Water is a treasure – He tāonga te wai is a programme about water use and water conservation for use in early childhood centres on the Kāpiti Coast.

Introduction

On the Kāpiti Coast, everyone recognises water is a resource we must use wisely. We need to make sure that we, and future generations, have a reliable, quality water supply, as well as healthy streams, rivers and lakes.

Since 2011, the Kāpiti Coast District Council has been working with iwi and educators to develop water education programmes for young people.

The Water Education Facilitator (WEF), who can be contacted at works with Early Child Education (ECE) teachers and teachers to develop and implement water education programmes for young people and to assist centres and schools to be efficient users of water. They can be contacted on watered@kapiticoast.govt.nz

A series of learning programmes that focus on water use on the Kāpiti Coast has been developed for ECE to Year 9. Each learning programme is stand-alone and is intended to be adapted by ECE educators or teachers to meet the needs of their children or students. Collectively, the series of resources provide sequential learning for young people as they develop an understanding of water issues on the Coast and actions they and their families can take to use water wisely.

Learning Intention

Children understand that water is precious and that we all need to use water safely and wisely.

Activities are provided so children can investigate water and practise using water safely and wisely.

Key questions that are addressed in the learning programme are:

- What is water?
- Where is water found?
- Why do we need water?
- How do we capture, treat and use water?
- How do we use water wisely?

The learning programme overview

Water is a treasure - He tāonga te wai is in six sections:

1. Water is precious
An introduction to why water is precious and an exploration its cultural significance.

2. What is water?
An exploration of the physical properties of water that extends to children developing an understanding of the water cycle.

3. We need water to live
An exploration of the fact that all animals and plants need water to live.

4. Three waters – drinking water, storm water and waste water
An exploration of the delivery, treatment and removal of drinking water, stormwater and wastewater.

5. Being waterwise and conserving water
An exploration of ways to use water wisely and not waste it.

6. Taking Action
Actions children, their families and ECE centre staff can take to use water wisely.

These six sections are consistent throughout the water education programmes developed for ECE, primary and junior secondary school use.

The headings are less relevant in an ECE context and it is expected you will choose activities that are appropriate to the needs of your children, in response to 'learning moments' and events that occur in your centre.

The Water Education Facilitator is available to discuss any aspect of implementing this programme by emailing watered@kapiticoast.govt.nz

Links to Te Whāriki

As children explore water and their relationship with water:

- their health and well-being is promoted as they learn which water is safe to drink and use water wisely and safely
- they use play, language and creative expression to develop their understanding of the place water has in their lives
- they have opportunities to develop theories to make sense of the natural, physical and social world of water
- they have opportunities to learn with others and to share their learning with their families.

Acknowledgements

The Kāpiti Coast District Council would like to thank everyone who has been involved in the development of the *Water is precious* learning programmes.

This learning programme was written by Anne Brunt with assistance from Waikanae Kindergarten staff.

Photographs were provided by Anne Brunt, Nicola Easthope, Ōtaki Playcentre, Liz Stretton, The Greater Wellington Regional Council and Waikanae Kindergarten and the New Zealand Fire Service.

A number of territorial authorities in New Zealand and Australia have developed educational programmes about water. Over time, some activities have been created and modified for use, hence it is no longer possible to acknowledge their authors. The Kāpiti Coast District Council would like to acknowledge the co-operation of local and regional Councils that has allowed the free exchange and use of material so we can all create quality educational programmes suited to our local areas.

Modelling waterwise behaviour

Your centre staff may want to meet before they begin this learning programme to discuss:

- how they currently model waterwise behaviour;
- how their centre currently saves water and any other ways it could save water;
- what they do to save water with your children (so they become aware of the actions they are already carrying out); and
- how to engage their children in planning and completing waterwise actions.

Involving parents and carers

This work involves your children thinking about how they use, value and conserve water at your centre and in their homes.

Parents and caregivers can:

- provide resources for play at the centre;
- provide photographs of:
  - their children engaging with water at home or in the community;
  - local extreme weather events; and
  - cultural events that involve water.
- come to the centre as the children explain their water wall and demonstrate water play; and
- attend a talk with speakers from the Kāpiti Coast District Council that describes ways to conserve water, use energy efficiently and minimise waste.

Assistance from the Kāpiti Coast District Council Green Team

Members of the Green Team can come to your centre and offer FREE advice about using resources sustainably.

The green team can work with your staff to:

- complete a review of how efficiently your centre uses water and practical ways to reduce water usage. (via the Water Conservation Adviser)
- complete an energy efficiency review and practical ways your centre to be more energy efficient, reduce heating costs and be warmer, drier and healthier (via the Eco-design Adviser)
- develop sustainable gardens (via the Green Gardener)
- become an enviroschool (via the Enviroschools Facilitator)
- implement a water education programme (Water Education Facilitator)
- develop and implement a waste minimisation programme (Waste Minimisation Officer).

If you centre would like the services of the Green Team, the Water Education Facilitator can organise a visit or you can go to www.kapiticoast.govt.nz/greenservices to find out more.

Free services for families

Families can access the services of the Green Gardener, the Water Conservation Adviser and the Eco-design Adviser.

The Water Education Facilitator will provide brochures that outline these FREE services for families.

Families can also go to Council website (www.kapiticoast.govt.nz/greenservices)

Talks for parents and caregivers

Staff from Kāpiti Coast District Council's Green Team can come to your centre to deliver a presentation and a question and answer session that provides:

- an explanation of how our drinking water is treated (DVD);
- a discussion about water issues in Kāpiti and Council initiatives to encourage people to conserve water;
- tips on how to use water efficiently and conserve water;
- advice on how to make homes warmer, drier and healthier; and
- advice on how to minimise and dispose of household waste.

In terms 1 and 4, ECE centres will be contacted by the Water Education Facilitator to ask if they want to invite their parents and carers to attend a talk that provides tips on how to use water efficiently and conserve water, as well as advice on how to make homes warmer, drier and healthier.

Resources to use in this programme

Books

Kāpiti libraries have books that can be borrowed including many listed here.

Your centre may want to purchase some of the books about water, valuing water and water use and conservation listed here.

I am water Jean Marzollo (Scholastic 1996)
Taniwha Robyn Kahukiwa (Puffin 2007)
Eel dreaming and *Tuna moemoea* Ben Brown (Reed 2005)
I love the rain M Park Bridges (Chronicle Books 2005)
This is the rain Lola M. Schaefer (Greenwillow Books 2011)
What is water? Rebecca Olien (Capstone 2005)
The snowflake Neil Waldman (Milbrook Press 2003)
Flotsam David Weisner (Clarity Books 2006)
Round the garden Omri Glaser (Harry N. Abrams 1999)
River story Meredith Hooper (Walker Children's Paperbacks 2010)
Morning on the lake Jan Bourdeau (Kids Can Press 1997)
*Incredible Ocean Play (*Bac Publication 2009)
Water water Window on the World (Zero to Ten 2010)
Tiddalik the Frog Anne Faundez (QED Publishing 2004)
The drop in my drink Meredith Hooper (Francis Lincoln Children Books 2008)
Rain dance C Applegate (Margaret Hamilton Books 2000)
The Water Cycle (First Facts: Water All Around) Rebecca Olien (Capstone 2006)
Our world of water Beatrice Hollyer (Henry Holt and Co 2009)
The sunflower that went flop J Cowley (Wright Group 1980)
A cool drink of water Barbara Kerley (National Geographic Children's books 2006)
One well, the story of water on earth (citizen kid) Rochelle Strauss (Kids Can Press 2007)
A drop of water: a book of science and wonder Walter Wick (Scholastic Press 1997)
A drop around the world Barbara Shaw (Dawn Publications 1998)

Teacher/leader reference

A life like mine (Dorling Kindersley UNICEF Teacher reference 2002)
The little book of sand & water Sally Featherstone (Featherstone Education Ltd 2002)
Water, Water Everywhere MJ Rauzon (Seria Club Books for Children 1994)
Water Fun experiments for budding scientists Lisa Burke (D Kindersley 2011)

For the water play area

Gather:

- a range of plastic bottles, funnels;
- containers and buckets;
- plastic animal and human figures;
- shells;
- water wheels;
- child-sized watering cans;
- washable babies and dolls' clothing;
- materials to make boats (foam trays, sticky tape and straws etc);
- materials to test floating and sinking e.g. duplo blocks that float;
- piping and tubing;
- showerheads that can be fitted to a pipe for play; and
- activities in the water trough.

