

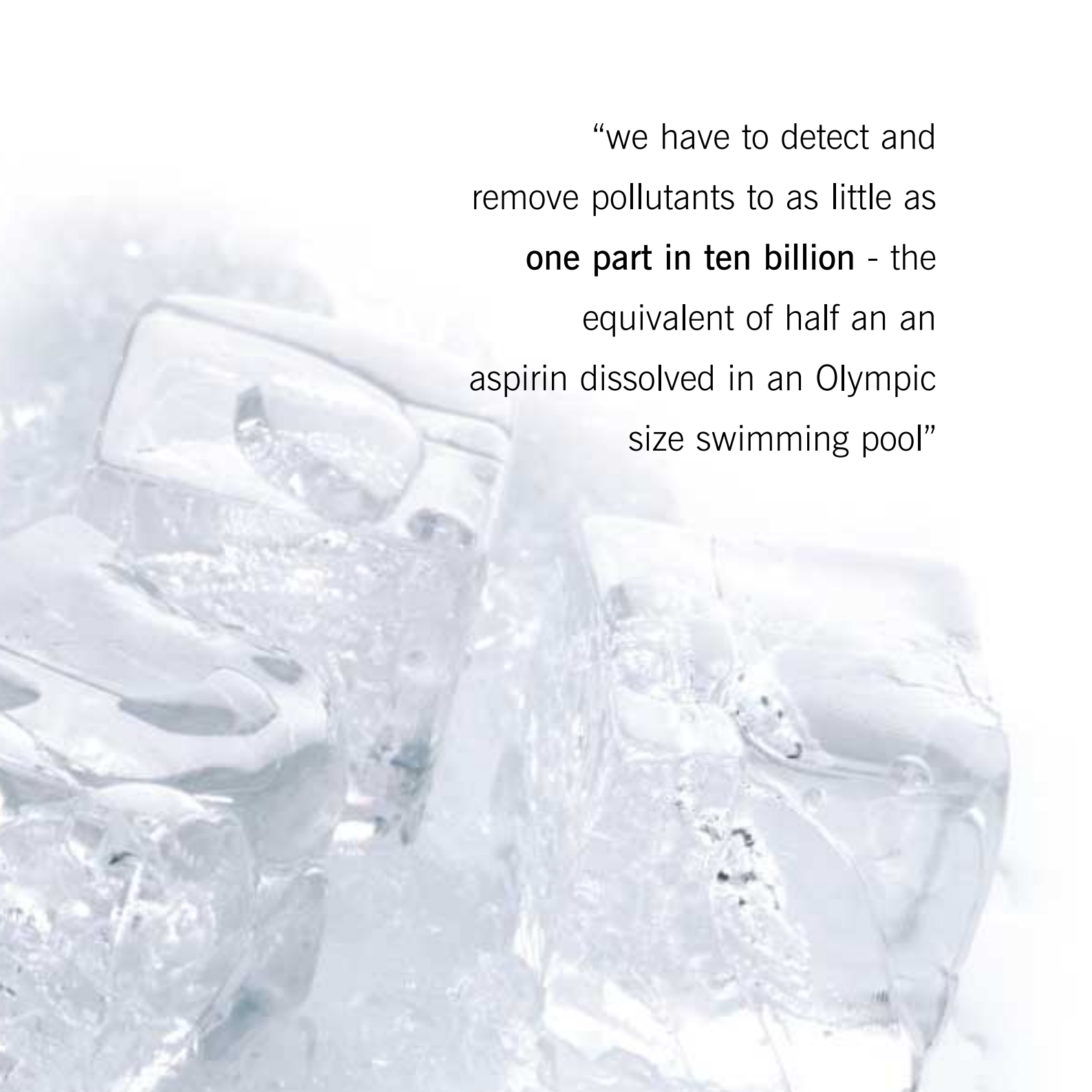


# even rainwater needs to be cleaned

Every day, over 7 million people in the Severn Trent region rely on us for clean, safe, drinking water. Just turn the tap and out it flows - nothing could be more natural. Yet collecting that water, treating it and getting it to our customers' homes is an extremely complicated and sophisticated business.

Every single drop needs to be turned into safe drinking water – whether it comes from our reservoirs, rivers or underground boreholes. Rainwater collects dirt and dust from the air as it falls. On the ground it picks up debris and bacteria – then as it filters downwards, it draws in minerals and salts. Soil, manure, pesticides and organic material also get washed into streams and rivers from farming, and then there's pollution – and not just from industry. So never pour paint, turps, oil, or other harmful materials down the drain. Take them to your local waste disposal centre and we can all do our bit for a better, safer environment.

