

# **Waste Reduction** in Office Buildings

## A Guide for Building Managers

RESOURCE<sup>NSW</sup>

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These Guidelines have been prepared in good faith. Whilst every effort has been made to ensure that the information provided is correct, Resource NSW does not endorse any of the goods or services discussed in the Guidelines. It is your responsibility to ensure that any waste reduction system and equipment used in your building is suitable and appropriate.

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# Introduction

This booklet is designed to be a simple and straightforward guide to what building managers of office buildings can do to reduce waste in their building. Its focus is on implementing a successful paper recycling system, the greatest component of the waste stream. Topics covered include: working with cleaners, working with tenants, different systems and costs.

Reducing the waste from an office building should not be difficult or time consuming. This booklet aims to make implementing a waste reduction program quick and easy – and cost effective!

## Why reduce waste?

Recycling is not new. Most homes in NSW now have a recycling bin. By simply putting paper, cardboard and drink containers in their recycling bin, NSW residents save hundreds of thousands of tonnes each year from going to landfill.

Governments and the community are looking to the commercial sector to match the performance of the community recycling schemes. The State Government has legislated that waste should be treated according to a “waste hierarchy”: first – reduce, second – recycle, third – dispose. Over the next few years, you will be faced with increasing pressure to implement a wide range of environmental measures in your building, including a waste reduction program.

Increasing tenant awareness of environmental issues, and the potential for cost savings, will lead to more tenants requesting recycling and other environmental initiatives in their buildings.

## Why you want to reduce your waste

Reducing the amount of garbage that your building is sending to landfill can have direct benefits to your work and your bottom line, because:

### **It will save waste costs**

Recycling is cheaper than garbage disposal;

Reducing waste management costs is also a way of impressing upon your senior management the unique initiatives you have considered in better managing day-to-day building operations;

### It can help streamline building operations

Most of the waste from an office building is paper. Separating out the paper leaves you with a much smaller amount of putrescible waste to be handled;

### It can help meet corporate environmental commitments

Many companies now have environmental policies, or have made a public commitment to reducing their impact on the environment. Either your tenants or your own company may report on their environmental performance in their annual report. Reducing waste is an immediate, tangible and measurable way of improving environmental performance; and

### People in NSW believe in recycling

If you can recycle at home, why can't you recycle at work?

## What do I have to do?

The greatest barrier for many building managers is finding the time to implement a waste reduction program. A few simple measures, however, can make a big difference. There is a checklist at the back of the Guide that should make this easier and throughout the Guide are tips and hints to help the process succeed. There are also some sample letters, memos and posters you can use.

Remember, there are significant potential economic and environmental benefits associated with implementing simple recycling systems.



# Where to start?

Before making any changes to the waste management system in the building, it is well worth spending an hour or two reviewing what waste is being generated and how it is dealt with.

The best place to start is to look in the garbage and recycling bins. From a quick walk around the building and into the waste room, it will be immediately obvious what is the major component in the waste stream and whether any recycling systems you currently have in place are working. In some cases, this exercise alone will reveal a number of simple measures that would immediately improve your waste management system.

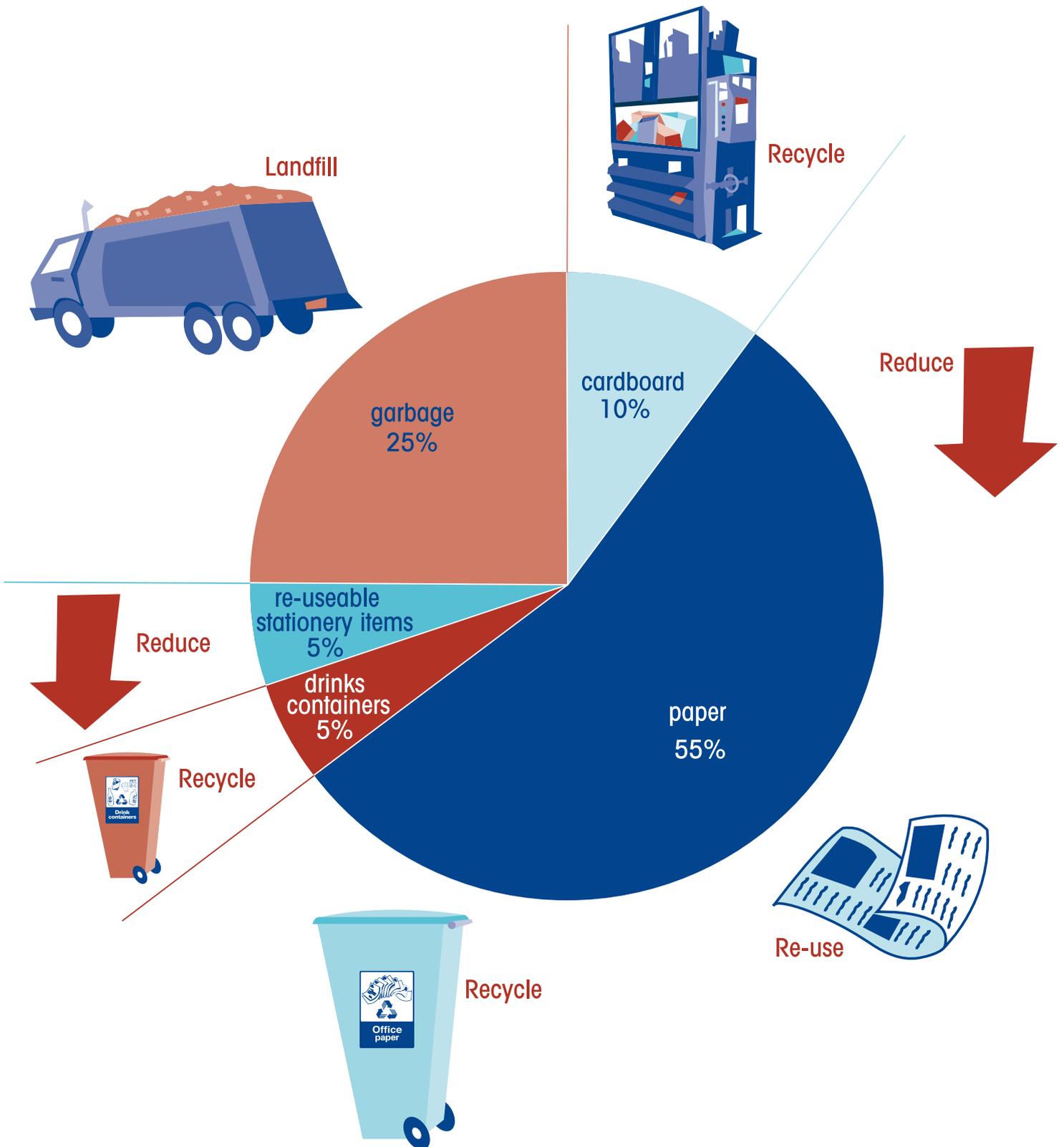
Another important exercise when starting a waste reduction program is to look at the waste and recycling invoices for the last 6 to 12 months. This will tell you exactly how much waste is being generated, whether waste generation is seasonal, what the waste removal costs are and whether there are any savings to be made. This information is important for convincing both tenants and building

