



TARGET WASTE BUSINESS GUIDE

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1. Introduction	4
2. Waste - An Overview	4
2.1. Christchurch issues	5
2.2. Dealing with waste	5
3. Office Waste	6
3.1. Measuring waste produced	6
3.1.1. Visual waste assessment	7
3.1.2. Desk top audits	7
3.1.3. Physical waste audit	7
3.1.4. Mass balance	7
3.2. Opportunities for improvement	8
3.2.1. Top tips - Paper and cardboard	8
3.2.2. Packaging	9
3.2.3. Kitchen	9
3.2.4. Electronic waste	10
3.2.5. Printers	10
3.2.6. Fluorescent tubes	10
3.2.7. Ablutions	10
3.2.8. Chemicals and cleaning products	10
3.2.9. Furnishings	11
3.2.10. Construction and demolition waste	11
3.2.11. Other ideas to reduce waste in the office	11
3.3. Setting up an office recycling system	11
3.3.1. Paper recycling	11
3.3.2. Confidential paper destruction (if required)	12
3.3.3. Cardboard recycling	12
3.3.4. Co-mingled recyclable materials	12
3.3.5. Printer cartridge recycling	12
3.3.6. Food waste recycling	12
3.3.7. Fluorescent light recycling	12
3.4. Developing key performance indicators	13
3.5. Top tips for office waste	13
3.5.1. Red flags (common waste areas)	13
3.5.2. Basics	13
3.5.3. Quick fixes	13
3.5.4. Medium to long-term	14
4. Manufacturing Waste	15
4.1. Measuring waste produced	15
4.1.1. Identifying solid waste	15
4.1.2. Raw materials	17
4.1.3. Process waste	17
4.2. Designing a recycling system	17
4.3. Developing key performance indicators	17
4.4. Top tips - Manufacturing	18
4.4.1. Red flags (common waste areas)	18
4.4.2. Basics	18
4.4.3. Quick fixes	18
4.4.4. Medium and long term	18
5. Conducting Waste and Recycling Audits	19

5.1. Walk-through audit	19
5.2. Conducting a sort and weigh audit	19
5.2.1. Identify who is to complete the waste and recycling audit	20
5.2.2. Identifying waste leaving the site	20
5.2.3. Develop a waste audit kit	20
5.2.4. Determining the sample size for the waste audit	21
5.2.5. At least one week before collection week	21
5.2.6. Each day of the collection week	21
5.2.7. During the waste audit	22
5.2.8. Audit procedure	23
5.2.9. After the waste audit	26
6. Waste Management Contracts	26
7. Communication	27
8. Recycling Service Providers	29
9. Glossary	29
10. Target Sustainability Business Guide series	30
11. On-line Worksheets	30
12. Attachments	30

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1. Introduction

The Target Sustainability Programme has been developed to help your business improve the efficiency of resource use and improve profitability.

The Target Waste Business Guide is one of a series of Target Sustainability Business Guides written to help your business use both natural and manufactured resources more efficiently. Other Guides in the series include Target Energy, Target Water and Target Paper and an implementation Guide called The Path to Sustainability Business Guide.

This Guide is focused on opportunities for reducing the quantity of material resources in the form of solid wastes that your business disposes to landfill.

If you are a manufacturing company, you are likely to be also discharging wasted resources into the trade waste system. The value of the wasted raw materials, products and by-products that are discharged with waste water can also represent a significant opportunity for improvement. Contact the Christchurch City Council Target Sustainability team to find out more.

This Guide will be more effective for your business if read in conjunction with The Path to Sustainability Business Guide which outlines the basics of how to go about implementing the kinds of changes necessary to make significant and lasting resource efficiency improvements.

2. Waste - An Overview

Our society's view of waste has changed dramatically in just a few short years. Fifty years ago, concerns about waste were all to do with public health issues. Today, waste is seen as both an environmental and economic problem, and an important signal that, as a society, we need to become more sustainable. These concerns are now part of the mainstream.

Even the meaning of the word waste has been changing. The word no longer implies that something is worthless, but, more and more, waste material is being recognised as a potential, but wasted, resource.

Businesses, particularly overseas, have started to realise the importance of addressing their waste issues. Zero waste goals are becoming more common with businesses, alongside other zero goals such as zero accidents, zero emissions, and zero defects.

Becoming more efficient and reducing waste through better waste management makes good business sense. Waste does not improve customer or shareholder value, and so, ultimately, has no place in business. Every item of waste must be paid for several times over – when it is bought from a supplier, handled by staff, and sent for disposal. By reducing waste, businesses can reduce costs. Not only can disposal costs be cut, new revenue sources are often possible as many recyclable materials are now being paid for by recycling operators.

Waste disposal costs are only going to rise as transport costs go up, landfill charges increase, and, as seems likely, the government introduces a waste levy. At the same time, the price received for recovered materials, such as cardboard, steel and plastic film, is rising as demand increases worldwide.

As well as the economic benefits, there are both environmental and social benefits from a business managing its waste better. Greenhouse gases can be reduced, as the landfilling of organic materials generates methane, a much more potent greenhouse gas than carbon dioxide. Recycling materials saves raw materials, energy and water, when those recycled materials are made into new products.

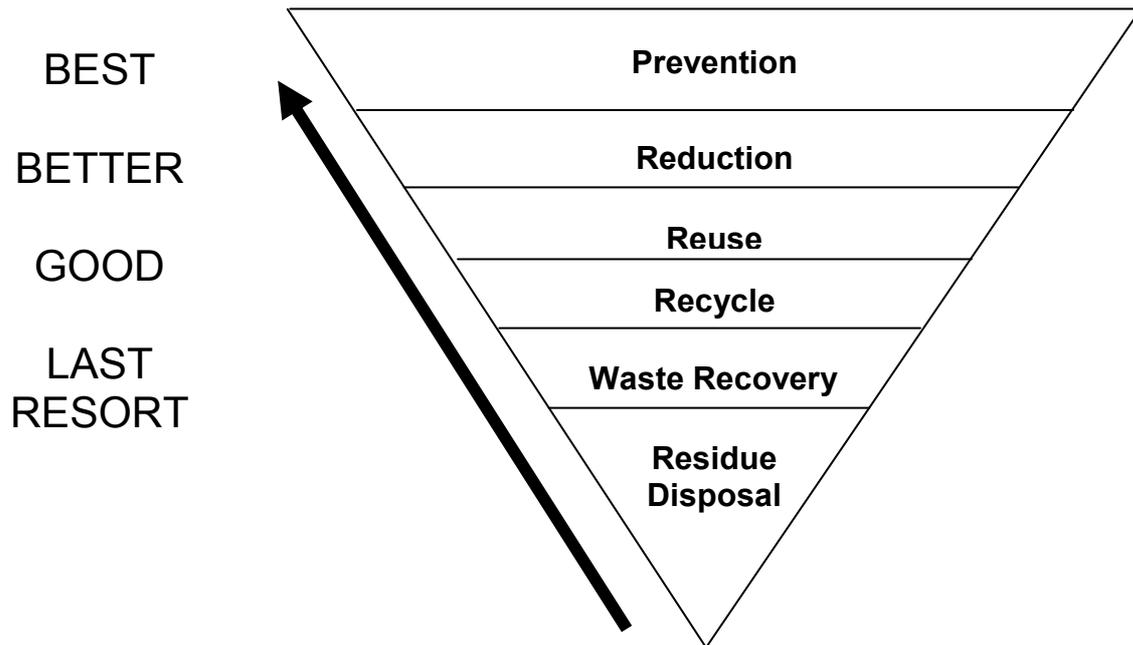
Better waste management is also good for a business' standing in its community. A growing proportion of both staff and customers recognise and appreciate a business' efforts to act in an environmentally-responsible way. When management supports staff involvement in reducing waste and other environmental issues, it encourages innovation and loyalty from staff who have shown they take pride in what the business does.

2.1. Christchurch issues

Under local government legislation, Christchurch City Council is responsible for promoting effective and efficient waste management while having regard to environmental and economic costs and benefits for the district. Even though Christchurch is one of the most pro-active Councils in the country at reducing waste Christchurch disposed of 253,000 tonnes of waste into the Kate Valley landfill in the 2007 calendar year. This is not sustainable and wastes resources as most of what goes to landfill could be used in other, more beneficial ways.

2.2. Dealing with waste

It is internationally agreed that the best way to deal with waste is according to the waste hierarchy.



If possible, it is always best to reduce the quantity of material resources being wasted. If this can not be done, then can the materials be reused in your processes? If this is not possible either, then recycling the materials is the third best option. And finally, if there are no options for reducing, reusing or recycling a material, then the only option left is to dispose of it to landfill.

