



JBA
consulting

Working with Natural Processes

Core to delivering on EU
Directives and climate change

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Consultants
of the Year 2010



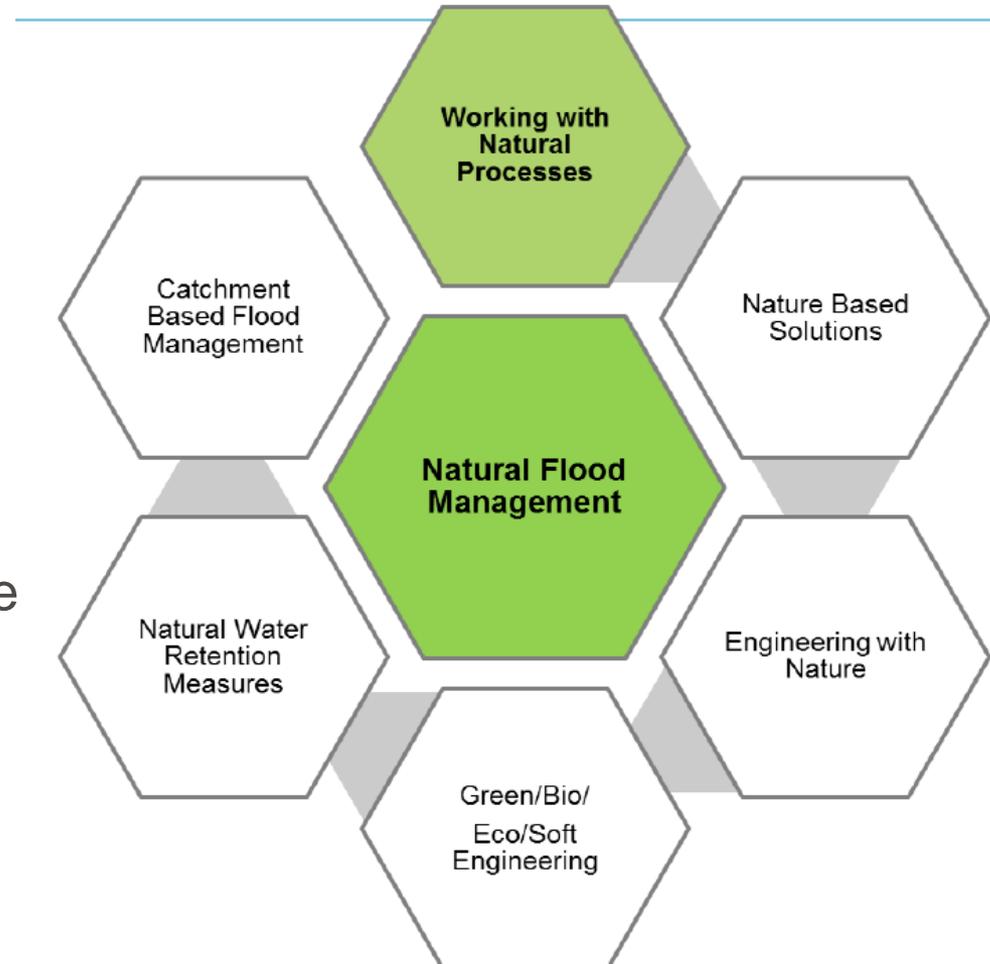
Winner

Non structural measures?

Natural flood management?

Green Infrastructure?

Adopt **Working with Natural Processes (WwNP)** it widens the scope to include management of WQ/Sediment and Runoff



- **Triple benefits in flood risk management**
 - Protection of fluvial and coastal eco systems
 - Mitigation of climate change and carbon sequestration
 - Cost effective flood risk reduction measure
- **WwNP critical core to both WFD and FD**
 - Sediments
 - Water quality
 - Climate change resilience
 - Part of an environmental best option

Broad-scale modelling, mapping, engagement, re-modelling, visualisation (UK and Ireland approach)

Evidence

- Review knowledge of the 3 catchments and plans such as the Cumbria Flood Plan
- Review **Evidence Base** for effectiveness of different NFM measures

