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27 April 2021

Dear Jan,

Please find outlined in this letter the results of an audit of contamination from a truck of domestic kerbside recycling collected from a suburb of Auckland.

On Friday 16 April 2021, Sunshine Yates Consulting (SYCL) audited 621 kg, or approximately 6.5m², of materials that had been removed from one truck of domestic kerbside recycling. The truck delivered its contents to Visy Recycling on Thursday 15 April, and Visy staff isolated the load, and then fed it onto the conveyor belt to hand remove contamination before the rest of the load proceeded through the Visy Recycling plant. This type of 'positive sort' of contamination, where all significant items of contamination are removed at the beginning of the sort line, is likely to capture all larger pieces of contamination, and let small pieces proceed through the system.



Pile of contamination

The contamination from the truck load was set aside by Visy Recycling staff for SYCL to audit the following day. SYCL and a team of three contract auditors sorted the pile of contamination into 22 categories, as outlined in Appendix A.

A sorting table was placed adjacent to the pile of contamination, and bins were placed around the table, each labelled with a different category name. Materials were moved from the pile of contamination onto the table and then sorted into the 22 categories. Once a bin was full of a particular material the contents of the bin were weighed and disposed of. The tare weight was removed from each gross bin weight during data entry. An estimate of volume was also undertaken, based on the volume of the bins used.



Waste audit

The entire load was sorted during the audit. The results are shown on the following page in Table 1.

It is expected that there is much variation in the composition of contamination from trucks of domestic kerbside recycling collected from different areas of the city. The composition outlined below is specific to this particular truck load.

The categories used for the audit are different to the categories generally used to classify domestic refuse, and have been adapted to best suit the materials found in contamination while keeping the number of categories to a minimum.

**Table 1 – Composition of contamination in domestic kerbside recycling
(as removed from conveyor belt by Visy staff)**

Primary	Secondary categories	Weight	Volume
Paper & cardboard	Paper cups	0.1%	0.1%
	Sanitary items	1.8%	1.4%
	Other non-recyclable paper/card	3.9%	5.1%
	Subtotal	5.8%	6.7%
Plastic	Soft plastic	6.4%	11.5%
	Polystyrene	0.6%	3.1%
	Oversized plastic containers	0.2%	0.7%
	Other non-recyclable plastic	6.5%	10.8%
	Subtotal	13.6%	26.1%
Organics	Food waste	2.7%	1.0%
	Green waste	3.2%	1.4%
	Organic other	0.0%	0.1%
	Subtotal	5.9%	2.4%
Metals	Pots and pans	0.8%	0.7%
	All other metal	2.2%	1.1%
	Subtotal	3.0%	1.8%
Glass and ceramics	Crockery and drinking glasses	0.0%	0.1%
	All other non-recyclable glass	0.0%	0.0%
	Subtotal	0.0%	0.1%
Textiles		25.9%	22.9%
C&D waste		4.1%	2.8%
Potentially hazardous	Batteries	0.0%	0.0%
	Electronic/kitchen appliances	3.3%	2.1%
	All other potentially hazardous	0.2%	0.5%
	Subtotal	3.5%	2.6%
Bagged materials		31.8%	27.8%
Recyclable materials		2.3%	5.6%
Fines		4.1%	1.2%
TOTAL		100.0%	100.0%

