

Sussex Flow Initiative Case Study: Natural Flood Management at Woodland Farm



Project summary

Woodland Farm is in the middle-upper reaches of the River Ouse (Sussex) catchment adjacent to the Cockhaise Brook. The location and land use provide excellent opportunities to implement a wide range of Natural Flood Management (NFM) interventions. A combination of large, flood water storage scrapes, floodplain tree planting, cross-slope hedge planting, silt traps and river embankment lowering/washland restoration, were delivered in 2018/19. In addition to contributing to flood risk reduction, this work will provide multiple other benefits, including the provision of



Figure 1. Floodplain scrape and tree planting at Woodland Farm

important temporary freshwater habitat and reductions in sediment delivery to the river. Numerous organisations were consulted, including botanists from the River Ouse Project, the Rivers Trust, Catchment Sensitive Farming and High Weald Area of Outstanding Natural Beauty (HW AONB) advisers, to ensure the project had broad support and achieved multiple goals.

Site & catchment characteristics

National Grid Reference	TQ366269
Catchment, catchment size (fluvial extent)	River Ouse, 510 km ²
Land use	Semi-improved grassland/pasture, ancient woodland, grass/herb leys
Soil type	Sandy with underlying clay
Annual rainfall (Met Office Standard Average Annual Rainfall 1961-1990)	851mm

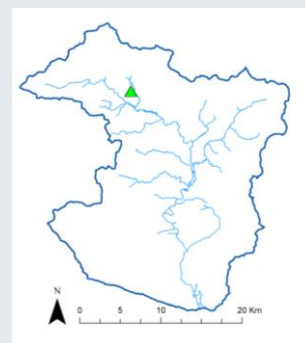


Figure 2. Location of Woodland Farm in the Ouse catchment

Background information

Situated within the High Weald AONB, Woodland Farm comprises ~128 ha in the middle-upper reaches of the River Ouse catchment. The Cockhaise Brook meanders through the site which has large areas of floodplain, meadow, and ancient woodland, as well as steep slopes that were planted with maize but have recently been converted to grass leys. The floodplain areas are utilised as pasture for organic dairy cows and any NFM interventions needed to be considerate of these activities. SFI provided advice and support during the farms Countryside Stewardship (CS) application, ensuring that the range of different interventions were complementary. The landowners are keen to help reduce flood risk downstream, by implementing wildlife friendly measures that will help to improve water quality in the Cockhaise Brook whilst helping to enhance the biodiversity of the whole farm.

Project work

Tree planting

Cross-slope and floodplain hedgerows and woodland were planted using a mix of native species obtained from the Woodland Trust, as well as 60 Black Poplar from Wakehurst Place. The shrubs/trees were planted with the help of contractors and volunteers, with 150 m of hedgerow and 0.77 ha of woodland planted in 2018/19. We have also fenced 0.1 ha and are trialing planting without plastic tree tube protection. A further 250 m of hedgerow will be planted through Countryside Stewardship in 2019/20.

Water storage

Water storage scrapes were excavated on the floodplain and a sediment trap was created at the foot of one of the steep slopes recently converted from arable to grass ley (as part of the farm's sustainability strategy) (Figure 3). The scrapes are estimated to temporarily store approximately 490,000 L, with at least a further 2,600,000 L of storage made available by cutting through/lowering the Cockhaise Brook embankments to allow the floodplain to flood more frequently. The resulting spoil from excavations was spread outside of the floodplain to increase flood storage.