owners to support implementing a waste reduction program.

There have been a number of government-funded studies into what is in the garbage of an office building. Recently, Resource NSW sorted through the waste of five office towers and found:

- Most of the waste stream was recyclable paper;
- Most of the paper was printed only on one side;
- In buildings with a paper recycling system, half of the recyclable paper was still ending up in the garbage; and
- A surprising amount of new or barely used stationery items were thrown out.

## Composition of "typical" office tower waste



# The right system

In waste studies conducted by Resource NSW, all the buildings already had a paper recycling system in place. However, in all the buildings less than half the paper was finding its way into the recycling system. Even buildings that have a paper recycling system in place can reduce waste further through improved use of the system. Other easy ways of reducing waste include recycling cardboard (ask your paper recycler if they will accept cardboard in with the paper) and recycling drinks containers. Your recycling contractor may collect other recyclable items from your building in separate wheelie bins or mixed with the paper and cardboard.

There are a number of ways to implement a recycling system in an office tower. The trick is to mix and match available equipment to suit you, your tenants, the cleaning staff and the recycling collectors. It is a good idea to talk to each of these parties before putting in a paper recycling system.

## Common problems

Many office buildings already have recycling systems in place. However, the studies conducted on waste in office buildings revealed that recycling rates are still quite low, and that there can be a lot of contamination in the recycling system. Building managers can become disheartened if they put a lot of effort into putting in a recycling system and it fails. Some of the common problems encountered with recycling systems are:

- Cleaners putting separated recycling into the garbage bins. Introduction of a paper recycling system can mean a lot of extra work for the cleaners. The priority for cleaners is to empty bins as quickly as possible. Minimising the amount of extra time/effort required by the cleaners will maximise the chance of gaining their co-operation. In some cases, there is merely the perception of there being extra work. Being clear about what exactly is required may alleviate some of their concerns;
- Office staff putting non-recyclable material in the recycling. Some people will put whatever is in their hand in the first/easiest bin. Having non-recyclable material in the recycling is a real problem because if

there is too much contamination the whole lot will have to be thrown out and the building will be charged a penalty; and

- Office staff putting recyclable material (for example paper) in the garbage. If it is easier to put paper in the garbage bin than to put it in the recycling bin, then the temptation will be to do just that. This means that not as much material is being recycled as there could be.

### Some potential solutions

The keys to a successful recycling program are clear communication and predicting how people behave. This section presents a few examples of systems in place at different office buildings, and the positives and negatives of each system. Some hints that apply to all recycling systems are:

1. Always place a garbage bin next to a recycling bin – this reduces the likelihood of contamination;
2. Make sure all garbage and recycling bins are clearly labelled. You should be able to read the label from at least five metres away;
3. Put labels and bin stickers on the bins before giving them to the tenants. Don't rely on the tenants to do this; and
4. Hand out simple posters (not too big) that tenants can put up telling office staff how to use the new recycling system.





In the office

The centralised paper recycling system is the simplest to implement for building management and cleaners.

## System 1. Centralised paper recycling

This system is the simplest to implement for building management and cleaners. A blue wheelie bin for paper recycling is put in each office, preferably next to the photocopier and/or the printer. It is important that a garbage bin is put next to the paper-recycling bin to help prevent people putting garbage in the paper bin. When the bin is full, the cleaners take it to the waste room, loading dock or car park for the paper recyclers to collect.

### Advantages:

- There is likely to be lower contamination in the paper recycling because it takes more effort to recycle than to put material in the garbage bin.
- Tenants are responsible for managing the paper they produce and putting it in the recycling (just like at home).
- Waste and paper are removed from the office using completely separate systems, which means cleaners are

less likely to mix the recycled paper in with the garbage.

### Disadvantages:

- The system relies on the tenant's staff to do their bit. If the system is not made as convenient as possible, staff might not use it all the time.
- Sufficient space is required near the photocopier and/or printer for storing a large recycling bin. This can be a problem in cramped or small offices.

### Suitable situations:

- large offices;
- when "retrofitting" a system, that is, introducing a system in the middle of a cleaning contract;
- where minimal change for cleaning staff is preferred;
- where there is limited extra money for a recycling service;
- where there is a high level of office worker compliance.

In the waste room



## System 2.

### Each desk has a small paper bin and a small garbage bin

The way to make this system work is to ensure that the garbage bin and the paper bin look very different to each other. It is also important cleaners can pick up both the waste bin and the paper bin at the same time. This means they need a trolley that holds two bags - one for the garbage and another for the paper. If they have to visit each desk twice, once to pick up garbage and again to pick up paper, they probably won't do it. Everything will end up in the garbage.

