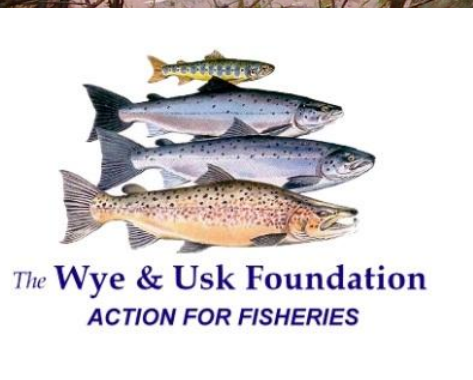


Solving wicked problems on the Wye



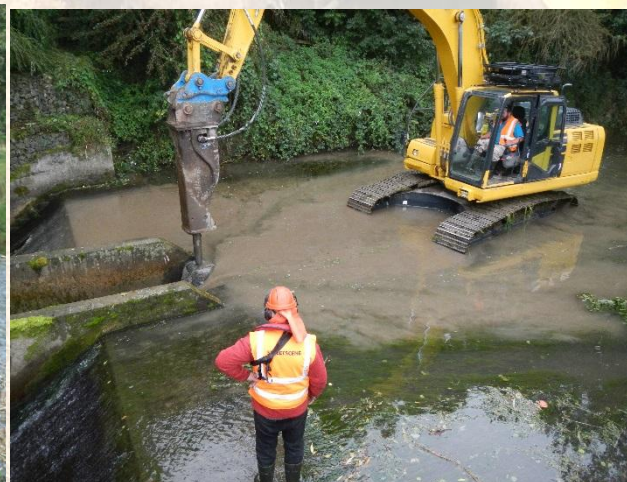
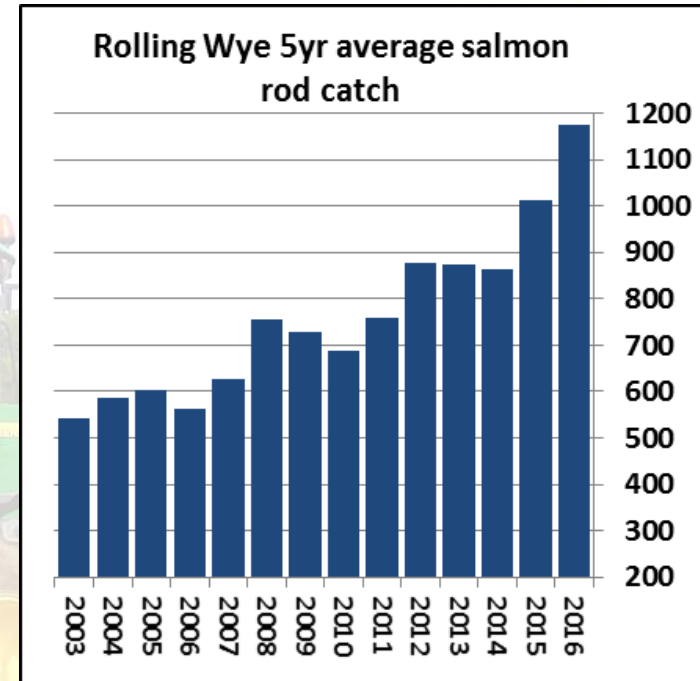
Lessons for elsewhere?

Wye and Usk Foundation and partners 1996-



The Wye & Usk Foundation
ACTION FOR FISHERIES

- Successfully dealt with issues within our control.
 - **Salmon exploitation** (Nets 2002, Rods 2012)
 - **Riparian habitat** (365km restored 72km left)
 - **Fish Access** (1,023km re-opened)
 - **Acid waters** (62km restored)
 - **Fishing value** (biggest 'passport' in UK)
- But as we delivered this other limiting factors have come to the fore.
- Water quantity and quantity
 - Climate change



What is WUF's work designed to do?

- Reduce phosphate in the water
- Reduce soil loss to water
- Reduce risk of pesticide pollution
- Reduce need for abstraction
- Reduce flooding and drought
- Improve soil organic matter

