

Drains and Pipes Teacher Notes



The Drains and Pipes board game is designed to take participants through the ACT urban network. These educator notes provide key story points for each square on the game board.


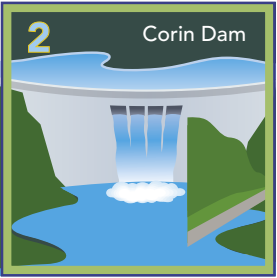
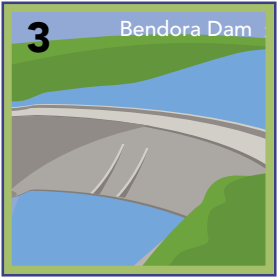
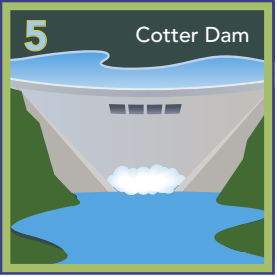
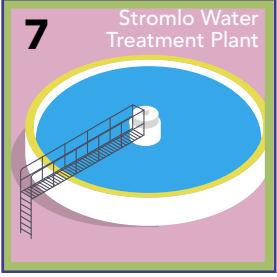
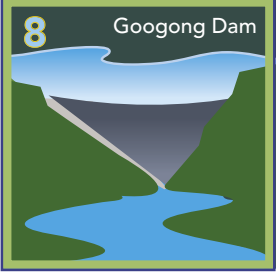
These points will help you to narrate the board game as players land on each square. Before answering a question card, you might like to read out one of the blurbs listed below to outline this part of the urban water story.



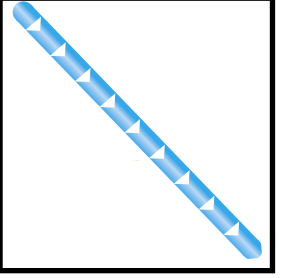
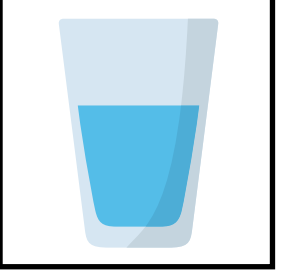


Before you play, brainstorm the following questions with your class:


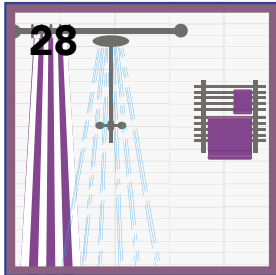



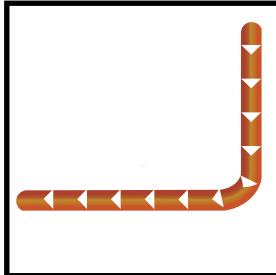
- Where does our drinking water come from?
- What are the names of our water supply dams?
- What are the different ways that we use water every day?
- What rooms in the home do we find water on tap?
- How do you use water at your home?
- Where does the water go to once we wash our hands, pull the bath plug, have a shower or flush the toilet?
- What sort of pipes are there that bring and take away water?

Pipes and Drains ACT urban water network story

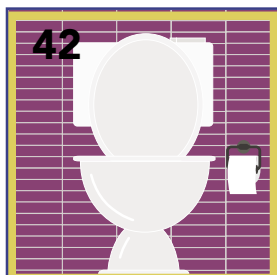
<p>The Water Cycle</p> <p>Click here to see full water cycle & activities</p> 	<p>Water flows through an ongoing cycle, called the hydrological (water) cycle. This is the continuous movement of water between the land, ocean and atmosphere. Water is always cycling, through and above the earth. As it flows through the cycle, water changes its state. It begins as a liquid before changing into gas (steam). This gas then forms a solid (ice) before finally turning back into a liquid. The drinking water from our taps is part of this ongoing water cycle.</p>
<p>Our River Catchments</p> <p>Click here to see full water and sewer network</p> 	<p>The Australian Capital Territory's drinking water supply comes from three sources. The first is the Cotter River which lies to the east of Canberra. Our second source is the Queanbeyan River to the southwest. Lastly, we have the Murrumbidgee River which flows north from the Snowy Mountains. These three rivers make up our water supply catchments.</p> <p>Catchment protection is the first step in safeguarding our water supply. Careful catchment management keeps our water clean and pure. Everybody can help preserve our fabulous drinking water.</p>

<p>Precipitation</p> 	<p>When water in the ocean heats up it evaporates. This causes water vapor to rise into the atmosphere. Clouds will then form as condensation occurs. When clouds build (and get heavy), water falls as precipitation (rain, sleet, hail or snow). The mountains are the highest points of the landscape.</p> <p>When water falls it soaks into the ground. The water then slides down slopes and gullies as surface runoff. This forms the waterways and rivers of the ACT.</p>
<p>Corin Dam</p> 	<p>The water from our rivers is held in one of four dams - Corin Dam, Bendora Dam, Cotter Dam and the Googong Dam. Water that flows into these dams becomes part of the ACT's urban water cycle.</p> <p>Corin Dam, built in 1967, has a capacity of 70.8 billion litres (equivalent to 28,316 Olympic sized swimming pools).</p>
<p>Bendora Dam</p> 	<p>This is the smallest Dam along the Cotter River and is located between the Corin and Cotter Dams. This curved structured holds 11.4 billion litres when full (equivalent to 4,560 Olympic sized swimming pools). We use gravity to send water to Mount Stromlo, from Bendora, through a 20 km pipe.</p>
<p>Cotter Dam</p> 	<p>There have been three dams at this location. The original Cotter Dam was only 18 metres tall. Built in 1918, it provided the new National Capital with a water supply. In 1956 the Dam was raised to 26 metres to supply 4 billion litres to Mount Stromlo WTP.</p> <p>In 2013 the Enlarged Cotter Dam was built in front of the old one. This new dam is 83 metres tall. The Cotter Dam today holds 78 billion litres of water (equivalent to 30,480 Olympic sized swimming pools), supplying 20 times more water to the network.</p>
<p>Stromlo Water Treatment Plant</p> 	<p>At Mount Stromlo Water Treatment Plant, the raw water goes through a process of filtration, disinfection by chlorination and UV treatment. This provides high quality drinking water to our suburban water reservoirs.</p>
<p>Googong Dam</p> 	<p>Googong is the largest of the four dams with a capacity of 119.4 billion litres (equivalent to 47,760 Olympic sized swimming pools). This dam receives water from Queanbeayn and Burra Creek catchments. Googong Dam's primary role is for water storage and supply. Googong is the only water supply Dam you can visit with permitted recreation activities. You're unable to swim, walk pets or use electric motored/paddled vessels.</p>