#### Advantages:

- This system is convenient for office workers, which should lead to more office workers recycling and more paper being recovered.

#### Disadvantages:

- Cleaners may perceive that this system is doubling their workload. They may not co-operate with such a system.
- It relies on cleaners collecting the contents of the bins separately, and not just emptying everything into the one bag.

#### Suitable situations:

- where a high level of convenience for office workers is very important;
- where the co-operation of cleaning staff is guaranteed.



*In the office*



*In the waste room*

## System 3.

### Centralised garbage bin and a paper recycling bin at each desk

An alternative to the first system is to not only give everyone a paper recycling bin at their desk, but also to make them get up to put their garbage in a central bin. This system has potentially better savings than the central recycling bin, and means there are only one or two putrescible bins per office for the cleaners to empty.



*In the office*

#### Advantages:

- This system makes it convenient to recycle, which should lead to increased participation rates and increased recovery rates.
- It is less unpleasant for cleaners, as they only have to empty one or two garbage bins per floor, and the rest of the bins contain only clean paper.
- It can mean less work for the cleaners. Garbage bins need to be emptied every day, but paper bins can be left longer. By only having to empty desk bins every second day, cleaning costs can be reduced.

#### Disadvantages:

- There may be higher levels of contamination due to it being easier to put things in the recycling bin than in the garbage bin. However, as such a high proportion of the waste is paper, if most people do the right thing, it shouldn't matter.

#### Suitable situations:

- offices where very high proportion of the waste stream is paper;
- offices where there is a high awareness level.

*In the waste room*



# Working with the cleaners and waste collection contractors

Securing the co-operation of the cleaning staff is crucial to the success of any recycling program; they are the ones who transfer the material from the office to the collection point. Cleaners and cleaning companies may resist the introduction of recycling because they believe it will take them longer to empty the bins, effectively costing them money.

As mentioned earlier, the most common problem with cleaners and recycling systems is with cleaning staff mixing the source-separated recycling with the garbage and putting both in the garbage skip/compactor. During the studies on office towers, cleaners were asked why they were putting the recycling in the garbage. There were a range of responses, but the most common one was that they had been told to do so.

The impact of this behaviour goes beyond the lost opportunity to recycle the separated paper, and saving disposal costs. Sooner or later, the tenants will discover that their recycling efforts are being undermined. This makes the cleaners, and the building management, appear deceitful. The cleaning service is the most visible aspect of the building management for most

people who work in the office. In terms of image and relations with tenants, it can have a negative impact to implement a recycling system only to be caught putting all the recycling in the garbage.

The key to success is to ensure that recycled materials stay separated throughout the handling process. To achieve this, the following measures might help overcome potential obstacles.

## **Write it into the contract**

The best time to introduce a recycling system is at the beginning of a new contract. The tender documents and contract documents should clearly and explicitly state what is expected of the cleaners. This is particularly important for labour-intensive systems such as each desk having a garbage and paper recycling bin.

If introducing recycling into an existing contract, it would be prudent to either give the cleaning company the opportunity to revise their price and have the extra tasks written into the contract, or choose the least labour-intensive system. The right configuration could even save the cleaners some time and effort.

There is an increasing move for the consolidation of contracts, so that often the bulk of building services are let as one contract to a facilities manager, or to a cleaning company. While this streamlines administration, it can make it extremely difficult to institute change. The tenants and building manager have no direct contact, and no direct control over the waste collection contractor/s. This inflexibility can lead to increased costs if there is a change in service for any reason, such as implementing or increasing recycling services.

## Waste Collection Contracts

As for most services, a waste and recycling collection service is a balance between quality and cost. Ideally, a collection service should offer flexibility and a high level of customer service. However, this costs money.

The best way to achieve cost-effective flexibility is to let a combined garbage/recycling collection service contract to the one (reputable) company. Combining the waste and recycling services allows the collection company to offset the increase in the recycling costs against the savings in waste disposal, and pass savings onto the customer. If separate companies hold each contract, then each will be reluctant to reduce their service fees to benefit the other. The temptation is to sign the lowest - cost garbage collection contract. However, this can result in a substantial increase in costs once recycling is implemented, as this may require a new, separate contract that is extra to the existing garbage collection service.

The range of services included in the fee should be balanced against the cost. A quality garbage/recycling contract should clearly state whether the following are

included, and whether there are any extra costs:

- Garbage container size and frequency of collection;
- Recycling container size and frequency of collection;
- Alteration of proportion of garbage to recycling containers should recycling rates increase or decrease;
- Customer determination of collection time;
- Extra fee to go inside the building or to travel excessive distance from truck to container;
- Rent and/or repairs on collection containers;
- Additional or non-scheduled pick-ups;
- Regular cleaning of containers;
- Excess charge if a container is over-full or if the weight of the container exceeds a maximum amount;
- Recycling education program or materials for tenants and cleaners; and
- Ability to access your site with their trucks.

## Cleaning Contracts

On one hand, having the waste contract managed by the cleaning company gives the cleaners a vested interest in ensuring the recycling works, so they can realise the cost savings. However, where a cleaning company has engaged a small waste operator who does not offer a recycling service, the temptation will be to put all the waste in one container and dispose of it to landfill.

Existing contracts may not allow variation in the waste/recycling collection arrangements. When developing a new contract, building managers should take the opportunity to incorporate clauses that require cleaners to support any recycling initiatives that are implemented by the building, or even by individual tenants.

