

# Water Wise Game Changers

The Well

Tap into water education



## Student handbook

Water Wise Game Changers is a fun program that explores water use on the Eyre Peninsula and how we can all conserve water, protect our planet and change the world for the better. The Water Wise Game Changers live show, along with this handbook, shows you how you can be a part of the **Our Water, Our Future** movement of change!



Government of  
South Australia

# Connection to land and water

by Nellie Hirschhausen, Mirning, Kokotha, Kurna, and Narungga woman.  
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For Aboriginal people of this country, our connection to land and the water is core to our being. When speaking of a connection to country, Aboriginal people mean they belong to the country and are a part of it. As humans require air to breathe, that is the essence of having a connection to country, which has occurred for generations longer than we can imagine.

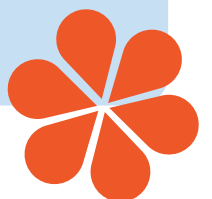
Being connected to country informs all aspects of life for Aboriginal people. Intertwined and existing within each other, Language, Lore, and Country are the drivers that determine our place, kinship, name, relationships, and responsibilities in the past, present and future. Being everything and everywhere at the same time.

Across the Eyre Peninsula, pre-contact with Europeans, the Barngarla, Kokotha, Nauo and Wirangu people cared for the many rock holes and waterways across the land. Song lines kept the country thriving, through ceremony and dance.

Today we are reminded to stop and listen and remember our place amongst each other and the responsibilities we carry as custodians of the land.

## Words to know

- **Fresh water:** water that is not salty and suitable for consumption if clean or treated.
- **Aquifer:** layers and areas of rocks below ground where all the cracks, crevices and spaces between rock particles are full of water.
- **Groundwater:** water that has seeped into the ground and accumulated within cracks or pores in the rocks (aquifers).
- **Water treatment:** the process by which raw water from the environment is purified for use.
- **Drinking water:** water that is considered safe and fit for human consumption and domestic purposes.
- **Water cycle:** a series of physical processes that continuously moves water from the surface of the Earth into the atmosphere and back down again.
- **Evaporation:** the process of turning water from liquid into vapor (gas).
- **Condensation:** when water vapor cools and turns back into a liquid.
- **Precipitation:** rain, snow, sleet or hail that falls to the ground.
- **Water security:** having a dependable and safe supply of fresh water for all our needs, for now and the future.
- **Desalination:** the process that removes salt from water and turns it into fresh water.
- **Water efficient:** using the least amount of water without wasting it.
- **Conserve:** to use resources carefully so they don't run out.
- **Climate independent water source:** a source of fresh water that doesn't rely on rain.



# The value of water

Clean water is one of Earth's most precious resources. You might think that water is everywhere, and it is, but only a small percentage of it can be used for human consumption.

The majority of Earth's water is salt water, and not safe for human consumption. Around 97% of all water on Earth is salty, and only the remaining 3% is fresh water. But isn't that still a lot of water? Unfortunately, most of that fresh water isn't easily accessible to humans. 69% is frozen in ice caps, and 30% is stuck deep underground. So, of all the fresh water on Earth, approximately 1% is actually available to us to drink.

Our fresh water resources need to be conserved and managed carefully on a global level, but it's even more important in Australia. Here's why:

- Australia is the driest inhabited continent in the world.
- Nearly 20 per cent of Australia's land mass is classified as desert.
- We have very hot temperatures meaning a lot of fresh water gets evaporated before we can use it.
- We have low average annual rainfall.
- We only get to use 6% of Australia's rainfall, the other 94% evaporates, drains into groundwater or is transpired by plants.

Speaking of rainfall – as well as being low, rainfall across the country is also highly variable, meaning it can be wildly unpredictable (Variability: the degree to which rainfall amounts vary across an area or through time).

Australia has always been the land of 'droughts and flooding rains' – a phrase coined by Aussie poet Dorothea Mackellar in her famous poem 'My Country'. It's normal to endure a multi-year drought, before experiencing major floods. You may think flooding is a good thing because it means more water, but flooding erodes soil, carries pollution into waterways, and creates challenging conditions for water treatment. Any extreme weather caused by increasing climate change isn't good for our potable water supply.

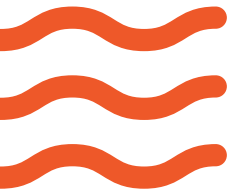
We also have a growing global population, meaning the use of our available fresh water is increasing – not just for consumption, but for food production and industrial use. So, we have an ever-increasing demand on our available water supply.



