



Reduce, reuse and recycle

Action projects that minimise your school's waste and clean-up the environment

Quality for Life



greater WELLINGTON
THE REGIONAL COUNCIL

Environment

This booklet offers practical advice on action projects that minimise waste and clean up streams and beaches.

By taking part in waste minimisation at school you can:

- develop socially and environmentally responsible behaviour among students
- improve your school environment
- reduce the school's waste disposal costs
- reinforce cost saving waste disposal methods used at home (eg. recycling).

Beach and stream clean-ups provide opportunities to not only improve the environment but also make children's recreational areas safer and more inviting.

Environmental projects are excellent teaching tools that can enhance learning across the curriculum. More information about curriculum integration can be found at the end of this booklet.

The Greater Wellington Action Crew can help you and your class set up recycling and resource recovery systems in your school.

This booklet is one of a series for teachers to help students do practical and effective action projects as part of *Take Action for Water*.

Teachers can use the action projects described in the series to tailor *Take Action* to the school's environmental interests and circumstances. This series can also be used to support long term environmental education in schools.



Take action!

Throughout the Wellington region, households are able to recycle more of their waste than ever before. This socially responsible behaviour could be further supported by setting up a recycling system within your school as an action project.

Why consider waste minimisation and clean ups as an action project?

- setting up a recycling scheme will get students more involved in caring for their environment
- recycling plastic bottles, cans and packaging will reduce the amount of litter at school, and stop it ending up in storm drains and streams
- if less waste is sent to the Region's landfills, their life expectancy will be extended, and fewer will need to be created in the future. The risk of landfills polluting local waterways will also be reduced
- recycling paper, plastic and metal means far less of the Earth's natural resources are used to make new materials. Waste that is not recycled goes to landfills and can take decades - even centuries - to break down. See the Support material, later in this booklet, for more information
- every year, New Zealanders send 3.4 million tonnes of waste to landfills. That's about 900kgs per person. In addition, many tonnes end up as litter in rivers and streams, along roadsides and on beaches. Removing rubbish from these places makes them cleaner and safer for people, and healthier for the plants and animals that live in these special environments.



How to set up a waste minimisation system as an action project

Minimising waste can be as easy or as comprehensive as you want to make it. The following describes a way to set up a comprehensive system but you can recycle paper or plastic or cans on their own. Information on this can also be found below.

There are 7 basic steps to reducing waste in your school:

1. complete a waste audit
2. look at what can be reduced, reused or recycled and research ways of doing this. The support material at the end of this booklet will provide you with some information
3. plan a school or class recycling system (don't forget the staff room)
4. implement the system
5. repeat the waste audit to evaluate your progress
6. present your results to the school board, staff and students
7. celebrate your successes.

Health and safety

There are hazards in doing an audit that need to be recognised and minimised. These include sharp objects, broken glass and rotting food. Gloves are essential. Those dealing with sorting sharp objects should have adequate tetanus protection.

1. The waste audit

Doing a waste audit can help you identify the kinds of waste your school produces and their volume or quantity. This will help you decide where you can make the biggest reductions or which wastes you need to concentrate on. You may be surprised what you will find!

Waste audits are easy to do with willing helpers and a few basic pieces of equipment. You should carry out the audit at the end of the day so that there is a full day's rubbish to analyse. Make sure you pick a typical time period to sample so that you get a true picture of an average day.

There are two different ways to audit your waste – the **Disposal Point** method or the **At Source** method. **Disposal point** means sorting the rubbish at the point from which it is ultimately disposed of, usually the school skip. This is the most reliable and effective way to do a waste audit because it catches everything. **At Source** means taking random waste samples at their “source”, i.e., where the students dispose of them (waste bins in classrooms and rubbish bins outside). However, this method is not as reliable as the Disposal Point method because the bins you choose may not be a true representation of the whole schools' waste. This method is good if you are short of time.

To do the audit, choose an area that is dry, out of the wind, has adequate lighting, is away from any hazards and is well ventilated. You will need the following equipment:

- platform scales (preferably electronic)
- sorting table or tarpaulin
- protective gear e.g. gloves, safety/protective eye wear, masks
- bins to sort into (label these with the categories that you are going to sort into)
- pen and clipboard (to record the weights and category type)
- audit record sheet
- first aid kit
- cleaning gear e.g. broom, shovel, dustpan, disinfectant.

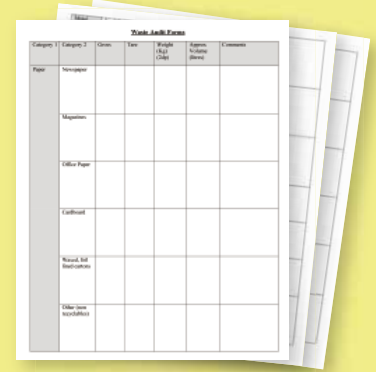
Bring all the rubbish together, or take it out of the waste skip, and start sorting.