Photographs

Gather photographs of children using and saving water, as well as events such as floods, storms, droughts and snow falling etc.

Section 1: Water is precious

This section introduces the concept that water is precious. It explores what your children know about water and want to find out about water. Activities are provided to explore the cultural significance of water for your children, their families and local iwi.

Introducing water as a treasure — he tāonga te wai

- Prepare a box wrapped to look like a special present. Inside the box put a clear bottle of water and a letter with a message like this.

Kia ora children,
This is a special present for you. It is very, very precious.

We need to take good care of water and not waste it. Water is one of the most amazing things on this Earth. We cannot live without it. Plants and animals cannot live without it. Many Countries do not have enough of it.

We are going to go on a learning journey to find out why water is so precious, why we need to take good care of it and how we can save it.

- Discuss the word treasure with your children by identifying what they think is precious or is a treasure in their family or at the centre.
- Find out
  - ◊ what your children know about water
  - ◊ why they think water is precious or a treasure
  - ◊ what your children would like to find out about water.
- Record this information as the first part of a water wall in your centre. Complete any of the activities your children want to learn. Record what your children think and do. Add it to your centre's water wall.

Big ideas

Water is a precious resource.

Water has cultural significance for Māori.

Water has significance for many cultures.

Vocabulary

water
lake
river
stream
sea
precious
treasure

Exploring the cultural significance of water

Valuing and respecting water is important in many cultures. This section encourages you to explore how valuing water is significant to local tāngata whenua and to families with children in your centre.

Value of water to Māori

- The Water Education Facilitator can organise contact with a representative from your local iwi. You could invite them to visit your centre or a local stream/ river with your children to discuss the importance of water and local water environments to Māori. The iwi representative could discuss the meaning of the names of local rivers, streams and lakes that your children are familiar with and tell the story of a local river.

Kupu

tāonga	treasure
wai	water
awa	river
roto	lake
moana	sea

He tāonga te wai -
Water is a treasure

Valuing our local waterways

- Ask your children to identify where in your local environment you can find water and identify local streams, rivers, lakes and beaches.
- Plan and conduct a visit to a local waterway and talk about what you can see, the plants and animals that live in, on or around the water-way and how the community values and uses the waterway.

Cultural Values of water

- Use photographs of cultural events provided by families or from other sources. Events could include:
  - ◊ use of water in religious ceremonies e.g. baptism
  - ◊ use of water at cemeteries (urupa)
  - ◊ competitions such as waka ama or dragon boating
  - ◊ festivals that feature water like Diwali
  - ◊ actions that show respect for water before gathering food from water or completing activities in or on the water.

- Discuss how water is used in cultural events the children are familiar with and ask questions like these:
  - ◊ Why is it important to think about water being special or precious during these activities?
  - ◊ What would happen to these events if there was little or no water?

Celebrating water

Parents could be invited to the centre to organise a water celebration that has significance for them and their children.

Section 2: What is water?

This section has a range of activities so children can investigate the physical properties of water. It concludes with a demonstration and explanation of the natural water cycle.

Big ideas

Water is a liquid.

Water has no shape.

Water has weight.

Exploring water as a liquid

Water has no shape and is colourless

- Have your children identify different shaped containers: pots, pans and toys etc that can be filled with water.
- Fill a plastic jug/cup with water and let your children predict whether a container they find will hold more or less water.
- Have your children make and test predictions using other safe water containers. If you use coloured water for some of the testing, discuss the idea that water has no colour and is clear or see through, but we can colour it with paint or food dyes.
- Explain that water is a liquid with no shape and forms the shape of any container it is being poured into.

Water is heavy

- Partially fill a range of different sized plastic bags with water and tie them off.
- Place them in an empty water trough or on the sand pit. Have a large container of water and jugs available so your children can add water to the bags or containers.
- Have your children lift the bags, feel the weight of them and experiment as they tip the bags over, open them and let some of the water out or add more water to them.
- Your children could experiment using other containers or by filling latex gloves or balloons with water.
- Play alongside your children and discuss what they are noticing.

Water has no shape and is clear and colourless

- With a small group of children, explore what happens when water is heated.
- Put a small amount of water just covering the bottom into an electric frypan or pot (preferably with a glass lid).
- Heat the water in the frypan or pot, with the lid off, and have your children observe what happens.
- Ask your children what is happening to the water and if they can see the water vapour or steam.
- Boil the water until there is none left and ask your children where they think the water went.
- Repeat the process but this time put use the glass lid on the frypan or pot.
- Discuss what happens as the water vapour or steam rises and explore the idea that water can change from a liquid to a gas and back into a liquid.
- If you do not have a frypan or pot with a glass lid hold a metal tray, mirror or similar item that has been in the freezer over the water vapour. Do this safely to avoid a steam burn.

Big idea

Water evaporates when it is heated.

Vocabulary

liquid
water
gas
steam
water vapour
water

Kupu

wai - water or liquid

Above: A water droplet on a leaf.

Above: Condensation forming on the lid of the frypan.

Natural evaporation using saucers

- Give your children a saucer each. Let them measure out three teaspoons of water from a jug and put it in their saucers.
- Ask your children to find a sunny spot where the water cannot get spilled.
- Encourage your children to check over time to see what happens and ask where they think the water went.

Water painting outside

- Supply your children with small buckets of water and thick paintbrushes.
- Have your children paint paths and sheds etc. Observe the water's effect on the surface and what happens as the water dries.
- Ask where the water has gone and discuss water going into the air or evaporating.
- Ask when water comes back out of the air (i.e. when it rains or snows).

Disappearing puddles

- Pour a puddle of water on a sunny area of concrete or other flat surface and draw a line around the puddle in chalk.
- Monitor the puddle and watch as the water shrinks and then disappears.
- Discuss how heat causes evaporation and what happens to the water droplets or particles as the puddle disappears.

Water evaporates when clothes dry

- Have your children wash dolls clothes and dress-ups. Set them to dry outside.
- Discuss questions like:
  - Where will we put the clothes to dry?
  - Where will they dry fastest?
  - How long do they take to dry?
  - Why do we need to watch the weather while they are drying?
  - What fabric dried the fastest?
  - Where has the water gone?

Rain, hail and snow – precipitation

- Choose a wet day to explain how clouds cause rain to fall.
- Ask what the sky looks like when it is raining or about to rain. Explain that water which makes the rain is held in clouds. When the clouds fill up with water they become so heavy, they burst open let water fall on the earth, i.e. d rain falls from the sky. If it is very cold the water may fall as hail or snow.
- Give each child a cloud (cotton ball) and ask them how it feels. Fill trays with water and place the cotton balls in. Watch as the clouds become heavy with water.
- Have your children pick up their wet cotton ball, describe how it feels and what happens when they pick it up.
- Use the photographs provided on the next pages and ask your children to describe what it is like to be out in the rain, hail or snow.
- If you have any photographs of a local storm or snow falling discuss them with your children and add them to your water wall.

Big ideas

Precipitation is when water falls to the ground from the clouds.

Water can fall as rain, hail or snow.

vocabulary

rain
hail
snow
precipitation
flood

Tilley Road, Paekākāriki in the 2003 flood.

Rain

Snow

Snow and ice

Ice on a footpath

Ice in a mountain stream

Frozen grass

An ice flower

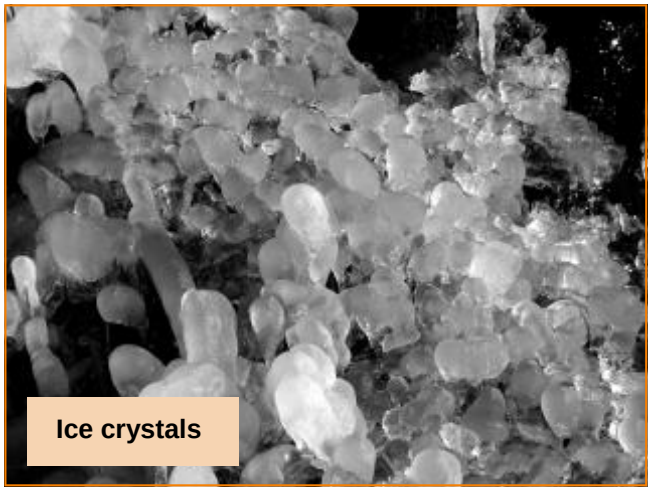
Melting ice

- Bring a big piece of block-ice to your centre or freeze your own if you have room.
- Use the ice in your water trough or water play area.
- Have your children play with the ice by itself first, then add smaller ice blocks. Pour cold water on some of them and warm water on others.
- Ask your children to predict which ice blocks will melt first and check their predictions.
- Discuss what you could do to melt the ice faster and what you could do to keep the ice frozen for longer. Explore the possibilities.
- Discuss what it feels like to touch ice or play in the water that has ice melting in it and discuss the idea that water freezes or turns into ice.

