

The Waste Wise Schools Program

# Waste Audit Toolkit



Department of Environment and Conservation  
Waste Authority

**WRIGLEY**  
A Subsidiary of Mars, Incorporated

# Acknowledgments

**Written by** Danielle Ralph

**Illustrations by** Rod Waller

**Designed by** Su-Anne Lee, Spice Creative

**Edited by**

Jennifer Weston

Patrick Hamill

Wendy Aspden

This guide was developed by the Waste Wise Schools Program which is managed by the Department of Environment and Conservation and supported by the Western Australian Waste Authority through the landfill levy fund, with additional assistance from the Wrigleys Corporation, a subsidiary of Mars.

**For more information about the program please contact:**

The Waste Wise Schools Program  
Department of Environment and Conservation  
Locked Bag 104  
Bentley Delivery Centre, WA 6983

Phone: (08) 6467 5011

Fax: (08) 6467 5532


Email: [wastewise@dec.wa.gov.au](mailto:wastewise@dec.wa.gov.au)

Web: [www.wastewise.wa.gov.au](http://www.wastewise.wa.gov.au)



# Contents

<b>Introduction</b>	<b>1</b>
<b>Chapter 1    Waste Wise Schools program</b>	<b>2</b>
About the Waste Wise Schools program	2
<b>Chapter 2    Waste audits</b>	<b>3</b>
A waste audit	3
Waste and related issues	3
A typical breakdown of waste in schools	4
<b>Chapter 3    How to conduct a waste audit</b>	<b>5</b>
Plan it	5
Set it up	6
Run it	6
Keep it going	8
<b>Chapter 4    Waste audit scope and sequence, lessons and tools</b>	<b>9</b>
Waste audit scope and sequence	9
Scope and sequence table	10
Waste audit mathematics lesson plan	14
School waste audit report lesson plan	16
More curriculum links	19
Other resources	19
Useful websites	20
Example letter to inform parents/guardians of the waste audit	21
Waste audit results table	22
Waste audit signs	25



# Introduction

The **Waste Audit Toolkit** is an operating practices manual that is intended to guide the development and implementation of waste audits in schools. The information gained from an audit is an invaluable step towards developing a focused and data driven method to reducing the amount and types of waste your school sends directly to landfill. It is usually the second step schools take towards becoming a Waste Wise School after completing the Waste Wise introductory workshop.

The **Waste Audit Toolkit** has been designed to promote best practice; however, the key is finding what works for your school. This toolkit has been designed with the intention that it can easily be tailored for the needs of individual schools, classrooms and students.

Good luck and we hope you enjoy your journey to becoming more Waste Wise!

**The Waste Wise Team**



For more information go to  
[www.wastewise.wa.gov.au](http://www.wastewise.wa.gov.au)



# Chapter 1

## Waste Wise Schools program

### About the Waste Wise Schools program

Waste Wise Schools throughout Western Australia are reducing waste by implementing the 3Rs – reduce, reuse, recycle – while developing positive environmental values in students and the whole school community. Waste Wise Schools model responsible environmental behaviours through hands-on learning experiences that are linked to the WA Curriculum Framework. The program helps schools set up infrastructure and provides resources aimed at changing attitudes and behaviours in regards to sustainable waste management. The program is free and available to all schools in Western Australia.

**“The Waste Wise Schools program has been developed based on best practice education for sustainability principles.”**

### The Waste Wise Schools philosophy

The Waste Wise Schools program has been developed based on best practice education for sustainability principles. The overarching message of the program is to reduce, reuse and recycle to promote the sustainable use of natural resources and minimise our collective environmental footprint.

### The Australian Sustainable Schools Initiative – WA

Through participation in the Waste Wise Schools program, your school has already begun participating in Australian Sustainable Schools Initiative – WA (AuSSI – WA), and schools can formally register and learn more about AuSSI – WA through the online toolkit. For further information regarding the Sustainable Schools Initiative WA, visit the project website: [www.det.wa.edu.au/sustainableschools](http://www.det.wa.edu.au/sustainableschools)





# Chapter 2

## Waste audits

### A waste audit

A waste audit is an evaluation of the waste that your school produces. It allows you to find out two things; first, how much waste your school produces and second, what type of waste is produced. The information can give you an idea of where to begin your waste minimisation efforts, for example, what type of recycling to implement or what type of waste to reduce. The information gathered from a waste audit can also be a valuable way of measuring improvement, particularly if you're planning on implementing a waste management plan.

### Waste and related issues

To help create a context for conducting your waste audit there are a few things that you may want to discuss as an introduction to the audit. This may include 'what is waste?', 'where does our waste go?' and 'what problems can be created by our waste?'.

There are many ways in which waste can be defined, with one such example being 'a resource with a yet-to-be-determined use'. For example, an apple core, a plastic food container and an old pair of shoes may all be considered as waste, but that does not mean they have to be put in the rubbish bin. An apple core can be composted, a plastic container can usually be recycled and an old pair of shoes could be given to a charity organisation or simply to a brother, sister or friend.

There are a number of places we put our waste, including the rubbish bin, recycling bin, compost bin and worm farm. Usually if a school has not arranged for a recycling service, the waste in the rubbish bin is sent to landfill or the rubbish tip. This traditionally involves burying or piling our waste in or on the ground. There are a number of issues that our waste can create. Some may include:

