


# Worksheet 1

## Mapping the region

The Wimmera catchment boundary is located in western Victoria and covers an area of approximately 30,000km<sup>2</sup> or 10% of Victoria. The Wimmera extends from the Grampians National Park in the south to Lake Albacutya, near Rainbow in the north, and from the South Australian border in the west to past Stawell in the east. It includes the Wimmera River catchment and the eastern part of the Millicent Coast Basin. The Wimmera River is the largest Victorian river that does not flow to the sea, but instead flows into a series of terminal lakes. The largest of these terminal lakes are Lake Hindmarsh and Lake Albacutya.

## Upper Catchment

	<b>Land area</b>	368,851 hectares
	<b>Population</b>	9,000 (approximate) <sup>(66)</sup>
	<b>Population trend</b>	A slight decrease around Stawell and Halls Gap and a slight increase for the Ararat region including Pomonal and Moyston <sup>(77)</sup>
	<b>Main towns</b>	Stawell, Halls Gap, Great Western, Moyston, Pomonal, Landsborough, Glenorchy, Navarre
	<b>Climate</b>	Semi-arid. Summer temperatures can reach over 40 degrees and regular frosts are experienced in winter. Average annual rainfall is around 532 mm
	<b>Land use</b>	40% of the area is agricultural, comprising non-native pasture (21%) and cropping (19%) <sup>(72)</sup>
	<b>Main industries</b>	Agriculture, especially wool and lamb production, cropping and viticulture Gold mining, manufacturing and tourism
	<b>Main natural features</b>	58% of the area is covered by native vegetation and waterways <sup>(73)</sup> <ul style="list-style-type: none"> <li>- Gariwerd (Grampians National Park)</li> <li>- Barringgi Gadyin (Wimmera River) and tributaries including Mount William Creek and Mount Cole Creek</li> <li>- Pyrenees range</li> <li>- Lake Lonsdale, Lake Fyans and Lake Bellfield</li> </ul>

**Figure 1.** Infographic on the Wimmera region. Source: [http://wcma.vic.gov.au/docs/default-source/corporatedocs/rcs/wimmera-regional-catchment-strategy-\(rcs\)-2021-27.pdf?sfvrsn=7dcb6e68\\_5](http://wcma.vic.gov.au/docs/default-source/corporatedocs/rcs/wimmera-regional-catchment-strategy-(rcs)-2021-27.pdf?sfvrsn=7dcb6e68_5)

Please note: This is one of five available. Other information can be found in the source.