Waste can be anything that is brought into your organisation that doesn't leave as part of your products or services. The tools provided in this business guide concentrate on solid wastes, rather than liquid or gaseous wastes.

These tools should be used in conjunction with The Path to Sustainability Business Guide, which provides a framework for implementing these tools.

Wastes can occur at all levels of your organisation. Have a look around your site for some sources of waste.

Inputs:

- Packaging
- Raw materials
- Damaged stock

Processing and administration areas including:

- By-products
- Trimmings
- Rejects
- Scraps
- Rags
- Off-cuts
- Obsolete equipment
- Consumables

Outputs from the site including:

- Off-specification products
- Discontinued or damaged stock

Ancillary areas including:

- Building maintenance materials
- Grounds maintenance materials
- Organic waste from the grounds

3. Office Waste

Most businesses will produce office waste – in some businesses all the waste is produced by staff working in an office environment, in other businesses there is a small management or accounts office only.

Generally, a large proportion of office waste is paper. There is usually also a substantial amount of food waste, plastics and paper hand towels.

Office waste can be reduced by ensuring unnecessary items are not being used, that materials are reused where possible and by installing a simple recycling system.

You should approach water reduction systematically, following the approach outlined in The Path to Sustainability Business Guide. The following table illustrates the link between the main sections of the office portion of this Guide and The Path to Sustainability Business Guide.

Office waste sections	The Path to Sustainability Business Guide
3.1 Measuring waste produced	Step 3: Measure the baseline
3.2 Opportunities for improvement	Step 4: Identify opportunities...
3.3 Setting up an office recycling system	Step 5: Implement the action plan
3.4 Developing key performance indicators	Step 6: Monitor, review and report...
5.0 Conducting waste and recycling audits	Step 3: Measure the baseline

As you work through this section, please also incorporate the other Steps in The Path to Sustainability Business Guide not explicitly mentioned, especially Step 1, Commitment and Step 2, Planning and organisation.

3.1. Measuring waste produced

It is essential that waste is measured prior to implementing waste reduction initiatives so that a baseline is set to measure progress against. A number of methods can be used to measure waste, including a visual waste assessment, a desk top audit and a waste audit.

A description of these methods is provided in the following sections.

3.1.1. Visual waste assessment

Visual assessments involve estimating the quantities of different types of waste in your waste bins by inspection. To do a visual waste assessment, you need to start by identifying each type of waste material in your bin and then estimate the proportion (%) of that material, by volume. For example:

Type of Waste	% of Bin
Cardboard	10
Paper	35
Plastic	25
Organic waste (food)	20
Printer cartridges	5
Metal cans	5

Visual inspections are useful to review recycling programmes and also as an initial assessment to see if a recycling programme is going to be useful. If you know the volume of your waste bin then you can go one step further and estimate the volume of each waste type.

Visual assessments, while a good starting point, are not as accurate as a desk top or physical audit. A visual assessment is subjective and provides a qualitative indication only.

3.1.2. Desk top audits

Desk top audits are performed by taking the information gathered from purchase records and waste management invoices to estimate what proportion of the resources you have purchased have been utilised within your organisation for key consumables and what proportion has been wasted.

For example you could review the amount of materials purchased and log this against the amount of product produced and the waste produced.

3.1.3. Physical waste audit

A physical waste audit enables you to gather specific information on the types and weights of the waste produced by your organisation. Waste audits are performed by sorting and weighing each individual type of waste and recording the data.

To do a waste audit, follow the waste audit procedures in Section 5.

3.1.4. Mass balance

A mass balance is a technique that can help determine how much material you are using, where it is being used and where it is being wasted. A mass balance will typically use a combination of both desk top and physical audit data.

Consider the following example that outlines the type of data needed for a mass balance of paper.

Inputs of paper

- Record the total amount of paper purchased
- Record the total amount of paper received through product deliveries and in supplied reports

Remember that there are many different types of paper as well as A4 office paper. Your business may also purchase or produce significant quantities of:

- Brochures
- Business cards
- Envelopes
- Newspaper
- Toilet paper

- EFTPOS paper
- Cash register rolls
- Paper towels

Use of paper

- Record where paper is being used
- Look at the electronic logs of photocopiers and printers for the quantity of paper being printed

Outputs of paper

- Record the amount of paper in waste skips
- Record the amount of paper recycled
- Estimate the amount of paper stored by the organisation

3.2. Opportunities for improvement

There are many different ways to go about reducing office waste. In some cases, simple changes to purchasing or the way you go about your daily activities can have a significant impact on your waste. The following sections outline some common office waste streams and provide practical opportunities for waste reduction.

You can use the information on Worksheet 1 (see Section 12) to help you understand your existing waste and recycling systems prior to implementing your waste audit and waste reduction programme.

3.2.1. Top tips - Paper and cardboard

Paper and cardboard usually make up a large proportion of office waste. The following information outlines how this paper (including stationery) and cardboard waste can be reduced, reused and recycled.

3.2.1.1. Basics

- Know how much paper and cardboard you are buying
- Know where paper and cardboard is going now and how much is going where
- Set up a paper and cardboard recycling system
- Educate staff on recycling
- Put up relevant signage to remind staff to recycle
- Organise a paper and cardboard recycling collection service

3.2.1.2. Quick fixes

- Encourage e-mailing and discourage printing of e-mails
- Proof read documents electronically when possible
- Teach staff to use print preview and spell-check on the computer to avoid unnecessary printing
- Set photocopiers and printers to print double-sided and reduce copies to fit two pages into one where possible
- When printing PowerPoint presentations as a handout, print 6 slides on each side of an A4 page
- Don't use cover sheets for your faxes
- Use your computer to send paperless faxes
- Don't print agendas for everyone at meetings. Post one agenda on the board or share copies
- Use a data projector for meetings rather than paper handouts
- Save documents electronically instead of printing hard copies
- Use a smaller font and margins to reduce pages printed
- Place a reuse tray beside the printer/photocopier and on desks to collect and encourage reuse of paper used on one side only (lids from paper containers make good trays)
- Reuse envelopes for internal circulation and reuse envelopes for external mail by covering the address and markings with stickers
- Purchase reuse address labels for envelopes
- Buy envelopes made out of recycled paper
- If you must use window envelopes, then ask your supplier for envelopes that use glassine, a wood fibre product, as these can be recycled
- Use 2-way envelopes
- Reuse paper folders

- Use paper recycling collection containers under people's desks, beside photocopiers and printers and in the lunch room
- Collect paper, newspaper, magazines, and cardboard for recycling
- Buy cardboard rather than plastic folders
- Use durable cardboard folders and binders
- Use distribution lists for magazines and other subscriptions rather than ordering copies for individual staff
- Talk to suppliers about minimising packaging
- Purchase in bulk to reduce packaging

3.2.1.3. Medium and long term

- Eliminate unnecessary forms and redesign forms to use less paper
- Circulate memos, reports, and publications using distribution lists
- Remove duplicates from mailing lists, update lists before mail-outs, and take yourself off unnecessary mailing lists
- Make note pads with paper that has only been used on one side
- Shred paper and use for packaging
- Give your old magazines and journals to schools and libraries
- Use binders, file folders, containers, and report covers more than once
- Reuse computer paper ream containers for filing instead of buying filing containers
- Buy recycled and recyclable paper products
- Encourage suppliers to use reusable and recyclable containers
- Transport your products in containers you have received from suppliers
- Ask customers to return containers for reuse and recycling
- Give away materials you cannot reuse yourself
-

3.2.2. Packaging

Products often have packaging that can be avoided. Look at your suppliers' and your own products and identify ways packaging can be improved to minimise material use and increase its ability to be reused and recycled after purchase.

Consider the following when reviewing opportunities to minimise packaging use

- Options to prevent excess packaging
- Talk to suppliers to take back packaging for reuse or recycling
- Consider reusing packaging
- Use packaging made from materials that can be reused or be recycled
- Use materials already on hand for loose-fill packaging material e.g. use shredded office paper for loose fill packaging
- Give away what materials you cannot reuse
- Use reusable containers and mailbags for shipping to branch offices, shops, and warehouses
- Ship products to your customers in the containers that you receive from your suppliers
- Set up a place to store reusable containers
- Ask customers to return containers for reuse
- Print a message on products to encourage consumers to recycle the packaging
- Return, reuse and repair wooden pallets and spools
- Purchase in bulk to reduce packaging

3.2.3. Kitchen

Some simple ideas for reducing waste in your kitchen facilities include:

- Use reusable cups and cutlery
- Recycle glass, plastic, aluminium and steel recyclable containers
- Provide a labelled organics bin in the tearoom to collect food waste for composting or for a commercial organic collector

By weight, food scraps often make up to a third of the total weight of office waste. Remember that the organic waste that you compost or use a Bokashi system to process can be put on your office garden. Go to <http://www.ccc.govt.nz/waste/composting/> to find out more.