Enjoying ice

- Make plain water iceblocks with your children and put iceblock sticks in them.
- Eat and enjoy while talking about ice.
- Discuss where they can find ice, for example have they smashed the ice on a puddle? What might happen if a road was icy?
- Use the photographs provided or any others you have for discussion.

Hailstones



Ice crystals

Measuring rainfall

Making a rain gauge

- Cut the top off a plastic soft-drink bottle and fit it upside down into the rest of the bottle to form a funnel.
- Use a ruler and marker pen that will write on plastic to mark off a scale on the side of the water bottle every 10 mm.
- Set up the rain gauge in an open place, making sure it is firmly pushed into the ground so it does not blown over.
- When it rains, record how much water is captured in the gauge.
- If your centre collects rainwater, talk about how the water is gathered, collected and stored, as well as what you use the water for.
- Explain why we do not drink the rainwater (it may have picked up paint particles, dirt or things that make us sick as it goes across the roof, down the pipes or into the tank and drinking it could make us ill) and that you can treat rainwater to make it safe to drink.

Big idea

A rain gauge measures the amount of rain that falls in a certain time.

Ice – solid water

How water freezes

- Have your children select a number of open containers that can hold water and won't break when put in a freezer. Do not use glass containers as they will break when the water freezes and expands inside them.
- Partially fill the containers with water and put them in the freezer.
- Have your children check their containers during the session and see what is happening inside them. Talk about the freezing process, i.e. liquid water turning into solid ice.
- Freeze the water in the containers overnight. In the morning, let your children take their ice blocks outside and see what happens to them.

Big ideas

Water freezes to make ice.

Ice is a solid.

Water balloons

- Give each child a balloon, fill it with water and put it in the freezer overnight.
- The next day, give them their frozen water balloon, another water balloon filled with water and one filled with air.
- Let your children feel the difference in weight, temperature and flexibility.
- Go outside so they can play and experiment with them.
- Find out what happens when you drop them on the ground. Definitely do this outside!
- Children can either wait for the ice in their balloon to melt and see what happens to the balloon as it melts or they can make a hole in the balloon and take the ice shape out.

Painting with water based paints

If you mix paints by using a solid base and adding water, show your children how the paint is created before you paint water pictures.

Using stories, songs and rhymes

- Reinforce learning about the nature of water using books in your centre or borrowed from Kāpiti libraries.
- Use songs and rhymes you know and those at the end of this guide.

Freeze and melt

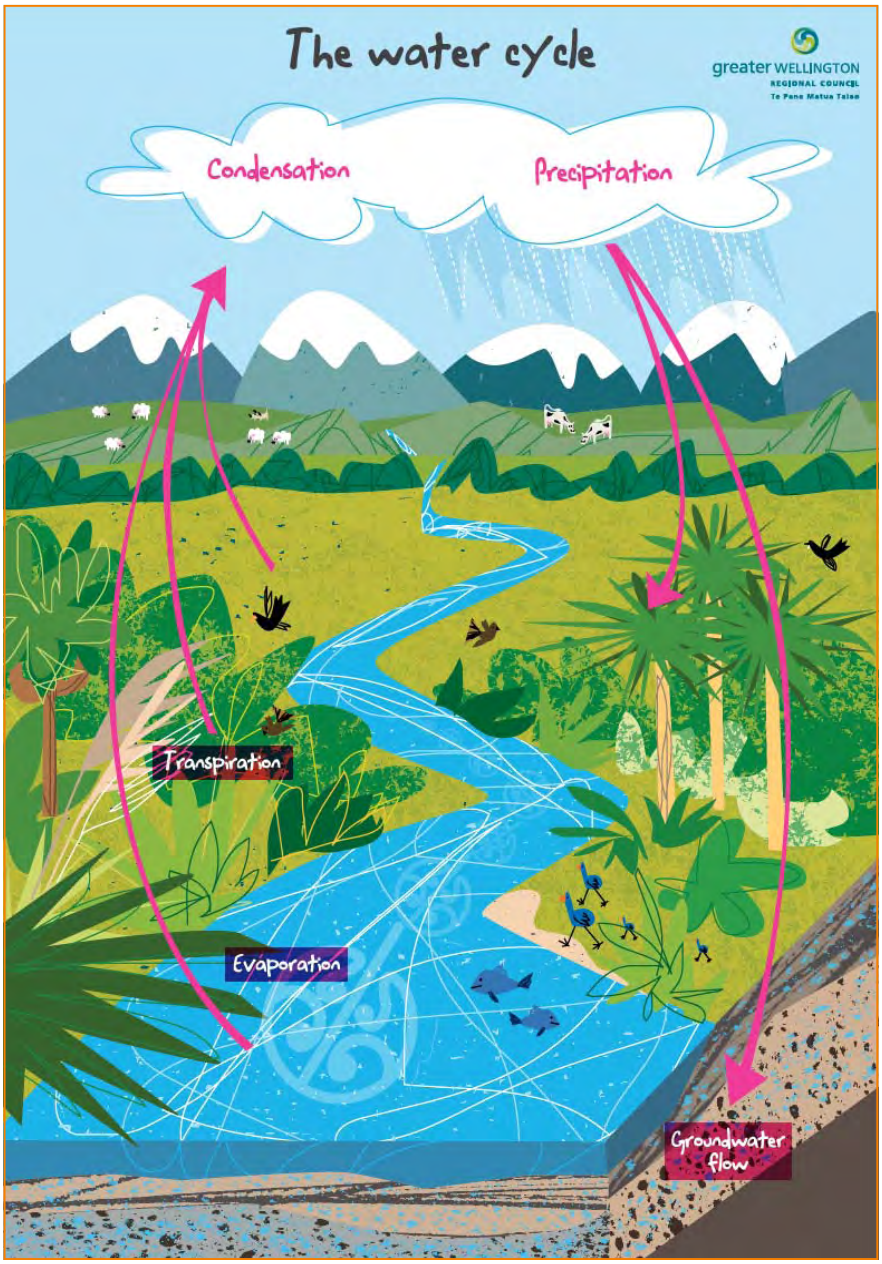
A musical experience

- Explain to your children that they are raindrops moving through the air. Play the xylophone or other suitable instrument while they move around as raindrops.
- Gradually slow the music down and tell your children the air around them is getting colder and colder and they are moving slower and slower.
- Slow the music right down and tell your children they are turning into ice. Have them freeze into a shape.
- Shake a tambourine or other instrument while telling your children that the sun has come out and the air around them is getting warmer. Play your first instrument again as the children unfreeze, become raindrops and move around again.
- Play the starting instrument quietly and gradually getting louder. Tell your children that the raindrops are getting hotter, changing into water vapour and going up, up into the sky. Have them jump, leap or reach up for the sky.
- Use the words solid, liquid, water, steam or water vapour, air and ground as you play the game.

The water cycle

Your children are becoming familiar with cycles such as the lifecycle of butterflies and insects. This programme is an opportunity for the children to be introduced to the water cycle.

Use the diagram below and the text on the next page to explain the water cycle to your children.



Big ideas

Water constantly moves through the water cycle around the earth.

No new water can be created.

Drinking the same water as dinosaurs

We are drinking the same water as the dinosaurs did over 60 million years ago.

The natural water cycle

Water falls out of the clouds as rain, hail or snow.

Plants, animals and people use some of the rainwater. Some of the rainwater flows into the creeks and then into our rivers. The water flows into lakes or into the ocean.

Some of the water soaks into the earth creating ground water.

The sun heats up water in rivers, lakes or the ocean and turns it into vapour or steam. The water vapour or steam leaves the river, lake or ocean and goes into the air.

