

Towards Solutions: Payments for Ecosystem Services

15/04/2010 - Laurence Couldrick



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SOUTH WEST WATER



Environment
Agency

The Westcountry Rivers Trust



The objectives of the Trust are:

- To secure the preservation, protection, development and improvement of watercourses in the Westcountry.
- To advance the education of the public in water management.



“...a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in a equitable way...”



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Case Study – Riverbank fencing



Savings: Fencing preventing lameness, straying and infection saving £2 per animal per year. On a 200 head dairy unit the fencing more than paid for itself in the first year = **£400/yr**

Cost: Fencing = **£250**



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Win-Win integrated management plans



- 2000+ farmers & landowners given advice
- 1500+ Integrated Land & River Management Plans
- Over 100,000 ha of land targeted with management advice
- 250 km+ riverbank restored
- 20 major wetlands restored/improved
- 85+ km ditches prioritised for re-vegetation
- 350+ sites of accelerated erosion controlled
- 35 demonstration sites developed and operational
- 270+ sites of habitat improvement
- 50+ buffer zones created



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Tools to sculpt water catchment protection

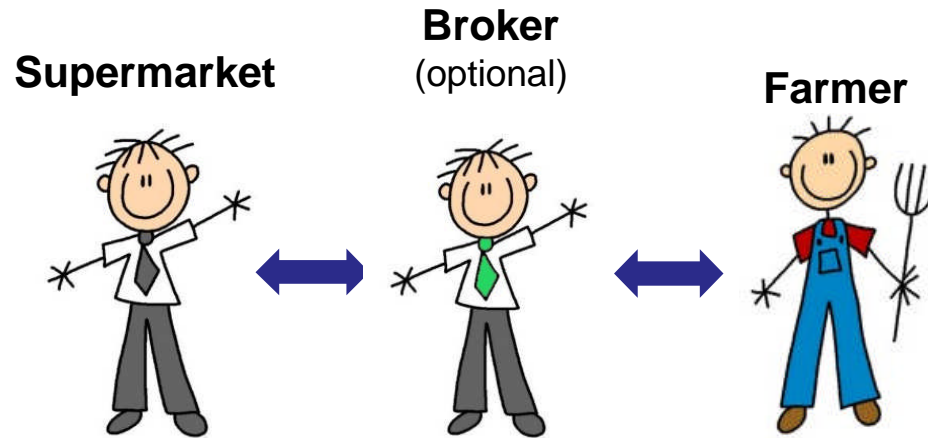


- **Regulation** - you alter rights to do certain things on land and prosecute breaches (SSSI, SAC, NVZ & WPZ) - *requires costly enforcement and unfair if not applied either universally or objectively*
- **Win-win** - you find win-wins for land owners that save them money and improve the environment, and foster land management change - *delivers economic benefits but land protection is voluntary and subject to global prices.*
- **Incentives - Paid Ecosystem Services (PES)** - beneficiaries pay providers for ecosystem services - *needs clear economic case for investment and understanding of uncertainties.*



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PES - Global commonalities

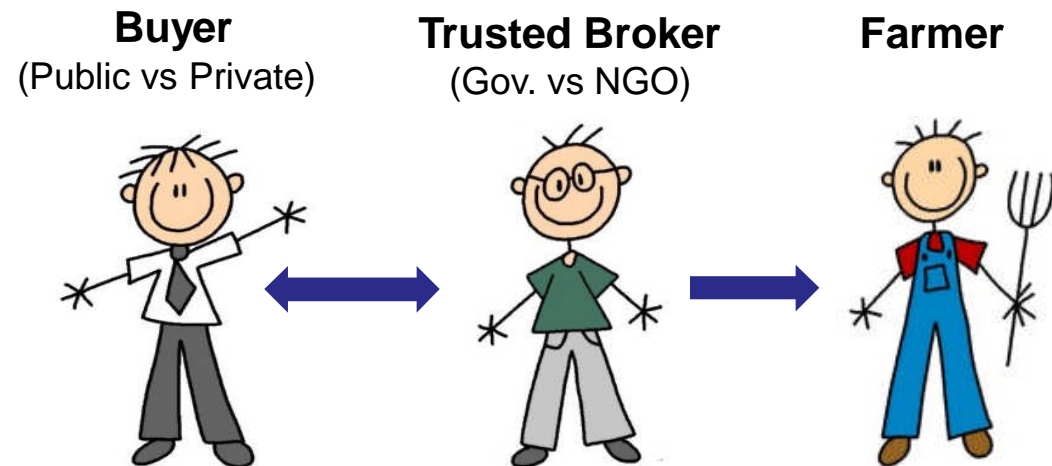


Types and number of services

A voluntary direct payment from the beneficiary to the provider conditional on the delivery of an ecosystem service
(most of the successful schemes have explicit single services and/or buyer)

