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social**



# **WATER IN THE WORLD**

**TEACHING RESOURCE: YEAR 7**

**GEOGRAPHY**



*This resource has been produced by the Academy of the Social Sciences in Australia as part of a pilot for a broader suite of evidence based, peer-reviewed classroom resources for Australian students and teachers in the social sciences. Feedback and further inquiries are welcome via email: [info@socialsciences.org.au](mailto:info@socialsciences.org.au)*

## Acknowledgments

Seriously Social is an initiative of the Academy of the Social Sciences in Australia.

This resource has been produced in consultation with Fellows of the Academy of the Social Sciences in Australia, who are experts in related fields.

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This fact checked school resource is produced at no cost to users and is fully funded by the Academy of the Social Sciences in Australia. This resource presents facts about water as a valuable resource in Australia, with learning experiences to empower students as agents of change to influence the sustainability of this valuable resource.

The Academy of the Social Sciences in Australia acknowledges the Traditional Owners of Country throughout Australia. We pay our respects to Elders past and present.

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# WATER IN THE WORLD

## TEACHING RESOURCE: YEAR 7

### Introduction

This booklet provides teachers with a variety of resources and learning experiences to address the Year 7 Geography topic *Water in the World*.

Teaching and learning materials have been developed with academic experts from relevant fields. These experts have provided contextual information about water as a natural resource in Australia that include the interconnected and relevant issues of sustainability, climate change and natural disasters. The message from experts has been captured in an educational [video](#) that accompanies this booklet. It is a message of adaptability and hope—water is one of the biggest indicators of climate change, with evidence of natural disasters associated with water increasing in Australia and across the globe.

Learning experiences provided in this booklet set out to increase student knowledge, while building skills and an understanding of how to be an agent of change.

## Teacher guidance

It is recommended that prior to teaching the topic of *Water in the World* teachers have students complete the Prior Knowledge Recall sheet to determine how familiar students are with the vocabulary and scientific information associated with this learning focus. Teacher judgement will determine if more time is required to teach vocabulary and to explore the scientific geography components further. It is anticipated that students’ prior learning will have included vocabulary and basic weather patterns associated with the topic of *Water in the World*.

Contents of this booklet predominantly focus on humanitarian topics of geography. For further exploration of this topic, including scientific geography, consider the following resources:

REFERENCE	CONTENT
Measurements and geographical tools: Australia’s Bureau of Meteorology: <a href="https://bit.ly/4cTrgKr">bit.ly/4cTrgKr</a>  Australian rainfall deciles since 1900: <a href="https://bit.ly/3TP7rv4">bit.ly/3TP7rv4</a>  Australian rainfall maps: <a href="https://bit.ly/3vL5urf">bit.ly/3vL5urf</a>  Indigenous weather knowledge: <a href="https://bit.ly/3PKzPgI">bit.ly/3PKzPgI</a>	Australia’s Bureau of Meteorology references for rainfall and Aboriginal and Torres Strait Islander histories and culture.
ClickView Water Around the World – Geography Resources for Secondary Teachers: <a href="https://bit.ly/3TZo8oB">bit.ly/3TZo8oB</a>	Water use, availability, management, and sustainability are presented in a global context.
7–8 Water in the World – Geography Teachers' Association of Victoria Inc: <a href="https://bit.ly/3U0IUFA">bit.ly/3U0IUFA</a>	Various resources, learning materials and references listed.
Geoscience Australia: <a href="https://bit.ly/3VIIYLE">bit.ly/3VIIYLE</a>	Groundwater sources, cycles, maps and quality management.
Australian water supply: <a href="https://bit.ly/3TFMClu">bit.ly/3TFMClu</a>	Agriculture and residential use, government regulations and economic considerations through case studies: Hume Dam, Snowy Hydro, Murray–Darling Basin, Great Barrier Reef.
Waterwise educational resources for schools: <a href="https://bit.ly/3TP7M0Q">bit.ly/3TP7M0Q</a>	A Queensland Government initiative of water conservation learning materials.

## Prior knowledge recall

This can be conducted as a class discussion, brainstorm (recorded on a classroom display for future reference) or as an individual writing task.

Explain what the following words mean:

	Weather:
	Climate:
	Precipitation:
	Average rainfall:
	Rainfall variability:
	Evaporation:
	Drought:

Explain the hydrological water cycle, either in words or by drawing a labelled picture.

