

Holding Water

why, how, where, when and who?

Paul Quinn

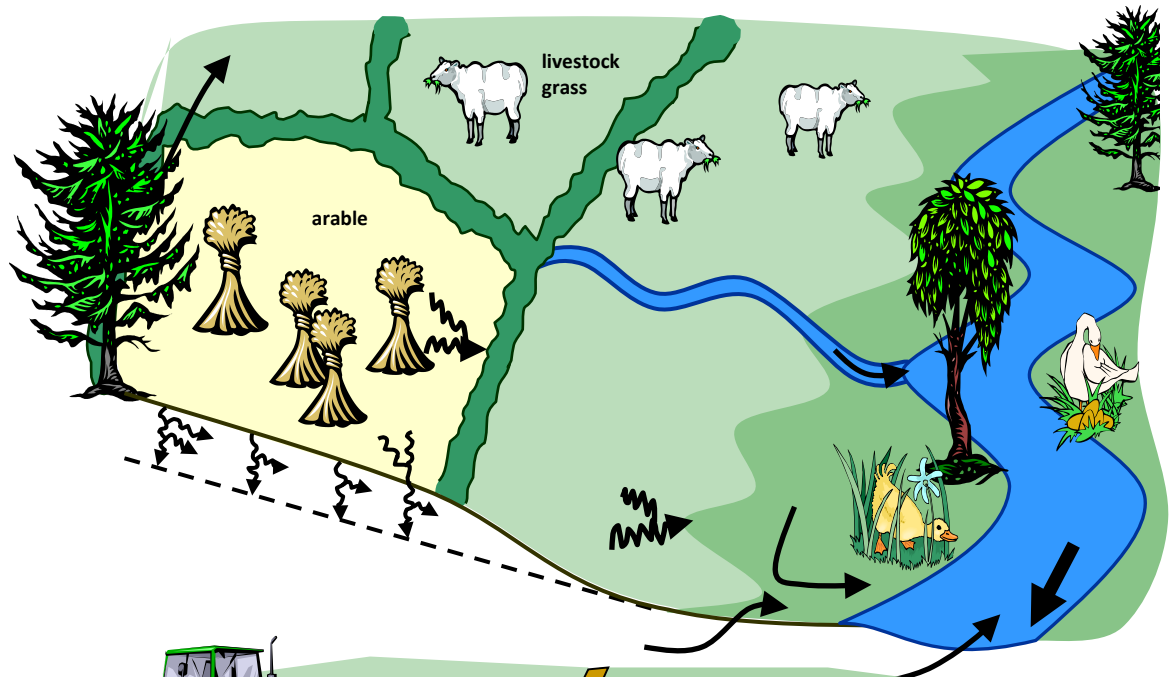
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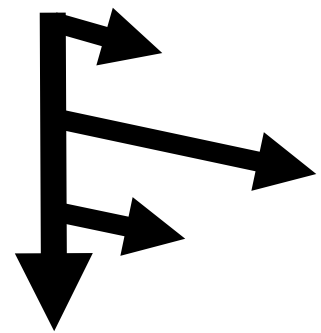
My Mission Statement?

Holding water in the farmed landscape by using engineered attenuation features will

