

Constructed Wetlands

Frequently asked questions

We're using constructed wetlands as an eco-friendly alternative to storm tanks, to help reduce storm overflows and as part of the sewage treatment process. Water is treated by a variety of physical, chemical, and biological processes, such as sedimentation, filtration, precipitation, adsorption, plant uptake and microbial decomposition.

What is a wetland?

A wetland is simply an area of land that's either covered by water or saturated with water. Wetlands go by many names, such as swamps, peatlands, sloughs, marshes, muskegs, bogs, fens, potholes, and mires. Most scientists consider swamps, marshes, and bogs to be the three major kinds of wetlands.

Wetlands can be naturally occurring, however they can also be constructed, and that's [what we're doing](#). Integrated constructed wetlands (ICWs) can be designed in several ways, and when designed correctly they contribute to the surrounding amenity and biodiversity value of the site and wider landscape. Wetlands can also be used to solve a variety of ecological issues, including water pollution and excess surface water that can lead to flooding and [storm overflows](#).

How can wetlands help biodiversity?

[Biodiversity](#) is all the different kinds of life you'll find in one area - the variety of animals, insects, plants, fungi, and even microorganisms like bacteria that make up our natural world. Wetlands provide another kind of habitat within the area they're constructed, attracting different types of animals to the area, increasing biodiversity and stability of the ecosystem.

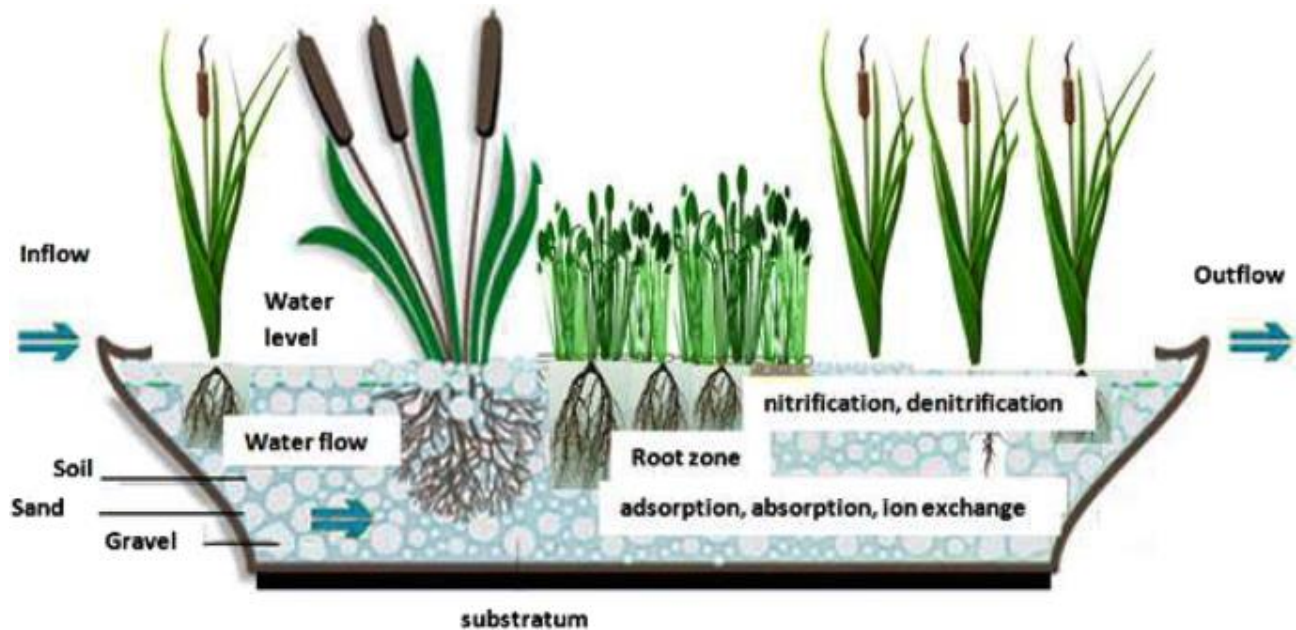
How do wetlands work?

Wetlands can remove sediment, inorganic nutrients and compounds such as nitrogen, phosphorus and ammonia from wastewater using naturally occurring physical and vegetative processes. Different types of wetlands remove different substances. In other words, the plants growing in and around the wetland clean and purify the water naturally without any dangerous or polluting by-products.

Constructed wetlands like the ones Southern Water are using work by mimicking the natural structures we see in nature. Deep pools allow sediment to settle at the bottom,

trapping the unwanted substances there, and emergent plant life like reedbeds and marsh flowers absorb nitrates and other compounds.

