1827 as King's College, predating the creation of Canada as a country. It is located in Toronto, Ontario

III. Plans to Reduce, Reuse and Recycle Waste

For each category of waste described in Part V of "Report of a Waste Audit" (on which this plan is based), explain what your plans are to reduce, reuse, and recycle the waste, including: 1) how the waste will be source separated at the establishment, and 2) the programs to reduce, reuse, and recycle all source separated waste.	
Polyethylene Terephthalate (PET #1)	Reduce: No plans Reuse: No plans Recycle: Container recycling stream Students and employees will be encouraged to use recycling bins to source separate PET (#1). Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.

High-Density Polyethylene (HDPE #2)	Reduce: No plans Reuse: No plans Recycle: Container recycling stream Students and employees will be encouraged to use recycling bins to source separate HDPE (#2). Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.
Low-Density Polyethylene (LDPE #4)	Reduce: No plans Reuse: No plans Recycle: Container recycling stream Students and employees will be encouraged to use recycling bins to source separate LDPE (#4). Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.
Polypropylene (PP #5)	Reduce: No plans Reuse: No plans Recycle: Container recycling stream Students and employees will be encouraged to use recycling bins to source separate PP (#5). Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.
Condensed Polystyrene (PS-C #6)	Reduce: No plans Reuse: No plans Recycle: Container recycling stream Students and employees will be encouraged to use recycling bins to source separate PS-C (#6). Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.
Expanded Polystyrene (PS-E #6)	Reduce: No plans Reuse: No plans Recycle: Styrofoam recycling stream Students and employees will be encouraged to use recycling bins to source separate PS-E (#6). Bins have been provided for students and staff in the appropriate spaces.
Aluminum Food and Beverage Cans	Reduce: No plans Reuse: No plans Recycle: Mixed recycling stream Students and employees will be encouraged to use recycling bins to source separate aluminum. Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.
Steel Food and Beverage Cans	Reduce: No plans Reuse: No plans Recycle: Mixed recycling stream Students and employees will be encouraged to use recycling bins to source separate steel. Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.
Glass Bottles & Jars for Food & Beverage	Reduce: No plans Reuse: No plans Recycle: Mixed recycling stream Students and employees will be encouraged to use recycling bins to source separate glass. Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.

Polycoats	Reduce: No plans Reuse: No plans Recycle: Mixed recycling stream Employees will be encouraged to use recycling bins to source separate polycoat containers. Bins have been provided in offices and staff areas for employees.
Scrap Metal	Reduce: No plans Reuse: No plans Recycle: Scrap metal recycling stream Students and employees will be encouraged to use recycling bins to source separate scrap metal. Bins have been provided for students and staff in the appropriate spaces.
Cardboard (Corrugated)	Reduce: No plans Reuse: No plans Recycle: Cardboard recycling stream Students and employees will be encouraged to use recycling bins to source separate cardboard. Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.
Boxboard	Reduce: No plans Reuse: No plans Recycle: Cardboard recycling stream Students and employees will be encouraged to use recycling bins to source separate boxboard. Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.
Mixed Paper (Fine Paper & Newsprint)	Reduce: No plans Reuse: No plans Recycle: Paper recycling stream Students and employees will be encouraged to use recycling bins to source separate paper. Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.
Tissues and Paper Towel	Reduce: No plans Reuse: No plans Recycle: Composting stream Students and employees will be encouraged to use recycling bins to source separate tissues and paper towels. Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.
Solid Food Waste	Reduce: No plans Reuse: No plans Recycle: Composting stream Students and employees will be encouraged to use recycling bins to source separate solid food waste. Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.
Other Organic Materials	Reduce: No plans Reuse: No plans Recycle: Composting stream Employees will be encouraged to use recycling bins to source separate acceptable organic waste. Bins have been provided in public spaces for students, as well as in offices and staff areas for employees.

Scrap Wood	Reduce: No plans Reuse: No plans Recycle: Wood recycling stream Students and employees will be encouraged to use recycling bins to source separate scrap wood. Bins have been provided for students and staff in the appropriate spaces.
Disposable Food Packaging	No plans to reduce, reuse, or recycle disposable food packaging.
Coffee Cups	No plans to reduce, reuse, or recycle coffee cups.
Clothing and Textiles	No plans to reduce, reuse, or recycle clothing and textiles.
Personal Protective Equipment	No plans to reduce, reuse, or recycle personal protective equipment.
Non-Recyclable Packaging	No plans to reduce, reuse, or recycle non-recyclable packaging.
Electronic Waste	Reduce: No plans Reuse: No plans Recycle: Electronic waste recycling stream Students and employees will be encouraged to use recycling bins to source separate electronic waste. Bins have been provided for students and staff in the appropriate spaces.
Other Waste	No plans to reduce, reuse, or recycle other waste items.

IV. Responsibility for Implementing the Waste Reduction Work Plan

Identify who is responsible for implementing the Waste Reduction Work Plan at your entity(ies). If more than one person is responsible for implementation, identify each person who is responsible and indicate the part of the Waste Reduction Work Plan that each person is responsible for implementing.		
Name of Person:	**Responsibility:**	**Telephone Number:**
Chelsea Dalton	Source Separation and 3R Program Implementation	905-301-2252

V. Timetable for Implementing Waste Reduction Work Plan

Provide a timetable indicating when each source separation and 3Rs program of the Waste Reduction Work Plan will be implemented.	
Source Separation and 3Rs Program:	**Schedule for Completion:**
Optimize the Diversion Streams: Consider optimizing diversion streams through the use of signage and engagement with stakeholders onsite. **Reduce Waste Materials:** Consider reducing the disposal of single-use products onsite through stakeholder engagement and participation in re-use programs onsite.	**Ongoing –** UofT St George/University of Toronto will continuously work towards a more sustainable waste management strategy onsite through optimizing diversion streams, increasing stakeholder engagement in the waste management programs, and reducing waste where possible.

VI. Communication to Staff and Students

Explain how the Waste Reduction Work Plan will be communicated to employees, students, tenants, and students:
The waste reduction work plan will be posted for students and staff to review. Students and staff will be briefed on new changes to diversion programs.

VII. Estimated Waste Produced by Material Type and the Projected Amount

Material Categories (as stated in Part III)	Estimated Annual Waste Produced* (kgs)	Name of Proposed 3Rs Program (as stated in Part III)	Projections to Reduce, Reuse or Recycle Waste (kgs)			Estimated Annual Amount to be Diverted** (%)
			Reduce	Reuse	Recycle	
Polyethylene Terephthalate (PET #1)	20927.64	Containers Recycling Stream			6368.78	30.43%
High-Density Polyethylene (HDPE #2)	1876.51	Containers Recycling Stream			82.53	4.40%
Low-Density Polyethylene (LDPE #4)	1777.33	Containers Recycling Stream			68.78	3.87%
Polypropylene (PP #5)	26826.67	Containers Recycling Stream			18198.48	67.84%
Condensed Polystyrene (PS-C #6)	4965.66	Containers Recycling Stream			96.29	1.94%
Expanded Polystyrene (PS-E #6)	3111.56	Styrofoam Recycling Stream			0.00	0.00%
Aluminum Food and Beverage Cans	9251.52	Containers Recycling Stream			4993.23	53.97%
Steel Food and Beverage Cans	4811.46	Containers Recycling Stream			27.51	0.57%
Glass Bottles & Jars for Food & Beverage	11920.12	Containers Recycling Stream			5598.48	46.97%
Polycoats	11691.06	Containers Recycling Stream			674.02	5.77%
Scrap Metal	61276.00	Scrap Metal Recycling Stream			61276.00	100.00%
Cardboard (Corrugated)	377587.07	Cardboard Recycling Stream			371180.00	98.30%
Boxboard	16562.92	Cardboard Recycling Stream			0.00	0.00%
Mixed Paper (Fine Paper & Newsprint)	219010.29	Paper Recycling Stream			210080.00	95.92%

Continued next page.

Material Categories (as stated in Part III)	Estimated Annual Waste Produced* (kgs)	Name of Proposed 3Rs Program (as stated in Part III)	Projections to Reduce, Reuse or Recycle Waste (kgs)			Estimated Annual Amount to be Diverted** (%)
			Reduce	Reduce	Reduce	
Tissues & Paper Towel	321262.45	Organics Composting Stream			24954.44	7.77%
Solid Food Waste	969622.27	Organics Composting Stream			770115.70	79.42%
Other Organic Materials	11141.47	Organics Composting Stream			6256.69	56.16%
Scrap Wood	168000.00	Scrap Wood Recycling Stream			168000.00	100.00%
Disposable Food Packaging	865510.07	Mixed Waste Stream			0.00	0.00%
Coffee Cups	44240.71	Mixed Waste Stream			0.00	0.00%
Clothing and Textiles	9226.18	Mixed Waste Stream			0.00	0.00%
Personal Protective Equipment	16516.72	Mixed Waste Stream			0.00	0.00%
Non-Recyclable Packaging	2564.44	Mixed Waste Stream			0.00	0.00%
Electronic Waste	134000.00	Electronic Waste Recycling Stream			134000.00	100.00%
Other Waste	50915.87	Mixed Waste Stream			0.00	0.00%

