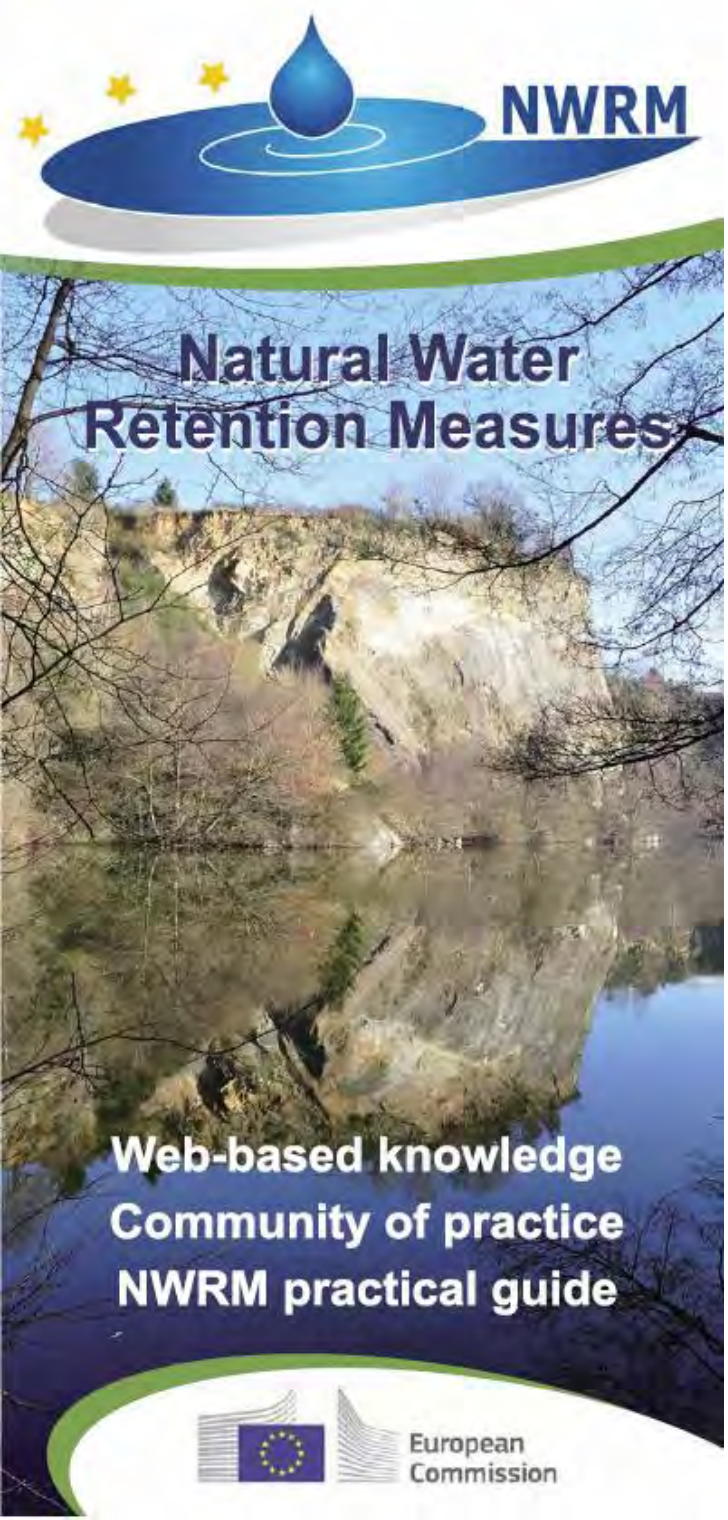

Pilot Project - Atmospheric Precipitation - Protection and efficient use of Fresh Water: Integration of Natural Water Retention Measures in River basin management

Service contract n ENV.D.1/SER/2013/0010

NWRM in other European Regions: Experience from the UK

Nick Jarritt
AMEC

Office International de l'Eau

ACTeon environment

Western Europe Network

1st workshop held in Brussels last week

- Participants from UK, Ireland, Netherlands, Belgium, France, Germany, Switzerland