Essentially, wetlands act like a sponge to soak up and slow the flow of excess water, and as a filter to treat and clean that water, while supporting and encouraging wildlife and biodiversity.



What do Southern Water use wetlands for?

Wetlands are one member of a group of natural and eco-friendly approaches now being used within the water sector called 'Nature-based Solutions' (NbS). We are using wetlands alongside other Sustainable Drainage Systems ([SuDS](#)) in catchments with high ground water.

Wetlands are used as a secondary treatment for stormwater and groundwater before it's released through [storm overflows](#) into rivers and seas. This means that the water coming out of storm overflows is pre-treated and will have less of an impact on the environment.

A constructed wetland can be used in various parts of the wastewater treatment process. They form part of a natural landscape and support biodiversity, making them preferable to traditional concrete storm tanks. Where storm tanks only hold excess wastewater flow, wetlands absorb, hold and treat the water, as well as slowly releasing it back into the environment.

Why are wetlands important?

As well as providing a host of benefits such as biodiversity and adding value to the areas they are constructed in, wetlands can be used to address several challenges faced by water companies including the improvement of water quality and management of excess water which would normally cause a risk of flooding and storm overflow releases.

These wetlands present an eco-friendly or 'blue/green' alternative to building new infrastructure, they provide a solution which uses less carbon in its construction and operation than conventional means. They also act as a carbon sink, removing CO₂ from the atmosphere, meaning they're actively giving back to the environment rather than taking from it.

How are wetlands part of the Clean Rivers and Seas Plan?

Wetlands are becoming a popular way to remove unwanted nutrients and other potentially polluting matter from wastewater, providing a more environmentally friendly alternative to chemical dosing and energy intensive machinery, while still allowing environmental legislation requirements to be met.

Southern Water is taking this even further. Where there is significant groundwater infiltration into the sewer, we're proposing to construct wetlands alongside the relining of public and private sewer pipes. That is because groundwater infiltration is the primary reason 25% of our storm overflows discharge.

Over the current and upcoming programming periods (2020-2025 followed by 2025-2030), we have [plans](#) to construct several wetlands. We've carried out analysis to find out which Southern Water treatment works we can create wetlands on to assist in the current water treatment process, and you can see them and all our other projects on our Interactive Map.

What wildlife is supported by wetlands?

The wildlife that can be found in a wetland depends on the type of wetland and the location, however some examples include ducks, mute swans, snipes, kingfishers, moorhens, frogs, fish, otters, water voles, water shrews, Chinese water deer and insects such as dragon and damselflies.

Additionally, you can find a vast range of beautiful and functional plants including common reed, bulrush, sedges, rushes, yellow iris, white water lily, pondweeds, water crowfoot, hornwort, water milfoil, duckweeds and angelica. When constructing our wetlands, we always make sure we're using the appropriate species of vegetation for the location.

You can download a Wetland Wildlife Spotter Sheet from Wildlife Watch [here](#).

Do wetlands smell?

They can, but no more than any other lake or garden pond. Wetlands collect organic litter from the water and reduce it to usable nutrients again. Through these processes, bacteria and fungi break down the material in the wastewater, creating byproducts that either enrich the soil with nutrients or escape in the form of gasses which can sometimes have an odour.

Do wetlands fill up with silt and other debris?

Eventually a wetland will need maintenance to remove silt and sediment that accumulates over many years. However, the design of a wetland system allows plants to use this silt and debris to grow root systems. These root systems slow down the accumulation of solids and prevent blockages in the short and medium term, which keeps the wetland working effectively before a silt removal is necessary.

Why aren't more people creating wetlands?

This is a fair question, given all the benefits it may seem like a simple solution to just build them everywhere, however there are many things that need to be considered. Not all land is viable to build a wetland on, and they can take up a lot of space in certain circumstances.

There are many considerations including:

- who owns the land
- the ground conditions and whether they can support a wetland
- what the existing on-site ecology looks like
- how to keep the area wet all year round
- whether the area is prone to flooding or drought and how that will affect flow into and out of the wetland.

Can I make my own wetland?

Yes - a wetland is defined as “an area of land that is either covered by water or saturated with water”, and the size of that area is entirely up to you. You may have seen videos online of people making ‘wildlife ponds’, these are a type of wetland.

By creating a wetland in your garden, on your land or in your allotment, you'll not only be helping to control water flows on your property but encouraging wildlife visitors and supporting biodiversity and local ecology.

Your wetland can be as small as a shoebox or as large as a swimming pool. The only limit is the space available to you and your imagination. Find out how to make your own mini wetland [here](#).