

# Marlborough's Water



**MARLBOROUGH  
DISTRICT COUNCIL**



Daily Marlborough





## Introduction

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Water is essential for life and therefore needs to be treasured and looked after.

The following information is designed to give you some general information about Marlborough's water and what happens to it

There are also several other resources that you can access that will give you some further information, such as our Enviroschools programmes topic on healthy water, the Wai Korero kit for schools and our environmental educators who can work with your classes to look at where our water comes from as well as water quality, the critters that live in your local waterway and show you how to monitor the water. These resources all have links to the science, health and social sciences curriculum.



## Water

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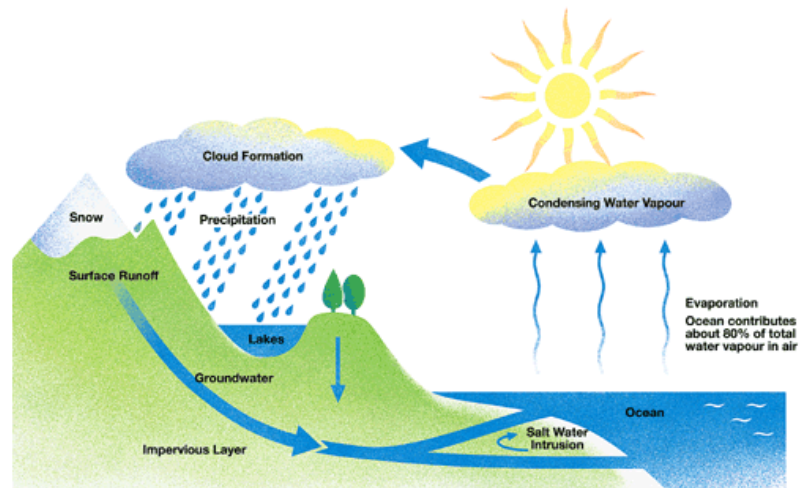
Some interesting facts and figures about water:

- Water covers over 70% of our planet.
- The oceans make up over 90% of all water on earth.
- Around 3% of all water is locked in icecaps.
- Only 0.03% is all we actually have to drink, wash in and grow food with.
- We use 70% more water than we did 30 years ago.
- Around 60-70% of the world's water is pumped from underground aquifers.
- We are now using that underground water more quickly than it is replaced by rainfall infiltration.
- A jellyfish is 96% water.
- A watermelon is 93% water; an apple is 80% water.
- An elephant or a human is 65% water.
- The water molecule is made from two hydrogen atoms linked to an atom of oxygen. They are so small that there are millions of H<sub>2</sub>O molecules in a single drop of water.

## The Water Cycle

Water is essential to life on Earth, as all living creatures contain water in their cells. The Earth is the only planet in this solar system with the right temperature range to have the liquid water that is essential for life (others have either water vapor or ice).

However, less than 3.5% of this is fresh, salt-free water and a majority of the fresh water volume is frozen in glaciers and icecaps, leaving only 1% as potential drinking water in streams, lakes and (the majority) in underground reserves. Much of this 'fresh' water is today too polluted to use without treatment, or is inaccessible. Only a small percentage is actually drinkable.



Although water is a scarce resource globally, nature's water cycle steadily replenishes this limited supply through rainfall as part of the water cycle, particularly on mountains catching the prevailing ocean winds.

## The value of water to people

People value water to drink, to cook and wash with, for livestock and their gardens, for its appearance, the sounds it makes, fish and other wildlife habitat.

Flowing water has been valued for many centuries by the first peoples of New Zealand (Aotearoa) for its life force (*mauri* – a spiritual concept meaning essence of being or the power that makes it what it is). Te Reo Maori uses different words to distinguish types of water (*momo wai*) of varying quality, such as:

- *Waiora* – the purest water, source of wellbeing and life.
- *Waimora* (or *Waimaori*) – ordinary clean water, no longer sacred.
- *Waikino* – water flow which has been disrupted or debased, and might cause harm.
- *Waipiro* – slow moving water such as in a swamp, natural wetland, traditional source of *tuna* (eels and other fish), *manu* (ducks and edible birds) and useful plants such as *raupo*.
- *Waimate* – water that has lost its life-force (perhaps through pollution) and is dead.
- *Waitai* – saltwater of the sea and surf and tides.
- *Waitapu* – an area of waterway that is deemed *tapu* or 'off-limits' for gathering resources or other use, until that restriction is lifted by its guardians.



Water from these different sources is not usually mixed, and there are cultural traditions and practices (*tikanga* and *matauranga*) focussed on keeping water clean and protecting its *mauri*.

## Water's journey

All the land area supplying a particular stream is known as the water **catchment** of the stream. Rain falling on the ground in a catchment is absorbed and slowly flows downhill until it reaches the bottom of a small gully where it forms a trickle. These small trickles join together to form a small stream and this stream grows from there as more and more streams and trickles join it until eventually it forms a river

For example, the Wairau River catchment begins in the mountains of the Nelson Lakes and extends eastwards to reach the Marlborough Coast at Cloudy Bay



What happens upstream can affect water life and water users downstream. Therefore, it is very important to be aware of where our liquid waste is disposed, as it can easily pollute the water in a catchment.