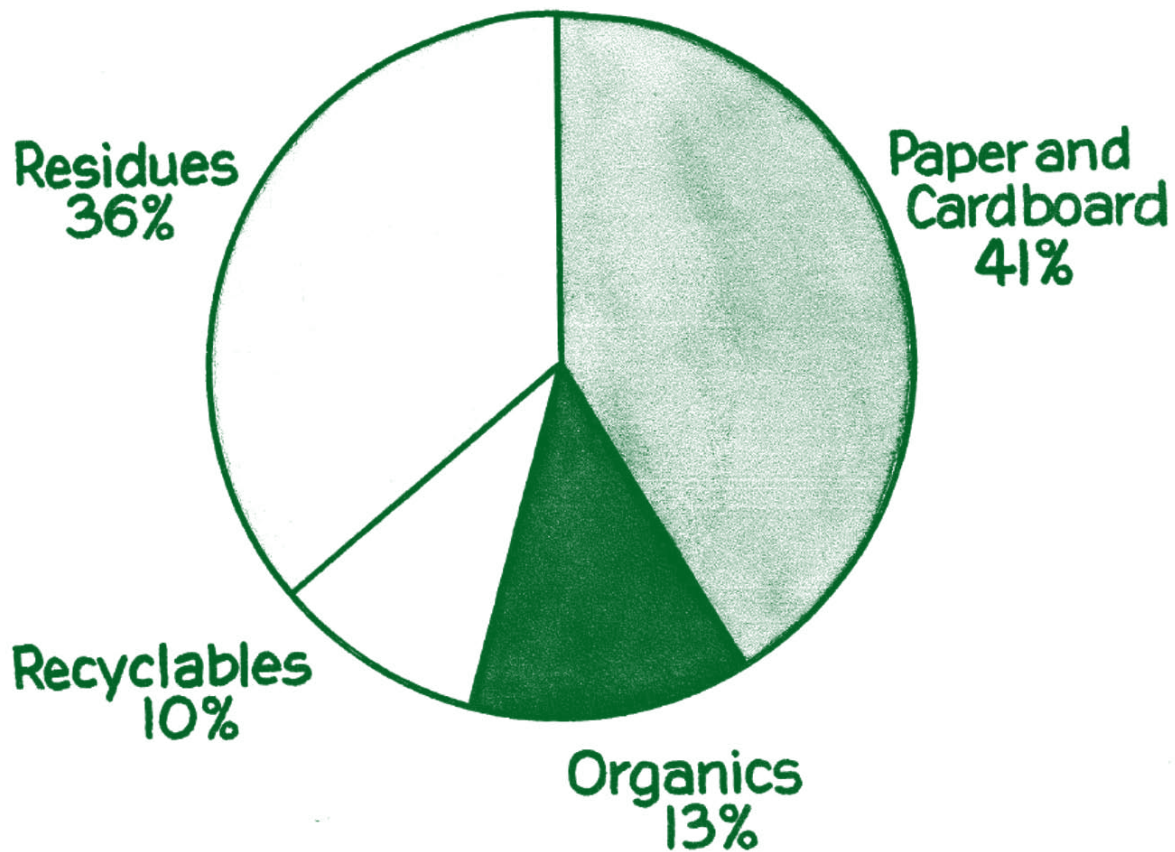
- Land clearing to build landfills may cause loss of biodiversity and habitats.
- Windblown waste from the landfill may allow litter to enter waterways or the bushland and could affect native fauna.
- Leachates or toxic liquids from products such as batteries and old paint may contaminate the soil and ground water (if the landfill or tip isn't lined with protective plastic).
- Social impacts that may occur from the unpleasant nature of the landfill include smell, noise, vermin and aesthetics.
- Burying resources that are valuable as recyclables and compostable material.
- Greenhouse gases, such as methane gas, are produced from decaying organic waste. Methane is about 20 times stronger than carbon dioxide. This refers to it being 20 times more able to hold heat in the atmosphere than carbon dioxide.

When we identify and discuss some of the issues that are associated with our waste we begin to understand why it is so important to be waste wise. This may help to clarify why the waste audit is such an important activity.



### A typical breakdown of waste in schools

In November 2001 a series of waste audits were conducted in Perth schools. Results showed that there were significant opportunities for schools to reduce the amount of waste that they are sending directly to landfill.



**Paper and cardboard:** This waste stream comprises the largest proportion of waste, totaling approximately 41 per cent of total school waste.

**Residues:** This category makes up 36 per cent of school waste and includes non-recyclable plastics, bricks, office equipment, soiled paper and cardboard, books, and clothing. In this category, a considerable proportion could be diverted from landfill by reusing or donating the products (clothes, office equipment, bricks, books) or composting (soiled paper).

**Organics:** Grass, food and garden waste are included in this category and make up approximately 13 per cent.

**Recyclables:** Approximately 10 per cent of total waste is comprised of common recyclables such as liquid paperboard (drink cartons), PET (polyethylene) and HDPE (high density polyethylene) plastics, aluminium, steel and glass.

The results show that an average school can reduce its waste output by over half, just by composting organics and recycling paper and cardboard. Extending recycling to other materials and implementing the 3R principle – reduce, reuse, recycle – to all the resources used in a school will further reduce school waste.



# Chapter 3

## How to conduct a waste audit

### Plan it

Waste audits are a useful means of gauging progress when you're aiming to implement a waste management plan. They are also an excellent way of convincing the rest of your school that they may have a waste management problem. Below are a few tips and suggestions to help your students gain maximum benefit from your school's waste audit.

#### 1. Choose who will do the audit.

Rather than having the audit with one whole class, consider establishing a signup sheet so that the students who attend are the ones with a keen interest. You could also have the student councillors or environmental club members conduct the audit. This will also help ensure that the benefits of the audit reach several year groups.

#### 2. Work out how many bins will be used.

Before commencing the audit, find out how many bins you have at your school. Don't forget to include classroom, staffroom, library and canteen bins. If you have more than 200 students in your school it is a good idea to sort only a percentage and adjust the results accordingly. If your bins are not emptied daily make sure that you consider this in your final results.

It is important that you conduct the audit after lunch or at a time of the day that will allow for a good representation of school waste. You may also need to consider waste generated from any special events, meetings or parties on that day.

**Safety note to avoid injury: Please check the bins for any dangerous goods such as glass or other unexpected items where possible before conducting the audit.**

#### 3. Try to involve the whole school.

Inviting the rest of the school to come and see the rubbish once it has been sorted is a great way to show them the need for waste minimisation in your school. Students not participating in the activity are always surprised by the amount of rubbish generated in just one day, particularly when they can see just how much is preventable or recyclable.

#### 4. Take photographs.

Taking photographs of the audit is a fantastic way to show the rest of the school what you're doing. Photos are also a great way to send the message home. Why not include them in newsletters or school displays? Alternatively hold an assembly to present the results and the students' waste audit experiences and impressions.



#### 5. Choose a suitable location for your waste audit.

Ensure that a suitable area is booked for the audit. The best area is one that is under cover, well ventilated, easy to clean and protected from the wind. Undercover assembly areas are usually ideal.

#### 6. Plan the cleanup.

Make sure that you have a hose available for washing down the materials following the audit. You may want to ask the students, gardener or cleaner to wash down the area following the audit. Plastic sheeting is used to reduce the mess. However, a certain degree of mess is unavoidable. You can request a waste audit toolkit by emailing [wastewise@dec.wa.gov.au](mailto:wastewise@dec.wa.gov.au). The kit includes black plastic sheeting and gloves.





## Set it up

### 1. Inform parents and the school community of your planned waste audit.

You may even invite them to participate! An [example letter for parents and guardians](#) is available in the tools section, chapter 4 of this document.

Students can bring tongs from home if parents don't feel that gloves are sufficient. If you think that it may be necessary, ask parents to complete a permission slip for their children to participate.

### 2. Incorporate the waste audit into your term program.

Waste audits can be very easily incorporated into your curriculum. The [waste audit scope and sequence](#) (see chapter 4), provides examples of how you may like to do this. By following these lesson plans, you may spark the interest of the students to change their behaviour in regard to their current waste disposal practices. You will also provide them with the skills and knowledge base to enable them to make a valuable contribution to their local community based on informed decisions.

