



Ministry for the
Environment
Manatū Mō Te Taiao

A Guide to Implementing Recycling Systems in Multi-Tenanted Office Buildings

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1 Introduction

It is clear that our present levels of resource consumption and waste generation are not sustainable long term. This guide encourages positive action to improve the way we use resources and offers practical solutions to reduce our resource consumption and waste production.

In 1997 the Ministry for the Environment published a report¹ defining the state of New Zealand's environment. This report states:

New Zealand's production and consumption patterns have resulted in a large ecological footprint based primarily on extensive land use, but also on the waste-absorbing properties of our water and air. Land use pressures as well as absorption pressures from energy use and waste generation have had measurable impacts on the state of our air, water, soil and biodiversity.

To ensure a good quality of life for everyone, now and for future generations, we need to improve the way we go about doing things. In 2002 the Ministry for the Environment released *The New Zealand Waste Strategy: Towards zero waste and a sustainable New Zealand*. This document presents a vision for minimising waste, and sets out a practical programme to implement this vision.

Many people may recycle household items for kerbside collection but then forget about recycling when they get to work. The implementation of recycling systems is an important first step in addressing resource efficiency and waste minimisation issues in an office environment. This can lead to further work looking at reducing the use of resources such as energy, water and paper, and implementing sustainable purchasing initiatives.

This guide presents the recycling system designed for five multi-tenanted commercial buildings in Christchurch, along with the lessons learned during its design. It will enable property owners, property managers and businesses to facilitate the set-up of building-wide recycling systems within their buildings, and will start to address resource use issues in the workplace. Businesses that are the sole occupants in buildings will also find this guide useful as many of the practical aspects of a successful system are the same.

¹ *The State of New Zealand's Environment* (1997) Ministry for the Environment and GP Publications.

2 Why Minimise Waste?

There are a number of reasons for building owners, property managers and tenants to work together to implement building-wide recycling systems.

Marketplace image

Organisations can achieve a better marketplace image through demonstrated responsibility toward the environment. Customers, clients and the general public are increasingly demanding that organisations ‘do the right thing’. Promoting your efforts in the local media can attract new customers and enhance relationships with existing customers.

Financial savings

Recycling isn’t expensive. In fact there are financial benefits in waste minimisation and recycling. Recycling services are often priced at such a level that they are competitive or cheaper than sending material to landfill. For example, the Royal & Sun Alliance Centre in Auckland is saving \$6,000 per annum on landfill fees through implementing a recycling system.

Staff morale and team building

There are positive social aspects to recycling, such as improved staff moral from knowing they are looking after the environment, and as a vehicle for team building by providing a common project for staff to work on outside of their everyday roles.

Reduced environmental impact

Removing recyclables from the waste stream lowers the environmental ‘footprint’ of the building through reducing waste to landfill. In addition, the production of goods made out of the material recycled will generally use less water, electricity and other resources than making products from virgin materials. This further reduces resource use.

Resource efficiency

A recycling project can be the initial project in a larger programme to improve the resource efficiency of the building. Other areas of resource use that might be addressed include looking at reducing energy and paper use, and sustainable purchasing. For more information, see the Ministry for the Environment’s website (www.mfe.govt.nz).

Why work together to minimise waste

Small to medium enterprises (SMEs) make up a large proportion of New Zealand’s businesses. In SMEs one person often takes on a variety of roles within the organisation, so the time and resources available to address environmental issues can be very limited. The big advantage for businesses involved in a building-wide project is that tasks can be shared, minimising the input required by each individual business and avoiding duplication. A shared project also reduces the number of collection companies coming into the building and simplifies security issues.

3 How to Set Up a Recycling System

Overview

The following section shows you how to go about designing and implementing a building-wide recycling system. While there is a general order to the set-up process, some of the steps below are interlinked and you should read the whole section before starting the design process. The steps involve:

1. gaining support for the project
2. developing a project plan
3. communication and promotion
4. undertaking a waste audit
5. cost–benefit analysis
6. system design
7. implementation
8. measuring to manage.

Step 1: Gaining support for the project

One of the keys to a successful recycling system is to ensure the tenants, property manager and cleaning firm take ownership of it. The support of all parties should be gained right at the outset of the project and regular contact maintained to encourage this ownership.

The property manager

The support of the property manager is essential, as he/she will know all of the tenants and so is in an excellent position to help with co-ordination, design and distribution of information. The property manager is also likely to be the person who ensures the ongoing operation of the recycling system. If you are not the property manager then it is important that you meet with the property manager early.

The cleaning firm

Depending on the building, the property manager may also manage the cleaning contracts and waste disposal services. Once support is gained from the property manager, contact should be made with the cleaning firm. The cleaners will be key to the implementation of the recycling system. They can give a clear description of how the solid waste is currently collected and how and where it is disposed. Some cleaning firms also have expertise in setting up waste minimisation/recycling systems.

Tenants

A project outline can then be presented to tenants at a building-wide meeting. The aim of this meeting is to gain support for the overall project concept. Areas to focus on to gain this support include the benefits of implementing a building-wide recycling system (see section 2), and letting tenants know they can participate fully in developing system design criteria, which should ensure that their needs are met (see Step 6: System design). These criteria could include ensuring the system is easy to use and accessible to all staff, and that it maintains the professional image of the building.

Once support is gained the project can be advanced by a ‘champion’ or a group.

- A project champion can be appointed to facilitate the project. This would most likely be the property manager or the person who initiated the meeting.
- A group comprising the property manager, representatives from tenants and the cleaning firm can meet on a regular basis to develop a project plan. The advantages of working as a group include sharing workloads and ensuring the requirements of all parties are met as the project proceeds.

Some business tenants may not be interested in actively taking part in the project. In these cases it is important to maintain a key contact within the tenancy to assist with staff education and promotion of the system once it is implemented (see Step 3: Communication and promotion).

Step 2: Developing a project plan

It is a good idea to develop a plan for your waste minimisation project to help provide continuity for the project if team members change, and to document activities and progress. The plan is a written record of your programme and should include:

- a statement or reference to a statement that demonstrates management (building and tenant) support for the project (eg, a policy statement, a line in the annual plan or a letter from management)
- the goals of, and timeframe for, your project
- a description of your team, including members, roles and responsibilities
- a list of tenant representatives for communication
- a plan for how you will communicate and report progress of your waste minimisation programme (see Step 3: Communication and promotion).

