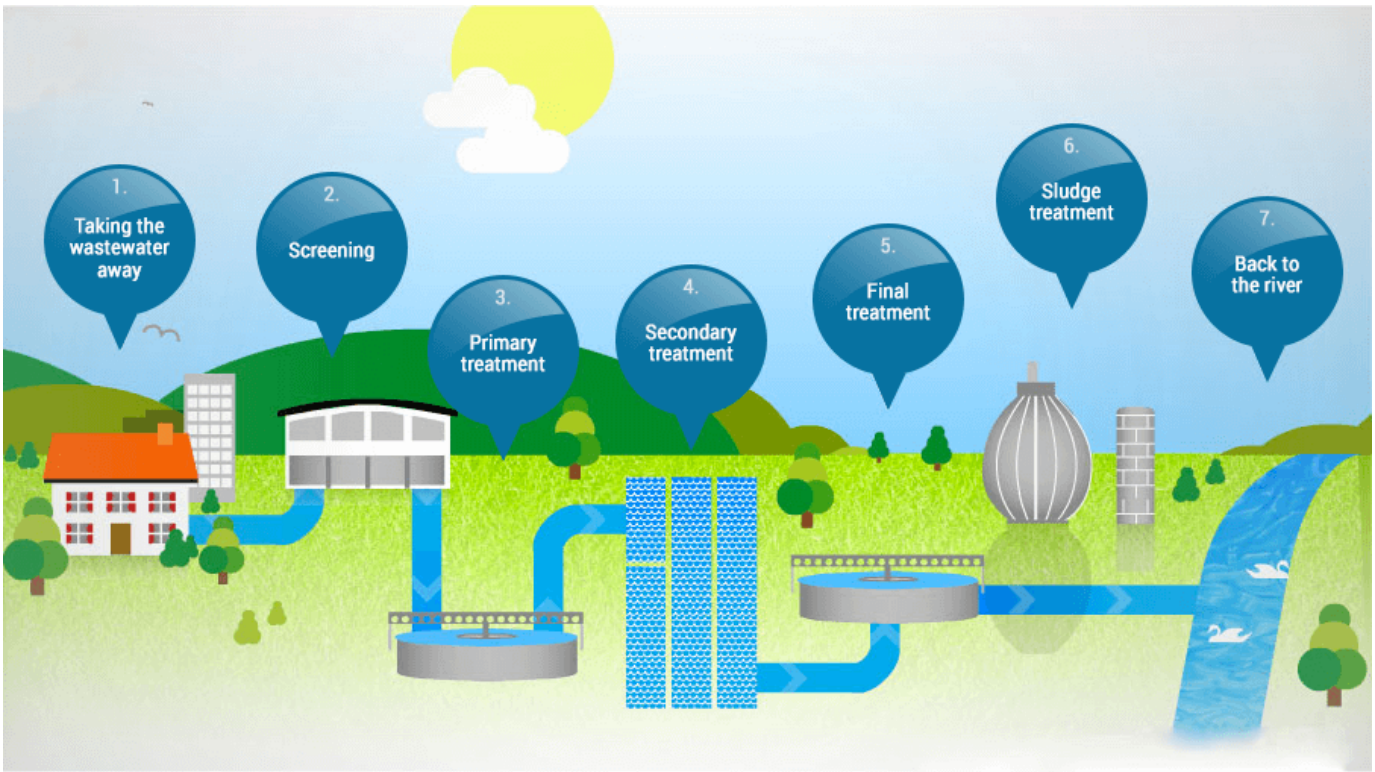
WATER UK

We bring people together to create better policies for the future of water

Wastewater

It's easy to forget about water after you flush or drain your sink, but wastewater companies put a lot of effort into treating our sewage and ensuring it is returned to the environment responsibly.

Wastewater companies in the UK have an important duty to take away and treat our sewage. At the sewage works, wastewater passes through a set of treatment stages before being safely returned into the environment. Some companies are able to collect energy or other useful materials from the wastewater treatment process. The steps that wastewater companies take when treating our sewage are outlined below.



1. Taking sewage away

When you flush the toilet or empty the sink, the wastewater goes down the drain and into a pipe which takes it to a larger sewer pipe under the road. The sewer then joins a network of other sewers and takes the wastewater to a sewage treatment works.

2. What is the screening process?

The first stage of cleaning the wastewater is to remove objects that should never have been put down the drain in the first place - such as nappies, face wipes, sanitary items and cotton buds - but often can be things like bricks, bottles and rags!

The wastewater often contains a lot of grit that gets washed into the sewer, so companies have special equipment to remove this as well.

3. What is the primary treatment stage?

The wastewater still contains organic solid matter, namely human waste. The next stage is to separate this from the water, and to do this, companies put the wastewater into large settlement tanks, which causes the solids to sink to the bottom of the tank. This is called settled solids or sludge.

In a circular tank, large arms or scrapers, slowly move around the tank and push the sludge towards the centre where it is then pumped away for further treatment.

The water passes over a wall near the top of the tank and is taken to the next stage of the treatment process.

4. What happens at the secondary treatment stage?

Although the visible bits of sludge have been removed, companies have to ensure that the smaller and sometimes invisible nasty bugs are also taken out.

At larger sewage treatment works, the wastewater is put into rectangular tanks called aeration lanes, where air is pumped into the wastewater. This encourages the good bacteria to break down the nasty bugs by eating them. The more they eat, the more they grow and multiply until all the nasty bugs have gone.

5. What occurs in the final treatment stage?

The treated wastewater is passed through a final settlement tank, where the good bacteria sink to the bottom. This forms more sludge - some of it is recycled back to the 'secondary treatment' stage, and the rest goes to sludge treatment. The now clean water passes over a wall near the top of the tank.

Sometimes additional treatment is needed if the river that the treated wastewater will be returned to is particularly sensitive. The treated wastewater is slowly filtered through a bed of sand, which acts as a filter and catches any remaining particles.

6. What is sludge and what treatment process is it put through?

The materials remaining from the wastewater treatment are known as sludge. The sludge collected during the process is treated and put to good use. Most of it is recycled to agricultural land for farmers to use as fertiliser, but companies also use it as a bioresource to generate energy in a variety of different ways, including the provision of heat, electricity and gas.

7. Where does the treated water go?

Once the wastewater is clean, it can be returned to local rivers and streams, or discharged to sea. In some areas, the water put back into the environment can improve water quality in rivers and streams, helping to keep them healthy.

The quality of the cleaned wastewater is strictly regulated by the Environment Agency and Natural Resources Wales, and companies thoroughly test it to make sure that it meets high quality standards.

Discover Water

If you are interested in learning more about the water cycle, or drinking water quality, take a look at **DiscoverWater**, the industry dashboard.