



# WASTE AUDIT

ELIZABETH BALLANTYNE  
ELEMENTARY SCHOOL

25TH MARCH 2024

## About enuf

enuf is a B-Corp whose mission is to do whatever it takes to solve the waste crisis. We work for cultural change in two interrelated ways: by helping to build better infrastructure for waste sorting and organics collection, and by running education and awareness campaigns in institutions and with the public. We work with cities, businesses and schools at all levels, and are involved in social mobilization in partnership with community organizations.




enuf is co-founded by three equal partners: one woman and two immigrant people of colour. We benefit greatly from a broad range of diverse perspectives within our team. We have recently become a “Benefit Corporation” (B Corp), which we pursued to ensure that we are anchoring our organization in sustainability best practices from the get-go. For example, our legal incorporation articles include the following text to ensure that executive officers can make decisions for social good, even if such decisions do not maximize profit, without being liable to shareholders:

“The purpose of the Company shall include, but is not in any way limited to or restricted by, the creation of a positive impact on society and the environment, taken as a whole, from the business and operations of the Company, which impact is material in view of the size and nature of the Company’s business”.






## Introduction:

We conducted a follow-up waste audit for *Elizabeth Ballantyne Elementary School* on Monday 25<sup>th</sup> March 2024. Prior to this, the following activities have taken place:

-  November 13<sup>th</sup>, 2023: Preliminary waste audit
-  March 19<sup>th</sup> & 20<sup>th</sup>, 2024: School-wide educational workshops on waste-sorting
-  March 19<sup>th</sup>, 2024: Review of waste sorting tailored to staff, and Q+A with teachers.

Following the waste-sorting workshops, we were able to conduct a thorough and deep assessment of the waste sorting conditions, where we went through **5** days' worth of recycling and compost, and **3** days' worth of trash, totalling **108.2 kg** of audited waste. On average, each person generated **110 g** of waste per day, assuming a 255 population of students and staff, at *Elizabeth Ballantyne Elementary School*.

The objectives of the work conducted by *enuf* are:

-  Compare data with that of the previous preliminary audit in order to assess the impact of the educational workshops.
-  Identify opportunities to improve waste reduction and diversion.
-  Identify non-compliance in waste disposal to inform educational efforts.

## Waste audit process summary:

The *enuf* auditors separated items into containers for each of the following waste streams:

- 1) Cardboard/paper,
- 2) Plastics,
- 3) Metals,
- 4) Organic waste,
- 5) Trash.

## Waste audit parameters:

*enuf* is committed to providing the best quality of waste audit for the best price. Our processes adhere to general waste audit guidelines. The amount of waste generated allowed *enuf* to conduct a full waste audit without the need to sample the waste bins. Previously, the trash bins in the November audit were sampled using 3 bags to represent the ~20 bags in the cubic yard container, due to difficulty of access. However, in this current audit, no sampling was required, and all waste generated was audited. These parameters give us a high confidence in the representativeness of our data and analysis.

