savings in your

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nzwwa
New Zealand Water & Wastes Association
Waiora Aotearoa

If you spent your childhood growing up in New Zealand, chances are you remember a disappointing summer or two marked with shallow rivers, empty pools and constant reminders of water restrictions. It's also likely that you nevertheless continued to take clean, fresh water for granted. Over recent years these times of water shortages have become more frequent and widespread, and are no longer confined to the hottest months of summer. The phrase "water conservation" is something we typically heard during dry spells, but as the severity of our diminishing freshwater resources has become more evident, it is the concept of a water efficient lifestyle that is demanding global attention, and rightly so; if we are to secure our future access to water, the changes we make to the way we use it must become habit and not something to be forgotten once the summer is over.

As an organisation whose objectives include promoting environmental responsibility and addressing topical water related issues throughout New Zealand, NZWWA has, and continues to take, an active role in the drive to shape New Zealand into a water conscious nation, thereby playing a part in addressing this worldwide problem.

Savings in your House has been created with you in mind - everyday New Zealanders living on a dairy farm, in a city apartment, or anywhere in between. You'll find the information on the following pages is simple, practical and straightforward, yet highly effective, making the move into a water-wise lifestyle effortless and inexpensive.

Having picked up this booklet, you have taken the first step to making a difference when it comes to preserving our freshwater resources; we wish you the best of luck as you continue to make the positive changes needed to achieve a more water efficient lifestyle, and we hope the advice found within these pages will help to get you there.

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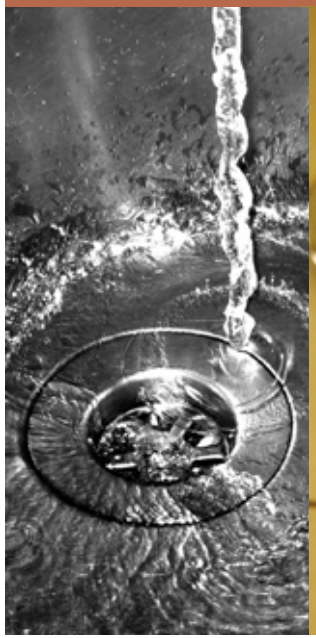


WHY WE MUST SAVE WATER

Freshwater is essential for human survival. Yet, in a world populated by approximately 6 billion people, it is estimated that today one third of these are affected by water shortages. 1.1 billion people do not have sufficient drinking water, while a total of 2.4 billion lack adequate sanitation systems.

The water crisis is getting worse. The world uses 10 times as much water as it did a hundred years ago, and with the world's population expected to rise by 45 percent in the next 30 years, we will face a world-wide water crisis by the year 2020 - not least because so many rivers, lakes and groundwater resources are becoming increasingly polluted.

Preventing water shortages in New Zealand

Although our freshwater is ranked in the top 10 for both cleanliness and abundance, many regions in New Zealand suffer water shortages or are about to do so. For example, the water crisis will hit Wellington as early as the year 2011, unless current water practices change. Christchurch, unless more water can be conserved, will need to spend millions of dollars on a new water supply within 20 years. This is because the demand for water, as the population rises, will soon be greater than the supply available from the city's underground aquifers.

So, New Zealand's freshwater supply is far from endless. With our rapidly growing population and with rainfall becoming more erratic each year, we must change our habits if we are to have the same access to water tomorrow as we have today.

Conserving water will save money and help the environment

By adopting a water-efficient lifestyle, we will save money that would otherwise be spent on building new dams, reservoirs and treatment plants. This will not only lower the cost of water to consumers but will also prevent environmental damage caused through the development of such infrastructure.

BUT WHAT CAN I DO?

Everyone can do their bit to save water - and every little bit counts. The easiest way to begin is to eliminate the leaks that cause much of the water waste in our homes. For example, by replacing a worn washer in a tap, you can save up to 5,000 litres of water per month for the cost of a few dollars.