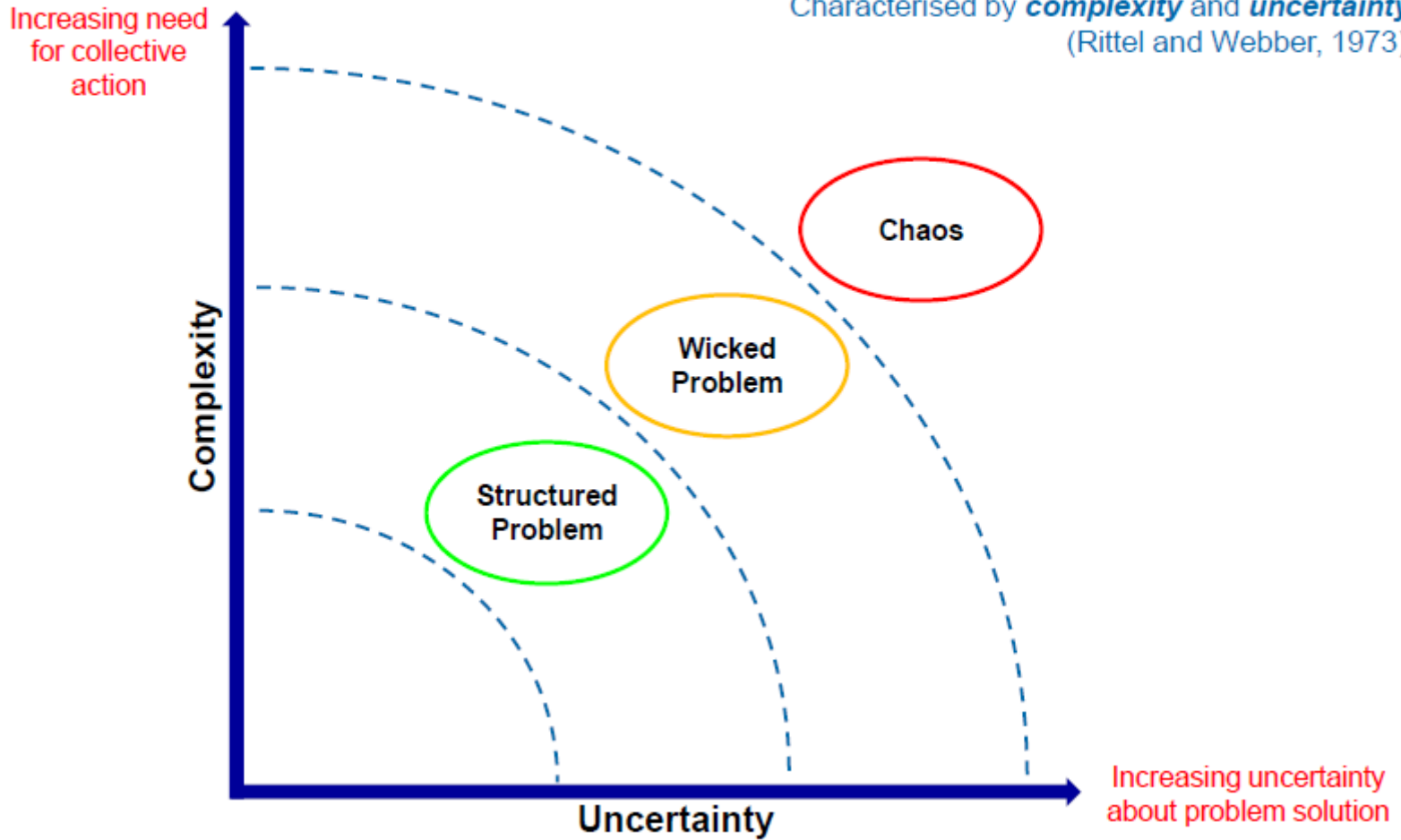
The result

- Improved fisheries
- Improved sustainability and profitability of farming
- Delivered statutory targets
- Reduced greenhouse gas emissions

