

Energy Conservation Systems

Recycling and Waste Management Report

40 Albert Road

1. EXECUTIVE SUMMARY

A comprehensive waste audit was carried out by Great Forest Australia on 14th and 16th June 2006 on solid waste generated at 40 Albert Road.

The purpose of the audit was to evaluate the waste management and recycling systems at 40 Albert Road as part of Energy Conservation Systems' full review of the building's environmental systems and to assess any areas of the program that may be improved.

ECS is recycling the following materials:

- Paper, including white office paper and envelopes.
- Glass, metal, and plastic containers (Nos. 1, 2, and 3) and liquid paperboard
- Organic material including tea bags, food scraps and plant material
- Cardboard (non-waxed)

Based on one night of waste audit data, a daily total of 7.9 kg of waste (114 litres) is being produced, comprising:

- 5.3 kg or 93 litres collected for recycling (81% by volume of all waste)
- 2.6 kg or 21 litres sent to landfill (19% by volume of all waste)

Of the material being collected for recycling, the average contamination rate is 2-3%, which is an acceptable rate. These results indicate that ECS's office recycling program is working well.

According to research carried out by Resource NSW in 2002, the average office worker generates 173 kg of waste and recycling per year. Based on 21 staff at the building, 40 Albert Road is generating 94 kg of waste and recycling per staff member, each year. This is 54% lower than that benchmarked by Resource NSW.

2. AUDIT METHODOLOGY

The waste material was audited in the following way:

1. Waste collected in wheelie bins in the basement from the previous day was assessed, weighed and recorded. This included the wheelie bins for paper, commingled, organic and landfill waste as well as cardboard from the cardboard manual baler. Using this method we were able to assess waste from three days' of operation at the building.
2. All paper recycling boxes at individual desks and beside photocopiers were assessed and recorded before the cleaner collected the waste in the evening.
3. Kitchen waste in the three streams (landfill, organic and commingled) were assessed and recorded.

One of the members of the cleaning staff who normally cleans at the building was not working on the evenings of the audits.

For the purposes of the audit, the categories measured are defined as follows:

Paper

White office paper including envelopes. This does not include other paper products such as tissues, magazines, phone books and newspapers.

Organic

Food scraps, tea bags, coffee grounds

Commingled materials

Cans, glass bottles, plastics 1, 2, & 3, milk and juice cartons

Landfill waste

Plastics 4, 5, 6 & 7, unnumbered plastics, confectionery & take-away food packaging, aluminium foil, plastic/waxed food wrap, plastic/polystyrene cups, metal (non-recyclable), plastic strapping, batteries

3. AUDIT RESULTS

During the audit period, 5.3 kg of material or 93 litres was collected for recycling. The chart below shows the relative proportions, by weight, of the recyclable waste stream:

Chart 3.1 Recyclable Waste Stream by Weight, June 2006

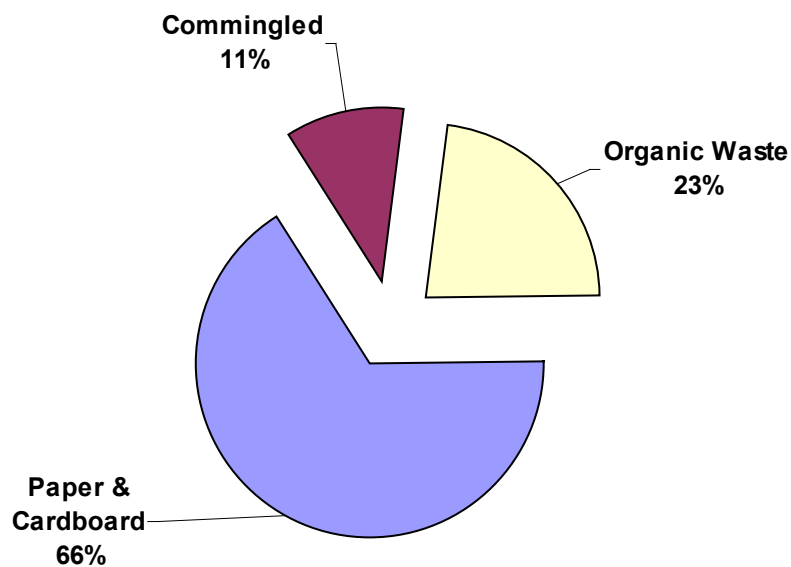


Table 3.1 Components of Recyclable material by weight and volume

Waste Stream	Weight kg	% of Total by Weight	Volume Litres	% of Total by Volume
Paper and Cardboard	3.49	66.0%	90.09	96.7%
Commingled	0.60	11.3%	2.65	2.8%
Organic	1.20	22.7%	0.40	0.4%
Total	5.29	100.0%	93.14	100.0%