3.2.4. Electronic waste

Electronic waste can occur from a number of sources e.g. computers, photocopiers, printers, mobile phones and batteries. It is important to ensure that these wastes are dealt with in an appropriate manner. Consider:

- Opportunities for others to use the unwanted equipment
- Returning equipment to suppliers for reuse or recycling
- Purchasing equipment that can be upgraded
- Purchasing equipment that can easily be repaired

Ways of minimising the impacts of electronic waste include:

- Lease items that are used occasionally or share them with other offices in your building
- Consider an upgrade or reconditioning of equipment before replacement
- Purchase equipment that matches your requirements rather than using the 'biggest is best' mentality
- Ensure equipment can be upgraded if needed in the future
- Consider the length of product life, warranty and availability of repair services when purchasing equipment
- Purchase products that do not need batteries e.g. powered by solar power
- Use re-chargeable batteries and recycle dead cell phone batteries and other batteries

For more information on hazardous waste such as electronics visit the Environment Canterbury website at www.ecan.govt.nz.

3.2.5. Printers

- Buy refillable toner cartridges and recycle old cartridges
- Get printer ribbons re-inked
- Invest in photocopiers and printers that can default to double side printing
- Use draft mode when printing to save on toner

3.2.6. Fluorescent tubes

Fluorescent tubes contain mercury and pose an environmental risk. These can be recycled through an appropriate commercial recycler.

3.2.7. Ablutions

The key to reducing waste from the ablutions and shower areas is to purchase wisely. Consider the following:

- Consider using hand dryers and/or cloth towel dispensers in bathrooms (ensure you meet your organisation's Health and Safety requirements), or purchase recycled and unbleached paper towels
- Purchase toilet paper in bulk and do not purchase individually wrapped rolls
- Purchase hand soap in bulk and avoid individually wrapped items
- Purchase cleaning liquids in bulk and decant into smaller refillable containers for daily use

3.2.8. Chemicals and cleaning products

- Consider the use of re-washable rags rather than disposables
- Dispense cleaning solutions in refillable containers like pump-spray bottles and buy in bulk. Use products in non-aerosol containers where possible

3.2.9. Furnishings

When purchasing workplace furnishings, look for the following to support your waste reduction programme:

Tips for choosing carpets

- Products that contain recycled content
- New Zealand made products that can be repaired locally
- Products that contain natural additives like vegetable dyes
- Formaldehyde free natural latex, woollen or jute (plant) backings
- A carpet that is recyclable at the end of its life
- Look for Environmental Choice labels for environmentally preferable carpets (Environmental Choice Products: www.ianz.govt.nz/echoice)

Tips for choosing paints

- Choose paints with low or no off-gassing (no volatile organic compounds, VOCs)
- Choose paints that do not contain mercury or mercury compounds or tinted with pigments of lead, cadmium, chrome 6 or their oxides (look for Environmental Choice labels)

Tips for choosing furniture

- Buy furniture that is recycled or has recycled content
- Buy furniture that is modular and can be easily upgraded or disassembled for recycling at the end of its life
- Buy durable furniture
- When modernising your office consider recovering or painting existing furniture instead of buying new furniture
- Buy furniture with the Forest Stewardship Council (FSC) logo to ensure it is from sustainably managed forests

3.2.10. Construction and demolition waste

If you are planning on building a new office or renovating an office view the REBRI Guidelines (Resource Efficiency in the Building and Related Industries) at www.rebri.org.nz to assist you in reducing waste going to landfill and cleanfill.

3.2.11. Other ideas to reduce waste in the office

- Recycle old computers or donate to charity groups or schools
- Donate old office furniture to charity groups, recycle at the transfer station recycling centre or repair and revamp existing furniture
- Rent instead of buying equipment that is used only occasionally
- Institute maintenance practices that prolong the life of copiers, computers, and other equipment
- Install reusable heating, ventilation and air conditioning filters
- Batteries should be recycled as they contain harmful heavy metals

3.3. Setting up an office recycling system

This section provides suggestions for establishing a recycling system within the office. But don't forget that you should first look at ways to prevent or reduce the amount of material you are using (see the waste hierarchy, Section 2.2).

Even when you have a recycling system in place, continue to look for ways to reduce consumption, as eliminating or reducing the need for a resource will always be a more efficient option than recycling.

An office recycling system should include the following:

3.3.1. Paper recycling

Put a paper recycling container or tray at each desk, by printers photocopiers and in the lunch room. Staff or cleaners empty these into a paper recycling wheelie bin (or the confidential paper destruction bin) located centrally - usually by printers or photocopiers. Cleaners transport wheelie bins to a collection point for collection by recycling service providers

3.3.2. Confidential paper destruction (if required)

Contact a service provider to implement a system that meets your confidentiality and paper recycling requirements.

3.3.3. Cardboard recycling

Designate a central area in each office (out of thoroughfares) as a cardboard collection point (with signage). Staff are asked to flatten cardboard and place in this area. Cleaners transfer cardboard to collection units regularly.

3.3.4. Co-mingled recyclable materials

Co-mingled recycled materials include plastic bottles, glass bottles and jars and steel and aluminium cans.

Set up a collection unit for co-mingled recyclable materials in kitchens and arrange for the cleaners to empty daily into a co-mingled recyclable material wheelie bin which is collected by the recycling service provider.

3.3.5. Printer cartridge recycling

Set up a printer cartridge recycling collection system with a recycling service provider. This normally involves placing a printer cartridge recycling container, provided by the recycler, in a central location where staff place used cartridges which are collected by the recycling service provider.

3.3.6. Food waste recycling

For food waste composting, you can use a worm farm, a Bokashi system or a commercial organic waste collector. If you have a worm farm, place a small food waste bin (preferable with a foot pedal) in each kitchen. Staff or cleaners empty this bin nightly into the worm farm. If using a Bokashi system (available through Council), place the Bokashi bucket in the kitchen and empty the contents of the bucket regularly into a hole in the garden.

3.3.7. Fluorescent light recycling

Set up a fluorescent light collection with a recycling service provider. This normally involves placing a fluorescent lamp recycling container, provided by the recycler, in a central location where staff place used fluorescent lamps which are collected by the recycling service provider.

Note: When contracting a recycling service provider ensure that the contract specification includes a requirement to supply you with regular data on quantities of recyclables collected from your site.

The on-line Recycling Directory at www.target sustainability.co.nz lists of recycling service providers.

It is also important to use signage throughout the recycling system. NZ Recycling symbols can be downloaded from www.ronz.org.nz. It is recommended that these are laminated and attached to receptacles and to the wall above receptacles as appropriate.

Education of staff and cleaners is critical. Cleaners' recycling tasks and responsibilities should be included in their contract and their performance.

3.4. Developing key performance indicators

The data collected from your waste audit will allow you to measure the success of your waste reduction programmes. However, if you have a substantial increase in staff numbers or in production after the first waste audit, you may find that even with a good waste reduction programme in place, the amount of waste you are generating has increased.

Therefore, in an office situation, where waste is generated by general staff activities, it is important to calculate a figure of waste generated per full time equivalent (FTE), per week or per year. This will allow you to compare waste generation over time, regardless of staff increases or decreases. To calculate waste generation per FTE, per week or per year, create a table similar to the one that follows, and divide the total amount of waste audited (five day's generation) by the number of FTE, to calculate waste per FTE per week. Then multiply the weekly figure by 50 (working) weeks to gain an annual figure.

Site	FTE staff numbers	Waste audited (5 days)	Waste per FTE/per week	Waste per FTE/per annum
Example site A	25	36 kg	1.44 kg	72.0 kg

These calculations can be used for:

- Waste to landfill
- Paper recycling
- Cardboard recycling
- Co-mingled recycling materials
- Reuse materials
- Organic (food waste)

A key performance indicator for office paper use is also essential and can be based on weight, reams of paper purchased and number of pages printed per FTE per week, month or annum (see Worksheet 9, Section 12).

Data collected from waste, reuse and recycling collection service providers can also be used to measure waste per FTE per week/year, and therefore provide a snap shot of waste trends over time.