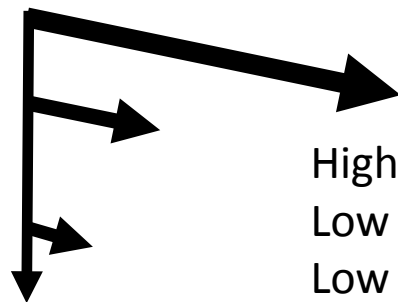
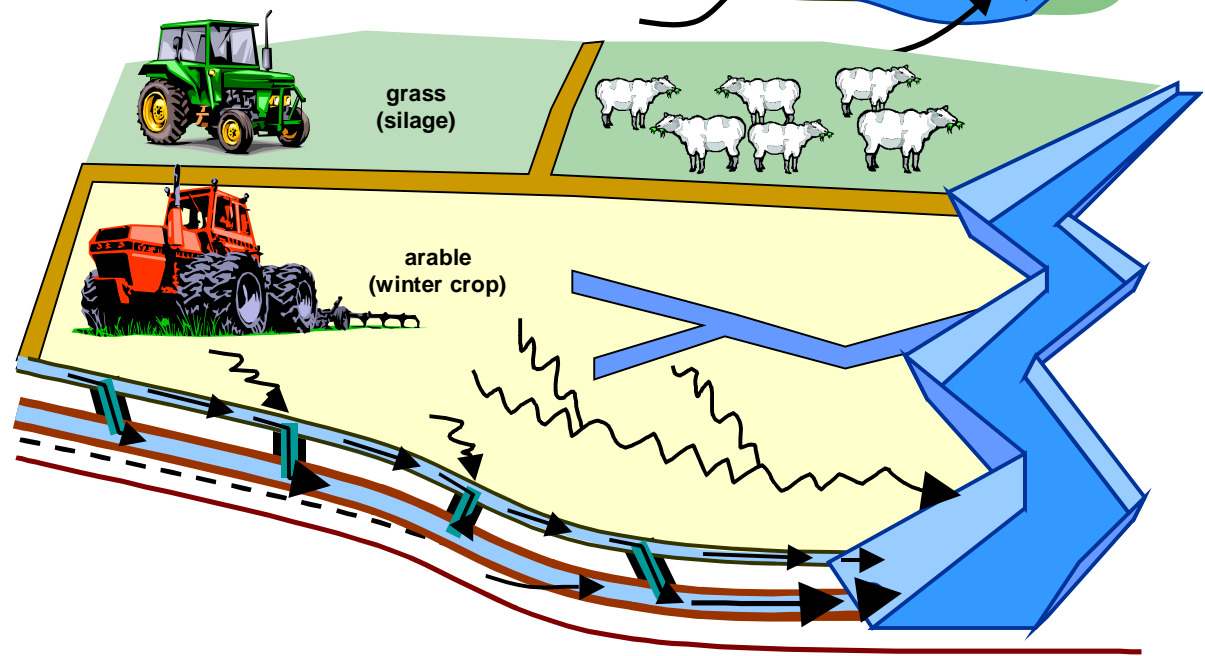
1. Offset increased runoff rates arising from farming
2. Have minimum impact on farm production, as it requires ~ 5% loss of productive land (with changes in ditch management, riparian management and new forest zones)
3. Lowers flood hazard, drought risk and diffuse pollution
4. Be Cost effective
5. Be achieved by the farming community themselves avoiding red tape and farmer animosity
6. Form a major contribution to a full and long term catchment restoration plan