However, it is the simple changes that we can make to our behaviour when using water that are often the most effective.

IN THE KITCHEN

The kitchen and laundry account for 30 percent of household water use - roughly 180 litres per day - and much of this water is wasted. Here are some simple suggestions to help you use water more efficiently while cooking and washing:

WASHING:

Use a water-efficient dishwasher. Choose a dishwasher with at least an AAA water conservation rating - the more A's, the more water-efficient it is. Alternatively, choose a machine with economy settings for small loads.

Don't rinse dishes before loading them into the dishwasher. Most dishwashers are designed to clean very dirty dishes. If you *must* rinse dishes, soak them briefly in a sink of soapy water then load them directly into the dishwasher - don't rinse them first.

Fill your dishwasher before using it. Wait until your dishwasher is full before using it, since dishwashers can use up to 125 litres per wash. Alternatively, you can use an economy setting for small loads, if your dishwasher has such a setting.

Check your dishwasher regularly. If your dishwasher is not cleaning dishes properly, check for clogged pumps, sticking rotors and leaking hoses, rather than using the heavy-duty cycle that uses more water and electricity.

Use less dishwashing detergent. When washing dishes by hand, use either the minimum amount of detergent, or a low-sudsing detergent. This will reduce the amount of rinse water needed.

Use vinegar to cut grease. Add a quarter to half a cup of vinegar to your wash water to help cut grease. This works better than using hot water alone.

COOKING:

Keep drinking water in your refrigerator. Keep a bottle of drinking water in the fridge. This means that there will be no need to run the tap for several minutes until the water runs cold. This can save up to two litres of water per glass.

Defrost frozen food in your refrigerator or microwave. Instead of running water over frozen food, allow it to defrost overnight in the refrigerator. Alternatively, use your microwave oven to defrost food straight from the freezer.

Put a plug in your sink when washing vegetables. Washing vegetables under a running tap can waste 10 litres of water per minute. Instead, put a plug in the sink and partly fill it. You will use much less water.

Save water and energy with healthy ways of cooking. Microwaving, steaming or using a pressure cooker will save both water and electricity (or gas) and will help retain nutrients in the food. Simmer rather than boil, and use lids that fit tightly - this prevents evaporation and can save up to 20 litres of water per week.

Use just enough water to cover vegetables when boiling. If you add just enough water to cover vegetables and then place a lid on the saucepan, you get four benefits: you save water, the vegetables cook quicker, you save electricity, and more nutrients are preserved in the food.

Re-use boiled water. The water used to boil food can be re-used in soups or casseroles, thereby adding extra nutrients to your food.

IN THE BATHROOM

The bathroom and toilet, between them, account for half of the water used by most households. The toilet alone flushes 25 percent of household water down the drain, with the average single-flush toilet using 11 litres per flush. A house with three occupants flushes 165 litres a day down the toilet - that's over 60,000 litres a year, or two thirds of an Olympic sized swimming pool.

Here are some ideas that will help you save water in the bathroom:

TOILET:

Don't use the toilet as a rubbish bin. Don't use the toilet to flush away tissues, cigarette butts or other bits of rubbish. Remember, every full flush uses 11 litres of water.

Install a modern dual-flush adaptor. These devices mean that you will use only three to six litres of water per flush - up to eight litres less than single-flush toilets.

Install a flush saver device. Flush saver devices - small weights that fit inside the cistern that reduce the volume of water in each flush - are available from most city councils. They are inexpensive and some councils provide them at no cost.

Place a plastic bottle in the cistern to reduce flush water. If you can't install a flush saver device or a dual-flush adapter, use a plastic bottle or other container filled with water. It works just as well, and will not disintegrate and clog the tank as bricks do. The container should hold one or 1.5 litres of water. Be sure to place it well clear of any moving parts.

Check for slow leaks. It is common for cisterns to leak or overflow. You can discover a slow leak by adding a few drops of dye to the cistern. Coloured water appearing in the bowl after 15 minutes shows that the cistern needs to be repaired.