Water from your tap will vary in hardness depending on where you live and the nature of local water sources. Hard water tends to come from chalk or limestone areas where the rock minerals dissolve in rainwater as it filters through. Soft water tends to occur where there is hard rock like granite which doesn't dissolve easily. Some people prefer the taste of hard water, but it can leave scale in kettles, steam irons and shower heads.



“we have to detect and  
remove pollutants to as little as  
**one part in ten billion** - the  
equivalent of half an an  
aspirin dissolved in an Olympic  
size swimming pool”

# meeting the highest quality standards

At Severn Trent, we make sure that the most rigorous water quality standards are met. In our region, 99.9% of tap water tested passes the requirements of the UK, EU and other world bodies. The independent Drinking Water Inspectorate monitors everything. In fact, tests show that drinking water in our region is amongst the very best in the UK. When you know that UK standards rank alongside the highest in the world, you get reassurance of just how good our drinking water is, compared with many holiday destinations.

It's a record we're proud of, so we're working hard to keep it. Our quality inspectors visit 20,000 homes at random every year to sample and test the water.

We also produce a detailed annual **Water Quality Report**. Our own results are checked independently by the Drinking Water Inspectorate, who works as the Government's watchdog. Close liaison is also maintained with officials responsible for public health, particularly the health authorities and local environmental health departments. It's worth knowing that some local health authorities also ask us to add tightly controlled levels of fluoride to supplies.

Detailed data about the quality of water in your own area is available on request. If you'd like to know more, call us on **0800 783 4444** or look on our website at **[www.stwater.co.uk](http://www.stwater.co.uk)**.





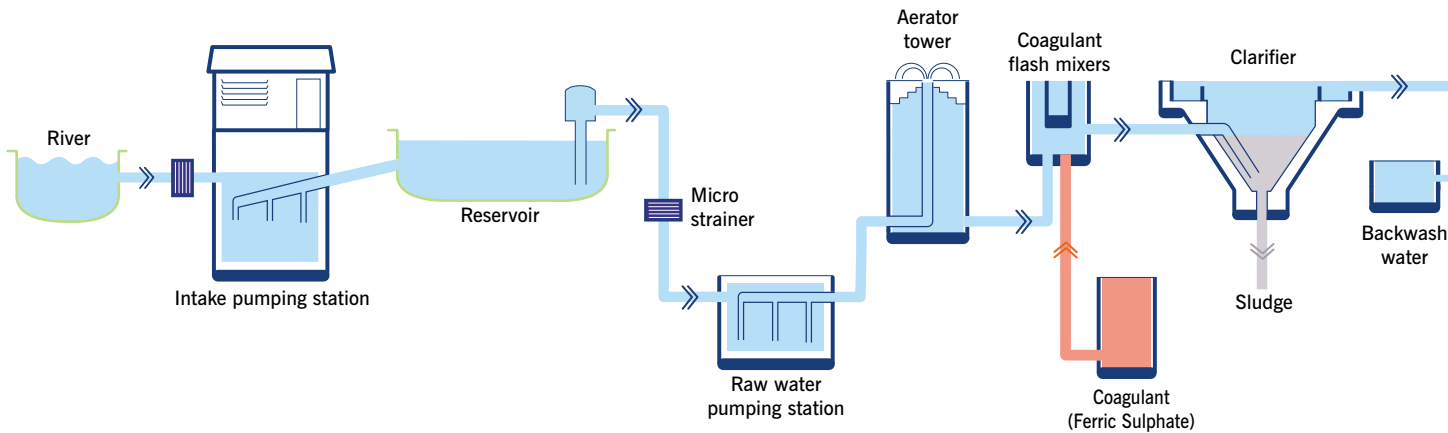
# how we get wholesome water

The amount of treatment the raw water needs, depends on its source. Water from below ground goes through a natural filtering process, as it travels slowly through soil and rock. There is also a basic cleaning system within lakes and reservoirs. Particles suspended in the water tend to settle to the bottom and many harmful bacteria gradually decay. The sun also acts as a bleaching agent, reducing colour in the water.

But despite all this, nature still needs a helping hand to meet 21st Century standards. For our highest quality underground sources, we add a small, carefully-controlled amount of chlorine to make certain that the water is disinfected. For other sources, intensive cleaning procedures are called for. These range from simple settlement and filtration to the most sophisticated clarification, ozone oxidation and carbon absorption techniques.

If you'd like to know more about the full story, simply turn the page...





## the water treatment process

**Stage 1:** Customers always need water, but rainfall is seasonal and increasingly unpredictable. So we often use storage reservoirs to make sure there's always a supply for treatment.

By passing water through mesh screens, we remove sticks, water weeds and other large foreign objects. Often, we need to aerate the water, too. The air takes some odours and gas from the water and allows some dissolved metal salts to separate to be filtered out. We add air by cascading the water down a tower, spraying it into the air or bubbling air through it.