The plan will be a living document and will be added to as the programme progresses.

Step 3: Communication and promotion

Experience has shown that changing the habits of staff is often the hardest challenge when implementing recycling in offices. Effective communication raises staff awareness of activities and encourages participation. It is essential to have clear and regular communication during the design stage, a well-planned promotion when the system is put in place, and ongoing communication of results to all staff within the building. There should be a primary contact within each tenancy who can liaise with staff members, thus building a relationship with each business in the building.

Write a communication plan at the beginning of the project that identifies:

- who you will communicate with (tenant contacts, cleaners, etc.)
- what you will communicate (eg, activities, progress, achievements, ways for staff to become involved)
- when you will communicate (eg, monthly, when milestones are reached)
- how you will communicate (eg, team meetings, notice-boards, company newsletters, web pages).

A combination of approaches can work best. For example, you may decide to provide a one-page written report to the senior management of each tenancy and the cleaning firm(s) team fortnightly, and to include an article about the project in each issue of the building newsletter.

Communication and promotion during implementation

A well-designed recycling system will only be effective if it is combined with a comprehensive educational and promotional campaign at the time it is implemented. While design criteria ensure the system is easy to use and accessible to all staff, staff habits are often the biggest hurdle to success. There are a number of ways to market the new system to staff. For example, you may want to:

- hold a ‘kick-off’ event to publicise the implementation of the system and inform tenants about what is happening
- give a presentation at each tenancy outlining why the system is being implemented, its objectives, what it involves for staff, and who to contact with questions about or problems with the system
- use building-wide e-bulletins or newsletters to promote the system
- run a competition related to recycling to raise staff awareness of the system
- develop a poster for use in staff rooms to educate staff about recycling (The MfE has examples of posters available on its website).

Christchurch City Council Good Sort Award

At Christchurch City Council a monthly Good Sort Award is given to the unit that has best sorted their materials for recycling. The cleaners judge this and the award is a sculpture made of recycled materials and filled with sweets. Results are publicised in the internal staff newsletter (see Appendix 1 for full case studies).

Ongoing communication and promotion

Ongoing and effective communication is key to creating a culture among tenants that is supportive of waste minimisation. It won't happen overnight. Communication should be linked to monitoring systems and provide feedback to staff.

Competitions and incentives increase the awareness of staff about the recycling system because they provide a talking point. They can also be tied in with the review process.

Rewarding recyclers

Landcare Research offices at Lincoln, Christchurch City Council civic offices and the Christchurch office of the Ministry for the Environment have reported positive results from such initiatives. At Landcare Research and the Ministry for the Environment, a check was done periodically to see if staff were recycling. If so, they were rewarded with a chocolate fish to acknowledge their efforts.

Consider putting a percentage of the savings made by the recycling system into a fund to cover the costs of competitions and promotions.

External communication and promotion

As well as communicating internally, you may decide to use the project as a public relations tool and communicate to a wider audience how you are minimising waste and reducing your impact on the environment. This might target local residents, local businesses, similar industries, suppliers and clients. There are many ways you can do this, such as through technical and trade journals, trade association meetings, annual reports, newsletters, community and local newspapers, and television (local and national).

Step 4: Undertaking a waste audit

Before starting the recycling programme a waste audit should be undertaken to determine the types and quantities of material that are present in your waste stream. You will also need to determine the total tonnages disposed to landfill, the costs of waste disposal, how and what materials are collected, and whether these activities are written into contracts. This information can then be used to design your recycling system, to provide baseline data to enable an assessment of the effectiveness of the system, and to provide information for use in the education of staff.

Historical data

Gather historical data on waste disposal from the building's tenants, including costs and the amount of material disposed to landfill per week, month or year. Depending on the contract with service providers, this will be recorded as either volume or tonnage of waste. A lot of useful information can be gathered from past invoices and accounting information. Alternatively, your waste contractor or cleaners may have records.