BATHROOM SINK:

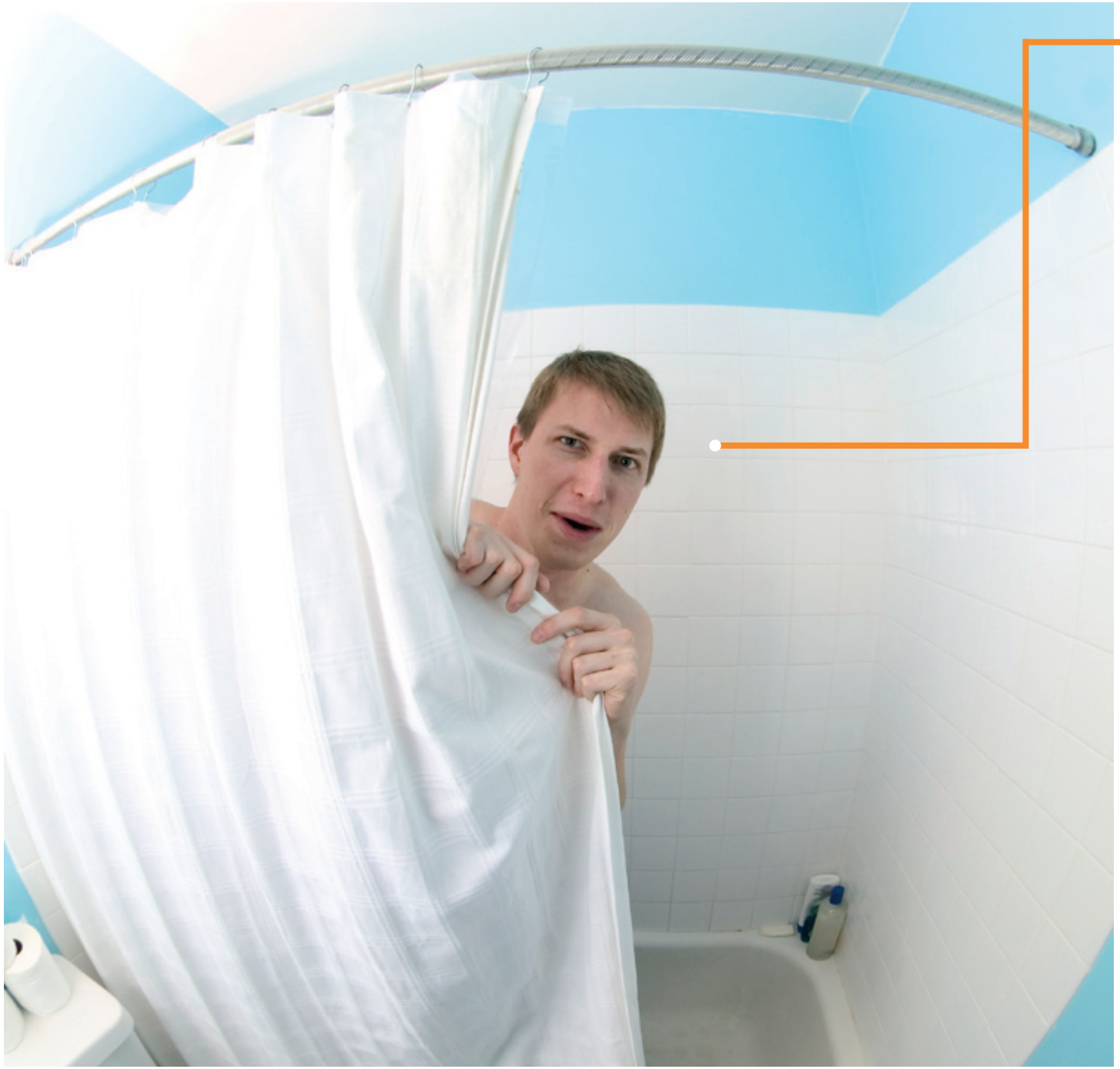
Install tap aerators. Aerators cut the flow of water from your tap by 50 percent without reducing water pressure. They are inexpensive and easy to install.