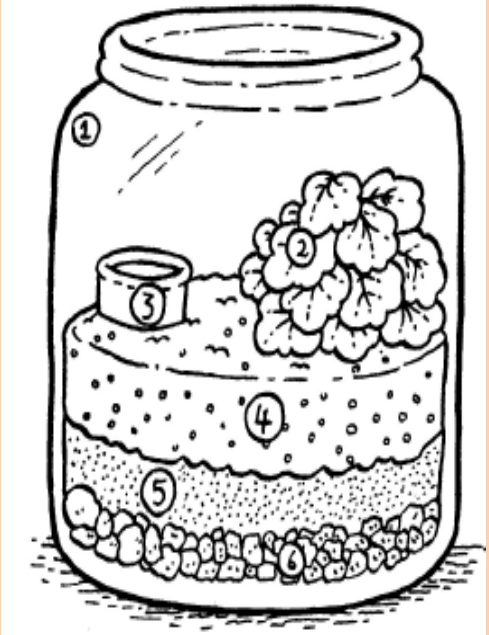
When it gets cold, water vapour in the air gets cold and changes back into liquid, forming clouds. When so much water is stored in the clouds and they cannot hold it any more, the water falls back to earth as rain, hail, sleet or snow.

This means that water is constantly cycled around the earth.

Make your own water cycle

You will need:

- jar with a lid, or use kitchen foil as a lid;
- plants;
- bottle cap or shell of water;
- soil;
- sand; and
- small rocks.



Have your children fill the jar (see the picture) and put the lid on or stretch some kitchen foil tightly over the top and secure with an elastic band.

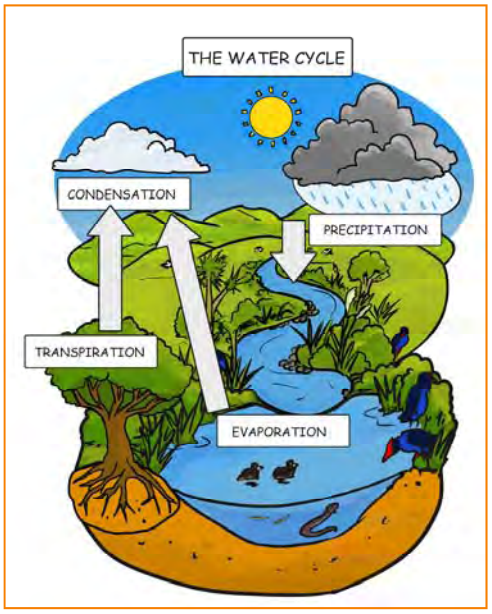
Put the jar in a sunny place and see how the water cycle works.

Discuss what is happening with your children in these terms:

- Plants need water to live.
- Plants get water from the soil.
- Water falls from the sky onto the soil.
- When it is sunny, water evaporates or returns to the air.
- When it is cold, water falls as droplets onto the ground or soil.
- The plants are able to live for a long time because the water goes around in a cycle.

Recreating the water cycle on the magnetic board

Cut out the illustrations on the next three pages and have your children recreate the water cycle by placing the pictures on a magnetic board with magnetic or magnetic strips.