## Sample Clauses - Waste Collection Contracts

<b>Provision of service</b>	The service provider will provide a waste and recycling collection service to the client as per the service levels and fees listed in schedule 1.
<b>Recycling assurance</b>	Where materials have been separated for recycling, the service provider will make all reasonable efforts to ensure the material is recycled [according to its highest resource use].
<b>Contamination penalty</b>	The client agrees to pay a penalty clause for contamination in the recycling as per schedule 1, on the condition that the service provider can provide documented evidence of continued contamination above agreed levels in schedule 1.
<b>Flexibility</b>	The client reserves the right to review the number and size of containers for waste and recycling every 3 months. The service fee will be altered to reflect the change in service. The new service will be costed according to schedule 1.
<b>Collection times</b>	All waste and recycling will be collected between the hours of [12 midnight] and [6am].
<b>Non-scheduled pick-ups</b>	The service provider will make non-scheduled collections of waste and recycling as requested by the client. The fees for non-scheduled collections are as per schedule 1.
<b>Collection point</b>	The client will be responsible for placing the waste and recycling bins at the collection point indicated on the site layout in schedule _.
<b>Bin stickers</b>	The service provider will ensure that all waste and recycling collection containers are labelled with the appropriate sticker from Resource NSW's Standard Signs for Waste and Recycling Bins.
<b>Reporting</b>	The service provider will provide the client with written [monthly] [quarterly] reports on the waste and recycling service, as per schedule _.

### Schedule 1

#### Scheduled collections

Material	Containers	Collection frequency	Cost	Contamination penalty
Garbage	1x10m <sup>3</sup> compactor	Tuesday and Thursday of each week	\$200 per pickup plus \$100 per month unit rental	NA
Paper	10x240L MGBs	Monday and Wednesday of each week	\$3 per MGB per collection	\$5 per MGB per collection
Cardboard	Cardboard baler	Friday of each week	\$100 per pickup plus \$20 per month unit rental	\$100 per pickup

#### Non-scheduled collections

Material	Containers	Cost	Contamination penalty
Garbage	1x10m <sup>3</sup> compactor	\$400 per pickup	NA
Paper	10x24L MGBs	\$3 per MGB per collection	\$5 per MGB per collection
Cardboard	Cardboard baler	\$100 per pickup plus \$20 per month unit rental	\$100 per pickup

## Sample clause - cleaning contract

Compliance with Waste Management System. The waste and recycling system at the premises is as per schedule 1. All waste and recycling will be collected and removed to a location designated by the client. Where material has been separated for recycling, the service provider will ensure recyclable material is kept separate from the general waste. At all times, the service provider will comply with the client's waste management system [and Environmental Management System].

Collections performed as directed. Recycling and waste collections will be performed as directed by Building Management. Recycling and waste collection systems may alter from time to time, at the discretion of Building Management.

Recycling contamination penalty. Where the client finds that cleaning staff are causing contamination of the recycling, the service provider will pay any financial penalty for contamination charged by the waste and recycling collection contract.

### Put up signs

Simple, graphical signs can make it clear what material goes where. The most important sign will be in the waste room, where cleaners are out of sight of watchful tenants. An example of the type of sign that should be posted in the waste room is given on page 7.



Making sure all bins and collection trolleys are clearly marked may help, also. Graphics and bin labels can be downloaded from the internet ([www.resource.nsw.gov.au/officebuildings/links.htm](http://www.resource.nsw.gov.au/officebuildings/links.htm)). Page 7 gives example signs to be posted in offices. These might also be useful for letting cleaners know what to do and why, as well as the tenants.

### Talk to the cleaners

Face-to-face communication with the cleaning supervisor, and preferably the cleaning staff, will impress on them that you are serious about what is required of them. It also gives them the opportunity to ask questions, give feedback and make suggestions. Ideally, the cleaners will be able to help tailor your waste and recycling system to suit your building, resulting in a better outcome for everyone. A good time

to do this is when the new recycling equipment is installed. A short training session will be necessary for OHS reasons if you are installing a baler or compactor. This should include a briefing on the recycling system as a whole.

### Monitor waste and recycling amounts

Your waste and recycling contractor should be able to provide monthly feedback on the amount of material collected from your building, and the approximate contamination levels (i.e. non-recyclable material in the recycling bins). This information is often written on the invoice. By monitoring this over time, you can see whether recycling is steady, improving or erratic. If it is erratic, then there may be a breakdown in the system somewhere.

# Working with the tenants

The best way of reducing waste is to encourage your tenants not to produce it. This will save them money, as well as saving you money. A copy of “Waste Reduction in Office Buildings, A Guide for Tenants” is available from Resource NSW ([www.resource.nsw.gov.au/officebuildings](http://www.resource.nsw.gov.au/officebuildings)).

Some tenants, such as State Government departments and large organisations who report on their environmental performance, will require paper recycling systems to be in place. If the building management does not provide them, then tenants will make their own arrangements. Building-wide systems are more efficient and cost effective. They also limit the number of collection contractors having access to the building. If one or more tenants require a paper recycling system, it is probably best from a security and operational point of view for building management to make arrangements on behalf of all tenants.

Building-wide recycling systems work better the more tenants participate. This also improves the cost savings to the building as a whole through avoided disposal costs. Therefore, if the majority

of tenants would like a recycling system, then a building-wide system should be implemented, and other tenants should be encouraged to participate. There are a number of measures that can help improve participation rates.

## Tenancy Leases

The key to achieving a successful, cost-effective recycling service in an office building is to ensure that as many tenants actively participate as possible. Using tenancy leases to require tenants to recycle has several benefits:

- It reduces garbage (and hence overall garbage disposal costs);
- It provides a mechanism to penalise tenants who consistently contaminate the recycling bins;

- It lets tenants know up-front that there is a centralised recycling system, thus preventing them from engaging their own contractor; and
- It lets tenants know up-front what is expected of them in relation to the waste and recycling service.

Example clauses that can be inserted into tenancy agreements include:

## Sample clause - tenant leases

**Building Management to arrange all waste and recycling collections.** Building Management will arrange all waste and recycling collections on behalf of the client. No waste or recycling collection contractor is permitted on the premises without permission in writing from Building Management.

### **Compliance with Waste Management System.**

The tenant will utilise and conform with the waste management system in the building [as outlined in schedule 1].

### **Tenants to minimise waste. Tenants will make all reasonable efforts to minimise waste from the building by;**

- a) developing and implementing a waste management plan for their operations in the building;
- b) separating waste paper for recycling, as per the waste management system; and
- c) not contaminating the recycling.