Turn off the water when brushing teeth or shaving.This can save up to 56 litres of water a day.

Fill the sink to wash your hands and face. Using running water to wash your hands and face can waste up to 10 litres of water per minute.

Don't rely on water pressure to remove dirt. Keep a nailbrush and pumice by the sink to use when washing dirt off your hands.

IN THE BATHROOM



SHOWER:

Take shorter showers or only partly fill the bath. Showers are more water-efficient than baths - but only if they last for four minutes or less. To decide which is the most efficient way of washing for you, plug the tub when you shower and compare the water level at the end with where the water level would be if you took a bath.

Install a low flow showerhead. Showerheads with an AAA water rating use no more than nine litres of water per minute, whereas traditional showerheads use between 15 and 20 litres. A low flow showerhead can save 50 litres of water for each six-minute shower.

Don't turn on the shower until you are ready to get in. If you have to step out of the shower halfway through, turn off the water until you get back in.

Shave before you get into the shower. Instead of letting the water run as you shave, use a container of warm water outside the shower. Alternatively, turn off the water while you shave inside the shower, using running water only to rinse off afterwards.

Use a kitchen timer to help you spend less time in the shower. Set the timer for five minutes or less to remind you to limit your shower time.

Take a 'navy shower'. Due to the limited supply of freshwater on ships, sailors were taught to get wet, turn off the water, soap and scrub, then turn the water on briefly to rinse off.

Make sure your hot water system thermostat is not set too high. If your thermostat is set too high, you will get very hot water that you will be tempted to cool by adding cold water.

IN THE LAUNDRY

How often a washing machine is used is important in determining how much water a household uses and wastes. A top loader machine, for example, can use up to 200 litres of water per wash. Here are some ways to reduce that massive use of water:

Use the washing machine only for full loads. If we increase the size of each load in our machines, we will reduce the number of times we use them. This can make a huge dent in our daily water wastage.

Think about what really needs washing. Try to break the habit of throwing everything you use, or take off, straight into the laundry hamper. A bath towel, for example, can be used more than once before it needs to be washed.

Choose a water-efficient washing machine. When buying a new machine, look out for the AAA water conservation rating label. Also, consider buying a front loader - they use about half the water that top loaders require.

Turn down the water setting. If you need to do a half-load, adjust the water level accordingly or use economy settings.

Reduce the rinse cycle. In soft water, clothes not only get cleaner and but also require less detergent and rinse water.

Plug the sink when washing by hand. When washing clothes by hand, put the plug in and partly fill the sink with water, rather than using running water. Then use the rinse water on your indoor plants or garden.

Garden

Everyone likes a lush green lawn and vibrant flowers, especially over the dry summer months when water consumption can almost double. However, with up to 1000 litres of water per hour running through a hose, it is easy to waste hundreds of litres through over-watering and other careless gardening techniques. To create a more water-efficient garden, try the suggestions that follow:

Choose trees and plants that need less water. You can save thousands of litres of water per week by landscaping with drought-resistant plants. Most native plants, for example, require less water than exotics. Visit your local council or garden centre for information on which plants to use.

Try group planting. Group your plants into those that require watering and those that don't. That way, you can give water to the plants that need it, without over-watering other ones.

Avoid watering the garden during the heat of the day. When you water the garden in the early morning or evening, you lose less water through evaporation.

Consider using a drip system to water the garden. Water from fine mist sprinklers can be easily lost to evaporation, or it can blow to places where it is not needed. In contrast, drip systems place the water near the roots instead of over the leaves and flowers. Drip systems are economical as well as efficient.

Soak your garden to help plants stay green. Watering deeply but slowly and infrequently (twice a week, and no longer than 30 minutes each time) toughens plants and encourages plant roots to grow deeper looking for moisture. A light sprinkle everyday will only cause shallow rooting that will make the plant more prone to drying out.