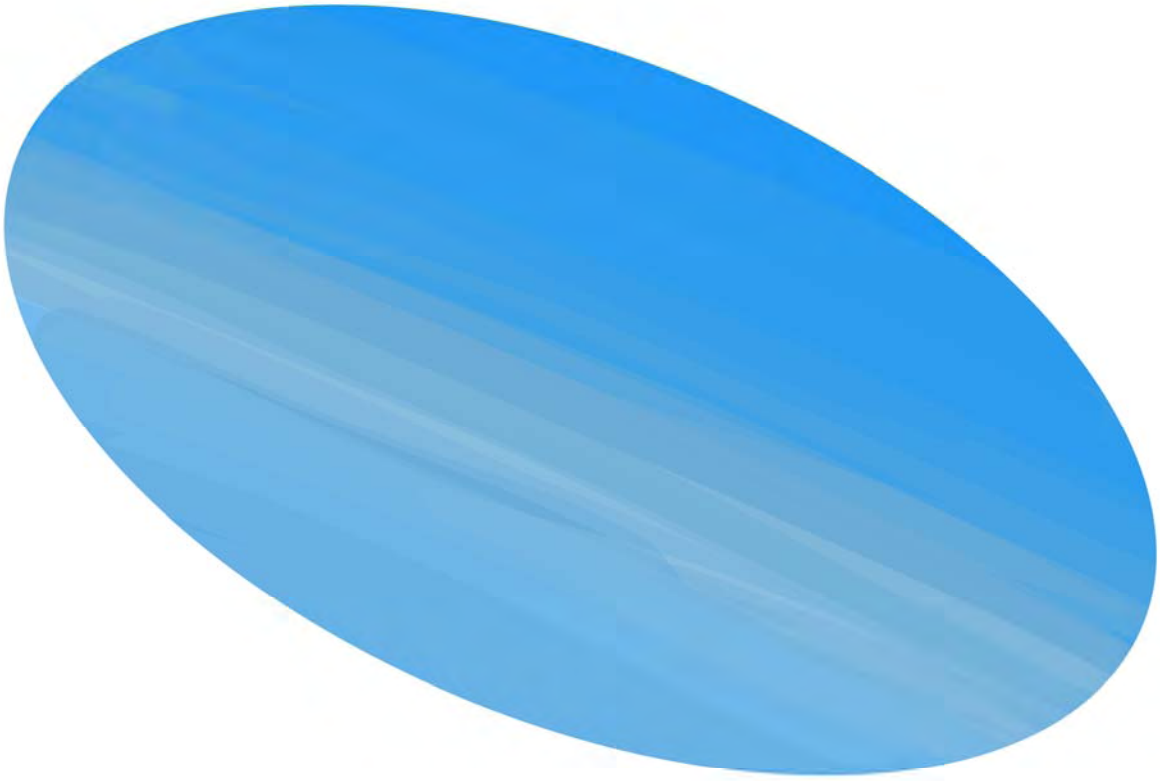


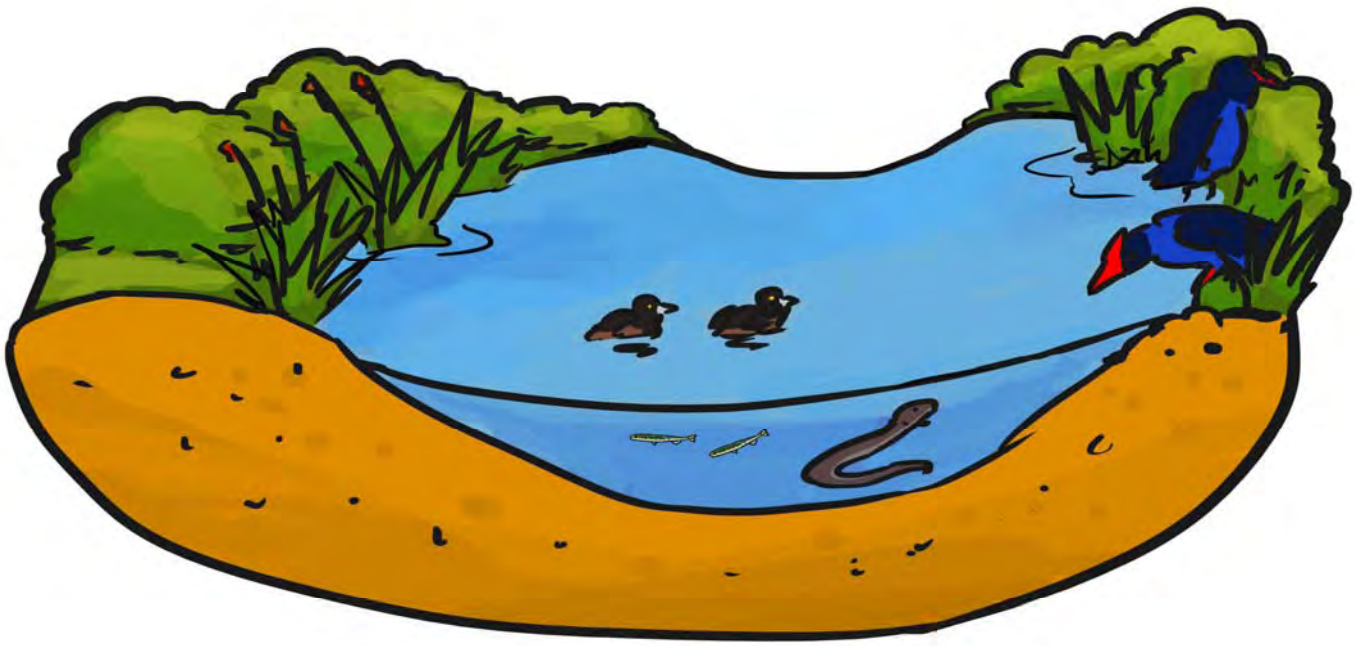
From the mountains to the sea

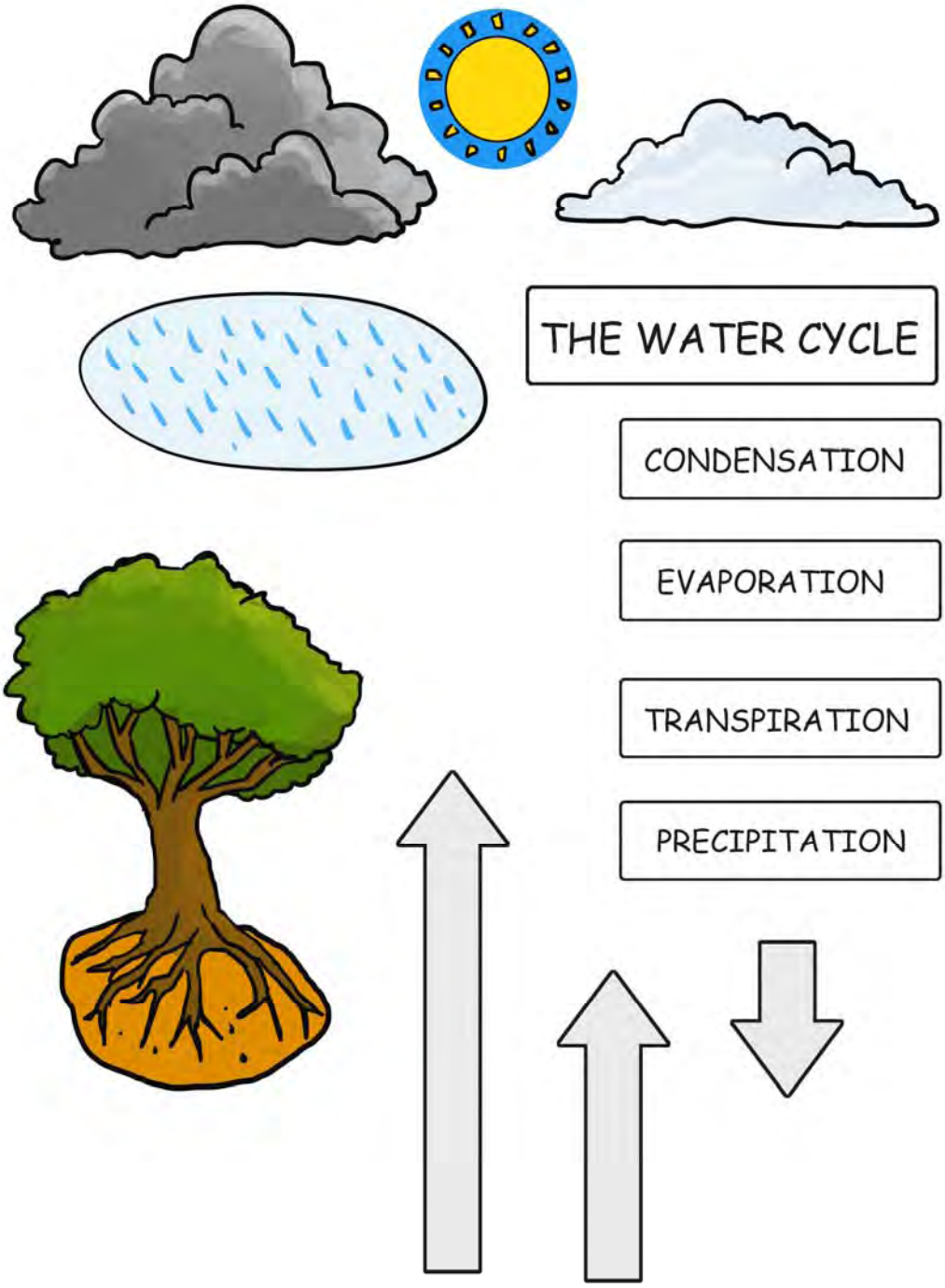
Use one or more of your walls to illustrate the journey of a water droplet starting in the clouds, falling onto plants on a mountain or hill, being washed down a stream, then a river and then out to sea.

Our island

- Have your children make an island in your sandpit, then surround it with clean water. Next, get them to make hills, ‘plant’ plants and create places for animals to live in the island.
- Find a way to demonstrate rain falling on the island, and if possible, running down the hills to lower ground. You can use a watering can or place a large sheet of plastic with holes in it over the island and water from a hose for the rain.
- Discuss what would happen if the island did not get any rain (i.e. drought and the wilting effects on plants) and show what happens if the island gets too much rain (i.e. flooding and the effects on plants or houses etc).






THE WATER CYCLE
CONDENSATION
EVAPORATION
TRANSPIRATION
PRECIPITATION

Section 3: We need water to live

In this section children explore the idea that all animals and plants need water to live.

Water in our bodies

- Ask your children to think about how water gets into their bodies, for example when we:
  - ◊ drink water;
  - ◊ drink other liquids like milk or fruit juice that have a lot of water in them; and
  - ◊ eat food (as all food contains water).
- Discuss how we lose water, for example when we:
  - ◊ breathe out;
  - ◊ go to the toilet;
  - ◊ sweat;
  - ◊ cry; and
  - ◊ sneeze.
- We all breathe out water vapour. Normally we cannot see the water we breathe out, as it is invisible. However, on very cold days, it looks like steam coming out of our mouths every time we breathe out.
- Show your children that they breathe out water by placing a number of small mirrors in the fridge for an hour to chill. Have them breathe hard on the cold mirrors and discuss what happens i.e. the mirror mists over when the warm water vapour in our breath hits the cold mirror and forms tiny droplets of water. This is called condensation.
- Ask your children if their windows at home are steamed over in the mornings when they wake up and if they know where those water droplets came from. They came from their family's breath while they were asleep. When the air outside is colder than the air inside, the water vapour from our breath condensates or gathers on windows as it cools down.

Big ideas

Water is essential for plant and animal life.

The human body is 70% water and water makes up more than half our body weight.

Water is the main component of each of our 100 billion body cells.

We can only live four to six days without drinking water or getting water from food.

How much of a person, plant and animal is water?

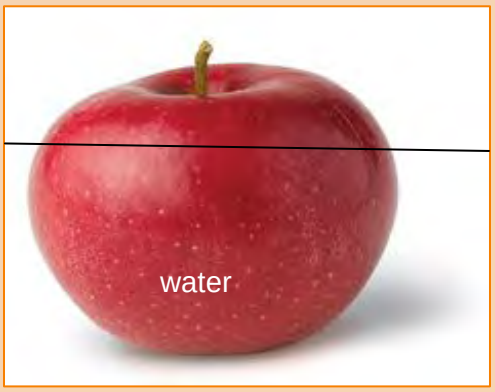
- Choose one child and ask him/her to stand at the front. Ask the other children how much water there is in that child. If you had to fill them up with water, where would the water come up to – their ankles, his/her knees, hips, armpits, eyes or head? The answer is 70% of a person is water and that would be up to his/her armpits.
- Explain that we must drink water everyday to be healthy. Sometimes we drink water, but we also drink water when we drink milk or fruit juice. We get water from the food we eat.
- You or your children can draw pictures of a human and of the other examples. Have your children draw a dotted line at the level the water percentage represents and colour the parts differently.

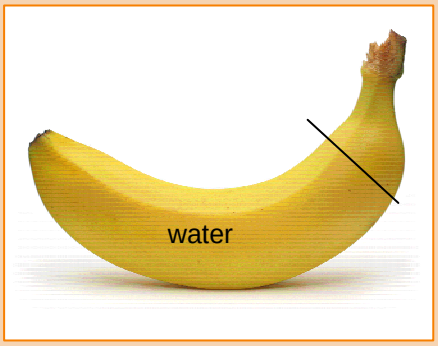
Amazing Fact!

70% of a person and an elephant is water.

How much water us in these foods?