**Contamination penalty.** If the tenant is found by Building Management to be contaminating the recycling, then they will be required to pay [a penalty of \$200 per incident][any penalty charged by the recycling contractor].

**Waste from fitouts.** Tenants will pay the cost of waste removal incurred as a result of fitout or refurbishment of their office.

While tenancy clauses can be useful, they should not be relied on as the sole mechanism for encouraging tenants to recycle. Often, the person signing the tenancy agreement is not responsible for day-to-day running of the office. In large organisations, the people working in the office may never see a copy of the lease. Further, not many building managers would risk souring relations with a large tenant over whether they are recycling as much paper as they could. Ongoing education, reminders and support can be much more effective in practice.

## Building Operations Manual/House Rules

An alternative to clauses in tenancy leases is to have a Building Operations Manual, or "House Rules". A book of "House Rules" lists all the procedures that the tenant needs to know, such as parking arrangements, security, cleaning and waste. It can also include other useful information such as emergency contact phone numbers and building services. This document is given to the office manager by the building manager on their arrival, and remains in the office as a reference. That way, the people occupying the office space have ready access to the information they need.

BOMA International has a downloadable publication called "Do It Yourself Guide to Producing a Tenant Handbook" ([www.boma.org/pubs/doiit\\_th.htm](http://www.boma.org/pubs/doiit_th.htm)) that might be useful.

## Financial incentives

It may not be worth distributing the cost savings achieved through a central paper recycling system to individual tenants. However, it can be motivating to the tenants to see some benefit to them as a result of the recycling effort. If savings are achieved, tenants should be informed through a newsletter or memo. It should be highlighted that savings in waste costs can delay increases in service fees. Tenants are more likely to sustain their recycling efforts if they can see some tangible benefits, as well as being aware of general environmental benefits.

## Communication

Communication is the key to any successful recycling system. Most people are prepared to do what is asked of them, as long as it is clear what is required and it does not need much effort on their part. When introducing a recycling system into a building, it is recommended that you:

- Send a letter or memo to all tenants announcing the introduction of the recycling system. See below for an example memo;
- Make sure all bins are clearly labelled. Standard bin labels can be downloaded from the internet ([www.resource.nsw.gov.au/officebuildings/links.htm](http://www.resource.nsw.gov.au/officebuildings/links.htm));
- Post educational signs near the new recycling bins when they are introduced. Example posters are included on page 7. These are available to download electronically from [www.resource.nsw.gov.au/officebuildings/building.htm](http://www.resource.nsw.gov.au/officebuildings/building.htm);
- Send out regular reminders through memos or the building newsletter (preferably electronically). Include feedback on how the recycling is going, for example, tonnes recycled, contamination problems, etc.

To: All tenants

From: Cash Tower Building Management

Subject: Coming Soon – Paper Recycling

---

In response to requests from a number of tenants, Building Management is pleased to announce that a building-wide, paper recycling system will be introduced to Cash Tower, starting (day, month, year).

The recycling system will involve each tenant receiving one or more blue bins for used paper. Tenants are requested to place this bin in a convenient location, such as next to the photocopier or printer. Bins will be initially allocated at one bin per 1000m<sup>2</sup> floor space. It is expected that it will take approximately one week to distribute the bins to all tenants.

Full paper bins will be removed and replaced by the cleaning staff on an as-needs basis. Each office will receive a small poster that explains the new system.

If you have any queries about the new service, please contact me on \_\_\_\_\_.

Kind regards

Bill

# Reducing Waste in Office Refurbishments

During an office refurbishment there are three phases that require different strategies to reduce waste.

## 1. Design

## 2. Strip-out

## 3. Construction

### 1. Design

“Designing out” waste in the first place is the best way to reduce waste in the long term.

- Write into the designer’s brief that they minimise waste and reuse/recycle materials wherever possible.
- Use modular components that can be easily reconfigured to create a flexible work space.
- Use durable materials and furnishings.
- Use materials that can be (or are) refurbished or remanufactured. (for example, carpet tiles).
- Require designers to write (and implement) a waste management plan. (Council may require this anyway).
- Reuse demolition materials on-site (for example, timber, partitions, light fittings, glass).
- Specify minimal, returnable or recyclable packaging from suppliers.

### 2. Strip-out

- Use a company that deconstructs rather than demolishes.
- Require demolishers to adhere to the waste management plan.
- Use a demolition company that has its own retail outlet for second-hand building materials. They may be able to salvage more than one that doesn’t.
- Nominate somebody to help organise the lifts and loading bays so that contractors can recycle and reuse as much material as possible (otherwise it’s easier to “throw it in the bin”).
- Get receipts from the waste company about the amount reused, recycled and landfilled.
- Some of the materials may be left onsite for reuse by the builder, for example, glass, timber, carpet underlay.

### 3. Construction

- Use a builder who is flexible and can reuse materials.
- Get materials made to measure to minimise offcuts, particularly plasterboard.
- Minimise and recycle packaging, particularly cardboard.

## Example:

When the Inner Sydney Waste Board extended their office they had extensive discussions with the designer so that any demolition was minimised. They also:

- > Re-used internal doors.
- > Used excess plasterboard as insulation within the internal walls.
- > Minimised the realignment of existing walls.
- > Steam cleaned the existing carpet instead of replacing it.
- > Purchased refurbished furniture.

# Cost Savings

The final decision is likely to be a financial one. Recycling and waste reduction measures can save a significant proportion of the waste bill. It can also contribute to the bottom line through less tangible channels, such as cleaner waste handling in the building, improved image and increased attractiveness to tenants.

The cost of waste disposal is set to increase substantially over the next decade. This is due to a number of factors, mainly annual increases in the State Government waste levy and the high costs of setting up new disposal facilities. The amount of cost savings that can be achieved depends on the configuration of the system and the nature of the contracts for cleaning and waste removal. However, a range of benefits to the building through recycling/waste reduction can be demonstrated for most buildings. Some examples of cost savings and indirect benefits are given below.