Opportunities

- Screen distributed WWNP: storage, tree planting, soil structure
- **Data mine** updated Flood Map for Surface Water for storage

Benefits

- Run fully distributed 2m whole catchment rainfall, losses and 2d runoff model
- Visualise **benefits** of initial **opportunities** for workshop

Engage

- Catchment workshop with Rivers Trust and catchment partners (7th Oct, 2016)
- Identify which measures are **feasible** and **effective; prioritise** detailed modelling

Re-Map

- Re-run model with realistic options and update visualisations
- Produce **interactive maps** showing refined opportunities and benefits

Appraise

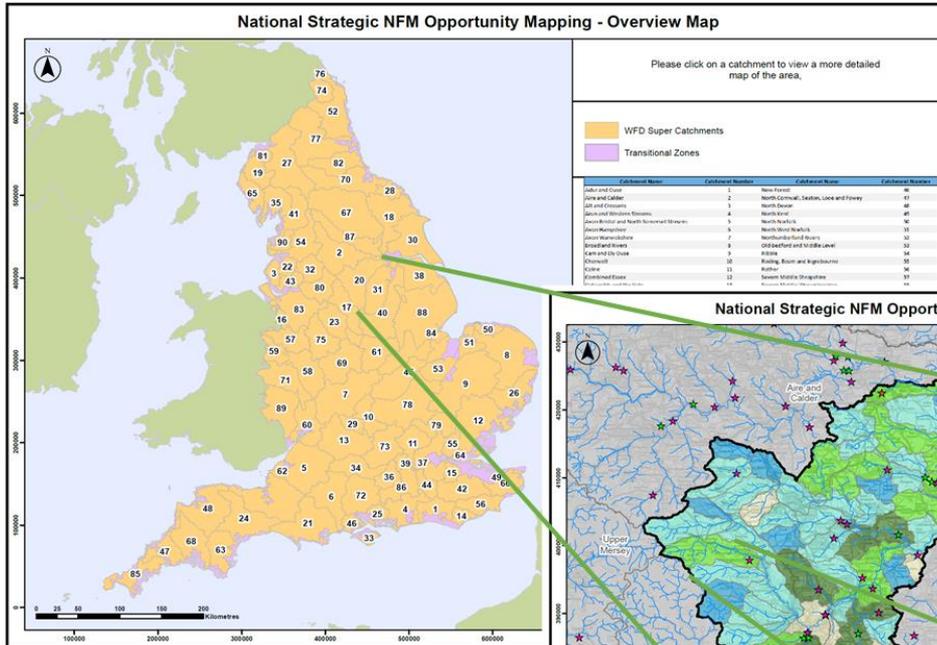
- Undertake more detailed modelling for priority sub-catchments
- Understand where most people are at risk downstream

Evolve

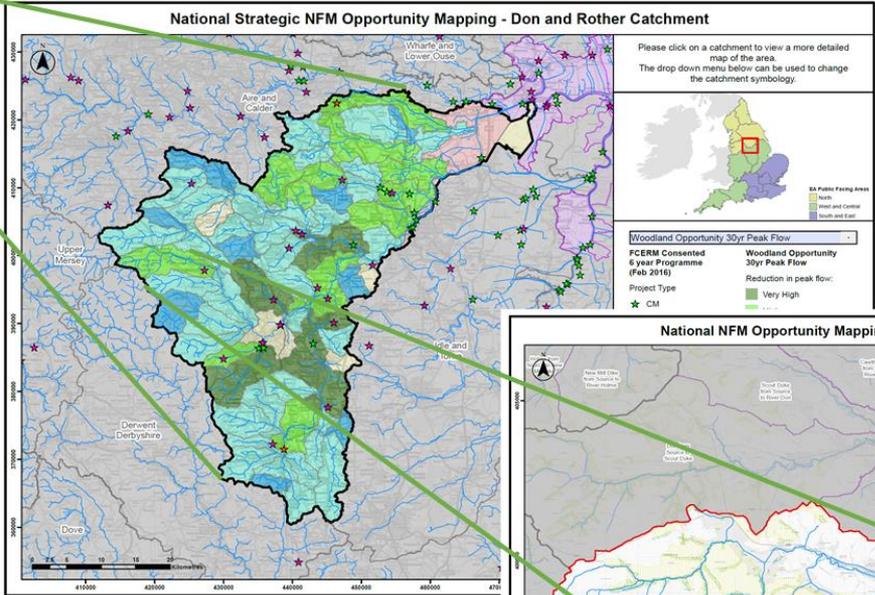
- Provide User-Guidance for interactive maps
- Provide capacity building and training in the longer term