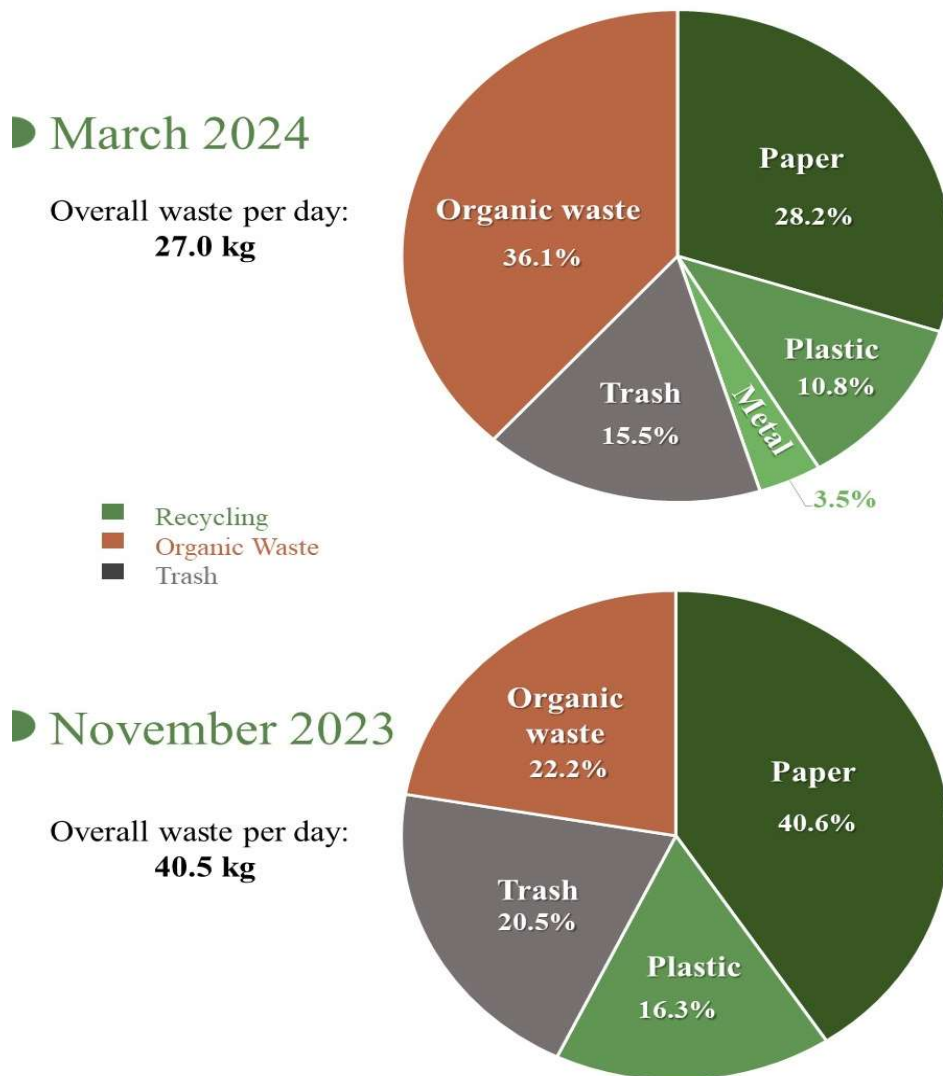
In this audit, the total weight of waste captured in recycling bins in the audited 5 days is **56.8 kg**. The total weight of waste captured in landfill bins in the audited 3 days is **40.4 kg**. The total weight of waste captured in the compost bin in the audited 5 days was **11.0 kg**. In addition to the audited waste, there was **8.9 kg** of construction waste present as a hazardous contaminant in the recycling stream. From observation, the waste appeared to be rockwool, and



should be disposed of correctly in the trash stream instead. This data was considered external waste (exceptional) and was therefore not included in the audit data or figures.

## Current state:

The composition of the audited waste, normalised by day, is shown in **Figure 1**, alongside the previous composition data from the preliminary audit in November 2023. As seen, around **15%** of the daily waste has to be sent for disposal at landfills. Organic waste represents the majority of the audited waste, at **36%** followed by paper, with composition decreasing from **40%** in 2023 to **~28%**. Thus, waste reduction and diversion efforts are best placed targeting the correct sorting and disposal of these two categories.



