

WEST CUMBRIA RIVERS TRUST NATURAL FLOOD MANAGEMENT (NFM) CASE STUDY: MOORSIDE FARM

ABOUT THE PROJECT

This project was led by West Cumbria Rivers Trust and involved creating wide buffer strips, planted with native trees (0.6 Ha) alongside a stream to reduce runoff and divert sediment laden runoff from the field into a scrape (an area where water can be temporarily stored). Small leaky dams have also been put in place made from hinged trees and boulders. The overall cost of the project was £10,800 and was funded by the DEFRA NFM (natural flood management) programme and there were also in-kind contributions of volunteer tree planting and landowner contribution.

DESIGN AND CONSTRUCTION METHODS

The following permissions were required for the project:

- Ordinary watercourse consent
- Agricultural permitted development
- World Heritage Site heritage impact assessment.

The field slopes steeply down to the watercourse and was badly trampled by livestock. Putting fencing along the top of these slopes and planting the buffer strips reduced runoff by increasing roughness and infiltration. A crossing point was installed for livestock with a pipe through, this will also act to hold back water during high flow events.



Images: West Cumbria Rivers Trust.
Riparian tree planting

At the bottom of the field, a small swale and bund was constructed to direct water into a scrape before it reaches the watercourse. This will act as a sediment trap and should also have additional capacity to perform as an NFM function.



Images: West Cumbria Rivers Trust. Scrape, photo on right shows channel diverting water from field.

Leaky dams were created by hinging bankside trees across the stream to create living structures. Small boulder dams were also put in, the boulders were partially dug into the bank and will be monitored to ensure they are not causing scour.



Images: West Cumbria Rivers Trust. Leaky dams

EFFECTIVENESS

The total volume of water stored from tree planting, the dams and scrape is estimated to be 500m³. The benefit of the reduced runoff and the increased infiltration from the measures cannot be quantified.

From monitoring, initial observations show that the scrape drains rapidly and is dry in dry weather but fills during high flow events. A water level logger has been installed to determine whether the scrape retains capacity in wet periods to act as an NFM feature during storms.

MULTIPLE BENEFITS

The project has also had multiple benefits:

- Carbon sequestration from tree planting
- Habitat creation from the new woodland, hedges, scrapes and leaky dams.
- Improved water quality by the riparian buffer strips, tree planting and the scrape/sediment trap.