* Estimated Waste Produced = Waste Diverted (3Rs) + Waste Disposed

** Estimated Waste Diversion Rate = Amount of Waste Diverted (3Rs) / Estimated Waste Produced x 100%

I hereby certify that the information provided in this Waste Reduction Work Plan is complete and correct.		
Signature of Authorized Official:	**Title:**	**Date:**

APPENDIX G: WASTE TO LANDFILL STREAM BREAKDOWN BY AREA

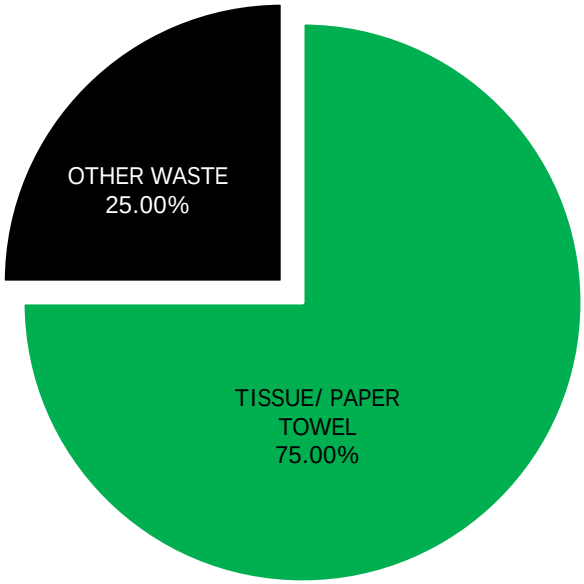


Figure G1. Student Commons Washroom's waste to landfill stream, shown in percent.

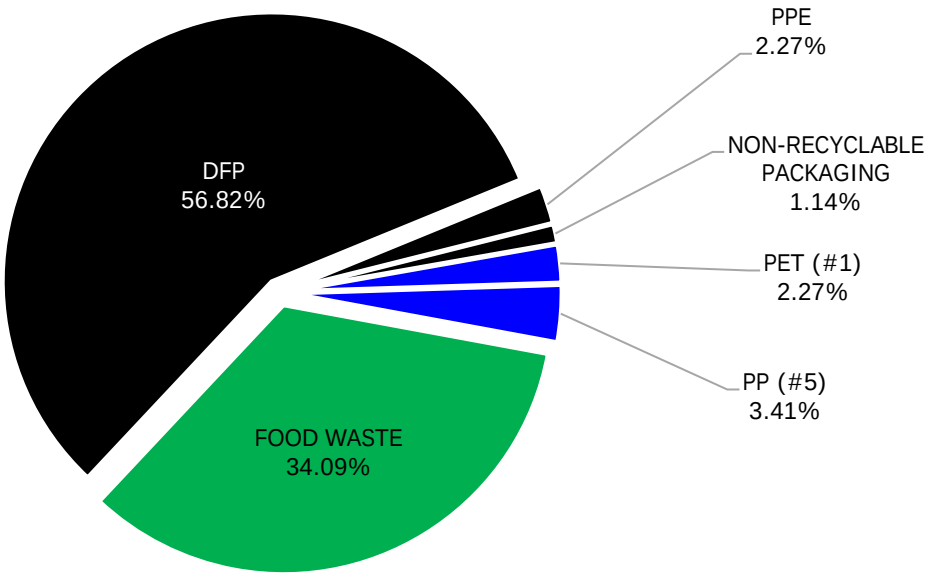


Figure G2. Student Commons' waste to landfill stream, shown in percent.

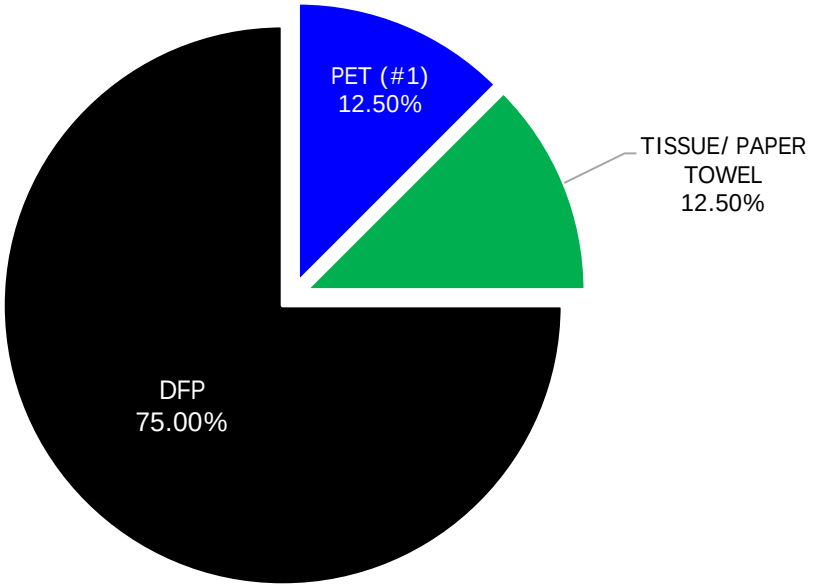


Figure G3. Student Commons Office's waste to landfill stream, shown in percent.

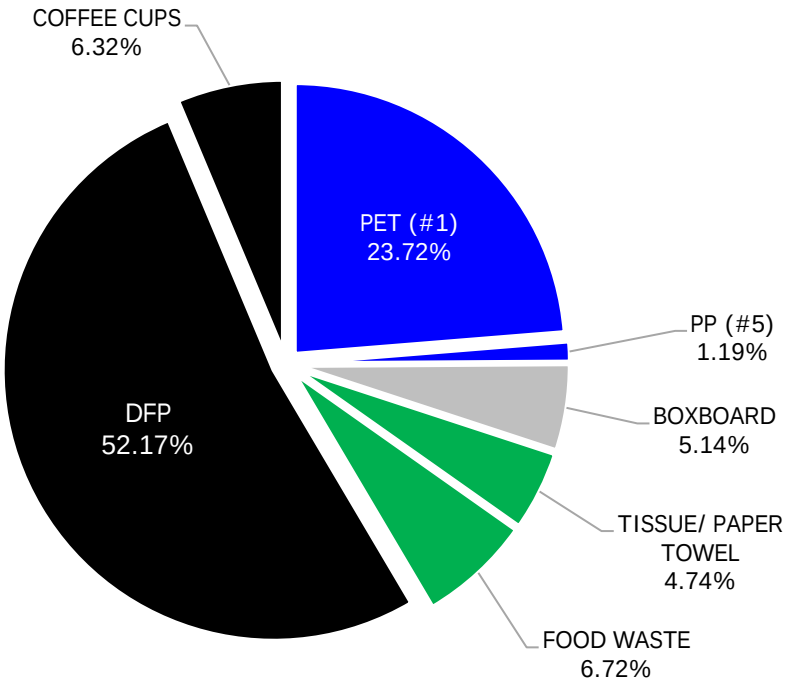


Figure G4. Anthropology Lunchroom's waste to landfill stream, shown in percent.

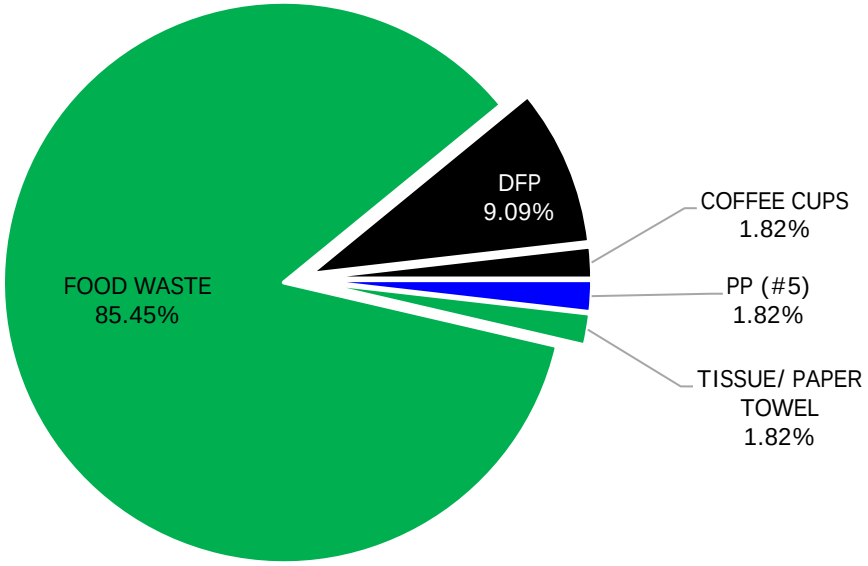


Figure G5. Anthropology Office's waste to landfill stream, shown in percent.

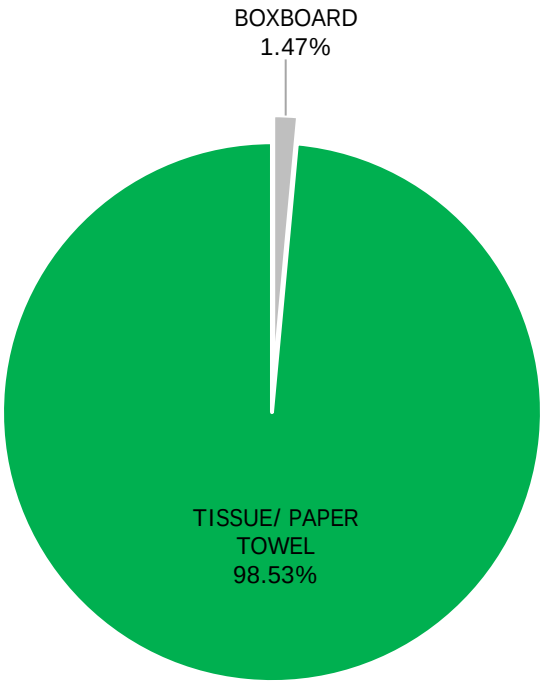


Figure G6. Anthropology Washroom's waste to landfill stream, shown in percent.