### Task 1

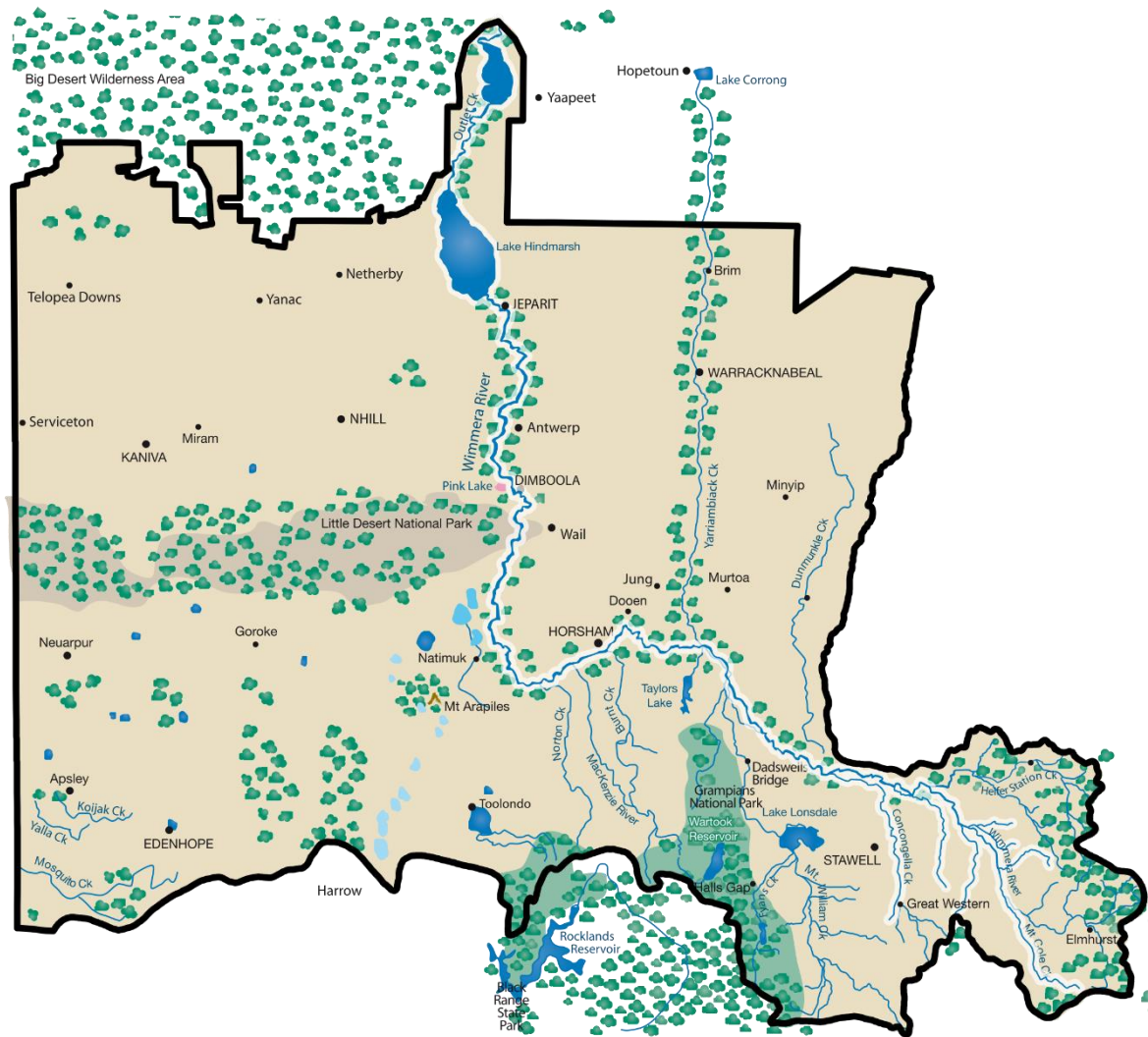
1. Open Google Earth: <https://earth.google.com/web/>
2. Using the search bar, locate the 'Wimmera River'.
3. By dragging the screen, follow the river in one direction and list the natural and human characteristics of the river region.

Natural Characteristics	Human Characteristics

### Task 2

Apply BOLTSS to the map provided of the Wimmera Catchment area.

1. Rule a border around the map.
2. Rule an arrow which indicates the direction of north on the map.
3. Mark the location of the following characteristics on your map and create a legend:
  - Mt Arapiles
  - Wimmera River
  - Yarriambiack and Dunmunkle Creeks
  - Lake Hindmarsh
  - Grampians ranges
4. Write a suitable descriptive title for your map.
5. Using the scale, estimate the length of the Wimmera River.
6. Using a highlighter, highlight where the map was sourced from.



This map contains data that is owned and under copyright of Wimmera Catchment Management Authority (WCMA), Department of Environment, Land, Water & Planning and the State of Victoria. The WCMA and the State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omission in the information.

Map created: 29/03/2022

### Task 3

Using the tracing paper provided by your teacher, use the map from Task 2 as a base map.

1. Lay the tracing paper over the map in Task 2.
2. Trace the border from the base map onto your tracing paper (so you know where they line up).
3. Give your tracing paper layer the title 'Towns in the region'.
4. Refer to: <https://wcma.vic.gov.au/about-us/Region>
5. Mark all the towns present in the catchment area on your tracing paper layer.
6. Ensure you create a suitable legend for this layer of the map.

Describe the pattern of towns and natural waterways in the Wimmera catchment region.

