



Wonder  
Project

## Water Challenge

### Activity 3.2: Clean

#### Healthy wai, healthy hapori. Create a treatment plant for your network to turn wai paru, pollutant-free.

As wai travels through Te Hurihanga Wai (the water cycle), it can come into contact with lots of different things that might make it wai paru (dirty water) – like pollutants and natural debris.

In Aotearoa New Zealand's wai network, collected water passes through a treatment plant that removes any pollutants and debris. This helps protect its mauri before it continues its journey.

#### Treatment plant

Let's create a treatment plant for your wai network.

##### You'll need:

- 1 x clear, recycled 1.5L bottle (label removed)
- Cotton balls
- Activated charcoal (rinsed)
- Filter paper
- Baking soda
- Measuring scoops
- Scissors
- Ruler
- Sharpie or other pen
- Resources to stabilise your treatment plant (boxes or a stand)

#### Step 1

Using a ruler, measure 10cm up from the base of your bottle. Then, mark that spot with a pen.



#### Step 2

Starting from your marking, cut off the bottom of your bottle. The bottom half will become your treatment plant, and the top half will become your water reservoir. Label them so you don't forget.



#### Step 3

Pierce some large holes into the bottom of the bottle.



#### Step 4

Turn the top half of your bottle upside down. Then, place the bottom half inside. Make sure you leave the cap on!



#### Step 5

Help your treatment plant stand on its own by placing it in a stand, or stabilising it with a box.



### Create your filter

Add these layers into the treatment plant (the base of the bottle) in the following order.

To be accurate, use your measuring scoops.

**Layer 3:** 2.5 tsp activated charcoal (make sure it's rinsed before use)

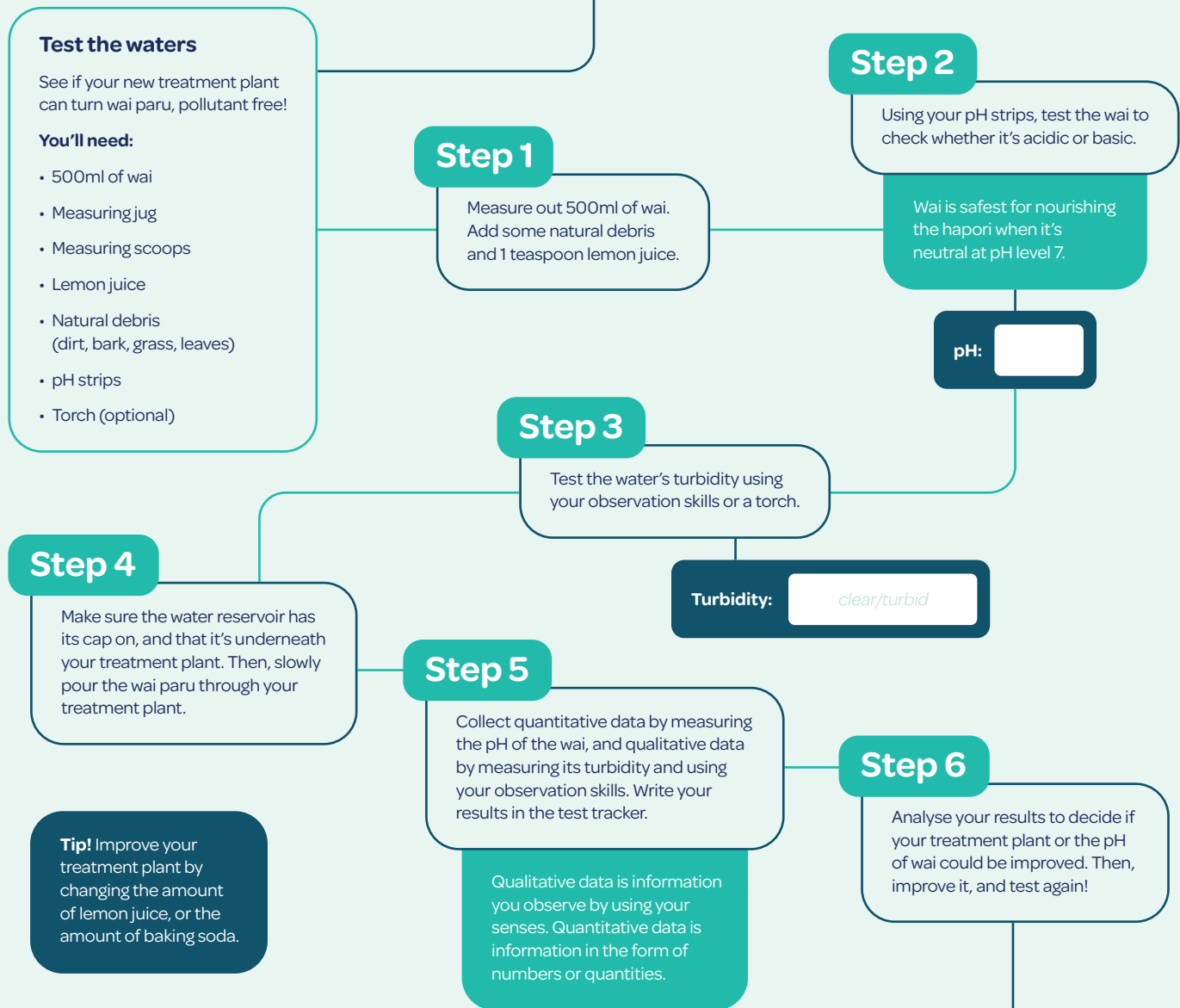
**Layer 1:** 1 sheet of filter paper

**Layer 4:** 6 cotton balls

**Layer 2:** 1 tsp baking soda



I wonder what the purpose of each layer is? Write your ideas in the box below.



## Test tracker

Test number	Quantitative data			Qualitative data		Data analysis Are your results better or worse? Why? What improvements could you make?
	pH Level (1-14)	Amount of lemon juice (tsp)	Amount of baking soda (tsp)	Turbidity (clear/turbid)	What observations can you make?	
Example	6 (acidic)	1 tsp	1/8 tsp	Turbid	There were some dirt particles in the wai.	pH is slightly less acidic. The wai is less turbid. Add more baking soda.
Test 1						
Test 2						
Test 3						
Test 4						

Analysis

What did you learn from your tests?  
What ratio of lemon juice to baking soda  
resulted in a neutral pH?

What improvements worked well?  
What didn't work well?

What does your final improved  
treatment plant look like?