Types of governance

Schemes can be paid for through private or public funds and run by governmental or non-governmental groups *(whilst there are many successful examples of all combinations trust is one of the most important factors)*



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Single service PES at a catchment scale



Martin Ross - SWW



- Estimated cost/benefit ratio of up to 65:1 = reduced risk
- Sold to OFWAT
- 65p from every bill payer = £9 million

Dylan Bright - WRT



- Ensure works and advice creates multiple ecosystem benefits
- Minimise admin costs
- Monitor concept

Mr Jones - Farmer

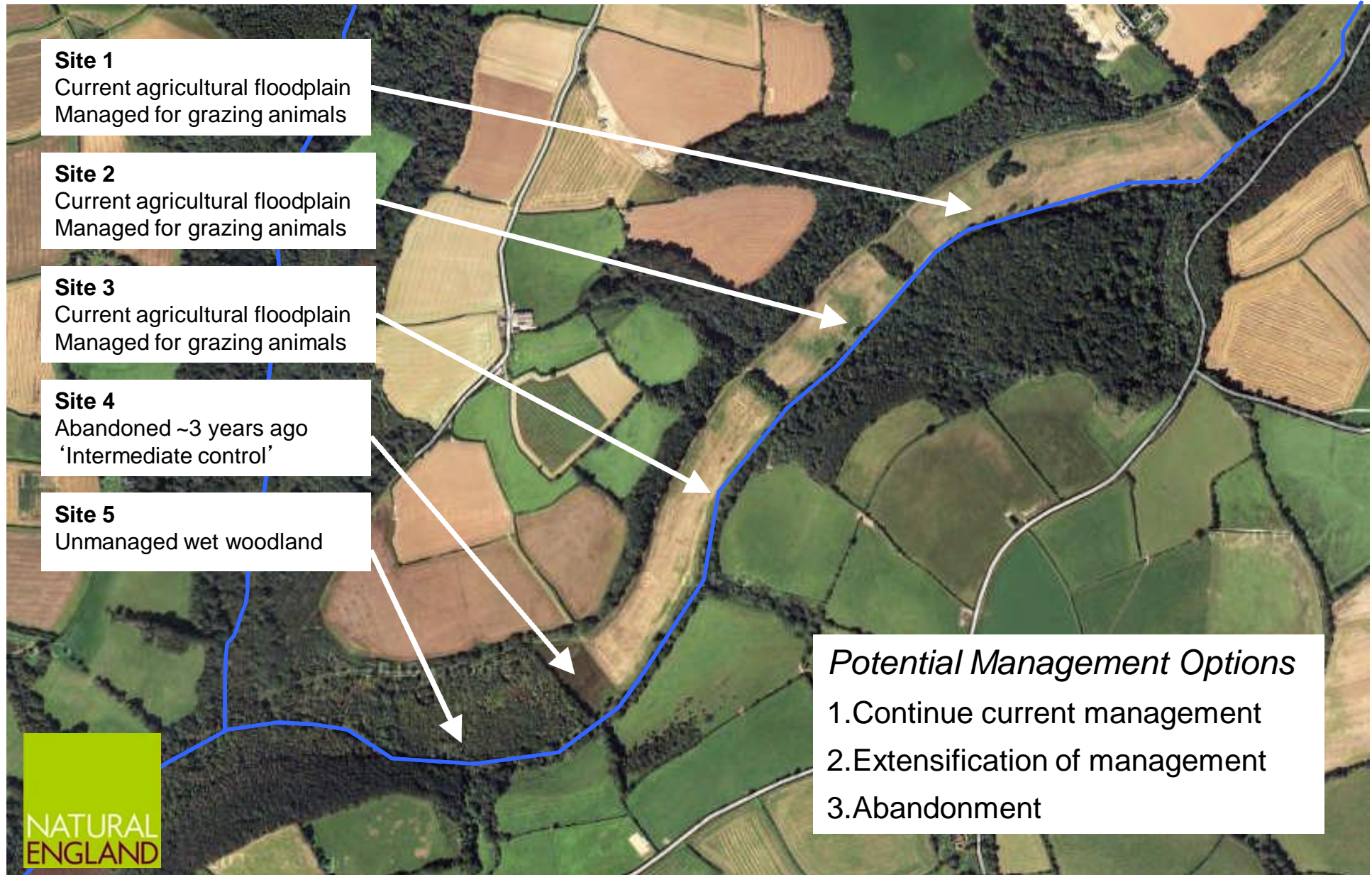


- Instigate farm resource management plan
- Pay for remaining non grant aided work
- Change practices



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Multiple service PES at a field scale



Ecosystem Service	Option 1 – Do nothing	Option 2 – Extensify	Option 3 – Abandon	Notes
Provisioning services				
Fresh water	0	++	++	Purification of water by increase retention of sediment
Food (e.g. crops, fruit, fish, etc.)	++	-	--	Loss of grazing and agriculture payments offset by shellfish production
Fibre and fuel (e.g. timber, etc.)	0	0	+	Limited coppicing
Genetic resources	0	0	0	Small increase or neutral
Biochemicals, natural medicines,	0	0	0	Small increase or neutral
Ornamental resources (e.g. shells)	?	?	?	Not known
Regulatory services				
Air quality regulation	0	+	+	Small increase or neutral