During the audit period, 2.6 kg of waste or 23 litres was collected for landfill disposal. The chart below shows the relative proportions, by weight, of the landfill waste stream:

Chart 3.2 Waste to Landfill Stream June 2006 (by weight)

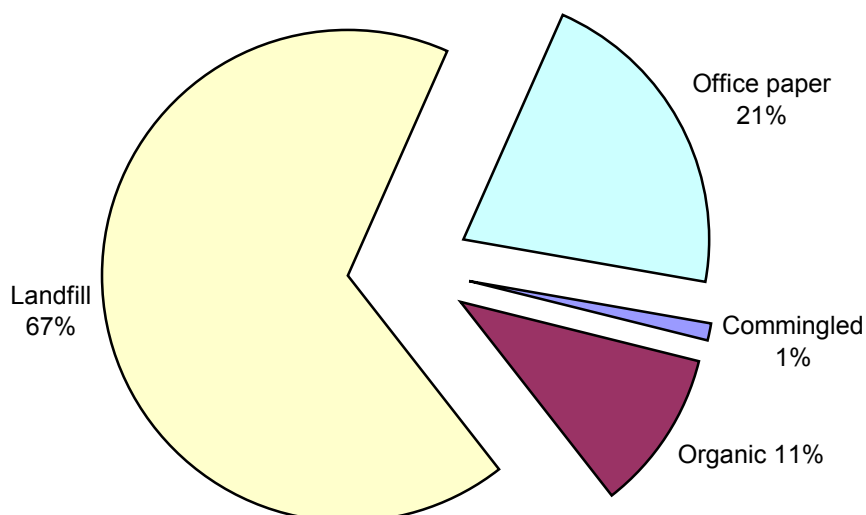


Table 3.2 Comparison of Recycling and Landfill Streams by weight and volume

Waste Stream	Weight kg	% of Total by Weight	Volume Litres	% of Total by Volume
Recycled	5.3	67%	93	81%
Landfilled	2.6	33%	21	19%
Daily Total	7.9	100%	114	100%

Analysis

These results indicate that ECS's recycling systems are functioning well, with 67% of all waste (by weight) being recycled. It also indicates that there is room for improvement given that 33% of the material being sent to landfill is recyclable.

Table 3.3 Contamination Rates of Recycled Material

Material	Recyclable Weight kg	Contam. Weight kg	% of Contam. by weight	Recyclable Volume kg	% of Contam. Volume Litres	% of Contam. by Volume Litres
Cardboard	1.2	0	0.00%	65.0	0	0.00%
Commingled	0.60	0.111	15.61%	2.65	0.46	14.79%
Paper	2.29	0.021	0.91%	25.09	0.41	1.61%
Organic	1.20	0	0.00%	0.4	0	0.00%
Total	5.29	0.132	2.50%	93.14	0.87	0.93%

Analysis

There was very little contamination found in the cardboard and organic recycling streams. A sandwich still in glad wrap, and other small plastic packaging was found in the organic waste stream, and although miniscule, this kind of contamination in the organics waste stream is important to eliminate.

Most of the contamination was found in the commingled and paper recycling streams. Some small plastic orange juice containers were found in individual paper recycling boxes at people's desks, and also plastic packaging was found in the paper and commingle recycling streams. An average rate of 1-3% by volume is within acceptable rates for these two waste streams.

Additional information

On the second day of the audit, we assessed the waste from the previous day, 16th June 2006. On 16th June there was a large meeting at the building which included lunch and refreshments for visitors. The volume and weight of the waste on this day was much higher than for an average day at the building, and was not taken into account with the data for daily waste. This kind of a meeting is held very infrequently.

However, we found a large volume (around 15 litres) of organic material from the catering, in the landfill wheelie bin. Over 20 litres of commingled material was also found in the landfill waste stream from this day. This may have simply been a training issue with the cleaner who cleaned that week. If so, this could easily be rectified.