The problem

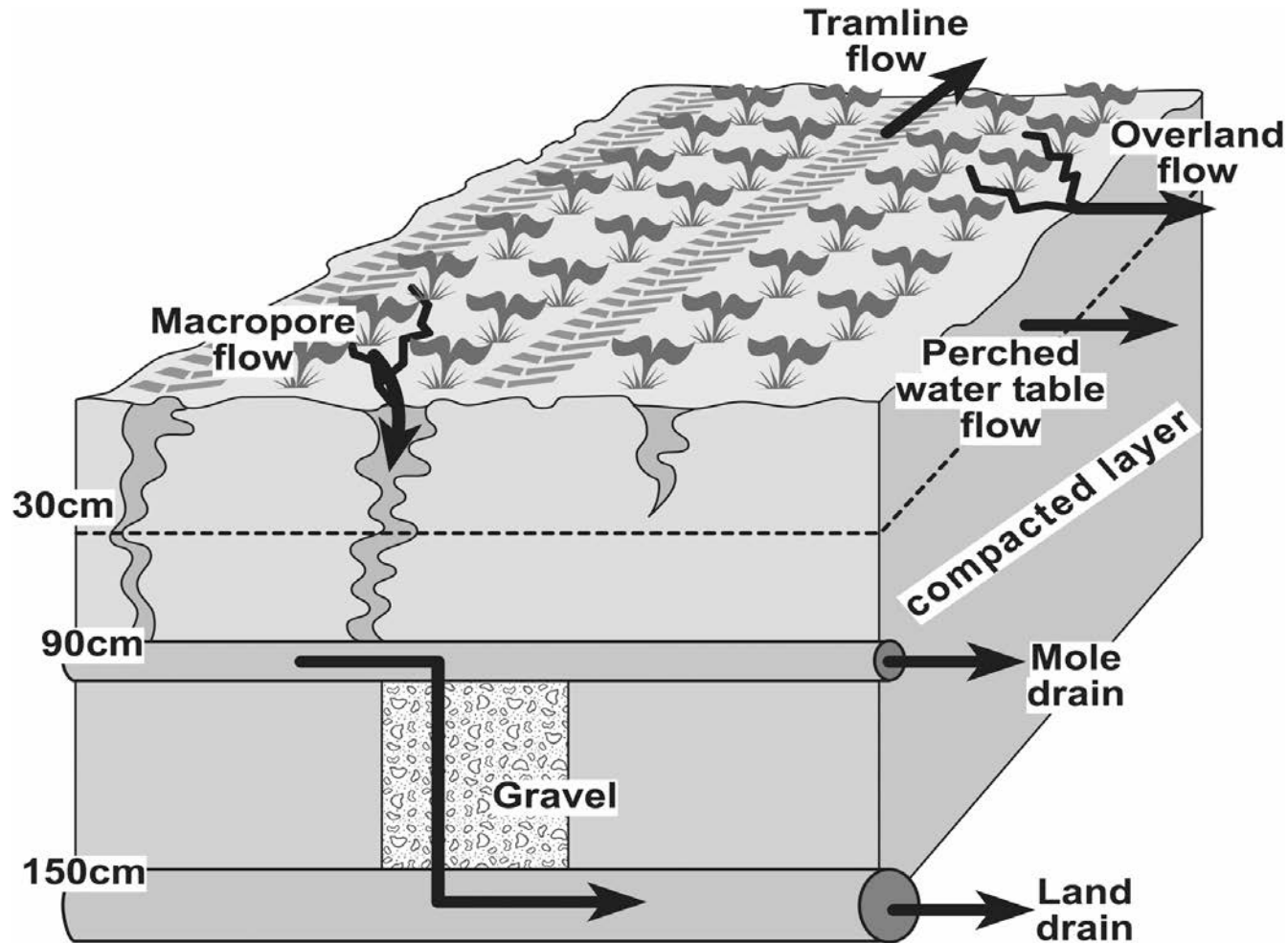


High infiltration
 High soil water capacity
 Deep soil recharge and groundwater storage
 Rivers flow for longer in droughts



High surface runoff
 Low storage in soils
 Low storage recharge to deep soil and groundwater
 Rivers dry quicker in droughts

Farmed soil: increased runoff and unchecked runoff



Lower infiltration + lower soil water storage
= lower infiltration capacity

Case study 1: India

Large scale catchment engineering solution



Solved by the local community themselves - spurred on by local champions

“Nothing has changed. No multi-million project has taken place. No new technology has been invented. Simply the flow of water, of community, of life has taken the place of aridness.”

Phil Franses on Rajendra Singh’s work in India

Case study 2: UK

Moderate scale catchment engineering solution, at moderate cost supported by Champions!



“The work at Belford was a pioneering initiative to address a water management issue within a catchment at low cost, involving stakeholders and demonstrating the solid evidence of its success. It is a fine example of research involving both policy, industry and science practitioners.”

Jamie Letts EA

“For communities such as Belford that cannot receive traditional defences, this sort of approach gives real solutions, real benefits, and at a fraction of the cost.”

Phil Welton EA

Case 3. Buffer strips – making them work

Buffer strip policy reflects the

UK commitment to environmental management

The concept is still unclear, complex to implement and are often not working.