## Class engagement prompts

This engagement session aims to highlight the necessity of water and begin stimulating ideas for water sustainability by listing the uses of water and identifying ways that water may be wasted.

This can be conducted as a class discussion, brainstorm (recorded on a classroom display for future reference) or as an individual writing task.

List ways water is used:	List ways water may be wasted:

## Australia's water challenges—too much, too little, too dirty

Australia is a big place with many kinds of weather. Sometimes, it doesn't rain for a long time, which is called a drought. Other times, there are big storms, cyclones and floods.

The weather in Australia changes a lot, not just from day to day, but also over long periods of time. Research on past ice ages shows that the First Peoples of Australia have been around for over 65,000 years, making them one of the oldest civilisations on Earth and people who survived and thrived in climate extremes. The river systems in Australia are also among the oldest in the world.

The Australian Bureau of Meteorology gives us predictions about how the weather changes over time, using scientific methods. This data analysis is used to predict future weather patterns. In Australia, which is the driest inhabited continent, it's important to understand water and to value it for what it gives us.

We especially need to know how to respond sustainably when there's too much water, too little water, or the water is too dirty. This is not easy but without safe and affordable water to drink, wash and use in trade and industry, communities all over Australia wouldn't be able to survive.

Hydrology is a water science and is about the study of how water moves through or under the Earth's surface. Hydrologists also look at how human activities affect water availability and quality because the hydrological (water) cycle and human behaviour are very closely linked. The water cycle affects how people live, work and survive. At the same time, human actions alter the water cycle. Here are some examples which show how humans and water are connected.

**Example 1:** A watershed is where water naturally flows from higher altitude, such as mountains and hills, to lower places such as floodplains. People often settle near rivers and lakes for easy access to water within watersheds. When humans change the watershed, such as through deforestation, this can harm communities and also the water source. For instance, building a dam or spillway to redirect river flow can have negative and unintended effects.

Grantham, a small town in the Lockyer Valley in Queensland, with a population of about 600 suffered in 2011, when severe flash floods killed 12 people and damaged many properties, leaving many residents homeless.

Lismore is a town located in New South Wales, about 200 kilometres south of Brisbane. It's a dairy-rich area with a population of about 28,000 people. In 2022, Lismore experienced devastating floods, resulting in 9 deaths and displacing thousands. Flooding is common in Lismore due to its location next to a river.



**Example 2:** Another problem arises when there's not enough usable water, often caused by human activities like farming. Australia's Murray-Darling Basin begins in Queensland and flows through New South Wales before merging in Victoria and reaching the sea in South Australia.

Prolonged drought is worsened by excessive water extractions by irrigators, without recognising the needs of downstream users during periods of drought. Low stream flows in the Murray-Darling Basin have contributed to increased salinity and mass fish deaths. Drinking water quality has suffered in river communities and downstream towns like Wilcannia and cities like Adelaide.

**Example 3:** Humans always adapt to changing weather.

Since the 2011 flash flood, Grantham, Queensland has moved to higher ground with government help, to avoid any further loss of lives and properties caused by floods.

Relocation is being discussed for Lismore, but costs and lifestyle changes, as well as questions about available land for resettlement, make it challenging. Locals are finding their own solutions. For example, a dairy company is now using flood proof seals to protect the factory in the event of flooding.

Planting local flora could also help to slow floods, as established trees along the banks of rivers help direct flood waters and their roots hold onto the soil, reducing erosion and the amount of sediment entering the waterways.

To help the Murray-Darling Basin improve water outcomes, the Australian government has bought back water entitlements from irrigators who are doing their best to maximise their crop yield for each litre of water extracted.

Without adaptation, farmers and communities face shortages of water and water of sufficient quality. Adaptation is crucial to avoid the potentially catastrophic effects of human-caused climate change. All of us, with help from others, including our governments, can adapt to climate change including rising temperatures and extreme weather events (droughts and floods).