**Figure 1: Overall composition of waste audited in March 2024 and November 2023, normalised per day.**

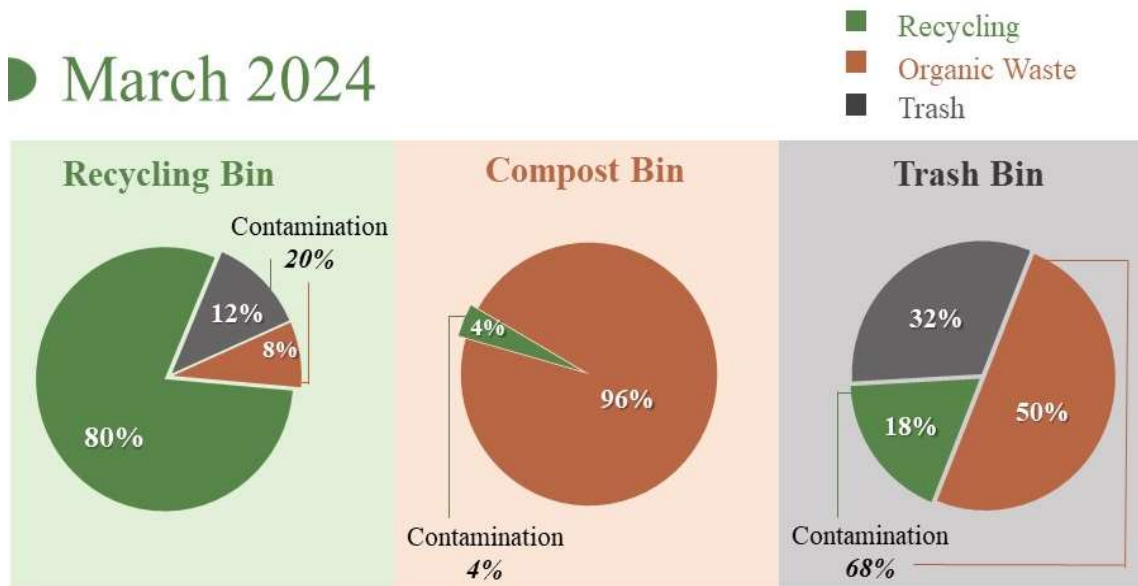
**Takeaway:** The two largest components of the waste generated are 1) **organic waste** which can be **composted**, and 2) **paper** which can be **reduced**.



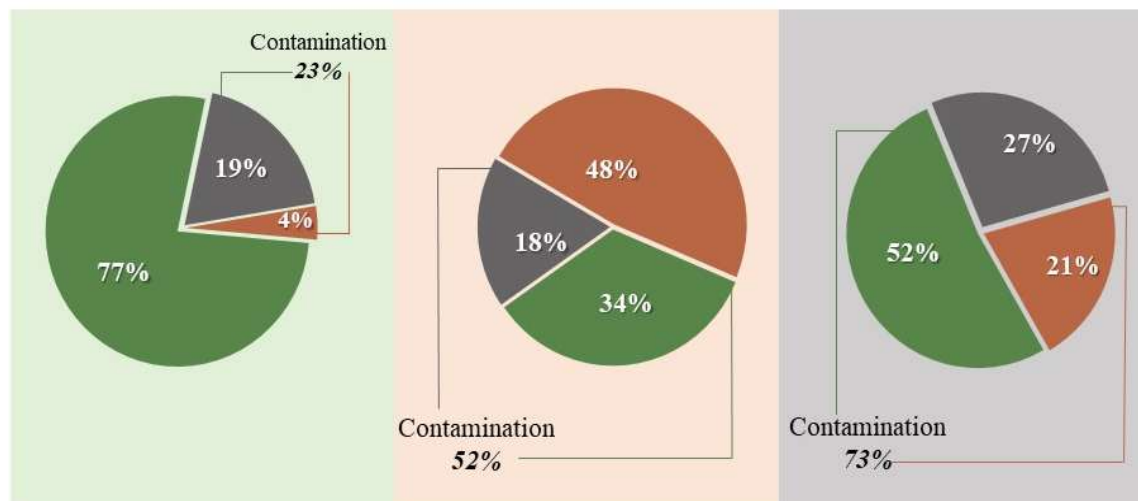
## Contamination:

Whilst only 15% of the audited waste needed to be sent to landfill, contamination of the waste streams continues to hinder the diversion to recycling and quality of the compost. **Figure 2** shows the composition and subsequent contamination of waste in the recycling, compost and landfill streams in the recent follow-up audit, alongside the previous data from November of 2023.

### March 2024



### November 2023



**Figure 2: Composition of the recycling, compost and landfill bins in the recent waste audit and the preliminary audit in November 2023.**

**Takeaways:** Whilst there is a massive improvement in compost purity, half of what is in landfill bins is organic waste that could have been composted.





The compost stream had the most impressive decrease in the contamination, dropping from **52%** in 2023 to just **4%** in this follow-up audit in 2024- a tremendous improvement! About **20%** of the waste in the recycling bins isn't actually recyclable, slightly lower (**-3%**) than in the 2023 audit.

