**ACTIVITY: Mapping water at my school**

**Activity idea**

In this activity, students consider how their school fits into the water cycle.

By the end of this activity, students should be able to:

* make observations about how their local environment is part of the global water cycle
* make observations about the role of elevation in where rainwater runs off and pools
* make observations about surface permeability and infiltration
* identify the source of the school’s freshwater supply
* discuss how the school deals with stormwater and wastewater
* choose a starting point and track the movement of an imaginary water drop in the school environment
* use online mapping tools to investigate water treatment intakes and wastewater treatment outputs (optional).

# For teachers

## Introduction/background

We often look at the [water cycle](https://www.sciencelearn.org.nz/image_maps/36-dynamic-and-complex-the-global-water-cycle) from a global perspective – forgetting that we are actually part of the cycle! How we fit into this varies around the country. Some schools use water tanks for freshwater, while others obtain water via pipes from the local water treatment plant. It’s the same with wastewater. Some feed into a municipal wastewater treatment system while others use septic systems. Stormwater may run into drains and be piped to a local stream, or it may run into a nearby drainage area.

One thing all schools will have in common is areas in which rainwater puddles – whether it is a compacted natural surface or a concrete path or court.

This activity encourages students to actively observe what happens to precipitation in their local school catchment – the outdoor sports fields, courts, paths, playgrounds and roofs – and to identify the source of indoor water use and its disposal.

If it has been a while since it has rained at your school, use a hose or watering can in a few locations to observe where the water goes when it rains.

## What you need

* Online map of the school
* Device that can take photos
* Caretaker or teacher with local knowledge
* Large sheet of paper to create a school map
* Copies of the student handout [Track the water](#_heading=h.3znysh7)

## What to do

1. Use the satellite view of an online map to view the school buildings and grounds. Discuss where students think the water goes when it rains.
2. Go outdoors, make observations and take photos of where the rain goes and where it puddles – low areas on playing fields where the grass is greener (or muddier), hard surfaces, stormwater drains, downpipes.
3. Interview the caretaker or someone with local knowledge about how the school gets its freshwater and where wastewater and stormwater go.
4. Make copies of the online school map or create your own map of the school. Label the movements of water around the school – indoors and outside.
5. Use the [student handout](#_heading=h.3znysh7) to create a water cycle with your school as the centre. Add arrows to show the direction the water goes as it moves through the water cycle.

## Questions to deepen student understanding

* What happens to water when rain falls on the school roof or the field or the courts?
* Where does rainwater come from?
* Where does rainwater go?
* Are there places where puddles form? Why do you think this happens?
* Does the surface make a difference to whether the rain sinks into the ground or forms a puddle? What are your observations?
* Does the elevation of the area make a difference to where puddles form? What are your observations?
* What happens to the water in the puddles?
* What happens to rainwater that goes into the storm drains?
* Does what happens with rainwater at our school happen at other schools in New Zealand? In the rest of the world?
* Where does our drinking water (and the water in our taps and for our toilets) come from?
* How does it get into our school? Is this the same as your home?
* Where does the wastewater go? Is this the same as your home?
* Can you find the water treatment plant and wastewater treatment plant on a map of the local town or city?
* Do you know where the septic tank is at your school or at your home?
* How does the water at our school fit into the water cycle?

## Extension ideas

Use the downloadable Rivers and Us PDFs for discussion ideas and/or content vocabulary:

* [The Water Cycle](https://static.sciencelearn.org.nz/documents/files/000/000/824/original/The_water_cycle.pdf?1582928477)
* [The Water Cycle (unlabelled)](https://static.sciencelearn.org.nz/documents/files/000/000/822/original/The_Water_Cycle_%28unlabelled%29.pdf?1582928323)
* [The Water Cycle in Use](https://static.sciencelearn.org.nz/documents/files/000/000/823/original/The_Water_Cycle_in_Use.pdf?1582928377)
* [The Water Treatment Process](https://static.sciencelearn.org.nz/documents/files/000/000/825/original/The_water_treatment_process.pdf?1582928522)
* [The Waste Water Treatment Process](https://static.sciencelearn.org.nz/documents/files/000/000/826/original/Wastewater_treatment_process.pdf?1582928595)
* [Water Use Amounts](https://static.sciencelearn.org.nz/documents/files/000/000/827/original/Water_use_amounts.pdf?1582928645)
* [The Stormwater Problem](https://static.sciencelearn.org.nz/documents/files/000/000/821/original/The_Stormwater_Problem.pdf?1582928276)
* [What Happens to the Water Used to Wash a Car?](https://static.sciencelearn.org.nz/documents/files/000/000/829/original/What_happens_to_the_water_used_to_wash_a_car.pdf?1582928736)

# For students

***Track the water***

Use the following words to create a water cycle that includes the water at your school. Remember to use arrows to show which direction the water moves.

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| --- | --- |
| tap | freshwater pipes |
| septic tank | wastewater pipes |
| bore | water treatment plant |
| wastewater treatment plant | groundwater  infiltration |
| rainwater tank | rain |
| groundwater flow | stream/river |
| ocean | evaporation |
| condensation | surface run-off |