

## Powhillon Farm

### Aim of the Scheme

At Powhillon farm on the WWT Caerlaverock Reserve in Dumfries and Galloway, a system was constructed to treat farmyard run-off and prevent nutrients reaching sensitive wetland habitats and a nearby water course.

### System Description

A feasibility study was conducted to determine soil types and topography and informal discussions with the regulatory authority, SEPA, took place to ensure their agreement with the proposal. In addition, measures were put in place to separate clean and dirty water prior to construction. Construction of the farm wetland took place in November 2012 over the course of two and a half days. Dirty water was directed from the

farmyard via a mixture of bunds and swales into a two-stage sediment trap and then into an existing species poor, nutrient rich recently planted wet woodland. Field edge run-off was also directed to a swale and then into the wet woodland. The profile of the sediment ponds maximises the collection of sediment. An initial sharp drop encourages sediment to settle out followed by a gradual slope to a vegetated strip. Each sediment pond measured 5 m x 4 m with a maximum depth of 1.1 m.

Emptying of the sediment ponds is expected to be required every three to five years, with the first of the ponds emptied more regularly than the second. The guiding swales should be scraped and maintained on a regular basis to keep them functioning and guiding water down into the two-stage sediment pond.

### System Performance

The quality of the water has been regularly analysed to assess the efficiency of the system. Since January 2013, the system has reduced total phosphorus concentrations between the two settlement ponds by around 20%. However, as a zero discharge system, the remaining effluent is dealt with through evaporation and uptake by trees as the water passes through the wet woodland.

### Team and Details

The scheme was delivered by WWT in cooperation with Andrew Marshall, tenant farmer at Powhillon Farm. A video produced in collaboration with Catchment Sensitive Farming featuring the creation of the constructed wetland can be accessed from: [www.wwt.org.uk/farmwetlands](http://www.wwt.org.uk/farmwetlands)



*Powhillon with and without vegetation.*