An excellent opportunity to

- Determine the level of knowledge, interest and willingness with respect to NWRM
- Identify relevant and valuable case studies

In this presentation

- A taster of the case studies presented
- A challenging example from London
- A timely debate in the UK …

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A selection of case studies

Agriculture

- The Belford Project (Northern England)
  - Mark Wilkinson, James Hutton Institute

Natural Areas

- Eddleston Water Project (Scotland)
  - Chris Spray, University of Dundee

Urban

- Ballyclare (Northern Ireland)
- Lockerbie (Scotland)
  - Peter Close, Northern Ireland Environment Agency

The Belford Project

Newcastle University
Civil Engineering and Geosciences

in partnership with Environment Agency

Village of Belford susceptible to intense rainfall events

"**Catchment Systems Engineering**" approach used to manage runoff

When sandbags and sympathy are not enough...Belford 'bereft' after floods

Belford finds itself under water — an not for the first time either..!

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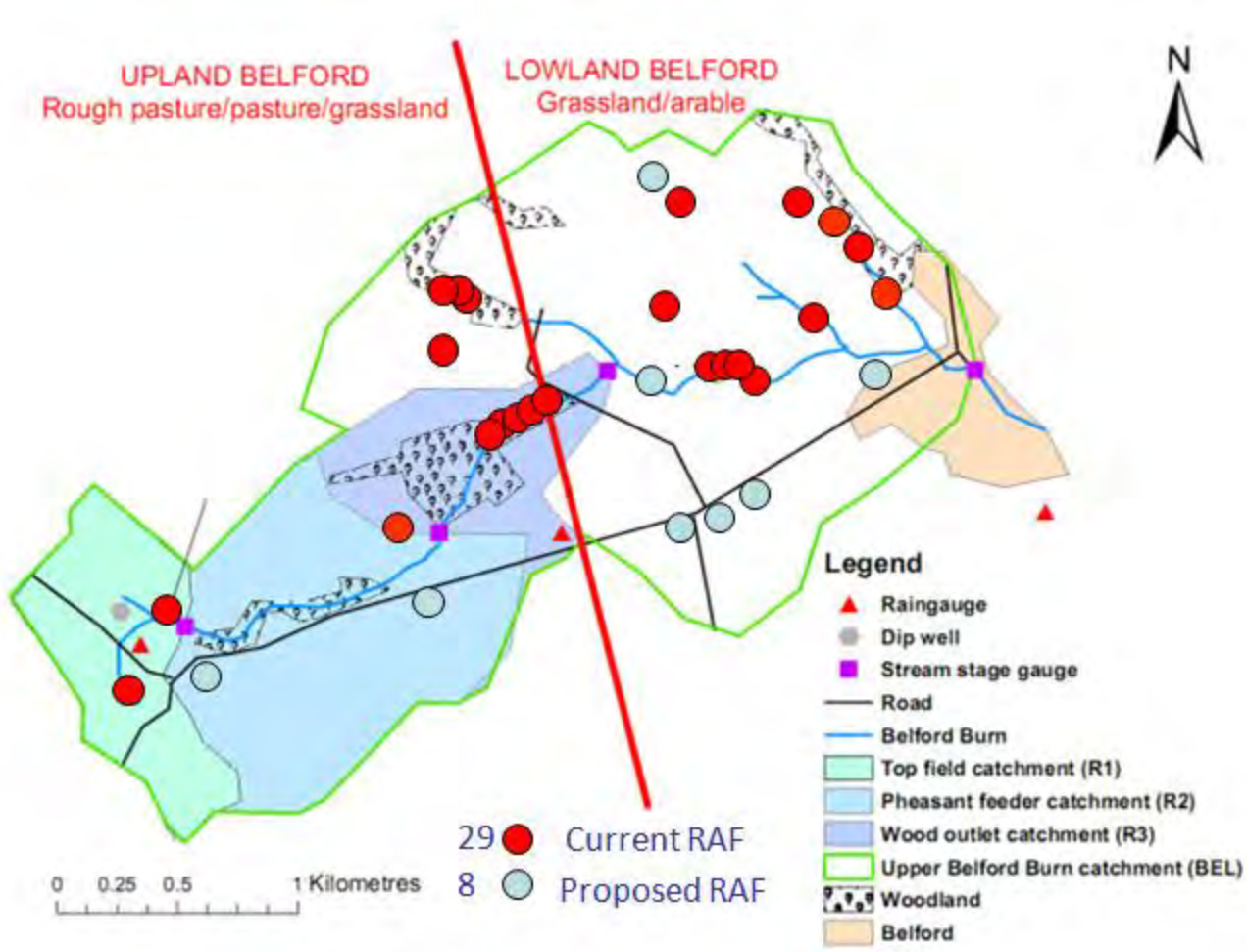
Taking action … gathering evidence

