

Catchment management

SO MUCH TO DO....



Questions for you.

What is the most important?

How do I go about selecting sites?

How do I get “buy in”?

Is it really worth it?

Diffuse Pollution

What is diffuse pollution?

*'Pollution arising from land-use activities (rural and urban) that are dispersed across a catchment or sub-catchment and do not arise as a process effluent, municipal sewage effluent or an effluent discharge from farm steadings' -
D'Arcy et al, 2000*



**Individually minor but collectively significant sources
of pollution across a catchment**

Climate Change = influenced by rainfall

DIFFUSE POLLUTION

Water Environment (Controlled Activities)(Scotland) Regulations 2011

Activities cover by GBRs

Fertiliser application and storage

Livestock management

Cultivation of land

Pesticide use

Preparation and use of Sheep dip

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DRINKING WATER IMPACTS

- Human health before the environment?
- Issues relating to rural land use often cause environmental and human health issues. (pesticides & bacteria, nitrates etc..)
- Multiple benefits to fixing the issues.



Holding back the waters

Climate change

Land use

Historic practices

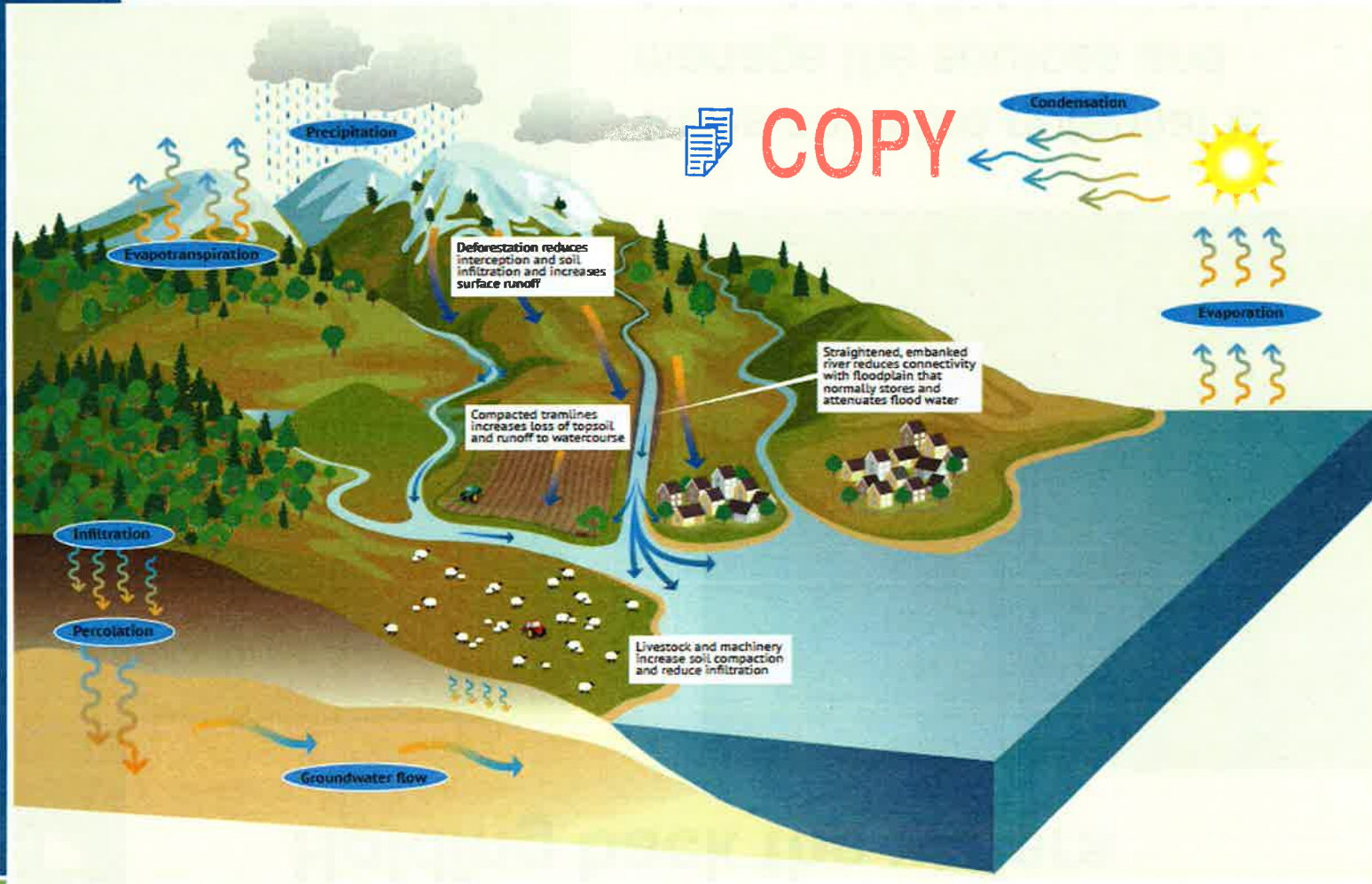
Questions on
suitability.

