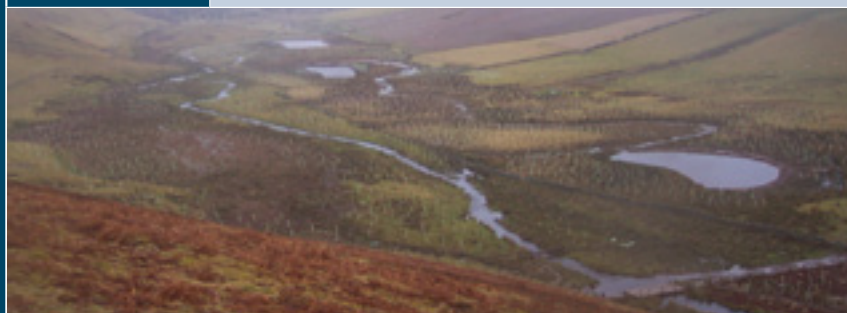


NON-TECHNICAL SUMMARY

Implementing Natural Flood Management (NFM) Measures



LOCATION	Crookston Farm, Armet Water, Stow, Galashiels, Selkirkshire
AIM	To slow down rainwater run-off rates to reduce flooding
SUMMARY	24.00ha of floodplain and hill-slope land was planted with native woodland to help alleviate flooding in towns downstream



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.

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

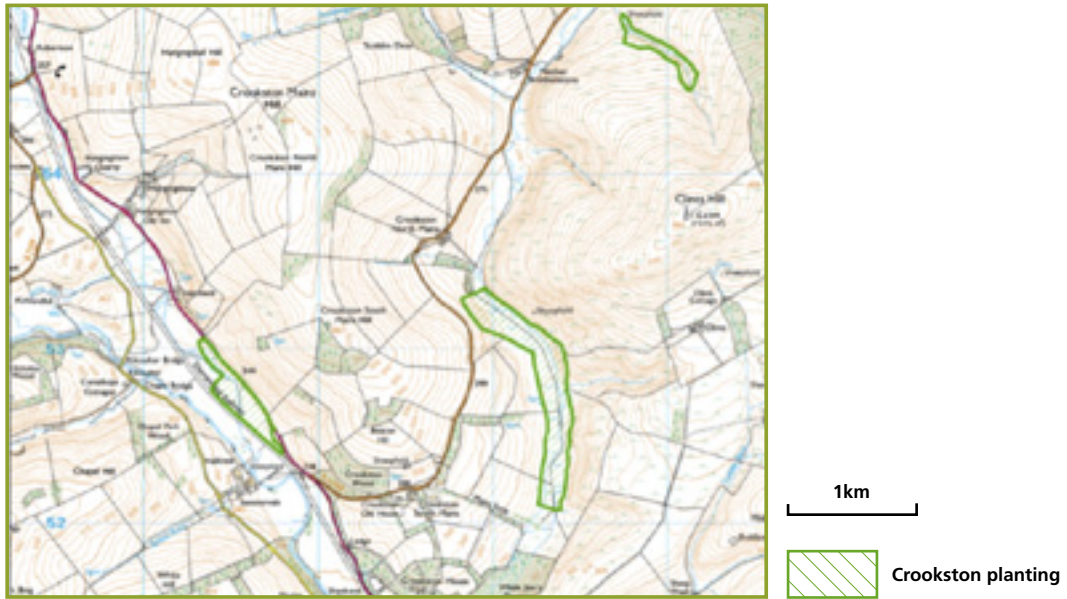
1 Land use issues and challenges

Jim and Graeme Sinclair are tenants on Crookston Farm 15km north-east of Galashiels in the Scottish Borders. The farm extends to 815ha with 320ha of rough grazings (heather moorland and native woodland) and 495ha of in-bye (agriculturally improved grassland). The business comprises 1,500 sheep and 100 suckler cows. Crookston Farm sits on the Armet Water, a tributary of the Gala Water. Recent flooding issues have been a major concern for Scottish Borders Council (SBC) and property owners in Stow and Galashiels. The Sinclairs were keen to explore the opportunities for positive land management with respect to alleviating flooding downstream.

2 Land management opportunities

Tweed Forum and Scottish Borders Council have been working with Jim Sinclair and the landowner, Lord John Borthwick, and other land managers, to look at solutions and ways of 'slowing the flow' of surface water runoff from farms within the upper Gala Water catchment. As a result of partnership working, it was agreed that 23.67ha of floodplain woodlands would be planted at Crookston. Benefits to the tenant farmers, to upland biodiversity and to the local community, were all identified. A facilitated approach by a number of land managers, working together with an advisor, within a sub-catchment, can achieve substantial and sustainable land management benefits.

