Clabby Wastewater Treatment Works

The original Clabby WastewaterTreatment Works was constructed in 2002 off the B107 Road on the outskirts of the village.

By the beginning of 2018, this mechanically-operated system was nearing the end of its useful life meaning that either a replacement of the existing works or an upgrade of the systems would need to be carried out.

Working with its project partners, NI Water explored various options – both mechanical and sustainable - to upgrade the existing system.

A reed bed solution was selected based on its ability to treat wastewater to the required standards in an eco-friendly manner, utilising minimal energy and requiring little maintenance compared with a traditional, mechanical system.

northern ireland water

Delivering what matters

If it's not **PEE, POO or PAPER** it will block the pipes

What can you do to help?

"If it's not Pee, Poo or Paper it will block the pipes".

Approximately 93% of the material causing sewer blockages is made up of wipes. This includes a high proportion of baby wipes, which are not designed to be flushed.

We are appealing to the public not to flush wipes, sanitary items or cotton buds down the toilet.

Find out more at niwater.com

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November 2018

northern ireland water

Delivering what matters

Clabby Reed Beds

An eco-friendly sustainable approach to wastewater treatment.

Delivering what matters

Clabby leading the way

While NI Water has many examples of using reed beds at the end of a conventional (mechanical) wastewater treatment system to 'polish' or 'purify' the water, Clabby is the first site in Northern Ireland to use reed bed technology for the full treatment of wastewater.

Known as Phragmifiltre®, this innovative system is the first reed bed technology in the UK that provides complete treatment of wastewater in one wetland system, with no pre-settlement and using little to no power. This signifies a major change in thinking towards a natural and sustainable alternative for wastewater treatment in the UK where reed beds have been traditionally used as a secondary treatment after settlement and as tertiary treatment to purify effluent prior to discharge.

Because of the unique way the Phragmifiltre® process stores and composts sludge on site, there is no need for tankers to visit the site to desludge - a major difference to the previous treatment works. This natural system also provides wildlife habitats - another important element that a conventional treatment works doesn't have.

This reed bed system at Clabby is an example of how NI Water and its project partners are working to promote 'greener' engineering solutions that have a smaller carbon footprint, require less power and ultimately have reduced impact on the environment. We hope it will encourage discussion and lead to actions that promote the development of innovative solutions to enable sustainable living.

What is Wastewater?

Every time you flush the toilet or wash your hands, have a shower or bath, wash your clothes, use a dishwasher or cook food you use water.

The average person in Northern Ireland uses approximately 155 litres per day. All of this water goes down the drains where it forms 'wastewater'.

Wastewater contains several different types of pollutants, organic matter (from human food waste) ammonia (from urine), solid matter and pathogens. These pollutants can be very harmful to wildlife and humans if they come into contact with this raw (untreated) wastewater.

It is very important to treat the wastewater to remove these pollutants before putting the treated water back into watercourses such as rivers, seas, lakes or the ground.

By 2038 it is predicted that the village of Clabby will have a population of approximately 750 people. This will generate an average flow of approximately 210 m^3 of wastewater (that's more than 200,000 one-litre bottles) per day.

What are reed beds and how do they work?

This wastewater treatment system is using reed beds (constructed wetlands) to treat the water and remove the pollutants.

Wetlands can occur naturally in the form of marshlands, bogs or reed beds. Historically it was observed that dirty water passing through wetlands emerged in a much cleaner state. Constructed wetlands are built to mimic the water treatment processes seen in natural wetlands but under controlled conditions. They are used all over the UK to treat sewage and industrial waste waters. They consist of a hole in the ground that is lined to prevent the wastewater from going into the ground. This hole is then filled with special sand and gravel and planted with reeds.

They are relatively simple systems with minimal or no mechanical elements so they can't break easily and require little maintenance. They are very robust and require little or no power. Aesthetically, they blend well into a location and add an element of biodiversity to the local environment.

Normally reed beds/constructed wetlands only provide one element of treatment - either the second or last stage of treatment. The reed bed installed here in Clabby has been specifically designed to treat the sewage across all stages - an approach that has been used and proven worldwide and the first application of its kind in Northern Ireland.

Treatment stages

There are two stages of reed beds in this system. The first stage comprises four reed beds through which controlled batches of wastewater pass one at a time in rotation, with resting periods between doses. Any solid material is trapped on the surface of the reed bed (filtered out) and is broken down over time by bacteria, a process known as composting.

The dirty water flows down through the gravel in the reed bed and bacteria grow on the surface of the gravel removing pollutants. Because the wastewater is fed to the reed bed in batches, air enters the bed between wastewater doses and supplies the bacteria growing on the gravel with oxygen.

The partially-treated effluent then passes down to the second treatment stage comprising two aerated reed beds operated in series (one after the other). Bacteria growing in these beds have plenty of air and give the partially-treated wastewater a final 'polish' to remove the pollutants to a level at which they will not affect oxygen levels in the receiving water. The clean water is then discharged back into the environment.