Waste sort

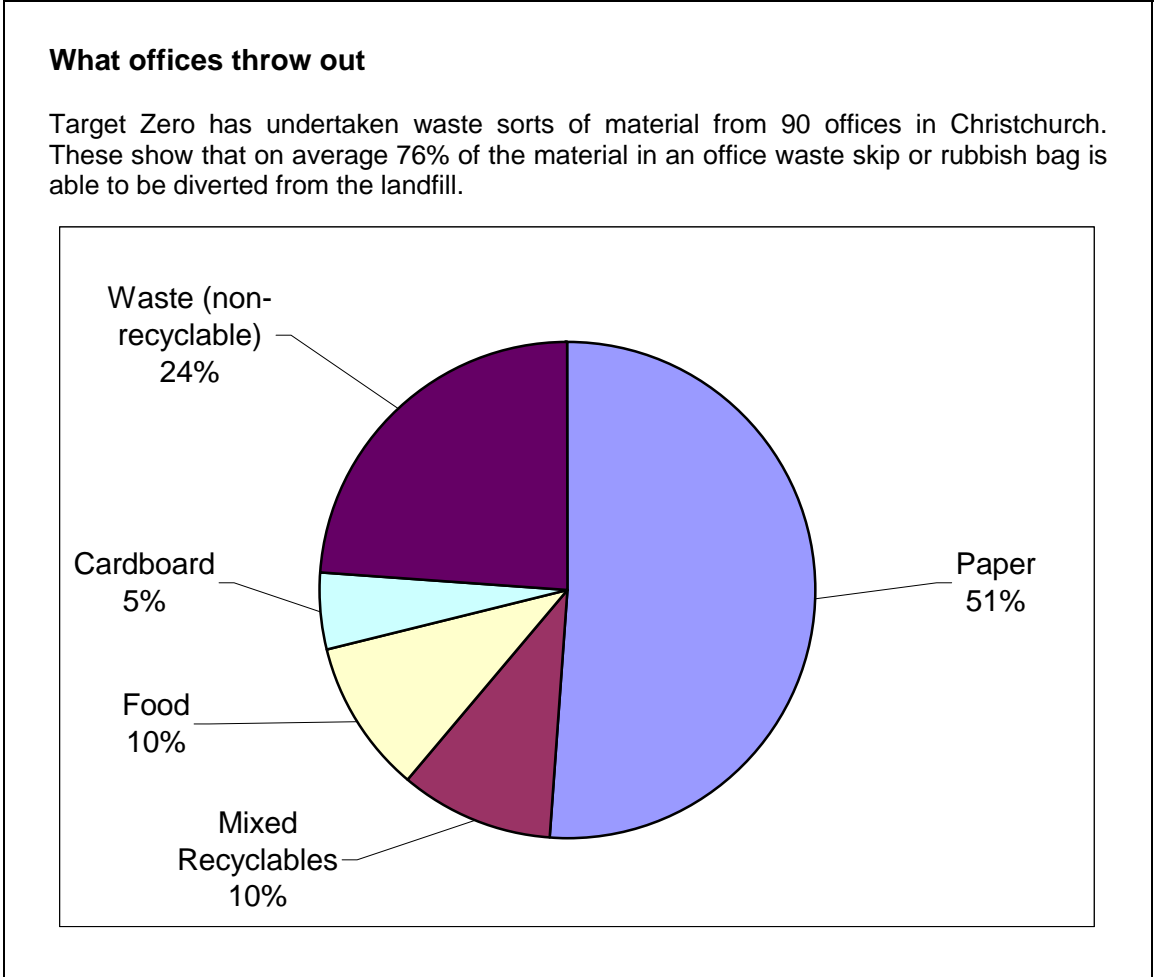
For environmental reporting purposes it is statistically preferable to have sampled a whole year's waste (ie, one waste audit of a day's waste during each season). But to gain a rough understanding of what is in your waste stream, one waste audit is fine. This involves getting the cleaner to save a day's waste (or a sample of a week's waste) and then sorting the material into categories and weighing it. Results can then be extrapolated using historical data to calculate the potential savings and reduction in waste going to landfill as the result of implementing a recycling system. (For guidance on undertaking a waste sort, see Appendix 2.) Waste audits are not difficult, but your waste contractor, cleaner or local or regional council may be able to assist you with the waste sort if you wish.



Christchurch Ministry for the Environment and Target Zero staff undertaking a waste sort in the PriceWaterhouseCooper Centre, Christchurch

Tenants and cleaners

Gather data from all tenants and the cleaning firm to document exactly how waste disposal systems operate in the building. This includes information on who collects what and when, and where it is taken. Some tenants will have existing recycling services and these should be identified. Gather information on existing contracts to collect and dispose of various materials.



Step 5: Cost–benefit analysis

Results from the waste sort can be extrapolated using historical data to give an estimate of total recyclable materials present in your waste stream per annum. From this you can calculate the potential savings to be made from implementing a recycling system, plus the potential reductions in recyclable material to landfill (sometimes cost may not be the main driver). This information can then be used to make decisions on whether to proceed with the project and what materials to include in the system if you do. You will need to make contact with local recycling service providers to get an idea of the costs involved.

Cleaners' time

A well-designed recycling system should not increase the amount of time the cleaners spend in a building. Remember that the same amount of material is leaving the building but it has been separated into different categories before the cleaners deal with it. However, if there is any increase in cleaners time and cost (due to changing cleaning practices) this may be offset by cheaper waste disposal costs depending on different cleaning arrangements and contracts (see the 'How to collect separated recyclables from each tenancy' subsection (below) for details).

Contracts

Just who benefits financially from a recycling system depends on how the contracts with cleaners and waste removal service providers are set up. In many buildings the cost of waste disposal is built into the cleaning contracts. If this situation remains after the recycling system has been implemented then any reduction in waste to landfill will result in a financial benefit to the cleaners.

If the property manager contracts a waste removal service provider and payments are volume or weight based, then financial savings through a reduction in waste to landfill will return to the property manager, as there will be a reduced skip pick-up frequency or skip size. Where payment is on a flat rate basis for a set time period there will be no financial benefit to the property manager until the contract can be rewritten so that payment is on a per tonnage or skip basis.

Calculations

In general, recycling systems for paper, cardboard, food and mixed recyclables can be implemented in offices. An example of a cost-benefit analysis for such a system is given below. This calculation is based on weight of material, but this is not the only way to calculate costs. If you are charged per 6m³ or 3m³ skip removed rather than on a per tonne basis, then savings can be calculated by working out the reduction in skip pick-ups the proposed system can achieve, or through using the same pick-up frequency but with a smaller skip at a lower charge.

Examples of a cost–benefit analysis calculation

In this example an office building has no recycling, and one tonne of material is being sent to landfill per week. Prices for collections are based on prices in Christchurch in October 2003. Note: in some parts of New Zealand there may be a charge for cardboard and paper recycling.

Existing situation

Material	Cost	% of total by weight	Estimate of annual weight (tonnes)	Cost for disposal/recycling (\$)
Waste to landfill	Waste to landfill (in Christchurch \$87.50 per tonne)		52	4,450

With the implementation of recycling

Material	Cost	% of total by weight	Estimate of annual weight (tonnes)	Cost for disposal/recycling (\$)
Paper	7 bins – emptied weekly – \$63 month	51	26.5	756
Cardboard	Free	5	2.6	0
Mixed recyclables	\$6.50 per wheelie bin*	10	5.2	1,489
Food/organics	\$9 per 205 L drum**	10	5.2	570
Waste to landfill	\$87.50 per tonne	24	12.5	1,094
Total	NA	100	52	3,909

* An average weight per wheelie bin of mixed recyclables of 23.0 kg is used in calculations. This assumes even portions of materials, and uses waste density conversion factors of:

- 13.5 kg/m³ for plastics,
- 240 kg/m³ for glass bottles
- 30 kg/m³ for cans.

** The average weight of a 205 L drum of food/organics is 82 kg. This uses a waste density conversion factor of 0.4 kg/L (ie, a 204 L drum is 82 kg).

The recycling scenario above assumes all recyclable materials are recycled and no additional cleaning time is required for the system. Under these conditions, implementing a recycling system would provide an annual saving of \$541.