Also, the paper waste is put into the paper recycling wheelie bin still in the black garbage bag it was collected in. Paper should always be placed into the wheelie bin without plastic bags and packaging, as this is contamination. Other items such as tissues are not recyclable in the KS Environmental paper recycling collection and are considered as contaminants.

Ducted vacuum system

During the audit the central ducted vacuum system was investigated. Approximately 100 litres of vacuum dust/waste is collected each year, which is a very small amount and not generally harmful to the environment, and hence is not included in this report.

4. WASTE MANAGEMENT COSTS

There have been significant variations in the volume of waste and recycling being generated at 40 Albert Road each month this year. The Table below outlines the average costs taken from the last five months' waste and recycling collections:

Table 4.1 Current Waste and Recycling charges at 40 Albert Road

Service	Equipment	Average Frequency/Month	Monthly Cost
Landfill Waste	1 x 240-litre bins	1.4 bins	\$9.70
Organic Waste	2 x 240-litre bins	0.2 bins	\$3.18
Commingle Waste	2 x 240-litre bins	6.2 bins	\$31.90
Paper recycling	1 x 240-litre bins	4.4 bins	\$23.80
Cardboard	Bale & frame	1.2 bales	\$9.60
TOTAL CURRENT MONTHLY COSTS:			\$78.00
TOTAL CURRENT ANNUAL COSTS:			\$938.00
CURRENT COST PER m² OF OCCUPIED NLA:			\$0.94

Current average charges are around \$938 per annum for the removal of landfill and recycling materials by KS Environmental.

Annual waste removal costs for a standard commercial office building with normal operating hours and minimal food waste generation are between \$0.60-\$0.70 per annum per m² of occupied NLA. We note that the property's current rate of \$0.94 per cubic metre is significantly higher than this rate, especially given the small number of staff occupying the building.

The wheelie bins are left out to be collected when they are half full or more. Since wheelie bins are charged on a per collection basis, and not how full the bins are, one way to reduce costs is to arrange for the bins to be collected only when they are full rather than a regular weekly or fortnightly service.

Current Limitations

One limitation with current waste and recycling system currently in place at 40 Albert Road is that the paper recycling collection is for white office paper only. This means that newspaper, magazines, coloured paper, and all other paper other than white office paper is going to landfill. One alternative is to request that KS Environmental arrange a special collection for all kinds of paper for 40 Albert Road.

The other alternative is to consider changing to the Visy 'fully commingled' recycling program. This collection includes all kinds of paper, such as newspapers and magazines, plus commingled material, in the same wheelie bin. This material is then separated at Visy's Coolaroo site for recycling. This would enable staff to recycle all kinds of paper together with commingled material in their desk-side recycling box. This would also reduce contamination and capture a higher volume of commingled material. Over 36% of this recyclable material (by volume) is being sent to landfill.

This Visy 'fully commingled' collection can be arranged as a free weekly service and would reduce waste and recycling costs by around \$670 or 71% per year.

Service	Equipment	Average Frequency/Month	Monthly Cost
Landfill Waste	1 x 240-litre bins	1.4 bins	\$9.70
Organic Waste	2 x 240-litre bins	0.2 bins	\$3.18
Fully Commingled Collection with Visy	4 x 240-litre bins	10-11 bins	No charge
Cardboard	Bale & frame	1.2 bales	\$9.60
TOTAL EXPECTED MONTHLY COSTS:			\$22.48
TOTAL EXPECTED ANNUAL COSTS:			\$270.00
EXPECTED COST PER m² OF OCCUPIED NLA:			\$0.27

5. RECOMENDATIONS

Given the observations by Great Forest Australia during the audits, we would like to make the following recommendations:

1. Improve signage in kitchens so that the different waste streams are clearly visible from the front of the cupboard.
2. Install recycling facilities at the ground floor reception and kitchen.
3. Request KS Environmental offer a full paper collection, or consider a Visy 'fully commingled' recycling collection.
4. Ensure that cleaning staff are aware of the recycling system for the building and that new or replacement staff who work at the building are fully trained.
5. Ensure that building staff are aware of the items that can and cannot be recycled in each recycling stream.
6. Provide feedback to staff on results of the audit and environmental benefits of recycling, acknowledging them for their contribution to the success of the program.