Climate regulation (sequestration)	-	+	++	Net increase in greenhouse gas sequestration with habitat shift
Water regulation (flooding, etc.)	0	++	++	Increased water storage
Natural hazard reg. (i.e. storms)	0	++	++	Valued in water regulation
Pest regulation	?	?	?	Not known
Disease regulation	?	?	?	Not known
Erosion regulation	-	+	++	Improvement in bank stability
Water purification & treat waste	+	++	++	Valued in fresh water provision
Pollination	0	+	+	Small increase or neutral
Cultural services				
Cultural heritage	0	0	0	Valued in recreation
Recreation and tourism	0	++	+	Improved fishing, shooting, navigation and bathing water
Aesthetic value	0	+	+	Valued in recreation
Spiritual and religious value	?	?	?	Not known
Inspiration of art, folklore, etc	0	+	+	Valued in recreation
Social relations	0	+	+	Valued in recreation
Supporting services				
Soil formation	-	++	++	Valued in erosion regulation and fresh water provision
Primary production	-	+	++	Quantification complex
Nutrient cycling	-	+	++	Valued in Climate regulation and fresh water provision
Water recycling	-	+	++	Valued in fresh water provision
Photosynthesis	-	+	++	Quantification complex
Provision of habitat	--	++	++	Net increase in diverse habitat

Qualitative assessment

Score	Assessment of effect
++	Potential significant positive effect
+	Potential positive effect
0	Negligible effect
-	Potential negative effect
--	Potential significant negative effect
?	Gaps in evidence



