Integrated catchment management

Policy/ regulation

Management

Research

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Rural Development Programme for England (RDPE)
Business Support

Farming and Forestry Improvement Scheme (FFIS)

APPLICANT HANDBOOK – Round One

ecosystem services and planning

If the planning system is to put a proper value on the services provided by land-based ecosystems, and so rise to the challenge of using land to meet future needs, it needs to embrace science in a way that has not been seen for some decades, say Jim Harris and Mark Tewdwr-Jones

Water for life and livelihoods

River Basin Management Plan
Northumbria River Basin District

Annex J: Aligning other key processes to river basin management

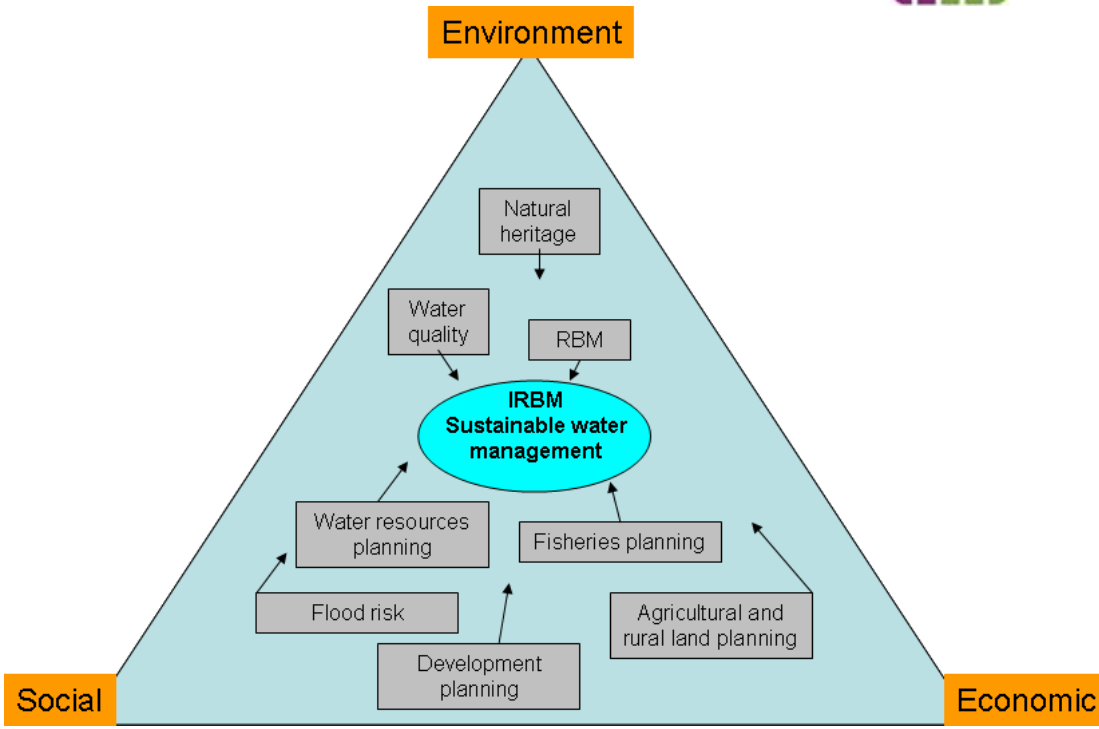
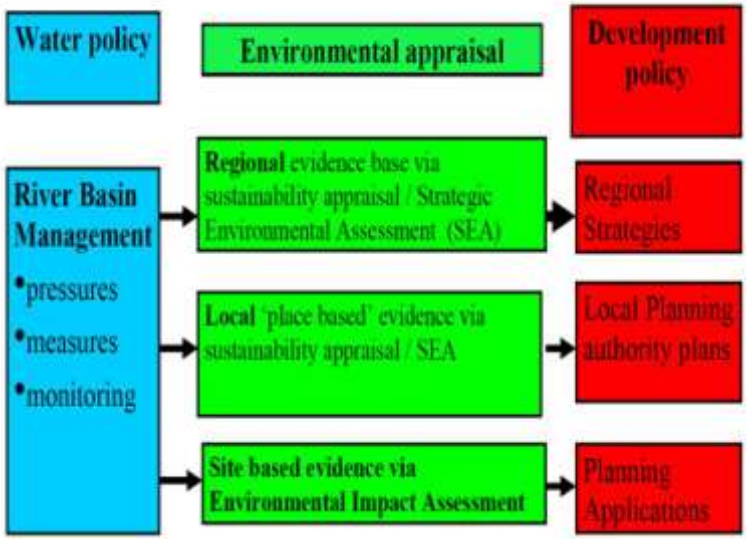