Step 6: System design

Design criteria

The property manager, tenants and cleaners will all have their own requirements of the recycling system and should be involved from the outset so that they can have input into the design of the recycling system. This ensures that the needs of all parties are met, and provides a framework within which to assess the system design and outcomes. Requirements may include that the system:

- is cost neutral for the disposal of waste and recyclables
- is cost neutral for cleaners' time
- maintains the professional image of the building
- is easy to use and maintain
- is accessible to every office.

Once the system requirements have been agreed, the system design can begin. The following is an outline of the main issues to be addressed in the design stage.

Deciding what materials to recycle

What is recyclable varies between regions and over time as markets and technologies change. For the most up-to-date list of recyclable products, contact your local council or recycling contractors (note some contractors deal in different materials). A list of recycling services available in Wellington will be available on the Ministry for the Environment website as of March 2004.

Results from the waste audit will give you an understanding of what types of materials are present in the waste stream. From this and the cost-benefit analysis, a decision can be made as to which materials to target for the recycling system. In an office building the materials that are recyclable are generally paper, cardboard, food/organics and mixed recyclables (plastics, glass, cans and tins).

In many businesses toner cartridges are collected by the copier and printer service providers, and because different businesses within the building may use different service providers a building-wide collection may not be possible. If participating businesses do not already use a toner cartridge recycling firm, they can be given the appropriate contact information.

Once you have decided what materials you intend to recycle, you can set targets for reducing waste to landfill. These are then used during review and monitoring to assess the effectiveness of the system, and when reporting back to staff (see Step 8: Measuring to manage). Targets should be:

- useful and meaningful for all employees
- challenging yet achievable
- flexible
- documented.

How to separate the recyclable material

Materials are best separated at source. This means that staff should be responsible for sorting the material they create. Keep in mind that recycling is more likely to be successful if the system is easy to use by both the tenants and the cleaning staff.

Paper

For paper recycling an effective option is to supply paper collection trays/boxes at each desk, printer, fax and photocopier. Once full, trays are emptied either by staff members or cleaners into centrally located recycling bins.

Although it may be easier to put all paper into an existing document destruction service, this option is often much more expensive than recycling. Confidential paper should, however, be kept separate and sent to a document destruction company. Many tenants will already have such a system in place and will want to retain this. It is recommended that confidential document destruction remain the responsibility of individual tenants. This avoids confidentially issues, and problems where businesses operating nationwide have contracts with one service provider to service all their branches and may therefore have difficulty participating in a building-wide system. You can still check to ensure the document destruction service provider is recycling the paper that is collected.



North Shore City Council's paper recycling box



Target Zero paper recycling tray

Mixed recyclables (includes aluminium and steel cans, glass bottles, and number 1 and 2 plastics)

A recycling bin for mixed recyclables should be located in the tearoom in each office, where many beverage and food containers are emptied and a sink is available for rinsing. A sign explaining what is accepted in the bin is recommended. In some parts of New Zealand other plastics may also be accepted. Check with local service providers. Staff should be responsible for placing materials into this bin.



*Internal Ministry for the Environment
'What to put where' sign*

Cardboard

A recycling bin for cardboard should be located in a central area, preferably at or near the bins for paper and mixed recyclables. Again, make staff responsible for flattening boxes and placing cardboard in this bin.



*Cardboard recycling 'book ends'
at North Shore City Council*

Food

Food scraps require more effort to divert from the waste stream than other recyclables particularly as food waste is often perceived as ‘smelly and slimey’. However there are a proven number of ways to deal with food waste that may help address this perception and at the same time make good use of the waste. Examples include contracting a service provider to remove the material, setting up a worm farm, or using EM bokashi to compost the materials (if volumes are small and staff volunteers are available).

- *Service providers:* if you don’t want to deal with the food scraps yourself then you may be able to locate a local service provider. These businesses will either compost the material or feed it to pigs.
- *Worm farms:* these produce excellent fertiliser, and offices that use them have no problems finding someone to take it home for the garden. LandCare Research’s office in Lincoln has been operating a worm farm for several years to compost their food scraps, as have the Wellington Regional Council and stores in The Warehouse chain. Worm farms can be any size, depending on the volume of material to be composted, but generally are better suited to smaller offices. For information on how to run a worm farm, check out www.wormsrus.co.nz, or see the Christchurch City Council’s *Guide to Worm Composting* at www.ccc.govt.nz/Waste/Guides/WormComposting/.
- *EM bokashi:* this involves ‘pickling’ food scraps in an airtight container using bokashi as an inoculant or compost starter. Bokashi is a Japanese word that means ‘fermented organic matter’. It is a bran-based material that has been fermented with a liquid concentrate of effective micro-organisms (EM). This is added to your bucket and aids in the fermentation of the organic matter. The liquid produced can be used for plant food, and the solids can be periodically put into gardens or ordinary compost to complete the decomposition process. This is an effective way to manage office food scraps, but is more suitable to individual tenants than on a building wide scale. Contact Mike Daly, NatureFarm Ltd, www.emnz.com, mobile 029 942 2777.

Diverting food scraps

Christchurch City Council’s civic office diverts 5.8 tonnes of food scraps to a local pig farmer every year. The Ministry for the Environment’s Wellington office diverts its food waste to a local composting plant, and the Auckland Regional Council sends its food waste to a local Vertical Composting Unit (VCU).

If you decide to divert food scraps/organics from landfill it is a good idea to purchase foot-operated bins that can be lined with a compostable paper bag. This ensures the bins are kept clean and tidy. These should be located in a central area such as the staff room, and emptied nightly into larger lidded bins in the storage area. This way food is not in the bins any longer than it was when it was placed in the general rubbish bins.



A foot-operated food-recycling bin at Christchurch City Council's civic office

How to collect separated recyclables from each tenancy

The collection of materials from each tenancy will depend on the cleaning arrangement in the building. There are two main scenarios for this.

