

Cairn Beck

River restoration 2018/19



Background

In June 2018, Eden Rivers Trust (ERT) was awarded funding by the Environment Agency as part of the Defra Natural Flood Management (NFM) project to carry out a project in the Cairn Beck sub catchment of the Eden that would help protect two communities at risk of flooding: Warwick Bridge and Cumrew.

The project would include a variety of NFM measures such as kested hedgerows, riparian buffer strips, tree planting, soil management, leaky dams and river restoration.

During the scoping period in summer 2018, a landowner contacted ERT asking for advice on re-meandering a stretch of river. After a site visit and landowner consultation, it was agreed that this would be a good site for a river restoration project with the primary aim of delivering NFM benefits.

Feasibility and designs

Environmental consultancy, AquaUoS were hired in October 2018 to design the river restoration project.

The designs encompassed a new primary channel, secondary and tertiary channels along with numerous features such as pools, bars, riffles and ponds (see designs on back page).



Construction

Local contractor Graham Prudham was hired to carry out the construction work which took place in September 2019.





Before

Highlights

Environmental consultancy, AquaUoS, designed a solution that would work for everyone and packed a wide variety of NFM features that restore or mimic natural functions of the river and the surrounding landscape into a compact area of just 0.5Ha (5000m²). These features would store water in the landscape and slow the flow of water downstream as well as creating better conditions for nature to flourish.

The new 200m long meandering (wiggling) river channel has room to move over time - letting the river find its own path. The new river channel contains meanders, gravel bars, pools and riffles – natural features that sustain river insects and fish and slow the flow of water.



Before - original channel



After - new split channel



After

Project benefits

Natural flood management

- Slowing the flow from new meanders (bends)
- Old channel left as a flood relief channel during high flows,
- Approx. 450m³ more storage,
- Rougher floodplain from tree planting.

Biodiversity

- Improved in-stream habitat for aquatic species and vegetation,
- Improved riparian habitat.

Project facts and figures

Costs

Ecological survey:	£ 420
Feasibility and design:	£13,508
Planning permission:	£ 1,170
Construction:	£59,748
Project management:	£ 2,000
E-Fish consultant:	£ 50

Total: **£76,896**

Key Surveys and consents

Topographic survey,
Drone survey,
Phase 1 habitat survey,
Otter and water vole survey,
Fish and Crayfish survey,
Ordinary Watercourse Consent,
Planning permission.



- ① New 200m river channel.
- ② Tertiary channel to let overflow seep back into the main channel.
- ③ Pond to store water during high flows and create habitat.
- ④ Riffles - water flowing over stones to slow the flow and oxygenate the water.
- ⑤ Meanders to slow the flow.
- ⑥ Gravel bars.
- ⑦ Trees planted in the riparian area to strengthen riverbanks, shade the water and collect water.
- ⑧ Original river channel has been cut off from main river to be used as a flood relief storage channel.

Project partners, funders and thanks

Designers: AquaUoS: Dr George Heritage, Dr Seb Bentley, Dr Neil Entwistle.

Contractors: Prudham IJ & G: Graham Prudham, Richard Ridley.

Environment Agency: Dave Kennedy, Anna Hetterley, Rebecca Ramsden.

Landowner: Alex Hampton.

Funders: Defra.

Planning: Carlisle City Council.

Consents: Cumbria County Council.

Eden Rivers Trust: Jenny Garbe (Project Manager), Lev Dahl, Alasdair Brock, Sam Mason.

Find out more about the Cairn Beck project at
edenriverstrust.org.uk