3.5. Top tips for office waste

3.5.1. Red flags (common waste areas)

- Recyclable items (paper, plastic, glass, aluminium and steel etc) in the rubbish bin
- An increase in the number of rubbish bags or wheelie bins you send out for collection

3.5.2. Basics

- Buy refillable toner cartridges
- Use binders, file folders, containers and report covers more than once
- Recycle paper, cardboard, plastics, glass, aluminium and steel
- Reuse paper
- Set printers to double sided printing
- Educate staff about waste reduction practices
- Ensure the office does a waste audit
- Record waste produced per month to look for trends

3.5.3. Quick fixes

- Buy recycled and recyclable products
- Purchase personalised cups for staff to use
- Set up a recycling system in your office
- Put up posters in key areas (photocopier, printer, kitchen) that explain the waste reduction behaviour you want to support

- Show staff how to use the 'print preview' function on their computer to avoid unnecessary reprints
- Ensure fluorescent lighting tubes are collected for recycling
- Remove individual office rubbish bins and provide them in communal areas
- Put paper recycling collection containers at each desk, beside printers and photocopiers and in the lunch room

3.5.4. Medium to long-term

- Purchase printers that can print double-sided to reduce the use of paper
- Collect organic food waste from the kitchen (a Bokashi system is available for purchase from Christchurch City Council) or use a commercial organics collector
- Plan in advance for office cleanouts, events or parties. Ensure you have enough recycling bins so staff don't use the rubbish bin

4. Manufacturing Waste

Most manufacturing businesses can significantly reduce their waste to landfill and in the process save money.

You should approach waste reduction in manufacturing systematically, following the approach outlined in The Path to Sustainability Business Guide. The following table illustrates the link between the main sections of the manufacturing related portion of this guide and The Path to Sustainability Business Guide.

Office water use sections	Path to Sustainability guide
4.1 Measuring waste produced	Step 3: Measure the baseline
4.2 Designing a recycling system	Step 5: Implement the action plan
4.3 Developing indicators	Step 6: Monitor, review and report...
5.0 Conducting waste and recycling audits	Step 3: Measure the baseline

As you work through this section, please also incorporate the other Steps in The Path to Sustainability Business Guide not explicitly mentioned, especially Step 1, Commitment and Step 2, Planning and organisation.

4.1. Measuring waste produced

Before implementing a waste reduction programme in your manufacturing plant, it is important to measure your current waste. This will allow you to tailor your waste reduction programme to your business' unique needs, and to monitor the programme's success. The methods outlined in Section 3.1, in addition to those below, will assist you.

4.1.1. Identifying solid waste

You may think that identifying solid waste in your business is obvious but it is not just about what is sitting in your skip. You need to look at waste within your manufacturing environment and identify it long before it enters the skip. Walk around your business and look for areas or processes that produce solid waste. You may need to do the walk-through several times to identify waste streams from start up, clean down, busy periods, slack periods and changes in production etc.

Note: Refer to the Office Waste - Measuring Waste Produced in Section 3.1 of this Guide.

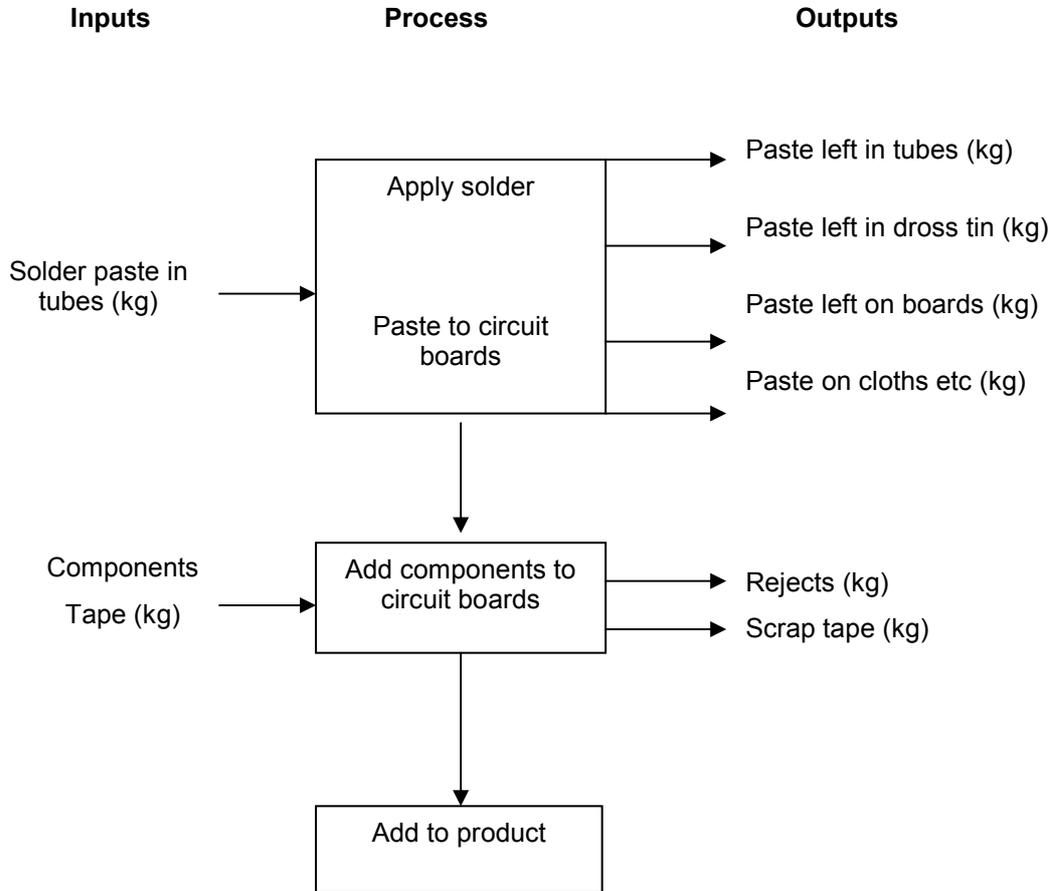
Identify solid waste within your business by looking for:

- Off-cuts and rejects
- Product needing reworking
- Wastage of expensive materials
- Raw materials or product lying on the floor
- Raw materials or product in rubbish bins
- Old or damaged stock or raw materials
- Over-packaged stock and excess packaging coming in and going out of the business

Measure what is in your skips, compactors, and recycling bins and consider:

- How much of the waste could be avoided
- How much waste can be reused on or off-site
- How much of the waste could be recycled

You may choose to create an input and output diagram for your manufacturing plant. This will help you to map what materials you are using, where they are being used, and what wastes are being generated. An example of an input and output diagram follows:



Another way to document inputs and outputs is in table form:

Inputs to Process	Weight (kg)	Outputs from Process	Weight (kg)
Raw material purchased - type 1	800	Weight of products produced	2000
Raw material purchased - type 2	600	Waste material sent to landfill	200
Water Note: 1000 litres = 1000 kg for this example	1000	Estimated effluent loss through trade waste	200
Total	2400	Total	2400

As we can see from the table above, if you know how much of a material you are using and how much material you are producing you can determine how much you are losing as waste.

4.1.2. Raw materials

It is important when documenting your processes that you can collate the raw material going into the process with the actual amount ending up in the final product. The difference between these two figures is the amount of raw material that you have lost in the process and wasted.

4.1.3. Process waste

Process waste ends up in skips and wheelie bins or other collection containers. You can either get your collection service provider to supply you with the on-going weights of the materials leaving your site or you can set up an in-house measurement system of the materials leaving your site.

Note: Encourage your collection service providers to provide you with regular information on the quantity of waste they are collecting from you. Include this requirement in your service contract with your collection provider. This will allow you to monitor any increases or decreases in waste generation over time. It is also important to monitor the quantity of materials being collected for recycling, to ensure that you are reducing your waste and not simply moving it from the waste skip bin to the recycling bin.

You can use the information on Worksheet 1 (see Section 12) to help you understand your existing waste and recycling systems prior to undertaking your waste audit and implementing your waste reduction programme.

4.2. Designing a recycling system

This section provides suggestions for establishing a recycling system within a manufacturing site. But don't forget that you should first look at ways to prevent or reduce the amount of material you are using (see the waste hierarchy, Section 2.2).

Even when you have a recycling system in place, continue to look for ways to reduce consumption, as eliminating or reducing the need for a resource will always be a more efficient option than recycling.

A manufacturing solid waste recycling system should include the following:

- Determine what materials you are generating that could be recycled. These may include paper, cardboard, co-mingled recyclable materials, steel, non-ferrous metals, plastic wrap and other plastic.
- Contact your local recycling service provider and find out what recycling services they offer and types/size of bins they are able to provide you for storing the recyclable materials onsite. Based on the results of your waste audit, determine how many recycling bins you will need, taking into account how frequently the recycling service provider will be able to empty the bins.
- If the recycling service provider provides you with large cages (e.g. for cardboard) or gantry bins (e.g. for steel), place smaller recycling bins inside your manufacturing area, close to where each recyclable waste is being generated. The easier the access to the bins the more likely staff are to use them.
- Note: When contracting a recycling service provider ensure that the contract specification includes a requirement to supply you with regular data on quantities of recyclables collected from your site.
- Delegate a staff member or the cleaning contractor, to empty the internal recycling bins into the larger recycling bins stored outside on a regular basis.
- Ensure that you provide clear signage on and above all bins and train staff in how to use the system.