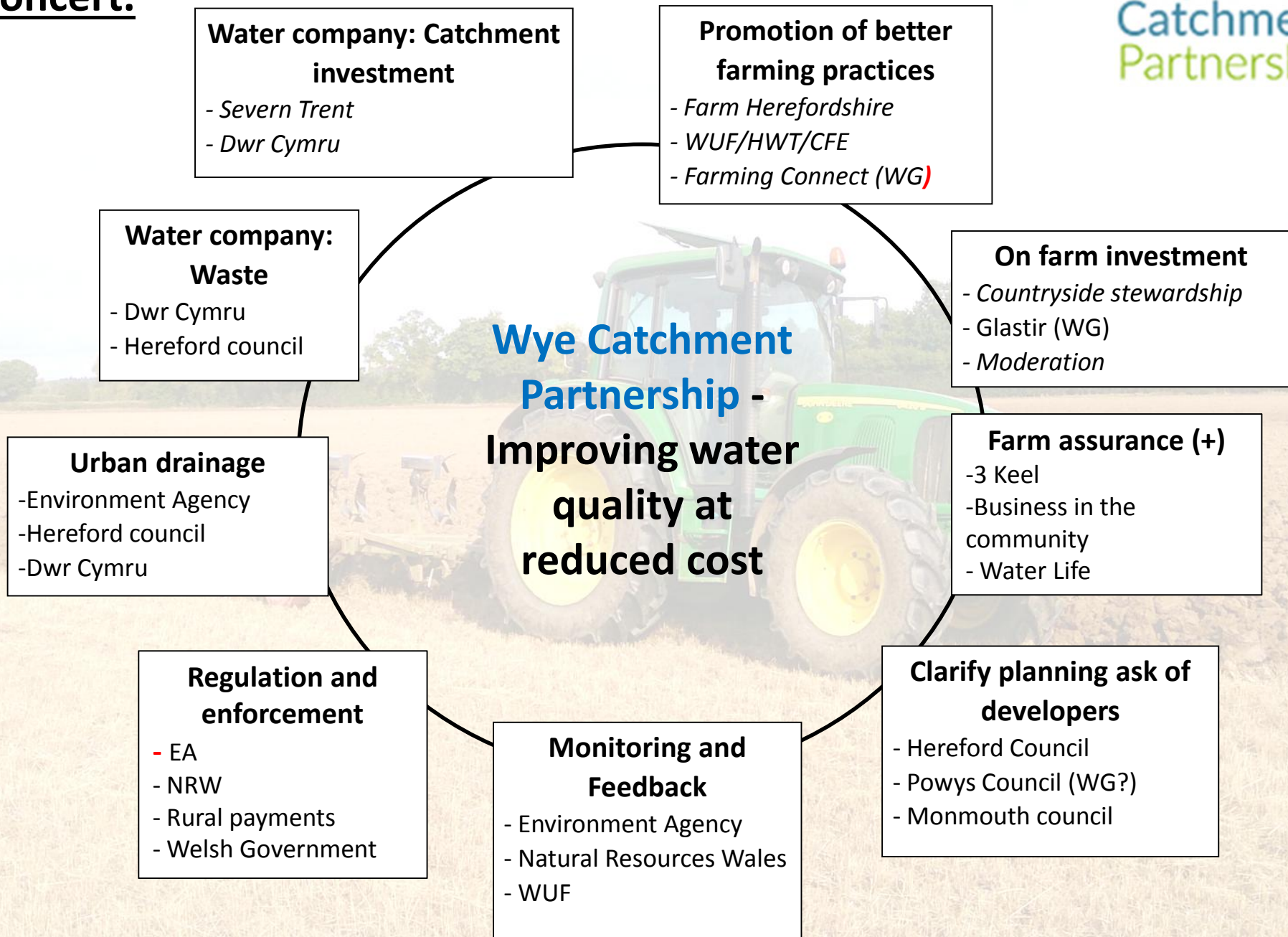


'Wicked' ('messy') Problems

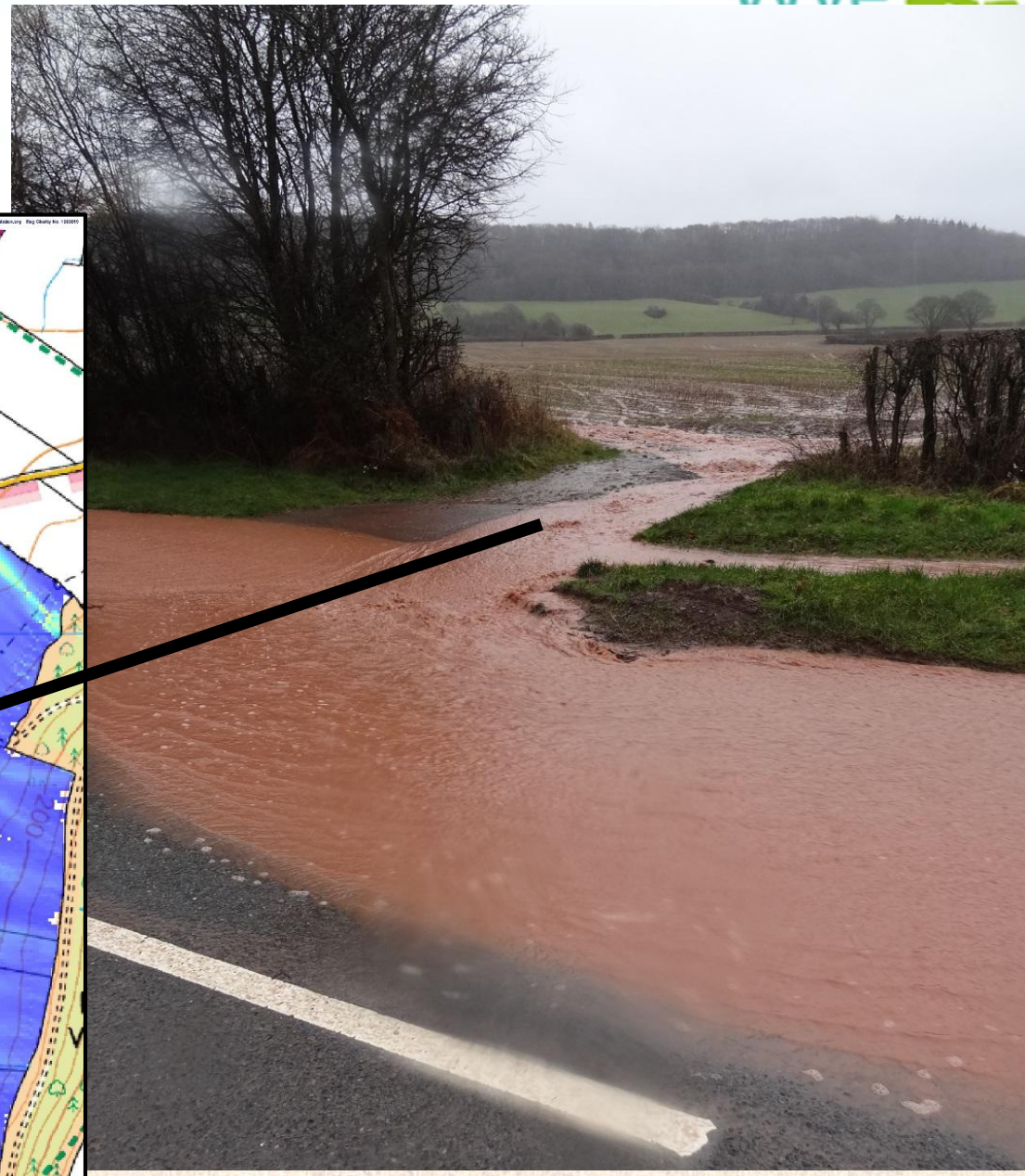
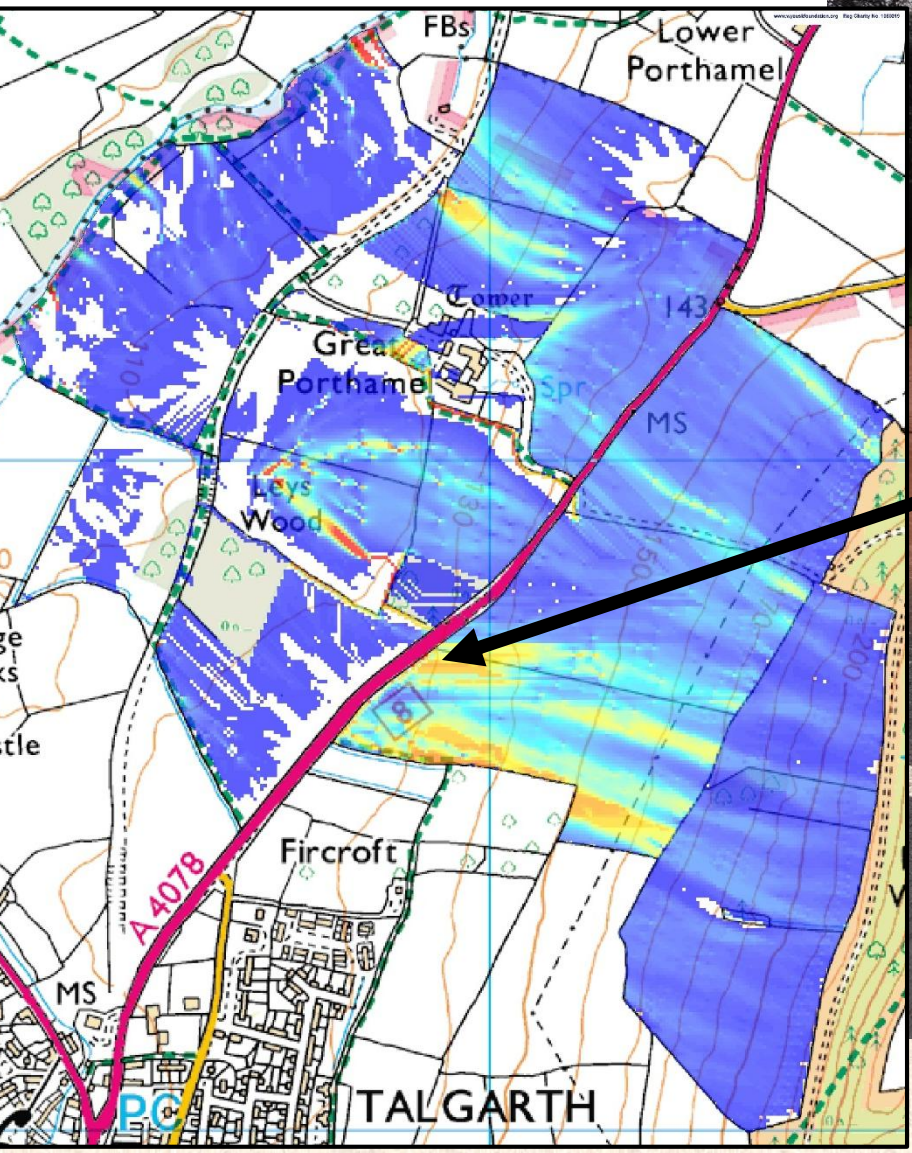
Characterised by **complexity** and **uncertainty**
(Rittel and Webber, 1973)



Solving 'wicked' problems: Agreeing who does what and working in concert.