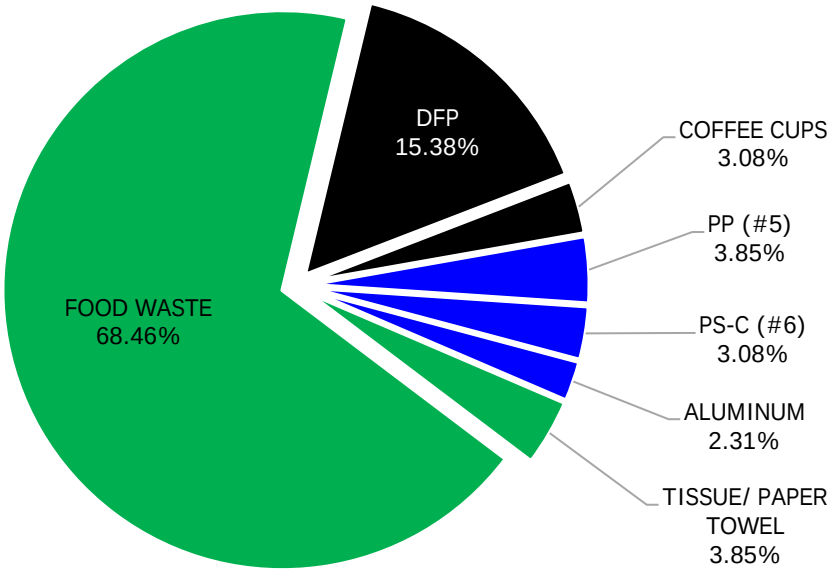


Figure G7. Anthropology Kitchen's waste to landfill stream, shown in percent.

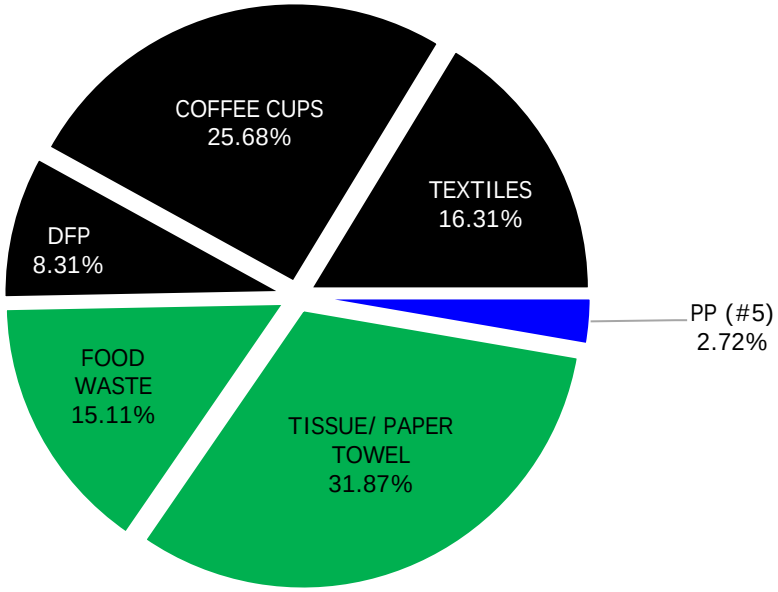


Figure G8. Architecture's waste to landfill stream, shown in percent.

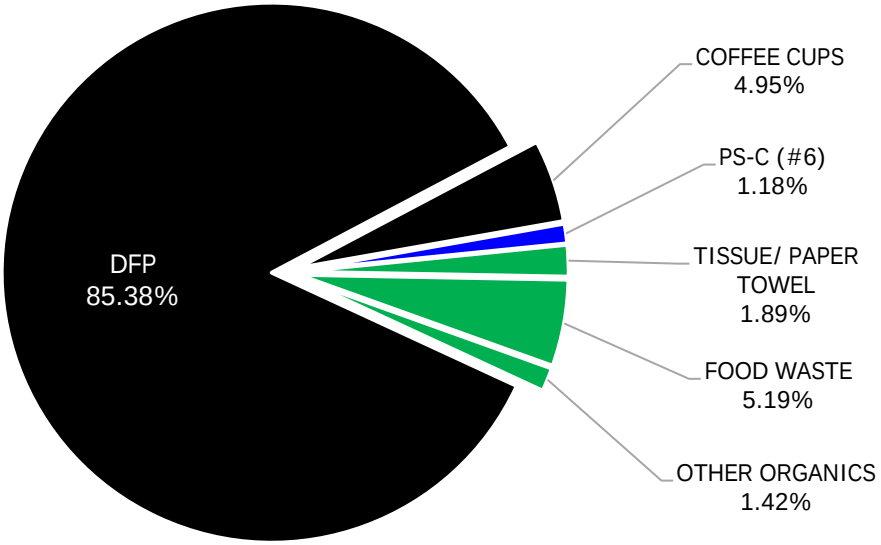


Figure G9. 1 Spadina Studios' waste to landfill stream, shown in percent.

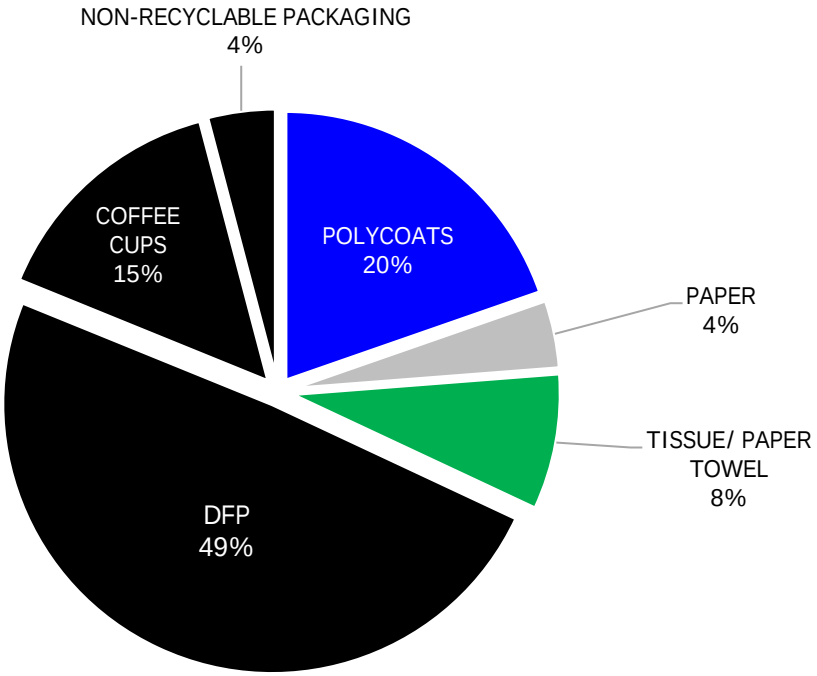


Figure G10. 1 Spadina Kitchen's waste to landfill stream, shown in percent.

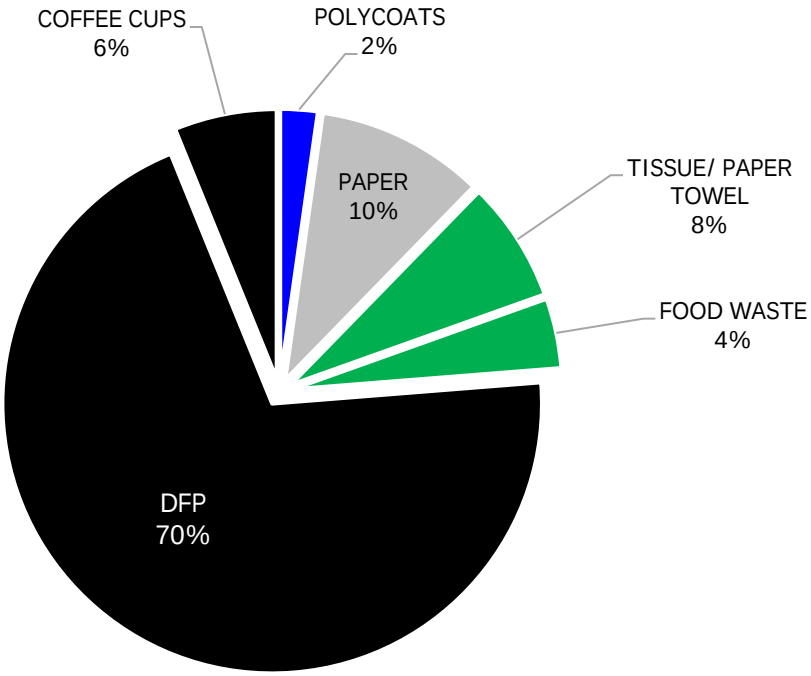


Figure G11. 1 Spadina Corridor's waste to landfill stream, shown in percent.