Many **Runoff Attenuation Features** installed

Extensive **monitoring network** to measure effectiveness



Small-scale Runoff Attenuation Features
Photos courtesy of Mark Wilkinson, James Hutton Institute

The Eddleston Water Project

Project aimed to **restore the river and its whole catchment** whilst at the same time **promoting livelihoods** of those who derive income from the **sustainable management of farms, forests and fishery**

- Improved physical habitat
- Reduction in flood risks

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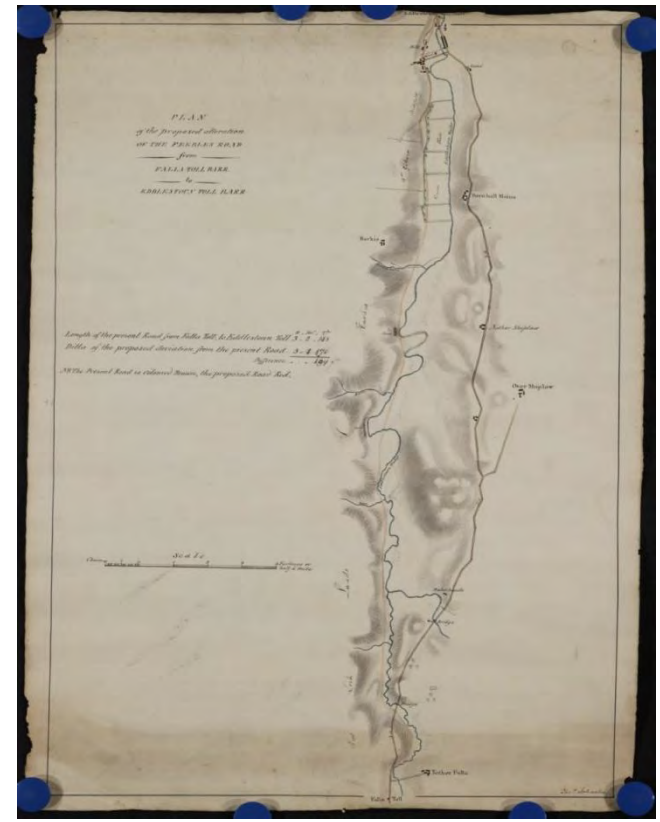
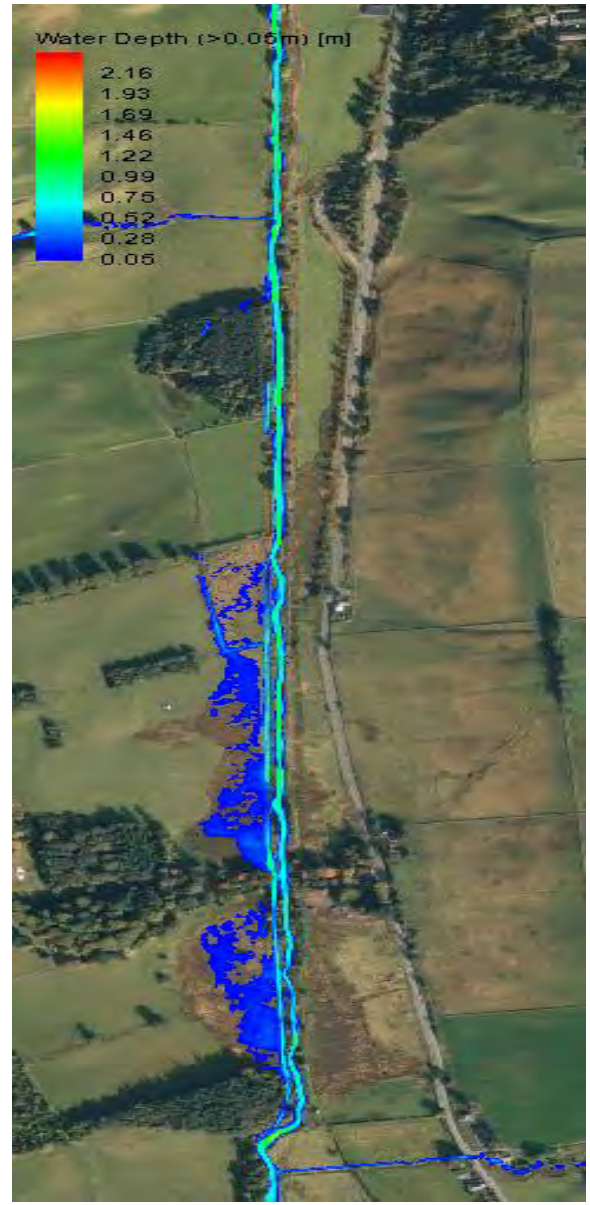
Righting historical wrongs?