### 3. Prepare the students for the waste audit.

It is very important to discuss the waste audit with your students before it is actually conducted. This saves a lot of time and confusion on the day and gives them a chance to absorb all the information. Let them know what they're going to be doing and include some of the reasons why. For example, you may like to discuss the environmental and cost saving reasons. It is also recommended that you talk about what type of results you might expect and what you plan on doing with the data.

Consider enabling the students to plan and set up the audit themselves or break the group into two teams as a competition to add an element of fun!

### 4. Prepare the equipment.

Ensure that you have the appropriate equipment needed to run your waste audit. This includes:

- a large sturdy plastic sheet
- sorting containers or squares of newspaper for each of the 15 waste categories
- [waste audit signs](#) for each of the waste categories. (You may want to laminate these for future use, see the 'tool's' section, chapter 4).
- gloves for each student participating and a box to keep these in
- copy of '[Waste Audit Findings](#)' (chapter 4), pens and clipboards for each group
- a portable scale that can measure large amounts and hold the containers
- waste audit results.

## Run it

### 1. Collect the bins.

- Determine how much waste to sort out. With a school of approximately 200 students, sort all of the waste, with 400 students sort about 50 per cent and with 800 students sort about 25 per cent of the waste.
- 'Collect the rubbish bins from around your school including the classrooms, library, staff room and canteen bins (excluding all recycling bins). If you are auditing a percentage of the waste then ensure you have collected bins that represent the correct percentage of waste to be sorted.



## 2. Arrange the audit equipment.

- Lay out a sheet of sturdy plastic big enough to accommodate all the waste from the bins.
- Place sorting containers or squares of newspaper on the edge of the plastic sheet for each of the 15 waste categories. Hang the [waste audit signs](#) on the containers or prop them up behind the newspaper to indicate where each waste item is to go.

## 3. Discuss the importance of waste audits.

Gather the students together to talk about the audit. Discuss why the audit is important, what you plan to gain from the exercise and what you expect to find. You may also want to discuss what waste is, where it goes and what problems our waste can cause. You can refer back to the information in 'A waste audit' (Chapter 2). At this point, it would also be necessary to discuss safety rules as well.

## 4. Sort the waste.

- Have students put on their gloves and empty the bins onto the plastic sheeting.
- Begin sorting the waste into the correct containers (i.e. plastics, paper, food waste, etc.).
- Continue until all the waste has been removed and sorted (if you have found there is too much waste then continue until you have sorted a percentage that you are happy with, for example, 50 per cent).



## 5. Weigh and count the different waste categories/containers.

Rubbish (other non-recyclables), fruit and vegetable and food scraps can just be weighed. However some of the waste categories would also need to be counted. Counting often means more to the students, as 0.3 grams of lolly wrappers may contain 80 or more wrappers. Have students do this in small groups with one student (or the teacher) allocated to scribe for everyone. Items that need to be counted are also identified on the signs.



## 6. Discuss and record the results and possible future actions.

- Gather in a circle around the containers to discuss what you have found. For example there was more paper than you expected or less food than you thought.
- Calculate the number of items or mass over the school year and the amount produced per student on the attached table '[Waste Audit Results](#)' (Chapter 4).
- Record your results in the attached document '[Waste Audit Findings](#)', including the four items that you found the most of and student suggestions on how to reduce waste. Discuss and agree on potential future actions. For example, if there was a lot of fruit and vegetable waste you may like to establish a worm farm.



## Keep it going

### 1. Use peer teaching to conduct the waste audits.

Try to have different classes or groups conduct the waste audits to ensure a whole school approach. Have the initial class show the waste audit method to another class. For example, the year five students would show the year four students what to do and the materials needed. This would then allow the year four students to conduct the audit the following time, with a different class then watching. This process could then be continued throughout the school.

### 2. Compare waste audits and monitor the results.

To maintain enthusiasm for waste reduction, try to conduct a waste audit each term, or at the start and end of the year. For more thorough results, have a different class conduct each audit and use the average of these to compare your results over a number of years. This will allow you to compare your results across a time frame and can assist you in identifying areas that are of continued concern.

### 3. Provide feedback, recognition and incentives.

Use school assemblies, newsletters and the local media to announce and celebrate your school's results. Perhaps your school could also have spot prizes for students who have correctly disposed of their waste throughout the year.





## Chapter 4

# Waste audit scope and sequence, lessons and tools

Although a waste audit can be reasonably effective as a stand alone activity, developing the students' understanding of the importance of the audit results is achieved by teaching them about what waste is, the problems associated with sending it to landfill and alternatives available. The program below is a suggested guideline in which the waste audit can be embedded into the curriculum across a range of learning areas.

### The inquiry approach

This program of work can easily be adapted to your classes' specific needs and time constraints. It is based on the inquiry approach and as such is broken into sections which involve students as active learners, involved in real life skills.

1. In the first phase the students become **engaged**. The lessons in this section aim to capture their interest, allow them the opportunity to display their prior knowledge about waste and provide a meaning and context for their learning.
2. Within the second phase students are provided with the opportunity to **explore** the problems of waste and how we dispose of it. The students are provided with hands-on activities which develop a greater understanding of the waste they produce.
3. In the third stage the teacher provides opportunities where the problems and amount of waste produced by the school and society as a whole are **explained**.
4. The fourth stage provides opportunities for the students to **elaborate** on the concepts and skills they have learnt. They begin to apply the knowledge they have learnt, start to encourage and make behavioural changes and develop a deeper understanding of the complexity of waste disposal.
5. The fifth stage involves **evaluating** what the students have learnt and how the students' behaviour and attitudes towards waste have changed.

It is recommended that at least one of the suggested lessons is conducted within each of the above phases.





# Scope and sequence table

## Aim:

To encourage and educate students and the school community about the need to reduce the amount of school waste going directly to landfill, while developing the behaviours and knowledge base that enable them to do this.