Lettuce is	96 % water
Broccoli is	91% water
Milk is	87% water
Apple is	85% water
Pineapple is	80% water
Corn cob is	80% water
Banana is	76% water
Chicken is	75% water
Ham is	54% water





Plants need water to grow

- Use the garden at your centre to demonstrate plants need water to grow.
- Put the same amount of suitable seeds (e.g. radish) or seedlings and put them in two containers with dry soil.
- Keep the plants indoors or in a green house (or suitable growing area) and water one container regularly but keep the other dry.
- Have your children observe what happens over a suitable period and discuss what happens.
- Discuss growing things we eat and how we make sure the growing plants get water, especially in summer. You can talk about mulching and how to water effectively.
- Explain that plants take in the water they need from the ground through their roots.
- If your centre does not have a garden and growing things is not an experience your children are familiar with, the Council's Green Gardener could visit and advise on how to set up a vegetable garden that can uses rainwater to provide water for the growing plants.

Animals need water to live

- If your centre keeps chickens, has a pet or maintains a fish tank, discuss what you and your children should do to keep the animals healthy.
- Discuss why you make sure the animal has clean drinking water and/or clean water to live in.
- Talk with your children about providing food, water, shelter and care for pets at home.
- Make sure your children understand that they and other animals need to drink clean water every day to be healthy.
- Use photographs, DVD extracts and picture books to discuss animals that live in water.

Section 4: Three types of water – drinking water, stormwater and wastewater

In this section, children explore the delivery, treatment and removal of drinking water, stormwater and wastewater.

Water we can drink

- Make a glass of water very dirty by putting soil, paint, cooking oil and detergent in it.
- Pretend to drink the water. Discuss your children's reaction and why we should not drink dirty water.
- Explain it is safe for us to drink water out of the tap because it has been treated to make it clean and will not make us sick. If we drink water from rivers, streams or rainwater it might make us sick. If your centre collects rainwater for the garden, explain why you do not drink the water (i.e. things such as bird poo can find its way into rainwater tank).
- Discuss why you do not drink water from the toilet, or drink bath or shower water.
- Take some photographs of children drinking water at the centre.
- Take your children around your centre and discuss what water is not safe to drink and why.

Big ideas

We need clean water to drink.

The water that comes from our taps in the house is safe to drink.

Background

You may want to view the 10 minute DVD *Our safe drinking water* to understand how water on the Kāpiti Coast is treated so it is high enough quality to be safe to drink.

Go to Council website:
www.kapiticoast.govt.nz/

Where does our water come from?

- Turn on the tap and fill up a glass of water. Ask your children where they think the water comes from.
- Use the information below and the diagram on the next page to describe where tap water comes from. Discuss how water travels from the Waikanae Treatment Plant to houses via pipes. Let your children use the diagrams on pages 32 and 33 to assemble their own water supply.
- Take photographs and make a visual display of where your drinking water enters the centre, is piped around the centre, where and how it is used.
- Discuss how water is heated at your centre, and at home. Discuss with your children what they do to make sure they do not get burnt by hot or boiling water.

Our quality drinking water

Rain falls on the land and into streams and rivers. Some goes under the ground.

In Waikanae, we take water out of the river and treat it at the Waikanae Treatment Plant to make it safe to drink. During dry hot summers, we

sometimes need to use water from under the ground as well as waterfrom the river.

The water is then pumped to reservoirs or large tanks where it is stored. From there, water arrives to our houses via a network of pipes. We turn on the tap and drink clean water.

We use this treated water in Waikanae, Paraparaumu, Raumati and Raumati South.

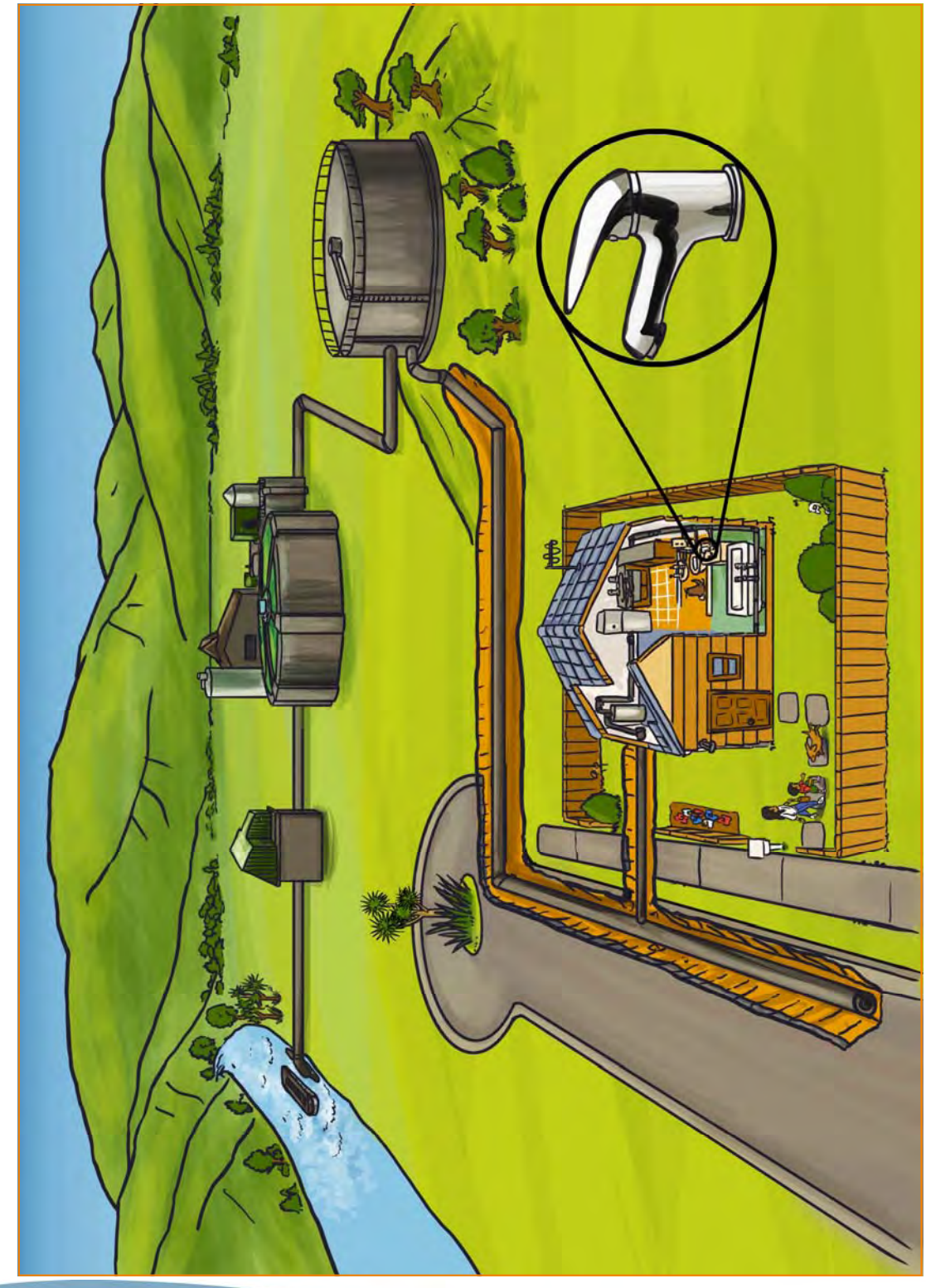
In Paekākāriki, the water we drink comes from a stream and from under the ground. It is treated before we drink it.