2. Look for what can be reduced, recycled or reused

In order to work out what your school may be able to recycle, you should sort the rubbish into categories or waste streams. The most common categories are paper/cardboard, plastics, metal, glass, organic matter, and any remaining non-recyclable rubbish.

Once you have done this, you need to weigh or quantify the different materials. Establishing the weight and volume of the materials will help you work out how many recycling ‘stations’ or recycling bins you will need for your scheme to work. At each station, for example, you may require separate containers for each of the categories.

The Action Crew can provide more information on waste audits. Contact us for an audit record sheet to help keep track of what you find.



Category	Date	Time	Weight (kg)	Volume (litres)	Comments
Paper					
Magazines					
Other Paper					
Cardboard					
Wood, Soil, Bio-waste					
Other (non-recyclable)					

Remember

Waste is simply a resource in the wrong place!



However, some of the categories can be combined (e.g. glass, cans, and plastic are often collected in one bin and separated later by the recycling company), and you should discuss this with the industry provider you choose before setting up your system

3. Planning your recycling system

Armed with this knowledge, you and your students can plan a system that meets your school's needs. Many students will already be familiar with recycling at home. You can ask these students how they and their families set up their recycling system. Encourage them to share their expertise with students who may not yet understand recycling.

Each class, or syndicate will need bins or boxes to collect recyclable items. These should be in a convenient and obvious place. Commonly, each recycling area will require a bin for paper/cardboard, one for plastics, metal and glass, and one for organic matter.

Have a competition amongst students to design eye catching bins. Keep the colour of the bins consistent throughout the school, for example a green box or bin for paper and cardboard and red for glass, cans and plastic. The colours you choose should co-ordinate with the colour code of the 'wheelie' bins used to store the recycled materials before they leave the school.

You will still need a bin for general, or food contaminated rubbish. Put a sign on this bin to make it clear what it is for, such as:

Please: No glass, plastic, cans or clean paper products. Remember to Recycle!

This will remind students and staff to use the correct bin and recycle as many resources as possible.

4. Implementing your system

To make your system work day-to-day you will need to encourage students to use the bins and to empty them regularly. Ask your students to set up a roster for emptying the bins. A pair of students could be rostered on for a week and empty the recycling bins as required. In a class of 30, each student would be rostered on no more than twice a year.

Additionally, you could appoint some environmental monitors for your class. To acknowledge their contribution you can create an Environmental Monitors contract. An example of a job description for Environmental Monitors can be found on page 9.

5. Evaluating your progress

When your system has been up and running for 3 - 6 months, you can undertake a second waste audit to compare the difference in the amounts of waste collected. Graphs and charts can be used to show the amounts and types of waste produced.



6. Share your results

Share the findings with students, staff, the principal and Board of Trustees members. People need to know that they are making a real difference to keep up the practice. They may also be encouraged to take up further environmental initiatives such as worm farming or composting.

7. Celebrate your success

Be sure to let the local media know of your achievements.

Cleaning up outside your school grounds

If your students' action project is to clean up outside your school grounds at a nearby beach or stream, the Action Crew may be able to help. Contact us on (04) 384 5708. Clean Up New Zealand is an organisation dedicated to helping New Zealanders reduce the waste and rubbish that ends up in streams, along roadsides and on beaches. More information on how to do a clean up is available from the Clean Up New Zealand web site (www.cleanupnz.org.nz) or by phoning 0800 315 000. The web site provides information on relevant educational resources, how schools can get involved in clean ups, waste facts, and links to the help available from your local Council (which may be able to supply rubbish bags and gloves, and help remove any waste that you collect). Each year there is a Clean Up New Zealand Week, in which many schools take part.

Health and Safety is very important when doing a clean-up. Students should be encouraged to develop their own Health and Safety Plan but it is essential that adults take the lead in making sure the exercise proceeds safely. Hazards that might be encountered are glass, syringes, steep inclines, slippery surfaces, and deep water. The Clean Up New Zealand web site provides comprehensive advice on how to be safe when doing this kind of project (see Health and Safety).



Things to consider

When setting up a waste minimisation system you should involve parents, the Board of Trustees, staff, and property maintenance personnel at every step of the process. Demonstrations of support from the Board and principal are important to the long term success and sustainability of the project.

Maximise participation by involving students whenever possible, from the waste audit, to designing the bins, to setting up a roster system for emptying them.

Consider having a school policy on waste reduction to maintain support for the initiative. An example of a waste reduction policy can be found on page 9.



Health and safety

As part of your system development, ask your students to devise a Health and Safety plan. Students can create instructions about where to put the bins and how to use them. These can be displayed in the collection area. An example of a Health and Safety plan can be found on page 9.