Small changes in management can make buffering work

The importance of land owners, farmers and subsidies

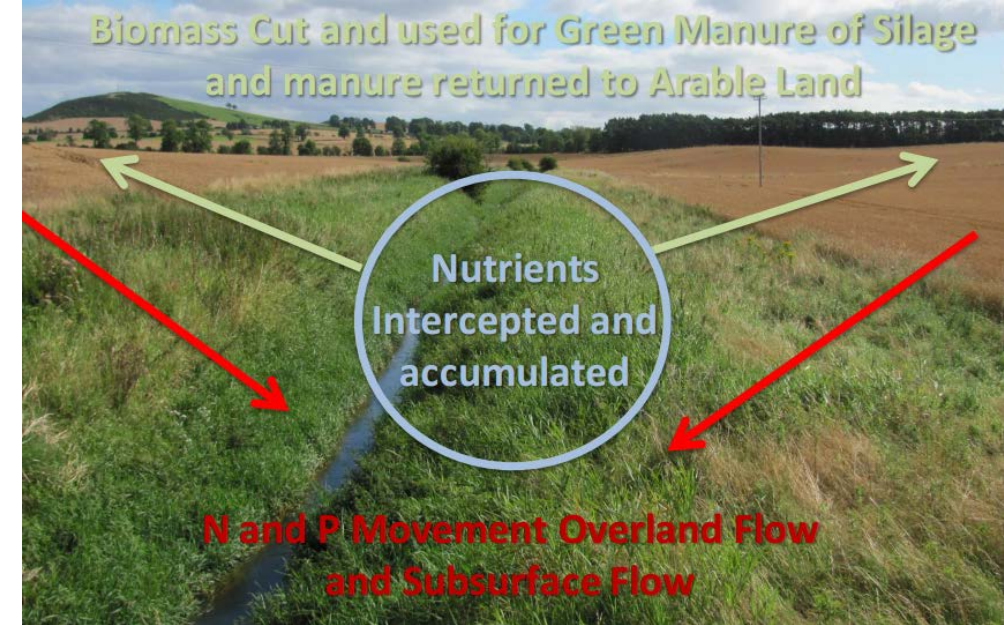
Rural SuDs – from the buildings and tracks to the channel

Widening and storing flow in ditches – the ditch of the future

Using woodland better – holding and attenuating water

Small upstream floodplains

River restoration – is a thriving area of work

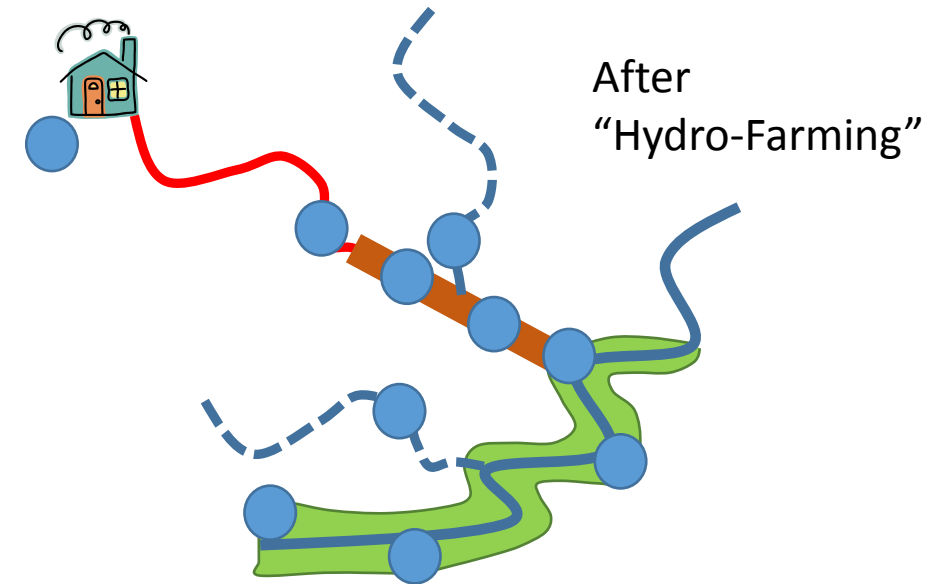


Catchment Restoration

Flow accumulation map: Morland



Before and after



- **RSuDs - swale**
- **Ditch alteration - widening**
- **Ponding zones**
- **Flood plain optimisation – e.g. new ponds, buffers, forestry zones and woody debris**