The on-line Recycling Directory at www.target sustainability.co.nz lists of recycling service providers.

4.3. Developing key performance indicators

The data collected from your waste audit will allow you to measure the success of your waste reduction programmes. However, if you have a substantial increase in staff numbers or in production after the first waste audit, you may find that even with a good waste reduction programme in place, the amount of waste you are generating has increased.

In a manufacturing environment, rather than calculate waste per FTE, it is more appropriate to select a KPI based on the services or products you are generating. For example, you may choose to calculate waste generated per 'widget', per kg or per m² manufactured, or per dollar of turnover.

4.4. Top tips - Manufacturing

4.4.1. Red flags (common waste areas)

- Waste evident on the floor
- Materials falling off conveyer belts
- Increases in raw material use for no gain in product quantity
- Unexplained waste management cost increases

4.4.2. Basics

- Know how much waste you are producing
- Educate staff about waste reduction practices
- Install signage and reminders for staff about waste reduction
- Conduct regular site wide waste audits and communicate the results to all staff
- Record waste produced over time (per month) to look for trends
- Lock waste skips out of work hours to prevent non-work waste dumping

4.4.3. Quick fixes

- Regularly maintain equipment to increase longevity
- Keep housekeeping up-to-date so that waste cannot accumulate
- Have recycling bins available for all staff to use and colour code these so items remain separated (you could be paid more for clean and segregated reuse and recycling materials)
- Try to sell or giveaway items in good condition that you no longer need as opposed to throwing them away (e.g. shelving, machinery parts etc)

4.4.4. Medium and long term

- Redesign processes to reduce waste production through minimising off cuts and rejects
- Reduce the amount of waste you put onto your customers by only using the minimal necessary packaging for a product
- Supply your customers with products and packaging that can be reused and recycled

5. Conducting Waste and Recycling Audits

5.1. Walk-through audit

Before conducting a waste audit, you need to do a walk-through or inspection of your workplace to help you identify what types and quantities of waste are being generated and where and why these are being created. Refer to The Pathway to Sustainability Business Guide for more detail on conducting a walk-through.

During the walk-through you should:

- Look in the rubbish bins, wheelie bins, skips, or other designated waste bins for recyclable or reusable material.
- Look in the recycling bins for reusable material.
- Look in the recycling receptacles for contamination i.e. non recyclable materials
- Observe how people use and store new paper and cardboard – are they wasting materials as they use them or damaging the materials. Are some departments or staff more efficient than others?
- Take note of the paper and cardboard products you create – reports, letters, packaging, etc. Is there wastage when these are produced, stored or transported?
- Take note of products and materials coming into your workplace – is there wastage in packaging, damaged goods, unwanted materials (i.e. junk mail)
- Record what you saw, heard, observed, what is working and areas for improvement. Record this information in Worksheet 2 (see Section 12)
- Write down what your business is doing/not doing to reduce waste
- Take the names of staff who you could talk to that would have useful information
- Take photos of rubbish bins, skips and recycling bins to help your records

Note: Do not start recycling or reduction initiatives before a walk-through and waste audit are conducted so that you can gather a baseline of what is currently being done.

5.2. Conducting a sort and weigh audit

A waste audit should be completed before setting up any type of waste reduction system, in order to establish a baseline and get a clear picture of what waste can be diverted from landfill.

The basic steps to reduce waste in your work place include:

- Measuring the waste generated and establish a baseline
- Establishing what changes are required
- Calculating the benefit of proposed changes to reduce your use of materials and reduce the waste produced
- Implementing changes
- Measuring the change
- Reviewing the changes
- Celebrating the success

Refer to the The Path to Sustainability Business Guide for more information on these steps.

Once you have implemented an improved waste reduction system, follow-up waste audits allow you to measure and celebrate progress. Sharing this information with staff also helps to build support and participation in the waste reduction system.

Waste audits are a good way of identifying issues with all types of wastes. If you have a recycling system in place you should also conduct a recycling audit to measure how much is being recycled and whether there is any contamination entering the recycling system.

5.2.1. Identify who is to complete the waste and recycling audit

Identify which staff members are to conduct the audit. It is important that staff are involved in the waste audit and that you:

- Keep staff aware of their own impacts on waste
- Allow staff a chance to suggest ways to reduce waste

A minimum of 5 to 10 people should be participating. For bigger workplaces (300+) a ratio of at least one volunteer per 40 staff will ensure the waste audit is finished within four hours.

Reward volunteers attending the waste audit (for example, provide a morning tea). Consider asking the managers or executive team to participate in providing the reward to acknowledge the work of the volunteers.

If your cleaning contractor, waste management supplier, or an external consultant has the facilities and skills to complete a waste audit, they may conduct it on your behalf. This, however, does not provide the advantages listed above. If an external party does the waste audit ensure at least one staff representative is present to see the waste audit carried out.

5.2.2. Identifying waste leaving the site

In a waste audit, you need to weigh and record all waste that leaves the site i.e. what goes to landfill, what is reused and what is recycled.

Before the audit, identify existing waste, reuse and recycling systems and record:

- What systems are already in place
- Amount of waste being reused
- Amount of waste being recycled
- Amount of waste being sent to landfill

Record this information in Worksheet 1 (see Section 12).

Obtain collection quantities of these materials from your collection service providers in order to get a baseline measurement of waste, reuse and recycling quantities. This data will be used as part of the baseline to show the effectiveness of your waste reduction programme.

Any waste that you have identified as already being reused or recycled should be checked and monitored to confirm that these materials are actually being reused and recycled.

5.2.3. Develop a waste audit kit

To perform the waste audit you will need the following items:

- A copy of the audit procedure contained in Section 5.2.8
- Printed copies of the waste audit recording sheets (see Section 12), for recording the weights of your waste
- One set of scales
- Extension cord (if necessary to power scales)
- Large tables (if available)
- One large tarpaulin
- Rubber gloves
- Suitable footwear
- Suitable clothing e.g. overalls
- Wiping cloth and cleaners for table
- Sorting containers with labels (one for each waste material category in the audit)
- Digital camera to document the waste audit for staff newsletters etc

5.2.4. Determining the sample size for the waste audit

Identify an average working week to conduct your waste audit, when most staff will be present and there is normal operating conditions. The recommended approach is to start saving waste from a Friday, collect all the waste until the following Thursday and audit on the Friday. This way there is a full week of waste, with a minimum quantity of waste having to be stored over the weekend. An alternative is to audit four or fewer days of waste. However this does not allow for variations in workload over a full working week.

Consider when you might do your annual waste audit. Aim to audit around the same time each year. Many workplaces have seasonal variations in workload, and consequently variations in waste production, so ensure an average working week is chosen for the audit.

If you operate out of several buildings, or even on several floors of the same building, consider auditing the waste from each building, or each floor, separately. This will allow you to compare waste generation across the different areas of your business, and even set up a competition to see which area/floor of the business can create the least waste.

Note: Ensure all the waste that currently goes to landfill, materials currently collected for reuse and materials currently collected for recycling are stored separately as they will be audited separately. If there are separate, paper recycling, cardboard recycling and other materials recycling collection systems in place these should also be stored separately as they will be audited separately.

5.2.5. At least one week before collection week

- Seek the manager's support in encouraging and allowing staff to participate in the waste audit, and encourage the manager's own participation.
- Do not broadcast to staff that a waste audit will be conducted as they may change their waste, reuse and recycling habits during the audit period
- Identify an area to store collected waste (e.g. basement or cleaning cupboard). The storage area should be cool in temperature and free of pests. The area should also be secure so that the stored waste will not be tampered with.
- Identify an area where the waste audit will be conducted. This area should be indoor, well ventilated and close to a power point if the scales require electricity.
- Make sure the cleaning supervisor and cleaning staff know to store all office waste (does not include sanitary bins) in the designated storage space from Friday through to the end of Thursday of the following week. Emphasise that no waste should be taken off site during the collection week. The cleaning regime can go back to normal on the Friday, once the waste audit has been completed.
- If auditing waste from different buildings or different floors of the same building, ask the cleaning contractor to label each bag of waste, with the building name or floor number.
- If you use a waste, reuse or recycling collection contractor, contact them to cancel collection for the week of the audit. Organise for pick up on the Friday afternoon, after the waste audit has been completed
- Select staff to participate in the waste audit. Make sure not to tell staff (apart from the selected volunteers) when the waste audit will take place. This way staff will continue disposing of all waste as normal
- Organise the equipment and waste audit recording sheets that will form the waste audit kit
- Identify a budget or a volunteer to provide morning/afternoon tea (or other form of reward) to thank volunteers

5.2.6. Each day of the collection week

- Confirm each day of the collection week that the cleaning staff are storing all the waste correctly in the designated storage area.