The contamination rate for the recycling stream slightly decreased (+3%). As for the trash stream, only **32%** of the waste in the landfill bins was trash, with **50%** and **18%** of the waste in these bins being compostable and recyclable materials, respectively, that could have been diverted from landfill disposal. The contamination of recyclable waste ending up in landfill bins decreased by almost three folds, whilst the contamination by organic waste counteractively doubled (**+29%**), resulting in a slightly lower contamination rate (**68%**) for the trash stream than previously recorded in the 2023 audit (**73%**).

## ► Capture rate:

**Error! Reference source not found.** shows the capture rate of the different waste streams, alongside the rates previously reported in the 2023 audit. About **79%** of all recyclable material was captured in the recycling bin, whereas only **67%** of trash was collected in the landfill bins and a mere **19%** of all organic materials were found in the compost bins.

The previously low capture rate (**42%**) of trash in landfill bins was increased to **67%** following waste-sorting education, with non-recyclable plastics no longer contaminating the compost bins in addition to a 7% decrease of contamination in the recycling stream.

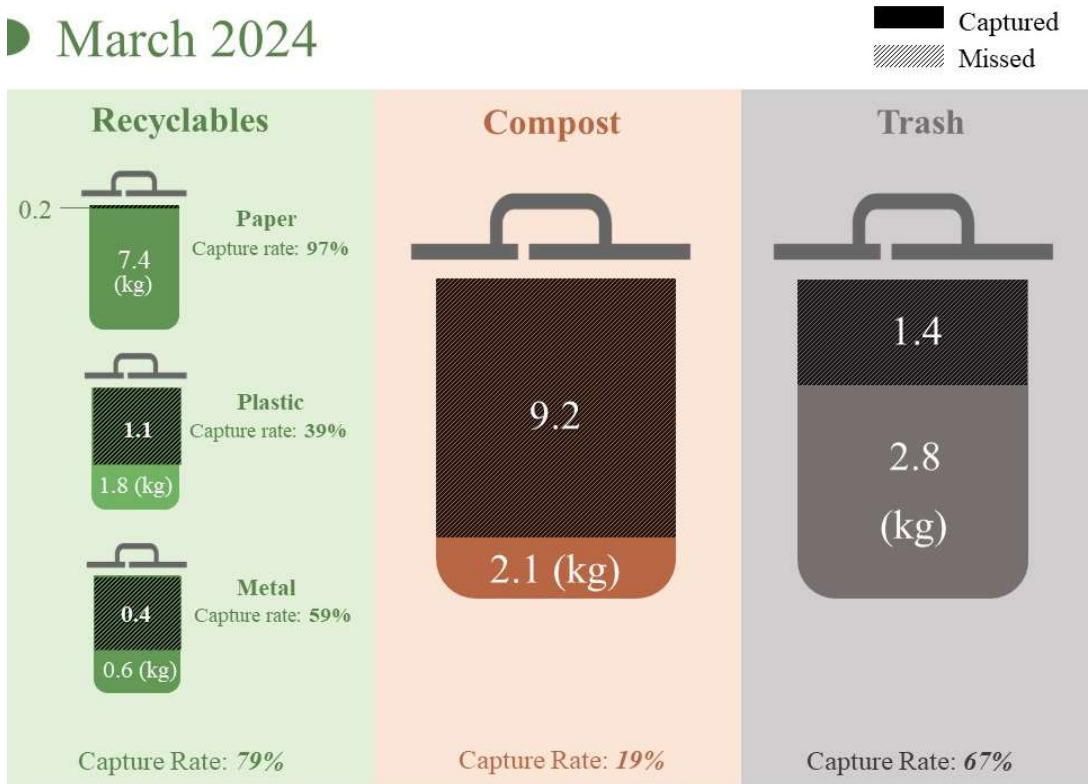
The capture rate of organic waste in compost bins slightly increased from **17%** to **19%** but remained the lowest of all the streams. After discussion with some teachers, it was revealed that food waste was not being composted in classrooms due to odour and fly issues. Addressing this concern would lead to the biggest improvement for the school. This concern can be mitigated by regularly collecting the organic waste from the classrooms to the bigger compost bins that are collected by the city. That way, food will not stay long enough in the classrooms to cause issues.