## Direct savings

### Recycling is cheaper than garbage disposal

It is cheaper for waste collection companies to collect recyclable materials than it is to collect garbage. There are a couple of reasons for this. Firstly, the collectors pay less to deliver recyclable material to waste management centres than garbage (for which there is a disposal fee and a State Government levy). For some materials, the recyclable material is free to drop off, so the cost to them is simply the transport cost. Secondly, separated recyclable materials tend to be cleaner and drier than mixed

## Example:

We saw on page 5 that a typical office tower's waste contains 55% paper. If management arrange a paper recycling system for the whole building, they can easily divert half of the paper from the garbage stream. The following is an example of a building that produces 1 tonne per day of waste.

If garbage is stored in a 10m<sup>3</sup> compactor, then it will need to be cleared about every 3 days, or approximately 10 times per month. If the cost is \$300 per clearance, then the cost of waste disposal is about \$3000 per month.

By recycling half of the paper, 275 kg per day is diverted from the garbage. This leaves 725kg per day as garbage. The 10m<sup>3</sup> compactor only needs to be cleared every 4 days, or roughly 7 times per month. The garbage cost is then \$2100 per month. If paper is collected at a flat rate of \$150 per month, the cost saving is approximately \$750 per month or \$9000 per year.

garbage. Therefore, the bins/compactors and collection vehicles can be less expensive and require less maintenance than those used for garbage. As it is relatively straightforward to recycle and is easy to transport, clean office paper is one of the most cost effective materials to recycle.

### **Don't pay to throw away air**

Most commercial businesses pay each time their waste container is emptied. Some businesses need to have waste removed every day for health and odour reasons. However, office waste tends to be quite clean. Also, for large office buildings, waste can be collected in a compactor, which means the waste is fully enclosed. Therefore, most office buildings don't need to have their waste collected every day provided they have the space

to store the waste generated over a longer period.

Previous studies of a range of businesses show that often bins are not full, or even nearly full, when they are emptied. This means that those businesses could either "make do" with smaller bins or have their existing bins emptied less frequently. It may be that extra bins are required during peak times (such as the end of the financial year). However, this doesn't mean that excess bin capacity is required all the time.

If the building uses a skip bin, flattening cardboard boxes can save a lot of space. Even better, separate boxes for recycling. A baler might be required, or cardboard boxes will need to be flattened and stacked, both for easy storage and easy collection.

## Example:

A building had a regular, three times per week pick up of their waste bin. The cleaner noticed that the bin was usually only half full when it was emptied. The building manager decided to trial a twice per week pick up. This turned out to be sufficient, and the building saved a third of its garbage removal costs.

Extra paper recycling bins were brought in for the financial year peak. The recycling bins were approximately half the cost of the garbage bins. So, a substantial cost saving was still achieved.

### Cost of contamination

Where recycling programs can end up costing more money is when the contamination levels are high. If the contamination levels are too high, the material can't be recycled and has to be dumped at a landfill. Paper recycling companies will usually charge a penalty when the contamination is too high. This is to cover the cost of disposing the contaminated material and to encourage businesses not to contaminate their recycling.

The way to keep the contamination low, and hence avoid penalties, is to have an ongoing education program with the tenants. This can consist of:

- Clear and correct stickers on the bins;
- Posters and information sheets near the bins; and
- Regular reminders in a newsletter or by memo.

The cost of these simple measures are well and truly covered by the avoided contamination level penalties. In many cases, suitable stickers and posters are available for a low cost or for free from the recycling company, the local Council or the State Government (see Appendix A - Where to go for help).

Sometimes cleaners put waste in the recycling bins. If the recycling contract is held with the cleaning company, then they will receive the penalty, anyway. If the recycling contract is held directly with the building management, then there should be some mechanism to pass on any penalties resulting from poor practices by cleaning staff. A discussion on contracts is given in the previous section.

### Example:

An office block in the Sydney CBD was paying a flat fee of \$100 per month for paper recycling. Due to consistently high contamination levels, the flat rate fee was increased to \$750 per month. Therefore, the office block was paying \$650 per month more than it needed to because people were putting the wrong things in the paper recycling bin.

### Cleaning costs

One of the barriers to implementing a paper recycling system is the real or perceived increase in cleaning costs. Even for those systems that require more time, the cost increase is negligible. For well-run systems with high recycling rates, the avoided disposal costs should cover any extra cleaning costs. If you can convince your tenants to use the system of having a paper bin at each desk and a centralised garbage bin (System 3), you can easily reduce cleaning costs.

## Example:

Studies by Resource NSW found that the waste generation rate in offices were approximately 0.03 kg per m<sup>2</sup> floorspace per weekday, of which about 0.0163 kg per m<sup>2</sup> per weekday was recyclable paper. If a cleaner (costing \$27 per hr) takes 5 minutes per 100m<sup>2</sup> floorspace to empty desk bins and take the waste down to the dock, and the cost of waste removal/disposal is \$200 per tonne, then the cost of cleaning and waste removal is approximately \$2.85 per 100m<sup>2</sup> floorspace.

A new system is implemented where waste desk bins are replaced with paper recycling desk bins and a central bin for garbage, with paper recycling costing about \$1 per tonne paper (administration fee) and the desk paper bins are only cleared three times per week. If 50% of the paper is recycled and the time taken by the cleaner to empty the central garbage bin is 5 minutes, the cost of cleaning and waste/recycling removal is approximately \$2.67 per 100m<sup>2</sup> floorspace. The savings increase as the recycling rate increases.