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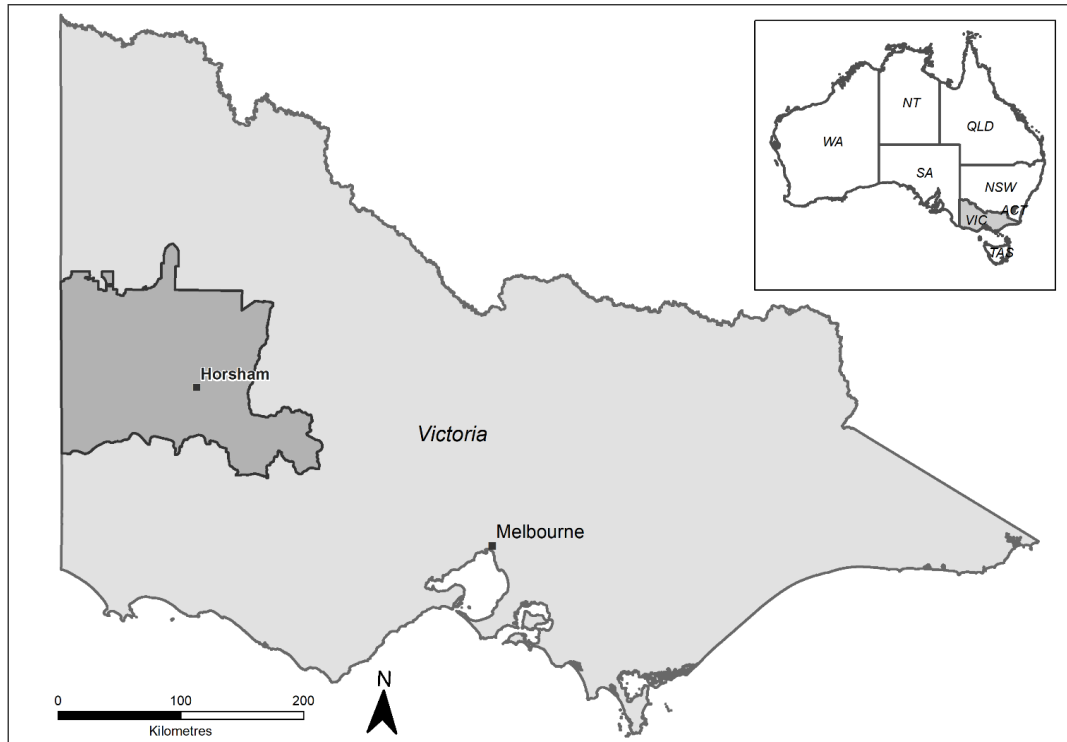
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# Worksheet 2

## The history of the Wimmera

### Task 1

Access: <https://aiatsis.gov.au/explore/map-indigenous-australia> and by zooming and moving the map with your mouse, locate the Wimmera Catchment region.



**Figure 1.** Location of the Wimmera Catchment region.

Using the First Nations Language Group Map:

1. Identify the language groups in this area
2. Complete the following table:

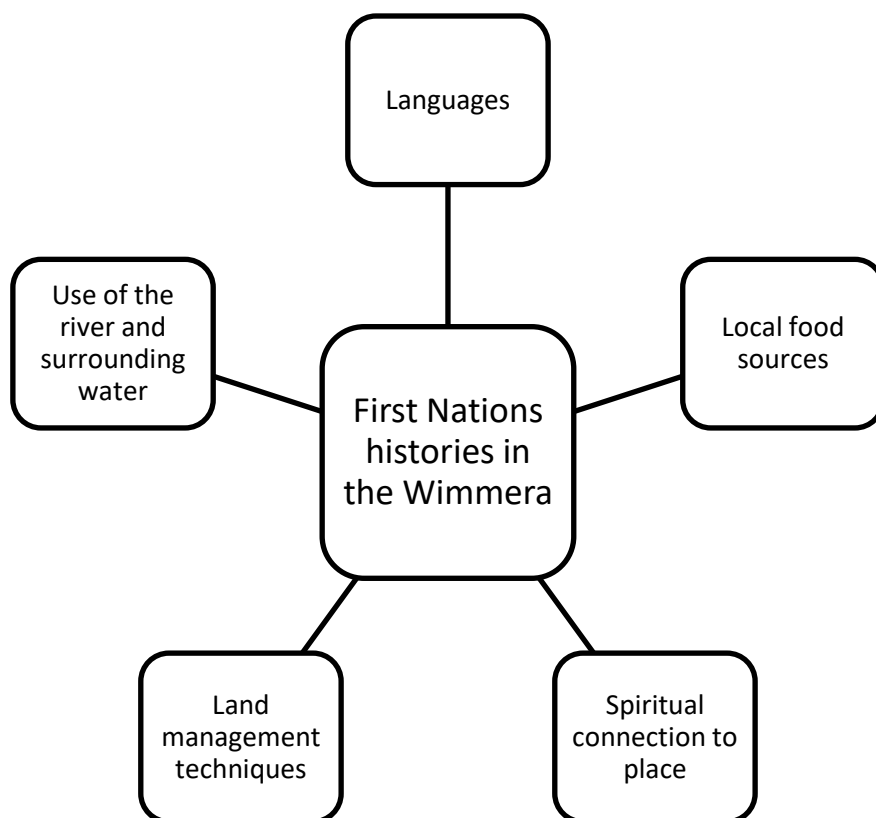
Language Group	Area covered	Other information