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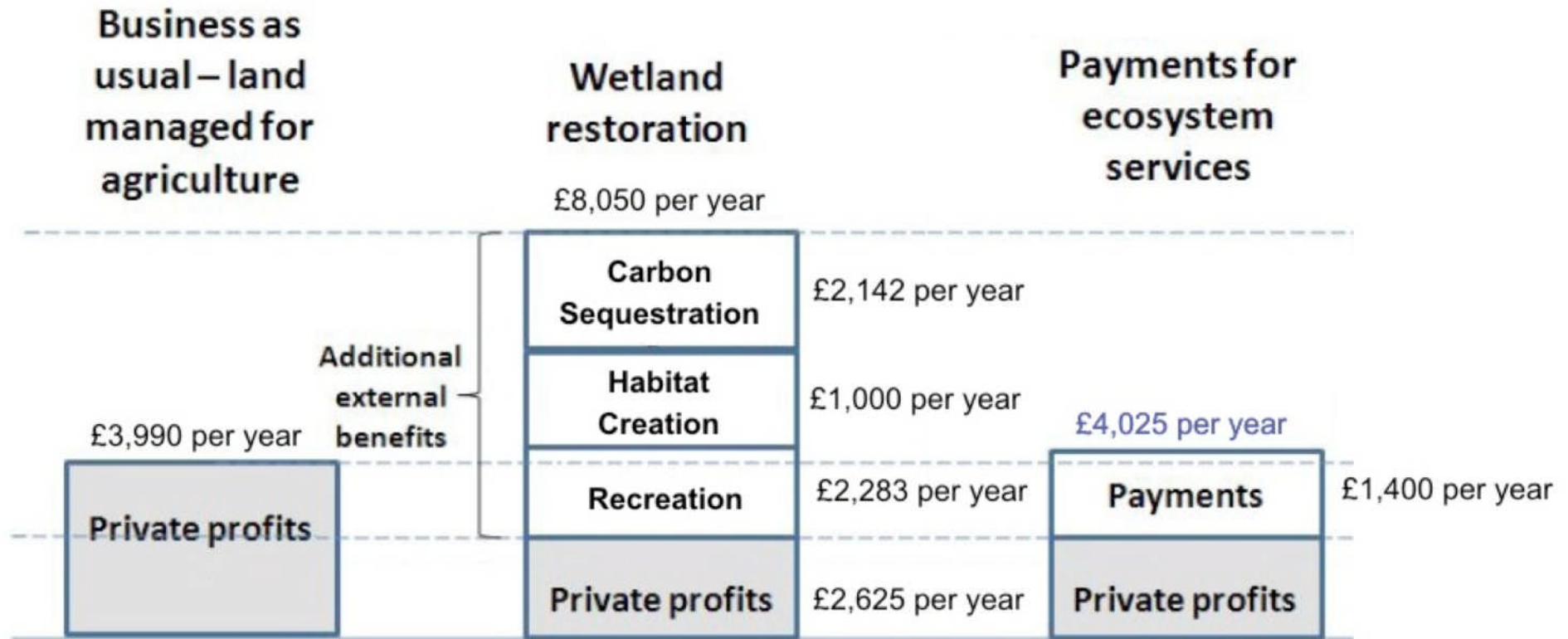
Quantification and monetisation of potential exploitable services

Ecosystem Service	Option 2 – Extensify	Option 3 – Abandon
Provisioning services		
Fresh water	£7,357	£7,357
Food (e.g. crops, fruit, fish, etc.)	£-1,365	£-3,990
Fibre and fuel (e.g. timber, etc.)	0	+
Genetic resources	0	0
Biochemicals, natural medicines,	0	0
Ornamental resources (e.g. shells)	?	?
Regulatory services		
Air quality regulation	+	+
Climate regulation (sequestration)	£2,142	£4,284
Water regulation (flooding, etc.)	++	++
Natural hazard reg. (i.e. storms)	++	++
Pest regulation	?	?
Disease regulation	?	?
Erosion regulation	£141	£283
Water purification & treat waste	++	++
Pollination	+	+
Cultural services		
Cultural heritage	0	0
Recreation and tourism	£1,950	£200
Aesthetic value	+	+
Spiritual and religious value	?	?
Inspiration of art, folklore, etc	+	+
Social relations	+	+
Supporting services		
Soil formation	++	++
Primary production	+	++
Nutrient cycling	+	++
Water recycling	+	++
Photosynthesis	+	++
Provision of habitat	£1,000	£1,000
Total Annual Benefit	£11,225	£9,134
25 year Horizon (discounted 3.5%)	£189,594	£154,276



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Assessing actual exploitable payments for extensification