## Web references: Australia’s water challenges – too much, too little, too dirty

REFERENCE	WEB LINK
First Peoples of Australia	<a href="https://bit.ly/3TDvpt3">bit.ly/3TDvpt3</a>
Australian Bureau of Meteorology	<a href="https://bit.ly/4cTrgKr">bit.ly/4cTrgKr</a>
watershed	<a href="https://bit.ly/3VJAmmQ">bit.ly/3VJAmmQ</a>
Relocation	<a href="https://bit.ly/3vxpe1F">bit.ly/3vxpe1F</a>
climate change	<a href="https://bit.ly/3PKMHDe">bit.ly/3PKMHDe</a>
<i>Water in Australia</i> educational video	<a href="https://bit.ly/3UdMFp2">bit.ly/3UdMFp2</a>

## Connection circle

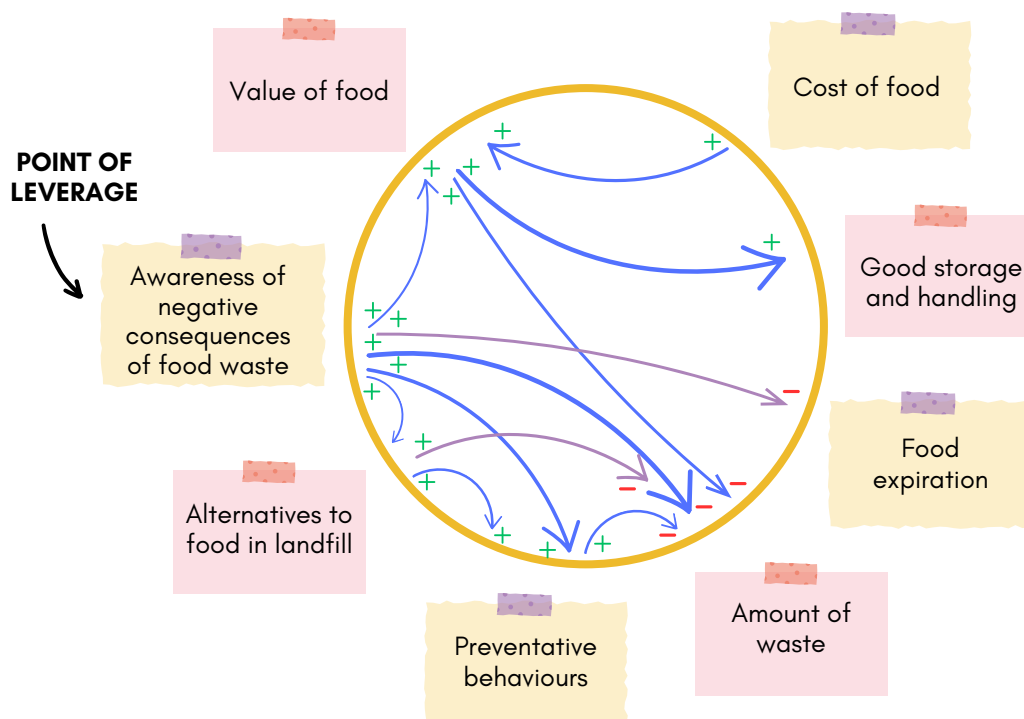
A connection circle will be used to help identify the relationship between key factors and behaviours and how this relates to water conservation.

Find an example of a connection circle below that focuses on food waste as the topic, linking key factors and behaviours.

### How to create a connection circle:

1. Draw a circle in the middle of a page.
2. Around the circle, write down key factors and behaviours that influence if people conserve or waste water.
3. Use arrows to connect factors/behaviours and show their relationships.
4. Use a plus (+) or minus (-) sign at the ends of the arrows to indicate whether the connection increases or decreases the factor/behaviour.
5. Analyse cause and effect relationships within the circle. Identify key factors or behaviours that have many arrows pointing to them, as they indicate points of leverage. A point of leverage is where attention could be best focused to begin informing ideas to improve water conservation (example connection circle should have 'point of leverage' identified for awareness of negative consequences for food waste).
6. Use the points of leverage to work through the process of a feasibility funnel.

### Connection circle example: how can we reduce food waste?



## Feasibility funnel

A feasibility funnel will be used to help consider ideas to influence behaviours that will improve water conservation. To help you understand the importance of water conservation by individuals, watch this video: [bit.ly/4aFhKbx](https://bit.ly/4aFhKbx)

Work in a group to brainstorm ideas to encourage people to conserve water. Points of leverage selected in the connection circle provide a good starting point for ideas. Use the feasibility funnel to test your ideas and decide which one is likely to be most successful in increasing people's water conservation behaviours.