Figure J2 – **Proposed interaction of river basin management with the planning system**



Systems-scale/level-connectivity-thresholds

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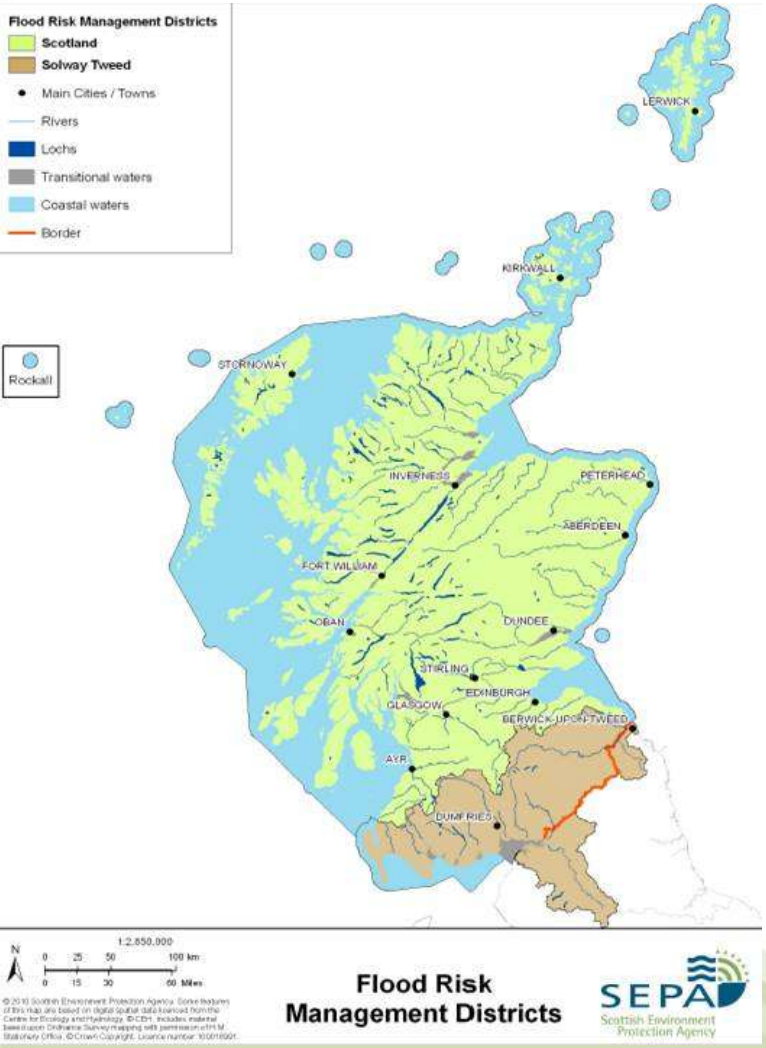
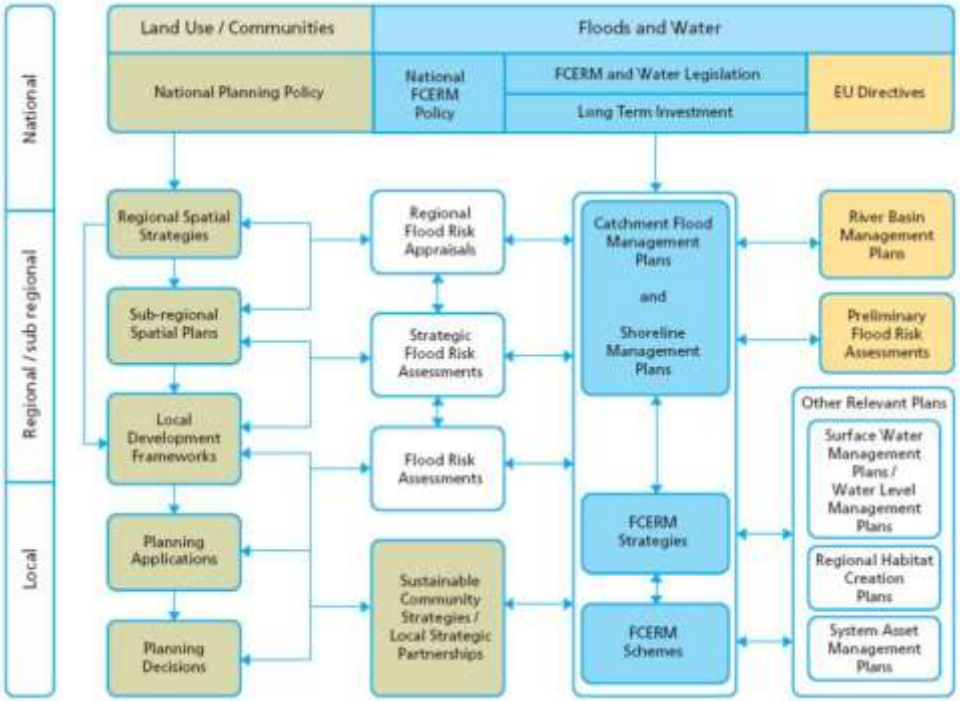
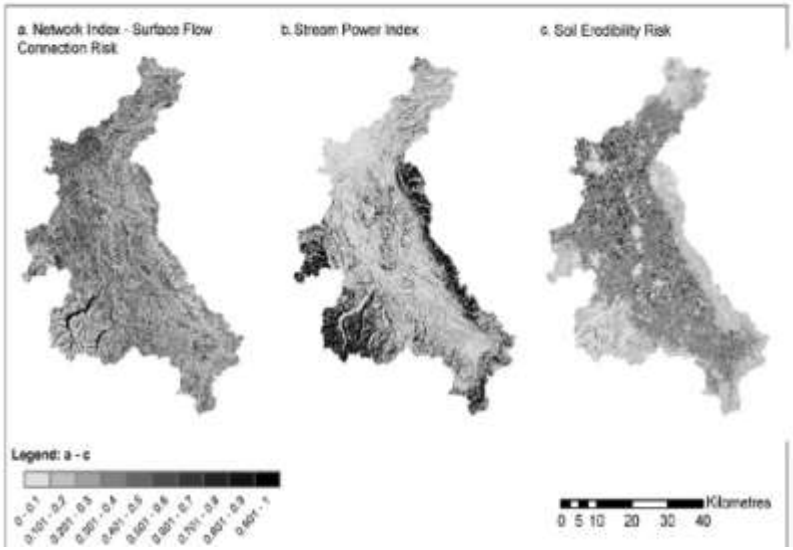




Systems-scale/level-connectivity-thresholds

S.M. Reaney et al. / Ecological Modelling 222 (2011) 1016–1029



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SEPA Scottish Environment Protection Agency

Water Use

Supporting Guidance (WAT-SG-67)

Assessing the Significance of Impacts - Social, Economic, Environmental

Table 27 Indicative criteria for assessing the scale of an impact on landscape

Negative impact				
Very small	Small	Medium	Large	Very Large
Only features that are of low importance to the distinctiveness and character of the landscape character type would be altered and the changes would be virtually imperceptible and/or within the capacity of the landscape to absorb.	Features that contribute moderately to the distinctiveness and character of the landscape character type would be slightly altered in a localised area.	Features that contribute moderately to the distinctiveness and character of the landscape character type would be altered to a medium extent over a wide area or altered substantially in a more localised area.	Features that contribute significantly to the distinctiveness and character of the landscape character type would be altered over a wide area or altered very substantially over a more limited area.	Features that contribute significantly to the distinctiveness and character of the landscape character type would be very substantially altered over a wide area.
Positive impact				
Very small	Small	Medium	Large	Very Large
The impact is	The impact is	The impact is	The impact is	The impact is

What are we trying to achieve and what are the constraints?