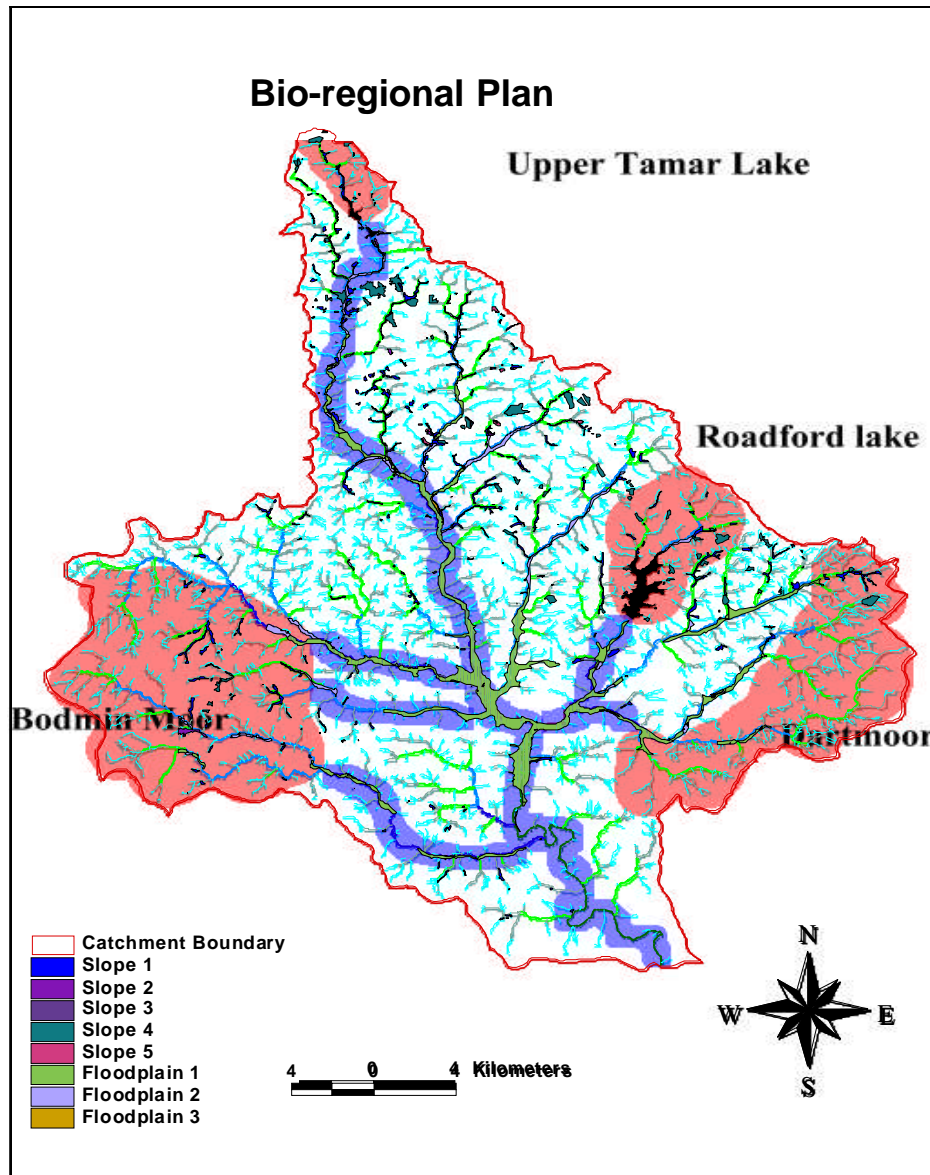


* Not to scale



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Creating a catchment vision – Tamar 2000 (WRT & WERG)



