

**Project**

Clabby

LocationCounty Fermanagh, Northern
Ireland**Project type**New full treatment reed
bed WwTW**Wastewater type**

Raw domestic sewage

Treatment processPhragmifiltre®; Full sewage/
sludge treatment**Need**

A lack of headroom in the existing Wastewater Treatment Works (WwTW) in the rural village of Clabby was restricting planning applications and subsequent essential development of the rural community. In addition, tighter discharge consents were applied in 2013. The original WwTW was constructed in 2002 with Rotating biological Contactor (RBC)

technology for a design population of 271. The population had risen to 450 putting the WwTW under stress and spatial constraints limited options to extend the existing process in its existing location. There was no further capacity at the nearest larger works at Fivemiletown, over 5km away. A new WwTW was needed at a different location and Northern Ireland Water's guidelines were to consider greener solutions, reduce energy demand and sludge transportation costs. Three options were considered; an Integrated Constructed Wetland, an upgraded RBC or a **Phragmifiltre®** solution. A feasibility study identified the first two options as being too land intensive and too costly respectively and so the **Phragmifiltre®** was chosen as the preferred solution.

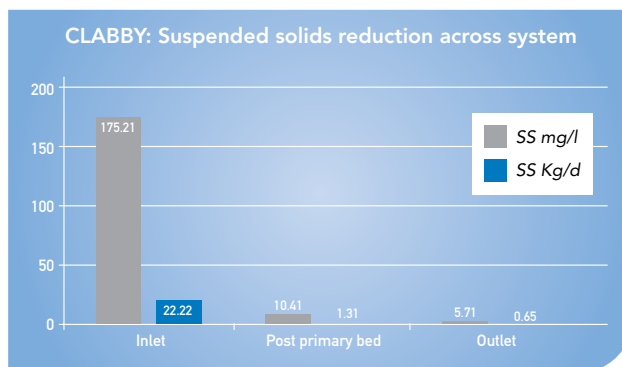
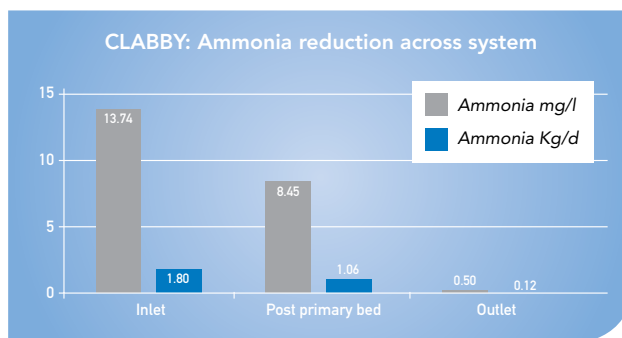
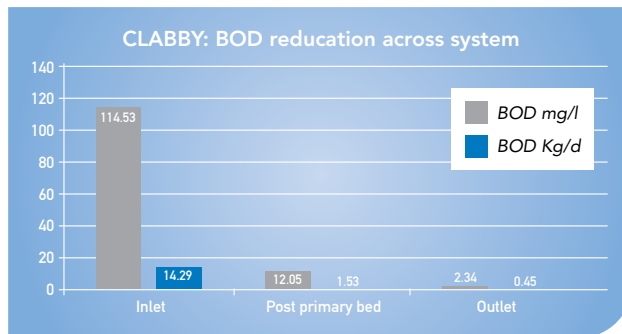
PARAMETER	INFLUENT	CONSENT
Flow (m³/d)	210 Average	699 Formula A
Biological Oxygen Demand (mg/l)	214	13
Ammonia (mg/l)	29	3
Total Suspended Solids (mg/l)	268	20

Solution

Phragmifiltre® systems comprise two stages of multiple vertical flow reed beds. The first stage consists of 3-4 reed beds which are operated alternately. These trap all the suspended solids on the surface of the reed beds and, through rotation of the beds, have a resting period between effluent dosing periods allowing the solids to dewater and compost /mineralise. The liquors pass down through the free draining reed bed media which removes soluble organic matter and ammonia through conventional means as an attached growth reactor. The liquors pass on to the second stage of reed beds where final polishing of the effluent occurs before discharge to the local water course. In this instance



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aerated reed bed technology was used for the second stage. Overall the system is very versatile and provides complete sludge management and secondary treatment on site eliminating sludge transportation costs as well as providing full treatment to the required discharge consents for the receiving water.

The design load was a 750 population equivalent. Ground conditions were challenging, comprising forest and peat which necessitated specialist civils construction knowledge supplied by local contractors. The system required a 0.2-hectare footprint. Local weather conditions informed design as well as a tight 3mg/l ammonia consent. The system is designed to treat flows up to Formula A so a stormwater management system is not required. Performance information is given on the left.

Benefits

The installation of a new WwTW comprising a **Phragmifiltre®** system provides the security of ongoing full sewage treatment to discharge consents for the village allowing essential development to support the community. The **Phragmifiltre®** system installed also offers the significant other benefits of full sludge management on site (no sludge transportation required), low whole life costs, low maintenance, low power consumption and will bring an element of enhanced biodiversity to its setting.

