

NON-TECHNICAL SUMMARY

Implementing Natural Flood Management (NFM) Measures



LOCATION	Bowanhill Farm, Teviothead, Roxburghshire
AIM	To slow down rain water run-off rates to reduce flooding
SUMMARY	3.87ha of floodplain was planted with native woodland to help alleviate flooding in the town of Hawick, downstream. A new stream channel was dug to protect silage production on adjacent land

Background and aims: How might climate change affect land management and how might farmers work with it to deliver sustainable land use?

If climate change predictions are correct, we can expect more extreme weather events in future. With respect to intense rainfall events, as experienced in recent years across southern Scotland, it seems sensible to look at ways of reducing the amount of damage to land and property. Well-designed NFM measures also reflect good land management practice. Natural Flood Management (NFM) offers a range of techniques that aim to reduce flooding by working with natural features to temporarily store or slow down flood waters. These techniques can never solve the problems associated with flooding but they can contribute to reducing the height of the flood peak and subsequent damage to property.

The NFM programme

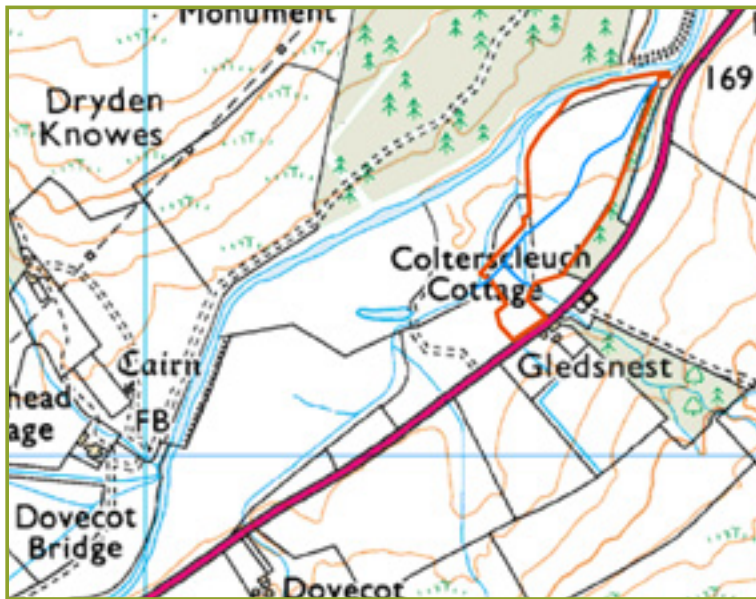
Tweed Forum is co-ordinating NFM enhancement measures across 60 sites within five sub-catchments of the Tweed river system. The catchments involved include: the Ettrick and Yarrow valleys, upper Teviot, Gala Water, Bowmont Water and Eddleston Water.

Four key points to consider when implementing a Natural Flood Management programme

1 Land use issues and challenges:

Recent flooding events have been a major concern for Scottish Borders Council (SBC) and property owners along the river Teviot. Flooding has been affecting the town of Hawick particularly badly. The Tullie family, who are tenants of Buccleuch Estates and farm at Bowanhill in the upper reaches of the valley, had a problem with regular flooding of a silage field. A workable land management solution was required.

Bowanhill planting areas



Location map (NT/417 065) showing where the 3.87ha of new wet woodland was planted at Bowanhill Farm (shown within the red compartment), to reduce water flow rates during high rainfall events

1km

 Bowanhill planting

Old artificial river embankments along the Teviot, have contributed to increased river flow rates



Newly planted floodplain woodlands at Bowanhill will contribute to habitat diversity



Newly cut watercourse showing adjacent riverine woodland planting and natural gravel distribution



Farmer John Tullie showing a group of local farmers (and members of the public), around the floodplain site at Bowanhill.



“The upper reaches of the River Teviot, are actively eroding and depositing sediment. This is causing problems downstream in Hawick. Farmland has been affected too. I have suffered over the last 15 years from coarse gravel deposition onto a valuable silage field and this combined with rising river bed levels at a side stream outflow, means I have been forced to give up silage production on a 4.00ha field; a major blow to the farm business. I investigated the possibility of removing gravel from the river and would probably have been able to get a SEPA licence to do this at some cost, but I realised that the next flood would simply bring down more sediment and I would be no better off. I decided to create a new stream channel across the wettest part of the former (lower) silage field, incorporating two small burns. Alder woodland was planted on the wettest ground. This ensured that drainage on the upper silage field was maintained. This required a Controlled Activities Regulation (CAR) licence from SEPA. Tweed Forum assisted me with the paperwork and with accessing advice and funding.”