Is Natural Flood
Management (NFM)
the only solution?



Trees have the potential to manage the sources and pathways of flood waters in a number of ways.

Impact of land management on the water cycle



NFM MEASURES – ASSESSING THE SOLUTIONS

Table 2.1. River and catchment based natural flood management measures

Measure group	Measure type	Main action*
Woodland creation	Catchment woodlands	Runoff reduction
	Floodplain woodlands	Runoff reduction/floodplain storage
	Riparian woodlands	Runoff reduction/floodplain storage
Land management	Land and soil management practices	Runoff reduction
	Agricultural and upland drainage modifications	Runoff reduction
	Non-floodplain wetlands	Runoff reduction
	Overland sediment traps	Runoff reduction/sediment management
River and floodplain restoration	River bank restoration	Sediment management
	River morphology and floodplain restoration	Floodplain storage/sediment management
	Instream structures (e.g. large woody debris)	Floodplain storage
	Washlands and offline storage ponds	Floodplain storage

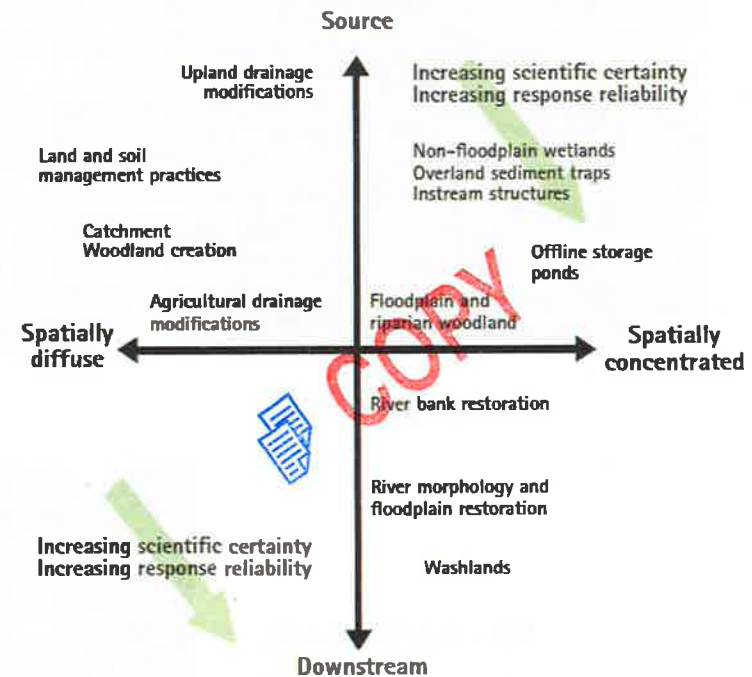


Figure 2.6. A catchment scale classification of natural flood management measures: NFM measures can be broadly classified by the location of their likely implementation, either near the source of a flood or further downstream, and by how the strategy may be spatially distributed on the ground (adapted from Thorne et al.¹⁷).

Holding back the waters



Constructed farm wetlands. Cleaning and slowing down water from farm developments

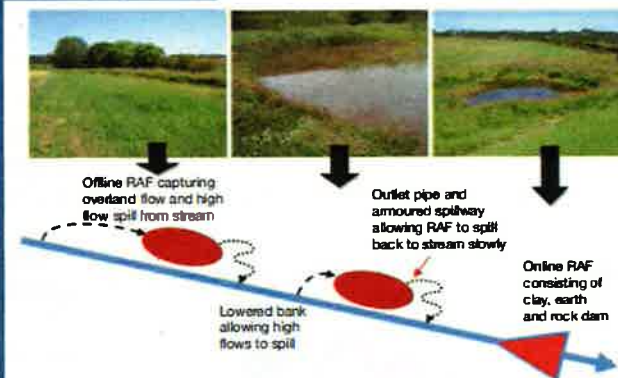


Figure 2.32. Offline storage areas and other attenuation features (Runoff Attenuation Features) constructed in the Belford Burn catchment, Northumberland (from Wilkinson et al.⁴¹).



