Once the large objects have been sieved, water flows in pipes for 18 miles to the outfall and then goes back into the river. But before it does, the water is tested to make sure it is clean enough to go back into the river. The world’s water is a finite and precious resource. It is continually being used and reused in the water cycle. Used water, like sewage, is treated and recycled for the benefit of all of us and the sustainability of our environment. To make sure we get the best out of this resource, we need to manage and protect it.

Rivers and seas have the natural ability to breakdown organic pollution, such as human, food and industrial waste. But as cities have expanded, so has the volume of waste increased, making more treatment necessary to prevent pollution.

Used water is carried from houses and businesses in underground pipes and sewers. It normally flows by gravity but in flatter areas, pumping stations are sometimes needed to help move the flow. In older parts of towns and cities, sewers also collect rainwater from roofs and roads.

Chelmsford Water Recycling Centre has been treating the city’s sewage since the Victorian era. Chelmsford Water Recycling Centre treats sewage from around 140,000 people who live in Chelmsford and nearby villages. Used water from 38,000 businesses, including factories and restaurants, is also treated here.

The average flow is 600 litres per second. During heavy rainfall the site can treat up to 860 litres per second.

The incoming used water is made up of 99% water and 1% solids. It’s important to remove the solid material as soon as possible to prevent blockages and damage to the machinery.

The screen is like a giant sieve: the objects like wipes, toilet paper, sweetcorn, etc., are removed at this stage. The screen is then pushed out into a skip by a machine called the ‘nodding donkey’, or Detroiter, to be reused to make items like cable ties and plastic moulding for the car industry.

The water passes through it and removes objects like stones, gravel and bottom litter. These objects are collected as possible to prevent blockages and damage to the machinery.

The sludge is then added to the sludge from primary settlement tanks ready to be treated.

The water from the biological filters or the activated sludge then passes into the final settlement tanks, where any remaining solids are removed as sludge. This sludge is then added to the sludge from primary settlement tanks ready to be treated.

The circular tanks are two metres deep and filled with stones. The sludge is passed through a well-mixed tank to create small bubbles. Oxygen is pumped into the tanks and spread through the bottom of the tanks to make it safe and useful.

The water is tested to make sure it is clean enough to go back into the river. The water is tested for ammonia, oxygen levels and turbidity (the amount of tiny particles).

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