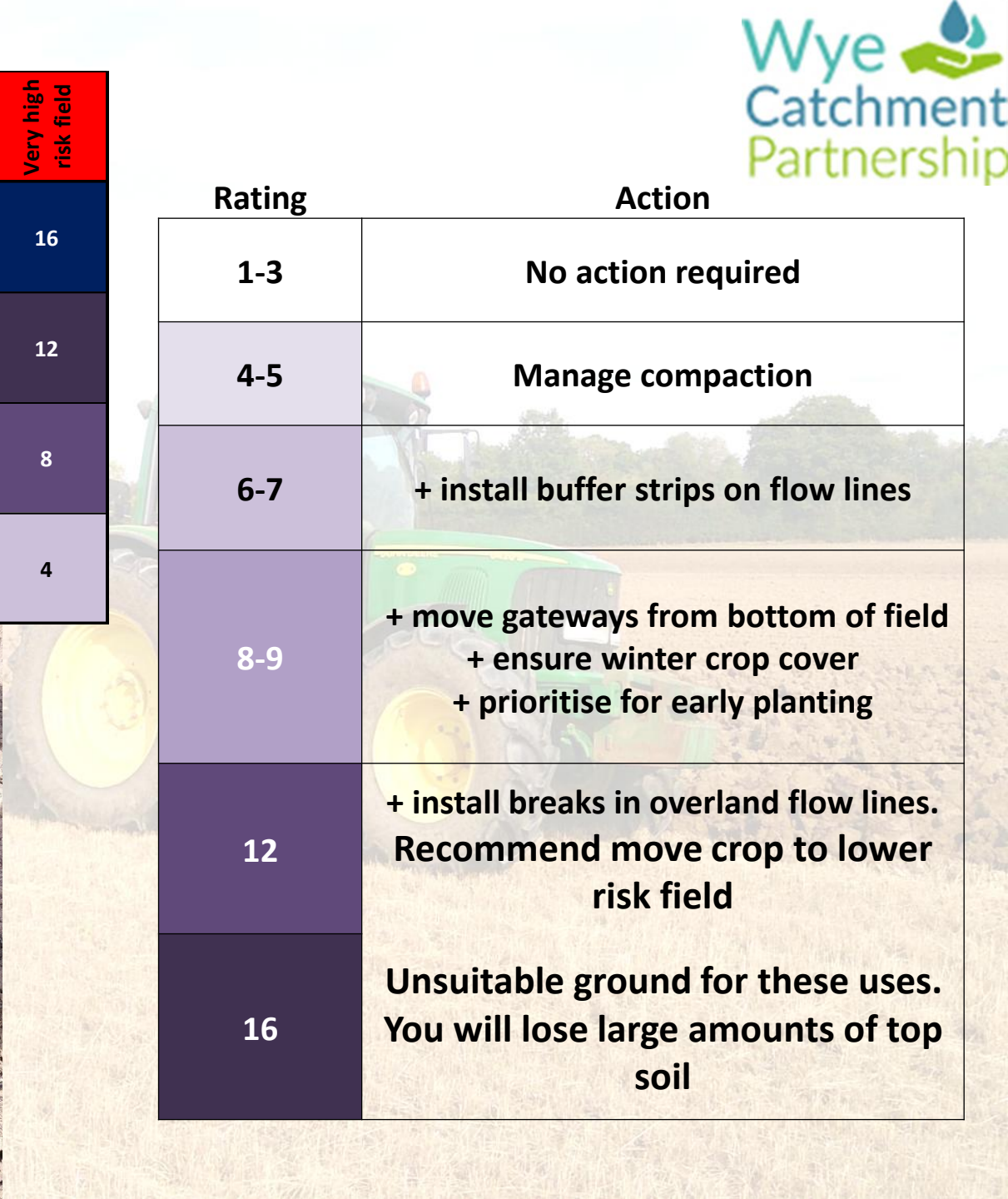
Understanding run-off



Highest risk in field shown by SCIMAP	Low risk	Medium risk field	High risk field	Very high risk field
Potatoes Maize Free range pigs	4	8	12	16
Poly tunnels Winter cereals Fodder crops	3	6	9	12
Spring cereals Grass leys	2	4	6	8
Permanent Pasture	1	2	3	4



Rating	Action
1-3	No action required
4-5	Manage compaction
6-7	+ install buffer strips on flow lines
8-9	+ move gateways from bottom of field + ensure winter crop cover + prioritise for early planting
12	+ install breaks in overland flow lines. Recommend move crop to lower risk field
16	Unsuitable ground for these uses. You will lose large amounts of top soil



Stage 1: Engaging Farmers

- Invitations to engage (20-40%)
- Talking to neighbours + cold calling (70-80%)
- Longer term presence in catchment 90-100%
- Good advice from 3rd sector is best
- Requires a certain type of advisor.
- Changes worked up with farmers that are in the interest of the farm **and** the river.
- Type and scope depends on:
 - **Economics (grant)**
 - **Environmental engagement**
 - **Working with peers**
 - **Level of enforcement**



Understanding Why? Factors Affecting Decisions (England) - Wye Catchment Partnership