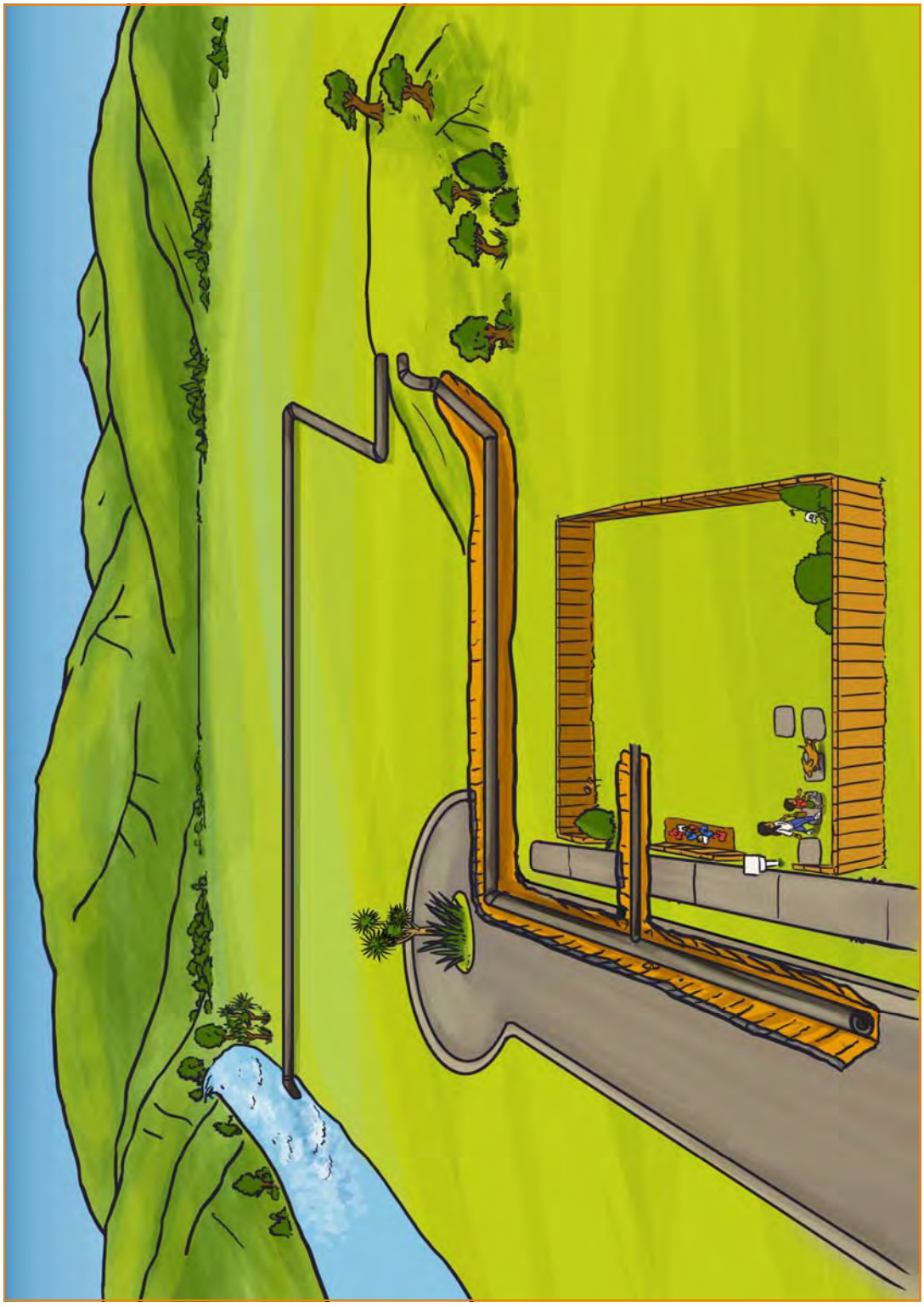
In Ōtaki, the water comes from under the ground. It is treated before we drink it.

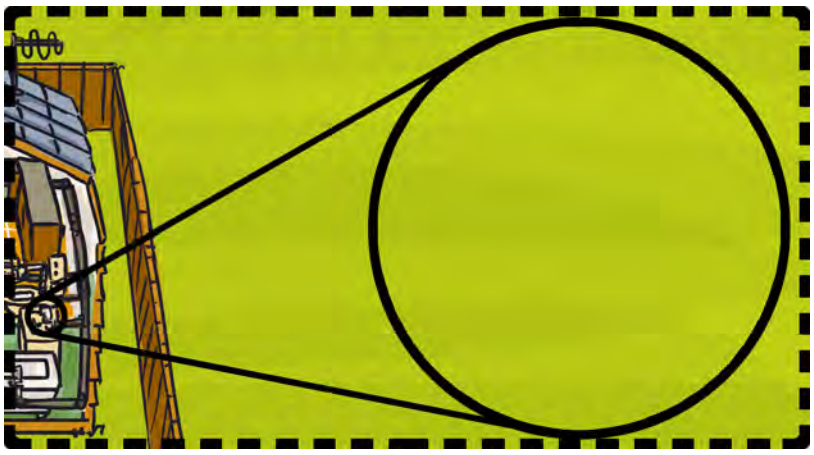
We leave water in the river so that plants and animals can live there and people can use and

The Waikanae Water Treatment Plant

The Riwai Street reservoir in Paraparaumu







Produced by Kāpiti Coast District Council.
www.kapiticoast.govt.nz

Section 5: Being waterwise and conserving water

In this section children explore ways to be waterwise and conserve water.

What do we use water for?

- Take small groups of children around your centre and explore all the ways you use water. If you use rainwater or bore water, explain what you use this water for and why.
- Take photographs of your children and/or centre staff using water to make into a display.
- Ask your children to describe other ways they use water at home or when they are out playing and having fun e.g. in swimming pools, at the river and at the beach.
- If your centre has a garden, talk with your children about the cycle of planting seeds or seedlings, growing and watering them, harvesting the crop and then processing and/or eating the crop.

Big ideas

Being waterwise is about taking action to use water wisely or save water.

We can all save water.

We can save water at home and at our centre.


S.C. Moore

Being safe around water

- Set up some situations where water is unsafe, e.g. taps are left on and water falls onto the floor or a container of water is spilt on the floor. Discuss the situation with the children so they know what to do to make it safe (*keep away from the water, tell an adult). If an adult isn't nearby, put a towel or piece of clothing to soak it up.*
- When at the water play area, talk about why children like them and their younger brothers and sisters do not play with or near water unless there is an adult with them.

Using water wisely

- Walk a small group of children through your centre looking at where you use water. Discuss what you could do to waste water and what you do to save water.
- Photograph your children being waterwise e.g. turning the tap off and writing captions such as:
  - ◊ *Anna is waterwise. She turned the tap off.*
  - ◊ *Jason is waterwise. He played with the water, then turned the hose off.*
- Include actions your centre staff take like filling up a dishwasher or washing machine before they turn it on, using rain water to water gardens or using water from the water trough on the garden.
- If you have dual flushing toilets, discuss the flush buttons on the toilet and help your children use the appropriate flush (i.e. half flush for number ones and full flush for number twos)
- Engage your children in planning activities that use water play equipment wisely.
- Visit your centre garden and discuss with your children how you can save water when growing plants.
- Use books, songs and rhymes to encourage your children to conserve water.

Handwashing technique

Turn the tap on slowly and moisten hands.

Put soap on hands.

Turn the tap off while-soaping and rubbing hands together.

Turn the tap on again and rinse hands.

Dry your hands

Turn the tap off.

Check the tap is off and not dripping.

We need to drink water to be healthy

Tell them water is much healthier to drink than fizzy and juice.

Being waterwise at home

- Let your parents know their children will be coming home and discussing ways the family can save water. Send home the information sheet *Using water in the home.*
- Discuss how your children can be waterwise at home e.g. making sure they turn taps off and telling Mum or Dad if a tap is dripping or is accidently left on.

Rewarding waterwise behaviour

- Set up some play situations where children role-play being waterwise and talk about what they are doing.
- Focus on a targeted praise and reward system where your centre staff praise children being waterwise.

Families can reduce their water use by more than 100 litres a day, especially if they change how they use water outdoors in the summer months.

Using water in the home

Water use area	How much does the average home use?	What can we do to reduce our use?
	Garden hose hand held up to 900 litres per hour. Garden hose sprinkler up to 1,300 litres per hour Garden hose, uncontrolled up to 2,000 litres per hour.	• Water early morning or late at night to avoid evaporation. • Mulch your garden. • Avoid overwatering. • Use greywater and/or rainwater to water your garden. • Use a soaker hose.
	Shower at 6 litres per minute for 5 minutes uses 30 litres . Shower at 18 litres per minute for 5 minutes uses 90 litres.	• Take shorter showers. • Change your showerhead to one that produces a lower flow rate.
	A full load in a top loader uses 130 litres or more. A full load in a front loader uses approximately 50 to 70 litres.	• Wash with a full load or use economy settings for part loads. • Buy a washing machine with at least a four star WELS rating.
	The average single flush toilet uses 11 litres per full flush. Modern dual flushing toilets use only 3 to 6 litres per flush.	• Use the dual flush appropriately. • Install a dual flush toilet. • If you have a single flush toilet install a Council supplied lead weight to manage the flush.
	A tap that loses 2 drips per second can lose 380 litres per month send 15 to 30 litres of water down the drain every minute.	• Fix dripping taps. • Don't leave the tap running when you clean your teeth. • Don't leave the tap running to rinse the dishes or when you peel vegetables.
	A dishwasher uses approximately 28 to 40 litres per wash cycle. The kitchen sink holds 14 litres.	• Run the dishwasher with a full load of dishes. • Buy a dishwasher with an AAA water conservation rating. • Wash the dishes in a half full sink instead.
	A bath uses 80 to 200 litres of water depending on size.	• Consider showering instead of taking a bath. • Use less water in the bath.