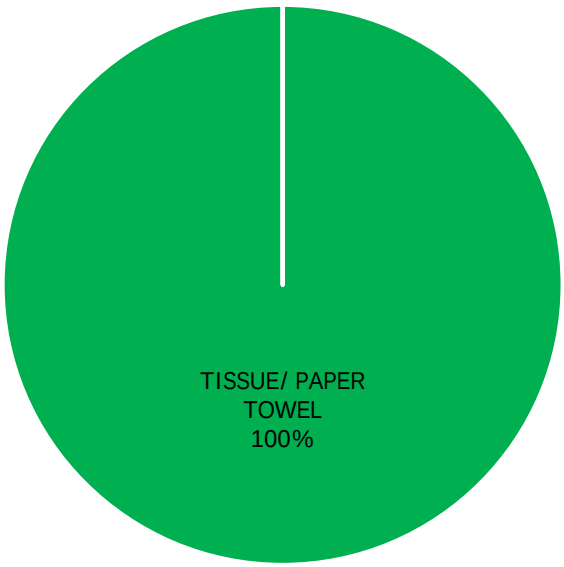


Figure G12. 1 Spadina Washroom's waste to landfill stream, shown in percent.

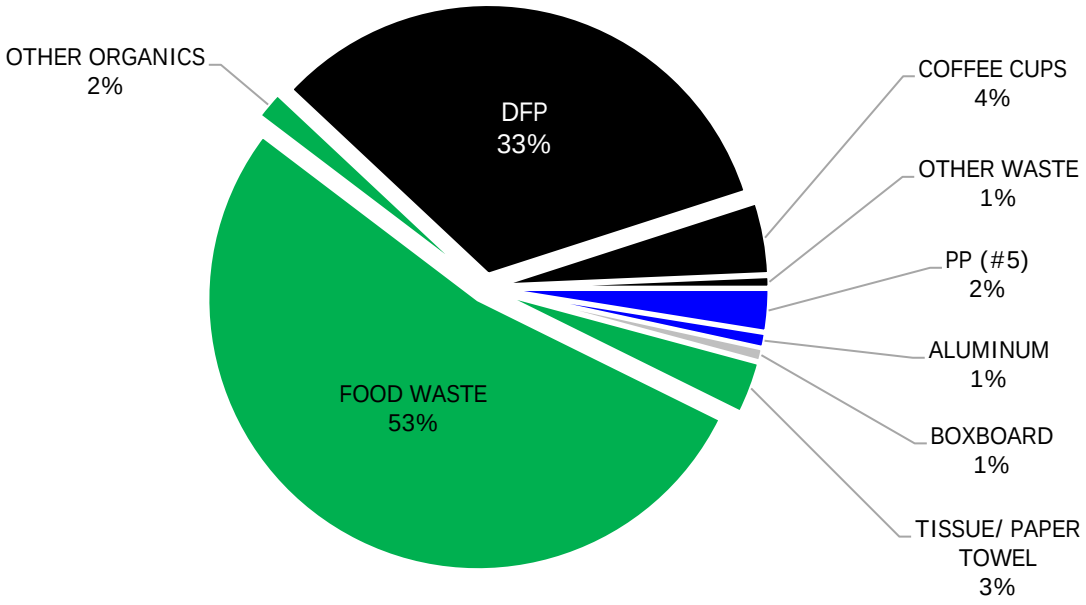


Figure G13. 1 Spadina's unlabelled waste to landfill stream, shown in percent.

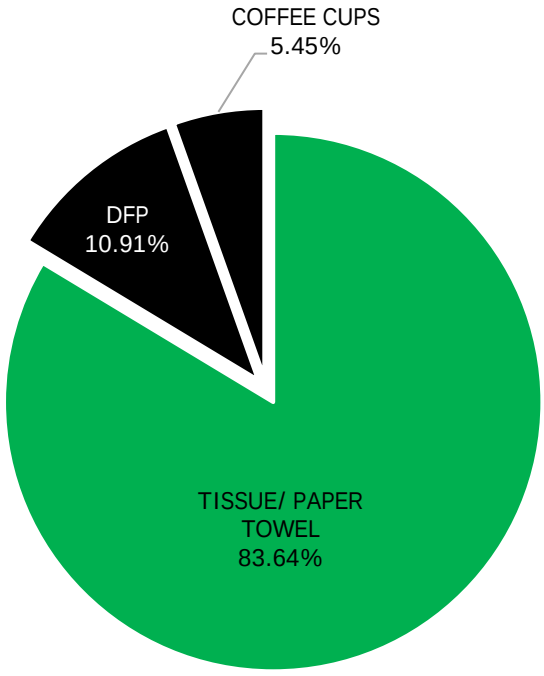


Figure G14. Lash Miller Office's waste to landfill stream, shown in percent.

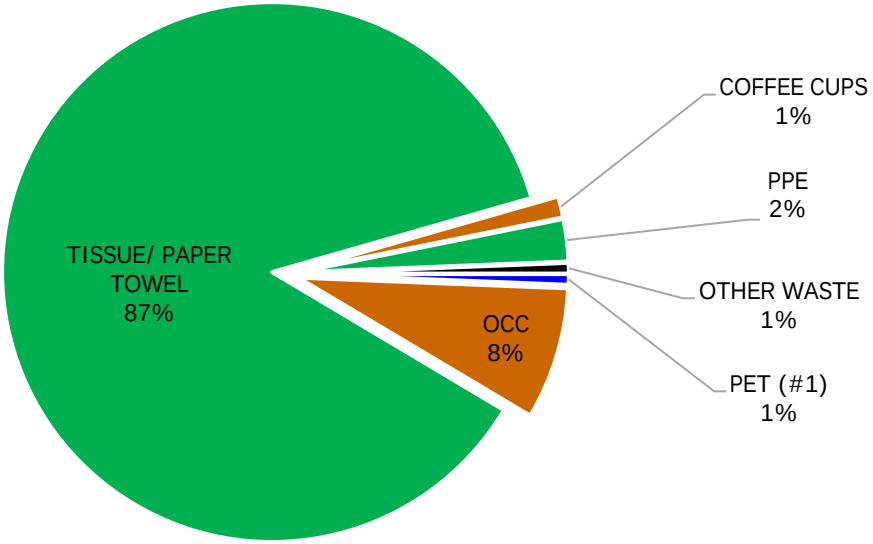


Figure G15. Lash Miller Lab's waste to landfill stream, shown in percent.

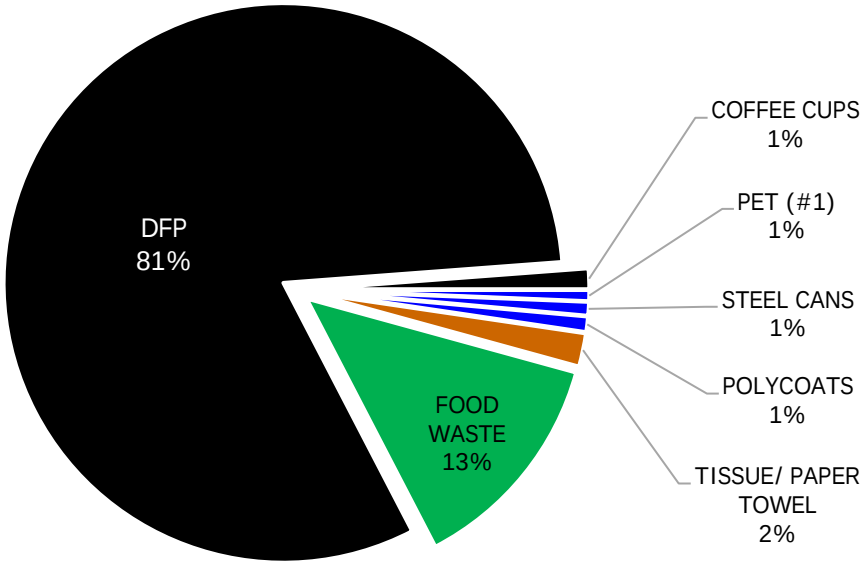


Figure G16. 89 Chestnut Kitchen's waste to landfill stream, shown in percent.

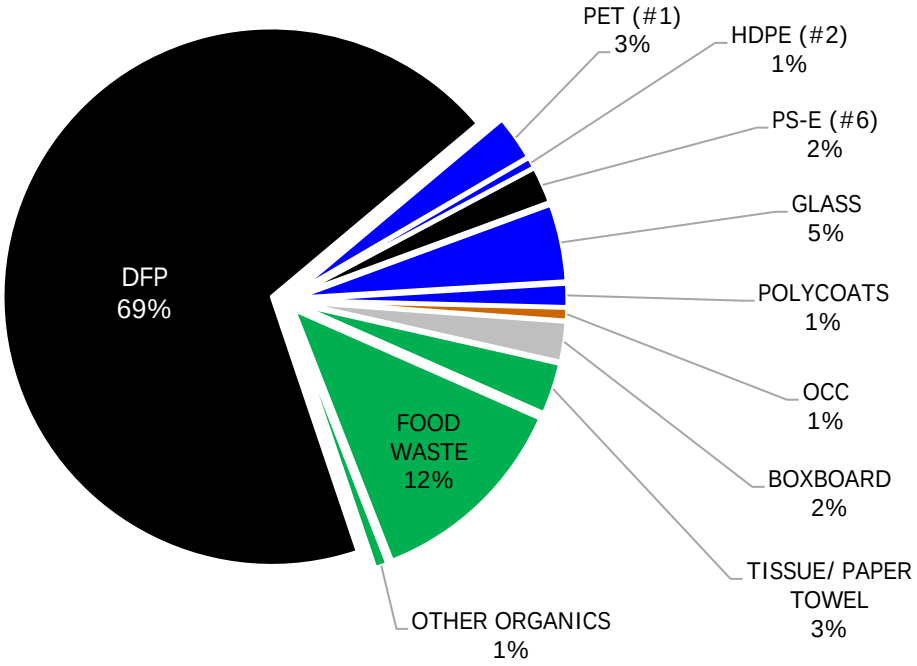


Figure G17. 89 Chestnut Residence's waste to landfill stream, shown in percent.

