06/25 – Version 1

Recycled Water

Learning Objectives

Students will:

- know what recycled water is and why it is important for a sustainable future for our region.
- know how the different types of recycled water can be used, and the benefits it has for our environment and community.

Inquiry Questions

- What is recycling?
- What is the urban water cycle?
- What is wastewater/sewage?
- Can we recycle water?
- Why do we recycle water?
- Is all wastewater recycled to the same standard?
- What can recycled water be used for?
- How can recycling wastewater benefit our community and environment?

Time	Approx 60 minutes
Curriculum Alignment	**Humanities > Geography > Levels 7 and 8** **Geographical Knowledge and Understanding > Water in the world** _____ Students learn about: - the classification of water as a renewable resource, the forms that it takes as a resource in the water cycle, and the ways in which flows of water connect and change places VC2HG8K01 - the nature of water scarcity and ways of overcoming it, with examples from Australia, and West Asia and/or North Africa VC2HG8K04

Pre-learning	Resources
Activity: Recycled water quiz - what do you know about recycled water? **Time:** 5-10 Minutes **Purpose:** Discover what students may know about recycled water already and what areas may need particular focus. Students will be able to demonstrate improvement in the future, by completing the quiz again. Students complete the Recycled water baseline quiz (**Resource A or online here**) individually, online or paper, to establish a baseline of current knowledge about recycled water in our region.	**Resource A**: Recycled water quiz Paper or online (link here)

Teaching and learning sequence	Resources

Activity: Orientation questions and discussion
 	
Time: 10 mins approx.
 	
Purpose: uncover and connect to student prior knowledge of recycling and the natural water cycle.
 	
1. **Recycling symbol –** share image of the recycling symbol. Either as a 'Think, Pair, Share' or educator-led, explore the following questions:
   1. What is this symbol?
   2. What does it make you think of?
   3. Why is it shaped the way it is?
 	
2. **What is recycling and why do we do it? –** Teacher led brainstorm/discussion. Students will likely think of things like kerb side comingled recycling, and that we recycle because it encourages the sustainable use of resources and reduces waste.
 	
3. **Do you think water can be recycled? –** Building on the knowledge of recycling uncovered in the first question, continue to lead a class discussion that teases out what students might know of the natural water cycle, how the planet cycles water continuously.
 	
4. Briefly highlight the **features of the natural water cycle**. Highlight that the recycling symbol's cyclical nature is like that of the natural water cycle.
	Slides

Activity: Define the features of the urban water cycle **Time:** 5-10 mins approx. **Purpose:** Highlight how a town or city uses water and creates wastewater that is treated and can be captured for reuse. Use the catchment model and **Resource B** - Water cycle comparison diagram to highlight features of the urban water cycle. **Highlight the following:** - the urban water cycle is an interruption of the natural water cycle, - we create wastewater in many ways, not just from toilets, and that it is 99% water. - the job of sewage treatment is to protect the environment and human health. - recycled water is water we capture at the end of the treatment process - there are different uses and classes for recycled water, and we will learn about that next.	**Catchment model.** **Resource B:** Water cycle comparison diagram **Additional resource:** VIDEO: Virtual tour of the Bendigo water reclamation plant
Activity: Bus stop of 'curious items' **Time**: 25 mins approx. **Purpose**: encourage curiosity and connection making between stimulus items (**Resource C**) and the beneficial uses of different classes of recycled water. In this activity there are four 'stations' or stops: 1. A footy 2. A Platypus model/toy 3. Jar of barley 4. Purple-pipes and water meter	**Resources:** **Resource C:** Curious item images **Resource D:** Curious item response sheet

Each of the items is connected to a way we use recycled water in our region. In small groups, students should consider: **What might the connection be between the item and a possible use for recycled water?** Rotate the items/pictures between each group (or groups between items/pictures, whatever suits the space). Spend 3-4 minutes at each station. Students can simply discuss answers or, optionally, record their ideas on the response sheet for each group (**Resource D**). Bring the groups together and prompt responses to each item, with the slides as support. Use the corresponding slides to reveal the connection between the item and the class of recycled water that enables that beneficial reuse in our community or environment.	
Activity: Reconstruct the Recycled Water table and create a reflection note. **Time**: 10 mins approx. **Purpose**: Define the uses, means of production, and classes of recycled water in our region and take time to make a personal reflection connected to the purpose of the learning. Building on the previous activity, use the supporting slides to briefly lead the class in defining the different classes of recycled water, outline where they are produced, and what the difference is between them. Have students take a deconstructed table (**Resource E**) and reassemble it accurately. They can use inference and logic, as well as drawing on the lesson content so far to create a correctly reconstructed table. This could be done individually or in the same groups from the previous activity. Once students feel they are complete (students will finish at different times) ask them to individually record an answer to the prompt below on a 'post it' note ready for the final part of the lesson. Collect these as students finish their tables. **PROMPT: What is the most interesting thing you've learnt today about recycled water?**	**Resources:** **Resource E:** Deconstructed table* *Simply cut this table up **Post it notes or scrap paper**
Activity: Plenary recap on learning. **Time:** 5 mins Gather the class together and share 'post it' note contributions to the prompt with the class, highlighting some interesting or thoughtful contributions and using them to reinforce what students now know: • know what recycled water is and why it is important for a sustainable future for our region. know how the different types of recycled water can be used, and the benefits it has for our environment and community.	
Continuing learning and extension	**Resources**
Activity: Recomplete quiz - What do you know about recycled water? Recycled water quiz. **Time:** 5-10 Minutes **Purpose:** Students recomplete **Resource A: Recycled water quiz** to see if they can improve their score and to reinforce the main points of the lesson. You may wish to recomplete in the future again!	**Resource A**: Recycled water quiz Paper or online (link here)

Students can learn more about recycled water here: https://www.epa.vic.gov.au/for-community/environmental-information/water/alternative-water-supplies-and-their-use/recycled-water https://www.water.vic.gov.au/water-sources/diverse-water-sources/using-recycled-water-safely	