

# STAGE 4 GEOGRAPHY

## Water Around Australia

### FOCUS AREA - Water in the World

#### Outcomes explored

##### A student:

- Discusses management of places and environments for their sustainability GE4-5
- Acquires and processes geographical information by selecting and using geographical tools for inquiry GE4-7
- Communicates geographical information using a variety of strategies GE4-8

##### Key inquiry question

- Why does the spatial distribution of water resources vary globally and within the countries?
- How do natural and human processes influence the distribution and availability of water as a resource?
- What effect does the uneven distribution of water resources have on people, places and environments?
- What approaches can be used to sustainably manage water resources and reduce water scarcity?

##### Content:

- Water Resources
- Australia's water resources
- Water scarcity and water management

##### Content focus

##### Students:

- Examine water as a resource and the factors influencing water flows and availability of water resources in different places
- Investigate the nature of water scarcity and assess ways of overcoming it.
- Discuss variations in people's perceptions about the value of water and the need for sustainable water management

##### Australian Syllabus Links:

- ACHGK037
- ACHGK039
- ACHGK040

# WATER AROUND AUSTRALIA

Australia is a unique country with roughly the same land mass as the United States but with a population 90% smaller. One would assume with a much smaller population and large landmass that resources, like water, would not be a concern. The driest continent on Earth is Antarctica, but after that is Australia with 20% of the continent being classified as a desert. Most of Australia's population inhabits major cities on the coastline while the remaining areas of Australia are scattered with small towns with few people. The Central Coast often experiences heavy rain and occasional flooding while areas inland may not see rain for many months. The current population of the Central Coast is just over 346,000 people and by the year 2036 the population is expected to increase to 414,615 people. With an ever-increasing population in the area, the demand for water also increases. This increase in demand requires more access to fresh drinking water.

This activity will have you travel around Australia learning about access to water, catchments, rivers, topography and more. The Central Coast has many challenges facing water security due to population growth, drought, infrastructure, flooding and climate change. This activity shows how the Central Coast is not alone in Australia in its quest to have a secure water supply to meet the needs of the community.

## Water Clues

**Instructions:** Put your detective skills to the test! Below are questions that need to be answered in a specific order to get the correct final answer. The first question will have you starting in Perth and from there you will need the correct answer to proceed to your next location. The table below has the remaining questions in no particular order. Once you have the correct answer for Perth the first and last letter of your answer will allow you to find your next location on the map. The first letter is located at the top of the map and the last letter on the side. Where the two cross paths are your next location which is a major city or town in that area. Once you find your last location write your answer in the "Final Answer" box to show you followed the correct path. Bon voyage!

**\* You will need the internet to help you search for the answers to your clues**

**\* HINT: The questions have specific answers that can be found by searching the city or town with a question.**



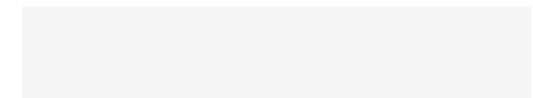
## First Clue!

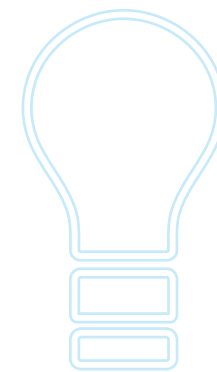
- Perth receives water from dams, ground water, desalination and groundwater replenishment. Which one provides the least amount of water to the Perth?

### Map Clues

With its steep topography which creates a multitude of streams and rivers, Tasmania has 48 of these natural landscapes where water is collected.	The Brisbane River is a brownish colour due to sediment being suspended by dredging, run-off and this process when the riverbank falls into the water.	The Amadeus Basin is where Alice Springs water supply comes from. They use this type system to extract water.
The _____ Project was completed in 1981 that included a major pumping station and a water treatment plant that allowed this city to increase their water storage capacity to 95,000million litres.	The Murray Darling Basin holds three of Australia's longest rivers in its catchment. What is the name of the location by Adelaide where the longest river enters the sea?	Water supplied to Cairns is extracted from rainforest areas untouched by humans. The water before it gets to homes and businesses is untreated or unfiltered. The term for water not treated is called "____" water.
The majority of Broome's water is locked in a unconfined aquifer which requires a bore to be drilled to access the water below. What is it called when you have many bores in one area pumping water from underground?	In Darwin 85% of its water needs are meet by this type of structure.	The Warragamba Dam flooded this valley to provide 80% of the available water supply to the Sydney region.

### FINAL ANSWER





Draw lines of travel from location to location. also add the names of the locations once you find them.

First Letter	Z	C	F	S	G	R	B	E	D	Last Letter
				●						R
										A
										J
										D
		●								S
										B
					●					T
										G
										K
										M
										I
										C
										N
										W
										E
										H
										F
										Y
										Z

Where do they get water?