Sediment traps constructed in series can intercept surface runoff and encourage settling out of sediment

RAF – features in catchment can act as a “spill-over” to slow down flow in watercourse.

Holding back the waters



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River engineering.

Right place.. Right time.

Green v Grey



Holding back the water

River restoration

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Figure 2.26. The Rottal Burn (South Esk), Angus, before, during and after work led by the Esks Rivers and Fisheries Trust to reintroduce meanders to a channelised reach: In addition to reducing flood peaks, this work sought to improve riparian and aquatic habitat and reduce the unnaturally high sediment load experienced downstream of the reach.

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Getting the message across

Evidence Base



Awareness Raising



Targeted Engagement



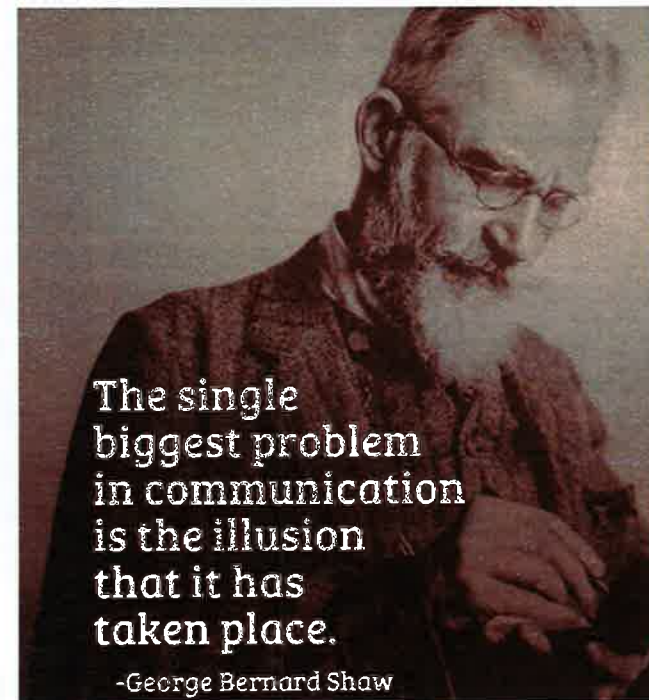
Awareness raising – the message delivered

- 4000 letters and leaflets sent to land managers
- 3500 1:1 visits in PC
- Over 335 workshop, events, training days and presentations (agri/ forestry/ recreational green space)
- Over 30 Press releases
- 15 Articles in Scottish farmer - PC updates etc
- 17 Articles in other organisations magazine
- Catchment Characterisation Reports in production for each priority catchment, and technical summaries – 8 printed
- 10 radio interviews / 1 TV interview
- Pod cast with SAC
- Leaflet mail shots – equine
- Golf course managers / green keepers guidance
- Web page development
- Know the Rules documents
- Twitter