Several short waterings are better than one long one. Most sprinklers spray water faster than the soil can absorb it. To reduce water wastage through run-off, water the garden for three 10-minute sessions - each one half an hour apart - rather than watering steadily for 30 minutes. Use a kitchen timer to remind you when to turn the water off, and on again.

Place sprinklers carefully. Place sprinklers so they spray water only on the lawn or garden, not on paths, driveways or buildings.

Accept a dry lawn over the summer. Grass becomes dormant during periods of drought but rejuvenates naturally when winter approaches.

Want green lawns? Choose drought-resistant grass. If having a green lawn is important to you, choose drought-tolerant grasses, such as Fescues or Bluegrass, that stay green with minimal watering.

Let your grass grow slightly taller in the summer. Longer blades promote deeper rooting and shade the root zone, thereby reducing water loss.

Use mulch to minimize evaporation. Mulch can reduce evaporation by up to 70 percent and is fantastic for improving water absorption and reducing weed growth.

General

Wash the car on the lawn using a bucket. Using a bucket is less wasteful than using a hose. Also, the soapy water will be absorbed by the grass, instead of running down the drain and into the storm water system. Better still, use a commercial car wash that recycles the water used for each wash.

Use a broom to clean driveways and paths. Sweeping will get them clean enough without wasting litres of water.

Buy a trigger gun hose attachment. Cheap and easy to attach, these make it easy to turn on and off the water as you use it, preventing much water wastage.

Cover your swimming pool. A cover on your pool means that water loss due to evaporation will be cut by up to 90 percent.

RAINWATER COLLECTION

For many centuries, people collected rainwater for drinking, washing, gardens and farms, with no help from treatment plants and distribution systems. Today, as water shortages loom, people are again turning to private rainwater collection.

Domestic rainwater collection is relatively straightforward. Rainwater collected from the roof via gutters and pipes flows through screening devices to remove dirt and debris, and is then stored in tanks outside the house for use in the garden, toilet and laundry. (The reticulated supply should still be used for drinking, cooking and other potable purposes.)

The benefits of using rainwater include:

- reducing the demand for water from the main water supply
- reducing flooding of land and storm water drains, and
- decreasing sewage overflows during heavy downpours.

Across the Tasman, long-lasting droughts over many parts of the country and widespread water restrictions have pushed the re-introduction of rainwater tanks to urban areas. Although the reticulated supply provides the safest source of drinking water in towns and cities, rainwater collection has received increasing support, encouraged in some Australian states by subsidy schemes and the obligation to include rainwater tanks in new urban developments.

The costs of domestic rainwater collection vary with the amount of rainwater to be stored and its intended uses. Tank prices can be as low as a few hundred dollars, to which the cost of installation and any additional fittings must be added. Some councils offer a rainwater tank rebate scheme.

For more information, talk to your local or regional council, or visit any of these websites:

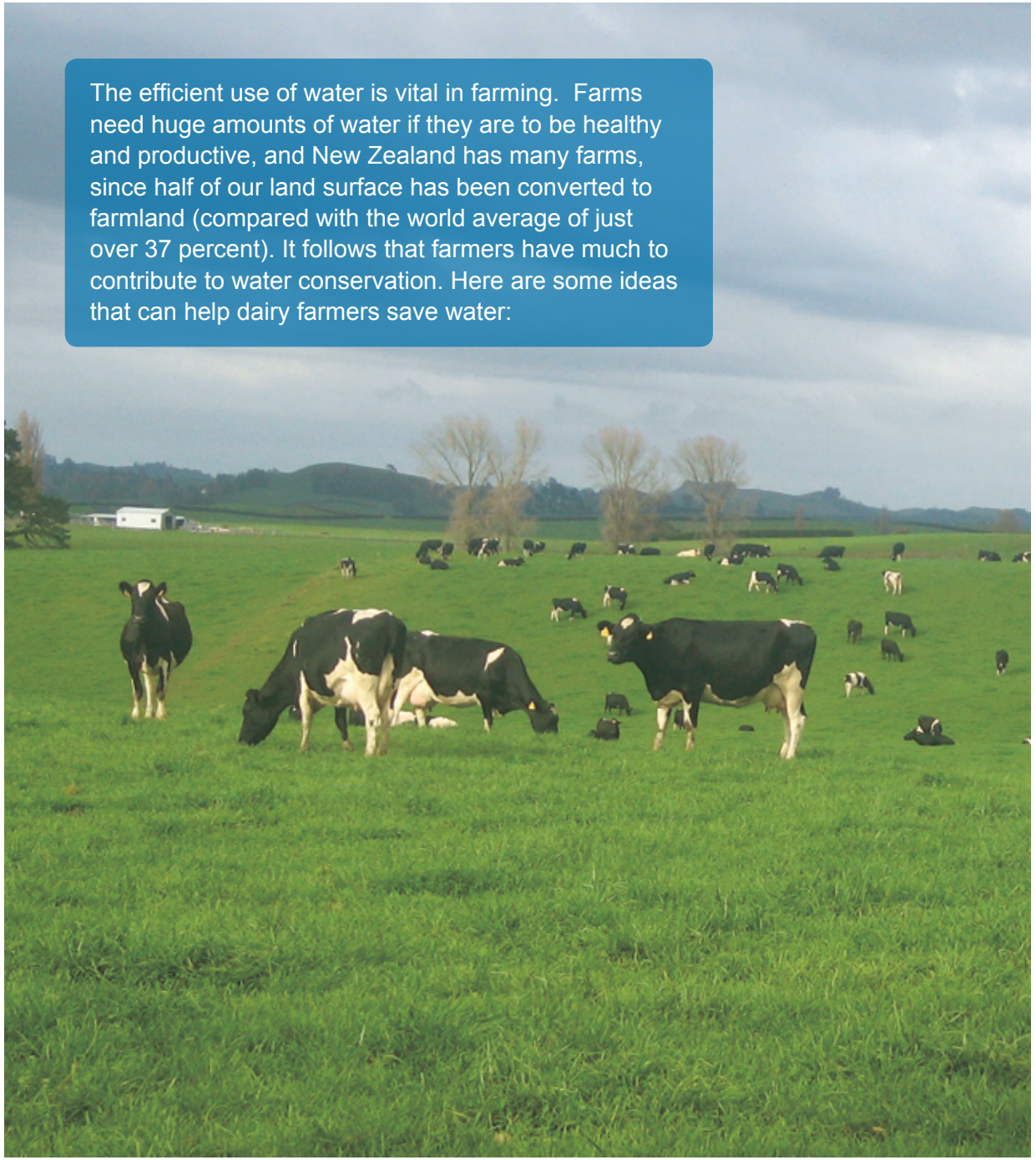
COUNCIL WEBSITES:

Waitakere City Council:
www.waitakere.govt.nz/CnlSer/wtr/wtrsavetips.asp#Rainwatertanks

Auckland Regional Council:
http://www.arc.govt.nz/library/z75675_2.pdf

North Shore City Council:
www.northshorecity.govt.nz
our environment > water > a - z water information > rainwater tanks

ON A RURAL DAIRY FARM



The efficient use of water is vital in farming. Farms need huge amounts of water if they are to be healthy and productive, and New Zealand has many farms, since half of our land surface has been converted to farmland (compared with the world average of just over 37 percent). It follows that farmers have much to contribute to water conservation. Here are some ideas that can help dairy farmers save water:

Re-use the pre-cooler water that chills down milk. Instead of allowing the water that flows through the cooler to run down the drain, catch it in a tank for your animals to drink, or install a re-circulation system.

Capture rainwater. Roof runoff can be directed into storage tanks. The water can then be used for wash down during dry periods.