SRDP Guidance for RSuDs – unpublished report Darcy and Wade



Pond next to hardstandings



Swale from farm to channel

Rural SuDs



Ditch of the future?

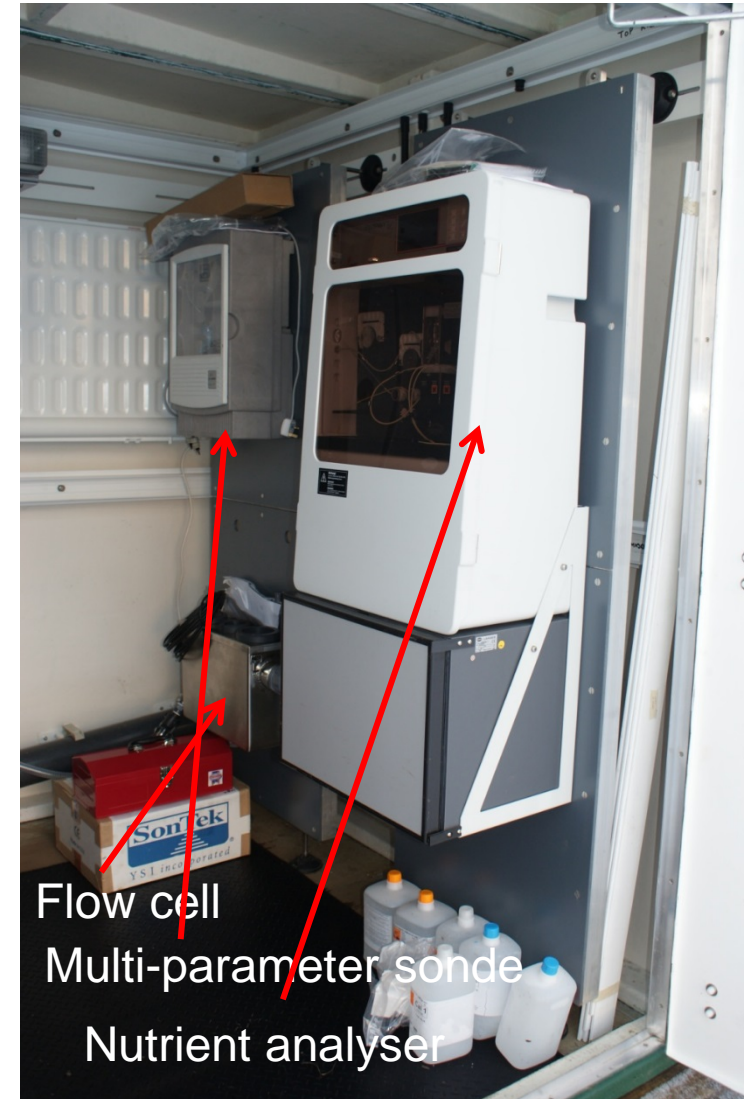
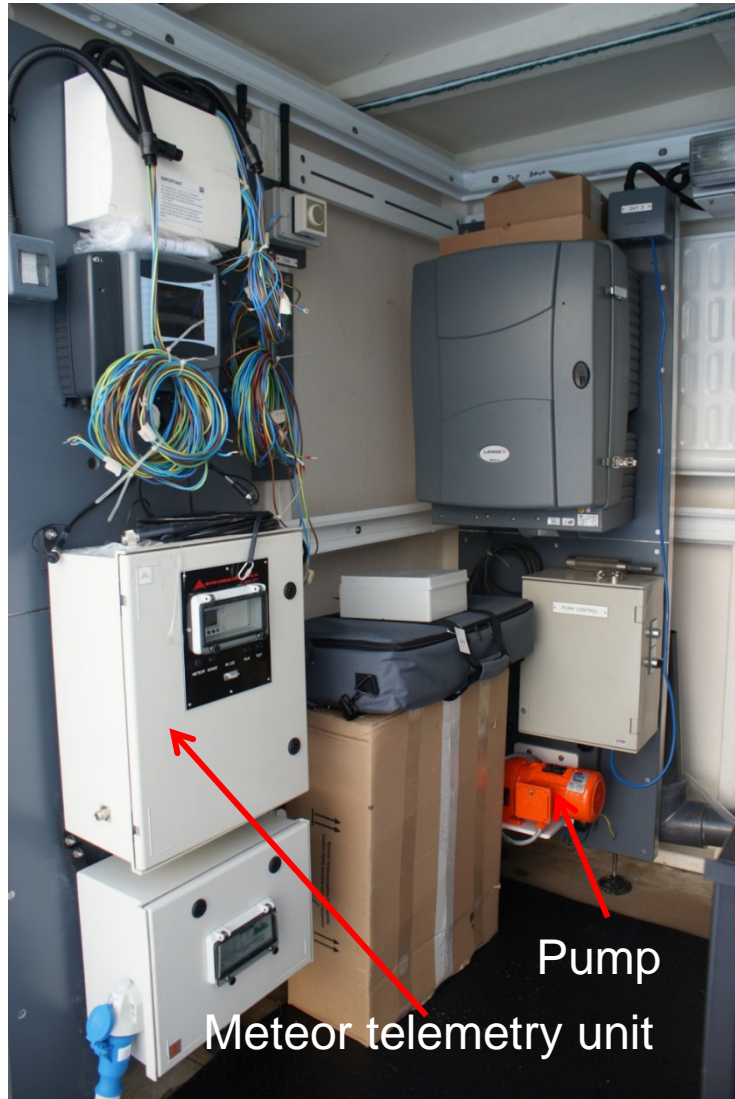