### How to use the feasibility funnel:

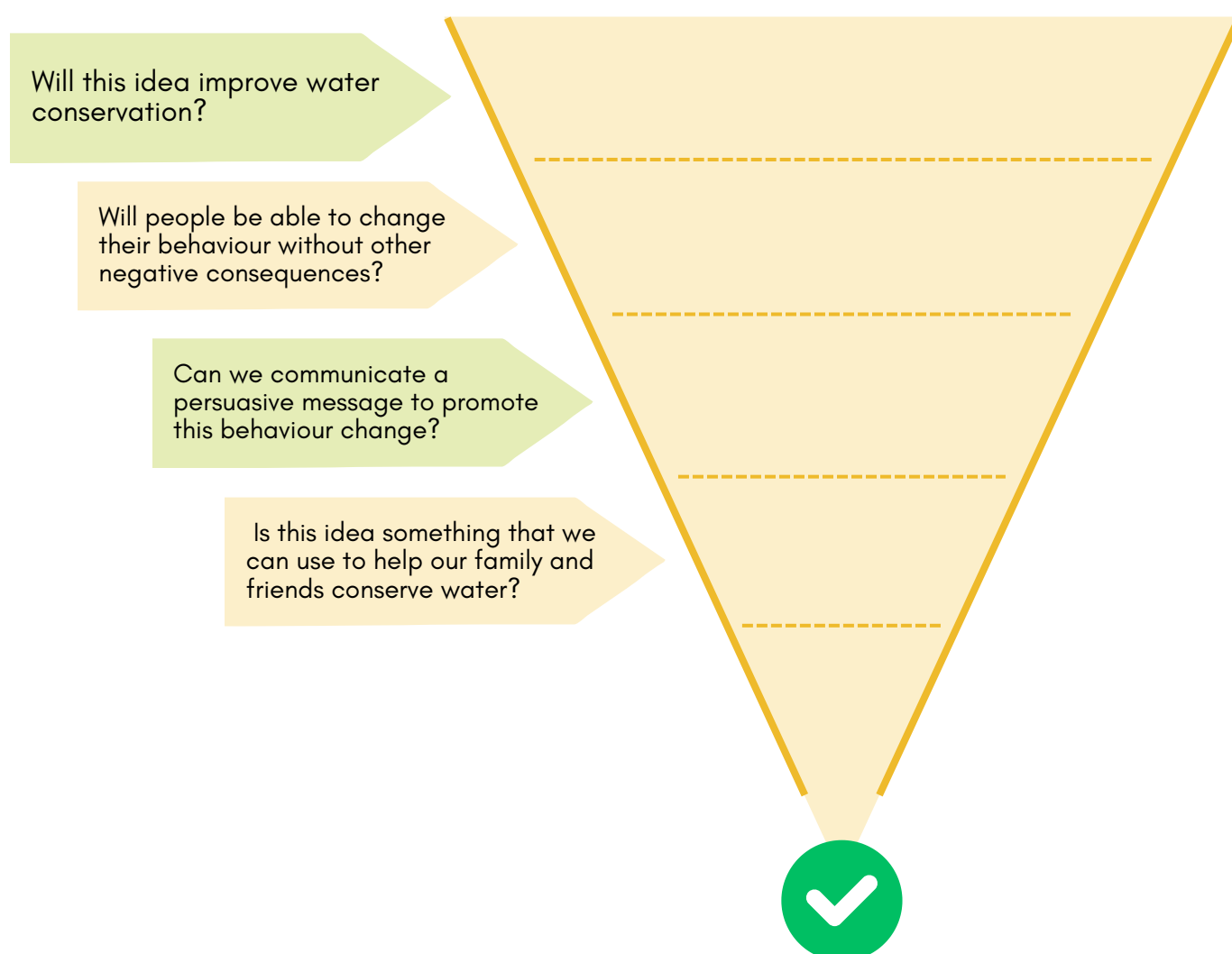
1. Work in a group with others and write down all the things you can think of that people can do to conserve water. Write each idea on a separate post-it note.
2. Consider questions that you can ask about your ideas to check if they will work.
3. Draw a feasibility funnel on a whiteboard or large piece of paper like the example shown. Write questions down the side of the feasibility funnel that will help you decide if the ideas will work: Will this idea improve water conservation? Will people be able to change their behaviour without other negative consequences? Can we communicate a persuasive message to promote this behaviour change? Is this idea something that we can use to help our family and friends conserve water?
4. Take post it notes and place them along the top line of the feasibility funnel. Ask each of the questions one at a time and test your answers to decide if the idea can work. If the answer is no, have a conversation in your group to consider if the idea could be adapted to work. If not, the group can discard the idea and continue working through the process to decide which ideas have the greatest chance of success.
5. Once all ideas have passed through the feasibility funnel, determine which idea is most preferred and use this to work through a persuasion pyramid to now consider how you will best motivate people to change behaviours and embrace this water conservation strategy.

