

What has ELMS got in store for NFM?

Steve Maslen – Head of Environment JBA

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Background

“I believe the most important public good we should pay for is environmental protection and enhancement” Rt Hon Michael Gove

“ELMS will put farmers, foresters and other land managers more in control of how they use their assets in order to satisfy commercial and government contracts for the delivery of environmental public goods”.

“A contract to deliver public goods, alongside market products”

- Clean and plentiful water,
- Clean air,
- Thriving plants and wildlife,
- Reduction in and protection from environmental hazards,
- Adaptation to and mitigation of climate change,
- Beauty, heritage and engagement with the environment.



Protection from and
Mitigation of hazards



Mitigation and adaption
to Climate Change

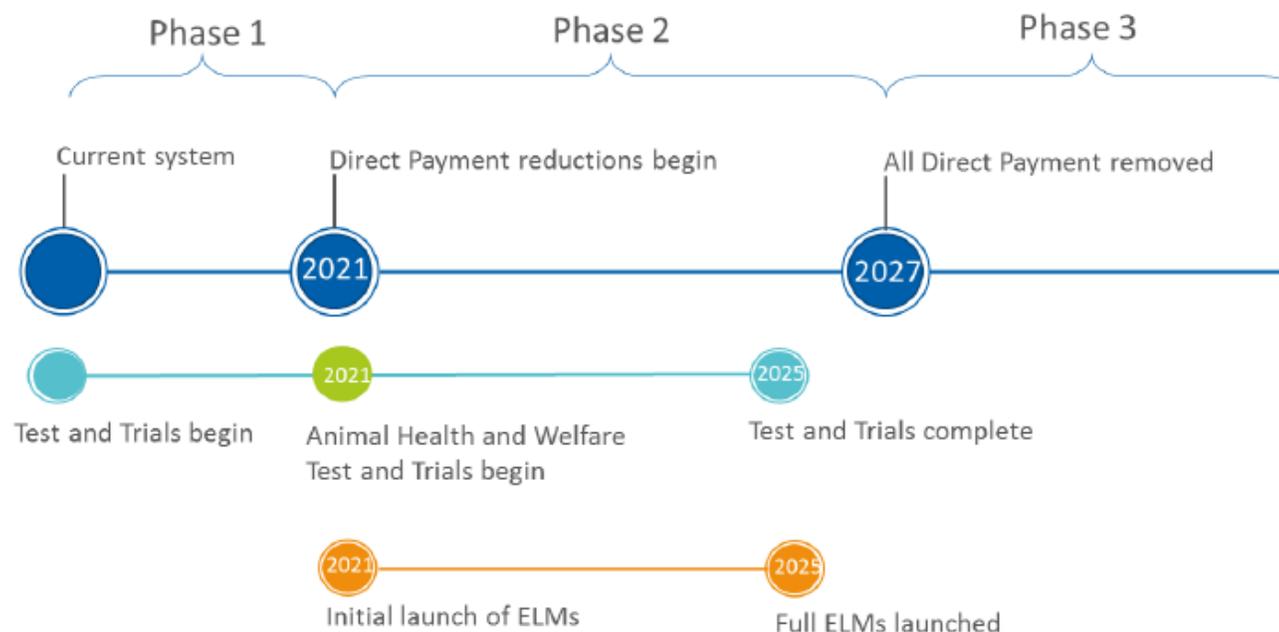
“cornerstone of land management policy”

Background

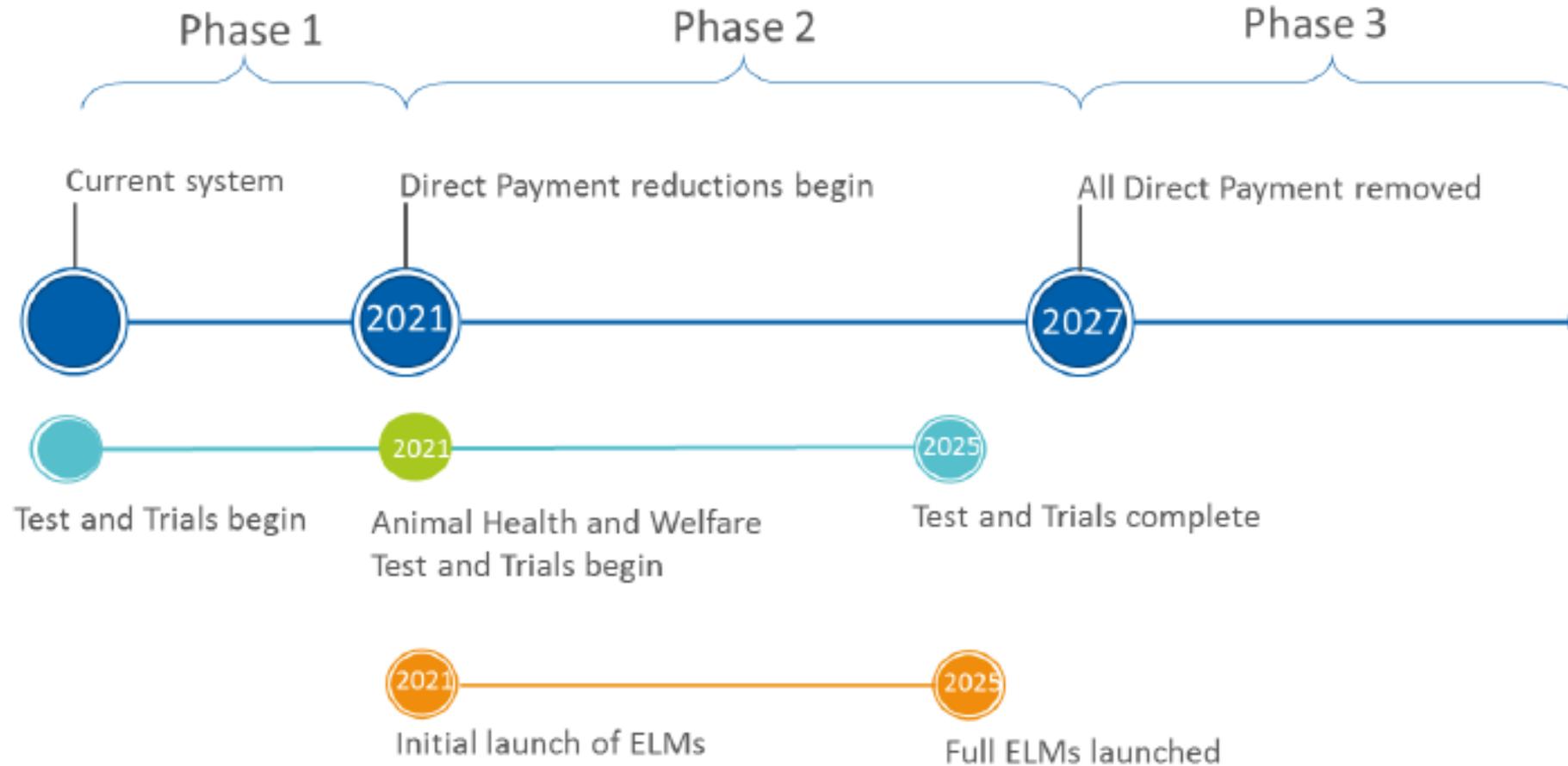
A plan to '**delink**' Direct Payments.

