

WEST CUMBRIA RIVERS TRUST NATURAL FLOOD MANAGEMENT (NFM) CASE STUDY: LONSCALE GULLY EROSION STABILISATION PROJECT

BACKGROUND INFORMATION

This project was delivered by West Cumbria Rivers Trust as part of their DEFRA funded Glenderamackin Natural Flood Management (NFM) Project, in partnership with the Environment Agency and landowners.



Image: West Cumbria Rivers Trust

The project involved stabilising two large gullies on an upland farm. These are upstream migrating knickpoints which are actively eroding which resulted in the release of large volumes of sediment downstream during the floods of 2009 and 2015. The sediment was deposited in the main river downstream effectively reducing channel capacity and increasing flood risk. It also led to the loss of agricultural farmland and poses a potential future risk to the farm buildings.

The overall cost of the project was £15,800. Funding came from the Water Environment Grant (£3,000) and from the DEFRA NFM programme (£12,800).

ABOUT THE PROJECT

The following permissions were required for the project:

- Agricultural Permitted Development Notification of Intent
- Habitat Regulations Assessment
- Ordinary Watercourse Consent
- Heritage Impact Assessment

The bed of both gullies is composed of highly erodible fluvial and glacial sediments. Stabilisation was carried out using gravels from a culvert upgrade project elsewhere on the farm (to improve fish passage and enable a more natural sediment transfer regime, funded through the Water Environment Grant).

Local sourced stone and woody material were knocked into the culvert to create a series of bed check weirs. Large woody debris features were added to facilitate stabilisation and to create a less easily erodible gravel bed in the river, these were created from the coppicing of 3 – 4 dangerous oak trees overhanging the gully. Additional seeding, scrub planting and planting of willow stakes have also contributed to increased hydraulic roughness at the site. The gullies have also been fenced off from livestock to enable vegetation to establish. Stone from bed check weirs was sourced from a local quarry. No treated timber was used. Banks were regraded once the excavator had left site. The project also included the restoration of 135m of cross slope hedge.

Before - Photos showing the before photos in the gully. Images: West Cumbria Rivers Trust



After - Photos showing the gullies afterwards with trees installed, bed check weirs, large woody debris features and them fenced off from livestock and seeded. Images: West Cumbria Rivers Trust



EFFECTIVENESS

Regular fixed point photography is being undertaken to see whether the measures put in place will reduce sediment loss downstream and improve channel conveyance during a storm event.

MULTIPLE BENEFITS

The project had multiple benefits:

- Helping to prevent the loss of farmland.
- Protects the farmstead from erosion during a large storm event.
- Reduces excessive sediment loss downstream, leading to improved channel conveyance, water quality and spawning grounds.
- Increasing woodland cover in the form of willow and trees.