## Task 2

Using your map from Worksheet 1, attach another tracing paper overlay. Locate the First Nations Language Groups highlighted above (remember BOLTSS).

## Task 3

Complete the following mind map exploring First Nations histories in the region.



### Websites to start your research:

Hindmarsh Shire Council: <https://visithindmarsh.com.au/cultural-heritage>

Barengi Gadjin Land Council: <https://www.bglc.com.au/>

Barengi Gadjin Aboriginal water project:

<https://www.water.vic.gov.au/aboriginal-values/the-aboriginal-water-program/barengi-gadjin-aboriginal-water-project-wimmera-river>

ANTaR Victoria: <https://antarvictoria.org.au/local-nations>

Parks Victoria: <https://www.parks.vic.gov.au/news/2020/06/11/00/11/cultural-sites-protected-along-the-wimmera-river>

Traditional owner language map: <https://aiatsis.gov.au/explore/map-indigenous-australia>

# Worksheet 3

## Environmental Flows

Environmental water releases or environmental flows are designed to supply sufficient water back to river systems and wetlands based on scientific recommendations. Environmental water releases aim to improve conditions for aquatic, wetland, and riparian ecosystems. In the Wimmera's regulated rivers and creeks environmental flows assist in improving water quality and habitat for aquatic species as well as increasing the abundance and diversity of riparian and aquatic vegetation. Sometimes flows are deliberately stopped for a number of days in summer/autumn, which is called a 'cease to flow,' reflecting the typical conditions during those drier months.

### Task 1

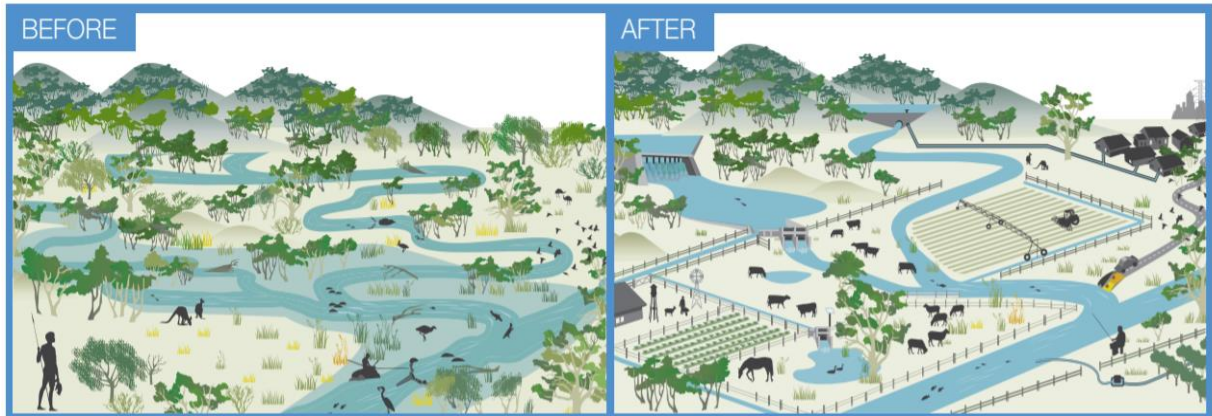
Access: <https://www.vewh.vic.gov.au/water-for-the-environment/what-is-water-for-the-environment>

Create a flow diagram or cartoon which explains what an environmental flow is and why it is important to people and place.



