CASE STUDY

Wolseley Bridge

Aerated saturated vertical flow reed bed

Project
Wolseley Bridge,
Wildlife Trust, Visitor Centre

Location
Wolseley Bridge, Staffordshire

Project type
Refurbishment

Wastewater type
Primary treated,
municipal waste water

Completion date
June 2012

Treatment
Aerated saturated vertical downflow

Need

The Wildlife Trust Visitor Centre at Wolseley Bridge is the headquarters of the Staffordshire Wildlife Trust. It is set in 26 acres of landscaped gardens which are managed for wildlife and provide a visitor attraction for thousands of visitors each year. As well as toilet facilities there is a small sandwich cafe which generates wastewater for treatment. The centre has seen increasing numbers of visitors over the years and has added conference facilities. This has resulted in the need for the wastewater treatment system to evolve with demand to achieve adequate treatment for discharge into Stafford Brook which lies alongside the Visitor Centre.

Staffordshire Wildlife trust established the centre in 2002 and initially a horizontal flow reed bed was used to treat discharge from a septic tank installed on site. In 2005 the bed was converted to vertical downflow to treat the higher loads associated with increased visitor numbers and the introduction of an ammonia consent. For the same reason the reed bed was converted to an aerated vertical downflow system using Forced Bed Aeration™ (FBA™) technology in 2012. Details of the loads passing forward to the beds are given below.

	AVERAGE FLOW RATE (M^3/D)	BOD (MG/L)	BOD (KG/D)	AMMONIA (MG/L)	AMMONIA (KG/D)	SUSPENDED SOLIDS (MG/L)
Load	0.54 – 7	426	3	63	3.7	511
Consent	–	20	–	12	–	30

The varying flow rates, and consequently loads passing forwards, are characteristic of an event driven system common with visitor attractions which requires a solution which can offer adaption to changing treatment requirements.

natural wastewater treatment

CASE STUDY continued

Wolseley Bridge

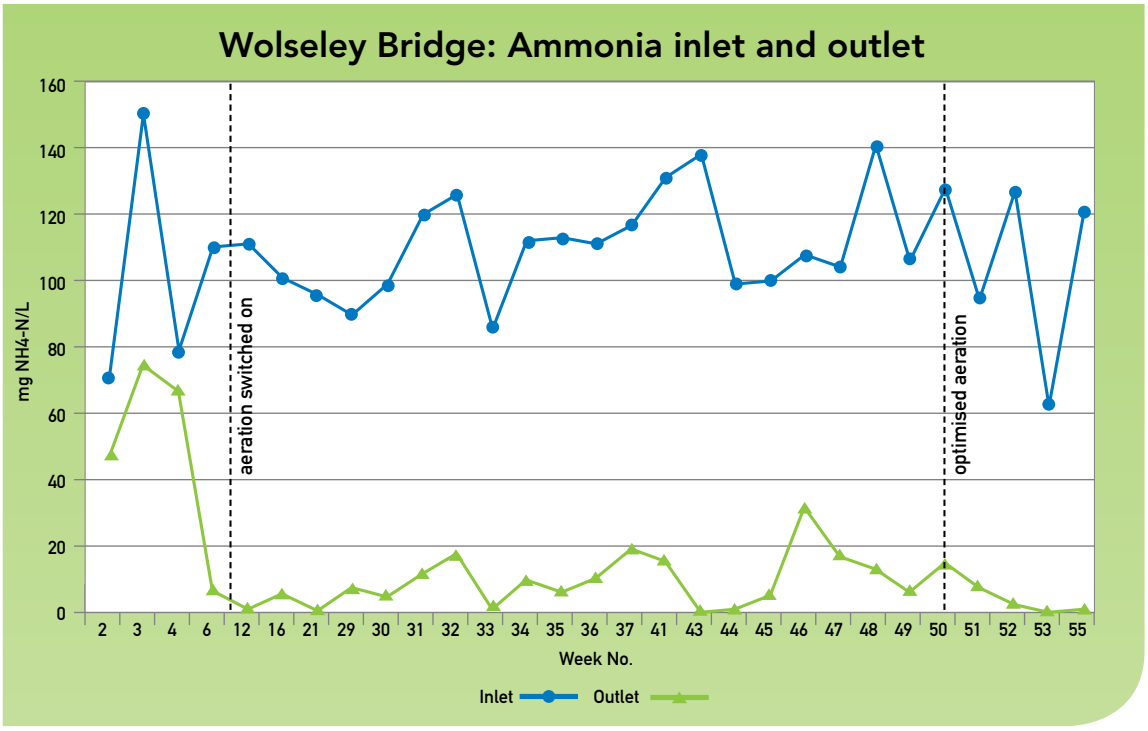
Solution

In 2011 as a result of fluctuating and increasing loads from the Visitor centre the bed was converted to a FBA™ system. Yellow flag irises were planted to make the bed more of a feature as it is positioned directly adjacent to the Visitor Centre. Through its development the bed has not required enlargement maintaining an area of 77m^2. The system provides 3-37 days retention depending on loads and uses a 1.6 kW blower. The blower was initially set to run for 10 hrs per day.

Benefits

The graph below indicates the benefit of the last conversion to FBA™ technology indicating an immediate improvement in ammonia reduction from 40% to 95%. The application of air can be controlled which suits the seasonal variation in load associated with visitor numbers. The increase in variability seen in the graph caused by upstream loading changes was quickly corrected, and the potential for recurrence eliminated, through increasing the aeration to 14 hours per day.

The aerated reed bed system at Wolseley Bridge provides the increased level of treatment required by the site to discharge into the Staffordshire Brook within consent. It also has the flexibility to adapt to varying loads seen throughout the year. The use of Flag Irises as the primary plant stock provides an aesthetically attractive water treatment solution position directly adjacent to the visitor centre.



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