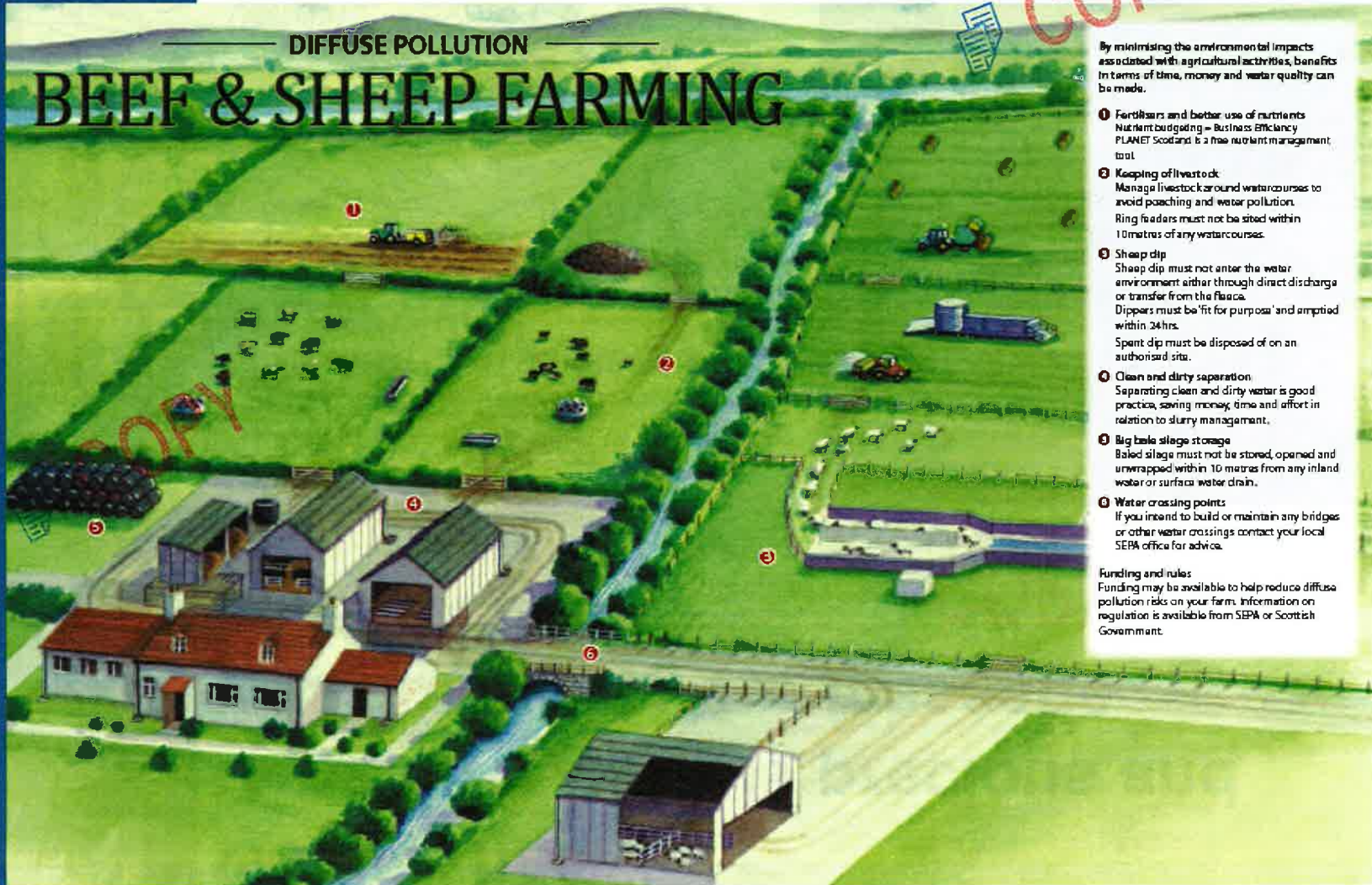
**Getting heard –
remember, time is precious and
you must get your message
across clearly.**

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Diffuse Pollution

DIFFUSE POLLUTION BEEF & SHEEP FARMING



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By minimising the environmental impacts associated with agricultural activities, benefits in terms of time, money and water quality can be made.

- 1 **Fertilisers and better use of nutrients**
Nutrient budgeting = Business Efficiency
PLANET Scotland is a free nutrient management tool.
- 2 **Keeping of livestock**
Manage livestock around watercourses to avoid poaching and water pollution.
Ring feeders must not be sited within 10 metres of any watercourses.
- 3 **Sheep dip**
Sheep dip must not enter the water environment either through direct discharge or transfer from the fleece.
Dippers must be 'fit for purpose' and emptied within 24 hrs.
Spent dip must be disposed of on an authorised site.
- 4 **Clean and dirty separation**
Separating clean and dirty water is good practice, saving money, time and effort in relation to slurry management.
- 5 **Big bale silage storage**
Baled silage must not be stored, opened and unwrapped within 10 metres from any inland water or surface water drain.
- 6 **Water crossing points**
If you intend to build or maintain any bridges or other water crossings contact your local SEPA office for advice.

Funding and rules
Funding may be available to help reduce diffuse pollution risks on your farm. Information on regulation is available from SEPA or Scottish Government.