Section 6: Taking action

In this section your children can focus on what they and their families do to conserve water or be waterwise.

Taking action to conserve water

- Complete your water wall and show your parents and caregivers what they have done as they have learnt about water and about valuing and conserving water.
- Have your children create artworks that finish the starter sentences:
  - ◊ *I save water when I ….*
  - ◊ *Our family saves water when we …….*
  - ◊ *Our centre saves water when we …….*
- If your families are interested, work with the Water Education Facilitator to hold a meeting at your centre (or join with other families at other centres) to find out how they can conserve water, make homes more energy efficient and reduce waste.

Songs, games and rhymes

A range of songs, games and rhymes around water and the use of water are provided here.

Making a rainmaker to use during songs

You will need:

- empty paper towel holder;
- tissue paper / coloured material;
- paint brush;
- glitter glue;
- water bowl;
- rice or beans;
- wax paper;
- rubber bands; and
- glue.

- Have your children use colored tissue paper to create a design over the paper towel holder using a paint brush and water to temporarily set the tissue paper in place.
- Once they have all their tissue paper on, take glitter glue and spread it all over the tissue paper being careful to not to rip paper as it rips very easily.
- Once dry, have them take a large enough piece of wax paper to cover one end of the paper towel holder and fasten a rubber band and use glue to secure it.
- Quarter fill your towel holder with rice or dry beans.
- Finally secure the other end with wax paper and rubber bands or glue.
- Enjoy using the rainmaker in songs, rhymes and games.

Thunder and Rain game

Instruments required: drums and rain sticks/bells

- Divide your children into two groups, facing each other. One group represents thunder, and the other group represents rain.
- Get the thunder group to begin to beat their drums, and stomp toward the rain side as the rain group, using rainsticks and/ or bells, tippee-toe toward the thunder side.
- When the teacher calls out 'thunder', the thunder group must chase the rain group back to their area, beating their drums as they go.
- When the teacher calls out 'rain', the rain group must chase the thunder group back to their area, rattling their rainsticks and /or ringing their bells as they go.

Little Raindrops

This is the sun, high up in the sky.

A dark cloud suddenly comes sailing by.

These are the raindrops,

Pitter, pattering down.

Watering the flowers

Growing on the ground.

Everyday Circle Times,
By Liz & Dick Wilmes

I Hear Thunder

I hear thunder

I hear thunder

My friend does too

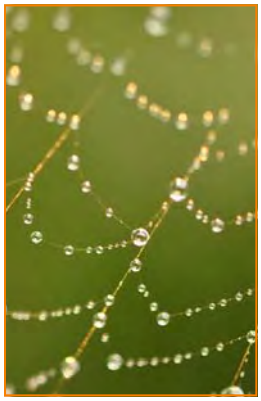
My friend does too

Pitter patter rain drops

Pitter patter rain drops

I'm wet through

And so are you.



Incy Wincy Spider

Incy wincy spider

Went up the water spout,
(fingers imitate a moving spider)

Down came the rain

and washed the spider out.
(fingers imitate falling rain)

Out came the sun

and dried up all the rain.

Incy wincy spider

Went up the water spout,
(fingers imitate a moving spider)

Down came the rain

and washed the spider out.
(fingers imitate falling rain)

Incy wincy spider

went up the spout again .

Five Busy Raindrops

Five busy raindrops,
(Hold up 5 fingers in the air)

Run down the windowpane,
("Run" the fingers down.)

Drip, drip, drip, drip, drip,
(Run each finger down in turn.)

They'll never come back again.
(Shake head.)

Ten busy rain drops,
(*Hold ten fingers in the air.)*

Run down the windowpane,
(Run the fingers down)

Drip, drip, drip, drip, drip,
Drip, drip, drip, drip, drip,
(Run each finger down in turn.)

They'll never come back again.
(Shake head.)

Rain Is Falling Down

(sing to the melody of 'London Bridge is Falling Down')

Lots of rain is falling down

Falling down, falling down

Lots of rain is falling down

And the soil is happy!

My Umbrella

I have a big umbrella,

With colours bright and gay.

It's, oh, so very useful,

On a wet and rainy day.

(Open and hold up imaginary umbrella.)

I can skip through splashy puddles,

Or run down to the shop

I can march just like a soldier,

Or bounce, or jump, or hop!

(Do the actions suggested by the word.)

So, you see my gay umbrella

Is as useful as can be,

When a sunny day turns rainy

It can be fun for me!

(Shake and put the umbrella away

Pitter Patter

Pitter patter, pitter patter,
(F*lutter fingers down to the floor*)

Oh, so many hours,
(C*ross arms on chest*)

Though rain may keep me in the house,
(*Form point of "roof" over head with arms*)

It's very good for flowers!
(O*pen arms up into a blossom)*

From: Little Hands Finger plays and action rhymes Emily Stetson & Vicky Congdon

It's starting to rain

It's starting to rain.
There's a drip and a drop,
and a splish and a splosh,
over and over again.

Rain's starting to fall.
It starts so soft,
you can hardly hear it at all.

Here comes the rain,
Like a thousand drummers,
drumming on a window pane.

It thunders down,
and splashes around,
and swishes all over the ground.

Plants and little creatures,
waiting for the rain to arrive.
Now it's falling down around us,
Everything's coming alive.

It's started to fall,
All the flowers open up,
and the birds start to call,

That beautiful rain
Every cloud has a silver lining
Everything's gonna turn out fine
And it won't be long before the sun
starts shining again.

Here comes the rain
Come on and play in the rain.

Justine Clarke *I like to sing* DVD

This Is The Way We Save Our Water

(Sing to the melody of 'This is the way we wash our hands...")

Turn off the tap when you brush your teeth,

Brush your teeth, brush your teeth.

Turn off the tap when you brush your teeth,

Early in the morning.

Just a little flush when we use the toilet,

Use the toilet, use the toilet.

Just a little flush when we use the toilet,

Early in the morning.

I'm helping all of us to save our water,

Save our water, save our water.

I'm helping all of us to save our water,

Early in the morning.

A thunderstorm in the forest

This is a dramatic musical recreation of a thunderstorm and the sounds one might hear as the rain, thunder and lightning passes. *Instruments required are drums, rainsticks, bells, cymbals, whistles*

- Divide your children into five small groups according to their instrument: whistles (birds), paper pom poms (wind), rainsticks and bells (rain), cymbals (lightning) and drums (thunder). Begin by telling this story:

As the sun shines down on thick rainforest, warm, dappled light flickers through to the cool, dark undergrowth below. Standing on the rainforest floor, surrounded by soft large ferns and slippery damp rocks you can hear the sounds of life all around. The sounds of birds whistling their beautiful song high in the treetops.

- CUE your children with the whistles to begin softly playing their instruments.

The rainforest begins to grow darker and darker as heavy rain clouds fill the sky. The treetops begin to sway back and forth as a cool wind blows between the branches.

- CUE your children with the paper pom poms to begin playing their instruments.

The first sounds of raindrops can be heard as the rain clouds begin to burst open.

- CUE your children with the rainsticks and bells to begin softly playing their instruments.

The wind blows stronger, the rain begins to fall heavier and a flash of lightning streaks across the sky.

- CUE your children with the cymbals to begin playing their instruments.

The lightning crashes and a loud rumble of thunder rolls through the rainforest as the storm covers the sky above.

- CUE your children with the drums to begin playing their instruments.

"The wind blows .....the lightning crashes ....the thunder rumbles .....the rain is pouring down .....

- Have your children make a lot of noise with their instruments, creating a 'storm' of sound.
- Ask your children to place their instruments back on the floor group by group when cued in the story.

The thunder stops ....the lightning stops .....the wind stops.....the rain begins to fall more softly as it pitter patters on the leaves. The rain stops .....the birds begin to sing ...

- Cue your children with whistles to play again.

The sounds of the frogs and birds emerge again as the clouds move on and the sun begins to shine through to the rainforest floor once more."