Waste audit toolkit









GOVERNMENT OF WESTERN AUSTRALIA

Many WasteSorted Schools are GREAT Sorts and reduce their waste to landfill through these waste sorting activities.

Where can it go?

Prompt students into thinking of alternatives to sending waste to landfill by running a classroom bin audit before a whole school waste audit.

Complete an audit of the classroom bin in any of the following ways:

- empty items from the bin onto a plastic sheet or layer of newspaper
- project a photo of the top layer of the bin onto the classroom board
- ask the class to write down every item thrown in the bin over the course of the day.

Once the audit is complete, go through the results and prompt students to reflect on each item in the following ways:

- Why is the item being thrown away? Is it broken? Is the item designed to be thrown away after one use? Is it partly eaten food?
- What are some alternatives to landfill? Brainstorm ideas with students, including practices at home. For example, do students have chickens or a worm farm, do they pass things on to younger family members, or do they fix items if they break?
- Draw the table below on the board. Ask students to sort the items from the waste audit into the categories below, which offer alternative solutions to landfill. Count how many items from the audit could not be sorted into any category. Were there many left over?



| | Alternative solutions to landfill | | | | | |
|--|--|--|--|---|--|--|
| Landfill | Gift | Recycle | Earth-cycle | Avoid | Take to a drop-off point | |
| Leftover items from the classroom bin. | Examples include good- quality items like text books, stationary, uniforms. | Examples include paper, cardboard, metal cans, glass bottles or jars, plastic containers and bottles. | Examples include food scraps, dirty paper, paper towel. | Examples include single-use plastics, straws, plastic bags. | Examples include batteries, charging cords, e-waste. | |

Taking it further

Maths: Ask students to make a bar graph to show the results from the table, including the leftover items destined for landfill. How much waste from your classroom bin can you easily divert with a few simple waste sorting steps?



English: Discuss key terms in waste management from the waste hierarchy and the pros and cons of each way of managing waste in Western Australia. Asks students to create posters with three easy solutions to avoid or recover classroom waste, based on the data from the classroom audit. For high school students, refer to the Western Australian Waste avoidance and resource recovery strategy.



Science: Design a system for collecting and recycling classroom waste. Consider the main types of waste generated in your classroom and how to recycle them, such as setting up an earth-cycling system, using local council collection, Containers for Change, or designing a machine to break down and recycle materials into raw materials which can be repurposed into new items, like paper fire-starter briquettes or jewellery from plastic waste.

C N Design and Technology: Make a sustainable and reusable item from repurposed waste, such as a shopping bag from an old t-shirt or beeswax wraps from old bed sheets.

Watch: Watch the War on Waste videos, such as the episode extra 'Zero Waste Family: Make Your Own Toothpaste and Deodorant' from Season 2 on ABC. Discuss the solutions to avoiding waste presented by this family. How could your school or community adopt some of these? Use a series of opinion lines to create discussion, by placing 'strongly agree' and 'strongly disagree' at either end of the classroom (examples below) and ask your students to place themselves along the line. Follow up by asking them to write a short answer in their journal to the question 'whose responsibility is waste?'.

Example opinion lines:

- 'What I do with my waste is my responsibility.'
- 'If I take my own container, I can make an impact on the amount of waste I produce'.
- 'It's important to take reusable bags when you go shopping'.
- 'Recycling waste is more important than avoiding waste'.



Excursion: Arrange a school tour of your local waste management facility to see how your local or regional council manages waste from your area. Alternatively, watch the virtual tours of the Resource Recovery Group's green waste and materials recovery centre or Suez's waste management facility.

Activity 1

What others do

Normalising waste management behaviours will drive change in your school, as will giving students responsibility and a sense of achievement. In this activity, students will look to successful WasteSorted Schools in Western Australia to see how they have effectively recovered and avoided waste in their school communities.