Original river course was sinuous – 1750s

River straightened by 1811 – new toll road

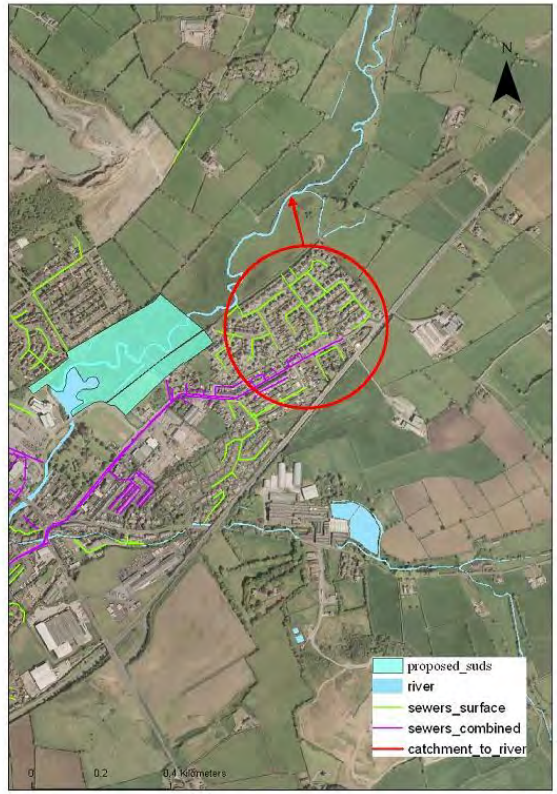


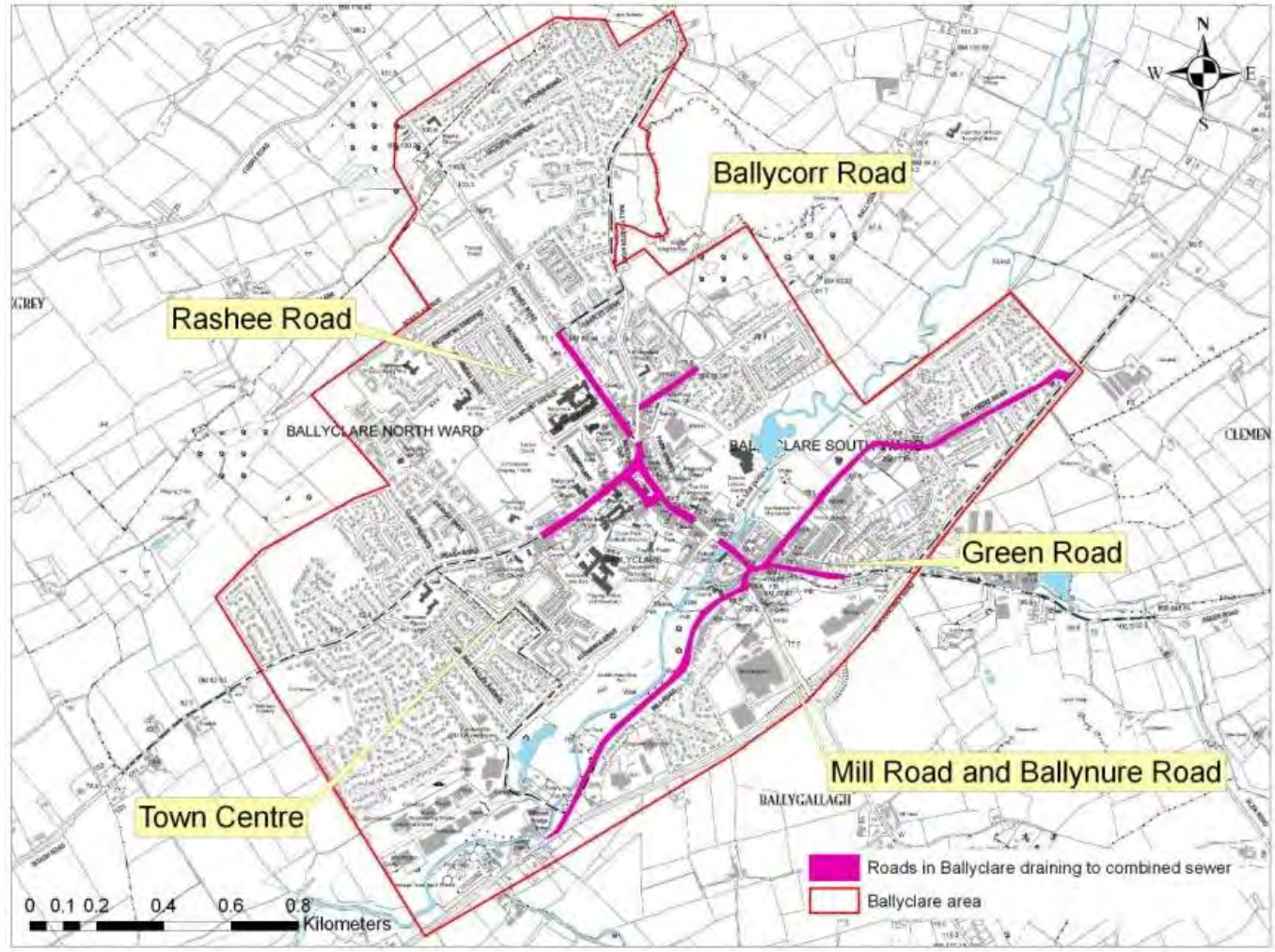


Re-meandering for river restoration and flood management
Photos courtesy of Chris Spray, University of Dundee

Ballyclare Urban Drainage Project

"Retrofitting" of sustainable urban drainage





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Ballyclare Urban Drainage Project

Sustainable stormwater management
Photos courtesy of Peter Close

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Lockerbie – Water Treatment Train

Simple but effective!

- Series of settlement ponds
- Discharge to river is better quality than receiving water

Thamesmead Canal Corridor Enhancement Masterplan

- Thamesmead estate is located on flat, low-lying land in South East London
- A network of canals is a key feature of the estate
  - A poorly-used part of the public realm
- Part of the “East London Green Grid”

Thamesmead Canal Corridor Enhancement Masterplan

- Consultation with the local population highlighted that the canal network is underused and would benefit from improvements to
  - Ecological diversity
  - Access
  - Public realm and landscape

- The canal network also plays an important role in flood risk management
  - Receives surface runoff from higher land to the south
  - Conveys flood water northwards to two Environment Agency pumping stations adjacent to the Thames

Environment Agency

Gallions Housing Association

LONDON DEVELOPMENT AGENCY

TRUST

amec

Project Aims

- To set out a masterplan to improve the canal network and provide:
  - **Biodiversity** – improve the ecological value of the canals and lakes
  - **Access** – improve access to the canals and lakes so that they can be enjoyed by all
  - **Maintenance** – develop opportunities for enhancing the maintenance regime of the canals
  - **Diversity** – recognise the canal network as an opportunity to diversify the green infrastructure network and provide a varied setting for improved access through Thamesmead