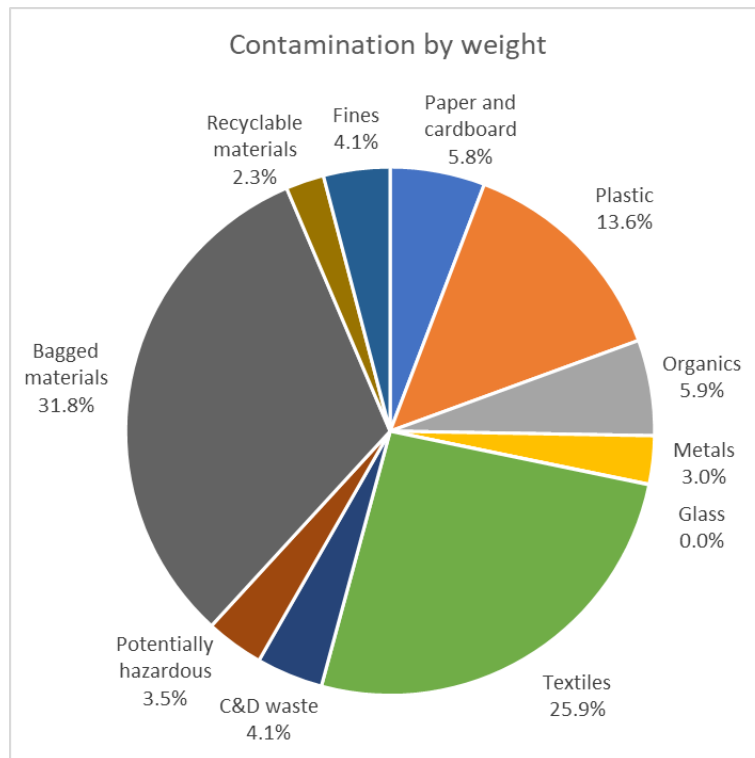


Figure 1 – Composition of contamination by weight

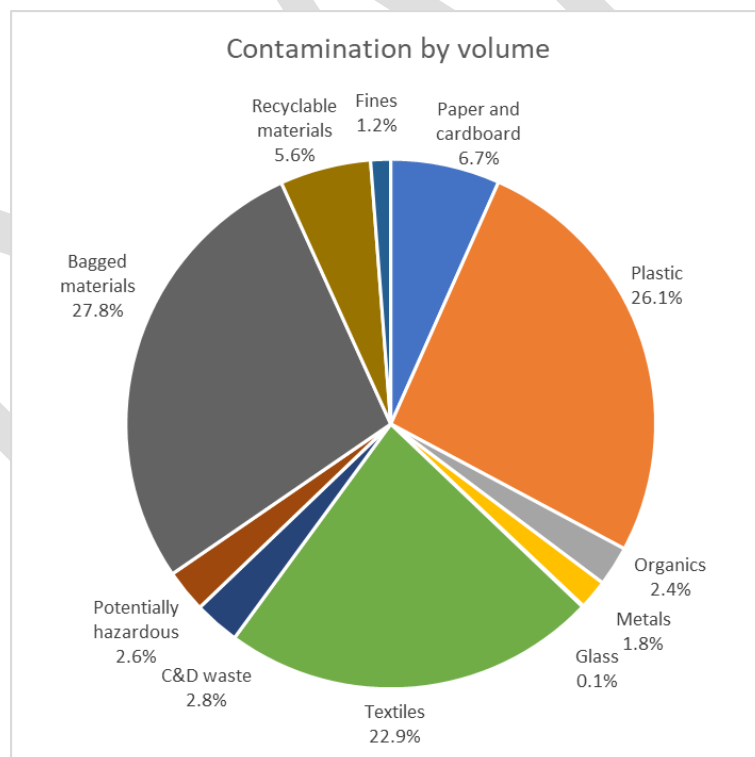


Figure 2 – Composition of contamination by volume

Key comments

- The majority of 'Bagged materials' contained rubbish, though some bags contained recyclable materials.
- Many bags of 'Bagged materials' were losing their contents, after having been handled several times, and a portion of all other materials sorted into their various categories probably started off in bags.
- There were vast quantities of 'Textiles' (clothing, bedding, towels, soft toys, shoes...) present in the contamination – over a quarter of all materials, by weight. Many bags of 'Bagged materials' were also full of 'Textiles' but were categorised as 'Bagged materials'.
- There were very few paper cups present, and most of the ones found were soft drink cups rather than coffee cups.
- There were not large quantities of fines, and this is likely due to the 'positive sort' undertaken on the sort line, manually removing items of contamination. Sorters are less likely to remove small items such as small pieces of broken glass etc.
- There was little polystyrene, and what was present was almost entirely meat trays.
- There appeared to be a lot of food waste in the bags of 'Bagged materials'.
- While much of the material was 'dirty' it was not possible to determine to what degree food waste was responsible for this.
- There were very few batteries, and those that were found were AA and AAA batteries.
- There were limited numbers of nappies present – in total two 45-litre bins of nappies, sanitary items and tissues were found in the sample of contamination.
- The 'Other non-recyclable plastic' category included a wide range of plastic items, from hosing, to food contaminated containers, plastic toys, plastic laundry baskets, plastic strapping etc.

Appendix A – Category definitions

Categories	Description
Paper and cardboard	
Paper cups	Disposable paper coffee cups and soft drink cups
Sanitary items	Nappies, sanitary products, tissues paper...
Other non-recyclable paper/card	Wet paper, laminated paper, wallpaper, dirty paper
Plastic	
Soft plastic	All soft plastic (bags, cling film etc)
Polystyrene	Polystyrene packaging, meat trays etc
Oversized plastic containers	Plastic containers 4-litres and over
Other non-recyclable plastic	All other non-recyclable items – toys, pens etc
Organics	
Food waste	All food waste, bottles or containers containing food or liquid
Green waste	Garden waste (leaves, branches etc)
Organic other	Vacuum cleaner dust, candles, dead animals...
Metals	
Pots and pans	All pots and pans
All other metal	Anything else made from metal
Glass	
Crockery and drinking glasses	All plates, cups, drinking glasses
All other non-recyclable glass	Mirrors, windowpanes etc
Textiles	
All textiles	Clothing, bedding, soft toys, shoes, bags etc
C&D	
C&D waste	Timber, concrete, bricks etc
Potentially hazardous	
Batteries	All batteries
Electronic/kitchen appliances	Anything battery or power operated
All other potentially hazardous	Medical waste, medication, cleaning products, garden chemicals etc
Bagged materials	Bags (or boxes) of materials
Recyclable materials	All recyclable material (plastic containers #1-7, paper and cardboard, aluminium cans, steel cans, glass bottles and jars)
Fines	Anything the size of a yogurt pottle or smaller

Appendix B – Photos of a sample of categories



Paper cups



Sanitary items



Polystyrene



Oversized plastic containers



Other non-recyclable plastic



Other non-recyclable plastic



Food waste



Pots and pans



All other metal



Textiles



Textiles



C&D waste



Batteries



Electronic/kitchen appliances



All other potentially hazardous



Bagged materials



Bagged materials



Recyclable materials



Fines

DRAFT