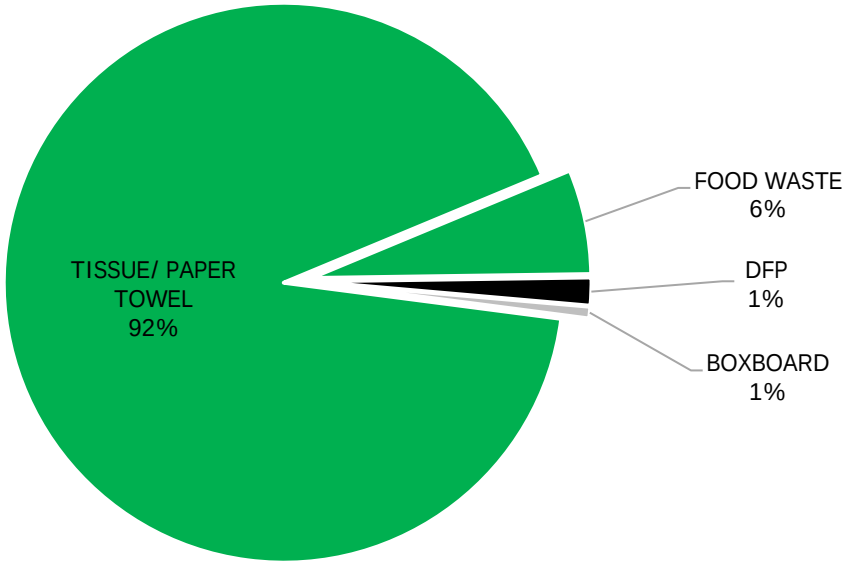


Figure G18. 215 Huron's (unlabelled) waste to landfill stream, shown in percent.

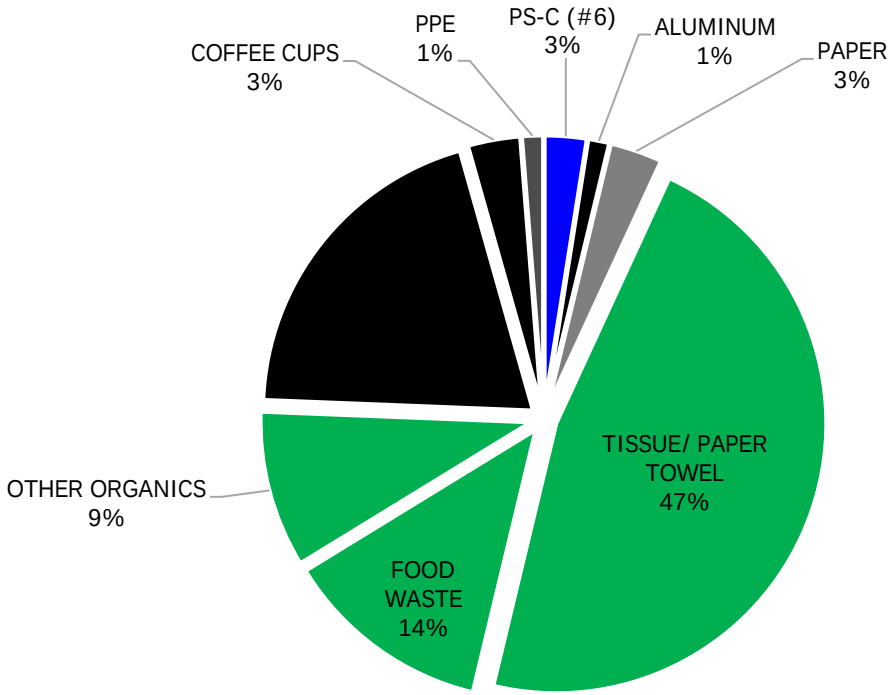


Figure G19. Zoology Kitchen's waste to landfill stream, shown in percent.

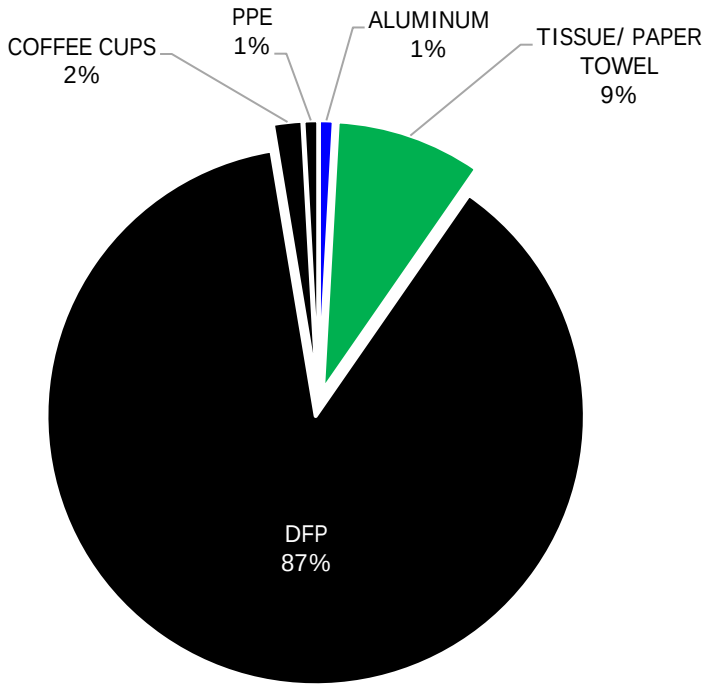


Figure G20. Zoology Corridor's waste to landfill stream, shown in percent.

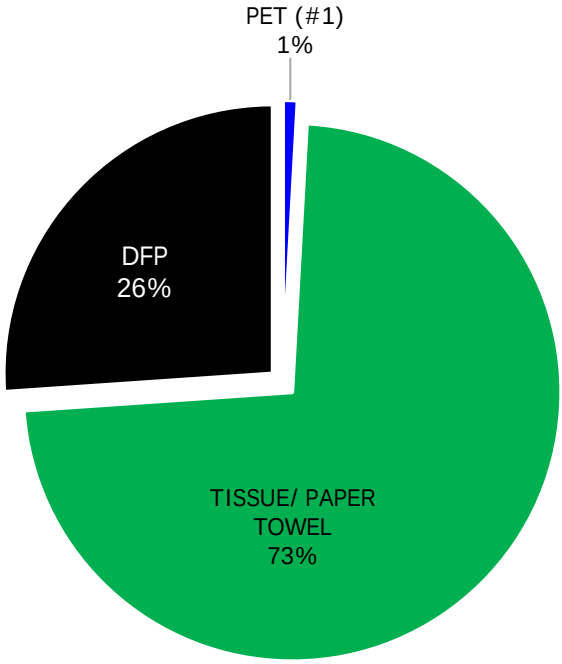


Figure G21. CCBR Café's waste to landfill stream, shown in percent.

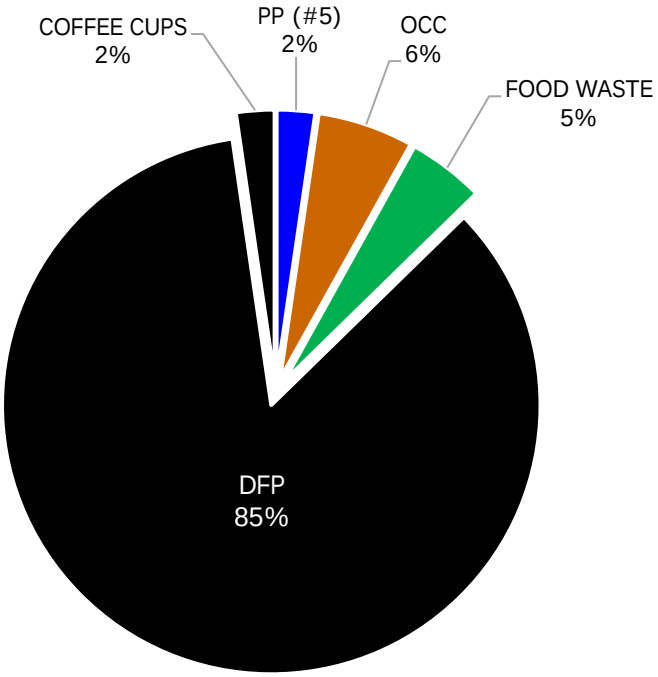


Figure G22. CCBR Kitchen's waste to landfill stream, shown in percent.