## Background information:

**Cross-curricular programming:** Waste Warriors!

**Time frame:** 10 weeks (one term)

**Values:** Social and civic responsibility, environmental responsibility

Phase	Lesson	Brief lesson overview	Resources available	Curriculum links
Engage	Shock Presentation	<ol style="list-style-type: none"> <li>1. Ask the students how much fresh food they would throw away each fortnight and where they think Australia is positioned relative to other western countries in our waste disposal.</li> <li>2. View and discuss this power point presentation. It provides interesting statistical information about waste, water and air quality in Western Australia.</li> </ol>	<p>Presentation is developed by Australian Sustainable Schools Initiative – WA (AuSSI – WA) and can be found on their website in the toolkits section under “Discover and envision”</p> <p><a href="http://www.det.wa.edu.au/sustainableschools">www.det.wa.edu.au/sustainableschools</a></p>	Eng S&E Sci
	Landfill and you	<ol style="list-style-type: none"> <li>1. Ask the students what happens to their rubbish after they put it into the bin.</li> <li>2. Show the DVD ‘Landfill and you’.</li> <li>3. The DVD shows the procedures adopted at a waste management facility in Perth. It shows how waste is sorted and managed to reduce the impact on our environment.</li> </ol>	<p>Contact Keep Australia Beautiful Council (KABC WA) or use the link below to request your free copy of the DVD:</p> <p><a href="http://www.kabc.wa.gov.au">www.kabc.wa.gov.au</a></p>	Eng S&E Sci

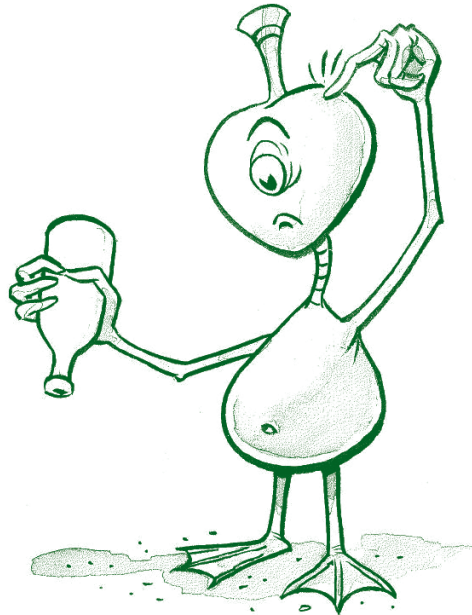


Phase	Lesson	Brief lesson overview	Resources available	Curriculum links
Explore	Timeline of waste	Create an overview of how waste has been disposed of throughout time.	This lesson is in the resources and curriculum section, within 'Learning to be Waste Wise – What is waste?' document. <a href="http://www.wastewise.wa.gov.au">www.wastewise.wa.gov.au</a>	S&E Sci Maths
	Hypothesis on school's waste	<ol style="list-style-type: none"> <li>Students create an estimate of the results that they would expect from their waste audit.</li> <li>Present as a pie chart displaying the different types or mass of waste each student or the school as a whole currently sends to landfill over a year.</li> <li>In conjunction with the actual <a href="#">waste audit</a> this lesson could be conducted as a scientific investigation.</li> </ol>	See a <a href="#">typical breakdown of waste in our schools</a> in chapter 2 Use Scitech's Science investigation planners. Found on their website ( <a href="http://www.scitech.org.au">www.scitech.org.au</a> ) under 'for teachers', 'educational resources', 'activity sheets', 'investigating'	S&E Sci Maths
	What is Waste?	A series of lessons with curriculum links: <ul style="list-style-type: none"> <li>Investigate your waste (classroom waste audit)</li> <li>Time capsule of waste</li> <li>Build a model landfill</li> <li>Disposable culture</li> <li>Waste debate</li> </ul>	Each of these lessons can be found in the resources and curriculum section, within 'Learning to be Waste Wise – What is waste?' document. <a href="http://www.wastewise.wa.gov.au">www.wastewise.wa.gov.au</a>	Eng S&E Sci Maths
Explore	Conduct waste audit	Students conduct a <a href="#">waste audit</a> .	Steps to consider are explained in Chapter 3. Use Scitech's Science investigation planners. Found on their website ( <a href="http://www.scitech.org.au">www.scitech.org.au</a> ) under 'for teachers', 'educational resources', 'activity sheets', 'investigating'.	Eng S&E Sci Maths
	What is biodegradable?' experiment	Students develop strategies to manage the school's organic waste (fruit and vegetable scraps and garden waste) through composting.	<a href="http://www.solidwastedistrict.com/lessons/what_is_biodegradable.htm">www.solidwastedistrict.com/lessons/what_is_biodegradable.htm</a> <a href="http://www.rouswater.nsw.gov.au/content/uploads/Compost_with_Green_House_Lesson_Plan.pdf">www.rouswater.nsw.gov.au/content/uploads/Compost_with_Green_House_Lesson_Plan.pdf</a>	Eng Sci
	Excursions	<ul style="list-style-type: none"> <li>Visit a landfill site or a material recovery facility. Contact your local council for information.</li> <li>Attend a Remida workshop (recycled art activities)</li> <li>Have a Wakakirri incursion (promotes sustainability through the arts)</li> <li>Use Waste Wise Schools Program resources for other activities</li> </ul>	<ul style="list-style-type: none"> <li>See the list of council links below: <a href="http://www.wastewise.wa.gov.au/for-home/index.html">www.wastewise.wa.gov.au/for-home/index.html</a></li> <li><a href="http://www.remidawa.com">www.remidawa.com</a></li> <li><a href="http://www.wakakirri.com">www.wakakirri.com</a></li> <li><a href="http://www.wastewise.wa.gov.au">www.wastewise.wa.gov.au</a> (action and projects).</li> </ul>	Eng S&E Sci Art



Phase	Lesson	Brief lesson overview	Resources available	Curriculum links
Explain	Story of stuff	View the online movie and consider how the actions and choices we make have an environmental impact.	<a href="http://www.storyofstuff.org">www.storyofstuff.org</a>	Eng S&E
	<a href="#">Waste audit mathematics</a>	1. Create a pie chart to display the results of your audit. 2. Calculate how much waste is produced by each student or the school across the year.	<a href="#">Waste audit mathematics</a> (Chapter 4)	Maths
Explain	<a href="#">School waste audit report</a>	Students create a report on how the school is currently disposing of their waste and how to minimise the amount sent to landfill.	<a href="#">School waste audit report</a> (Chapter 4)	Eng S&E Maths
	School assembly	This could be on the history of waste, about the waste audit results or explaining the concepts of reduce, reuse and recycle.		Eng S&E Art
Elaborate	Waste minimization plan	Use the waste audit results to prioritise waste wise actions for the school. Use 'Sample waste minimisation plan' for ideas.	<a href="http://www.wastewise.wa.gov.au">www.wastewise.wa.gov.au</a> Look in the resources section	S&E
	Waste Warriors	Students begin to adopt waste minimisation practices such as a ring pull collection, Mobile Muster, composting and/or paper recycling.	"Where to reuse and recycle." Please contact Waste Wise on 6467 5367 or <a href="mailto:wastewise@dec.wa.gov.au">wastewise@dec.wa.gov.au</a> for the latest copy of our useful contacts. <a href="http://www.recyclingnearyou.com.au">www.recyclingnearyou.com.au</a> ( A useful website for local recycling contacts).	S&E
	Help Us!	Students write letters or newsletter articles to inform the school community about the need for waste reduction and request support for particular projects.		Eng
	Zero Waste Lunch	Hold a Zero Waste Lunch day.	Use the Waste Wise Schools Toolkit for curriculum resources and organisational tools. <a href="http://www.wastewise.wa.gov.au">www.wastewise.wa.gov.au</a>	Health



Phase	Lesson	Brief lesson overview	Resources available	Curriculum links
Evaluate	Conduct another waste audit	<p>Compare new results with previous results. Focus on areas of continued concern.</p> <p>Perform as a science investigation, making a hypothesis on any areas that may have changed.</p>		Eng S&E Sci Maths
	Conduct a behaviour and attitudes survey of the students, parent or teachers	You may also like to explore the difference between a person's attitude and actual behaviours.	The surveys are available at <a href="http://www.wastewise.wa.gov.au">www.wastewise.wa.gov.au</a> (in the resources section) or create your own with your students.	Maths





# Waste audit mathematics lesson plan

## Aim:

Students use the information from the school waste audit to calculate figures about the school's yearly waste stream.