Crookston planting areas



Crookston before planting



Crookston after planting



Floodplain woodland helps reduce overland water flow rates during periods of high rainfall events. Fencing off from livestock has reduced livestock checking times.



Water retention ponds provide additional flood water storage areas.



The various landscape features will be better connected by linking the floodplain grasslands and native woodlands, with other habitats.



3 Land management benefits

Multiple benefits to the farm business, the local community and biodiversity, can be accrued by undertaking a co-ordinated and Integrated Catchment Management (ICM) programme. Many of the benefits can be realised within a short time frame of three to five years and can have a lasting impact for generations.

Specific benefits to the farm business through enhanced stock control

The 2,200m of fencing required for the programme, allowed the farmers to fence off a very wet piece of ground on the floodplain, which was a constant problem for trapping livestock. The risk of farm animals contracting liver fluke was also reduced significantly.

Specific benefits to the community through reduced run-off rates

The new woodland helps slow down surface water by trapping vegetation around the tree stems and creating flow restrictors. Trees also transpire water through their leaves and help increase water infiltration rates to soils and underground aquifers. Silt and gravel carried in flood water settles out on the floodplain, reducing the amount of sediment entering the Gala Water. Several water retention ponds help hold water temporarily. Freed from bankside grazing, the river will become narrower and deeper, encouraging a more natural riverine system to function. This will benefit fish stocks locally and help protect the internationally renowned salmon fishery on Tweed. The local amenity and landscape value of the area will be enhanced. Woodland planting as part of this scheme will also sequester carbon, helping to lower the farm carbon footprint.

Specific benefits to wildlife and the environment through habitat creation

The main tree species planted were willow and alder on the wetter ground and oak, rowan, holly and juniper on the drier lower hill slopes. The mix of wetlands and woodlands will provide significant new habitats for key wildlife species such as: Atlantic salmon, otter, Brown trout, lamprey, Reed bunting, Great crested newt and Water vole. Creating wildlife corridors here will help connect this floodplain area to other habitats along the river and across the farm.

4 Costs and funding

The illustrative costs of the project are set out below.

Farm	New floodplain woodland planting	New hill-slope woodland planting	New ponds & scrapes created	New stock fencing required	Scottish Rural Development Programme (Capital grant)	Scottish Borders Council (Biodiversity Offset Funding)	Total
Crookston	18.40ha	5.27ha	7	2,200m			
Expenditure	£51,672	£14,799	£1,500	£10,120			£78,091
Income					£61,636	£16,455	£78,091

In addition to the capital funds, the farm business secured £27,000 over 15 years, through loss of grazing, in respect of woodland creation.

Outcomes and lessons learned

The programme worked well from the outset with multiple benefits achieved. The tenant farmers and landowner were very pleased with the measures put in place. The trees established well but to avoid the problem of tree shelter removal, deer fencing could have been used. There were gains for the land owner (through woodland creation), the tenant farmers (through reduced livestock losses and reduced stock checking time), the local community (through action to reduce flooding) and for wildlife conservation (through creating more habitat diversity). Having a project facilitator was important, to negotiate and network with the farmers and all the partners and organisations involved.

Promoting to others the benefits of the change in land management

Jim and Graeme Sinclair are keen to show others the work that has been undertaken at Crookston. They have been involved in hosting many group visits from a broad range of organisations, including farmers' groups, charitable trusts, government agencies and schools. Organised visits can be arranged, but must be co-ordinated through Tweed Forum.



Jim Sinclair - Tenant farmer

"The steps we are taking to reduce surface water run-off rates will hopefully have a positive effect on reducing potentially damaging flood water levels in Stow and Galashiels, whilst at the same time benefitting our livestock management and also the farm environment. It will require a co-ordinated approach from land managers across the catchment to achieve a lasting effect."



Project Partners, Funders and Facilitators

The programme of conservation works was facilitated by Tweed Forum staff. Funding was obtained from a number of sources, including the Scottish Rural Development Programme and Biodiversity Offset Funding facilitated by Scottish Borders Council.

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:

Tweed Forum, South Court, Drygrange Steading, Melrose TD6 9DJ
T 01896 849723 E info@tweedforum.org
www.tweedforum.org