Incentives and rewards

One school encourages students to write their names on their plastic bottles and cans before they place them in the recycling bin. Each week a bottle or other item is drawn out of the bin. The student whose name is drawn in the 'lucky dip' wins a small prize such as a food item from the canteen. You can ask the students for their ideas on other appropriate rewards.

The Enviroschools awards give your school the opportunity to get national recognition for your environmental initiatives. See the Enviroschools website: www.enviroschools.org.nz for more information on how to get involved.

Support material

Recycling is a great idea, but by far the best way to minimise waste, is to reduce the amount we produce in the first place. This means thinking differently about the way we live and how we use the objects that are a part of our homes and schools. The following information tells how your students can minimise waste by reducing, reusing and recycling common materials like paper, glass, and plastic.

Paper

Reduce - assess the amount of paper used by your school. Could you reduce this, and the costs that go with it, by setting your printers to print double sided? Or using the back of single sided sheets for photocopying where possible? Use scrap paper from offices and businesses for draft copy work.

Reuse - encourage students to write on both sides of their paper

Recycle - collect paper trimmings and other used paper in a box in the classroom. All of the following paper products can be recycled; magazines, newspaper, cardboard, brochures, junk mail, flyers, comics.



Each year 180,000 tonnes of paper and cardboard are recycled at paper mills in New Zealand. This is made into newsprint, writing paper, toilet tissue, cartons, cardboard egg boxes, and even apple trays.

Plastic

Reduce - encourage students to reduce the amount of plastic they bring to school. One school's action project was to have a 'Plastic Free Week' to promote the litter-free lunch box idea (see page 36 of the Take Action teachers' book).



Some schools reduce the amount of food waste they dispose of and the amount of litter on the school grounds by making it compulsory to take home all morning tea and lunch wrappers, packets and left over food.

Reuse - try using re-useable, washable containers for lunch box sized quantities of chippies and yoghurt. These foods are cheaper bought in bulk and large packets can be resealed to stay fresh.

Yoghurt containers can be used again to raise seedlings for planting around the school or by your local stream. Simply put a few drainage holes in the bottom of the pot and fill with seed raising mix. Small juice and Tetra Pak milk containers can be used in the same way.

Recycle - most plastic is non-biodegradable. This means it is not broken down by bacteria or by other living organisms. If plastic is not recycled, it can stay intact in the landfill for many hundreds of years.

In New Zealand, plastic is reprocessed and made into new items in Hamilton and Otaki. Polyester clothing, carpets, buckets and pipes, and fibre for pillows and sleeping bags can all be made from recycled plastic.

Many plastic items can be recycled. The triangle symbol and number on the base of each plastic object tells which ones are recyclable in your area. In the Wellington region plastic labelled with the following numbers, can be recycled:



e.g., fizzy drink and water bottles



e.g., milk bottles

Check with your local Council if plastics bearing any other numbers can be recycled. To get the full story on how plastic is recycled into polar fleece, see the article entitled, "Is that a soft drink bottle you are wearing?" in the School Journal, 1999, Part 4, Number 1.



Did you know?

25 plastic bottles can be recycled to make an ecofleece top.



Cans

Recycle - steel cans that have contained anything from fruit salad to pet food or soup can be recycled. We use over 400 million a year in New Zealand. Every tonne of scrap steel that is recycled avoids the consumption of 3 tonnes of raw materials. There's no need to remove the labels, as they are burnt off in the recycling process. Aerosol cans are also recyclable so long as they are empty, as are paint tins (when empty), and lids from jars. See www.steelcans.co.nz/ for information on recycling steel cans.

An empty aluminium drink can can be used again and again to make anything from new cans to bridges. Aluminium in New Zealand is sent overseas for recycling.



Glass

Reuse - empty glass bottles and jars can be used to keep pre-mixed paint, craft equipment or lollies!

Recycle - glass can be recycled to make decorative paving and beaches, as well as new glass jars and bottles. Waste glass (cullet) goes to the Visy Recycling plant in Penrose, Auckland to be reprocessed. New Zealand's first recycled beach was created in mid-Canterbury in January 2003 out of 40 tonnes of crushed glass.



Collection of your recyclable resources

Paper, plastic, cans and glass collection can be arranged with local industry providers. Their contact details are in the Yellow Pages. If you would like to go further at your school and consider initiatives like zero waste or other ways of helping the environment please contact Greater Wellington's Action Crew on 04 384 5708.

Hazardous substances

Inevitably, some of the waste that your school produces will be of a hazardous nature. This includes items such as left-over paint, garden chemicals, batteries, cleaning products and pool chemicals. These will not be able to leave the school with the other recycled materials. However, there are ways to dispose of these items safely and with minimal effect on the environment. Contact your local Council for information about hazardous waste disposal in your area.