Step 1. Review waste audit data:

As a class, review the waste audit data and photos. Discuss the main findings from the waste audit, including the main sources of waste (by weight or number of items) from the school landfill bins. Pick three to four main waste streams to focus on during the lesson. You'll use these later.

Step 2. Think, pair, share:

Using the waste hierarchy on page 4, run a 'think, pair, share' on which of these items can be easily avoided or recovered by the school community through gifting, earth-cycling, recycling, or collecting to take to drop-off points. Is your school doing any of these already?

Step 3. What others do:

Group students and assign a waste stream from part 1 of the activity to each group. Go to the WasteSorted Schools case study webpage and use the filter to search by the assigned waste stream. Ask students to investigate what successful WasteSorted Schools have done to avoid or recover a specific waste stream.

Get students to research two or three schools and write a few dot points about how each school managed a specific waste stream, including how students were involved or led the projects. Using their dot points, students should write a summary paragraph to show how WasteSorted Schools have been successful at managing waste. They must include several ideas of how they could apply these strategies to their own school's waste management system.

Ask students to share their summary paragraph with the group for peer feedback.



Augusta Primary School won WasteSorted School of the Year 2020 for their approach to avoiding and reducing waste.

Activity 2

Influential thinkers

Solutions to waste management come not only from trained experts but also from everyday people wanting to make a difference. By showing students how influential thinkers are helping to solve common waste problems in their community, you will inspire students to take responsibility for managing waste in their own environment.

Ask students to research the influential thinkers described on pages 15-16. Run this activity in one of the suggested formats below, based on your class year level and ability, or choose your own format.

Activity formats

Jigsaw

Divide students into five or more 'expert' groups to research and review information on one influential thinker each. They will need to research who the person is, what waste problem they saw in their community, what they did to address it, and how it is making a difference in their community.

- **Step 1** Once students have reviewed the information and taken notes on their influential thinker, form the students into 'teaching' groups, with each group composed of one student from each of the different 'expert' groups.
- **Step 2** Ask students to take turns presenting key facts about their influential thinker to their 'teaching' group, with the members of the group taking notes and asking questions.
- Step 3 Once the groups have finished sharing information, conduct a class discussion on how much impact one person can make. Try using the following quote to engage students in discussion: "When people think about travelling to the past, they worry about accidentally changing the present, but no one in the present really thinks they can radically change the future."

Group poster and gallery walk

- **Step 1** Divide students into groups and assign them one influential thinker to research. Give each group butchers paper and coloured pens (or the equivalent for your classroom).
- **Step 2** Get each group to create a poster to highlight the influential thinker's contribution to waste management. Each poster should include the following:
 - a. a title that stands out
 - **b.** the name of the influential thinker
 - **c.** key words about the topic
 - d. the main achievements of the influential thinker
 - e. the reasons they started their business/waste management project
 - f. how they have influenced their community (local, national, or international)
 - g. a colourful picture to represent the influential thinker.

- **Step 3** Give students 20 minutes and when the time is up, display each poster on the wall. Next to each poster, place a blank sheet of paper for questions (consider using the back of a used piece of paper for this).
- **Step 4** Ask students to stay in their groups and complete a gallery walk through the posters. At each poster, get the group to read the poster and write a question on the question sheet about the influential thinker. Assign a time limit if needed.
- **Step 5** Once complete, get a student (or you can as the teacher) to read out the questions to the class and use them to generate discussion on how individuals have the power to create change.

Report

Ask students to create a report, video or slideshow on one of the influential thinkers and how they influenced their community to reduce waste.