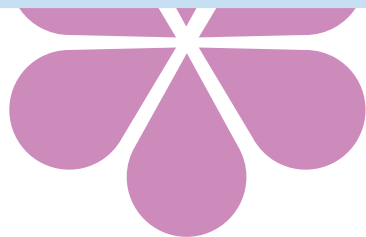
# Word find

Find and highlight all the words to know the word search below.

H U S W A T E R C Y C L E V E  
 J D J O X O G M R U H V E C W  
 T M N Z M C O N S E R V E L A  
 Q J N V J Q A Q U I F E R I T  
 P G R O U N D W A T E R L M E  
 P O T A B L E D R O M X X A R  
 D E S A L I N A T I O N O T T  
 P R E C I P I T A T I O N E R  
 A E V A P O R A T I O N N O E  
 I B E W S E C U R I T Y U E A  
 O W R G K O K S Q A I U U B T  
 Y A F I F R E S H W A T E R M  
 C O N D E N S A T I O N Z F E  
 T S O D R E G X E C Z H M V N  
 E F F I C I E N T I Z Y R U T



Water treatment	Precipitation	Climate	Condensation
Desalination	Groundwater	Security	Fresh water
Evaporation	Efficient	Water cycle	Aquifer
			Conserve



# Water cycle

The amount of water on Earth never changes. We have the same amount of water molecules now as when dinosaurs walked the planet. It's because water is constantly moving around our environment in an endless loop called the natural water cycle.

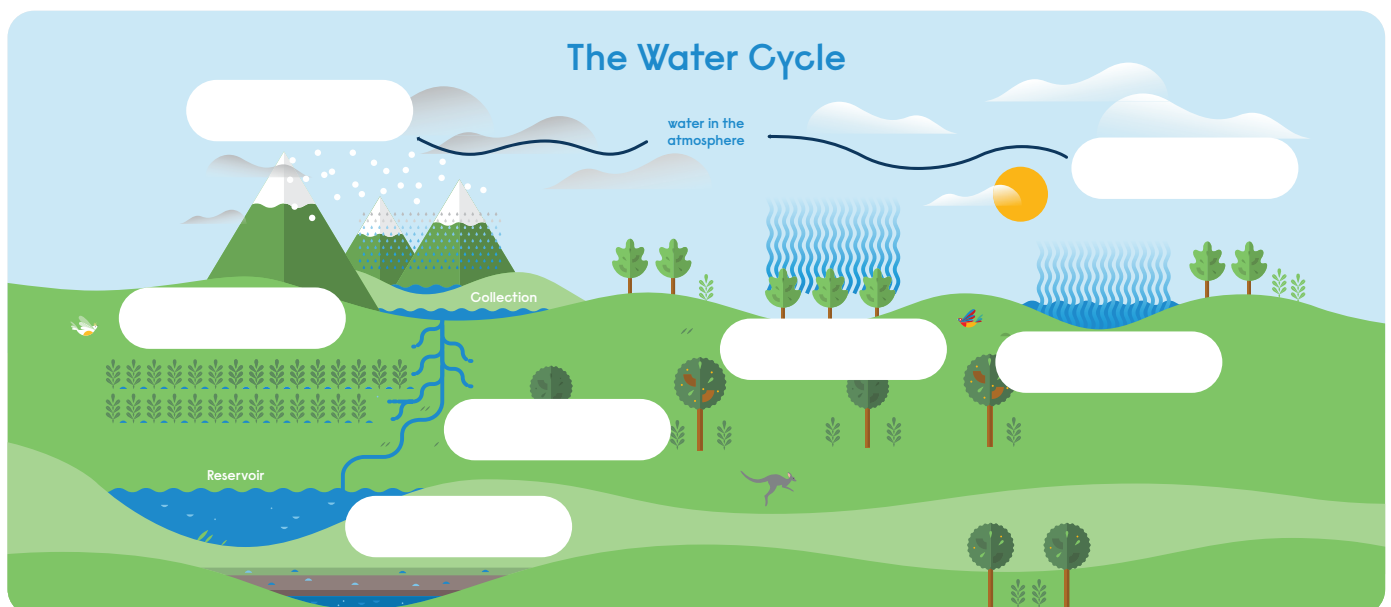
It starts with evaporation, where water transforms from a liquid into a gas, rising into the atmosphere. Plants also contribute through transpiration, releasing water vapor from their leaves, similar to how humans sweat. In the atmosphere, water vapor cools and undergoes

condensation, turning into liquid droplets that form clouds. Eventually, these droplets fall back to the Earth as precipitation, which could be rain, snow, or hail. When water reaches the ground again, it naturally flows downhill as surface run-off, and some can end up in waterways. Some rainfall sinks into the soil, moving downwards through infiltration. Some of this water continues deeper through percolation, replenishing underground aquifers found in porous rock formations. This cycle is what keeps our aquifers and rivers filled, although it happens slowly in our dry climate.