- Whilst ensuring that the flood management role of the canal network is maintained and improved

The Canal Network

The Flood Management System

- Extensive urban drainage network collects runoff from the surrounding catchment

- Drainage network feeds water to Southmere Lake

The Flood Management System

- Very large Environment Agency pumping stations balance water levels across Thamesmead

- From Southmere Lake, the canal network conveys water to two lakes adjacent to the Thames

Broadwater Dock

- Concrete channel, approximately 25m wide, 600m long and 4m deep
- Formerly connected to the River Thames, but no longer used
- Now collects rainwater and local surface runoff

- Ugly
- Dangerous
- Significant urban barrier

- **How can this feature be used to provide GI and flood benefits?**

Broadwater Dock - Proposals

- Fill the dock and create a linear park
  - Increase biodiversity
  - Provide a green link between railway station and River Thames
  - Provide linking bridges across the dock

- Make active use of water
  - Swale to provide sustainable drainage function
  - Possible wetland area in created low points

Broadwater Dock

Gallions Canal Extension

- Proposals to extend the canal network to provide a link between west and east Thamesmead
  - Currently separated by area of fenced off, disused land
- Aim is to create green/blue link that will:
  - Promote ecological diversity
  - Provide hydraulic connectivity between drainage networks

Gallions Canal Extension

- Design approach
  - Use soft banks to promote ecological habitats
  - Use wood bundles or poles to support banks (willow, hazel)
  - Incorporate cross-sectional variety to create marginal habitats
  - Create a wider green corridor – meadow areas alongside the canal extension

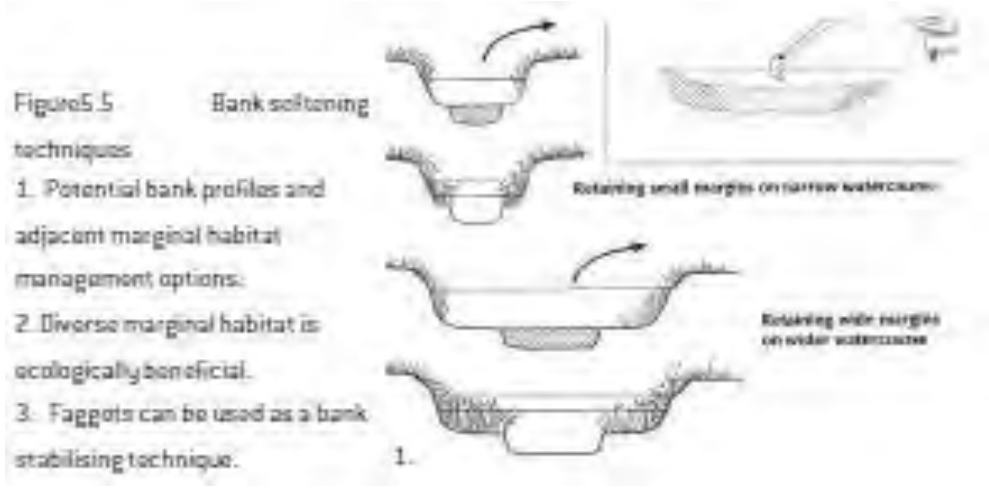
Figure5.5 Bank softening techniques
1. Potential bank profiles and adjacent marginal habitat management options.
2. Diverse marginal habitat is ecologically beneficial.
3. Faggots can be used as a bank stabilising technique.
1.


3.

Gallions Canal Extension

Why highlight this example?

It **hasn't** been implemented

Demonstrates the barriers we must overcome:

- Financial – no clear mechanism to pay for this
- Political – lack of a single organisation in overall control
- Inspirational – nobody with real vision to make it happen

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A timely challenge in the UK …

Extensive flooding in recent months

High media profile for NWRM

This week WWF suggested farmers should only receive subsidies if they implement NWRM

Thank you for attention