Influential thinkers



Gifting

Andrew Valder and Darryl Nichols started the Garage Sale Trail in Sydney in 2010 to reduce illegal dumping and waste going to landfill, and to increase community cohesion. Selling unwanted goods is another way of gifting – instead of throwing them into landfill.

www.garagesaletrail.com.au/

www.watoday.com.au/national/western-australia/wa-in-the-drapht-for-45-million-garage-sale-trail-20131024-2w486.html

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Recycle

a) Dave Hakkens set up Precious Plastics in 2012. He shares his knowledge about plastic recycling on an open platform to empower people globally to eliminate plastic pollution by recycling it into new products.

community.preciousplastic.com/academy/intro

www.forbes.com/sites/jeffkart/2020/02/12/this-open-sourceprecious-plastic-project-is-changing-what-waste-means-and-howrecycling-is-done/?sh=106e1005f6e8

 b) Professor Veena Sahajwalla is a materials scientist, engineer and inventor who revolutionised the steel industry by creating 'green steel'. She has also recently created a new way to make 'green ceramics' from textile waste and recycled glass.

www.abc.net.au/news/2021-02-22/veena-sahajwalla-recyling-revolution-green-ceramics/13041936

www.intheblack.com/articles/2020/07/01/veena-sahajwalla-revolutionising-recycling-science

Image source: https://createdigital.org.au/meet-engineer-helping-people-see-huge-possibilities-circular-economy/





a) Eliska Bramborova and Tomas Brambora set up the free digital source map 'ShareWaste'. ShareWaste is community project which connects people via the map so they can share their kitchen scraps and earthcycling systems, such as compost heaps, chickens and worm farms, to reduce the amount of food waste going to landfill.

en.reset.org/composting-app-08032018/ sharewaste.com/



b) The City of Bunbury was the first local government in Western Australia to use Food Organics and Garden Organics (FOGO) bins. These bins divert organic waste from landfill and prevent the associated methane production and damage to our environment.

www.abc.net.au/news/2019-03-17/perth-looks-to-bunbury-for-fogowaste-strategy/10907286

www.bunbury.wa.gov.au/Pages/Waste-and-Recycling.aspx





Avoid

a) Molly Steer is a young girl from Queensland who founded 'Straw No More' after watching a documentary on the environmental effects of plastic pollution. The 'Straw No More' movement encourages community groups and businesses to avoid selling straws.

www.strawnomore.org/

www.ted.com/talks/molly_steer_straw_no_more/
transcript?language=en

Image source: www.abc.net.au/news/2018-04-11/girl-wins-straw-phase-out-cairns-council-agree-ditch/9640522

b) Rebecca Prince-Ruiz founded Plastic Free July to help others avoid single-use plastics after seeing the amount of plastic thrown away when visiting her local waste management facility in Perth.

www.australianoftheyear.org.au/recipients/rebecca-prince-ruiz/2382/ alumni.uwa.edu.au/profiles/rebecca-prince-ruiz www.plasticfreejuly.org/about-us/



Take

a) Dismantle is a not-for-profit organisation in Perth which rescues and restores old bikes from landfill while helping at-risk young people reach their potential.

www.dismantle.org.au/

rac.com.au/car-motoring/info/stories_dismantle-bicycle-workshops

www.perthnow.com.au/community-news/western-suburbs-weekly/ dismantle-west-leederville-shop-receives-grant-to-help-work-with-atrisk-youth-c-791832



b) Mobile Muster is a not-for-profit organisation started in 1998, which provides free mobile phone recycling to Australians. Phones can easily be recycled by taking them to drop-off points or by posting phones and accessories to the company.

recyclingnearyou.com.au/about/mobilemuster www.mobilemuster.com.au/about-us/ wastemanagementreview.com.au/tag/mobilemuster/



More activities from WasteSorted Schools

Visit WasteSorted Schools teacher resources for more lessons, toolkits, and curriculum guides. Examples include:

Avoiding single use plastic: Lesson on how to 'choose to refuse' single-use plastic.

What's in the lunchbox? Lesson exploring reducing lunchbox waste.

Worm food investigation: Lesson where students build a mini worm farm and investigate the factors affecting the rate worms consume food.

Buying in bulk: Lesson on the benefits of buying in bulk.

Make food waste history: Lesson about preventing food waste.

