



The hydrological cycle

Water flows through an ongoing cycle, called the hydrological (water) cycle. This is the continuous movement of water between the land, oceans and the atmosphere. Water is always cycling, through and above the earth. As it flows through the cycle, water changes its state from liquid to steam (gas) or ice (solid) and back to (liquid).

The urban water cycle

The drinking water from our taps is part of this ongoing hydrological cycle. When water in the oceans heat up, **evaporation** causes water vapor to rise into the atmosphere. Clouds will 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. When water falls and soaks into the ground, it will slide down slopes and gullies as **surface runoff**, forming small streams, creeks and the catchment rivers.

In the Australian Capital Territory (ACT), the Cotter River lies east of Canberra, and the Queanbeyan River to the south west in NSW, and the Murrumbidgee River flowing north from the Snowy Mountains make up the three water supply **catchments**.

The water in the rivers are held in one of our four water supply dams - **Corin Dam, Bendora Dam, Cotter Dam** (Cotter River) and the **Googong Dam** (Queanbeyan River). Water that flows into these dams becomes part of the ACT urban water cycle.

From the dams, water begins its journey through the treatment process via a network of **pipes** and **pumping stations** to the Water Treatment Plants at Mount Stromlo and Googong.

At **Mount Stromlo Water Treatment Plant**, the raw water goes through a process of filtration, disinfection by chlorination and UV treatment, to provide high quality drinking water ready to travel to our suburban **water reservoirs**. From the reservoirs located on the high points of the hills, gravity helps to transport the water around the suburbs, flowing underground through over **3600 kilometres of network pipes** to our homes for drinking, washing and cleaning.

The water used from our kitchens, bathrooms, laundry and toilet will drain through the **sewer pipes** to the **sewerage network system**. The sewerage network takes the wastewater that is flushed down the drains from all of Canberra's residents and businesses to the **Lower Molonglo Water Quality Control Centre (LMWQCC)** in Belconnen to be treated, processed and cleaned.

At LMWQCC sewage is treated using physical, chemical and biological processes to remove the sediments, nutrients and pollutants. The water is cleaned to such high quality that it can be returned to the **Murrumbidgee River** before it takes the journey via the Murray River system to the sea near Adelaide, where the next part of the hydrological cycle continues.

Understanding the Hydrological cycle – terms

	<p>Evaporation</p> <p>Water is heated by the sun and turned into gas (vapour)</p>
	<p>Transpiration</p> <p>Water from a tree or plant is heated and turns to water vapour released into the atmosphere</p>
	<p>Precipitation</p> <p>Water falls as rain, sleet, hail or snow.</p>
	<p>Condensation</p> <p>Water vapour in the air gets cold and changes back into liquid forming clouds</p>
	<p>Infiltration</p> <p>Water soaks into the ground</p> <p>Percolation</p> <p>water slowly moves through cracks in the soil and bedrock</p>
	<p>Surface Run-off (Collection)</p> <p>Water runs over the surface of the ground and is collected in lakes, rivers and waterways.</p>
	<p>Groundwater</p> <p>Water found in the cracks and spaces in soil, sand and rock. It is stored in and moves slowly through aquifers</p>