# WATER AROUND AUSTRALIA

## Map Clues - Teachers Answer Key

**Instructions:** Put your detective skills to the test! Below are questions that need to be answered in a specific order to get the correct final answer. The first question will have you starting in Perth and from there you will need the correct answer to proceed to your next location. The table below has the remaining questions in no particular order. Once you have the correct answer for Perth the first and last letter of your answer will allow you to find your next location on the map. The first letter is located at the top of the map (x axis) and the last letter on the side (y axis). Where the two cross paths you will find your next location which is a major city or town in that area. Once you find your last location write your answer in the "Final Answer" box to show that you followed the correct path. Bon voyage!

**\*You will need the internet to complete this activity\***

1. Perth—Perth receives water from dams, ground water, desalination and ground water replenishment.

Which one provides the least amount of water to the Perth? **(ground water replenishment) (G,T)**

2. Alice Springs — The Amadeus Basin is where Alice Springs' water supply comes from.

They use this type system to extract water? **(Bore) (B,E)**

3. Melbourne— The \_\_\_\_\_ Project was completed in 1981 that included a major pumping station and water treatment plant that allowed this city to increase their water storage capacity to 95,000million litres. **(Sugarloaf Reservoir) (S, R)**

4. Darwin—In Darwin 85% of its water needs are meet by this type of structure. **(Dam) (D,M)**

5. Brisbane— Brisbane River is a brownish colour due to sediment being suspended by dredging, runoff and this process when the riverbank fall into the water? **(Erosion)**

6. Sydney - The Warragamba Dam flooded this valley to provide 80% of the available water supply to the Sydney region? **(Burratorang Valley) (B, Y)**

7. Tasmania—With steep topography creating a multitude of rivers Tasmania has 48 of these where water is collected? **(Catchments) (C, S)**

8. Broome—The majority of Broome's water is locked in a unconfined aquifer which requires a bore to be drilled to access the water below. What is it called when you have many bores in one area pumping water from underground? **(Borefield) (B, D)**

9. Cairns— Water supplied to Cairns is extracted from rainforest areas untouched by humans. The water before it get to homes and businesses is untreated or unfiltered. The term for water not treated is call " \_\_\_\_ " water. **(Raw) (R, W)**

10. Adelaide - The Murray Darling Basin holds three of Australia's longest rivers. What is the name of the location by Adelaide where the longest river enters the sea? **(Murray Mouth)**

## FINAL ANSWER

**Murray Mouth**

# WATER AROUND AUSTRALIA

## Teacher Debrief Q&A Ideas

### 1. What are some of the methods used around Australia to acquire fresh water?

Pump stations in rivers and creeks, creating borefields to gain access to aquifers, creating dams or weirs to hold more water, desalination plants to treat seawater and collecting rain using rain water tanks.

### 2. Do any of the locations in this activity have similarities with the Central Coast and our water resources?

The Central Coast built treatment plants and pumping stations like what Melbourne did in 1981. Darwin's main source of water is a dam and the Central Coast's largest fresh water storage is at Mangrove Dam. Sydney needed to flood the Burratorang Valley to create the Warragamba Dam and Mangrove Dam also needed to flood the valley for creating storage for the Central Coast. Woy Woy has borefields to acquire water from the aquifer during drought times and Broome also uses borefields to access their main source of water.

### 3. The Murray Darling Basin extends from Southern Queensland just north of Brisbane and extends all the way to Adelaide in South Australia. What is the economic significance of the basin to Australia?

The Murray Darling Basin contains over 40% of all the farms in Australia. It is the most important agricultural region in all of Australia as it's known as the "Food basket". Not having water in the Murray Darling Basin can cause high food prices, failing businesses, displacement of families and communities.

### 4. Alice Springs only has one main source of water while many other parts of Australia have more than one. Why is that?

Alice Springs is in the centre of Australia and is very hot during the summer. The area doesn't receive regular rain, nor does it have creeks or rivers that are consistently flowing. The Amadeus Basin is an aquifer in Alice Springs and holds an estimated 300-400 years' worth of water in the aquifer which is why they use borefields to acquire water. What is unknown is the quality of the water as they dig deeper into the aquifer.

### 5. What location's water supply is primarily focused on rain water collection? Would having a single system be advantageous in the Central Coast to meet the needs of the community?

Darwin's water supply is primarily focused on rain water collection. This system would not be advantageous for the Central Coast as a single system to provide water due to droughts. Darwin typically gets much more rain compared to the Central Coast which is why having a variety system is key in water security in the Central Coast. Darwin runs the risk of catastrophic water shortage if a drought would happen to occur in that region or if pollution affects the water.