

NON-TECHNICAL SUMMARY

Implementing Natural Flood Management (NFM) Measures



LOCATION	The Long Philip Burn on Foulshiels Farm (Yarrow Water) and Linglie Farm (Ettrick Water), Selkirkshire
AIM	To slow down rainwater run-off rates
SUMMARY	Heather moorland grazing management (light stocking) and 8.80ha native riparian woodland planting

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 Natural Flood Management (NFM) measures also reflect good land management practice. NFM offers a range of techniques that aim to reduce flooding by working with natural features to temporarily store or slow down floodwaters. 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 Tweed Catchment NFM programme

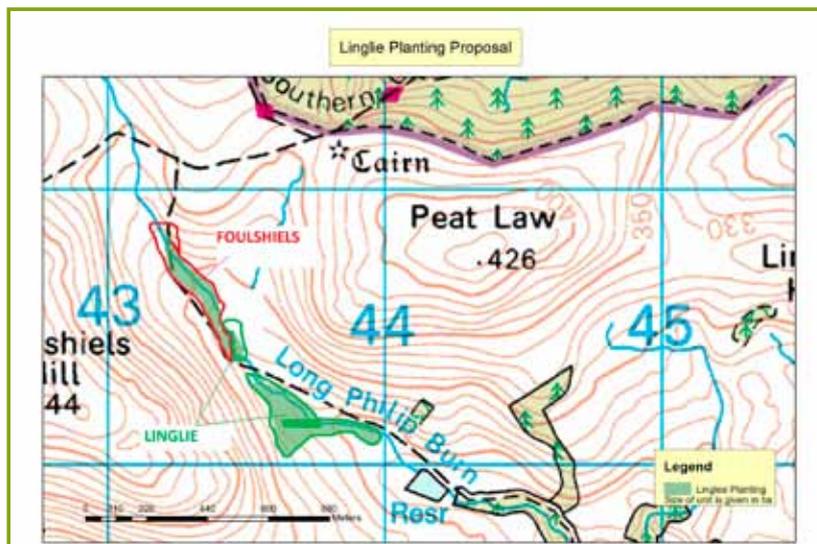
Tweed Forum is co-ordinating NFM enhancement measures across 60 sites within five sub-catchments of the Tweed river system. The catchments involved include: the Ettrick and Yarrow valleys, upper Teviot, Gala Water, Bowmont Water and Eddleston Water.

The Ettrick and Yarrow valleys

The aim of the project is to slow the flow of surface water run-off rates on heather moorland areas through controlling livestock grazing pressure. Restoring natural riverine processes and functionality by creating native woodland habitats is also key. By undertaking measures such as these, which benefit natural flood management, a number of additional benefits can be achieved. These benefits include: more diversity of habitats, more wildlife, more soil carbon storage and more diffuse pollution control.

The overall project aims to restore the natural habitats across the wider catchment to improve the ecological status of the catchment, the river and its fish populations. Implementing NFM measures will generally help address these drivers. The programme also aims to measure the effect that these restoration measures have on flood attenuation downstream. A key objective is to work with land managers and communities in bringing about meaningful and sustainable water and land management changes, and to recognise the services nature provides to society. In other catchments, a comprehensive monitoring programme has been developed to measure the effects on the ecology and hydrology. Tweed Forum approached a number of farms in the Ettrick catchment, and these two farms include the upper reaches of the Long Philip Burn. A huge downpour in June 2003 resulted in significant flooding in Selkirk, largely due to the massive release of gravels which blocked bridges and diverted water flows from this small burn into houses and the rugby ground.

Foulshiels and Linglie Farms, Selkirkshire



Foulshiels and Linglie Farms lie in the Ettrick and Yarrow valleys, Selkirkshire. The landscape is dominated by heather moorland with grass mosaics. The new woodland planting area boundaries are highlighted in red (4.0ha) and green (4.80ha).

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

1 Land use issues and challenges

Foulshiels and Linglie Farms are adjacent hill sheep farming units on the north side of the Ettrick and Yarrow Water near Selkirk. Both farmers were keen to explore the opportunities for habitat restoration to help facilitate the flow of surface water run-off into the adjacent river system. The farms are dominated by heather moorland and grass heath mosaics. Opportunities were taken to enhance heather condition through stock removal and establishing native riverine woodlands.

2 Land management opportunities

Tweed Forum helped facilitate and co-ordinate a programme of Natural Flood Management measures that all partners involved agreed would enhance the river and floodplain habitats. The habitat restoration works at Foulshiels included: keeping 200 sheep off the wetland and heather-dominated areas to allow the heather condition to recover, controlling 20ha of bracken which was also causing the heather condition to deteriorate and planting 8.80ha of native woodland along the hill cleuch of the Long Philip Burn. This woodland linked to and formed part of the new woodland planting site on adjacent Linglie Farm. The trees planted included: oak, birch, rowan, juniper, alder, willow, ash and Bird cherry. As a result of this work, it is hoped that Black grouse would be retained in the area.