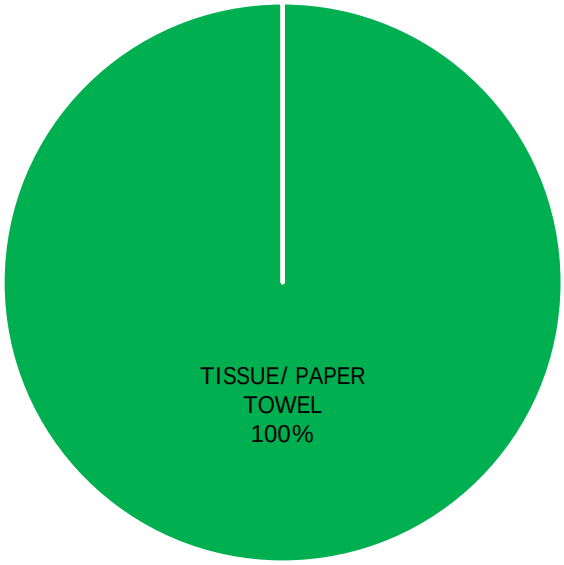


Figure G23. CCBR Washroom's waste to landfill stream, shown in percent.

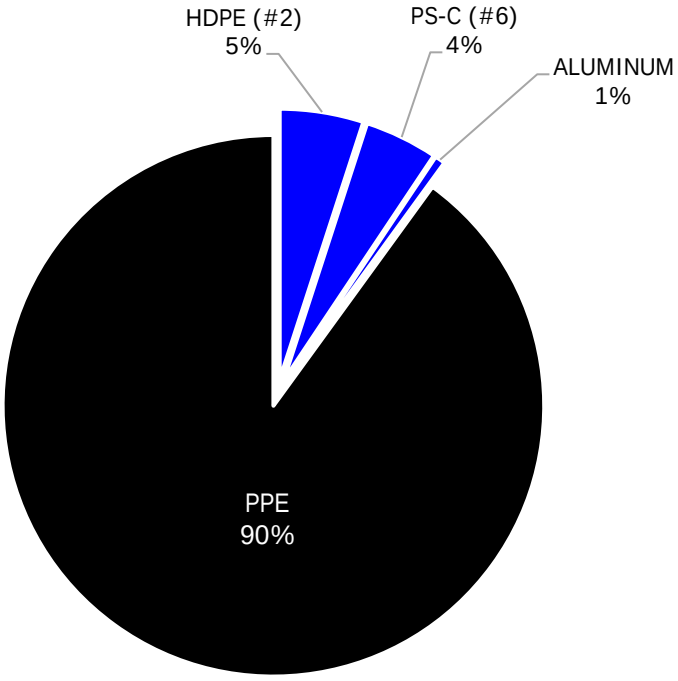


Figure G24. CCBR Lab's waste to landfill stream, shown in percent.

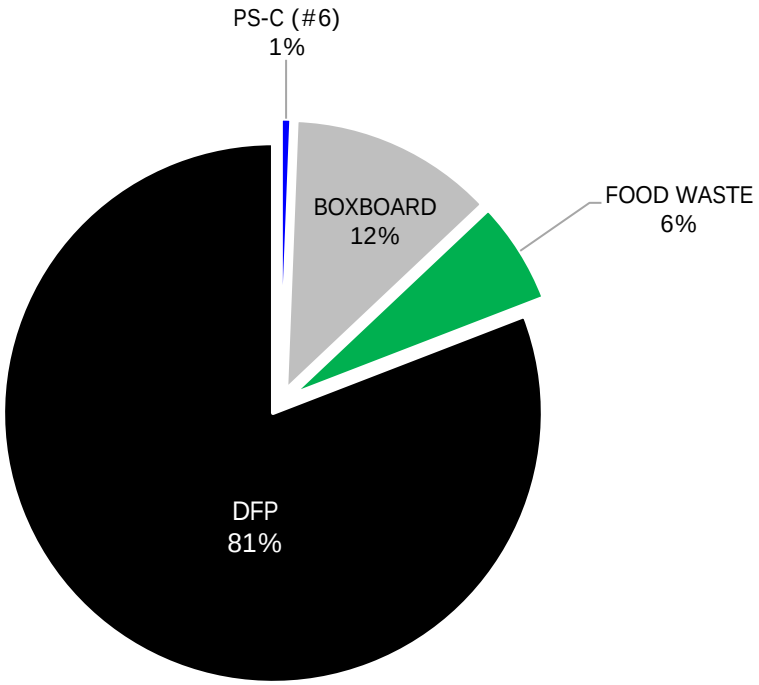


Figure G25. CCBR Corridor's waste to landfill stream, shown in percent.

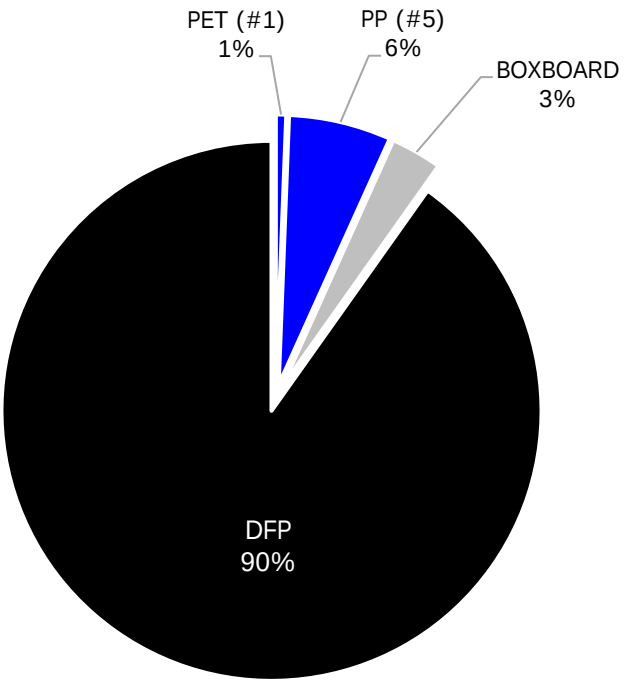


Figure G26. Sidney Smith Café's waste to landfill stream, shown in percent.

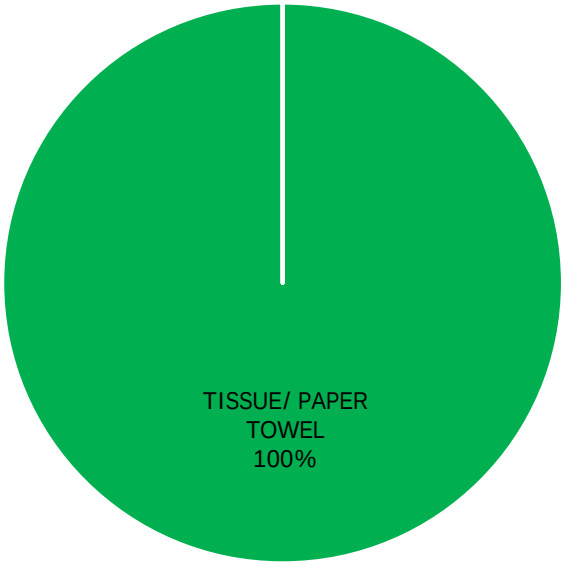


Figure G27. 215 Huron Washroom's waste to landfill stream, shown in percent.

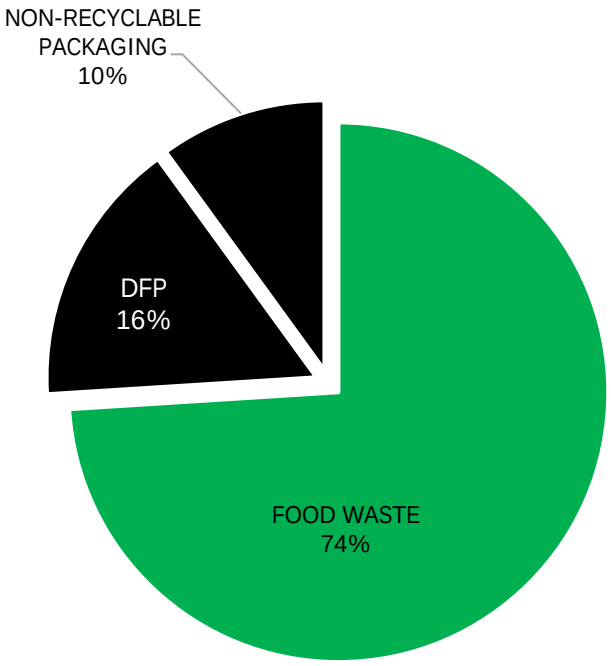


Figure G28. Fields Corridor's waste to landfill stream, shown in percent.

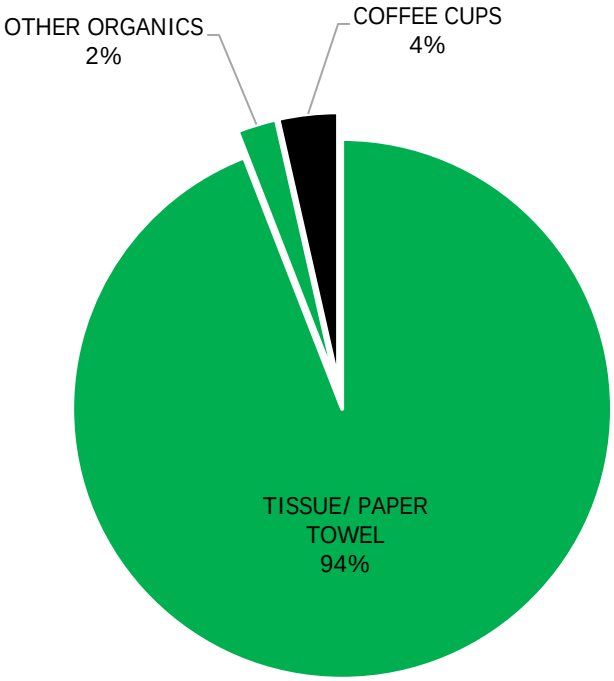


Figure G29. South Borden Kitchen's waste to landfill stream, shown in percent.

