Waste Audit Results

1. INTRODUCTION

Our Daily Waste specialises in waste prevention education, customised recycling signage, and we also provide comprehensive waste audits that analyse bin user behaviour and how behaviour change can be put into effect.

Below are the results of an audit of the comingled recycling, landfill, organics, and paper streams undertaken at the University of Canterbury, August 2nd to 21st. Carried out over three weeks, waste was taken daily from a different part of the campus each week including: The Undercroft, UCSA kitchens, and C Block/Karl Popper building.

As such, we cannot provide a full overview of the UC's waste output, but this audit does provide valuable information about contamination rates and how the bins are being used. It also indicates a number of waste items that could easily be eliminated from the UC's waste stream, which in turn would reduce the UC's waste output and costs.

This report is also informed by my knowledge of the UC's waste system and previous audits from my time as the Waste Reduction Educator in 2011/12 but all recommendations are based on what I would tell any of my clients: how to use the results as a positive education and media tool to promote the UC and save money on waste fees through committed waste prevention.

2. HEALTH & SAFETY

ODW takes Health & Safety seriously and all staff were fully briefed in our own H&S policy, along with the UC's, and both were complied with at all times. All H&S requirements (gloves, hand sanitiser, first aid kit etc.) were provided by ODW. There were no incidents or injuries incurred during the audit.

3. METHODOLOGY

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4. LOCATIONS and SAMPLE SIZE

4.1 Locations

The following locations were chosen because they were the subject of a waste audit carried out in 2014:

- Undercroft – audited Monday, 31st July to Sunday, 6th August
- UCSA Production Kitchens (UCSA PK) - audited Monday, 7th August to Sunday, 13th August
- C Block Theatres and Karl Popper building - audited Monday, 14th August to Sunday, 20th August

4.2 Sample Size, Pre-sort

A total of 617kgs was classified, in contrast with 566kgs audited in 2014. Volume wise, the bulk of waste was landfill, followed by general recycling. There was only three days where there was paper to audit so the data for the paper stream is not as robust as the other three streams.

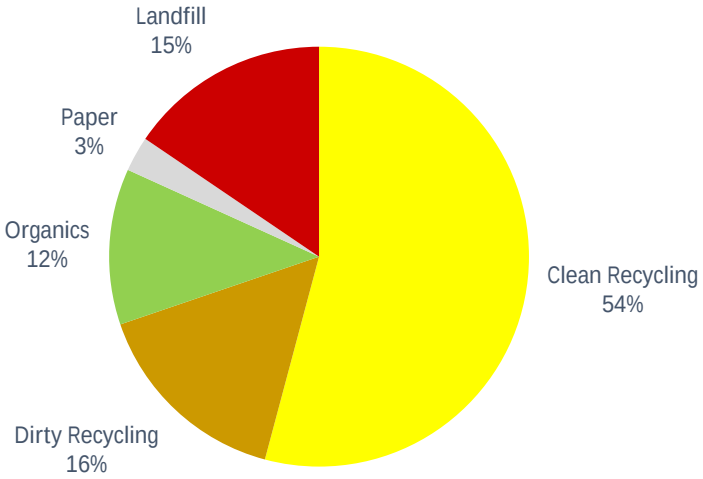
The table below indicates how the bins are being used and how much of each stream is going in the correct bin. Organics has been included in the pre-sorted list but not after as there was not the time or facilities to sort this stream.

Waste Stream	Container/Bin Used- kgs	After Sorting kgs	% Waste In Correct Bin
General Recycling	94.9	66.1	70%
Landfill			

This shows that the vast amount of bin users are using the landfill bins regardless of what it is they are binning with only 56% of the original landfill weight being landfillable items. A full breakdown of each separate stream will be included below, but the following section shows the weights per stream after classification.

5.2 Breakdown of Waste per Stream by Percentage

As a percentage the same data indicates where the UC most needs to focus its attention with more than three quarters of the waste made up from landfill and organics combined, both of which are usually charged at far higher rates than paper or general recycling



Fortunately, the UC has a system in place whereby some of the contamination from the recycling bags is removed before collection by Cleaning Services staff so that there is less risk of the bins being rejected outright for being too contaminated, which would certainly be the case based on these figures.

6.2 Breakdown of Recyclable Items by Category, Clean and Contaminated

Of the total recyclable items that were put in the recycling bins over three quarters of them were clean enough to recycle, although some categories such as aluminium cans fare better than others, as shown by the chart below (Fig. 6).

6.4 Food Contamination in Recycling

At 12% of all recycling, there was a relatively low amount of food in the recycling compared to landfill, but it is still highly problematic for the following reasons:

- Food and liquids are the items most likely to stain good recyclables such as paper and cardboard, rendering them non-recyclable.
- Waste collectors are more likely to reject recycling bins with visible food contamination.
- Whether the recycling bin is taken directly to the recycling sorting centre or to landfill the outcome for the food will likely be landfill, where it breaks down and creates harmful CO^2 gases.

