NORTHUMBRIAN WATER *living water*

RESERVOIRS

Water is a vital resource. Without it people cannot survive. For over 5,000 years, people have built reservoirs to provide them with the water they need to live.

WHAT IS A RESERVOIR?

A reservoir is a large natural or man-made lake used for collecting and storing water for people to use in their homes, on their crops or for industry. Reservoirs enable people to collect water when it is plentiful and save it for dry periods.

RESERVOIRS

During the Victorian times thousands of people died each year from water-borne diseases.

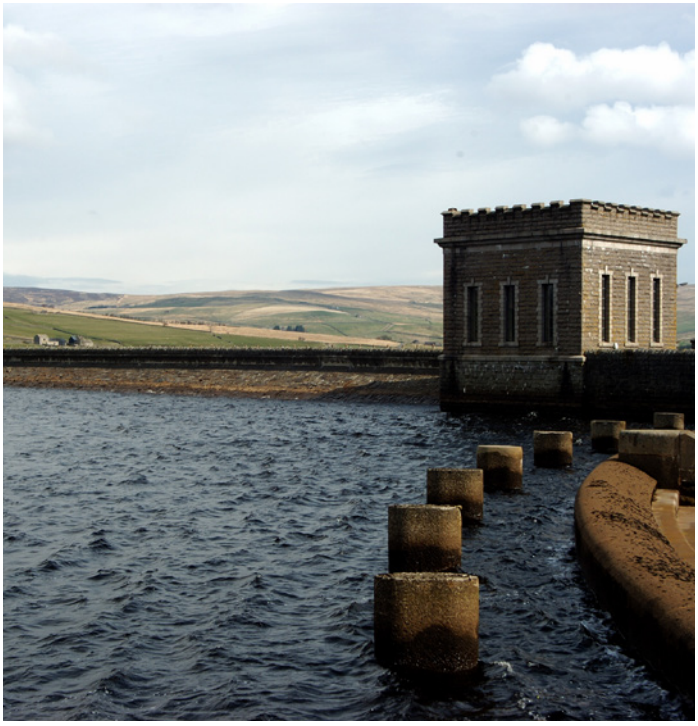
With the provision of clean water (mostly from upland reservoirs) and better sanitation the population became much healthier.

Reservoirs are needed to ensure that enough water is available to meet demands without having to take too much water from the rivers and harm the environment, especially during drought periods.

TYPES OF RESERVOIR

There are two main types of reservoir:

- **Direct supply reservoirs** - store water and supply it straight to a water treatment works.
- **River regulating reservoirs** - store water during rainy periods so that the river can be topped up during dry spells. They release extra water into a river so that it can be taken out futher downstream for treatment and supply.



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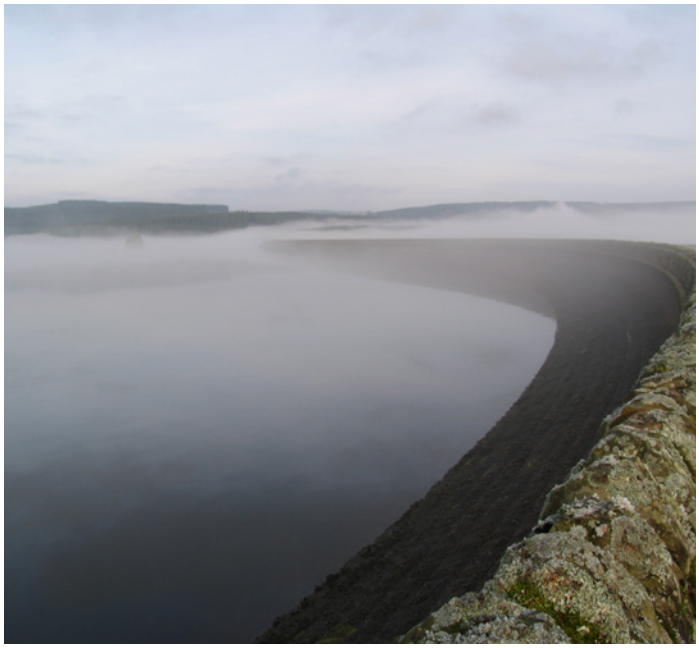
In order to stop water escaping from the reservoir an enbankment dam is built at one end.

DAMS

An enbankment dam has a sloping face, which is usually covered with grass to help it blend in with its surroundings.

Seen in cross-section, the dam looks like an enormous triangle of clay, earth and rock. The dam is thickest at its base to withstand the pressure of the water it holds back. The side in contact with the water is covered with stones, known as riprap. This prevents erosion of the dam by waves and the general water action within the reservoir. There is a solid core of clay, which resists the action of any water, which seeps into the dam from the outer more permeable wall. There is usually a spillway to the side of the dam, this acts as an overflow when the reservoir becomes too full. Dams often have a road across the top to give access to the surface of the dam and to either shore.