Draw a line to connect each water cycle term to its correct definition

<b>Evaporation</b>	Water enters the soil but continues further downwards, replenishing aquifers.
<b>Transpiration</b>	Rain, snow, or hail that falls to the ground.
<b>Condensation</b>	The accumulation of water beneath the Earth's surface in porous rock formations.
<b>Precipitation</b>	The release of water vapour from the leaves of plants and trees.
<b>Surface run-off</b>	The flow of water over the land's surface.
<b>Infiltration</b>	The process of turning water from liquid into vapour (gas).
<b>Percolation</b>	When water vapour cools and turns back into a liquid.

Now, label each stage of the water cycle with its correct heading in the diagram below



# Water sources on the Eyre Peninsula

## Where does our drinking water come from?



Most of the water on the Eyre Peninsula comes from underground sources called aquifers. An aquifer consists of layers and areas of rocks below ground where all the cracks, crevices and spaces between rock particles are full of water, sort of like a giant sponge. The Eyre Peninsula relies heavily on aquifers, with approximately 75% of its water coming from underground. The remaining 25% comes from the Murray River, which travels a long way to reach our communities.

Aquifers fill up – or recharge, when rainwater seeps deep into the ground. This process takes time. Think of it as slowly refilling a giant underground water tank.

## How does water come up from the ground?



Water in aquifers is extracted using pumps and bores, which bring it to the surface where it can be cleaned – or ‘treated’ – and used. Once water is taken out, though, it can take years for the aquifer to fill up again. This makes it very important for us to use our water wisely so we don’t take too much too fast.

## What are the limitations of our water supply?



Water on the Eyre Peninsula is limited because of both natural conditions and human use. South Australia is the driest state on the driest inhabited continent in the world, which means we don’t get much rainfall to replenish our water supplies. In addition to this, climate change is causing lower than average rainfall. With such little rain, it’s challenging to keep enough water in our aquifers, especially with a growing population. Overuse can lead to problems like a drop in the quality of water or even the aquifer running dry. If water levels run too low in aquifers near the ocean, there’s also a risk of saltwater intrusion. This means seawater can be drawn into the aquifer, making the water too salty to use.



# How much water do we use?

Complete these math problems and consider how much water we use at home every day compared to those in other countries, and how we might be more efficient with our water use.

1. In Australia, the average person uses about 187 litres of water per day. How much water would a family of four use in a month (30 days?)

2. An average person in South Africa uses about 235 litres of water per day, while in Australia, it's around 187 litres per day. How much more water does an Australian use in a week compared to a person in South Africa

3. A 10-minute shower uses approximately 90 litres of water. If a student takes a 10-minute shower every day for a month (30 days), how much water would they use in total?

4. A leaking tap can waste around 1.2 litres of water per day. If a tap is left leaking for two weeks, how much water would be wasted?

5. If a rainwater tank collects 2,000 litres of water during a heavy rainfall, and a household uses an average of 481 litres per day, how many days could the household rely on the tank for all their water needs?

6. It is estimated that watering a garden uses about 720 litres of water per hour. If a garden is watered three times a week for 30 minutes each time, how much water is used in a month (4 weeks)?

7. In India, the average daily water use per person is around 135 litres. How many more litres does the average Australian use in a day compared to the average person in India?

8. A 1.5-litre bottle of water costs \$2.50. If a person drinks 3 litres of bottled water every day, how much would they spend on bottled water in a month (30 days)? How much would they save if they switched to tap water, which costs about \$0.002 per litre?

# The science behind water security

## What is water security?

Water security means having enough fresh water for all our needs for now and the future. It's about making sure that we don't run out of water, even when conditions are tough, like during long dry spells. It also involves protecting our water sources from climate change, pollution, or overuse.