5.2.7. During the waste audit

5.2.7.1. Setting up the audit equipment

- Bring the waste, reuse and recycling collection containers from the storage area to the area where the waste sort is being held
- Cover the tables with the tarpaulin to create the sorting area. If tables are not available, place your tarpaulin on the ground
- Assemble the scales and place them on an even surface
- Connect scales to power
- Zero the scales
- Put the sorting containers with labels on the tarpaulin ready for sorting.
- Provide rubber gloves to volunteers.
- Have this waste audit procedure available (for reference) and the waste audit recording sheets and a pen ready to record results
- Ensure a camera is on hand to record the event and to demonstrate the waste stream visually
- Ensure you have a system for disposing of the waste once it has been sorted by placing it directly into an appropriate rubbish, reuse or recycling container or transporting it to the rubbish, reuse or recycling area
- Should you already have a reuse or recycling system in place (e.g. office paper recycling) make provisions to divert any uncontaminated materials found in the waste audit back to the appropriate reuse or recycling containers, after the audit is complete
- Go through the waste audit categories in Worksheet 3 (see Section 12) and add any material categories that you expect to show a strong trend, such as paper towels, paper, organic waste, takeaway cups or plastic water cooler cups

5.2.7.2. Health and safety

Ensure that all staff involved in the audit are aware of the Health and Safety requirements of the audit and the Health and Safety procedures of the organisation.

As a minimum consider the following:

- Wear gloves at all times
- Avoid sharp objects
- Ensure the confidentiality of any material is respected
- Wear appropriate masks if sorting dusty rubbish
- Provide good washing facilities and soap etc
- Be careful not to lift heavy objects
- Be aware of sensitive individuals (e.g. pregnant women, people with allergies) and only assign appropriate tasks for example recording weights. Consider whether it is appropriate for them to be involved in the audit

5.2.7.3. Assigning roles

- The quality controller is part of the audit team but ensures consistent sorting decisions are made. S/he is in charge of swapping full sorting containers with empty ones and taking the full ones to the scales for weighing
- The person who is weighing / recording must start by noting the waste category and weight of each empty sorting container (the tare weight) on the waste audit recording sheet. Once the audit starts, this person must record the weight of each full sorting container, beside the appropriate waste category and sorting container on the recording sheet. They should then transfer the waste either into the rubbish or recycling unit for disposal
- The waste sorters should place each piece of waste into the appropriate waste sorting container according to the waste category

- A photographer should take photos of: the audit team participants, all the waste present before the waste audit and after material categories have been weighed, individual piles of paper, piles of cardboard, piles of recyclables found in the rubbish, specific types of materials if they are in significant quantities, (e.g. paper towels, organic (food) waste, disposable coffee cups, plastic water cups), and generally document the waste audit for later promotional purposes. Once the separate audit of the recycling systems has been conducted take photos to show the amount and type of recyclables and the contamination present.

5.2.8. Audit procedure

5.2.8.1. Waste audit - waste to landfill

- Determine what waste categories are expected to show strong trends
- Discuss the different sorting categories with the volunteers
- Add material categories that you think will show a strong trend to the waste to landfill audit Worksheet 3 (Section 12)
- Set the scales to zero. Ensure all sorting containers are clearly labelled with material categories. Then weigh each clearly labelled empty sorting container and record the weight of each container in the appropriate column on the waste to landfill audit Worksheet 3 (see Section 12). These tare weights will later be subtracted from the weights of the full sorting containers, to gain a weight for the contents only.
- Start by recording the weight of all the full bags of rubbish. If you have labelled bags of waste from different buildings or different levels of the same building, weigh and sort the bags from each area separately
- Make sure any bulky, difficult to weigh items of waste, (e.g. pallets, reels etc), get recorded in the waste figures as number of items.
- Empty the rubbish bags or collection containers onto the tarpaulin and sort the waste into the relevant categories
- Start sorting the waste into the appropriate labelled sorting containers.
- Each time a container is full, record the weight of the full sorting container on the waste to landfill audit Worksheet 3 (see Section 12)
- Ensure that all of the contents in the sorting container have been removed before reusing the container to weigh more sorted material
- Place whole bags containing only one material (e.g. paper towels from the toilets) straight into the appropriate sorting container and weigh (it's important to weigh it in the container, as a tare weight will be subtracted from each recorded weight)
- Clean the sorting area and dispose of waste appropriately (e.g. either into rubbish, reuse or recycling containers)
- Note down any potential improvements to waste management that volunteers have identified during the waste audit
- Thank volunteers for their participation and go to morning or afternoon tea together

5.2.8.2. Waste audit - paper recycling

If you have a paper recycling system in place you should also do a paper recycling audit. This can be done straight after the waste audit if you have time, or on a separate occasion.

The aim of a paper recycling audit is to determine whether there is any contamination in the recycling bins, what types of paper you are disposing of, and whether there is potential to reduce the use of some of the paper that is being wasted.

- Determine what paper and waste categories are likely to show a strong trend
- Discuss the different sorting categories with the volunteers
- Add material categories that you think will show a strong trend to the paper recycling audit Worksheet 4 (Section 12)
- Set the scales to zero. Ensure all sorting containers are clearly labelled with material categories. Then weigh each clearly labelled empty sorting container and record the weight of each container in the appropriate column on the paper recycling audit Worksheet 4 (see Section 12). These tare weights will later be subtracted from the weights of the full sorting containers, to gain a weight for the contents only.

- Empty the collection containers onto the tarpaulin and sort the paper and other materials into the relevant categories
- Weigh each sorting container and its contents, recording the weight in the appropriate column in the paper recycling audit Worksheet 4.
- Ensure that all of the contents in the sorting container have been removed before reusing the container to weigh more sorted material
- Clean the sorting area and dispose of paper and any other materials appropriately (e.g. either into rubbish, reuse or recycling containers)
- Note down any potential improvements to waste management that volunteers have identified during the waste audit
- Thank volunteers for their participation and go to morning or afternoon tea together

5.2.8.3. Paper source investigation audit

It is important not only to implement a paper recycling system, but also to use paper efficiently and not waste this valuable resource. A paper efficiency programme can be developed to target areas where paper is being wasted.

To gather baseline data on where the paper waste is being generated, conduct a paper source investigation audit. This can be done either straight after the paper audit, or at another time. Collect representative samples of paper waste from the paper recycling containers and segregate it into the categories suggested in Worksheet 8 (see Section 12).

Record the weights in Worksheet 8 and then implement a programme to reduce paper waste generated in the areas of the organisation that show high paper usage.

5.2.8.4. Waste audit - cardboard recycling

If you have a cardboard recycling system in place you can do a cardboard recycling audit, to determine what area of your business is generating the cardboard, whether cardboard use could be reduced and whether there is any contamination in the cardboard collection units.

- Determine what cardboard and waste categories are likely to show a strong trend
- Discuss the different sorting categories with the volunteers
- Add material categories that you think will show a strong trend to the cardboard recycling audit Worksheet 5 (Section 12)
- Set the scales to zero. Ensure all sorting containers are clearly labelled with material categories. Then weigh each clearly labelled empty sorting container and record the weight of each container in the appropriate column on the cardboard recycling audit Worksheet 5 (see Section 12). These tare weights will later be subtracted from the weights of the full sorting containers, to gain a weight for the contents only.
Note: If the cardboard is larger than the sorting containers, weigh the cardboard directly on the scales. If you do this, the tare weight entered on Worksheet 5 will be zero.
- Discuss the different sorting categories with the volunteers
- Empty the collection containers onto the tarpaulin and sort the cardboard and other materials into the relevant categories. If you have several cardboard cages, you may want to audit a random sample only
- Weigh each sorting container and its contents, recording the weight in the appropriate column in the cardboard audit recording sheet
- Ensure that all of the contents in the sorting container have been removed before reusing the container to weigh more sorted material
- Clean the sorting area and dispose of cardboard and any other materials appropriately (e.g. either into rubbish, reuse or recycling containers)
- Note down any potential improvements to waste management that volunteers have identified during the waste audit
- Thank volunteers for their participation and go to morning or afternoon tea together

5.2.8.5. Waste audit - other recycling materials

If you have other recycling systems in place you should do a recycling materials audit to see whether there is any contamination in the recycling bins, whether there are items being disposed of that could instead be phased out or reused, what type of recycling materials you are disposing of and whether there is potential to reduce the amount of recycling materials being wasted.