John Tullie

2 Land management opportunities

Working closely with locally based project facilitators Tweed Forum and Scottish Borders Council (plus other agency staff) to look at ways of ‘slowing the flow’ of surface water run-off from farms such as Bowanhill, the multiple benefits of working in partnership became clear. The bottom 3.87ha of the floodplain field would be planted as a wet woodland of native tree species, with a new watercourse channel cut through it, to allow the top part of the silage field to drain. With other farmers in the catchment, looking at similar initiatives, this arrangement means that peak flood levels through Hawick, could be reduced in time.

3 Land management benefits

With this work taking place, benefits to the tenant farmer, to the landowner, to upland biodiversity and to the local community, have all been identified. It is often best to work with local advisors who know the local area well and can co-ordinate work on the ground.

Benefits to the farm business through maintaining a good silage field

The newly created watercourse allowed the top part of the floodplain field to drain freely. This ensured the top field remained dry enough to cut for silage. The newly planted and fenced-off floodplain woodlands, at the bottom of the haugh, helped reduce farmer time checking livestock. The risk to farm animals from liver fluke was also reduced.

Benefits to the community through reduced run-off rates

At Bowanhill, the floodplain woodlands, newly cut channel and wetlands, were created and managed (in part) to help alleviate flooding problems, in towns such as Hawick. Habitat management and woodland planting as part of this scheme, will also sequester carbon, helping to lower the farm carbon footprint. The trees will help slow down surface flow of flood water by trapping vegetation. Associated rank vegetation will help slow the rate of water transport further and encourage gravel and suspended sediments to settle on the floodplain. Keeping as much soil in the fields is important, as surface water run-off and erosion can combine, to fill up the river bed with gravel.

Benefits to wildlife and the environment through habitat creation

The wide variety of native tree species planted included: willow, alder, oak, rowan, hazel and birch. These add significant biodiversity value to the site. Wet woodland in the Borders is a rare habitat. Riverine mammals such as otter will utilise this new woodland expanse for cover. The small pools that will develop naturally within the wood, will provide habitat for amphibians such as frogs and toads. A main arterial road into Scotland runs close by the south side of the site. It is important that the site looks visually attractive to locals and tourists alike.

4 Costs and funding

The funding for the project came from a number of sources (listed in the table below)

Farm	New floodplain woodland planting	New watercourse channel created	New stock fencing required	Design for new channel	Scottish Rural Development Programme (Capital grant)	Scottish Borders Council (Biodiversity Offset Funding)	Total
Bowanhill	3.87ha	400m	68m				
Expenditure	£9,453	£16,430	£390	£7,500			£33,770
Income					£8,952	£24,821	£33,773

Illustrative costs which do not include facilitation time and smaller contributions

Outcomes and lessons learned

The programme of works went according to plan. There was a necessary compromise reached between the requirements of the floodplain field for silage production and benefits to the community of habitat restoration and reducing flood water flow rates. Working in partnership was really beneficial, as it encouraged debate on land management and galvanised support for the programme.

Promoting to others the benefits of the change in land management

John Tullie is keen to show others the work that has been undertaken at Bowanhill. He has been involved in hosting several group visits from a broad range of organisations, including representatives of farmers' groups, charitable trusts and government agencies. Organised visits can be arranged, but must be co-ordinated through Tweed Forum.

"The work that we have done at Bowanhill should have a lasting impact in the area. It is good to know that we are helping the local community, especially the people of Hawick"

John Tullie



Project Partners, Funders and Facilitators

The programme of natural flood management works was facilitated by Tweed Forum and included financial contributions from the following organisations, (including Buccleuch Estates, Cheviot Futures 2, the tenant farmer and the organisations listed above.

If you are a land manager and would be interested in carrying out something similar on your land, please contact Tweed Forum for a confidential discussion of what might be possible and to explore potential funding sources

Further information can be obtained from:

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