1. Basin Stream order

2. Wetland HGMU's

3. Bio-regional plan



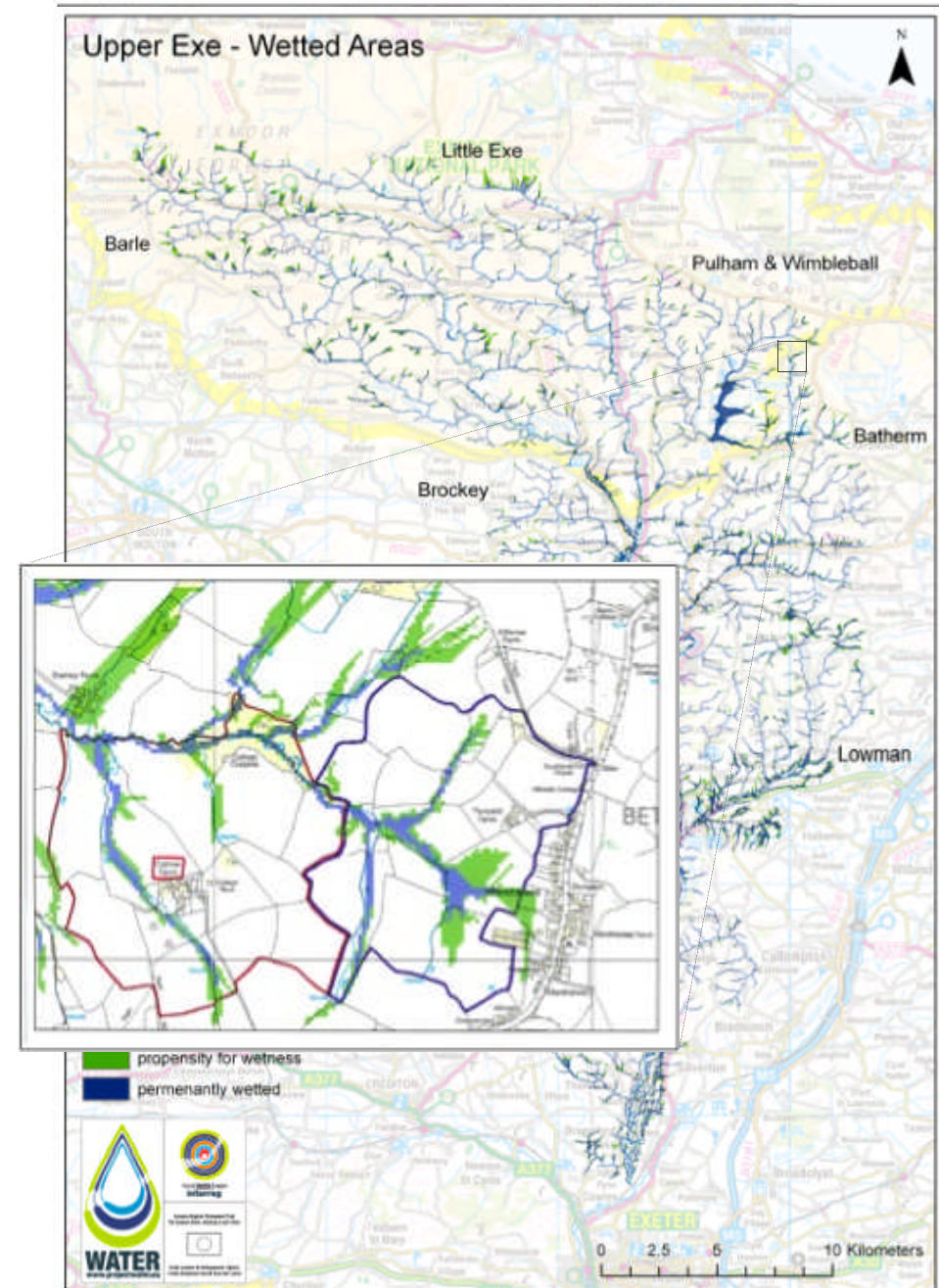
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Creating a catchment vision – 2011 and beyond...



Mapping to identify potential target areas
and value cost of protection:

- 1 – Pollution Source Mobility
- 2 – Pollution Connectivity
- 3 – Potential to Disconnect
 - Source wetlands
 - Pathway interceptor wetlands
 - Receptor stripping wetlands
- 4 – Management Areas
 - Low risk non wetland areas
 - Low risk source wetland areas
 - High risk areas with a buffer
 - High risk areas without a buffer
 - Receptor striping wetlands
- 5 – Weightings
 - Drinking water areas
 - Flood protection areas
 - Recreation areas
 - Biodiversity rich areas
 - Agricultural value



What these areas look like on the ground



Assessing Economics and apportioning benefits



Stake holder co-led service modelling with both the provider and the buyer generates Trust in model