- Determine what recycling and waste categories are likely to show a strong trend
- Discuss the different sorting categories with the volunteers
- Add material categories that you think will show a strong trend to the other recycling materials audit Worksheet 6 (Section 12)
- Set the scales to zero. Ensure all sorting containers are clearly labelled with material categories. Then weigh each clearly labelled empty sorting container and record the weight of each container in the appropriate column on the other recycling materials audit Worksheet 6 (see Section 12). These tare weights will later be subtracted from the weights of the full sorting containers, to gain a weight for the contents only.
Discuss the different sorting categories with the volunteers
- Empty the collection containers onto the tarpaulin and sort the recycling materials and any other materials into the relevant categories
- Weigh each sorting container and its contents, recording the weight in the appropriate column in the other recycling materials audit recording sheet.
- Ensure that all of the contents in the sorting container have been removed before reusing the container to weigh more sorted material
- Clean the sorting area and dispose of the recycling materials and any other materials appropriately (e.g. either into rubbish, reuse or recycling containers)
- Note down any potential improvements to waste management that volunteers have identified during the waste audit
- Thank volunteers for their participation and go to morning or afternoon tea together

5.2.8.6. Waste audit - material reuse

If you have materials leaving the site for reuse you can do a material reuse audit. This will help you to determine what materials you are disposing of that you may be able to avoid buying in the first place.

- Determine what reuse materials and waste categories are likely to show a strong trend
- Discuss the different sorting categories with the volunteers
- Add material categories that you think will show a strong trend to the material reuse audit Worksheet 7 (Section 12)
- Set the scales to zero. Ensure all sorting containers are clearly labelled with material categories. Then weigh each clearly labelled empty sorting container and record the weight of each container in the appropriate column on the material reuse audit Worksheet 7 (see Section 12). These tare weights will later be subtracted from the weights of the full sorting containers, to gain a weight for the contents only.
Discuss the different sorting categories with the volunteers
- Empty the collection containers onto the tarpaulin and sort the reusable materials and other materials into the relevant categories
- Weigh each sorting container and its contents, recording the weight in the appropriate column in the material reuse audit recording sheet.
- Ensure that all of the contents in the sorting container have been removed before reusing the container to weigh more sorted material
- Clean the sorting area and dispose of reusable materials and any other materials appropriately, (e.g. either into rubbish, reuse or recycling containers)
- Note down any potential improvements to waste management that volunteers have identified during the waste audit
- Thank volunteers for their participation and go to morning or afternoon tea together

5.2.9. After the waste audit

5.2.9.1. Audit results

- You have previously added expected material categories to the relevant on-line worksheet, printed it off and filled it in on-site (and possibly manually added categories as the audit progressed)
- Transfer the collected data from the hardcopy worksheets to the electronic worksheets available at www.targetsustainability.co.nz
- The electronic worksheets automatically calculate both the totals and the percentage by waste category onto the Results worksheet. Tare weights (the weight of the empty sorting container) will be automatically subtracted from each weight you enter
Note: If you did not use a sorting container and weighed particular material categories directly on the scales, (e.g. materials too large for the sorting containers) then enter the tare weight as zero.
- Check that the total weight of sorted waste is equal or very close to the total weight of unsorted waste. Small discrepancies often represent the weight of plastic rubbish bags, small rubbish debris and so on. Large discrepancies point to either an error in measuring or in data entry and should be re-checked
- Provide the results and photos to staff (via the intranet, email or other methods)
- Use the information from the waste audit to help identify opportunities to implement an improved waste reduction, reuse and recycling system and as a framework for internal awareness of the importance of waste reduction

Review your waste reduction programme every six months by conducting a waste audit, and compare the results obtained to your previous waste audits. If the waste reduction and recycling programme is not meeting your expectations, your options include:

- Conducting a survey of staff to find out how you can make the procedures easier to use
- Increased education on the workplace reuse and recycling system
- Competitions for top performing work areas

Even if you have an effective recycling programme it is important to ensure that you complete a waste and recycling audit to determine if any improvements can be made.

Ensuring your waste, reuse and recycling collection service providers supply you with collection quantities of materials will reduce the number of times you have to conduct a waste audit.

6. Waste Management Contracts

There are generally five basic systems of waste removal used by businesses:

- Rubbish bags
- Wheelie bins
- Front-loader bins
- Gantry skips
- Compactors.

Waste collection charges will vary based on the waste contractor, the type of contract the business has entered into with the waste contractor and the type of collection unit used.

Savings to be achieved through waste reduction will vary according to the type of collection unit and the type of waste management contract. Rubbish removal contracts that are based on a fixed monthly fee for services offer no savings from waste reduction.

Compactor and gantry skip contracts that include charges for equipment hire, transport and per tonne disposal, reduce the benefits of waste reduction because of the fixed component of the charges. Significant reduction in those charges can only be achieved if the number of collections and waste tonnage per month is reduced.

Front-loader bin and wheelie bin contracts that are based on bin hire charges and a per lift charge can, with active management, give good economic benefits from waste reduction. If through waste reduction the number of bins that are hired and the number of collections that are required can be reduced, cost savings equal to the reduction in waste can be made.

Note: When contracting a waste collection service provider ensure that the contract specification includes the requirement to supply you with regular data on quantities of waste collected from your site.

7. Communication

You must engage and influence staff to ensure that any waste reduction programme continues in the long-term. This can be done by:

- Giving information and training to staff about the programme
- Using signage and graphs to display information
- Rewarding staff that reduce, reuse or recycle waste

It is important to gain support from senior management before the programme is launched, and to ask senior management to endorse the programme publicly.

A useful way to communicate important messages to staff is by giving each staff member a letter with their pay slip or timesheet to explain the new programme. The following is an example of the type of information you could consider in a letter to staff when implementing a paper and cardboard recycling system.

Dear <staff member>,

From < insert date> a new recycling system for paper and cardboard will be operating within our organisation. Your support and participation is essential to make the whole system work properly. It would be greatly appreciated if you would please:

- Use the paper recycling collection container under your desk for all your waste paper (see below for what can and can't be recycled) and regularly empty it into the paper recycling bin located at <insert location>
- Use the shredder for confidential items and then place the remains in the paper recycling bin (you may have a confidential paper bin service rather than a paper shredder).
- Put flattened cardboard containers that are not suitable for reuse in the <insert location>

Paper that can be recycled includes:

- White office paper
- Post-it notes
- Newspapers
- Envelopes (with cellophane windows torn out if they have them)
- Coloured paper
- Light card
- Magazines

This does not include:

- soiled paper
- used tissues
- plastic covered paper
- paper clips
- plastic covers or spines from binding

Please reuse paper for notes and messages, before recycling, whenever possible.

For more information, questions or suggestions please don't hesitate to contact:

<insert your contact details here>

Thank you very much

8. Recycling Service Providers

The Christchurch City Council provides an on-line Recycling Directory which lists providers of recycling services. The directory is available at www.target sustainability.co.nz.

9. Glossary

The following table explains the plastics identification codes and common examples:

Symbol	Type of plastic	Common examples
 PET	PET (Polyethylene Terephthalate)	Soft drink and water bottles, trays
 PE-HD	PE-HD (High Density Polyethylene)	Crinkly shopping bags, freezer bags, milk bottles, ice cream containers, juice bottles, shampoo, chemical and detergent bottles, buckets
 PVC	PVC-U (Unplasticised Polyvinyl Chloride)	Cosmetic containers, electrical conduit, plumbing pipes and fittings, blister packs, bottles
 PVC	PVC-P (Plasticised Polyvinyl Chloride)	Garden hose, shoe soles, cable sheathing,
 PE-LD	PE-LD (Low density Polyethylene)	Plastic food wrap, garbage bags, squeeze bottles, black irrigation tube, black mulch film, garbage bins
 PP	PP (Polypropylene)	Dip pottles and ice cream tubs, potato chip bags, straws, microwave dishes, kettles, garden furniture, lunch containers.
 PS	PS (Polystyrene)	CD cases, plastic cutlery, imitation 'crystal glassware', low cost brittle toys, video cases
 PS-E	PS-E (Expanded Polystyrene)	Foamed polystyrene hot drink cups, hamburger takeaway clamshells, foamed meat trays.

	<p>Other - letters below the symbol indicate the ISO code for the plastic type</p>	<p>Car parts, appliance parts, computers, electronics, water cooler bottles, packaging</p>
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10. Target Sustainability Business Guide series

The following Guides will be useful to help you undertake your sustainability programme:

- Target Sustainability - The Path to Sustainability Business Guide
- Target Energy Business Guide
- Target Water Business Guide

11. On-line Worksheets

Electronic worksheets are available at www.target sustainability.co.nz. These can be modified to suit your requirements and used for data entry.

12. Attachments

The following worksheets are attached to show you what is available to download from www.target sustainability.co.nz to record your information.