The Contract

Farm
Assurance

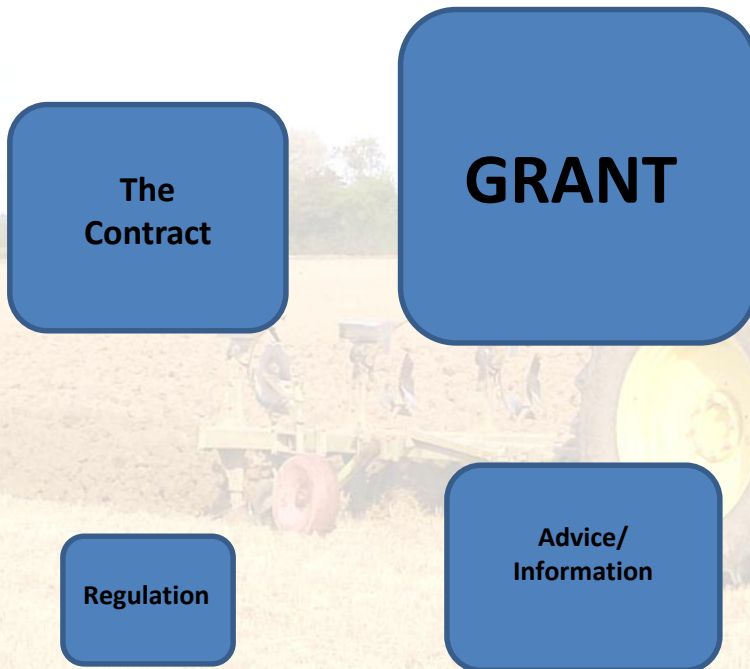
Regulation

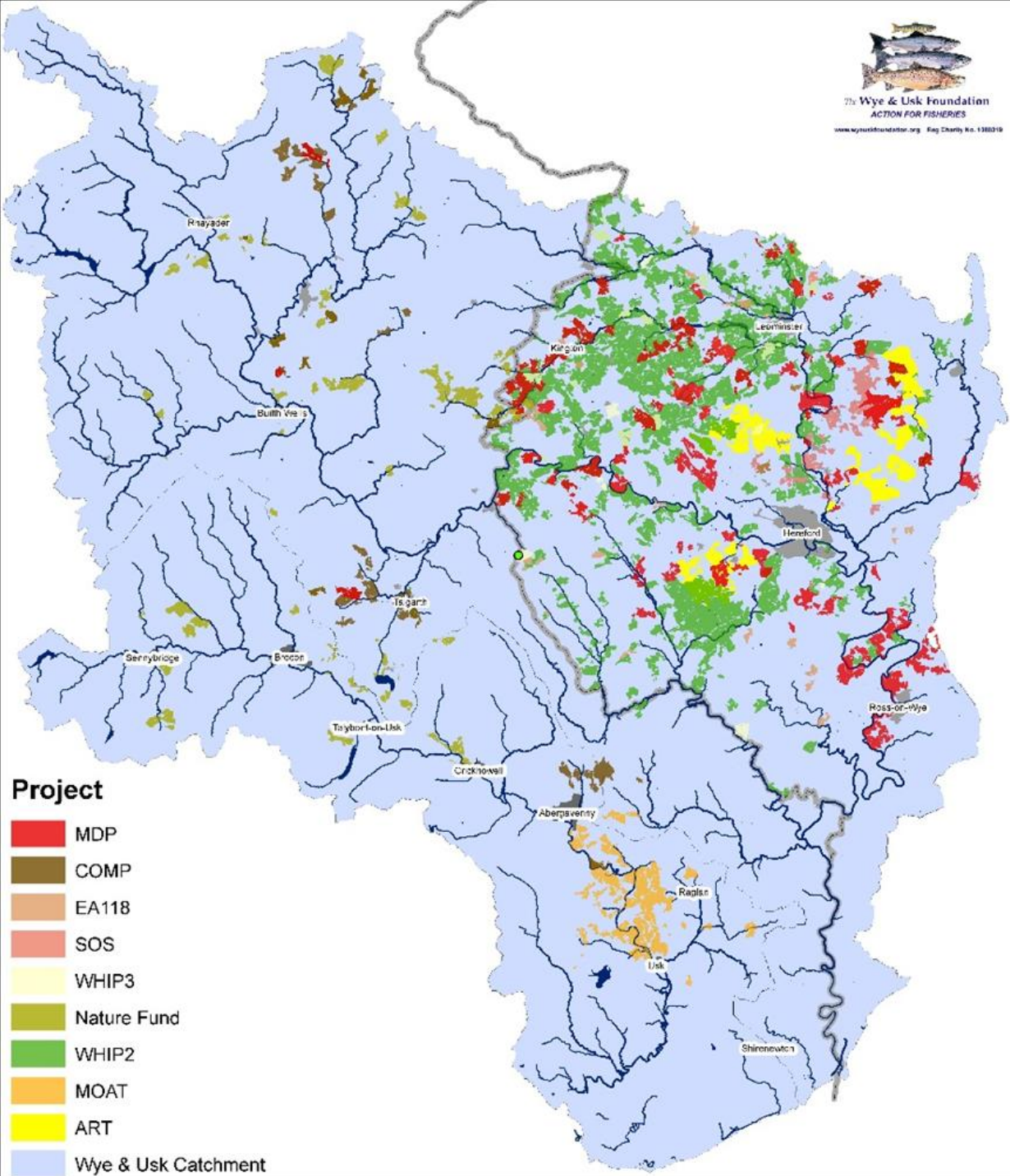
Advice/
Information



Improving Agricultural Practices in upland Wales

Factors Affecting Decisions: (Anderson)