## Feasibility funnel

### Teaching suggestion:

An example of this process would be best modelled as a whole class. Depending on the class structure, the entire feasibility funnel process could be completed as a whole class, with the teacher or nominated students facilitating the process. A range of successful ideas may be generated for students to choose from for further learning, using the persuasion pyramid.

### Feasibility funnel template:



## Persuasion pyramid

Use your selected water conservation strategy to plan for how to effectively communicate this idea. The persuasion pyramid helps you plan for communication to influence positive change.

**How to use a persuasion pyramid** (see below example for reducing food waste):

1. Draw a pyramid and divide it into four horizontal sections.
2. In the top section of your pyramid, come up with a slogan or title that sums up your message quickly.
3. In the second section write a call to action (maximum 30 words). This is a summary of what you are trying to achieve and why. It should also explain what people can do.
4. In the third section sketch some ideas for images that can help to communicate your message.
5. The fourth section is a narrative. This explains the impact on people by using examples with powerful points that demonstrate consequences if change doesn't happen.
6. The base of the pyramid is for facts. Gather data and information that shows a sense of urgency and justifies the need for change.



## Water conservation poster task

Use your persuasion pyramid to help you design a poster to influence people to change their behaviours with your idea for conserving water.

### Instructions:

	Use a blank A3 piece of paper either physically or electronically to create your poster
	Include text and images that relate to your message
	Present a clear message that promotes what people can do to conserve water
	Include facts that reinforce why the poster is trying to persuade people to conserve water
	Use fonts, colours and spacing that makes the poster appealing to others
	Seek feedback to refine your ideas and be prepared to make more than one draft



## World Heritage Sites and national parks research table

Conduct research using either the weblinks provided on page 17 and 18 or your own findings to identify the following features of water:

- economic
- cultural
- spiritual
- aesthetic
- Aboriginal and/or Torres Strait Islander heritage and culture

Not all states and territories need to be represented in the research, however a different water reference is required for each feature.

STATE/ TERRITORY	Conduct research to identify an example in Australia where water has value because of the following features: economic, cultural, spiritual, aesthetic, Aboriginal and/or Torres Strait Islander heritage and culture.  Look for specific examples that illustrate these aspects and provide a summary.
ACT	
NSW	
NT	



## World Heritage Sites and national parks research table

STATE/ TERRITORY	RESEARCH FINDINGS
QLD	
SA	
TAS	
VIC	
WA	

## World Heritage Sites and national parks: web links

STATE/ TERRITORY	World Heritage Sites and national parks
ACT	Namadgi National Park: <a href="https://bit.ly/3vs2U9J">bit.ly/3vs2U9J</a>
NSW	Gondwana Rainforest Area: <a href="https://bit.ly/4aGLOUx">bit.ly/4aGLOUx</a> Lord Howe Island Group: <a href="https://bit.ly/3U0IIM5">bit.ly/3U0IIM5</a> Lane Cove National Park: <a href="https://bit.ly/4aBNn5V">bit.ly/4aBNn5V</a> Sydney Harbour National Park: <a href="https://bit.ly/3PKMQqg">bit.ly/3PKMQqg</a> Myall Lakes National Park: <a href="https://bit.ly/43EwQvP">bit.ly/43EwQvP</a>
NT	Kakadu National Park: <a href="https://bit.ly/3TYf1ES">bit.ly/3TYf1ES</a> Culture  Kakadu National Park: <a href="https://bit.ly/4atonOi">bit.ly/4atonOi</a> Mary River  Kakadu National Park: <a href="https://bit.ly/49qepvX">bit.ly/49qepvX</a>
QLD	Gondwana Rainforests of Qld: <a href="https://bit.ly/49f5u0B">bit.ly/49f5u0B</a> Wet Tropics  Parks and Forests: <a href="https://bit.ly/4aA0m8e">bit.ly/4aA0m8e</a> The Wet Tropics: <a href="https://bit.ly/43JjZZt">bit.ly/43JjZZt</a> Great Barrier Reef: <a href="https://bit.ly/49pEBHc">bit.ly/49pEBHc</a> Reef Traditional Owners: <a href="https://bit.ly/3Tzeesk">bit.ly/3Tzeesk</a> K’gari (Fraser Island) - Qld Government: <a href="https://bit.ly/3THd4ev">bit.ly/3THd4ev</a> K’gari (Fraser Island) - UNESCO: <a href="https://bit.ly/3W01JJx">bit.ly/3W01JJx</a>
SA	Dhilba Guuranda-Innes National Park: <a href="https://bit.ly/43G632a">bit.ly/43G632a</a> Murray River National Park: <a href="https://bit.ly/3PLXf5j">bit.ly/3PLXf5j</a> Deep Creek National Parks: <a href="https://bit.ly/3TKlkKK">bit.ly/3TKlkKK</a>