- **Worksheet 1:** Existing Waste and Recycling Systems
- **Worksheet 2:** Walk-Through Audit
- **Worksheet 3:** Waste Audit - Waste Sent to Landfill
- **Worksheet 4:** Waste Audit - Paper Recycling
- **Worksheet 5:** Waste Audit - Cardboard Recycling
- **Worksheet 6:** Waste Audit - Other Recycling Materials
- **Worksheet 7:** Waste Audit - Material Reuse
- **Worksheet 8:** Paper Source Investigation Audit
- **Worksheet 9:** Paper Use Monitoring



Worksheet 1: Existing Waste and Recycling Systems

WASTE TO LANDFILL

Quantities of waste disposed e.g. tonnes of waste, number of skips or wheelie bins per week / month / year:

Cost of waste disposal per month / year: _____

Containers used _____

Waste disposal service provider: _____

Frequency of collection: _____

Who is responsible for collecting and depositing waste to a central area (e.g. cleaners, staff):

Other comments: _____

PAPER RECYCLING

Quantities of paper recycled e.g. tonnes of paper, number of wheelie bins per week / month / year:

Cost of recycling service for paper per month / year: _____

Containers used: _____

Paper recycling service provider: _____

Frequency of collection: _____

Who is responsible for collecting and depositing paper to a central area (e.g. cleaners, staff):

Other comments: _____

DOCUMENT DESTRUCTION

Quantities of confidential paper sent to document destruction e.g. tonnes of paper, number of wheelie bins per week / month / year:

Cost of document destruction service per month / year: _____

Containers used: _____

Document destruction service provider: _____

Frequency of collection: _____

Who is responsible for collecting and depositing confidential paper to a central area (e.g. cleaners, staff):

Other comments: _____

CARDBOARD RECYCLING

Quantities of cardboard recycled e.g. tonnes of cardboard, number of cages per week / month / year:

Cost of recycling service for cardboard per month / year: _____

Containers used: _____

Cardboard recycling service provider: _____

Frequency of collection: _____

Who is responsible for collecting and depositing cardboard to a central area (e.g. cleaners, staff):

Other comments: _____

OTHER MATERIALS BEING RECYCLED

MATERIAL TYPE: _____

Quantities of material e.g. tonnes of material, number of wheelie bins per week / month / year:

Cost of collection service per month / year: _____

Containers used: _____

Recycling service provider: _____

Frequency of collection: _____

Who is responsible for collecting and depositing the material to a central area (e.g. cleaners, staff):

Other comments: _____

OTHER MATERIALS BEING REUSED

MATERIAL TYPE: _____

Quantities of material e.g. tonnes of material, number of wheelie bins per week / month / year:

Cost of collection service per month / year: _____

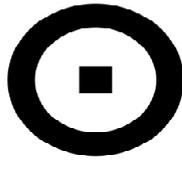
Containers used: _____

Reuse service provider: _____

Frequency of collection: _____

Who is responsible for collecting and depositing the material to a central area (e.g. cleaners, staff):

Other comments: _____



Target Sustainability

Worksheet 3		Waste Audit - Waste Sent to Landfill							
Date									
Time									
Physical address of the site									
Sheet Number									
Name of recorder									
Number of collection days									
Number of full time equivalent staff at the site									
Waste Category	Description	Container weight (kg)	Gross weight (kg)	Gross weight (kg)	Gross weight (kg)	Gross weight (kg)	Gross weight (kg)	Gross weight (kg)	Gross weight (kg)
Recyclable paper	Office paper, newspapers, magazines, etc								
Non recyclable paper	Laminated paper, food soiled paper, etc								
Recyclable Cardboard	Cardboard boxes								
Non recyclable Cardboard	Plastic covered cardboard boxes								
Plastic code 1 - (PET Polyethylene Terephthalate)	Soft drink and water bottles								
Plastic code 2 - (PE-HD High density Polyethylene)	Milk bottles								
Plastic code 3 - (PVC Polyvinyl Chloride)	Sandwich packaging								
Plastic code 4 - (PE-LD Polyethylene low density)	Bags								
Plastic code 5 - (PP Polypropylene)	Dip pottles, ice cream tubs, microwave dishes								
Plastic code 6 - (PS + PS-E Polystyrene or expanded polystyrene)	Yoghurt containers, expanded packaging								
Plastic code 7 - (Other)	Plastic packaging without a recycling number								
Organic - food waste	All food waste								
Organic - other	Plants, vacuum cleaner dust								
Steel cans	All steel cans								
Aluminium cans	All aluminium cans								
Other metal	All other metal and items made predominantly of metal								
Recyclable glass	Glass bottles and jars								
Non recyclable glass	Light bulbs, drinking glasses, window panes								
Textiles	All items primarily made of fabric								
Sanitary paper	Paper towels, tissues								
Rubble	General building rubble, concrete and ceramics								
Timber	All items primarily made of timber								
Rubber	All items made of rubber - tyres, rubber soled shoes								
Printer cartridges	Cartridges from printers and copiers								
Hazardous	Batteries, medicines and cosmetics, cleaning agents, smoke detectors								
Other									
Other									

Example

- Input weight of empty bins (tare weight) into apricot cells
- Input data from each bin weighed into yellow cells
- Input audit details into green cells



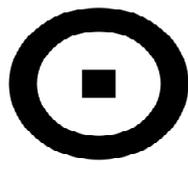
Worksheet 5		Waste Audit - Cardboard Recycling									
Date											
Time											
Physical address of the site											
Sheet Number											
Name of recorder											
Number of collection days											
Number of full time equivalent staff at the site											
Waste Category	Description	Container weight (kg)	Gross weight (kg)	Gross weight (kg)	Gross weight (kg)	Gross weight (kg)	Gross weight (kg)	Gross weight (kg)	Gross weight (kg)	Gross weight (kg)	Gross weight (kg)
Recyclable cardboard											
Non recyclable cardboard											
Other											
Other											
Other											
Other											
Other											
Other											

Input weight of empty bins (tare weight) into apricot cells
 Input data from each bin weighed into yellow cells
 Input audit details into green cells



Worksheet 8		Waste Audit - Paper Source Investigation															
Date																	
Time																	
Physical address of the site																	
Sheet Number																	
Name of recorder																	
Number of collection days																	
Number of full time equivalent staff at the site																	
Waste Category	Source	Description	Container weight (kg)	Gross weight (kg)													
Internally generated	Non e-mail	Multi pages non double sided															
		Single pages															
		Double sided															
	e-mail	Multi pages non double sided															
		Single pages															
		Double sided															
	Other	One sided reused															
		Stationery															
		Continuous paper															
		Other (notes etc)															
Externally generated	General	Magazines															
		Books, diaries etc															
	Reports	General correspondence															
		Single sided															
Other	Envelopes	Double sided															
		With windows															
	Other	Without windows															
		Blank paper															
Other	Contamination																

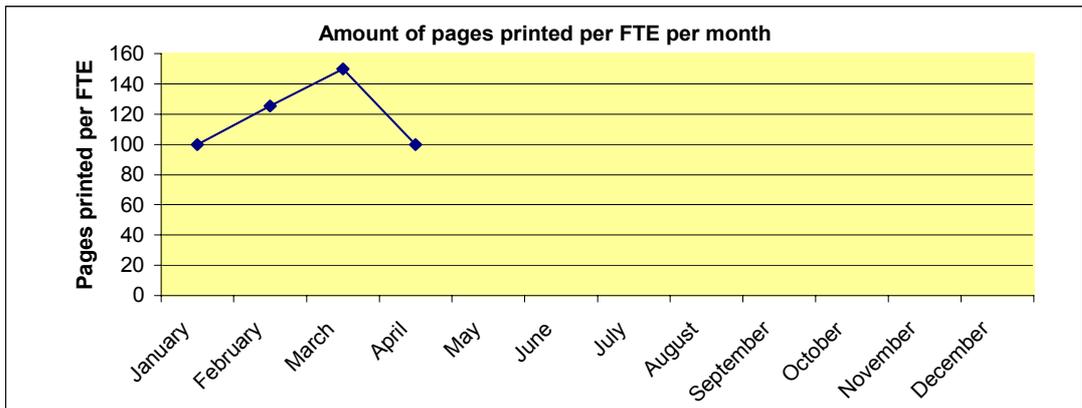
Input weight of empty bins (tare weight) into apricot cells
 Input data from each bin weighed into yellow cells
 Input audit details into green cells



Target Sustainability

Worksheet 9: Paper Use Monitoring

Month	Amount of pages printed	Number of FTE staff	KPI, Pages printed per FTE
January	1000	10	100
February	1255	10	125.5
March	1500	10	150
April	1000	10	100
May			
June			
July			
August			
September			
October			
November			
December			



Note: You can modify this spreadsheet to record data for weight of paper used per FTE per month, or number of paper reams per FTE per month.