## Why is water security on the Eyre Peninsula so challenging?

Our supply of fresh water on the Eyre Peninsula is currently under pressure for two main reasons: climate change and a growing population. Lower rainfall and warmer temperatures mean more evaporation and less rainfall reaching the ground. This makes it harder for our aquifers and the Murray River to recharge. This places significant stress on our water supplies, with levels in the Uley South Basin—our largest aquifer—approaching critically low levels.

## Climate-independent solutions for water security

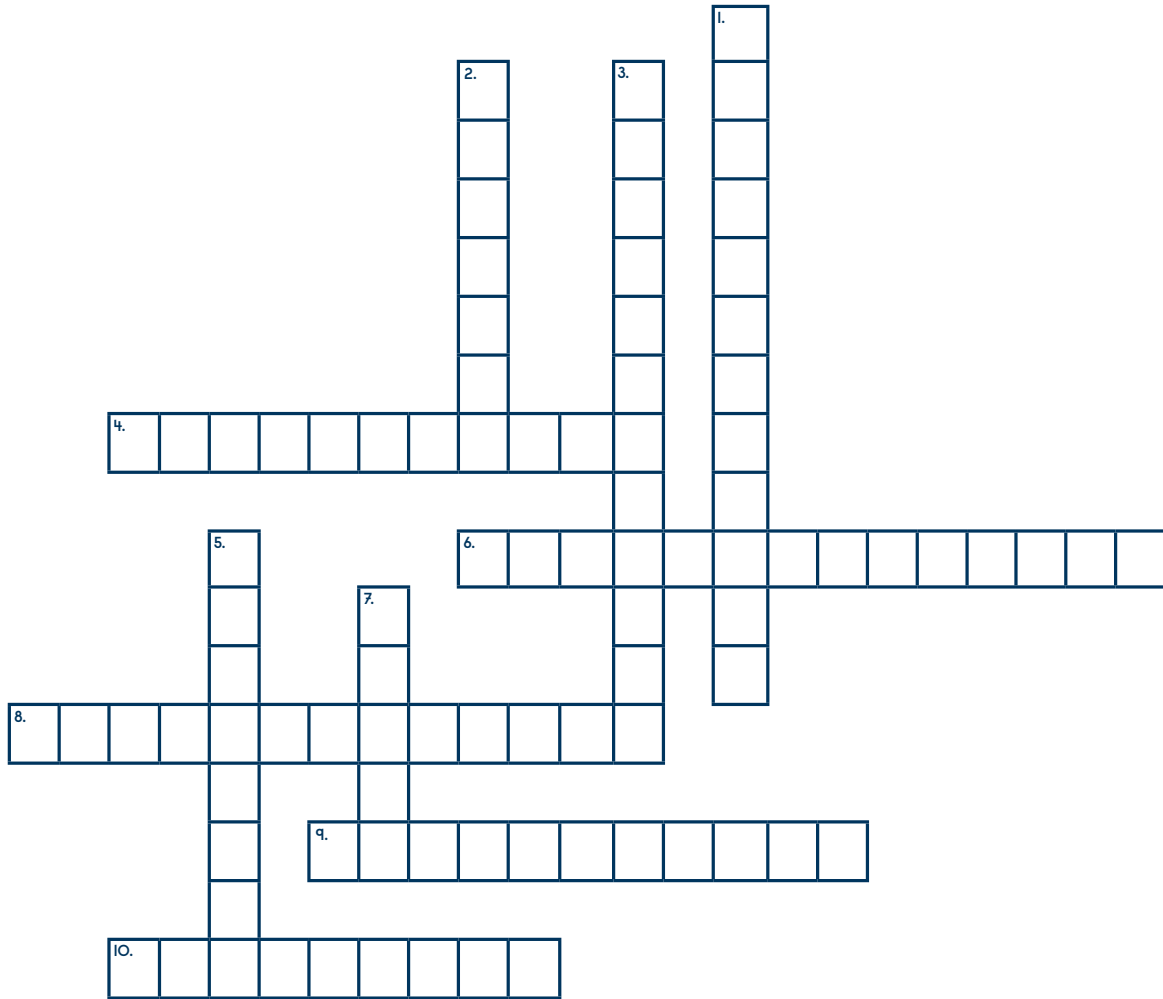
Because we can't always rely on rainfall when we need it, scientists and engineers around the world have been developing technology for alternative water sources for many years. SA Water has implemented various climate-independent strategies for water security around the state. These include:

- **Desalination:** This is a process where seawater is turned into fresh water. SA Water operates ten desalination plants around South Australia using reverse osmosis, a technology that forces seawater through a semi-permeable membrane to remove the salt and other minerals, making it very pure fresh water.
- **Fit for purpose water use:** This means using lower quality water for use that doesn't impact people's health. For example, using stormwater for things other than drinking, such as watering parks and gardens. This water goes through purple pipes, so we know it is separate from our drinking water. Recycling stormwater enables us to reduce the demand for drinking quality water without reducing the demand for water in general.