3 Land management benefits

Due to ongoing flooding issues in the town of Selkirk downstream, the Natural Flood Management (NFM) measures implemented could bring a significant number of positive benefits to the valley. Tweed Forum has been instrumental in completing a series of catchment-wide demonstration sites to showcase the wide variety of NFM measures that can be implemented at a catchment scale. The multiple benefits accruing at this site include:

Benefits to the farm business through restoring the watercourses

Erosion within the upland hill cleuchs at Foulshiels should be reduced as a result of the riverine woodland plantings. The reduced grazing levels on the hill means that the shepherd has fewer sheep to check each day. The remaining sheep should be in better condition leading to a better quality product.

Benefits to the community through reduced rainwater run-off rates

The planted woodlands and trees should help trap vegetation and slow surface flow of floodwaters. This should lead to reduced peak flood levels and reduced gravel release, which should help protect built property and infrastructure in Selkirk and other houses downstream. Woodlands planted in and around the town of Selkirk should ensure that the local community has more diverse landscapes in which to live and work.

Benefits to wildlife and the environment through habitat creation

The main benefits to wildlife are through the creation of habitat linkages. Watercourses are often confined by manmade floodbanks, but the creation of adjacent riverine habitats, such as woodlands connected to watercourses and areas of heather moorland, reconnects rivers to their floodplains. On the hill ground, the heather moorland conservation work should encourage species such as Black grouse and Mountain hare.

Heather moorland is maintained in good condition through appropriate grazing levels; the protection of the underlying peaty soils helps retain moisture which reduces surface water flow rates after heavy rainfall events



8.80ha of native woodlands have been established to help slow the flow of water and provide wildlife corridors; landscape diversity and enhancement is important in an area known for its rich cultural and natural heritage



Riparian woodland planting along the Long Philip Burn should help slow the flow rate of rainfall run-off and reduce the erosive nature of the watercourse



The new native woodland planting at Linglie Farm was designed to link to the adjacent plantings on Foulshiels Farm.



Creating habitat linkages from the agriculturally improved in-bye fields on the valley floor at Linglie to the high heather hill slopes on Foulshiels



4 Costs and funding

The costs of the project are set out below

Farm	New woodland planting	New stock fencing required	Total	SRDP capital payments	Biodiversity Offset Funding
Foulshiels	4.00ha	940m			
Expenditure	£10,185	£4,308	£14,493	£8,965	£5,528
Linglie	4.25ha	1,281m			
Expenditure	£9,526	£8,664	£18,190	£13,946	£4,244

Costs do not include facilitation services or VAT

Outcomes and lessons learned

One of the main lessons learned is that working in a loose but focused partnership has enabled the design and delivery of a range of habitat restoration projects. Without a partnership this project would not have been possible. Such partnerships do not come about by accident; they also require clarity of leadership and governance. An overarching lesson is that initial time spent developing such partnerships is a crucial first step. Finding multiple sources of income is a critical second step in project management, to ensure all real and potential costs are covered.

The conservation objectives at Foulshiels and Linglie were to:

- Reduce surface water flow rates by planting areas of native woodland
- Maintain heather condition to retain moisture in the underlying peat soils
- Restore the watercourses to a more natural state
- Create more diversity in habitats to attract more wildlife species (such as Black grouse) onto the farm

It is intended that the restoration actions of the wider Natural Flood Management programme will contribute to:

- An improvement of the 'ecological status' of the water bodies under the Water Framework Directive (WFD) classification and a reduction in flood risk within the catchment
- An increase in the habitat supporting designated species: otters, Atlantic salmon, Water crowfoot, lampreys
- The development of demonstration sites that other practitioners, land managers, policy makers and agency staff can visit to exchange knowledge and share experiences.

Final comment

The habitat mosaic of enhanced heather moorland linked to new native woodlands, should achieve the multiple objectives of reducing peak flow rates, enhancing biodiversity value, improving water quality and restoring soil carbon.

Promoting to others the benefits of the change in land management

Once the sites have been given time to rejuvenate, the aim will be to take organised groups to view the range of works undertaken. People from diverse backgrounds, including farmers, farm advisors, government agency staff, academic institutions and school groups will have the opportunity to see the work on the ground. Visits can be arranged through Tweed Forum.



Forestry Commission Scotland
Coimisean na Coilltearachd Alba

Project Partners, Funders and Facilitators

The project was made possible with the assistance of Borders Forest Trust, Southern Uplands Partnership, the organisations listed above and individual landowners.

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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