



NORTHUMBRIAN
WATER

Reed bed solution is a world first

A massive reed bed is breaking new ground in sustainable drinking water treatment in Essex.

It is providing a natural method of dealing with the sludge which remains after drinking water treatment.

Northumbrian Water has developed the first-of-its-kind reed bed system next to its Hanningfield Reservoir, near Chelmsford, operated by its Essex & Suffolk Water company.

16 reed beds, with a surface area of more than 10 acres, have been constructed and planted at a cost of £4.5million.

The eye-catching natural plantation recently completed is now an essential part of the drinking water treatment process for the nearby water treatment works.

Up to 240 million litres of water a day from Hanningfield Reservoir are treated to supply drinking water to a large part of Essex and part of east London; including Southend, Thurrock and the London Boroughs of Barking, Dagenham, Redbridge.

Part of the drinking water treatment process involves separating silts and algae from the raw water. It creates up to three million litres of a sludge containing ferric used in the treatment process every day. Most of the sludge is water which, once treated, can be recycled back to the reservoir for re-use.

In a world first, the water company has found a way to treat the sludge using a natural reed bed system.

Reed bed systems have been used successfully for many years to treat sewage and food waste but never in the water treatment process. It naturally recycles the valuable water from the sludge without mechanical or chemical processes.

Traditional methods of dewatering sludge involve mechanical systems which require high levels of maintenance labour and power.

The reed beds will save 70 tonnes of Co2 emissions a year compared to the traditional system.

Historically sludge from Hanningfield has been pumped to lagoons which are now at the end of their serviceable life and the new reed beds provide a long-term solution.

Following several years of original research and large scale trials to prove the projects success, reed bed construction began in June 2011 and was completed late in 2012.

The site has been transformed by 70,000m³ of earthworks to create the new reed beds, which are now in operation.

Sludge is delivered to the site via underground pipes to each of the 16 reed beds in turn. The sludge is then naturally filtered through the bed.

Clear filtrate water flows through the reed bed to help sustain the newly planted habitat and discharges by gravity back to the reservoir for re-use.

Solid residue will be retained on the surface of each reed bed over a number of years before being excavated and used as a soil conditioner.

The creation of the new reed bed is also an important addition to the wildlife habitat of the reservoir.