## Curriculum links:

### Learning area

Mathematics

### Strands

Number and Algebra

Measurement and Geometry

Statistics and Probability

### Sub-strands

- Number and place value
- Fractions and decimals
- Using units of measurement
- Data representation and interpretation

## Background

This activity can be used to summarise the findings from the waste audit.

## Information

- Suitable for year 6/7 students although ideas to simplify or extend this are offered
- Knowledge of waste categories is helpful
- 1 hour

## Resources

- Copy of the school's waste audit results
- Number of students at the school
- Paper and pencils

## Activity

1. Use the completed [Waste audit results](#) table (see chapter 4) to record the type of waste categories and the mass of the waste on the board for students.
2. Explain to students that they need to find out how much waste is produced by the school each year for each category. They'll also need to calculate how much waste (on average) each student will produce in a year at the school. Ask students for ideas on how to do this by asking some of the following questions:
  - a. How many days will students be at school in a year?
  - b. How many students are at the school?
  - c. What maths operation would we need to use to work this out?
  - d. What number sentence would we write?
  - e. Which measurement is used to measure mass?
3. Students then need to complete the table in their work books filling in the mass of waste per year produced and mass of waste per year per student by working out the correct calculations needed.



4. Ask the students to use their results to determine other waste calculations:
- What is the total amount of organic recyclable waste produced in one day?
  - What is the total amount of non-organic recyclable waste produced in one year?
  - What is the total amount of non-recyclable waste produced by one student in a year?
  - What is the total amount of waste produced by the school in one year?
  - How do these calculations compare to the weight of an elephant, size of a classroom etc. Students to write some of their own statistics to be used to raise awareness of waste problems in their school.

### To simplify

Use clip art or drawings to create a tally chart or graph to record the waste. The waste could be counted instead of weighed, and just your classes waste could be used.

### To challenge

- Start the lesson with the students identifying what waste would be produced at lunch, then categorise the waste into recyclable and non-recyclable or waste that could be reduced, reused or recycled.
- Students could use Excel to create their own table.
- Use the Excel table to create a pie chart of the percentage of weight in each waste category.



# School waste audit report lesson plan

## Aim:

Students identify the main materials in the school's waste, collate and present data for the school's use and identify which items in the waste stream can be reduced, reused or recycled. The students will create a report using their knowledge of waste disposal and waste minimisation practices. Within this they should identify what actions are needed in the school to reduce waste, why these are needed and how the whole school can help.

## Curriculum links:

Learning area	Strands	Sub-strands
Society and environment	Place and space ICP	<ul style="list-style-type: none"><li>Human activities influence natural features</li><li>Communicating findings and evaluating the investigation</li><li>Respect and concern for the environment</li></ul>
	Active citizenship	
Mathematics	Number and Algebra	<ul style="list-style-type: none"><li>Real numbers</li><li>Number and place value</li><li>Using units of measurement</li><li>Data representation and interpretation</li></ul>
	Measurement and Geometry Statistics and Probability	
English	Literacy	<ul style="list-style-type: none"><li>Creating texts</li><li>Text structure and organisation</li><li>Expressing and developing ideas</li></ul>
	Language	

## Background

This activity can be used as a way to communicate to the rest of the school the findings from the [Waste audit results](#) (which can be found towards the end of this document) either through written displays for around the school or as an assembly presentation. Students should be familiar with how to write an informational report.

## Information

- Suitable for year 5 to 7 students although ideas to simplify or extend this are offered.
- A series of one hour lessons. Time for researching either using the internet, at home or at the library would also be needed.

## Resources

- Copy of the [waste audit results](#)
- Poster boards
- Paints or coloured pens
- Computer with Excel or similar graphing program
- Copies of relevant Waste Wise fact sheets [www.wastewise.wa.gov.au/resources/index.html](http://www.wastewise.wa.gov.au/resources/index.html)
- Clean waste items, photos, drawings or magazine clippings of waste
- Photos from your waste audit
- Where to reuse or recycle information sheet. Please contact the Waste Wise Schools program for a copy. [wastewise@dec.wa.gov.au](mailto:wastewise@dec.wa.gov.au)



## Activity

1. As a class discuss the findings of the waste audit results.
2. Discuss the importance of the results and how these could be communicated to the school.
3. Lead the students towards presenting their information as a report.
4. Explain that students will be working either individually or in groups to create a report about your school's waste.
5. Provide the students with an overview of headings and information that would be included in their report.

### Sections of the report:

#### Introduction

- What is the problem? (Disposing of waste to landfill).
- Why it is important? (Diverting waste from landfill, reducing greenhouse gas emissions, reducing the clearing of land).

#### Results

- Clearly labeled table of waste audit results.
- How the amount of each type of waste for the whole school year and per student were calculated.
- Present results in graph or chart form. Students can use Excel to chart and graph results.

#### Explaining the results

- Summarise the findings from the results.
- Summarise what types of waste the school should focus on reducing and why. What percentage of the waste stream does this represent?

#### Recommended Actions (You may like to brainstorm these first and get students to focus on only one area)

- An overview of a particular type of waste of concern, the effects of this going to landfill and the alternatives to sending it to landfill.
- Students may wish to research specific details or costs of alternatives to sending it to landfill.

#### Conclusions

- Provide evidence of waste minimisation practices.
- School plan for waste minimisation practices to be implemented at your school.

6. Provide an overview of the purpose of and language used in an introduction. For the Introduction section of their report, you could use information from some Waste Wise fact sheets such as the Waste Fact Sheet and the Climate Change factsheet. These are available at [www.wastewise.wa.gov.au](http://www.wastewise.wa.gov.au), in the resources section. The students need to take notes on the key points about the problems of landfill and why it's important to divert waste from here.
7. Provide the students with a copy of their school's waste audit results or get them to produce these.
8. As a class discuss which types of waste were in the greatest weight or quantity and should be a whole school focus.