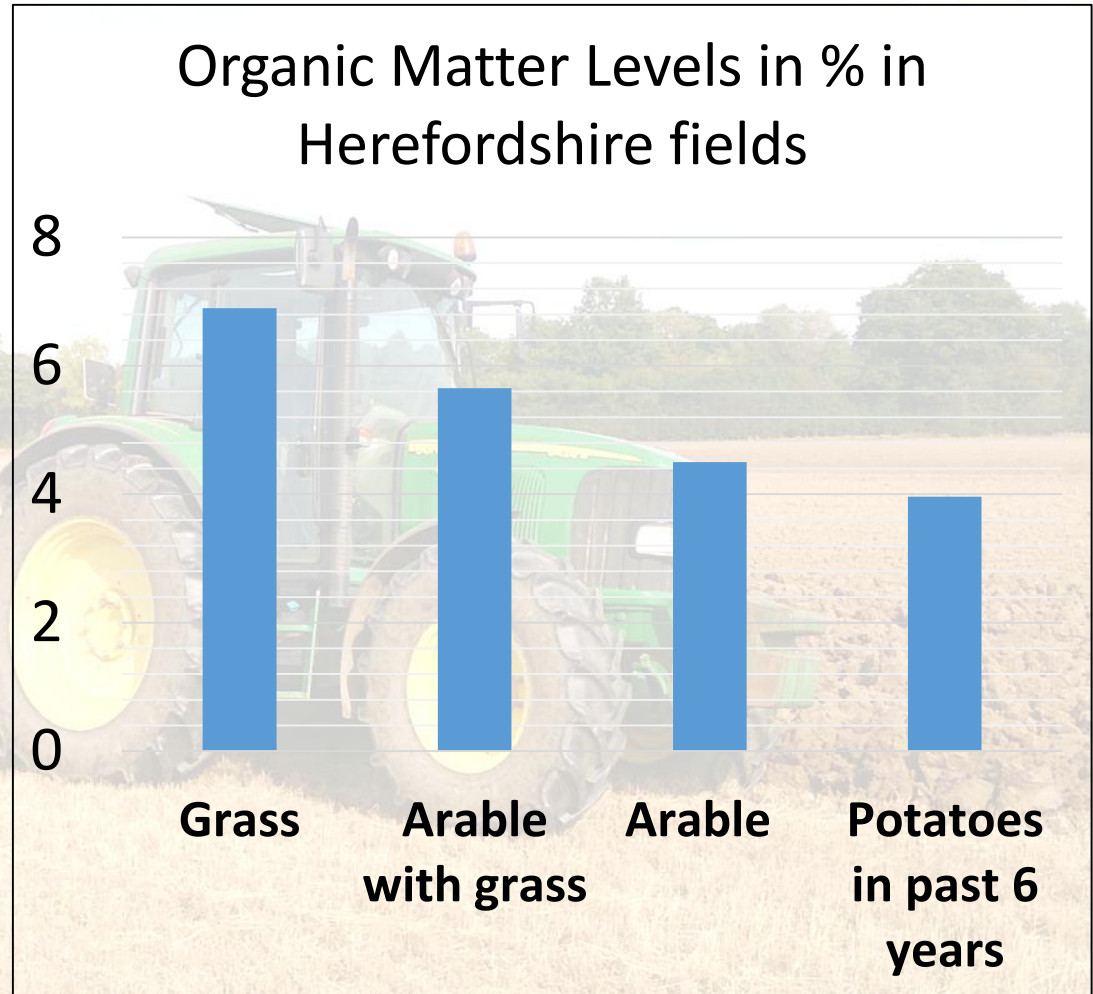
**Farms engaged by
WUF led projects**

812 holdings

92,491ha

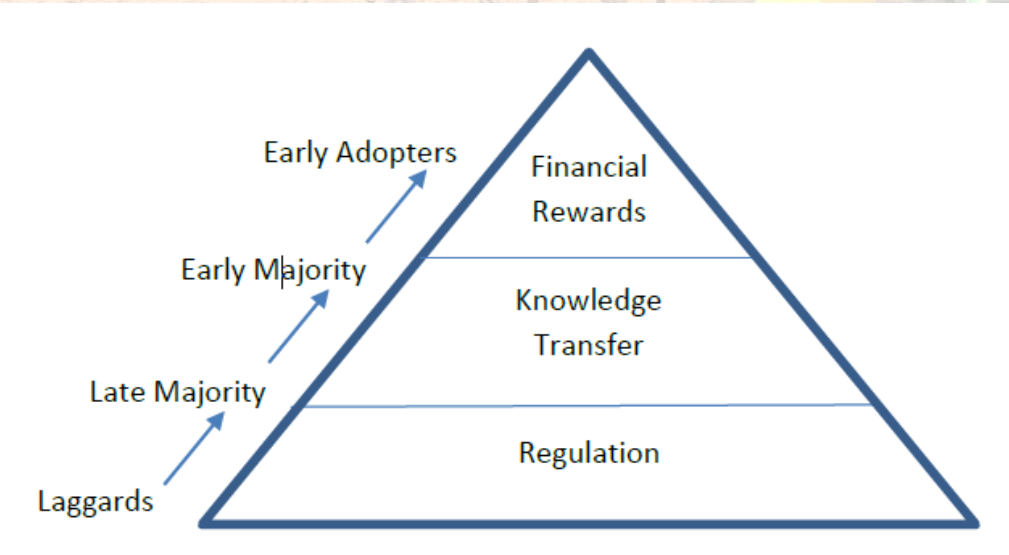
Soil Organic Matter - the Key

- Included in WUF's soil tests
- Organic matter determines;
 - Productivity of soil
 - Workability of soil
 - Trafficability of soil
 - Water retention
 - Erosion
 - Climate change (e.g. 4 for 1,000)



Laggards and Vanguards

- Kate Adam's Nuffield scholarship looked round the world at how to re-engage farmers with their soils.
- Combination of 3 actions works best
 - Regulation
 - Knowledge Transfer
 - Financial rewards





Solving the maize problem through partnership working

- Since mid 90's increase in Maize production
- Maize is high risk/high yield crop being grown outside natural limits
- Anaerobic Digestion now requires over 4,000 acres of maize in Wye alone
- Major problems with soil and Phosphate loss in wet autumns



The solution(s)

- Developed by farmers and WUF staff
- Chisel ploughing: effective but cost to farmer so limited uptake.



The solution(s)

- Broadcast under-sowing:
mixed results



Lessons from the continent

- Direct drilling works
- Partnership between Dwr Cymru, WUF and Field solutions to deliver the solution.
- New drill and coulters brought over from Denmark
- 6 major growers took up offer in 2016 (132ha)
- 3 well attended events to see establishment and post harvest
- Increasing regulation from EA
- Drill fully booked in 2017
- More drills are now being sourced



Increasing regulation of agriculture

- Herefordshire national exemplar:
- The Wye catchment partnership and 2015 Judicial Review has created the environment
- EA took known risk, and 4 staff got out on wet days
- 63 breaches of GAEC 5 recorded 2015/16
- Soils workshops
- Farmers responded!
- but RPA dysfunctional
- Now using satellite married to risk maps with threat of works orders
- 17 threats issued 2017
- 12 of the farmers contacted WUF