Both surface and underground waters can easily be polluted by human activity, such as:

- Pastoral and crop farm nitrogen fertilisers, herbicide sprays and animal manures (NZ farm animals produce 40 times more urine and faeces than the human population, mostly onto land but some of which washes into waterways when it rains);
- Soil erosion into rivers, which is common in deforested hill country, especially after storms and cyclones;
- Organic wastewater discharges from factories;
- Household chemicals such as moss-killers, herbicides, detergents, oil and paints;
- Wood preservative chemicals, mine drainage and spoil heaps and other industrial activities can affect groundwater and streams, sometimes for years after closure; and
- Oily and metal-polluted run-off in 'storm water', gathered from roads and urban hard surfaces after rain.



## Using our Water Resource

In developed countries where people have clean water piped to their house, annual water use per person has increased hugely in the past century.

This is mostly because of garden and farmland irrigation, large livestock numbers, industrial processes, flushing toilets and the water appliances we have in our homes, from washing machines to dishwashers, spa and swimming pools.

**In the past 30 years our water use has increased rapidly**



We now use 70% more water than we did 30 years ago.

We have more appliances around our homes many that use more water than their older counterparts.

**In Marlborough on average each household uses around 700 litres of water each day.**

**In the summer this can increase to up to 1500 litres of water each day and much of this goes down the drain or onto our gardens.**

Inside our homes, here is a look at where some of that water consumption goes.

- 30% on showers and baths
- 30% down the toilet
- 20% in the kitchen
- 20 % in the laundry.

Just out of interest a garden sprinkler delivers 900 litres of water per hour and if you have your hose going during the heat of the day, much of that gets evaporated into the air



***As a comparison, people in countries like India and Africa use only 25 litres of water per day, that is what they can carry back to their homes from the local water supply.***

## Marlborough's Water

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In New Zealand about two thirds of our community-piped water supplies are taken from lakes and rivers and a third from groundwater aquifers

In Marlborough much of our water comes from aquifers, or underground water storage.

Blenheim, Renwick, Havelock, Wairau Valley and Riverlands all draw water from aquifers. Picton has a dam plus a shallow aquifer and Seddon uses river water.

Most of these supplies have some form of treatment before they are piped to our houses.

Blenheim has two treatment plants. One adds lime and the other caustic soda to the water to balance the pH levels so that our old copper pipes do not corrode. Both use an ultraviolet light system to kill any bacteria and viruses that may be present.

Picton's water has a filtration and chlorination system with ultraviolet used at the Essons Valley plant, for treating the water. Havelock, Renwick and Wairau Valley water are chlorinated.

The Awatere water supply uses a MIOX (mixed oxidant) plant producing chlorine to dose the water supply. The Seddon School water continues to be treated using ultraviolet light to remove the risk from protozoa contamination which chlorine does not remove. A boil water notice for the Awatere water supply remains in place.



## Where does the water go when we have finished with it?

Household water, once we have used it goes down the drain to a septic tank (if you live in the country) or to sewage treatment plant if you live in town. This water is called wastewater and includes liquids from sinks, showers, toilets and our water based appliances like the dishwasher and washing machine. It is then treated at the sewage treatment site before being pumped out to sea

Rainwater that falls on your roof goes into large soak pits where it is absorbed by the soil (if you live in the country) or it goes down the drain and into the stormwater system if you live in town. The stormwater system takes water through a series of underground pipes to the nearest stream, river or sea. The storm water system also collects water through grates and sumps in the road. It's really important not to put any toxic chemicals down the storm water drains as they do go straight to a waterway near where you live.

## Taking Care of Marlborough's Water

There a quite a few people at the Council involved in looking after Marlborough's water.

Our engineers test drinking water daily to make sure that it is safe to drink.

Our environmental scientists monitor groundwater quality at over 23 sites.

Our environmental scientists also check the health of our freshwater to make sure that the values of our rivers and streams are kept for all of us to enjoy and to ensure that it is suitable for plants, fish and other instream life. Over 34 river sites are monitored monthly across Marlborough.



All fresh water eventually lead to the sea, so our scientists also monitor swimming spots and coastal beaches around our region to check how safe they are to swim and to play in.

## Water Allocation

Water is a precious resource and we need to make sure that it is used wisely in our region.

Apart from taking water for drinking and general household use, taking water for any other purpose requires a special permit or consent.

That means that whoever wants to use this water for things like industry, vineyards or farming need to apply to the Council and say why they want to use the water.

Our scientists have done lots of homework on what types of industry and activities affect our water and have some guidelines they provide to the decision makers who will say yes or no to people who want to use more water.

So each time you turn on your tap and take a drink of water, or go out in the garden to run under the sprinkler for a bit of fun in the summer time, just remember that there is a whole lot of stuff going on before the water arrives at your home and after it leaves as part of its journey to the sea!