- Where a single cleaning firm is used for the whole building, the cleaning staff collect wheelie bins provided by the recycling service provider for each type of recyclable material (see 'Engaging a recycling contractor' below for details) and visit each tenancy to empty tenant recycling bins into the appropriate wheelie bin. This is best done for all tenancies at once to reduce the time required by cleaners for this task. The wheelie bins are then returned to the storage area, which will often be in the basement.
- Where multiple cleaners are used, each cleaner (or the tenants themselves) will leave recycling bins in the lift foyer at the end of the day. The communal area cleaning staff then empty these bins into the appropriate wheelie bins and return these to the storage area.

To minimise the time taken by cleaners to undertake this task, collection of recycling and general waste can be undertaken on alternate or set days. Remember: cleaners are removing the same amount of material, it is just separated into different bins. This means there is no additional time except for the communal cleaner in the second scenario. In fact it should reduce the time for the cleaners of each tenancy in this case as they do not have to remove the material from the tenancy (see Step 5: Cost–benefit analysis).



A drawer containing four bins for milk bottles, plastic cups, mixed recyclables and general rubbish at Christchurch City Council's civic office

Engaging a recycling contractor

A variety of recycling firms should be contacted to enquire about their services and charges. The decision on which service provider to use can be made by the tenant group, project champion, or property manager, depending on who will organise and manage the contact with the recycling firm. In many cases this will be the property manager.

Ideally the service provider should provide wheelie bins, as these are easy to move around the building for collections and require minimal space. Collection frequency will need to be flexible at the outset as recycling volumes increase.

Access to your building by service providers will need to be organised where materials are kept in a security area.

Traditional cleaning companies are beginning to compete in this area and can have the benefits of reducing the number of people having access to buildings and offering an all-in-one service.

Storing recyclable materials

Space for storing materials is often an issue in commercial buildings. There are two points worth noting here.

- A greater collection frequency will allow you to use fewer or smaller bins to minimise space requirements.
- Reduction in waste to landfill may allow you to downsize the skip or bin used for general waste storage, thus providing space for recycling bins.

Savings and costs of the system

The cost–benefit analysis allows you to calculate annual savings. From this and information on cleaning and waste disposal contracts, a decision can be made on who pays for the recycling services and any additional time required for cleaning services, and who benefits from savings as a result of a reduction in waste disposal. This will depend on the system’s design, the cost for waste and recyclable collection, and who pays for waste disposal. Changes in contracts may be required to meet the requirements of all involved (see Step 5: Cost–benefit analysis, for more information).

If further resource efficiency projects are planned, then the savings made as a result of the recycling system could be channelled into a fund to assist with these initiatives. This fund can also be used to pay for purchasing recycling bins for use within each tenancy, and for promotional activities.

PriceWaterhouseCooper Centre, Christchurch (multi- tenanted)

The Sustainability Committee at PriceWaterhouseCooper Centre implemented a recycling system for paper, cardboard and mixed recyclables in late 2002. This resulted in an annual saving of \$980 through diverting 18.6 tonnes of material from landfill. There is the potential to divert a further 70 tonnes of material using the system, saving a total of \$4,974 (see Case study 2, Appendix 1, for the full case study).

Timaru District Council, Timaru (sole tenant)

A waste audit revealed 6.6 tonnes of waste to landfill per annum at a cost of \$4,000. After implementing a Zero Waste programme, waste to landfill was reduced by 87%, saving approx \$3,600 per annum.

Management of the system

Once the recycling system is initiated its ongoing management is best undertaken by the property manager. This is because it is the property manager who oversees other building-wide services and has contact with all tenants on a regular basis. The ongoing management role will include:

- identifying and resolving any problems with the system
- monitoring, reviewing and promoting the use of the system
- managing the contract with the recycling service providers
- managing the contract with the cleaner where one cleaning firm is used for the whole building, or for the communal area cleaner where tenants use individual cleaners.

The role of the cleaning firm(s) in servicing the recycling system should be written into the cleaning contracts. At Christchurch City Council, when contracts came up for renewal in 2003 specific instructions were added to contracts for each site where recycling systems were in place. An example of one of these is 'All recyclable paper is to be placed in the green recycling container situated in the photocopy room'. A performance review clause can also be written into the cleaning contract to ensure the cleaning firm is undertaking recycling tasks as required. Where individual cleaners are used by tenants, contractual alterations should be undertaken by each tenant.

Step 7: Implementation

People are most receptive to change if they know why they should make a change, exactly what they need to do, and that their efforts will be acknowledged. It is important that changes are carefully planned and executed.

Here are some guidelines for implementing your recycling system.

1. Organise delivery of recycling bins by service providers and provide keys or access cards to service providers, where required.
2. Recycling bins and paper collection trays for use within each tenancy should be clearly labelled using national recycling symbols that have been developed by the Recycling Operators of New Zealand (RONZ). Downloadable designs are available at www.ronz.org.nz (see below for examples).
3. Ensure someone is responsible for overseeing the change to make sure it happens. You may also need to have support staff on call to sort out any problems that may arise.
4. Ensure all parties that need to know about the change are well informed so that maximum support is cultivated from the outset. This should be part of the communication plan.
5. Identify what training is required and by whom. Be sure to explain to staff why a change is needed and what you hope to achieve through this change. Again, this should be part of the communication plan.