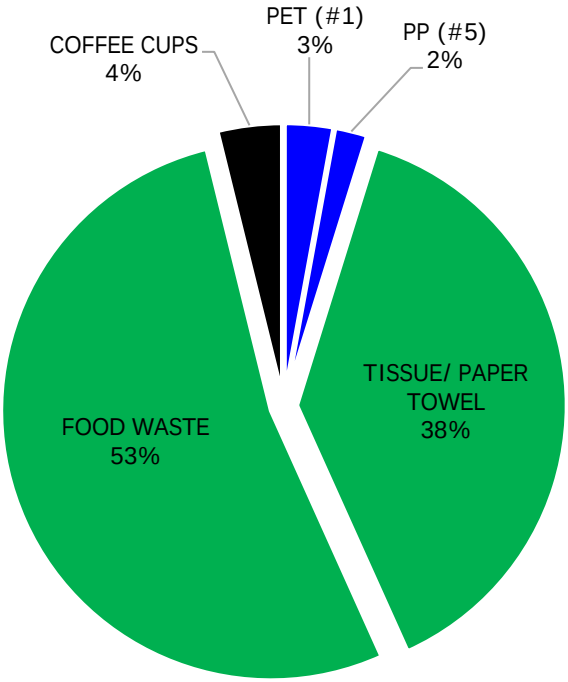


Figure G30. South Borden Public Space's waste to landfill stream, shown in percent.

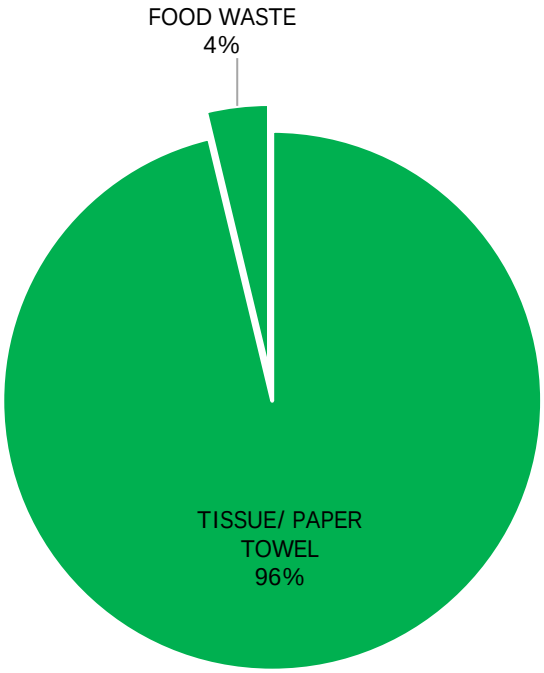


Figure G31. South Borden Corridor's waste to landfill stream, shown in percent.

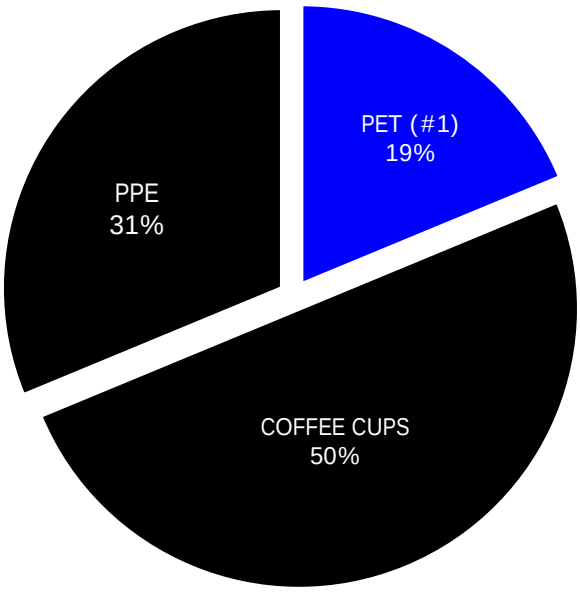


Figure G32. Dentistry Corridor's waste to landfill stream, shown in percent.

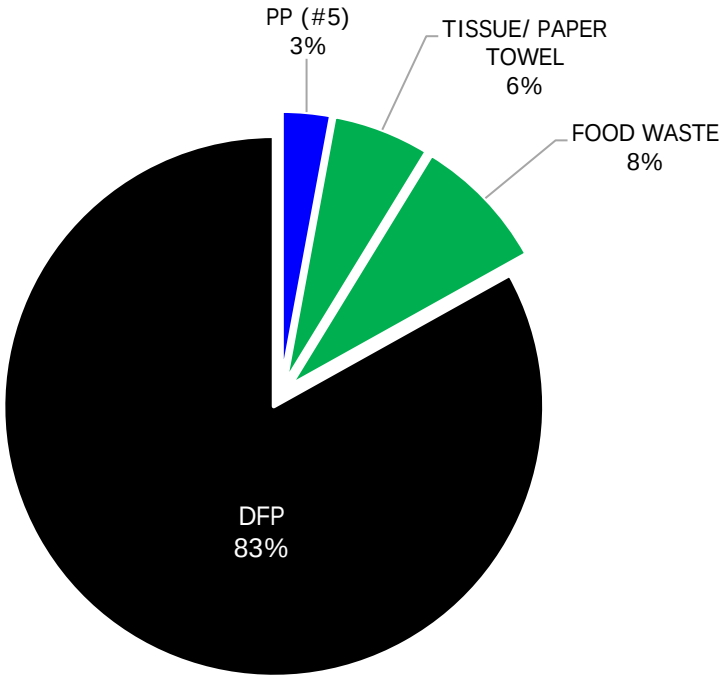


Figure G33. Dentistry Kitchen/Café's waste to landfill stream, shown in percent.

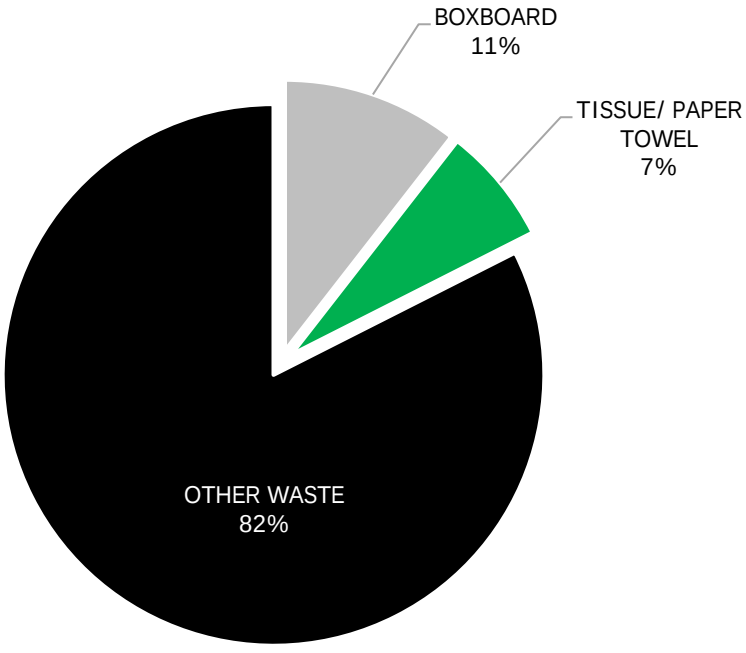


Figure G34. Dentistry Office's waste to landfill stream, shown in percent.

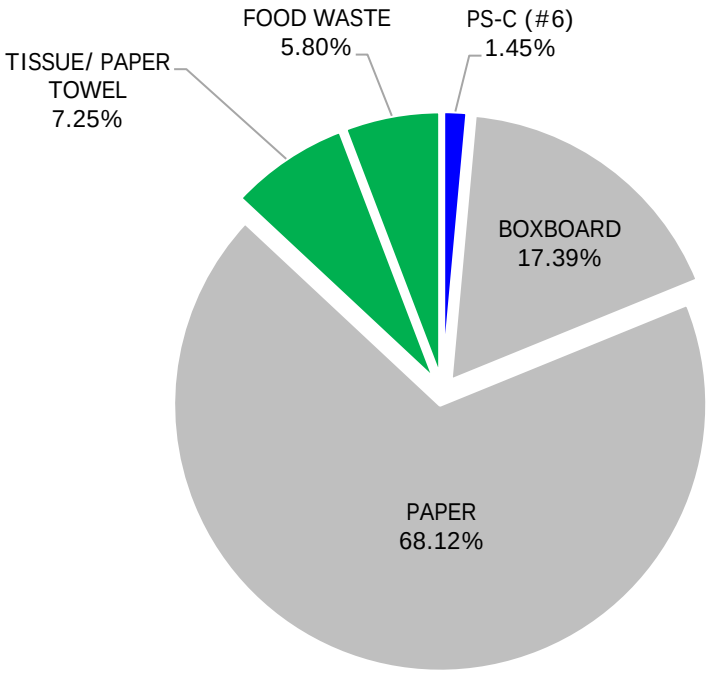


Figure G35. BCIT Library's waste to landfill stream, shown in percent.