9. Put the students into different groups to research specific waste types.
10. Organise the students with the relevant information and get the students to begin to research and take notes for their report. The Waste Wise Schools fact sheets can also be used as an information source. These fact sheets provide background information on each type of waste, the problems created with sending this type of waste to landfill and a range of alternatives to disposing of this waste other than sending it to landfill. There are fact sheets available for plastic, glass, drink cartons, aluminium, steel, waste, organic waste, litter and paper. [www.wastewise.wa.gov.au/resources/index.html](http://www.wastewise.wa.gov.au/resources/index.html).
11. If you'd also like the students to research the details or costs of alternatives to sending it to landfill you may like to use our 'Where to reuse or recycle' contact information. Please contact our Waste Wise Schools team for our most current document [wastewise@dec.wa.gov.au](mailto:wastewise@dec.wa.gov.au).
12. Students use their notes to create a written report about their schools' waste audit results. You may like to include photos taken on the day or images from the internet.
13. This report can also be presented as a display that can be exhibited in the library or foyer for other students and parents.

### To simplify

Instead of a written report, waste audit results can be presented as a play, poster or display.

### To challenge

- Student groups concentrate on specific areas of the school to audit and report on. For example the canteen, staff room, lunches, purchasing, packaging or photocopying.
- Students could write letters to the school administration to outline how the school can improve current waste practices.
- Students could write letters to other classes to encourage them to become responsible for overseeing the diversion of a particular type of waste from landfill. For example they could become responsible for diverting organic waste by composting this material.
- Students interview grandparents or an older neighbour about how waste collection has changed in their lifetime, what kind of waste they produced as children and how they disposed of it.



# More curriculum links

## Maths

- Estimate and then measure the weight/number of pieces of paper/plastic/organic material produced by a class. How does this vary across classes/year groups/days?
- Compare the amount of waste produced by using multi-pack chips and one large pack of chips. Use a range of operations to consider how much waste would be produced by a student/class/school/nation if they used multi-pack types of packaging over a year.

## English

- Students are to imagine that it becomes illegal to send rubbish to landfill as there is no room. It has instead been proposed that rubbish will need to be kept either at home or at school. Students could act as a reporter at the scene or write a diary entry or a poem.
- Students are to imagine that they have been transported into the future, a future where the 3 Rs have not been adopted – what would it be like? This could be the beginning of a story.

## Society and environment

- Research how waste is disposed and how it can be minimised/recycled.
- Research how much energy is used to make a recycled can/paper compared to making a new product.

## Science

- Investigate how long different waste materials take to break down when put into landfill.  
[www.wastewise.wa.gov.au/resources/index.html](http://www.wastewise.wa.gov.au/resources/index.html)
- Research how organic materials break down in compost with or without oxygen.

## T&E/Art

- Create a poster showing how much waste is produced by your school/students. For example, visually represent one piece of information such as how much paper a student would throw away in one year if it wasn't recycled.
- Make recycled paper.
- Use recycled materials to create a robot. Consider how your robot could encourage people to dispose of their waste correctly.

# Other resources

Trafford, C., 2006, *World-wide Waste*, Etram Pty Ltd, Australia.

Look at ***Making Connections*** for other waste related activities. This document provides a matrix of waste activities which incorporates Gardener's Multiple Intelligences and Bloom's Taxonomy.

[www.wastewise.wa.gov.au](http://www.wastewise.wa.gov.au)

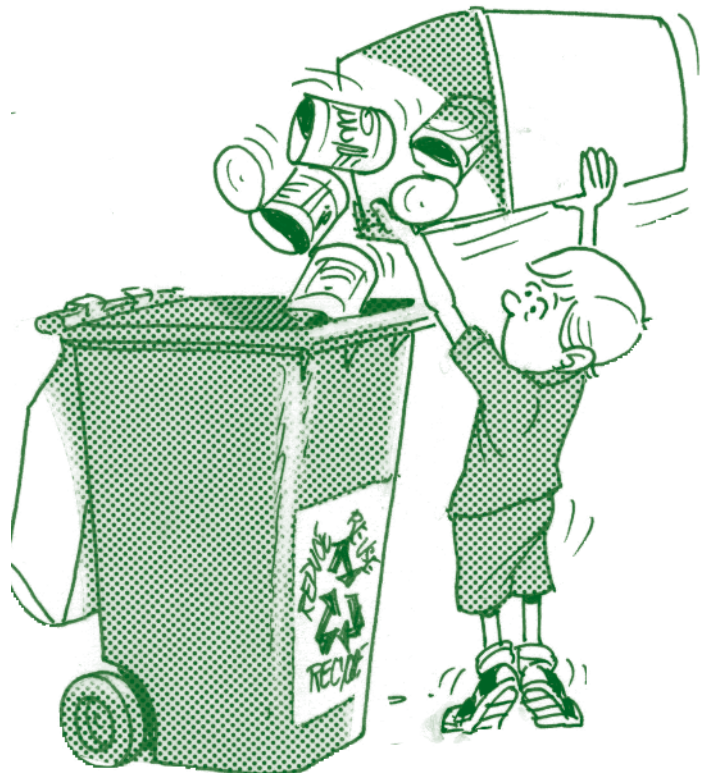
Waste Wise fact sheets [www.wastewise.wa.gov.au](http://www.wastewise.wa.gov.au)

Waste Wise Reuse and Recycle Contacts [wastewise@dec.wa.gov.au](mailto:wastewise@dec.wa.gov.au).



# Useful websites

- [www.storyofstuff.org](http://www.storyofstuff.org) A lighthearted short video about consumerism and the problems this creates.
- [en.wikipedia.org/wiki/History\\_of\\_waste\\_management](http://en.wikipedia.org/wiki/History_of_waste_management) History of waste.
- [www.wasteonline.org.uk/resources/InformationSheets/HistoryofWaste.htm](http://www.wasteonline.org.uk/resources/InformationSheets/HistoryofWaste.htm) History of waste.
- [www.bfi-salinas.com/kids\\_trash\\_timeline-printer.cfm](http://www.bfi-salinas.com/kids_trash_timeline-printer.cfm) Provides an example timeline of waste disposal.
- [www.oregongreenschools.org/waste\\_audits.cfm](http://www.oregongreenschools.org/waste_audits.cfm) This site has a great follow-up activity.
- [www.kabc.wa.gov.au](http://www.kabc.wa.gov.au) Keep Australia Beautiful can supply educational and litter collection resources by request, including car litter bags, orange litter collection bags, clean up safety equipment including gloves, schools resources, stickers and posters.
- [www.ollierecycles.com.au](http://www.ollierecycles.com.au) This is an interactive sustainability website suitable for both teachers and students.
- [www.sfenvironmentkids.org/teacher/lesson\\_plans.htm](http://www.sfenvironmentkids.org/teacher/lesson_plans.htm) This site has great lesson ideas.
- [www.naturegrid.org.uk/eco-exp](http://www.naturegrid.org.uk/eco-exp) This web site has been specifically designed for use in primary schools.
- [www.bfi-salinas.com/kids.cfm](http://www.bfi-salinas.com/kids.cfm) BFI Kids is an interactive website which provides a range of games activities and songs.
- [www.recycleworks.org/schools/s\\_audits.html](http://www.recycleworks.org/schools/s_audits.html)
- [www.recyclenow.com/schools/recycle\\_at\\_school\\_guide/start\\_recycling/how\\_much\\_does\\_your.html](http://www.recyclenow.com/schools/recycle_at_school_guide/start_recycling/how_much_does_your.html)  
This site has tips on how to set up a great recycling program.