Iterate

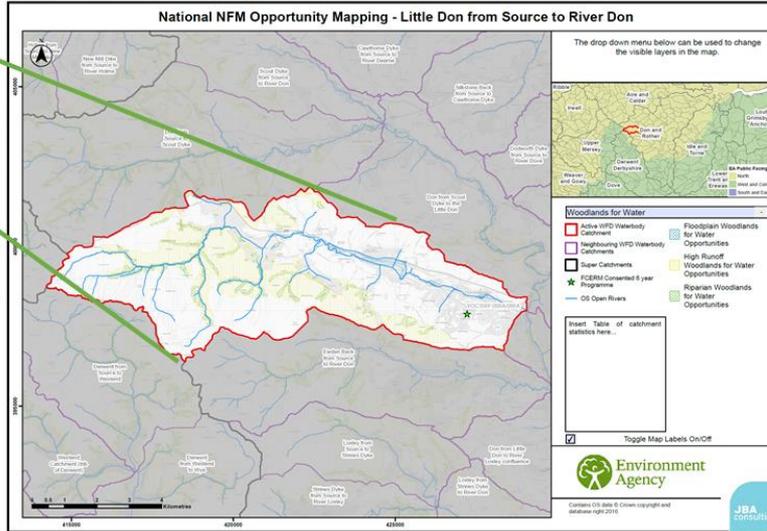
The suite of national NFM opportunity maps made for the Environment Agency



Over 5000 interactive PDFs that hyper-link and have drop-downs to explore different spatially mapped NFM opportunities



First attempt at Mapping tree-planting, runoff attenuation features opportunities and benefits for England



From concept to the reality ...

Proposed NS measures at Romanian level in FRMPs

- Nonstructural measures - Flood probability reduction measures
 - **NWRM associated to watercourses and wetlands – 93** (less than 4 % of the total of proposed measures in all APSFR in Romania)
 - **Natural water retention measures in urban areas - 2** (less than 0,1 %)
 - Natural water retention measures by changing or adapting land use practices in agriculture and forest management - 684
 - Other water retention measures - incl. polders and small retention areas for flood control - 488
- Nonstructural measures - Flood resilience measures
 - **Measures for increasing resilience of population (protection measures for buildings, constructions) - 4** (about 0,15 %)
 - Adapting of the existing defense infrastructure - 118
 - Measures for flood forecasting and flood warning - 15

Need to demonstrate that **green infrastructure and non structural measures are taken forward**, through :

- Increasing the institutional capacity of the authorities
- Training
- Available study-cases, as successful stories

- Can contribute to **reducing flood risk for smaller**, more prevalent **events**
- **Cannot** by themselves protect communities during **extreme flood events**
- Can act as **complementary** flood risk reduction **measures to traditional FRM schemes**
- Can help to **reduce the need for raising existing flood defences due to climate change effects**
- Can **increase the resilience of communities and businesses** to withstand more extreme events
- Can **provide a wide range of additional benefits to the environment and society**

How to achieve this culture change?

- **Model** the change – **hydrological, sediment, economic benefits**
- Demonstrate the benefits through **case studies and pilots**
- **Align government policies** and objectives
- **Engage the community and business** in the process
- **Training and dissemination**
- Investment in **monitoring of outcomes**
- Adopt an integrated catchment based approach using **multiple funding sources** to deliver **multiple benefits**