Ponding zones

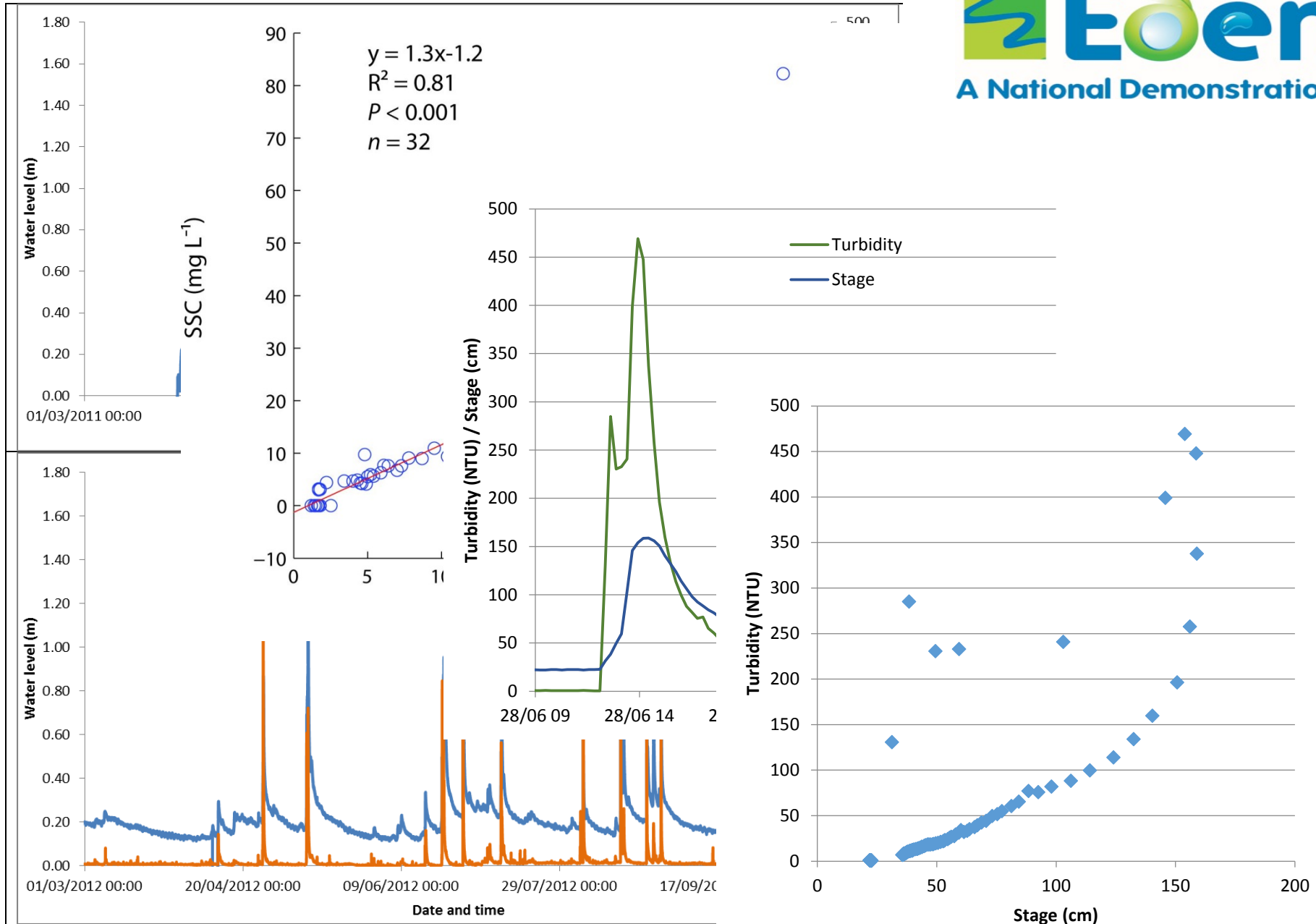


Improving farming conditions

Evidence



What needs to be managed? e.g. Flow and Turbidity



Using Upland Floodplains



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**Environment
Agency**



New forestry zones and woody debris using floodplains

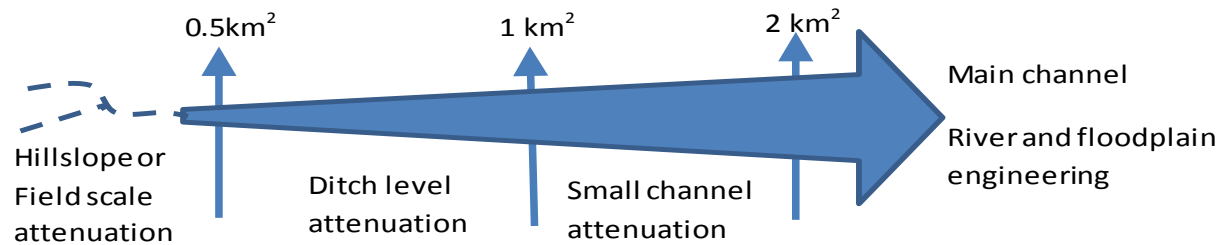
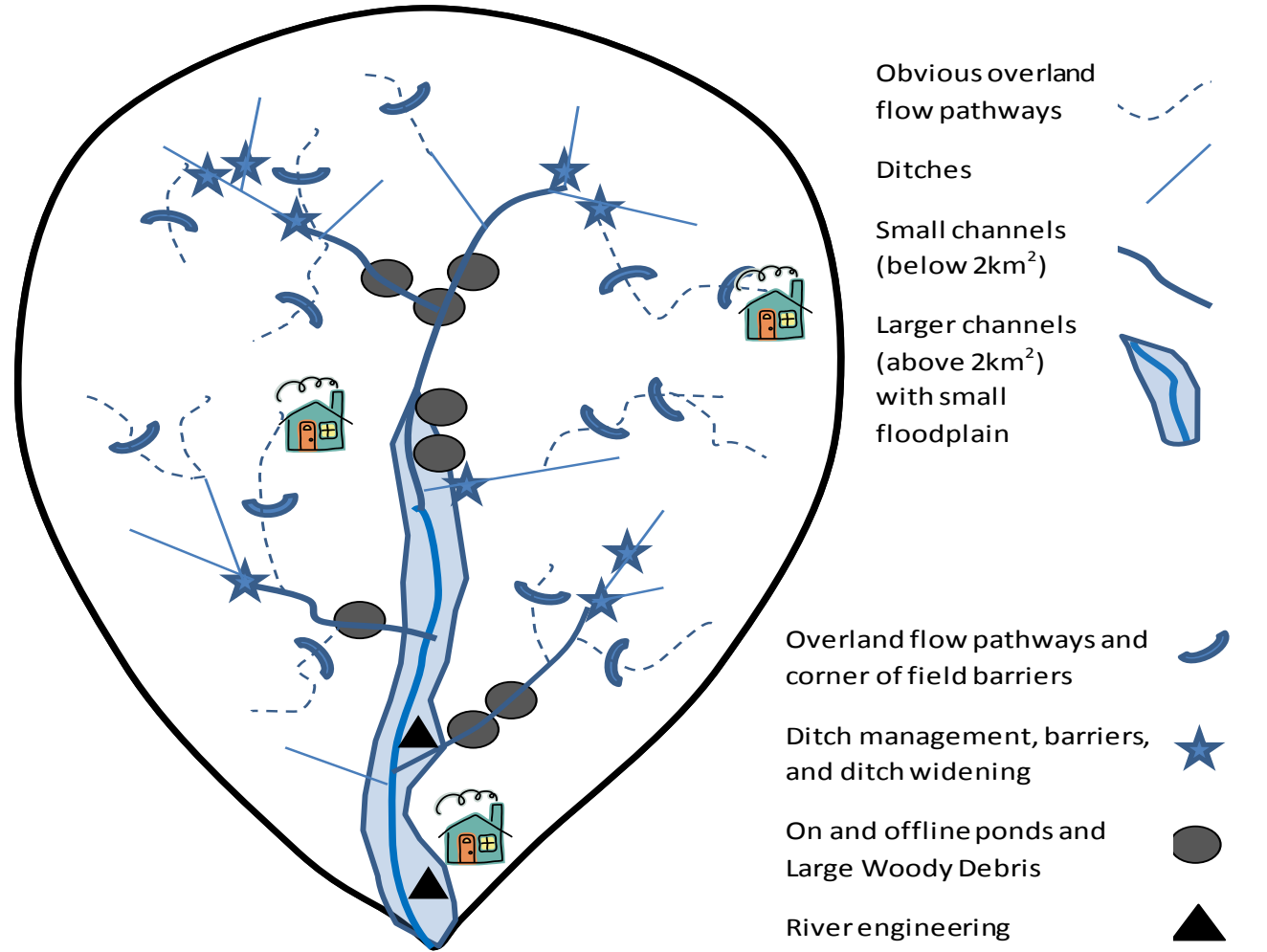


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Treatment Train



Who can do this?

- Can land owners and the farming community deliver these features?
- Can farmers implement a simple set of engineered features as the primary catchment management option?
- Can policy makers facilitate this approach?
- Can we make farmers the environmental managers of the future?
- Can we afford 5% of the land for mitigation or new forestry zones?

**Nothing shown here has been
technically complex or expensive**

Conclusion

We should hold water! Why?

- Simple to build
- Small and discreet impact on farm production
- Brings back the attenuation and buffering capacity lost from productive soils
- It is cheap with multiple benefits
- Easy to train anybody to do it. *If I can do it anybody can!*

It could simplify and integrate environmental planning, reduce cost and with less red tape.

Simple concept, easy to engineer and could be done by farmers

It is the Catchment Based approach – Catchments function better!

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