**Stage 2:** At this second stage there are still some fine pieces of matter suspended in the water, along with colour and bacteria. We add a precisely controlled amount of a coagulant like ferric or aluminium sulphate. This reacts with the material in the water, making it all stick together to form what's known as floc. To make this flocculation happen, water and the coagulant have to be mixed together very quickly and thoroughly, in a special device called a flash mixer.

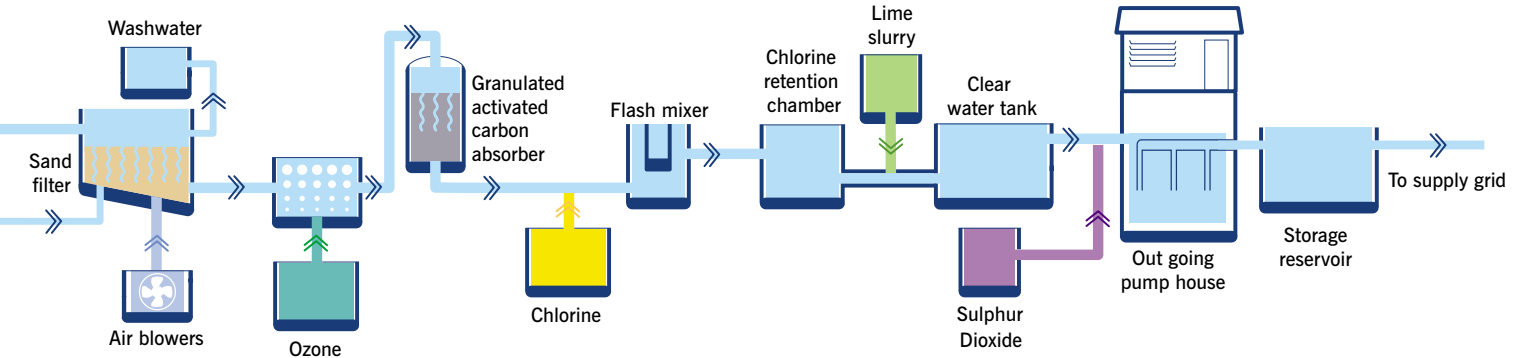
Next comes the clarification process. The floc forms itself into sludge and is separated in a specially designed tank called a clarifier. This sludge layer is called the sludge blanket.

### stage 3

### stage 4

### stage 5

### stage 6



To control the blanket, sludge is periodically drained off, concentrated and removed for safe disposal.

**Stage 3:** The water now needs filtration to get rid of any remaining particles. Water is filtered slowly through very fine sand or sand-like material, with the aid of backwash water.

**Stage 4:** For some river waters, we use ozone gas injection as a treatment stage. This can work in conjunction with granular activated carbon treatment, where the water is filtered through carbon granules to take out any undesirable traces of largely natural organic materials. The carbon in these filters is removed and regenerated by heat as necessary so it can be used again.

**Stage 5:** Now, the water's filtered and thoroughly cleaned, it's disinfected to make sure no harmful bacteria remain. A small, controlled amount of chlorine is the most effective method, and provides essential customer protection. This method is used across most of the world.

**Stage 6:** Last but not least, adjustments are made to the pH levels of the water during the treatment process, so that it's neither too acid or alkaline. This helps protect pipework, fittings and the water itself.

# how water is piped to you

From the treatment works, water is fed into a huge mains pipe network – 42,980 kilometres long – which forms a grid around the region. This lets us move water around to meet specific peaks of demand wherever they might occur. Large mains pipes feed into covered storage reservoirs and water towers, which in turn feed local areas through a network of smaller mains pipes.

Naturally, we carry out constant quality checks at the water treatment works and throughout the distribution system, including random tests at our customers' homes. We also work hard to prevent and repair leaks. Mains water is always under pressure, so if pipes are damaged by frost, or if any of the millions of joints in the system are affected by ground movement, we have to fix things fast.

That's why, besides spending tens of millions of pounds a year on finding and repairing leaks, we spend even more on improving and replacing pipes so the problems are less likely to happen in the first place.



# water treatment works

Our water treatment works operate round the clock, ensuring your health and well-being.



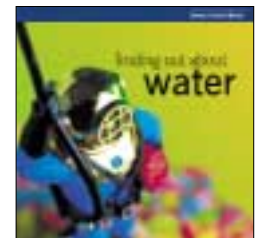
There are 3 other booklets available in the Severn Trent Water Facts Series:



**finding out about us**  
an introduction to Severn Trent Water



**taking care of your waste water**  
the sewage treatment process



**finding out about water**  
an educational guide

To obtain further copies, please call 0121 722 4000.