7. LANDFILL

Overall, there was less landfill (213.5kg) by weight than organics (267.5kg), but because organics is one of the heaviest waste streams, landfill was far greater in volume, with at least three overloaded frontload skips being disposed of daily, compared to less than two paper skips of the same size (see Fig. 10).

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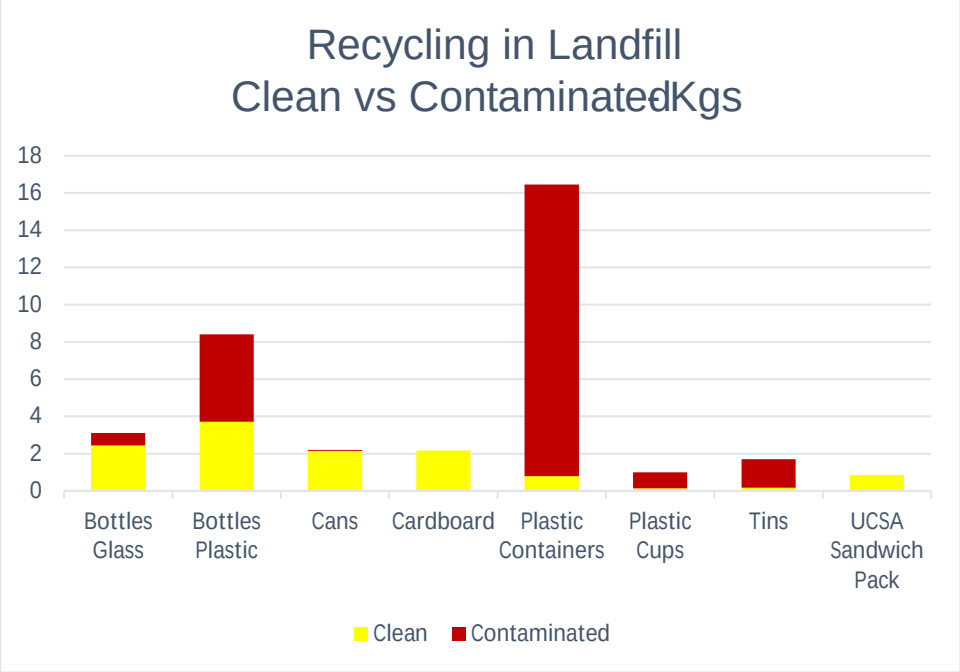
7.3 Recycling in Landfill

Recycling in the landfill only made up 11% but the following chart shows the items that could have been put into the recycling.



In the case of the tins, plastic containers and plastic bottles it is better that dirty recyclables go to the landfill, but the cans, glass bottles and cardboard could be easily diverted.

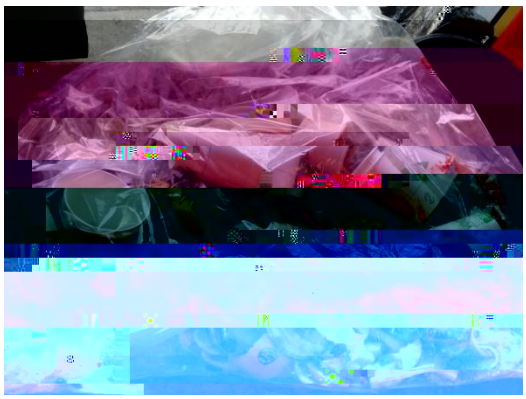
7.4 Organics in Landfill

Organics accounts for 31% of the landfill stream and the following graph shows the breakdown by area, showing that the UCSA kitchens account for the highest amount of organics in landfill (43kgs), although that figure is much improved on the 127kg that was recorded from the same area in the 2014 audit.

Waste Stream	Undercroft	UCSA PK	K. Popper/ C Block	Total
Organics	28.1	43	37.6	108.7

The organics that found its way into the landfill bins used in the Undercroft and Karl Popper building was leftover meals usually tucked inside the packaging, along with the cutlery and serviettes, showing that people like making tidy packets of their waste, which they then prefer to bin as one item rather than sorting.

However, the food in the landfill bins from the UCSA PK was in bulk, and could have easily been put in a dedicated organics bin, saving landfill fees. One explanation is that the kitchen staff do not know that Living Earth, where Canterbury's green bins go, can take meat, dairy and fish products (see section 10.2).