2 Herefordshire maize fields March 2017

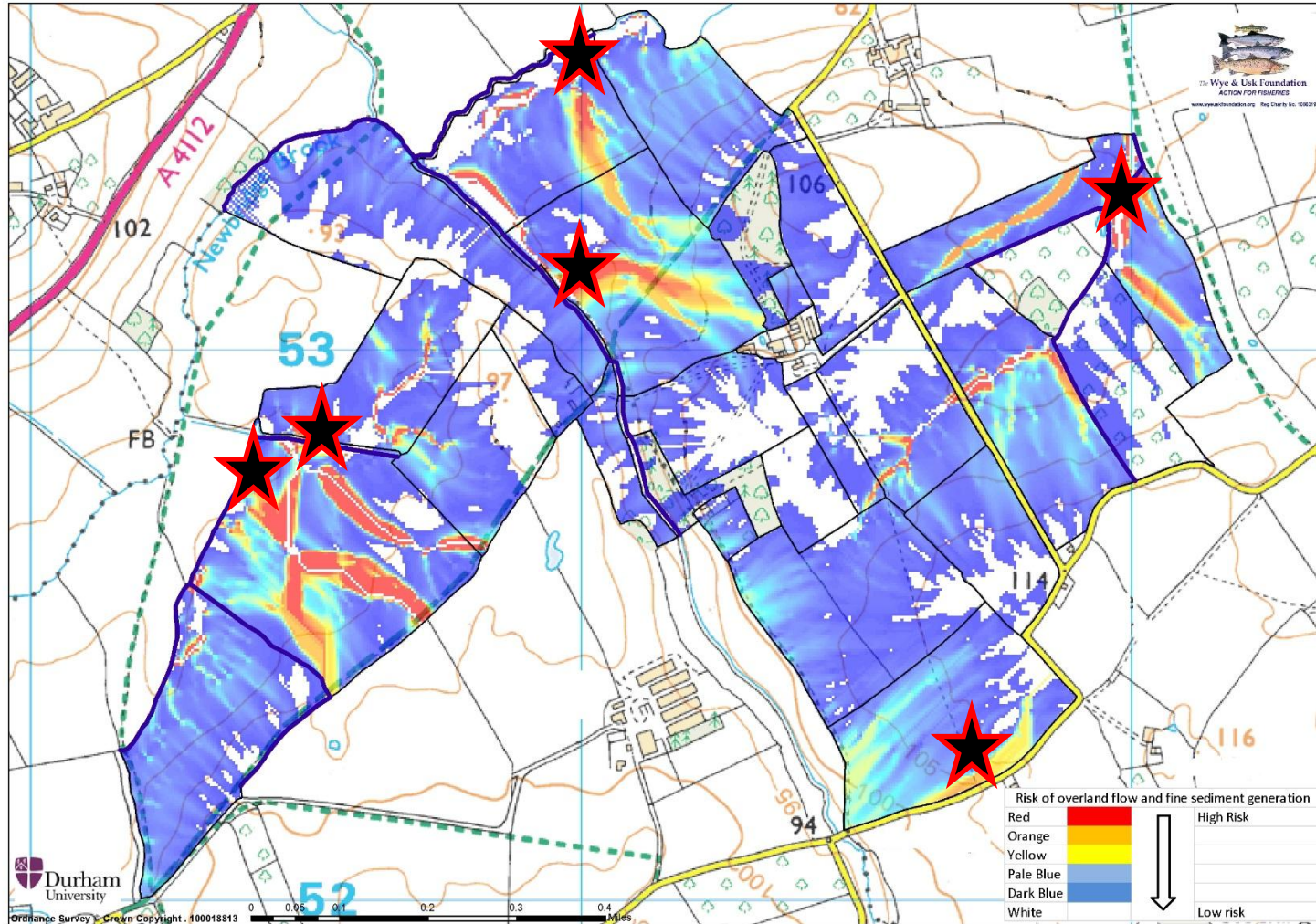


Supported and promoted by
WUF/DCWW

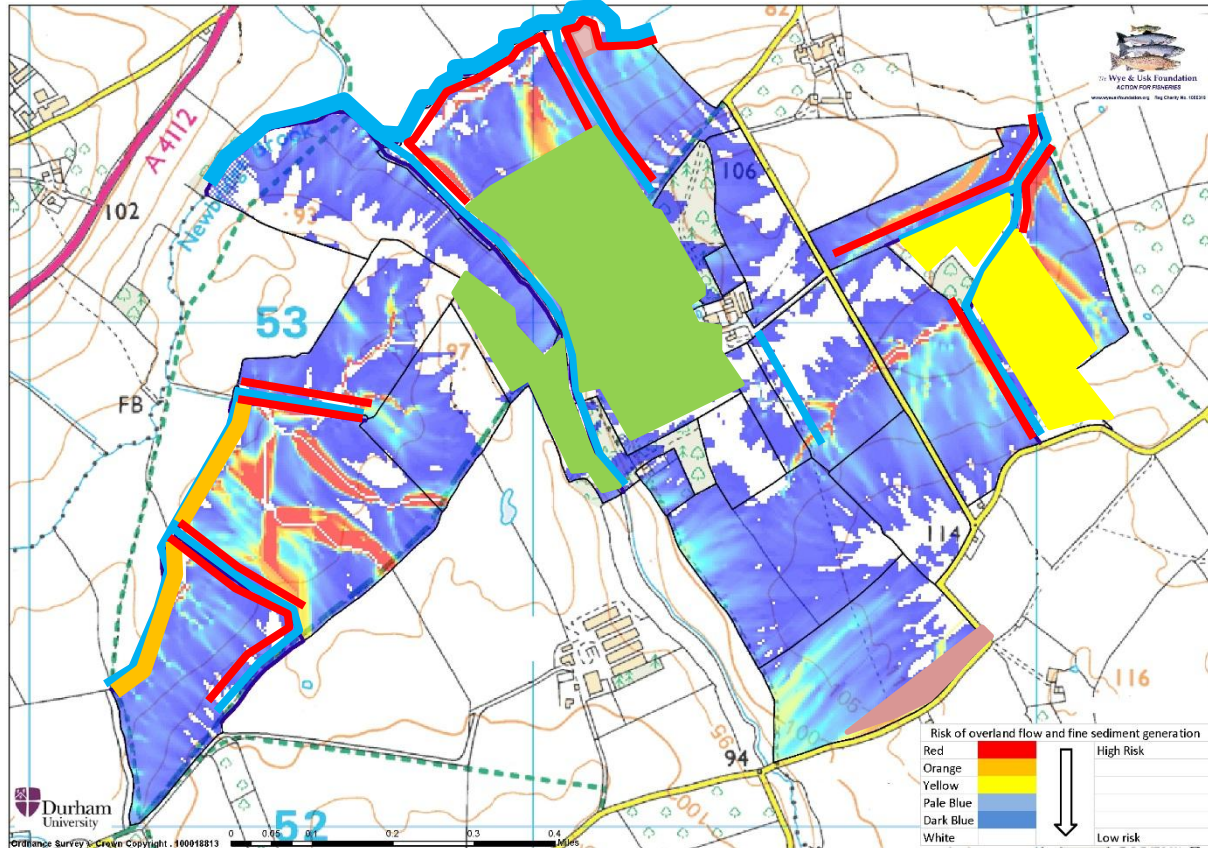


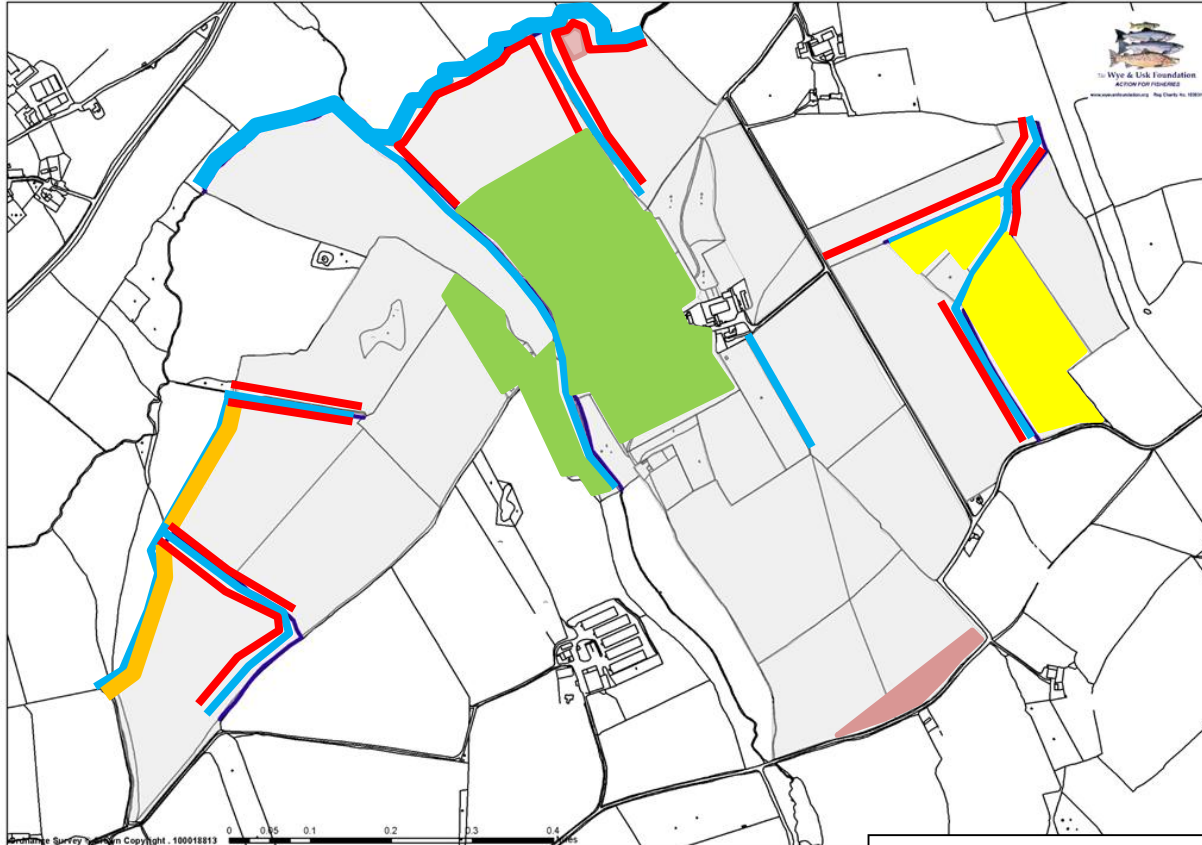
Warning issued by EA

Improved use of farm subsidies and grants in England– Right action, right place, right scale



Mid Tier application for 400 Acre Farm





Red:

6 metre margins SW1 (4,700 m or 2.8 ha at £353 / ha = £988)

Orange

12 – 24 metre margins SW4 (1.1 ha at £512 / ha = £563)

Green

Very low input grassland GS2. (19.8 ha at £95 / ha = £1,881)

Yellow

Orchards to restore GS2. (5.6 ha at £95 / ha = £532)

Pink

Nectar mix (2.0 ha at £511 / ha = £1022)

Total annual payment £4,475

Capital items

- Orchard tree planting
- Tree planting by big pond
- Restore small pond