# Example letter to inform parents/ guardians of the waste audit:



Dear Parent/s – Guardian/s,

Our class is planning to conduct a waste audit on \_\_\_\_\_.

Waste audits provide an opportunity to find out how much and what type of waste is produced by our school. This information can then give us an idea of where to begin our waste minimisation efforts, for example what type of recycling to implement or what type of waste to reduce. The process of conducting a waste audit, the need for waste audits and the findings from this are also embedded within our programming and planning for this term.

When participating in the waste audit, the students will sort the waste into different categories and measure each of these. With a focus on the largest categories, the students will then collaboratively develop a plan to reduce waste in these areas.

Waste audits are carefully planned and the safety of students conducting the audit is paramount. Sorting is done in a ventilated area and is carefully controlled and supervised. Safety issues are discussed and the students will be provided with gloves to conduct the audit. Waste is never handled with bare hands.

The main goals are to become more aware of the waste we produce and to develop ways to reduce the amount of waste we would normally throw away. Conducting a waste audit is the first step to reducing waste in our school and playing our part in making our planet a healthier place to live.

You may also wish to be involved in this activity, please let me know if you are.

If you have any questions please contact \_\_\_\_\_.

My child, \_\_\_\_\_ has my permission to participate in the school waste audit to be conducted at school. I, \_\_\_\_\_ am also interested in assisting on the day.

Parent signature: \_\_\_\_\_ Date: \_\_\_\_\_

Thank you for your support,



# Waste audit results table



## The Waste Wise *schools* Program

Name of School:

Date:

Type of waste	Weight of waste (kg)	Weight of waste equals	Number of items
<b>RECYCLABLE (Organic)</b>			
Fruit and veg (scraps)			
Whole fruit			
Food scraps (sandwiches etc)			
Paper and cardboard			
<b>RECYCLABLE (non-organic)</b>			
Plastic (1-7)			
Aluminium – cans, trays and foil			
Steel cans (tuna cans etc)			
Milk and juice cartons			
Other recyclables			
<b>NON-RECYCLABLE</b>			
Chip packets (and salty/ savoury wrappers)			
Lolly and ice cream wrappers			
Plastic bags & cling wrap			
Whole packaged food (unopened)			
Rubbish (Other non-recyclables)			





### What we found:

The items we found in the largest quantity were:

- 
- 
- 

### Ideas from students:

- 
- 
- 
- 

### Ideas to consider:

#### Support

- Form a committee of interested teachers and students to help share the workload.
- Encourage other teachers, groundskeepers and canteen staff to attend a Waste Wise follow-up workshop.
- If possible enlist the support and involvement of groundskeepers/gardeners, as they can be invaluable to the success of your WW activities, especially for composting, veggie gardens and worm farms.

#### Canteen

- Work with the canteen to encourage healthy eating, as healthy options often have less packaging.
- Work with and encourage the canteen to provide food options with little to no packaging. The canteen can also look into zero waste food storage options (i.e. containers instead of glad wrap or aluminium foil).
- Suggest that the canteen make some food from scratch in bulk volumes, such as pasta bakes or lasagne that can be served in reusable containers, rather than serving individually packaged foods such as pasta in aluminium trays.
- Minimize the use of canteen paper by placing orders onto a white board (use in conjunction with reusable containers or plates/bowls).

#### Organic Waste

- Sell 'worm wiz' and worm castings from worm farms as a plant tonic.
- Look into creating permaculture gardens/beds that may be used in conjunction with compost and worm farms.
- Consider the possibility of having chickens.
- Keep in mind that dirty canteen paper can be shredded and processed through worm farms.

#### Reuse

- Make paper from 'waste' paper. Homemade paper note pads or cards can be sold to parents and school community.
- Make and distribute note books from used paper that is blank on one side.
- Obtain a 'reuse shed' where teachers and students can store items that can be reused at a later date (for art, science classes etc.).
- Consider having student groups collect and repair old bicycles that can be sold to the school community.

#### Recycle

- Talk to your local council about what can be recycled in your area to avoid confusing the message.
- Organise paper recycling at your school and investigate recycling for other materials.
- Paint boxes with bright (obvious) colours to be used as recycling bins in each classroom, and allocate students to empty them into the larger recycling bins.



### Collection

- Look into collecting aluminium can ring-pulls for a charity organization. For example, Rotary Australia donates money from ring-pulls to International Prostheses Foundations – see website [www.rawcs.org.au](http://www.rawcs.org.au)
- Collect other items from the community such as batteries, printer/copier cartridges, ice-cream containers, newspapers, plant pots, 2nd hand clothing, stamps, CFL light globes, and old mobile phones – see the Waste Wise 'Where to reuse or recycle' contact list.
- Whole School Contact Waste Wise ([wastewise@dec.wa.gov.au](mailto:wastewise@dec.wa.gov.au)) for a current contact list.
- Publicise the results of the audit in your school newsletter to notify parents and other students about waste generated at school (especially wasted food).
- Create a 'reuse fashion show' as an assembly item to demonstrate and promote reusing.
- Create a display from your waste audit results to put up in a common area and/or show at assembly – include results, pictures, fact sheets etc. You may also want to announce results over p.a.
- Hold school swap meets or garage sales, where students can bring in old books, toys, and sports gear to swap with one another.
- Record how much paper you are recycling on a weekly basis (for example, if one ton of recycled paper saves about 13 trees) – plant a 14th tree in celebration of your efforts. If there is no space to plant a tree on school property, look at working in conjunction with an organisation such as Men of the Trees (e.g. have them plant a tree on your behalf).
- Contact us about our available curriculum that coincide with and supports your WW activities, which can be shared with other teachers.
- Contact us about our WW assembly kit and numerous videos, books, props, and resources available to borrow.

### Next steps:

#### Waste Wise Steps (if not yet complete):

- Use the results from your waste audit to write a waste plan for your school. This is simply a broad outline of the actions you intend to take and an approximate timeline. Remember, this doesn't have to be complicated. Use the sample plan as a guide and make sure the timeline is realistic!
- Write a school waste policy – this should be a simple statement of intent for the entire school. Feel free to use the sample policies for ideas ([www.wastewise.wa.gov.au](http://www.wastewise.wa.gov.au))

#### Grants

- Apply for a Waste Wise grant. Contact Waste Wise ([wastewise@dec.wa.gov.au](mailto:wastewise@dec.wa.gov.au)) for a current grant application and for any support.