Other resources

3 bin FOGO game: An interactive game to help revise waste sorting knowledge. For FOGO bin systems only. Created by the City of Melville.

ABC education has videos, articles, digibooks and audioclips to help you teach about waste in subjects across the curriculum and year groups.

TED talks: There are several talks on people finding solutions to tackle waste.

- Haaziq Kazi an 11-year-old with a plan to clean the oceans.
- David Katz founder of the Plastic Bank, which monetised plastic waste in poor economies to prevent plastic waste entering the oceans and close the loop in plastic manufacturing.
- Andrew Dent a man who encourages rediscovering thrift to reduce waste to landfill.

Documentaries: *Waste Not; Wasted! The story of food waste; Waste Land*; or *Just Eat It* – such examples show students the prevalence of managing waste. Show these documentaries in a solution-focused light so students feel empowered to make change.



Enacting change



Use your waste audit results to make changes in your school to reduce waste to landfill. Work out which waste streams are priorities and the easiest to manage. We recommend schools target waste streams in the order below.

These are suggestions only. Getting students on board to initiate and lead projects will lead to greater success. See the WasteSorted Schools checklist for more project ideas.

| Waste stream | Actions | Resources and further information |
|-------------------------|---|--|
| Paper and cardboard | Most schools set up paper and cardboard recycling using ideas from the WasteSorted Schools checklist. Set up skip bins for paper recycling collection. Put a sign on the front of each bin and/or bin lid to show what is accepted in the bin. WasteSorted has free bin signs for schools. Some schools recycle paper on-site through paper making sessions, making and selling fire-starter briquette, or shredding paper to use in chicken or animal pens. | See the recycling services for WA Government Schools factsheet for information about recycling services or speak to your waste collection service provider. Read the common use arrangement buyers guide for agency staff procuring waste disposal and recycling services. Download some WasteSorted bin signs. |
| Compostable organics | Earth-cycle food waste at school using composting, worm farms, chickens or food waste collection services. Many schools set up infrastructure to make sorting food scraps easy for students and staff. Some schools have made changes to avoid producing as much food waste. They've done this by changing the order of play time and eating time so that students play first then sit to eat. Find more helpful advice in our waste-free lunch toolkit. Some schools also educate parents and students about food waste and encourage conversations about positive food choices which will avoid waste. | See the recycling services for WA Government Schools factsheet for information about recycling services. Find specific whole school, classroom, and parent activities in our Waste-free lunch toolkit. Use composting to reduce food waste. Learn about worm farming in our fact sheet. Discover how to set up a fridge worm farm. |

Enacting change

| Waste stream | Actions | Resources and further information |
|---|--|---|
| Soft plastics such as zip lock bags and cling wrap | Many WasteSorted Schools are now collecting soft plastics to be recycled at REDcycle. These soft plastics are recycled into new products such as park benches. Some schools encourage families to look at ways to avoid the use of single-use plastics. A great way to do this is to share examples of other families using alternatives such as reusable containers and beeswax wraps. Some schools reduce waste by creating a Green Canteen. | Find specific whole school, classroom, and parent activities in our waste-free lunch toolkit. Make beeswax wraps in class for every student to wrap snacks and sandwiches in. Set up a Green Canteen. Start a RedCycle soft plastics recycling station. Use a new colour like purple for your soft plastics collection bin to prevent confusion with the bin colours used at home. |
| Drink containers | Sustainable schools avoid Tetra Paks and wasteful beverage containers by switching to bulk-buy options and reusable cups. This saves money and reduces waste. Other schools recycle this waste stream by setting up a Containers for Change collection point in their school. You can collect eligible containers and use the money to fundraise for your sustainability programs! | Set up a Green Canteen. Find specific whole school, classroom, and parent activities in the waste-free lunch toolkit. Lean about Containers for Change. (See their Q&A webinar for more info.) |
| Recycling | Several schools have successfully set up recycling bins in their school yards or staff rooms. You can also collect items to use in art and craft. | See the recycling services for WA Government Schools factsheet for information about recycling services. Read the common use arrangement buyers guide for agency staff procuring waste disposal and recycling services. |
| General waste | We suggest looking at what is in the general waste bins and discussing which items can be avoided or changed to reusable items in the school. Many schools are removing straws and single-use cutlery from their canteens. They are encouraging staff and students to use reusable cups and drink bottles and create a Green Canteen. | Set up a Green Canteen. |

Waste audit sorting categories cheat sheet

Yellow: these items can easily be recycled in a kerbside recycling bin.