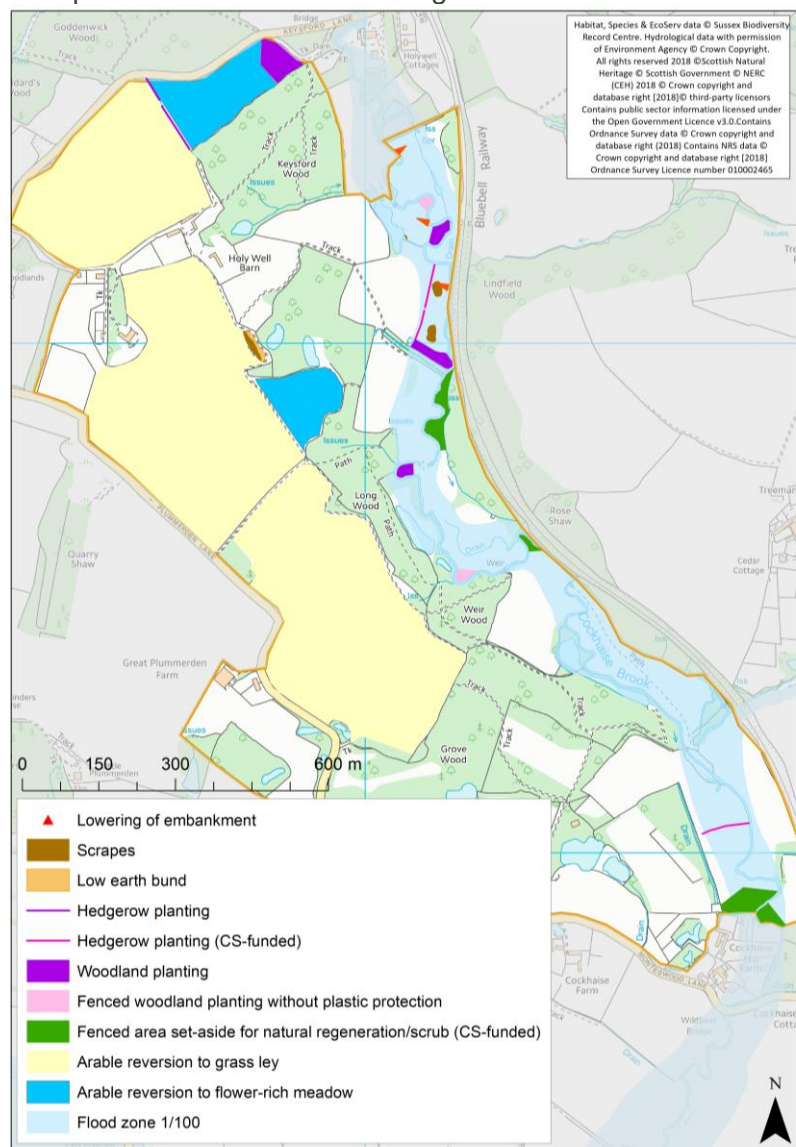


Figure 3. Work delivered for NFM and as part of Woodland Farm's wider sustainability and diversification strategy

Land use/management

Following advice from SFI and others, areas of arable land have been converted to grass leys or flower-rich meadows, and areas of floodplain have been fenced to allow for natural regeneration and scrub development.



Figure 4. Excavator cutting through river embankments to increase washland inundation (top), volunteers planting a cross-slope hedgerow (bottom)

Multiple benefits

Natural Flood Management can provide a wide range of ‘natural capital’ services to people and wildlife. The NFM work delivered at Woodland Farm will contribute to reducing flood risk in downstream communities by slowing/storing floodwater, slowing down surface water runoff and increasing water infiltration into soils. It will provide multiple additional benefits including CO² sequestration (up to 28 tonnes of carbon dioxide-equivalent p.a¹), contribute to soil formation and water purification (sediment removal), and act as important temporary (water storage areas) and permanent (hedgerows and woodland) habitat for wildlife. It will also provide shelter for livestock as well as extra fodder for them, and will enhance local ecological networks.



Figure 5. A large sediment trap at Woodland Farm

Collaboration & funding

The project relied on a strong relationship with the landowner, with SFI informing and helping to deliver some of the early stages of the farm’s sustainability and diversification strategy. The work is the result of a partnership project between Sussex Wildlife Trust, Woodland Trust and Environment Agency, as well as collaboration with Catchment Sensitive Farming (CSF).



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Project funding	Funding for the work was provided through the Woodland Trust’s MoreHedges schemes, a grant from the Banister trust, as well as in-kind contributions from the Sussex Flow Initiative in the form of Project Officer/Manager time.
Overall cost and cost breakdown	<p>The total cost of the project was £16,250 (£8,100 excluding in kind)</p> <p>Planting materials (incl. VAT): £3,000</p> <p>Contractors (incl. VAT): £1,900 (planting), £1,500 (fencing materials and installation), £4,400 (machinery and excavations)</p> <p>Project Officer & Project Manager: £4,250 & £900</p> <p>Volunteers and other in kind: Volunteers > 70 hours (£1000, based on £100/day), meetings/walkovers with other organisations > 56 hours (£2000)</p>

Consent

An Environmental Permit was obtained from the EA for the lowering of embankments on the ‘main river’, and exemptions were granted for other floodplain work.

Future work

Opportunities for further NFM work, particularly floodplain reconnection, are being explored with the landowner.

¹ Natural England. Carbon Storage by Habitat: 13.7 tCO₂-e ha⁻¹ yr⁻¹ sequestered when land is changed from improved grassland to

For more information please contact sussexflowinitiative@gmail.com or visit our website [here](#)