A simple cleaning, waste removal and recycling costing model is available on the Resource NSW website [www.resource.nsw.gov.au/officebuildings/building.htm](http://www.resource.nsw.gov.au/officebuildings/building.htm)

<sup>†</sup> source: Cleaning Makes Cents, BOMA International, 1997

## Indirect returns

Most State Government departments are now required to recycle paper and re-use toner cartridges. They are also required to report how much they recycle to the NSW Environment Protection Authority and in their annual report. Many larger companies are becoming increasingly aware of their image as good environmental citizens. Further, many companies report on their environmental performance in their annual report. One simple measure companies can do for the environment is recycle their office paper. In the future, buildings that are seeking large, long-term tenants will need to satisfy a range of environmental criteria, of which paper recycling will be the most common.

Ethical investment funds are becoming increasingly popular. People are looking to invest in socially and environmentally responsible funds. Access to these investment funds will be denied to organisations that don't comply with certain standards. Recycling and waste reduction are one aspect of a "green" building that may be eligible as an environmentally friendly property investment.

# C

## hecklist

Implementing a recycling system should be relatively straightforward, as long as all aspects are addressed from the beginning. The checklist below provides prompts for the activities that need to be undertaken if the recycling system is to be successful.

- Look at the waste management systems your building has in place, and work out where improvements can be made.
- Select recycling system and bins. The cleaners and/or the waste contractors should be able to advise you on this.
- Obtain agreement with the cleaners as to how the system will operate and any changes in work load.
- Make a case and obtain approval from the Building Owner.
- Inform tenants of the intention to implement a recycling system. Involve interested tenants in the program. Ask for suggestions and feedback.
- Label bins before distributing to tenants.
- Install recycling bins/equipment.
- Post signs in offices and the waste room.
- Make sure you receive regular feedback from the recycler/s regarding volume and contamination levels.
- Pass feedback on to tenants and cleaners through emails, memos and newsletters.

# Appendix A: Where to go for help

Resource NSW has set up an office building waste management resource web page, which can be accessed from:

**[www.resource.nsw.gov.au/officebuildings](http://www.resource.nsw.gov.au/officebuildings)**

It contains links to a range of useful publications and web sites, including bin stickers and posters.

## Other sources of information include;

Your local Council. Look on the Department of Local Government's web site for contact details

**[www.dlg.nsw.gov.au](http://www.dlg.nsw.gov.au)**

The Property Council **[www.propertyoz.com.au](http://www.propertyoz.com.au)**

EcoRecycle Victoria **[www.ecorecycle.vic.gov.au](http://www.ecorecycle.vic.gov.au)**

California Integrated Waste Management Board **[www.ciwmb.ca.gov](http://www.ciwmb.ca.gov)**

NSW Government **[www.livingthing.net.au](http://www.livingthing.net.au)**

Building Owners and Managers Association (BOMA) International **[www.boma.org](http://www.boma.org)**

EcoOffice **[www.ecooffice.com.au](http://www.ecooffice.com.au)**

Ethical Investor Magazine **[www.ethicalinvestor.com.au](http://www.ethicalinvestor.com.au)**

Sustainable Energy Development Authority (SEDA) **[www.seda.nsw.gov.au](http://www.seda.nsw.gov.au)**

Environment Australia Public Environment Reporting

**[www.ea.gov.au/industry/sustainable/per](http://www.ea.gov.au/industry/sustainable/per)**

National Australian Building Environmental Rating System (NABERS)

**[www.ea.gov.au/industry/waste/construction/abers.html](http://www.ea.gov.au/industry/waste/construction/abers.html)**

## Appendix B: Waste and recycling equipment

### Desk bins



Desk bins are generally approximately 10 litres in volume and come in a range of shapes. It's a good idea to have solid bins for garbage (to prevent leakage) and bins you can see through for paper (so the cleaners and everyone else can see if people are trashing the paper recycling). Cleaners should be given permission to leave paper-recycling bins that have garbage in them. Some paper recyclers provide a small cardboard box for each office worker to keep at their desk and put paper in.

### Mobile Garbage Bins (MGBs)



Bin Type	120L MGB	240L MGB
Height	940mm	1080mm
Width	485mm	580mm
Depth	560mm	735mm

MGBs are good for paper recycling systems as they hold a large amount of material and are easy to move. They are generally used for transferring the paper from the office area down to where the recycler will collect the paper.

### Bulk bins (skip bins)



Bin Type	1.5m <sup>3</sup>	2.0m <sup>3</sup>	3.0m <sup>3</sup>
Height	910mm	865mm	1225mm
Width	905mm	1400mm	1505mm
Depth	1810mm	1830mm	1805mm

*NB: Dimensions are a guide only and differ slightly according to the manufacturer.*

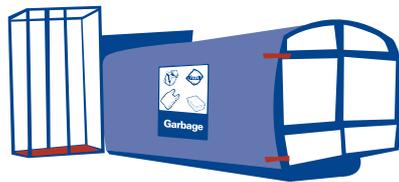
Most bulk bins are collected using a front-lift truck, which requires a high clearance (approximately 6m). If storing waste in an underground carpark, it is unlikely that a bulk bin can be used.



## Vertical baler

Vertical balers are good for buildings that generate a lot of cardboard. The baler squashes the cardboard into rectangular bales, which are easier to store and handle than large amounts of loose cardboard.

Safety features must be checked before installing and using any sort of compaction equipment.



## Compactors

Compactors are good for buildings that generate large volumes of waste, but have only a small space in which to store it. Typically, units compress the waste to approximately half its original size (2:1 compaction rate). Higher compaction rates are possible.

Compaction units are generally used for garbage. However, in office towers, where approximately 60-70% of the waste stream is paper and cardboard, it might be convenient to use a compactor for paper and cardboard. The main drawback is that if garbage is put into the compactor, the recycler doesn't find out until it is unloaded at the paper recycling plant. Then the whole load has to be picked up and transferred to the tip. This all takes time and costs money. So, it is likely the building will be charged a penalty if this occurs. Therefore, compactors should only be used in buildings where a very high percentage of the waste is paper and cardboard, and the cleaners can be relied upon to keep garbage out of the paper compactor.

As for balers, safety features of any compaction unit must be checked prior to installation and operation.

