Project Case Study

Trent Valley - Rural SUDS - Mottey Meadows

22nd August 2016

Rural Sustainable Drainage Systems (RSuDS) to help reduce the amount of diffuse pollution entering Mottey Meadows Special Area of Conservation (SAC).

Flooding, Diffuse Pollution, Drainage, Ponds, Reedbeds, Rural, Sediment, Silt, Sustainable, SuDS, Systems, Wildlife.

Partners	Contribution (£)
Staffordshire Wildlife Trust (lead)	£10,000
Environment Agency	£45,000
Total Project Value	£55,000

Background:

The project has arisen as a result of co-operation between the landowner and collaboration between the Environment Agency, who funded the project through the Environment Programme (EP), and Staffordshire Wildlife Trust.

Mottey Meadows, located near Wheaton Aston, is designated as a SAC, Site of Special Scientific Interest (SSSI) and a National Nature Reserve (NNR). It is one of the UK's best examples, and largest remaining areas of lowland wildflower-rich hay meadow, containing approximately 240 species of flowers, grasses and sedges.

The Motty Meadows Brook (a tributary of the Whiston Brook) runs through the SAC. It has been noted that the brook exhibits elevated phosphate levels, which are primarily due to diffuse pollution from agricultural sources. Routine monitoring suggests that parts of the SAC are suffering from phosphate enrichment from the brook, particularly during flood events.

Objectives:

The main aim of the project was to improve the water quality of the Motty Meadows Brook. In order to tackle the issues of the brook and on the SAC, two RSuDS schemes were initiated on the adjacent landholding.

Scheme 1 - Reedbeds

A series of reedbeds have been created along a ditch that carries dirty water from the farm to the Motty Meadows Brook. Each reedbed will allow for sediment settlement, water treatment and holding back a limited amount of water, before flowing into the brook. The reedbeds have wetland vegetation including reed sweet-grass and bulrush growing within them, which will aid the treatment of surface water and farm yard run-off by enhancing sediment removal. This will help to improve the water quality and buffer the SAC.

Before (April 2016)

After (August 2016): A series of reedbeds.

Scheme 2 - Wetland Pond with Reedbed

A large wetland pond has been created, situated in a field to the south of the farm, adjacent to a tributary of the Motty Meadows Brook. The pond was contoured so that it has an average depth of 1 m, however there are deeper and shallower areas which will be beneficial for freshwater wildlife. The pond water flows into a small area of reedbed so that it is treated before it is piped under the existing track into the un-named tributary. The reedbed has been planted up with iris to aid the treatment of surface water run-off by enhancing sediment removal.

Before (November 2015)

After (July 2016): Wetland pond with reedbed.

At the junction where the tributary meets the Motty Meadows Brook, we have upgraded the pipework, track and headwalls to allow better access for cattle and machinery to other areas of the farm. Additionally, we have relocated the cattle drinking trough from an area adjacent to the Motty Meadows Brook, to the other side of the field in order to reduce cattle poaching around the brook. (Please see additional photos in the Appendix).

Farm Infrastructure Audit

A Farm Infrastructure Audit was carried out on the holding in order to identify any sources that may contribute to diffuse water pollution, identify areas for improvement on the farm and produce a phased improvement plan. The report supported the need to carry out RSuDS schemes on the landholding.

Water Quality Monitoring

Water quality monitoring surveys have also been carried out since December 2015, these were undertaken initially by myself, then continued by a few members of the Friends of Mottey Meadows group. The water is tested at specific sampling points along the Motty Meadows Brook approximately every two weeks to monitor phosphate, ammonia, nitrate and nitrite levels. This will enable us to determine how successful we have been in reducing the amount of phosphate in the watercourse.

Outcomes and Lessons Learnt:

All works have been completed to a high standard using experienced contractors who have created and restored wetland habitats providing new opportunities for a range of wetland wildlife, as well as trying to reduce the amount of phosphates getting into nearby watercourses. Through carrying out the water quality monitoring of the Motty Meadows Brook from before the works were carried out continuing into the subsequent months after the RSuDS works have been completed, we will be able to evidence whether or not we have managed to improve the water quality of the Motty Meadows Brook and by how much.

Time was a limiting factor with this project as there was only a small time frame within which we had to complete the work, which is the reason for working on the one priority landholding. Furthermore, the fact that the work had to be completed during the winter months was a major issue this year due to contracting works being put on hold for long periods of time during wet weather conditions. Having a later deadline in Spring or Summer would be more advantageous due to generally drier weather conditions so that contracting works can be carried out much more quickly, more efficiently, cause less damage in the fields and therefore potentially cost less.

Contact

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Appendix:

Additional photographs of the works completed.

Before (November 2015)

After (August 2016): Motty Meadows Brook and track.

Before (January 2016)

After (July 2016): Pipework and headwalls.

Before (November 2015)

After (August 2016): Trackway.