Carbon Offsetting Businesses



Flood Insurance Groups



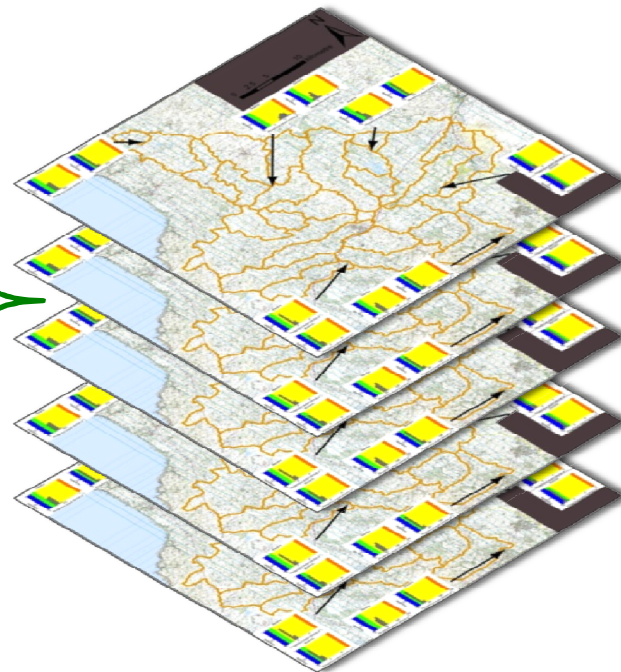
Harbour Dredging Groups



Water Companies



Tourism Groups



Flood risk reduced £/hectare of houses

Fecal Coliforms removal £/blue flag status

Carbon sequestered £/tonne C stored

Sediment removal £/tonne Sediment

Nitrogen & Phosphate removal £/kg N or P

Allows us to apportion benefits objectively

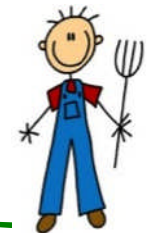
Farmer A