Some examples of RONZ symbols



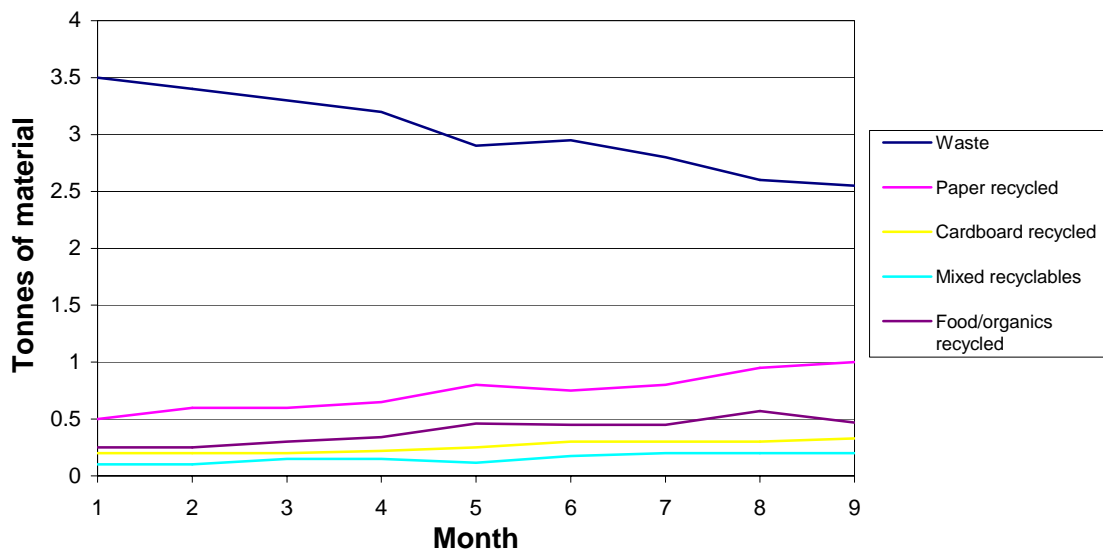
Step 8: Measuring to manage

As with any system it is important to monitor the results so that you can review progress towards targets and identify and resolve any problems. Ask your recycling and waste disposal service providers to provide regular information on the weight or volume of materials they have collected so that you can track progress. If service providers cannot give you this information, you can undertake a second waste sort after three to six months to gather data on the quantities of recyclables that have been removed from the waste stream. Accounts and invoices should be analysed to compare savings to initial costings.

It is important to gather feedback from tenants and cleaners. There will always be teething problems with new systems. Providing clear avenues for feedback will allow you to identify and resolve any issues quickly. It is also recommended that periodic checks be made to ensure cleaners are properly recycling the separated material. This may be part of a formal performance review.

As well as reviewing the effectiveness and costs of the system, monitoring data provides information to give ongoing feedback to tenants. It is important to motivate tenants by celebrating successes, but also to report on problems so that they can be resolved. Feedback might include a graph of materials recycled or sent to landfill. An example is given below.

Figure 1: Recycling system results



Conclusion

Remember to provide feedback to everyone, and celebrate your success.

Appendix 1: Case Studies

Case study 1: Royal & SunAlliance Centre, Auckland

Summary

Solid waste disposed in the compactor has been significantly reduced from the three main tenants in the tower block. Savings are \$500 per month. Four tonnes of waste is diverted from landfill weekly.

Business/property profile

The Royal & SunAlliance Centre in the Auckland central business district is a 33-level office tower block owned and managed by Kiwi Property Management. The property houses 12 different company offices (at the time this case study was prepared on 1 October 2001). It is estimated there are 1900 people currently occupying the building. The three main tenants are Royal & SunAlliance (an insurance company), who occupy multiple floors, and two legal firms, Bell Gully and Russell McVeagh. The remainder of the tenants occupy small and medium office suites.

All levels have at least two small kitchens for staff as well as cafeteria facilities and kitchen facilities adjacent to function rooms. There are also restaurant and cafe facilities in the main foyer. The property has a large basement area, substantial car parking facilities and public meeting areas. Both the foyer and exterior of the building have quantities of plants (mainly native varieties) and extensive garden and seating areas outside.

The project

Kiwi Property Management agreed to participate in a cleaner production project following an approach from their main tenant, Royal & SunAlliance, who were committed to writing and implementing an environmental management policy and plan. Kiwi Property Management recognised major advantages in participating in the project. Firstly, they wanted to assess and reduce costs associated with solid waste disposal from the building. Secondly, this project enabled them to improve their company's environmental performance while providing a model which, if successful, could be implemented in many of their properties throughout the country. Thirdly, if successful, the project could be extended to include further cleaner production initiatives.

The building manager co-ordinated the building tenants to implement recycling at the Royal & SunAlliance Tower through the following steps:

1. Enlist buy in for the project from the other two major tenants.
2. Establish a working environmental group consisting of the building manager, the three main tenants and a consultant.
3. Co-ordinate regular meetings and progress updates by email with the main stakeholders – the meetings were used to identify waste streams to be sorted and to address concerns and difficulties in implementation with each of the main tenants.

4. Identify and review the three main tenants' current waste disposal systems for paper, glass, plastic and cans, and assess the associated costs.
5. Co-ordinate the three main tenants' waste disposal procedures to establish, where possible, unified recycling systems.
6. Identify recycling and waste disposal options for the most cost-effective and efficient recycling systems.
7. Negotiate with relevant recycling companies for the most efficient overall system, encompassing both cleaning and removal from the building (recycling).
8. Implement the recycling collection from the building.
9. Inform the remaining tenants of the scheme and raising awareness about waste reduction and recycling opportunities within the building by email and the centre newsletter, Halo News.
10. Enlist buy in to the recycling programme from the remaining tenants.

The project consisted of two main stages:

- Stage 1: To accomplish an effective recycling programme, with the three main tenants diverting paper, plastic, glass and cans from the waste stream
- Stage 2: To extend the programme throughout the rest of the building.

The three main tenants who were part of the trial were all positive, keen and helpful, contributing their time willingly to initiating the scheme. The main difficulty was in finding a suitable plastic recycler who could collect the volumes of milk containers. Further opportunities for environmental improvement identified include:

- introducing a similar recycling scheme throughout all Kiwi Property Management buildings
- writing a company environmental policy
- developing an environmental management plan to implement in all future Kiwi Property Management developments.

Overall results

There was a small extra cost of \$78 to \$80 per week for the removal of recyclable material, which was balanced by the savings of \$125 a week on compactor charges. In May, after two months' recycling, tonnage leaving the building for landfill reduced from approximately 12 tonnes weekly to 8 tonnes. This figure was prior to one of the three main tenants beginning their plastic recycling programme and does not include the remainder of the building.

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Case study 2: PriceWaterhouseCooper Centre, Christchurch

Summary

A team of enthusiastic staff from businesses based in the PriceWaterhouseCooper (PWC) building completed a two-month trial in February 2003 of a building-wide recycling system. The project is a first for Christchurch, and resulted in the diversion of 3.1 tonnes of material from landfill to recycling operators and projected savings of \$980 (18.6 tonnes) per annum.

Business/property profile

The PriceWaterhouseCooper Centre in the Christchurch central business district is a 20-level office tower block, owned and managed by Kiwi Property Management. The property houses approximately 30 different company offices. It is estimated there are 750 people occupying the building.