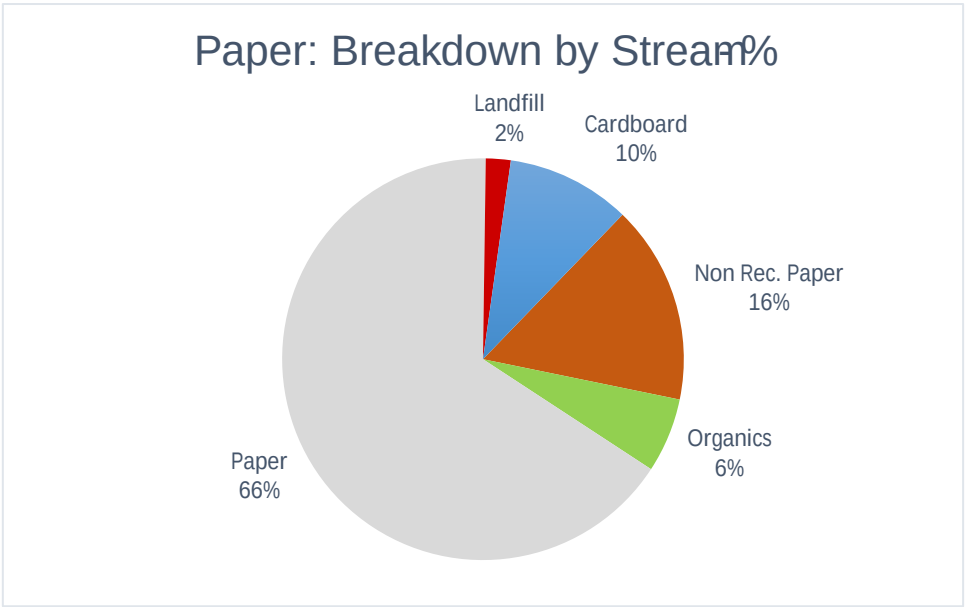


9. PAPER

There were very few paper bags put aside for us to audit, so the sample is not as large as the other streams but a total of 23.3kg was audited as part of the paper stream, with a further 7.7kg and 2.7kg being audited in the landfill and GR streams respectively.

9.1 Breakdown of Paper by Stream

The paper was sorted into the following categories: paper, cardboard, non-recyclable paper, landfill. There was only one item of comingled recycling in the paper so this category is not recorded in the statistics below as it was too light to count. The following chart shows the percentage of the above categories, and that 76% of the paper stream was either clean paper or cardboard. Although relatively low, the landfill and organics contamination in the paper is of concern because the cleaner the paper is the greater the discount for disposal. However, the paper skips were contamination free so Cleaning Services staff are clearly sorting this waste stream effectively.



9.2 Landfill Contamination in Paper

A total of 5.68kg of landfill contamination was in the paper, but 5kg of this was non-recyclable paper as categorised above. Of the smaller items the breakdown was as follows:

10. AREAS

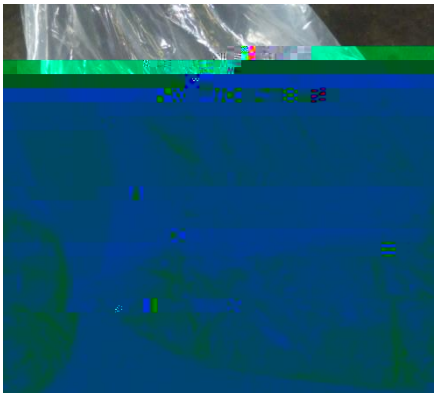
Each area was different in the makeup of the waste. The following chart shows the breakdown of waste by area after classification.

10.1 The Undercroft

The Undercroft bins were almost exclusively mad2 841.92 reW*nQ0.000008871 0 595.32 841.92 reW*nBT/F1 11.04 Tf1 59