Farmer B

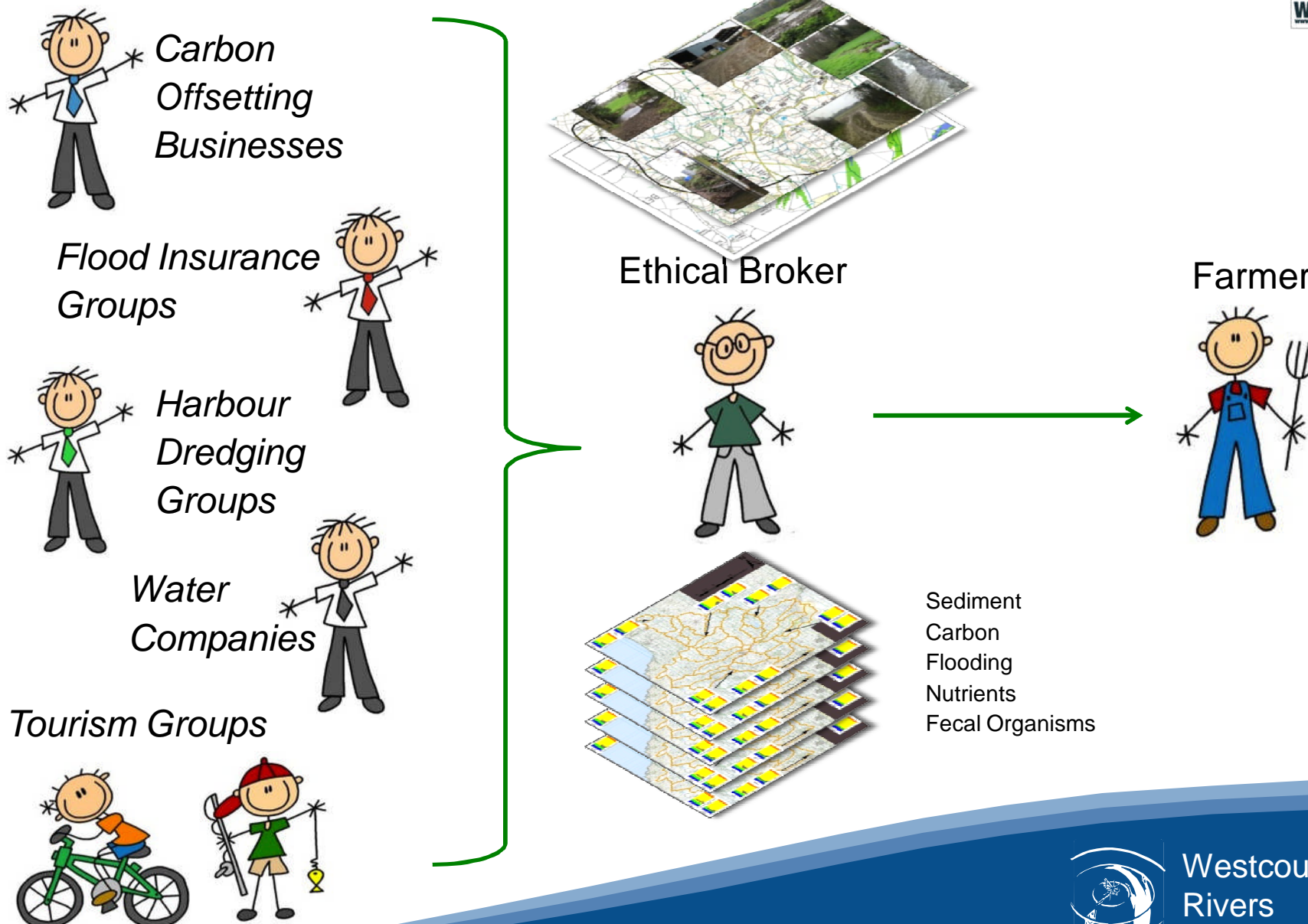


Farmer C



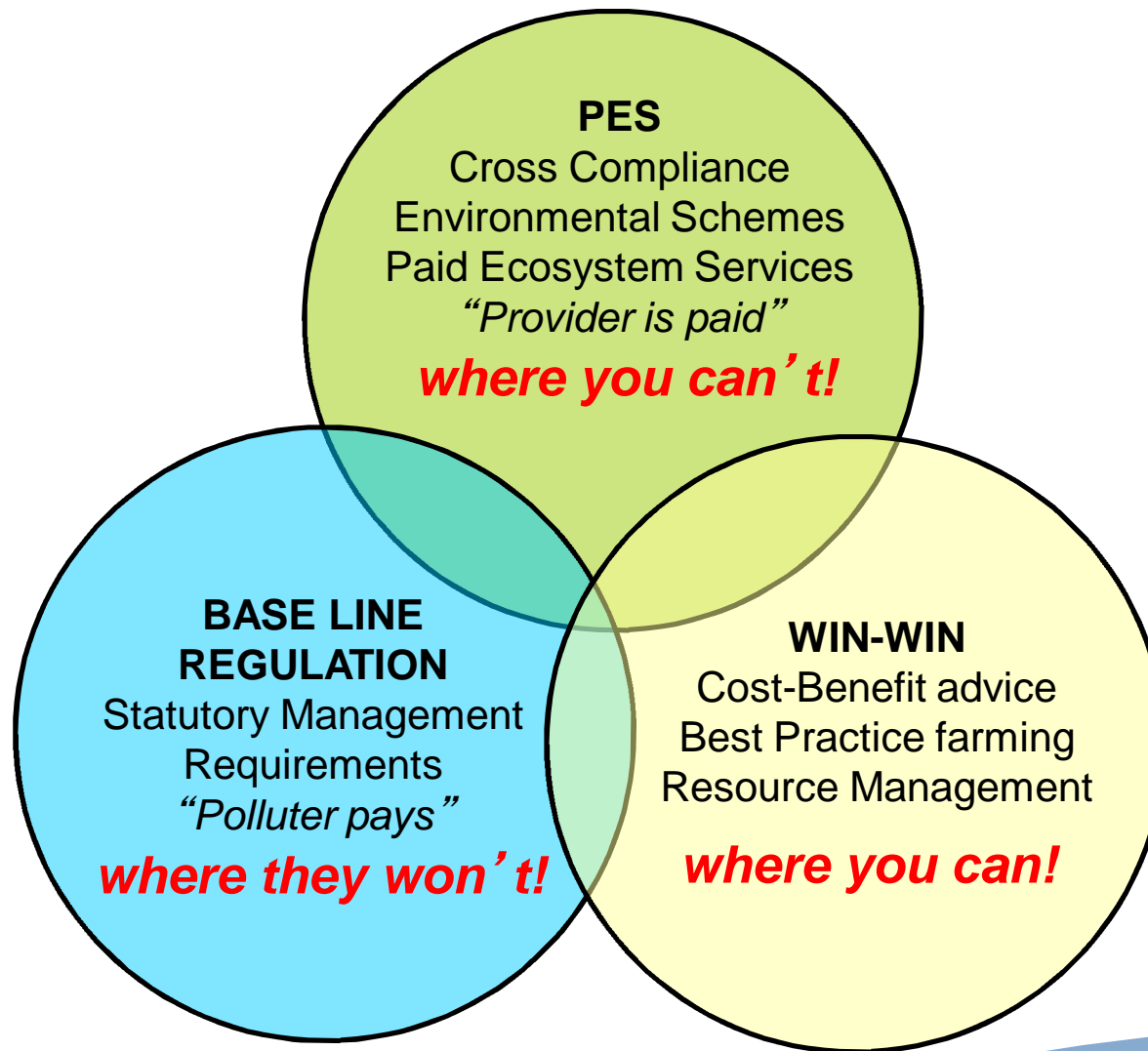
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Multiple service PES at a catchment scale



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Aligning tools to manage a catchment vision



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Thank you for taking the time to view this presentation



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