## Task 2

Access: <https://www.vewh.vic.gov.au/water-for-the-environment/why-do-we-need-environmental-water>



**Figure 1.** Impacts of human activities on water systems and flow.

Source:

[https://www.vewh.vic.gov.au/data/assets/pdf\\_file/0020/360245/VEWH0006 SWP FS 2 Important 2015 v10.pdf](https://www.vewh.vic.gov.au/data/assets/pdf_file/0020/360245/VEWH0006_SWP_FS_2_Important_2015_v10.pdf)

Explain what Figure 1 is showing us.

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List 2 reasons that environmental flows are important for natural systems.

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What are the effects of deepening and widening existing river channels?

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List 2 reasons why environmental flows are necessary for all users.

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### Task 3

Watch: [Mallee the Mighty Mussel - YouTube](#)

1. Why are mussel numbers declining in the Wimmera River?

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2. What do mussel numbers indicate about the river's health?

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3. How might environmental flows help species such as the mussel?

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#### Task 4

Brainstorm the following question:

**Do wetlands always have to be wet?**

Access: <https://www.vewh.vic.gov.au/water-for-the-environment/environmental-benefits#:~:text=Why%20wetlands%20sometimes%20need%20to%20dry>

Answer the question above.

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#### Task 5

Watch: <https://www.youtube.com/watch?v=WFBYeIgrkP8&t=2s>


Fill in the following table exploring the different reasons that environmental flows are important in the Wimmera river.

Environmental importance	Economic importance	Social and recreational importance	<u>Cultural importance</u>

# Worksheet 4

## Significance of water

Using an image search, collect 8 images of the uses of water within the Wimmera Catchment. For each image, outline how it shows water usage and importance. Suggest what would happen if water supply was reduced.

Photo	Uses of water	Impacts of water scarcity
	Recreational fishing	Lower fish stocks  Access for boats reduced

# Worksheet 5

## Floods and droughts in the area

### Task 1


Research measures which have been put in place to control and maintain water supply during times of drought in the Wimmera region.

#### Websites to get you started:

1. Case study: Building a strong Wimmera River: <https://www.vewh.vic.gov.au/news-and-publications/stories/case-study-building-a-strong-wimmera-river>
2. ABC News: <https://www.abc.net.au/news/2008-09-12/drought-takes-heavy-toll-on-wimmera-river/508542>
3. Threats to river health: <https://environmentvictoria.org.au/our-campaigns/healthy-rivers/about-healthy-rivers-2/threats-river-health/>
4. Horsham council: <https://www.hrcc.vic.gov.au/Emergency-Management/Flood>

## Task 2

Refer to the photos and images you collected in Worksheet 4. For each image consider how a flooding event would impact that use of the river and how it could be managed.

Photo	Impacts of flooding	Flood management, ideas or strategies
	<p>Dangerous for people to access river</p> <p>Unpredictable conditions</p> <p>Fish stocks impacted by faster river flows</p>	<p>Increase signage about wearing a life jacket and fishing with at least 2 other people.</p> <p>Carrying a rope and planning an escape route.</p>

### Task 3

Research a flooding event that has occurred within the Wimmera Catchment region. For the event selected fill in the table below.

**Example of flooding events:**

2010 Flood: <https://www.abc.net.au/local/photos/2010/09/06/3003413.htm>

2011 Flood: <https://www.abc.net.au/news/rural/2011-01-25/floodwater-welcome-here/6191252>

2011 Flood: <https://www.abc.net.au/local/photos/2011/01/12/3111331.htm>

Flood history: <https://www.floodvictoria.vic.gov.au/learn-about-flooding/flood-history/1971-to-2000-floods>

2016 Floods: <https://www.manningrivertimes.com.au/story/4171399/wimmera-floods-seen-from-the-air-photos/>

<b>Flooding location</b>	
<b>Date that flood occurred</b>	
<b>Area flooded</b>	
<b>Cause of the flood (e.g. excessive rainfall, seasonal, human-induced)</b>	
<b>Recovery or management of the flooded area</b>	