## World Heritage Sites and national parks: web links

STATE/ TERRITORY	World Heritage Sites and national parks
TAS	<p><b>Tasmanian National Parks:</b> <a href="http://bit.ly/3U1yxAr">bit.ly/3U1yxAr</a></p> <p><b>Tasmanian Wilderness  UNESCO:</b> <a href="http://bit.ly/43FCtty">bit.ly/43FCtty</a></p> <p><b>World Heritage Places Tasmanian Wilderness:</b> <a href="http://bit.ly/4axDK8c">bit.ly/4axDK8c</a></p> <p><b>Macquarie Island  UNESCO:</b> <a href="http://bit.ly/4aEwsj4">bit.ly/4aEwsj4</a></p> <p><b>Macquarie Island:</b> <a href="http://bit.ly/4aiWmcn">bit.ly/4aiWmcn</a></p> <p><b>Heard and McDonald Islands  UNESCO:</b> <a href="http://bit.ly/4aFjDoD">bit.ly/4aFjDoD</a></p> <p><b>Australian Antarctic Program:</b> <a href="http://bit.ly/3TXOJ5B">bit.ly/3TXOJ5B</a></p>
VIC	<p><b>Budj Bim Cultural Landscape  UNESCO:</b> <a href="http://bit.ly/4atpn50">bit.ly/4atpn50</a></p> <p><b>Gunditjmara Culture and People:</b> <a href="http://bit.ly/4akVaWe">bit.ly/4akVaWe</a></p> <p><b>Gunbower National Park:</b> <a href="http://bit.ly/4a8ltPb">bit.ly/4a8ltPb</a></p> <p><b>Lake Eildon National Park:</b> <a href="http://bit.ly/3xgF7d7">bit.ly/3xgF7d7</a></p> <p><b>Mitchell River National Park:</b> <a href="http://bit.ly/3J3nQ9Y">bit.ly/3J3nQ9Y</a></p>
WA	<p><b>Ningaloo Coast World Heritage Area:</b> <a href="http://bit.ly/3xkHgok">bit.ly/3xkHgok</a></p> <p><b>Ningaloo Coast  UNESCO:</b> <a href="http://bit.ly/4cHgKpu">bit.ly/4cHgKpu</a></p> <p><b>Ningaloo Reef:</b> <a href="http://bit.ly/3PMpRuX">bit.ly/3PMpRuX</a></p> <p><b>Shark Bay   UNESCO:</b> <a href="http://bit.ly/3xi0tXR">bit.ly/3xi0tXR</a></p> <p><b>Aboriginal Heritage - Shark Bay:</b> <a href="http://bit.ly/3xnSF6Y">bit.ly/3xnSF6Y</a></p> <p><b>Karlamilyi National Park:</b> <a href="http://bit.ly/4aDGfWQ">bit.ly/4aDGfWQ</a></p> <p><b>Millstream Chichester National Park:</b> <a href="http://bit.ly/3J26iLq">bit.ly/3J26iLq</a></p>

## Writing task: Explore the value of water to people

Write a short paragraph for each of the following three instructions. You may wish to refer to the research that you have conducted, focusing on water bodies found in Australian World Heritage Sites and national parks.

1. Choose two different types of water bodies (e.g. coastal, marshland, river, waterfall). Explain the similar and different reasons that these bodies of water are valued by people.
2. Identify and compare two water bodies that have different economic value.
3. Using three different examples of water bodies in Australia, identify and compare the historical and current value of water for Aboriginal and Torres Strait Islander People.