- Fence Brook in pasture and put in water trough
- Consider arable reversion option in Brick Hills SW7 (£311 / ha)
- Note the conditions for very low input grassland option – may be severe.
- Check the list for other options of interest.

Mid Tier application for 400 Acre Farm that delivers water protection and biodiversity

Also 800 metres (0.48 ha) of 6 metre margins on other land = £169



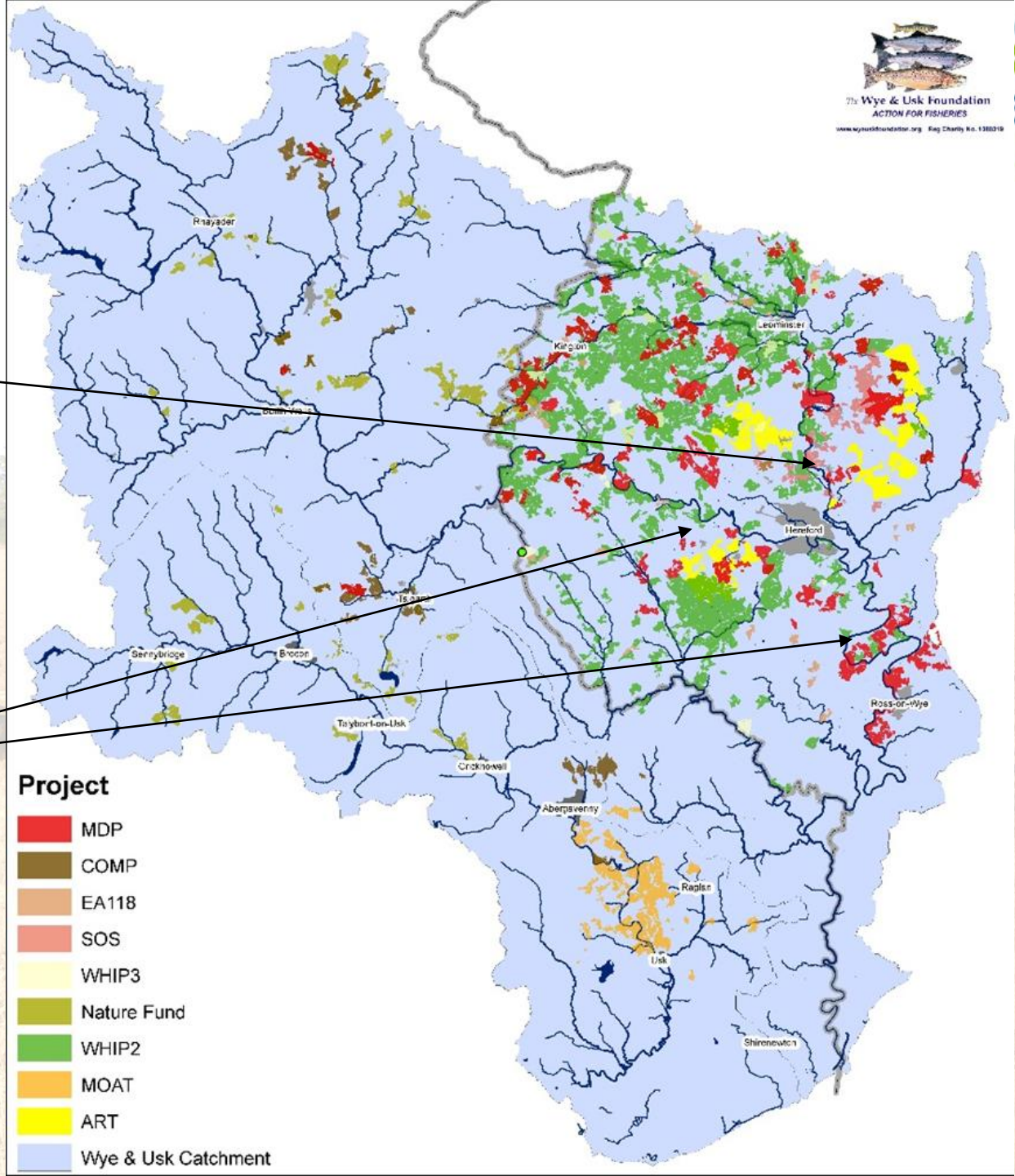
The Wye & Usk Foundation
ACTION FOR FISHERIES

www.wyusdfoundation.org Reg Charity No. 1388218



Phosphate in
Lugg SAC
down 26%

Salmon once again
spawning successfully



Wales: No case to answer (grants available!)



Thank you for listening – Anything to add?



The Wye & Usk Foundation
ACTION FOR FISHERIES

www.wyeuskfoundation.org