Green: these items can be earth-cycled by composting or using worm farms or chickens, food collection services, FOGO bins or bokashi bins.

Red: these items should be avoided as they are destined for landfill. Some items can be collected for special recycling collections.

Grey: an additional category to see how many beverage containers you could be collecting for Containers for Change. Please note, there is no collection for garden waste (organic plant materials), steel or glass in this toolkit. These items are rarely found in WasteSorted Schools waste audits so they have been removed as a category. If you find the above items, either add them to your data sheet as an extra category or remove them from the waste auditing station.

Fruit and vegetable scraps

- Only put food scraps which are fruit or vegetable into this tub (e.g. left-over salad, half eaten fruit, vegetable sticks).
- Do not include whole fruit or vegetables as they go in the whole fruit tub.
- Do not include scraps that aren't fruit or vegetable into this tub (e.g. bread, pasta, meat, yogurt) as they go in the food scraps tub.

You can save this waste from landfill by earth-cycling!

Food scraps

- Pieces of food which are not fruits or vegetables (e.g. bread, meat, cheese, pasta, pizza, popcorn, chocolate bars).
- Do not include whole fruit or fruit and vegetable scraps as they go in the whole fruit tub.
- Do not include food that is completely packaged and unopened, such as an unopened muesli bar or unopened wrapped sandwich. If the food has been opened but is still in the packaging, empty the leftovers into the food scraps tub and put the packaging into the relevant category (soft plastics, snack wrappers, etc.).

Whole fruit

- Untouched fruit, such as a whole apple or banana.
- Do not include fruit or vegetable scraps.
- If a piece of fruit has a small bite taken out of it, you can include it in this category.

Paper and cardboard

- Put dry cardboard and paper into this tub (e.g. office paper, envelopes, and cardboard boxes).
- Do not add tissues or kitchen wipes; they go into the general waste category.
- Do not include paper or cardboard contaminated by food or liquid. Contaminated items will make other pieces wet and dirty add them into the general waste category instead.
- Do not include shredded paper or paper torn into small pieces as this is too small to be collected by the recycling process.

Plastic bottles and containers

- Only include plastic containers that are empty of food, clean and dry (e.g. sushi trays or fruit trays).
- If the plastic container is contaminated by food (e.g. a half-full yogurt container), it goes into general waste.

Aluminium cans and foil

- Clean aluminium cans (emptied of liquids into the liquid bucket first).
- Aluminium foil as long as it is not contaminated with food.
- If there is aluminium foil wrapped around food, unwrap the food and put it into the appropriate food tub and place the aluminium into this tub.
- Heavily contaminated aluminium goes into general waste as it cannot be recycled.

Liquid paperboard (LPB) cartons

- Often used for milk containers.
- These can be recycled in the kerbside bin at home and school.
- These can also be collected in Containers for Change for the 10-cent refund for flavoured milk only.
- Empty liquids into the liquid bucket first.
- People often confuse LPB and Tetra Pak containers, so review these tubs with students. LPB cartons do not have a silver lining like the UHT or Tetra Paks.

Whole packaged (unopened) food

- Unopened food that is fully wrapped in plastic or packaging (e.g. untouched cut-up fruit in a ziplock bag, unopened yogurt, an unopened bag of chips).
- This waste stream is separate from the other organic food collection tubs as it can be avoided.
- Students typically throw this type of food away when they dislike food options packed by their carer but do not want to tell them. Discussing that it is okay to talk about food preferences with parents and students will help reduce this waste stream.