By learning how to use water wisely and not wasting it, we can all help ensure there is enough water for everyone, now and in the future.



# Quick crossword



**Across:**

- 4. When liquid water turns into water vapor (gas) and goes into the air.
- 6. Using resources wisely so they last a long time, and the environment is not affected.
- 8. Water that falls from the sky, such as rain, snow, or hail.
- 9. Fresh water found beneath the ground.
- 10. Natural materials, like water and minerals, that people use to meet their needs.

**Down:**

- 1. The act of protecting and using resources wisely to keep them safe for the future.
- 2. A long period of very low rainfall.
- 3. The process of taking salt out of seawater to make it safe for drinking.
- 5. Layers and areas of rocks below ground where all the cracks, crevices and spaces between rock particles are full of water.
- 7. A clear, colourless liquid that is essential for all living things.



Answers:  
 Across: 4. Evaporation 8. Precipitation 9. Groundwater 10. Resources  
 Down: 1. Conservation 2. Drought 3. Desalination 5. Aquifers 7. Water

# How you can be water wise

## How you can be water wise

In the Eyre Peninsula, every drop of fresh water counts, so being water wise is incredibly important! With our region's dry climate and limited water resources, it's essential to make smart choices in our daily lives to save water. Here are some simple actions we can take.

**Take shorter showers: Aim for 4 minutes or less.**

**Turn off the tap while brushing your teeth: This saves litres of water every day.**

**At school, don't let the bubbler waste water: Instead, fill up your water bottle.**

**Fix dripping taps: Turn off taps properly and tell an adult if a tap or toilet is leaking.**

**Use water-efficient technology: Tap timers in the garden and water efficient appliances at home.**

**Water your garden early in the morning or late at night: This minimises evaporation, so more water reaches your plants.**

## Other ways to save water

Other things you can do at home include:



### Upgrade to a dual-flush toilet

This clever invention allows you to choose between a big flush for solid waste and a smaller one for liquid waste, saving up to 4 litres of water each time.



### Mulch your garden

Adding a layer of mulch around your plants acts like a cozy blanket for the soil, keeping it moist for longer and reducing how often you need to water. Plus, it helps prevent weeds!



### Try greywater recycling

Collect water from sinks, showers, or washing machines and use it to water your garden, and using biodegradable soaps keeps your plants healthy.



### Create a rain garden

If you have space, plant a rain garden to capture rainwater runoff. Native plants thrive in these conditions, helping conserve water and providing a habitat for local wildlife.

# Crack the code

**Instructions:**

1. Each emoji stands for a letter in the secret phrase.
2. Decode the message by matching the emojis to their corresponding letters.
3. Write down the letters to reveal the hidden phrase!

Row 1: 🖐️ 🐬 🖐️ 🧼 👻

Row 2: 👁️ 🦊 🍁 🥳

Row 3: 🙌 🍁 🤖 👁️ 🐾 🤖

Row 4: 🦎 👁️

Row 5: 🐾 😎 🖐️

Row 6: 🖐️ 🧐 🦷 🖐️

Row 7: 🥳 🖐️ 👁️ 🦎 👁️ 🤖 🤖 🙌 👁️

**Clues:**

Symbol	Letter	Symbol	Letter	Symbol	Letter
👁️	N	🖐️		🤖	
🐬	V	🦷		🧐	
🍁	O	🦎		🧼	
👁️	D	👻		🙌	
🦊	R	👁️		😎	
🥳	P	🙌			
🐾		🤖			

Answer: Every drop counts on the Eyre Peninsula

# Design an awareness campaign

Design a poster for your local community that brings awareness to water use on the Eyre Peninsula. Think strategically about what might encourage people to think more about their water use habits. Include key facts, comparisons, and statistics to show why saving water matters here. Use a catchy slogan and consider your target audience when designing the poster.