#### Advice

- Ask us about schools you can be in contact with for ideas
- Go onto our Waste Wise website [www.wastewise.wa.gov.au](http://www.wastewise.wa.gov.au) and join our forum for ideas, support, and to chat with other teachers and see what other WW schools are doing.

Once you have established your Waste Wise activities and would like to branch out into other areas of sustainability perhaps have a look into the Sustainable School Initiative [www.det.wa.edu.au/sustainableschools](http://www.det.wa.edu.au/sustainableschools)



Fold

---

# Fruit and veg scraps



Fold

---

# Plastics (1-7)



Please count all plastics before weighing



Fold

---

# Lolly and ice cream wrappers

(sweets wrappers)



Please count all wrappers before weighing

Fold

---

# Chip packets

(and salty/savoury wrappers)

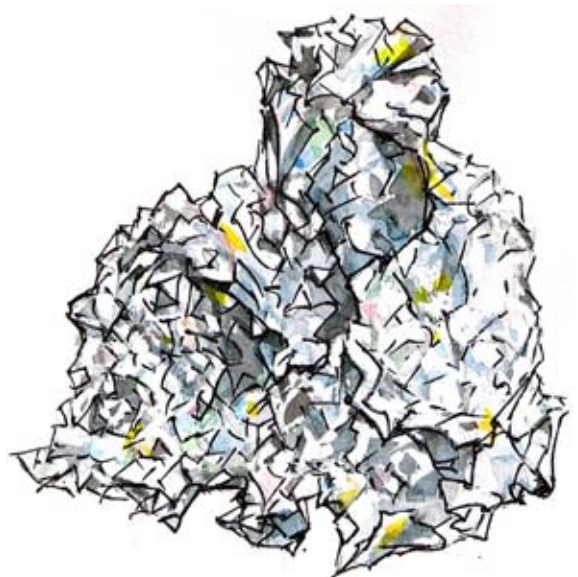


Please count all packets before weighing

Fold

---

# Paper and cardboard



Fold

---

# Steel cans



Please count all steel cans before weighing



Fold

---

# Glass



Please count all glass items before weighing

Fold

---

# Whole fruit



Please count all whole fruit before weighing

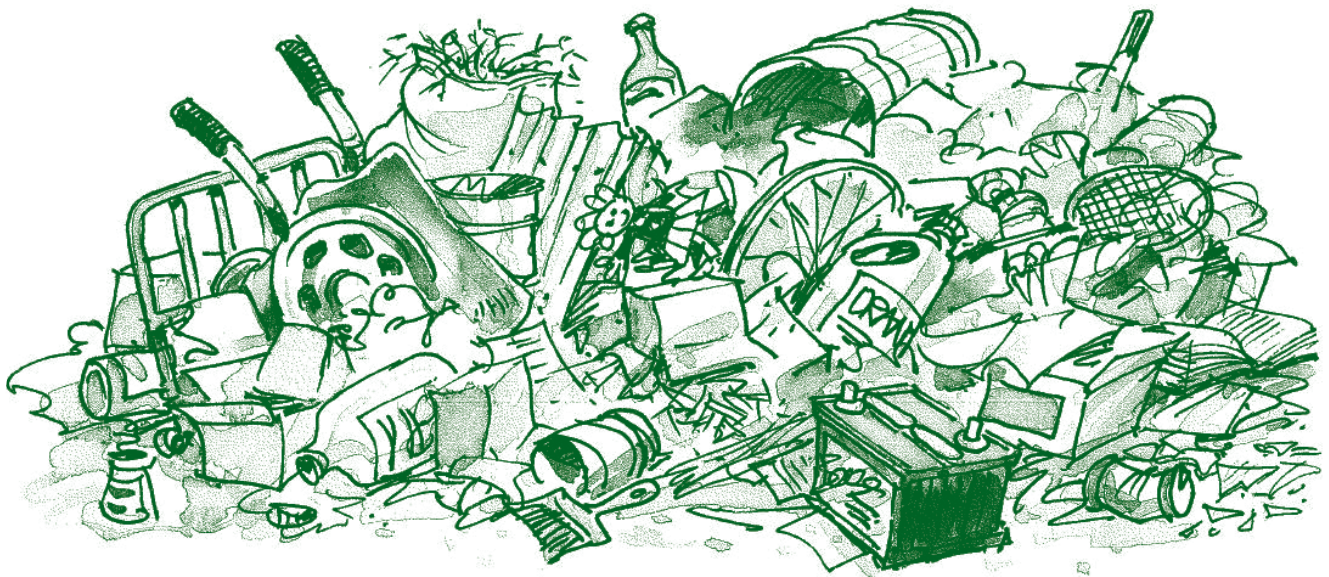
Fold

---

# Whole packaged food (unopened)

Please count all whole packaged food before weighing

**(other non-recyclables)**





Fold

---

# Aluminium – cans, trays and foil



Please count all items of aluminium before weighing

Fold

---

# Plastic bags and cling wrap



Please count all plastic bags/clingwrap before weighing

Fold

---

# Food scraps



Fold

---

# Milk and juice cartons

(Liquid paper board)

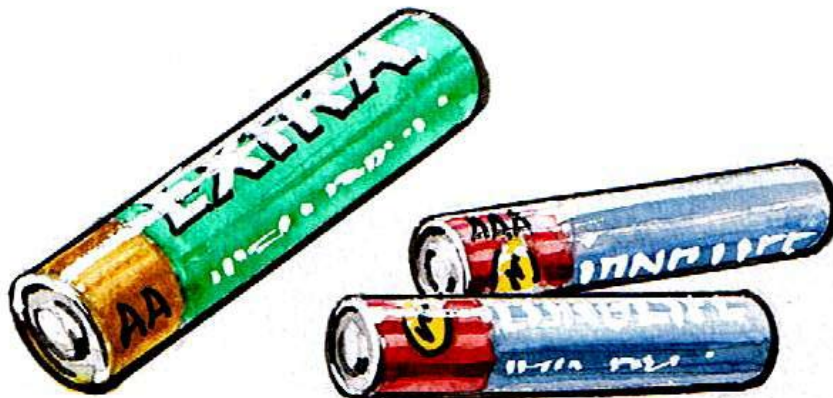


Please count all milk and juice cartons before weighing

Fold

---

# Other recyclables





**For more information about the program please contact:**

The Waste Wise Schools Program  
Department of Environment and Conservation  
Locked Bag 104  
Bentley Delivery Centre, WA 6983

Phone: (08) 6467 5011

Fax: (08) 6467 5532

Email: [wastewise@dec.wa.gov.au](mailto:wastewise@dec.wa.gov.au)

Web: [www.wastewise.wa.gov.au](http://www.wastewise.wa.gov.au)