The project

In October 2002 a group of staff from several businesses within the PWC building got together to form the PWC Centre Sustainability Committee. The objective was to look at sustainability issues within their workplaces and collaborate on building-wide projects. It was decided that as a first project they would implement a recycling system for the main recyclables in their offices.

A waste sort was conducted (with the assistance of Target Zero), which identified paper and mixed recyclables (glass bottles, cans, and number 1 and 2 plastics) as the main recyclable materials. Discussions were held with the property manager and cleaners to design a simple-to-use system that met the needs of all parties.

Paper is collected in Target Zero paper recycling trays located at each staff member's desk. Once full, these are emptied by staff into a larger bin in the staff room. The staff room is the main area where mixed recyclables such as Coke and milk bottles are used, so a second bin was provided in this area for these items. Both bins are emptied into wheelie bins by the cleaners when full. These are then taken to the basement for collection by commercial recycling operators.

A trial of the system began in early December 2002, with each business in the building being visited by a member of the Sustainability Group to discuss how the system would work. After two months a second waste sort was undertaken. Data from this was combined with recycling pick-up information provided by the recycling operators and feedback from cleaners and tenants to make an assessment of the effectiveness of the system.

The system was judged to be a success and it was decided to make it permanent. In addition, cardboard was added to the materials recycled. The only area of concern was that there was still a large amount of recyclable material going straight to landfill. The second waste sort showed that 67% of the material remaining in the waste stream was recyclable through the system in place, mainly office paper. A promotional campaign was undertaken to increase the amount of staff recycling and to give feedback on how well things are going.

Ongoing and effective education is seen as key to changing the culture of tenants to one supportive of waste minimisation. The Sustainability Committee intends to monitor the system to provide information that can be fed back to tenants on achievements as well as problems.

Overall results

In total 3.1 tonnes of material were diverted from landfill during the two-month trial, with overall savings of \$140. This included the cost of the recycling services. Extrapolate this to a year and 18.6 tonnes would be diverted, with annual savings of \$980. If all recyclable material present in the waste stream was diverted from the waste stream the system would recycle 89 tonnes and save \$4,974.

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Case study 3: Taranaki Regional Council, Stratford

Summary

The Taranaki Regional Council developed the in-house 'Don't be a tosser' waste minimisation programme to encourage staff to reduce waste and recycle used materials.

Organisation profile

The Taranaki Regional Council (TRC) is a regional local authority which promotes the sustainable use, development and protection of Taranaki's natural and physical resources; safeguards Taranaki's people and resources from natural and other hazards; and represents and advocates Taranaki's regional interests.

The Council offices are located in the renovated former Taranaki Dairy Company building on a 1.27 hectare site in Stratford. The Council is made up of 10 elected councillors and employs approximately 90 permanent staff.

The project

TRC saw that applying an in-house waste minimisation project was an opportunity for it to show local leadership in applying the principles of waste minimisation in its own operations. It also helped it reach the national target for waste minimisation (by December 2005 all councils will ensure that procedures for waste minimisation have been addressed for all facilities and assets they manage) in the New Zealand Waste Strategy.

TRC developed a staff-driven ‘Don’t be a tosser’ campaign, spearheaded by the Waste Minimisation Action Group. This group comprised staff representatives from each department who were charged with improving the environmental performance of the organisation and changing staff attitudes towards waste.

The group undertook a number of actions, including:

- improving the paper and cardboard recycling system by providing all staff with paper recycling bins and designating an area in the printery for cardboard recycling storage
- replacing individual rubbish bins with a ‘waste centre’ in each department for cans and bottles, and providing each staff member with individual ‘organic waste’ containers (the individual desktop organic waste containers re-use the plastic printer toner packaging)
- setting up a bin in the canteen to separate food, plastic, cans and glass materials for recycling
- removing the low-heat burning incinerator from the site
- replacing the shredding/burning of confidential documents with document security bins, which then recycle the shredded paper
- changing the milk order from 1 litre cardboard cartons to plastic bottles, which can be recycled
- encouraging composting/mulching of garden waste on-site
- currently developing a green purchasing policy for all council purchases across all departments.

The main challenges and lessons learnt were as follows.

- There is a need for ‘waste champions’ within the organisation to encourage and support the change.
- Some staff members were resistant to change, and an attempt was made to try to change behaviour over time by encouraging the resisters to try one element of the programme at a time.
- It is very important to make it easy for staff to recycle by having clearly identifiable bins for each type of waste.
- Having a slogan/campaign phrase such as ‘Don’t be a tosser’ is an effective way to promote change.
- By encouraging staff to sort their waste at work, many find it the natural thing to do at home.

There is an ongoing effort to increase the focus of staff on reducing and reusing resources before recycling, especially paper-use volume through activities such as double-sided printing. There is also work under way to develop a green purchasing policy for all Council purchasing.

Results

TRC achieved a three-fold increase in the volume of paper recycled, along with a significant increase in the volume of recyclables taken to the transfer station, particularly cardboard, which was otherwise disposed of in the skip bin. The volume of material in the skip bin has halved. There has been an increase in staff awareness of waste issues, and it is hoped that this will have a flow-on effect into staff homes and the community.

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Case study 4: Christchurch City Council libraries and service centres, Christchurch

Summary

As part of Christchurch City Council's (CCC) move to 'get its own house in order first', staff from the Libraries Unit and CCC service centres participated in a Target Zero waste minimisation programme. The aim was to reduce the amount of solid waste sent to landfill. Through the programme, libraries staff reduced waste to landfill from all libraries by 50%, providing an estimated savings of \$16,500 per annum. Staff from the service centres achieved on average a 60% reduction in waste to landfill – a reduction of 6.5 tonnes per year. This saves the service centres \$2,500 per year by reducing the number of CCC rubbish bags used.

Organisation profile

The Libraries Unit operates 14 libraries in the greater Christchurch area, employs over 250 full-time equivalent staff and issues over 1 million books each week. The service centres' 115 staff work at six different suburban locations. Staff deal with everything from issuing rubbish bags and taking rates payments, to planning new streets.