The highest capture rates are those of paper and cardboard, at **97%**. Given these materials are expectedly the majority of waste produced by schools, this is an impressive capture rate, maintained from the **98%** rate in the previous audit.

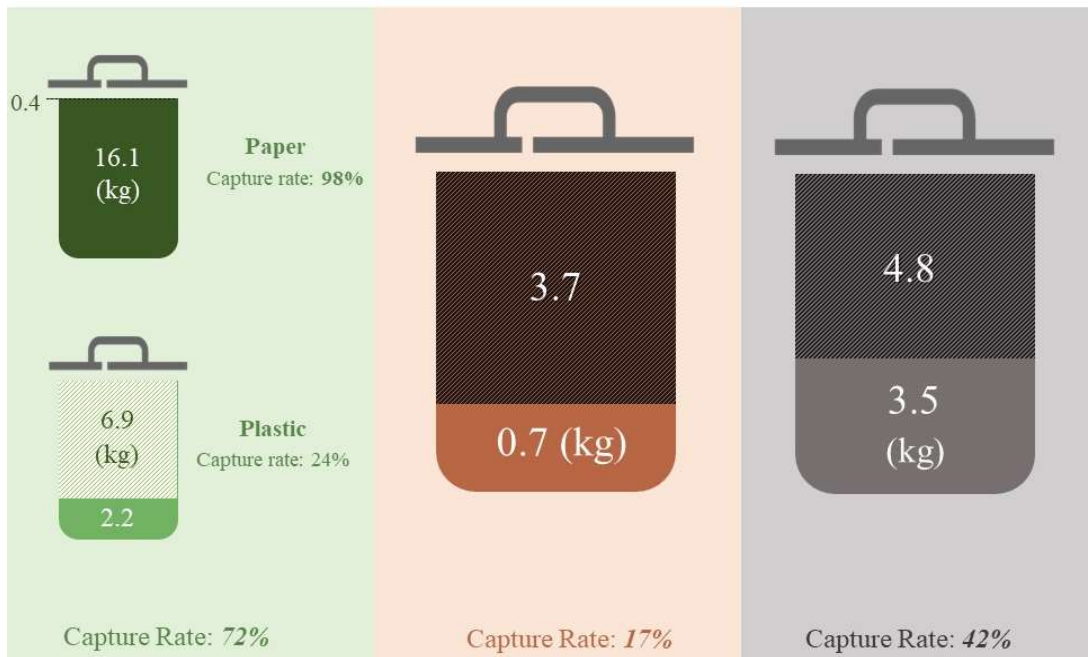
Regarding recyclable plastics, the current capture rate of **39%** is an improvement from the previously reported **24%** in 2023, with majority of recyclable plastics still mistakenly being placed in the landfill trash bins. These mainly comprised unfinished TetraPak juice boxes and milk cartons. After conversation with teachers and a few students, it was understood that students were deciding to throw away their unfinished recyclable drink containers to avoid bio-contamination of recycling waste. Whilst this is a thoughtful strategy, emptying the contents of the drink containers at sinks present in each classroom and recycling the boxes/cartons would further improve the capture rate for recyclable plastics.



### March 2024



### November 2023



**Figure 3: Capture rates of different waste streams, normalised per day for the audits conducted in March 2024 and November 2023.**

**Takeaway:** Significant improvement in trash capture rate, but stagnant capture rates of recycling and compost waste.



## ► Recommendations:

- 1) Addressing the concerns around placing leftover food in the compost bins would be the biggest step the school can make. Possible mitigation strategies could include ensuring that the organic waste is regularly moved from the classrooms to the bigger compost bins collected by the city.
- 2) Identify major sources of paper and target them with reduction efforts such as digitization and reuse initiative for school supplies.
- 3) Integrate green brigade training on the standard onboarding of lunch monitors.
- 4) Continue annual waste audits, and school-wide waste sorting education workshops.
- 5) Consider conducting 5-min refreshers on waste sorting in the winter semester after the return from Christmas holidays.