Tetra Pak (silver lining)

- Often used for juice or long-life milk (UHT).
- Multilayered beverage container consisting of cardboard, plastic and aluminium. They are silver on the inside and easily recognisable by the silver hole on top for the straw. Cut them open to show the silver inside.
- Their complex layers mean they are difficult and costly to recycle.
- Currently they cannot be recycled in Western Australia and go in the general waste bin at home and school.
- To reduce waste contamination and landfill, these are collected by Containers for Change and sent to a specialist international recycler. If you have a Containers for Change collection point at school, please educate your students about collecting them and not using general waste for disposal.
- We recommend students AVOID this type of waste due to the amount of waste (straw, straw wrapper, hard-torecycle Tetra Pak container, plastic wrapped around box) and use the easy alternative of bulk buying juice and refilling a container.

Plastic bags

- Includes plastic bags, cling wrap, or zip lock bags.
- These can be taken to a REDcycle point at participating supermarkets for specialist recycling.
- Test for soft plastics using the scrunch test. If it scrunches down, it is soft plastic and should be in a different tub. Plastics need to be clean and not contaminated by food.
- If open and containing food, empty food into the relevant category.
- We recommend students AVOID this waste stream as there are easy reusable alternatives.

Snack wrappers

- Includes all soft plastic snack wrappers (e.g. lolly wrappers, chocolate wrappers, chip packets, biscuit wrappers, yogurt tubes, ice cream wrappers).
- Does not include hard plastics such as plastic bottles and plastic containers. If confused, try the scrunch test on packaging. If it scrunches down, it is soft plastic.
- For silver-lined wrappers, if it stays scrunched, it is made of aluminium and goes in the aluminium category. If it un-scrunches, it is plastic and goes into the snack wrapper category.
- If the snack wrapper has been opened and contains food, empty the food into the food scraps tub and put the empty snack wrapper in the snack wrapper tub.
- We recommend students AVOID this waste stream.
- The contents of this tub can be taken to a REDcycle point at participating supermarkets for specialist recycling.

General waste

- Includes everything else found in the waste audit (e.g. wet paper, plastic cutlery, coffee cups and lids, tissues and napkins, clothing, small plastic lids, straws, food covered plastic, pop sticks).
- If an item belongs to another category but is too dirty to be recycled, place it in general waste.
- Does not include hazardous waste such as batteries, paints, nail polish and aerosols. These need to be dropped off at a hazardous waste collection point to prevent harm to the environment. Keep these separate and discuss with students.
- Find more information about household hazardous waste here.

Containers for Change

- Optional category.
- The Containers for Change litter prevention and recycling scheme was introduced in Western Australia in October 2020.
- Use this category if you collect containers at your school or if you are interested in starting a collection.
- Only audit containers in your landfill bin. Do not add containers you have already separated, as you are trying to find out how many containers you can still divert from landfill.
- Containers that go into this category include plastic bottles, glass bottles, aluminium drink cans, LPB flavoured milk cartons, and Tetra Paks. Visit Containers for Change for a full list of accepted containers.
- Do not include coffee cups or plastic cups.
- Do not include white milk containers.
- We recommend you try to AVOID this waste stream first through bulk buying beverages and using reusable containers.
- Tetra Paks can be collected for Containers for Change; however, they cannot be recycled through your recycling bin at home. This can confuse students (see Tetra Pak category for more information).

Waste audit excel spreadsheet

Waste audit data sheet

Waste audit signs

Walga 2020, Regional councils, available from: walga.asn.au/About-Local-Government/Regional-Councils, accessed 8/10/2021.

City of Melville 2020, What is the 3-Bin FOGO system, available from:

www.melvillecity.com.au/waste-and-environment/waste-recycling-fogo/3-bin-fogo-system/what-is-the-3-bin-fogo-system, accessed 8/10/2021.