The project

A team of staff members from a variety of roles in the Libraries Unit and service centres was formed. The team attended two workshops to learn the principles of waste minimisation, how to identify areas of opportunity and how to set up a project.

Waste was sorted at a selection of sites to ascertain how much waste was being created and what it comprised. The teams then looked at the opportunities to minimise or recycle these wastes.

Improvements were made in four main areas.

- All food waste is now collected and anaerobically composted in Bokashi units. The units produce a liquid fertiliser, and once the compost unit is full, waste is composted for two more weeks before being dug into a garden.
- All mixed recyclables such as glass, aluminium and plastics are placed in green bins and recycled using the free kerbside collection service.
- Cardboard is collected at no charge by a commercial collector.

- Paper from the libraries is reused by making it into note pads if one side is still clean, or otherwise recycled. Paper from the service centres is recycled through a commercial service provider.

Overall results

Total savings for the two projects were estimated at \$19,000 per annum, with a reduction of 50% and 60% in waste to landfill from the libraries and service centres, respectively. For the service centres this constituted 6.5 tonnes of material per annum.

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Appendix 2: Undertaking a Waste Sort

Planning

- Be clear about why you are auditing your waste to help work out the when, what and how.
- Find out exactly what happens to waste, who collects what waste, when and how (in bags? straight into the bin?), where it is stored, and who takes it away for disposal and how often.
- Check if there is anything else besides landfilled waste that should be measured, such as recycled paper, cardboard or plastic.
- Consider what other information you could collect to make your waste data more useful (eg, how many staff the offices have).

How

- Can you get staff and/or cleaners to put waste into bags labelled with where they are from, the date, etc?
- If you can't get the waste before it goes into the skip, can you get waste out of the skip (you don't want to walk on top of rubbish)? Where can you put it once sorted (not too far away, so that you can easily put the rubbish back into the skip without having to lift it too high)?
- Think about how much waste you want to sort. It is recommended that you sample a week's waste (ie pull aside a number of bags every day for a week and then sort them). This will give you a sample of that season's waste. You may want to make notes of any significant events that week (eg, an office party).

When

- When will you measure your waste? Pick your time, considering whether the waste stream varies from day to day, season to season, etc.
- How much waste do you want to collect for sorting (it takes five people about five hours to sort 7m³ of waste)?
- What time is your skip usually emptied? Can you fit in with this or do you need to get the waste contractor to do anything different (ie, not empty the skip for a day or two, or deliver the skip to a different location than usual for sorting, or leave a bigger skip to collect waste for a longer period than usual)?
- It is easier to sort waste that hasn't been compacted, so if you usually use a compactor see if you can get a skip temporarily.

- Talk to your contractor to let them know what you are doing. If you are sorting off-site be aware that waste contractors will often collect and mix waste from more than one company at a time. Make sure they don't do this on waste-sorting day.

Where

- You will need to have an area to spread out waste for sorting. At the smaller office sites this may be done at a large table covered with a tarpaulin. For a large building it may be on the basement floor.
- Think about how you will clean up the sorting site. You may need to wash the area, and this should be into a sewer (trade waste), not stormwater.
- Do the sort somewhere sheltered from the wind, which could upset the scales and blow rubbish everywhere.

What

- Look in your skip before you do your sort to determine how big it is, how full it is and what is in it.
- Decide beforehand what categories you want to sort into. Stop sorting after half an hour to check that your categories are appropriate.
- Take photos of waste as you go (photos are better than remembering) and also take lots of notes. It is a good idea if you have enough people to have one as a 'clean person' for recording and taking photos (this also keeps your camera clean).
- Nominate one person as the 'decider' on where tricky bits go (eg, are disposable nappies plastic or paper?) If one person answers all these questions you will have more consistency.
- Nominate one person to read the scales if they are not digital. This again provides more consistency.

Health and safety (very important)

- Be aware of hazards on-site and emergency responses/procedures.
- Be aware that most skips, etc. are open and anyone could put anything in to the skip.
- Sorters should use gloves and, if possible, aprons. Beware of broken glass and other sharp or gooey objects.
- Be careful not to lift heavy boxes. You may need a wheelbarrow to move heavy loads.

What you need

- *Protective clothing.*
- *Scales* – make sure they are sensitive enough to handle your big and small groups of waste. Electronic scales are preferred because they have less margin for error.
- *Power supply* – you may need power for your scales.
- *Camera* – it is a good idea to take a photo of waste (sorted and unsorted) as a record, and for use in communication with tenants and external publicity. If staff are involved it makes a good story for internal/external newsletters.
- *Containers to sort into* – these can be plastic bins or rubbish bags.
- *Somewhere to put your waste once it is sorted* (eg, recycling bins, skips).
- *Marker pens* – write on your bins what is in them and also the weight of the empty container (they will all be different weights).
- *Paper to record weights* – be clear about whether you are recording the total weight of bin and waste or just the weight of the waste. Also make notes as to what is in each category, and take a photo of it.

Table for waste sort

Date:

Time:

Source:

Recorder:

Unsorted weight:

Weigh unsorted items beforehand to ensure sorted weight = unsorted weight.

Waste type	Example	Weight kg	% by weight	Notes
Recyclable items				
Recyclable paper – copier	Paper for photocopier and/or printer			
Recyclable paper – miscellaneous	Magazines, envelopes, post-it notes			
Cardboard	Boxes			
Mixed recyclables:	Coke cans, baked bean tins, milk bottle, glass bottle			
<ul style="list-style-type: none"> • number 1 and 2 plastics • cans • bottles 				
Compostable items – food waste	Apples, sandwiches, tea bags, coffee grinds			
Compostable items – soiled paper	Napkins, tissues, non-waxed paper with food residue			
Subtotal				
Non-recyclable items				
Packaging material	Expanded polystyrene packing			
Potentially hazardous substances	Batteries, aerosols, glues, cosmetics			
Waxed drink containers	Takeaway coffee cups			
Plastic drink containers (numbers 3–9)	Water cooler cups, polystyrene cups			
General rubbish	Waxed paper, tetra packs, thermal paper, windowed envelopes, plastic wrapping, bits of metals, foil, pens, chopsticks, rubber			
Subtotal				
Total				