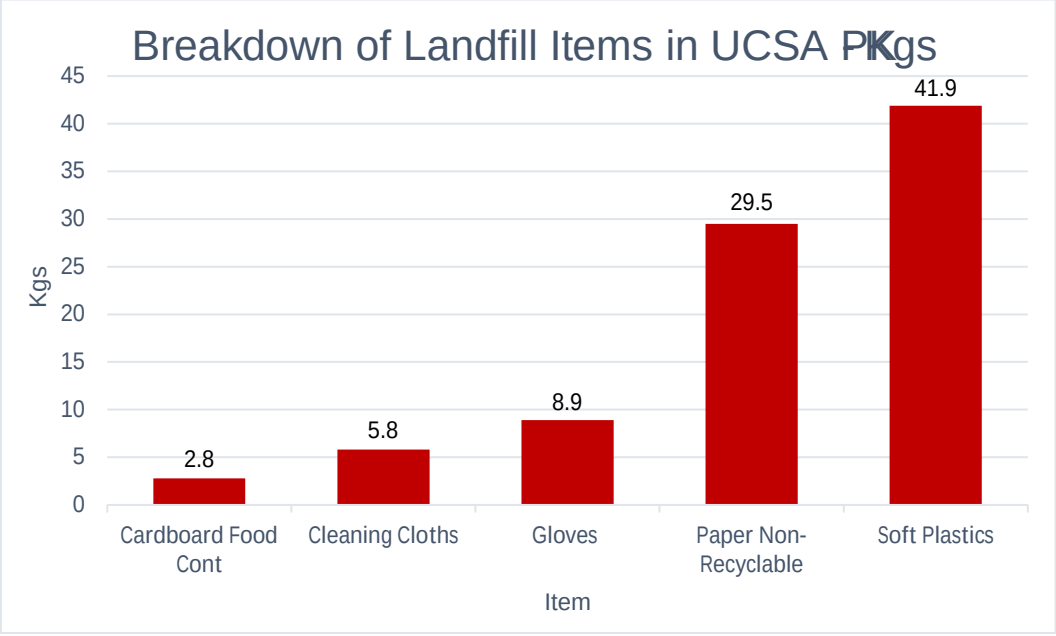
10.2 UCSA Production Kitchen

The UCSA PK did better at putting the right things in the bins, apart from the organics stream where 56.2kg of food waste found its way to the organics stream, but 43kg was put in landfill, increasing the landfill weights considerably for this area. Some of this may be due to kitchen staff not being aware that in Canterbury raw meat, fish and dairy can go in the green bins. However, as the cooked food also present in the landfill suggests, it may also be down to an unwillingness to separate food waste. There was also a lot of food waste inside containers such as sauce bottles and cooking oil bags as shown in Fig 22 and 23. That some of it was raw chicken etc. makes it a H&S risk for Cleaning Services staff collecting bags. Organics bins have clear liner bags so that any risks can be seen, and they are usually stronger. Staff know to handle them carefully whereas landfill bags could be at risk of leaking or ripping, especially when the heavier organics tends to sink to the bottom.



More positively, the message about rinsing recycling has had an effect with a total of 22.8kg of recycling collected in the UCSA PK, 21kg of which was clean. There was only 1.5kg of landfill items in the recycling including unrecyclable paper, cardboard food containers and bottle tops. There was also 7.2kg of recycling in the landfill, but most of this was dirty so had been put in the right place.

With the most amount of landfill of any of the three areas however, the UCSA PK bins revealed some highly wasteful practices in the kitchen, many of which will be justified as being for H&S reasons; however, there is certainly room for improvement as the figures below show.



As such, the recycling was more evenly distributed between the recycling and landfill streams with 15.8kg in recycling (10.3kg of which was clean), and 13.7kg in landfill (6.1kg of which was clean). However, 6.7kg of the waste put into the recycling stream was landfill, 4.4kg of which was unrecyclable paper, followed by bottle tops (0.4kg) and soft plastics (0.3kg) indicating that greater recycling education is required.

Paper was collected separately on one of the audit days in this area so we were able to get some data showing that this stream is also being abused, with only 1.2kg of clean/recyclable paper collected compared to 2.3kg of dirty/non-recyclable paper collected. By contrast there was a total of 5.7kg paper in landfill for the week, showing that people prefer putting it all in one bin.

The landfill in this area was mostly put in the landfill bins (40.3kg), with 2.3kg going to paper, and 6.7kg in recycling. The biggest categories for landfill in this area were dirty/non-recyclable paper (12.7kg), soft plastics (3.9kg) and miscellaneous (8.4kg). Much of the weight from this final category came one day's auditing when someone had cleaned out their office and disposed of their desk stationery (incl. staplers etc.) into the landfill bin. This also included their earthquake emergency kit, indicating that it may be worth sending departing staff emails about leaving any reusables in the office for the next occupant, or at least sending them to the warehouse for reuse.

11.CIGARETTE BUTTS

There were very few cigarette butts in the bins, indicating that in some areas the Smoke-Free campus initiative is working. However, there were a lot of cigarette butts in the gutters surrounding the campus, and they were also present in large numbers in the UC car parking areas. The photo of butts in the gutter at right (Fig. 28) indicates that smokers are even smoking in the carpark in front of the Security building.

The environmental effects of cigarette butts getting into the storm water drains – and worse, directly into the rivers and streams running through the UC grounds – have been widely covered. Making an area Smoke-Free does not

12.RECOMMENDATIONS

12.1 Recommendations for improving the recycling system

The UC's commitment to a 5-stream recycling system makes it a leader in recycling but there is still a lot of education required to ensure that the recycling is clean enough to recycle, as per the following recommendations:

- Choose the items that create the most contamination such as food and dirty paper and use the UC and UCSA's marketing and social media outlets, including the screens in foyers to circulate short videos and memes teaching people which bin these items go to.
- Ongoing staff training in production kitchens and cafés to ensure they understand how to sort their waste.
- Offer incentives to sustainability groups to stand in front of recycling stations at busy lunchtimes

- Whilst it is co