Waste minimisation policy document (sample)

A waste reduction policy helps establish the schools' commitment to taking action, and communicates that message and commitment to parents, staff and pupils. The following policy is suggested as a good place to start. Make your own policy or use the one below with any changes and additions that are appropriate for your school.

Our school will

- **Reduce** the amount of waste we produce by careful purchasing, buying recycled materials where possible and by using resources such as paper more efficiently.
- **Reuse** materials wherever possible for other functions in the school, such as art materials.
- **Recycle** all materials that are able to be recycled efficiently and for which there is no other use.
- **Recognise** the efforts and achievements of everyone involved in the waste reduction programme and publicise our initiative to the community.
- **Revise** our policies and practices regularly to make sure we are reducing waste as efficiently as possible.

Health and safety plan (sample)

As with any activity there can be risks involved in recycling and waste minimisation, and it is important to identify these risks and eliminate, isolate or minimise them. Once your system has been planned and your site(s) has been identified, undertake a formal hazard identification procedure and incorporate your risk management strategies into your school's health and safety plan.

When your system is up and running, review your health and safety plan to ensure all hazards have been identified. Some of the hazards that you may need to be aware of, together with suggested actions, include:

Hazard	Possible action
Lifting of bins and bags	Avoid lifting heavy bins. Use more than one person if necessary. Bend the knees
Sorting waste in the bins	Wear gloves when sorting rubbish.
Tipping over of wheelie bins	Store /place bins away from play areas
Trucks entering school grounds for recycling pickups	Arrange for pickups from out of bounds areas. Arrange for after hours pickups
Odour issues from decomposing organic wastes	Seek advice on correct composting procedures
Hygiene issues from dirty bins	Clean bins regularly with a high pressure hose onto the grass, not down a storm drain

Environmental monitors' job description

Environmental Monitors were suggested on page 4 as a way of involving students in the school recycling system. A sample of a job description for their role can be seen below:

Environmental monitors will:

- empty all the paper recycling bins in: tech-art rooms, science room, offices, staffroom and resource room. This should be done at 1.50pm or 2.45pm each day. If bins are less than half full leave them for the next day.
- help people to be good environmentalists by being good role models, picking up litter yourselves, in the classroom and around the school.
- recommend students who you think should get environmental merit mentions each week.

Curriculum integration

You can use environmental projects such as these to enhance learning across the curriculum. Please refer to page 6 of the 'Take Action for Water teachers' book for information relating to curriculum links and learning opportunities for students doing action projects.

The curriculum links below include the more specific achievement objectives relating to waste minimisation action projects:

Health and physical education

Healthy Communities and Environments

- Level 2 – students will share ideas and beliefs about ways in which the environment contributes to well being and work with other people to make improvements.
- Level 5 – students will investigate and evaluate features of the school environment that affect people's well being and take action to enhance these.

Maths

Number

- Level 3 – students will develop accuracy, efficiency, and confidence in calculating – mentally, on paper, and with a calculator: e.g. use a calculator and mental methods to round numbers of people who support a decision to fine students who drop litter in the playground.

Measurement

- Level 3 – students will develop confidence and competence in using instruments and measuring devices: e.g. Measure the volume of recycling your school collects over a defined period of time.

Statistics

- Level 4 – within a range of meaningful contexts, students should be able to:
 - plan a statistical investigation arising from the consideration of an issue or an experiment of interest
 - collect appropriate data
 - choose and construct quality data displays (frequency tables, bar charts, and histograms) to communicate significant features in measurement data;
 - collect and display time series data.

Assessment activity examples

The following can be used to assess students' knowledge on this topic. Students discuss an issue of interest or concern, for example:

- Is there a need for more rubbish or recycling bins to be placed around our school? Students make up questions relating to this issue, such as “What types of litter are prevalent in our school?” “Which areas in our school are problems?” “What are some possible solutions?” Working in groups, students decide how to categorise rubbish, collect and count waste items, summarise their data on an appropriate display, and present their findings to the Board of Trustees.

Using this example, teachers could assess student's ability to:

- plan a statistical investigation arising from the consideration of an issue or an experiment of interest (S4)
- collect appropriate data (S4)
- choose and construct quality data displays (frequency tables, bar charts and histograms) to communicate significant features in measurement data (S4)
- report the distinctive features (outliers, clusters, and shape of data distribution) of data displays (S4)
- pose questions for mathematical exploration (MP4)
- interpret information and results in context (MP4).

Water, air, earth and energy: elements in Greater Wellington's logo combine to create and sustain life. Greater Wellington promotes **Quality for Life** by ensuring our environment is protected while meeting the economic, cultural and social needs of the community.

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