<p>Googong Dam</p>		<p>Here water begins its journey through the treatment process. It travels via a network of pipes and pumping stations to the Water Treatment Plants at Mount Stromlo and Googong.</p>
<p>Googong Dam</p>		<p>The ACT has over 48 reservoirs. From these reservoirs, located on hills, gravity transports the water around our suburbs. This water flows underground through over 3600 kilometres of pipes to reach our homes for drinking, washing and cleaning.</p>
<p>Water distribution pipes</p>		<p>From our reservoirs, located on the high points of hills, gravity transports water around our suburbs. This water flows underground through over 3600 kilometres of pipes to reach our homes for drinking, washing and cleaning.</p>
<p>Safe drinking water</p>		<p>Everyday Icon water provides water to the ACT and Queanbeyan. Water is essential for health and wellbeing.</p>
<p>Drink tap</p>		<p>Drinking tap water is much better for the environment because it comes straight from our catchment to your tap. No packaging required!</p> <p>Did you know bottled water can cost more than \$3.00 a litre, while water from the tap is usually less than \$0.03. Single-use disposable plastic (PET) bottles often end up in landfills. Once there they can scatter across the country and land in our waterways or oceans.</p> <p>Remember to take your refillable water bottle wherever you go.</p>
<p>Water for well-being</p>		<p>Water is essential for life. Our bodies are made up of 85% water. We need to drink water daily to help keep our bodies healthy. Water increases your energy levels, strengthens your muscles and gives your brain the oxygen it needs to improve concentration.</p> <p>Not drinking enough water can really impact our vital organs. We need to drink 6-8 glasses of water a day to help keep our brain and body in top condition.</p>

<p>Taps</p> 	<p>In what rooms throughout your home, or school, do we find water taps?</p> <ul style="list-style-type: none"> • Bathroom (shower and/or bath). • Kitchen (sink and dishwasher). • Laundry (sink and washing machine). • Toilet.
<p>Water saving measures</p> 	<p>Permanent Water Conservation Measures (PWCM) have been in place for the ACT, and Queanbeyan, since 2010. These commonsense rules give us the flexibility to use water when we need to, but make sure water is never wasted.</p> <p>Examples include: timing showers with a four-minute song, using a bucket to collect water while the shower heats up, ensuring the tap is off when brushing your teeth and not turning on your dishwasher until you have a full load.</p> <p>More examples can be found on our website: iconwater.com.au/savewater</p>
<p>Hydration Girl</p> 	<p>Feel great, Hydrate! Hydration Girl is Icon Water's superhero. Her job is to make sure everyone drinks enough water each day. She also teaches us about the environmental benefits of tap water. Clean safe drinking water is essential for our survival.</p>
<p>Drain Pipes</p> 	<p>What can and cannot go down the drain?</p> <p>Everything you put down the drain, sink or toilet goes through the sewerage system. It is really important to remember what can and cannot go down the drain. This helps us avoid blockages, or bursts, and keeps the rivers safe.</p> <p>An easy way to remember what can go into the sewer network is the 3P's – pee, poo and (toilet) paper.</p>
<p>Free the Poo</p> 	<p>Take care of your sewage drains and pipes.</p> <p>Free the Poo reminds us when the wrong stuff is put down a toilet it can have gross consequences. Every time you flush wet wipes and other non-flushable items down your sewer drain and loo, one of our blockage busters (Icon Water's fabulous field staff) needs to get their hands dirty.</p> <p>We all can help keep Canberra's pipes healthy. Remember Bin that wet wipe! Only flush the 3 P's- Pee Poo and Toilet paper!</p>
<p>Drains</p> 	<p>There are drains inside your house that take away water after it leaves the tap, sink, bath or toilet. These sewer drains join the 3,300 km of sewerage pipes that run underneath Canberra. They lead to the sewage treatment plant called Lower Molonglo Water Quality Control Centre.</p>

Free the Poo



The water from our kitchens, bathrooms, laundry and toilet will drain through sewer pipes to the sewerage network. The sewerage network takes the wastewater to the Lower Molonglo Water Quality Control Centre (LMWQCC) to be treated, processed and cleaned.

Lower Molonglo WQCC



At LMWQCC sewage is treated using physical, chemical and biological processes. These remove the sediments, nutrients and pollutants. The water is cleaned to such a high quality that it can be returned to the Murrumbidgee River. Once here it takes a journey down the Murray River system until it reaches the sea. After this the next part of the hydrological cycle continues.