- Supply a range of functions.
- Hydrological perspective- delaying the peak.
- Targeted interventions (multiple demands on our land , effectiveness and acceptance).
- Multiple benefits of a feature.
- Constraints: regulatory, social and economic.
- Money: less, pooling.
- [Uncertainty in performance of features].

Lessons from previous studies

- Large scale changes to land management X.
- Comparing options: performance, impact, agreement.
- Multiple benefits can make schemes financially viable.
- Previous hydrological research e.g. Eden.
- Need consistent terminology/standards and sharing of data/metadata.

Evidence: for whom, what, by whom and weight

- Politicians, policy makers (Defra and EA), regional/local bodies, land managers, affected communities.
- Understand how evidence is/will be used.
- Perception and interpretation of evidence.
- Relationship between level of evidence and experience of flooding.
- The evidence required is based on who is paying for the interventions.
- Hydrological: stable post intervention, bands not numbers.
- Multiple benefits.
- Transfer evidence.

Evidence needs

- **Policy makers** need to know when and where the interventions work and what are the other solutions in simple but robust messages. In Scotland SEPA looking for hydrological evidence, level of protection for a scheme of a suite of measures. Multiple benefits are key.
- **Land managers/owners**: need simple and clear glossy (with good photographs) document/ coffee table book (could this have typology of features and key aspects/criteria for location, design, functioning and maintenance.
- Larger schemes have higher thresholds, other issues e.g. Aquarius project.

How the evidence base is developed

- Adaptive management. Learning by doing. Working in partnership.
- Role for monitoring-data-engagement in understanding system and how to intervene.
- Understand catchment functioning: spatial analysis, walking the catchment (focused on ground truth data/models) and a need for quick and cheap river level exploratory monitoring along the network.
- Discuss-plan-intervene-monitor-discuss--------.

When designing a scheme need to consider

- Understand land management, relationships between land managers/owners and other parties. Previous efforts and issues in the catchment.
- Understanding soil status and management.
- Scale and connectivity.
- Communication with public (what and how you say it).
- Interventions alter thresholds, maybe it is the monitoring of these thresholds that is key (issue of baselines/ stationarity).
- Planning structures and processes.
- Choosing locations: wooded areas example.
- Easy to take up my land owner/management as they have limited time but are interested: benefits need to communicated effectively by the right individual.

Guidance/best practice for features and their location (if not, needs TBD)

- Woody dams 5-6 channel width apart, x number in sequence based on expected discharges (function of inputs, contributing area, surface/subsurface hydrology, land management).
- Soil bank dams: preferred further down slopes where soil is deeper. Are these more resilient compared to leaky woody dams.
- Woody debris/log jams.
- Leaky wood constructed dams: often used due to limited soil.

Issues/challenges/needs

- Very difficult to provide a numerical estimate of protection, general bands could be used with some rules e.g. Belford-medium.
- Understanding and managing features for multiple events.
- Remobilisation of sediments in features.
- Hydrological/gaseous losses of N.
- How good/what confidence do we have in our models?
- Need to consider a medium term outlook. What will be the drivers and needs in 10 years time.
- None/few high order events to understand effectiveness of interventions for key events.
- Increase in regional (England) powers e.g. regional flood committees.
- Simple but robust rules for runoff generation e.g. HOST/SCS.
- Increase in area of woodland to be planted (1500 to 10000 ha/annum) need to ensure these are in the right locations for multiple benefits.
- Set of rules and matrices based on what to site where and why.