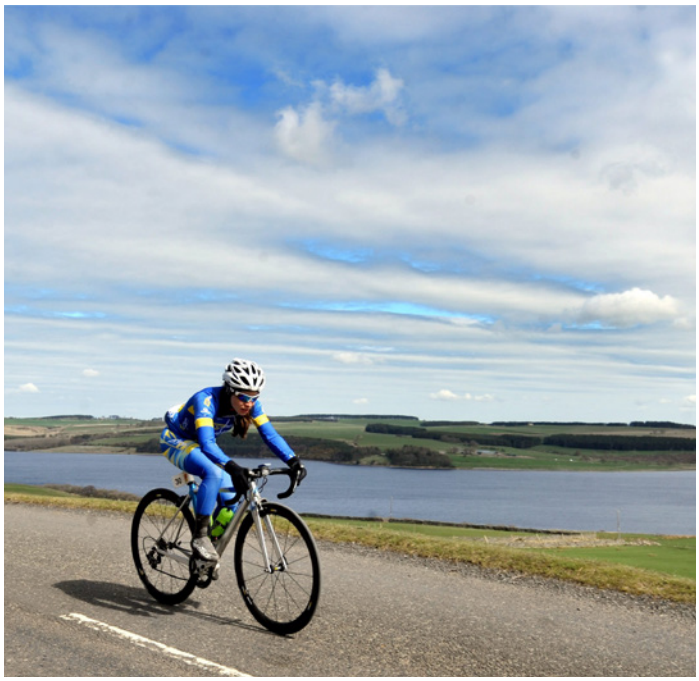


Although impenetrable, dams constantly feed water into the original valley so that the river continues to run. In this way farming and other communities have enough water for their needs regardless of the season. The dam can also reduce or remove the risk of flooding by storing excess rainfall.

Water can be released into rivers from the reservoir via special pipes that go through the dam. Water is released in order to keep the level of the river up during dry periods so that there is enough water to supply water treatment works that may be located further downstream or to help with the migration up river of fish like salmon.

AS WELL AS SUPPLYING US WITH WATER IN OUR HOMES RESERVOIRS HAVE MANY OTHER USES:

- **They store water to irrigate crops; the storage of flood water from the Nile in the Aswan reservoir allows Egypt to grow not just one crop a year but generally two and sometimes three**
- **They keep floodwaters back so it can be released slowly to protect people and property in the flood plain downstream** - Urban development, with its harder and often impermeable surfaces, results in more of the rain running off to the river and reaching it faster. This results in increased flooding downstream
- **They provide water for hydro-electric power generation** - This is a renewable and sustainable source of power. Power generated in this way does not result in carbon dioxide emissions and it contributes little to global warming. For example the hydroelectric power plant at Kielder generates 14 million units (kWhs) of electricity per year enough clean electricity to meet the average needs of about 4,000 homes a year
- **Increasingly, they are being used for recreation and conservation and they can enhance the quality of the local environment** - This can include fishing, boating, sailing, bird watching and walking and cycling around the perimeter.



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Several UK reservoirs are now SSSIs (Site of Special Scientific Interest), SACs (Special Area of Conservation) or internationally recognised Ramsar designated wetland sites.

COW GREEN RESERVOIR

Cow Green reservoir is an SSSI, SAC and a Special Protection Area (SPA) because it is surrounded by limestone with arctic alpine flora e.g. Spring Gentian.

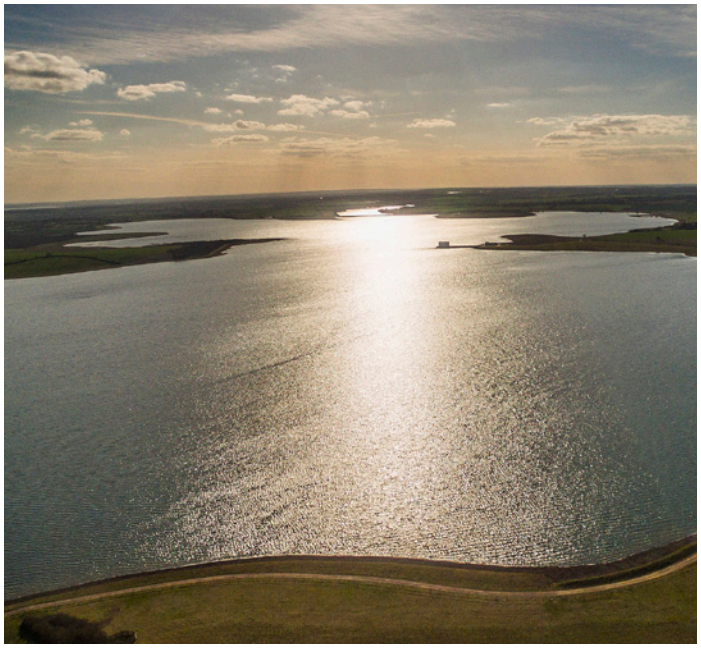
THE TRINITY BROADS IN NORFOLK

The Trinity Broads in Norfolk are an SSSI, SAC and part of them are a SPA and Ramsar site.

They are home to lots of rare species such as the Desmoulin's Whorl Snail, Holly-leaved Naiad, a rare aquatic plant and nationally important populations of breeding and wintering birds. Petrol motorboats are not allowed on the broads, so they are quiet and tranquil places to enjoy wildlife.

ABBERTON RESERVOIR

Abberton reservoir near Colchester is the largest freshwater body in Essex and is an SSSI, SPA, SAC and Ramsar site. Part of the site is managed as a nature reserve by Essex Wildlife Trust and the reservoir is home to lots of birds, including internationally important populations of gadwall, shoveler and widgeon. There are lots of wildlife activity days run for children by the Trust.



A number of other reservoirs are home to rare and proteced species, for example Fontburn Reservoir is home to great crested newts. Our reservoirs and their surrounding areas are important in enriching the biodiversity of the region.

They are also used by wading birdson the autumn migration, and many stop at our reservoirs to feed on the muddy banks that are exposed as the water levels lower over the summer months.