Student and teacher writing task review			
Student checklist	✓	Teacher checklist	✓
1. I have compared different types of water bodies and the value these have to people.		<u>AC9HG7K03</u> the economic, cultural, spiritual and aesthetic value of water for people, including First Nations Australians  ✓ Economic knowledge ✓ Cultural and spiritual awareness ✓ General knowledge of the value of water to people	
2. I have compared the different economical value of two water bodies.			
3. I have identified the cultural and spiritual value of water for Aboriginal and Torres Strait Islanders.			
Student comments	Teacher comments		
<div>Prior learning:</div> <div>New learning:</div>			

## Writing task: Consider how water connects people and places

Write a short paragraph for each of the following two instructions. You may wish to refer to the research that you have conducted, focusing on water bodies found in Australian World Heritage Sites and national parks.

1. List five ways people and places use water from the Murray-Darling Basin.  
Include the name of the places and what kind of water body each location represents.
2. Explain three significant changes that have happened to the Murray-Darling Basin over the past 100 years, describing how these have impacted people and places.

Student and teacher writing task review			
Student checklist	✓	Teacher checklist	✓
<div>1. I have listed five ways that people and places use water from the Murray-Darling Basin.</div> <div>I have included the names of places and types of water bodies selected.</div>		<div><u>AC9HG7K01</u> classification of environmental resources and the way that water connects and changes places as it moves through environments</div>	
<div>2. I have explained three significant changes to the Murray-Darling Basin over the past 100 years.</div> <div>I have described how this has impacted people and places.</div>		<div>✓ Knowledge of different bodies of water</div> <div>✓ Knowledge of water connecting people and places</div> <div>✓ Knowledge of water changing the environment and impacting people</div>	
Student comments		Teacher comments	
<div>Prior learning:</div> <div></div> <div>New learning:</div> <div></div>			

## Quiz

1.

In your own words, explain what the hydrological water cycle is.
2.

How might climate change alter the hydrological cycle?
3.

Explain what contributes to flood or drought.
4.

List the hazards to people and the environment that present due to floods and drought, with possible solutions to reduce the impact.

Hazards	Solutions

**5.**

What is a watershed?

**6.**

List some ways that individuals and communities can mitigate and adapt to rising temperatures because of human-caused climate change.

**7.**

Can you suggest further ideas for awareness and action at a national and global level to combat rising temperatures?

## Assessment

The following table provides assessment links for learning experiences throughout this booklet that are cross referenced to Version 9 of the Australian National Curriculum for Year 7 Geography Water in the World.

### General capabilities and cross curricular priorities:

- Aboriginal and Torres Strait Islander histories and culture
- Sustainability

Australian Curriculum content descriptors	Contextualised learning focus	Learning experience	Page
<u>AC9HG7K02</u> the location and distribution of water resources in Australia, their implications, and strategies to manage the sustainability of water	Identify the relationship between key factors and behaviours and how this relates to water conservation.	Connection Circle	10
	Consider how to influence behaviours to promote water conservation.	Feasibility Funnel	11
		Persuasion Pyramid	13
		Poster	14
<u>AC9HG7K03</u> the economic, cultural, spiritual and aesthetic value of water for people, including First Nations Australians	Identify various features of water that are of value to people.	World Heritage Sites and national parks research	15
		Writing task: Explore the value of water to people	19



## Assessment

Australian Curriculum content descriptors	Contextualised learning focus	Learning experience	Page
<p><u>AC9HG7K01</u> classification of environmental resources and the way that water connects and changes places as it moves through environments</p>	<p>Demonstrate knowledge of different bodies of water and how water connects people and places.</p>	<p>Writing task: Consider how water connects people and places</p>	<p>20</p>
<p><u>AC9HG7K01</u> classification of environmental resources and the way that water connects and changes places as it moves through environments</p> <p><u>AC9HG7K04</u> the causes and impacts of an atmospheric or hydrological hazard, and responses from communities and governments</p>	<p>Demonstrate knowledge of different bodies of water.</p> <p>Demonstrate knowledge of how water changes the environment through flood and drought and how this impacts people.</p> <p>Identify what contributes to floods and drought.</p> <p>Identify how communities and governments may mitigate risks involved in floods and droughts.</p>	<p>Quiz</p>	<p>21</p>



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