Use dry-cleaning techniques. Use scrapers, squeegees and brushes to remove solid waste from yards and pens, in order to reduce the amount of water needed for cleaning.

Check that trough ball-valves are set correctly. Much water can be wasted by overflowing water troughs and by incorrectly set or damaged ball valves. Ball valves can be adjusted to lower the float to reduce the risk of spillage and overflowing.

Use boom irrigation. Boom irrigation will apply water more accurately than gun irrigation, thereby improving both the quality of the crop and the efficiency of water use.

Use wash-down water for irrigation. Collect the water used for washing down yards and pens, and use as a supplementary source for irrigation.

Irrigate at twilight or at night. This will minimise water loss through evaporation.

Use correct pump and pipe sizes. Make sure you use the correct pump and pipe size - trying to pump too much water through a small pipe will increase friction (reducing pressure at the end) and therefore increase the chance of a leak occurring.

Check your equipment regularly. Water can be conserved by checking the condition of your pumps, pipes and valves, making sure all seals are tight, and repairing or replacing all worn seals and other damaged items.

Don't use running water for washing-up. Rinse small equipment in a bucket or sink, not under running water.

Don't use water-driven equipment, such as travelling gates. If saving electricity is a priority for you, recycle the water that is used to power the equipment.

Check the water meter regularly. Any indication of abnormal consumption could be due to leakage. Undetected leaks account for hundreds of litres of water loss each day.

FRESHWATER FACTS

Freshwater in New Zealand

By 1999 there were approximately 500,000 hectares of irrigated land in New Zealand, consuming approximately 331 cubic metres of water every second.

New Zealand's rivers and lakes provide 60 percent of the water we use, of which 75 percent generates our electric power. The remaining 40 percent comes from underground sources.

Waikoropupu (Pupu) Springs in the South Island is one of the largest freshwater springs in the world. It produces more than 14,000 litres – or 40 bath tubs full – of some of the world's clearest water each *second.*

Freshwater around the world

The world's longest freshwater river is the Nile (6,670 km). The Amazon (6,448 km) is slightly shorter but it contains 60 times more water than the Nile.

The world's deepest lake is Lake Baikal in Russia. It plunges to a depth of about 1.6 km in the middle, and contains one fifth of the world's fresh water.

Each year about 700 new dams are built in the world. The largest ever is planned for the Yangtze River in China.

Water problems around the world

More than two million children die each year from diseases such as cholera, typhoid, and infectious hepatitis carried by the only water available to them for drinking.

Over the last 300 years, the number of people on Earth has increased seven times but the amount of water we use has increased 35 times.

A person living in New York City uses about 300 litres of water a day. A person living in Kenya, in Africa, uses only five.

Surprising, but true

Seawater makes up 97 percent of the Earth's 1.4 billion cubic kilometres of water. The freshwater found in rivers, lakes and streams makes up less than one percent.

The Atacama Desert, on the west coast of Chile, had no rain for 400 years (from 1571 to 1971). It is the driest area in the world, and often has no rain for years.

In 1973, the US space station Skylab went into space carrying just 3,000 litres of water to last the crew for three months. They did it by recycling the water more than six times. In contrast, one toilet used by three people in New Zealand uses 15,000 litres over the same period.

GAMES, PROJECTS AND WEBSITES FOR STUDENTS

Ideas for projects

Use information from this booklet, and from the websites listed below, to:

- Plan a water efficiency campaign. For example, you could create a poster, leaflet, newspaper advertisement, TV or radio commercial, or even a website.
- Do a waterwise presentation for another class, perhaps with the help of Powerpoint.
- Draw up a water efficiency plan for your home, school or district.

Websites for online games and information

The online games listed below will test your knowledge about using water the smart way:

Greater Wellington: The Waterwise Game www.gw.govt.nz/section1010.cfm

UK Water Industry: The Water Family www.thewaterfamily.co.uk

The Saving Water Partnership: Water Busters: www.waterbusters.org

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