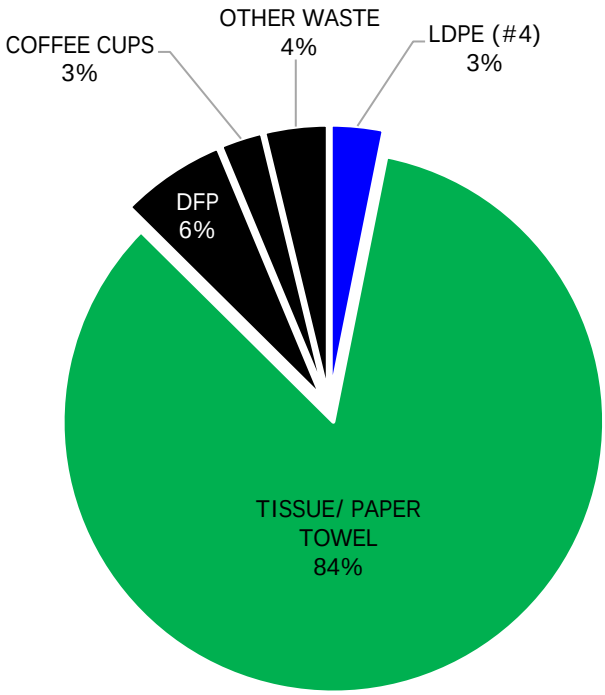


Figure G36. BCIT Washroom's waste to landfill stream, shown in percent.

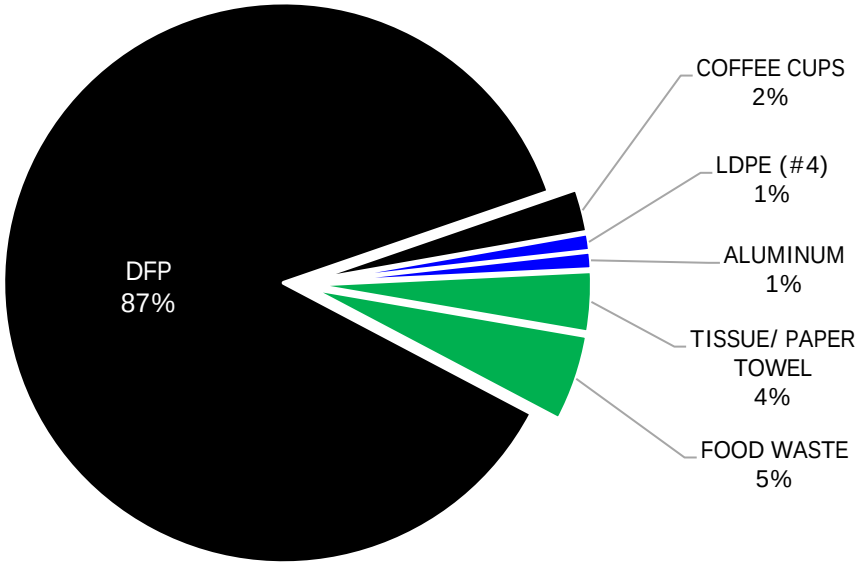


Figure G37. BCIT Corridor's waste to landfill stream, shown in percent.

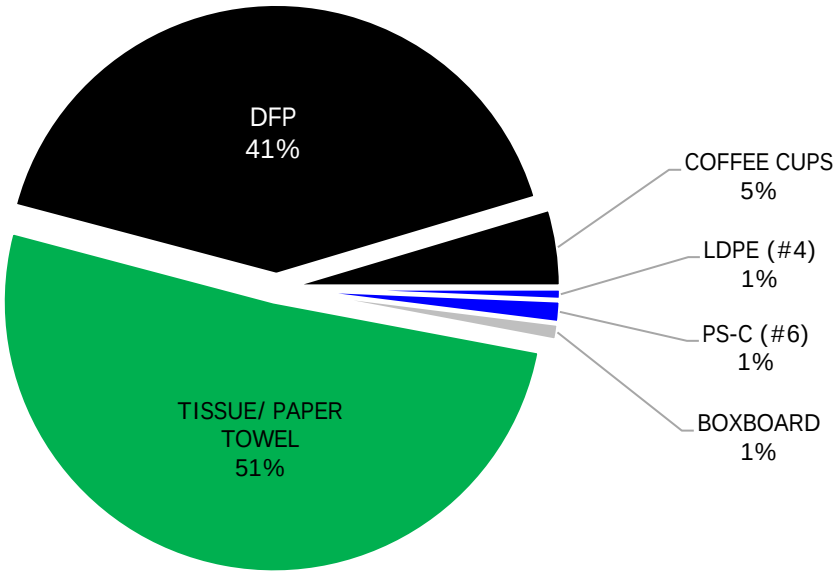


Figure G38. BCIT Office's waste to landfill stream, shown in percent.

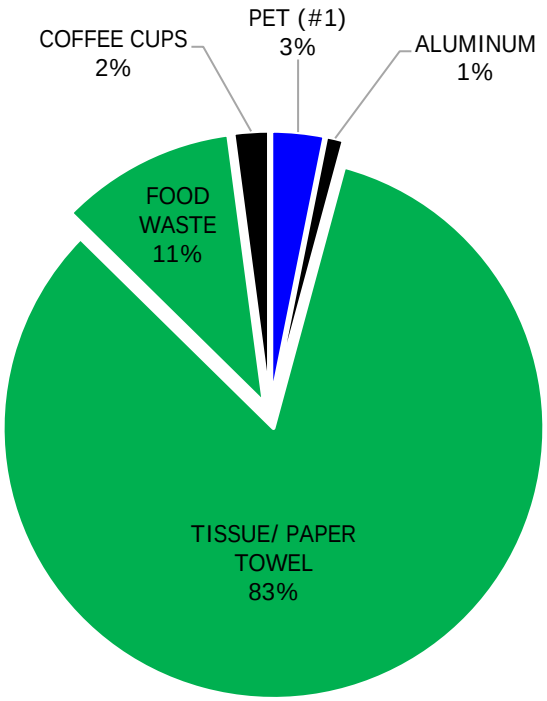


Figure G39. BCIT Kitchen's waste to landfill stream, shown in percent.

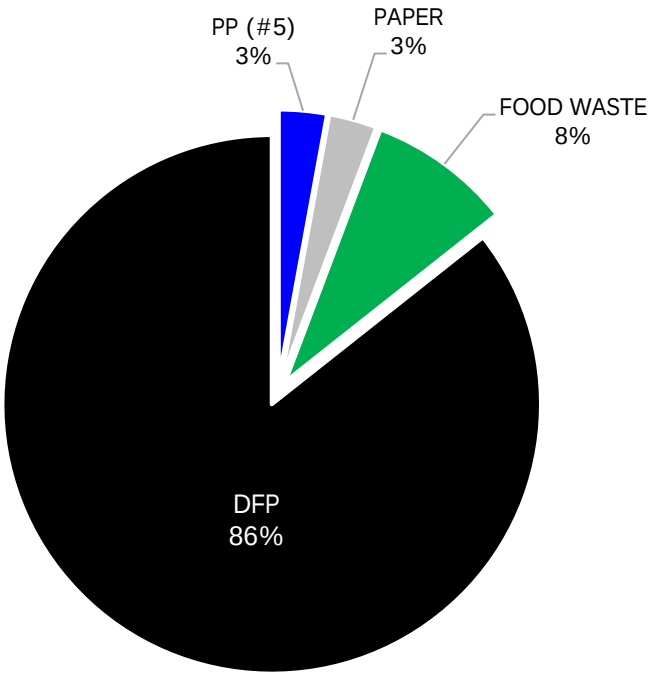


Figure G40. BCIT Public Space's waste to landfill stream, shown in percent.

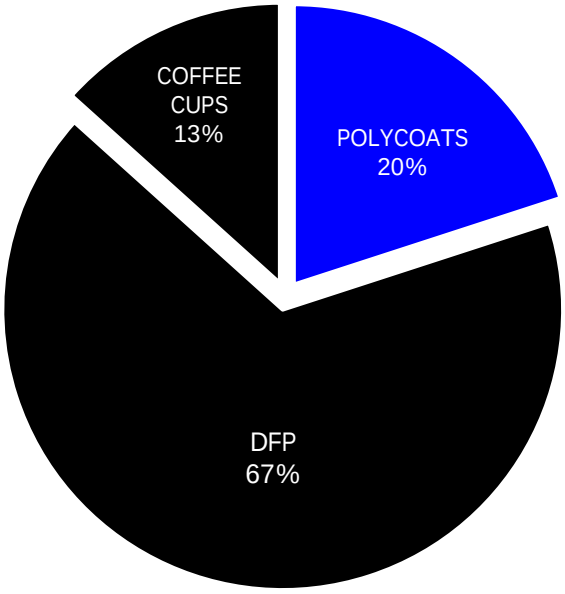


Figure G41. Fields Office's waste to landfill stream, shown in percent.