## Appendix C: The hard sell: Making a case to building owners

Below is an example memo to send to building owners seeking approval to introduce a paper recycling system in the building. The focus is on the potential cost savings, as well as providing a service to tenants. Basically, the larger the building, the more waste is generated, and the greater the potential savings.

To:

From:

Subject: Introduction of a paper recycling system into Camelot Tower, 13 Gallahad Street

Arthur,

A number of tenants in Camelot Towers have requested that building management introduce a building-wide paper recycling scheme. In particular, Merlin Enterprises, one of our largest tenants, is required to have access to paper recycling as part of their own environmental targets.

I support this initiative, as I believe it will be good for the image of Camelot Towers and has the potential to save on the building's waste removal costs.

I have contacted [a number of] recycling companies, including the building's current waste removal contractor. From the prices obtained, I recommend the following configuration:

	Paper recycling	Garbage removal
Current arrangement		Compactor removed three times per week = \$900 per week
Proposed arrangement	Flat rate \$300 per month (\$75 per week)	Compactor removed twice per week = \$600 per week

Resource NSW estimates that the waste from a typical office tower is approximately 50-60% paper. Therefore, the tower only needs to recycle half of the paper in the waste to achieve a cost saving of around \$225 per week. We believe we can achieve this with relatively little effort by using the free education resources available from Resource NSW.

I have discussed the proposal with the cleaning company and the cleaning supervisor. Both have agreed to support the new system.

If you have any queries, please contact me at your convenience.

Kind regards,

Lance

# Appendix D: Example Newsletter

Edition 1, July 2001

**AUSTRALIA SQUARE** **Don't Be Square About Waste...**  
Australia Square is getting really serious about reducing waste.

**This is how much waste the office areas at Australia Square throw out in ONE DAY.** Imagine this amount multiplied by all the similar sized buildings in Sydney!

**If you segregate your waste - it is recycled!**  
Feedback that we have received from many of the tenants is that their recycling efforts are in vain as "the cleaners put all the recycling into the same bin as the garbage".

**Do you have the right bins?**  
Everyone should have a paper recycling bin and a garbage bin. If you do not have the right bins, please contact Anthony Clinch at Berkeley Challenge (Australia Square's cleaning contractor) on 9494 0000 or anthony\_clinch@berkeleychallenge.com.au  
The Australia Square Waste Reduction Team is also looking at the disposable packaging in place in the food court, and conducting a glass recycling trial in the public place areas (focussing on Ryan's Bar).

**Did you know?**  
Australia Square is working with the Southern Sydney Waste Board and Waste Audit and Consultancy Services to minimise waste.  
**Facts:**  
• Australia Square generates over 3 TONNES of waste every DAY.  
• Nearly 40% or over 1 TONNE of this waste can be recycled EVERY day.  
• Australia Square tenants could save 38,000 reams of paper each year by double siding.

**Why Waste Makes No Cent\$**  
Available landfill space is declining and as landfills become scarce, disposal costs increase.  
NSW waste legislation has recently been reviewed with a key outcome being that landfill levies will be lifted from \$17/tonne to \$25/tonne over the next few years.  
Waste disposal costs will therefore rise from about \$72/tonne up to \$100/tonne depending on the landfill your waste is disposed at (this does not include your bin rental or transport costs).

**Good News - your recycling IS being recycled!**  
The cleaners have two sections in their wasterecycling collection trolleys. The contents of your garbage bins are emptied in the black garbage bag, and your paper recycling is emptied into the yellow bag, which in turn is emptied into the blue recycling bins.

**Blue paper recycling bins.**

**Australia Square's waste reduction target**  
50% reduction in waste disposed to landfill.

**It's a partnership**  
The project at Australia Square is a team effort. Jones Lang LaSalle, Berkeley Challenge, Bovis Lend Lease, the Southern Sydney Waste Board and Waste Audit and Consultancy Services are all working together to improve waste management.

**The Summit Restaurant scales new heights in waste reduction**  
The Summit Restaurant has some really innovative systems in place. These initiatives include:  
• Recycling their glass;  
• Using reusable containers for measuring out portions for meals - this means that during busy times they are not wasting food by putting too much on people's plates (which won't be eaten);  
• Utilising their surplus orange peels and garnishes to flavour sauces - other restaurants throw these away and buy additional oranges for flavourings.

**We're famous**  
Have you seen the TV advertisements on waste paper reduction developed by the NSW Government featuring Australia Square? Keep an eye out for the ads and the following logo:

**Foyer display**  
In August, Australia Square will have a waste reduction exhibit displayed in the tower building foyer. It will address specific issues identified in the Australia Square waste audit conducted in December of last year. There will be educational material available from the stand and it will show what Australia Square is currently doing, and is planning to do in terms of improving waste management systems in the future.  
**Please take the time to stop and look at the stand - it is there for YOU!**

**Other initiatives being considered...**

- Introducing waste signage throughout the office areas, common areas and in the dock.
- Introducing additional signage in the office kitchen areas to promote glass, plastic and aluminium recycling.
- Trialling new public place recycling bins, as the current ones are ineffective.
- Replacing the paper hand towel with driers or reusable/continuous towels.
- Putting reusable or totally recyclable packaging into the food court.
- Providing discounts to tenants who bring their own spill resistant mugs down for coffee from the food court coffee shops.

**Summit Restaurant use reusable plastic tubs for portion control.**

**OUR ENVIRONMENT**  
*it's a living thing*  
A NSW GOVERNMENT INITIATIVE

**WASTE AUDIT**

Please feel free to provide feedback about any of the initiatives detailed in this newsletter. We would love to know what YOU think about these issues. For further information or to provide feedback please e-mail Waste Audit and Consultancy Services on sasham@wasteaudit.com.au or phone (02) 9818 8267 OR contact Heather Kent at Jones Lang LaSalle Property Management on (02) 9236 6028 or heather.kent@apjoneslangsaile.com

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