DIFFUSE POLLUTION



- Cultivation techniques can impact water quality.
- Compaction/soil type/slope
- Impact on yields
- Think – source/pathway/receptor



DIFFUSE POLLUTION – FERTILISERS AND MANURES

Over application of slurries, manure and fertiliser

- leaching

Application at wrong time of year/weather

- results in direct run-off

Water users

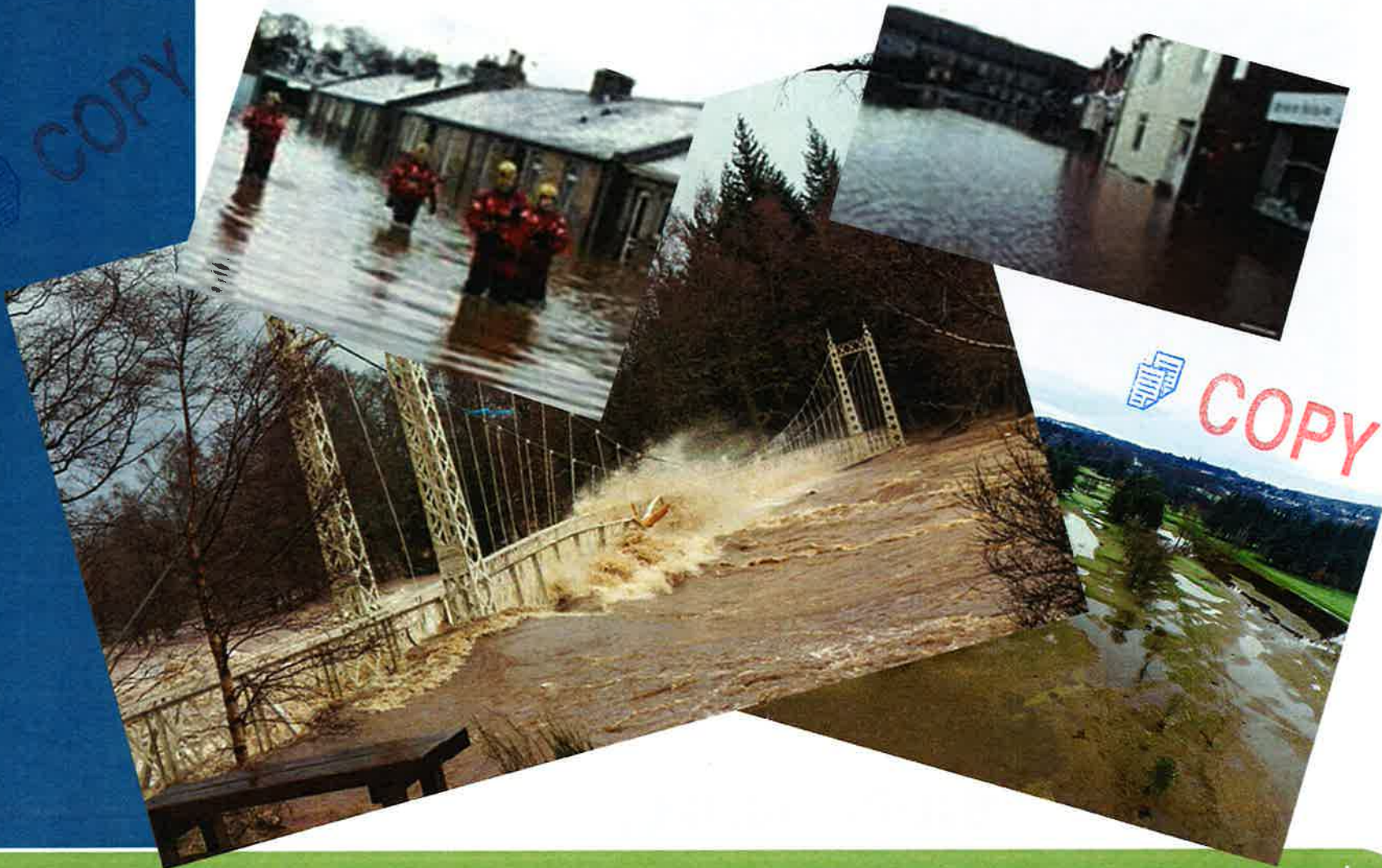


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Business, property, infrastructure & people



Any questions –
catch me during the event or email:

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Links:

Flooding – natural flood handbook

<http://www.sepa.org.uk/media/163560/sepa-natural-flood-management-handbook1.pdf>

Diffuse Pollution – farming and water Scotland

http://www.sruc.ac.uk/info/120603/farming_and_water_scotland



