WEST CUMBRIA RIVERS TRUST NATURAL FLOOD MANAGEMENT (NFM) CASE STUDY: MATTERDALE LARGE WOODY DEBRIS

ABOUT THE PROJECT

This project was carried out by West Cumbria Rivers Trust as part of their DEFRA funded Glenderamackin Natural Flood Management (NFM) Project, in partnership with the Environment Agency and landowner Forestry England. It involved securing ten logs across Thornsgill Beck at bank height to slow the flow and divert water onto the floodplain to be stored temporarily during heavy rainfall. The overall cost of the project was £18,800 and was funded by the DEFRA NFM programme.

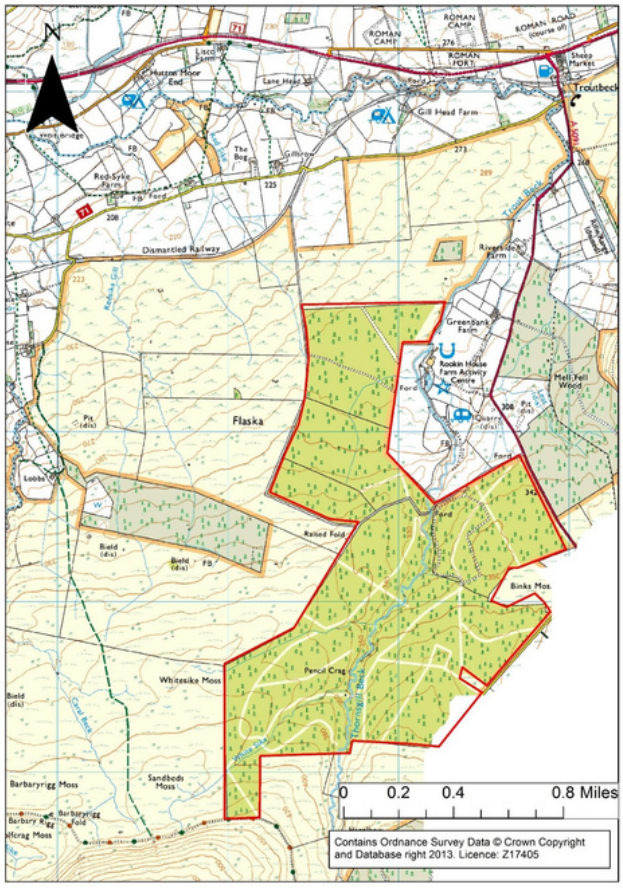

Image: West Cumbria Rivers Trust

DESIGN AND CONSTRUCTION METHODS

No permissions were required for the project and an initial scoping visit was carried out by a WCRT Project Officer and Forestry England to identify a potential location to force water out onto the floodplain. The design was adjusted to ensure Site of Special Scientific Interest (SSSI) river bank exposures weren't allowed to vegetate over. The logs used were 30-40cm higher than the floodplain and V-notches were cut into the timbers to ensure water was always guided downstream and metal stakes were favoured over timber by Forestry England to ensure the features were future proofed. 150 Aspen (populus tremula) were also planted to provide future woody debris material.

Larch and sitka spruce trees were used for the leaky dams and were felled from one side of the Matterdale Plantation. They were transported by a timber wagon to the site and a large excavator was used to lift the timbers into place and drive the metal stakes into the ground to minimise disturbance to the floodplain.

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BEFORE THE PROJECT

Images: West Cumbria Rivers Trust

DURING THE PROJECT

2 pins knocked in d/s, 1 pin knocked in u/s (pins are 2m long) and wired using high tensile wire. Notches were cut into pins to give wire a groove to sit in, to oppose upward force of water.

Locations of LWD features chosen due to topography and ease of access, taking advantage of floodplain width, bank height and what the machinery could easily move.

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AFTER THE PROJECT

Matterdale large woody debris project - 10 features spanning Thornsgill Beck. Picture 2 shows the LWD spanning the floodplain (effectively doubling the size of the feature and storing more water on the floodplain. Monitoring is ongoing (started December 2020)

Images: West Cumbria Rivers Trust

EFFECTIVENESS

The project is being monitored through water level loggers and time lapse cameras. A detailed topographical surveys of each large woody debris feature has also been carried out. The volume of water stored from the project is 700m3.

MULTIPLE BENEFITS

The project has had multiple benefits:

- 150 aspen trees were planted on the floodplain which will form future timber for large woody debris.
- The trees will increase floodplain tree cover and roughness and interception of rainfall to reduce and slow runoff.
- Intermittent wetland habitat creation on the floodplain.
- Complements existing self-seeded willow growing on the floodplain.

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