Direct payments will be **phased out** in England from 2021 to 2027. In the first-year the reduction will start at 5% and be reduced up to 25%

The reduction % for later years is yet to be decided.



Background

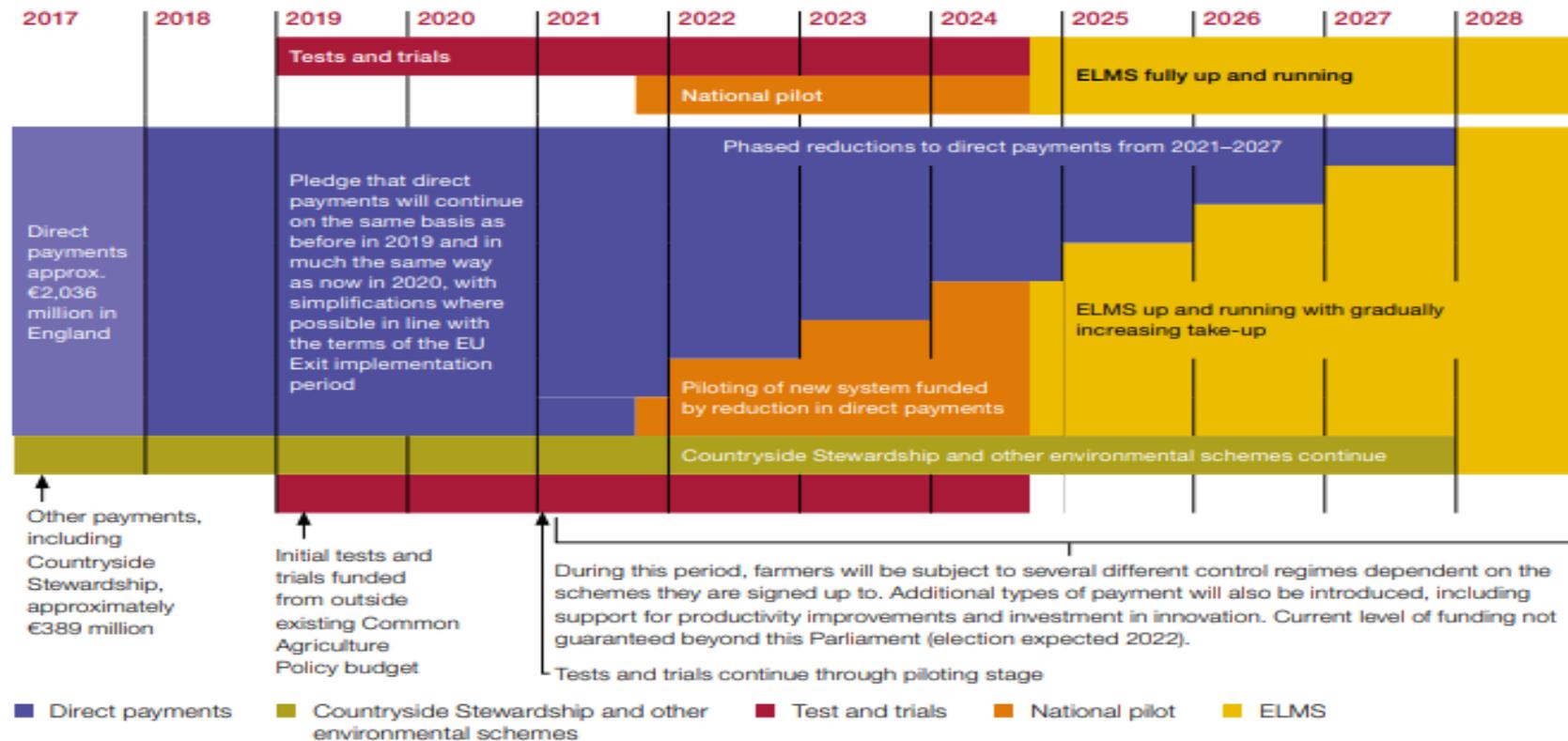


Phased implementation

Figure 3

Illustrative funding streams during the phasing out of direct payments

The new Environmental Land Management System (ELMS) will be introduced in phases with full roll-out from 2025



Note

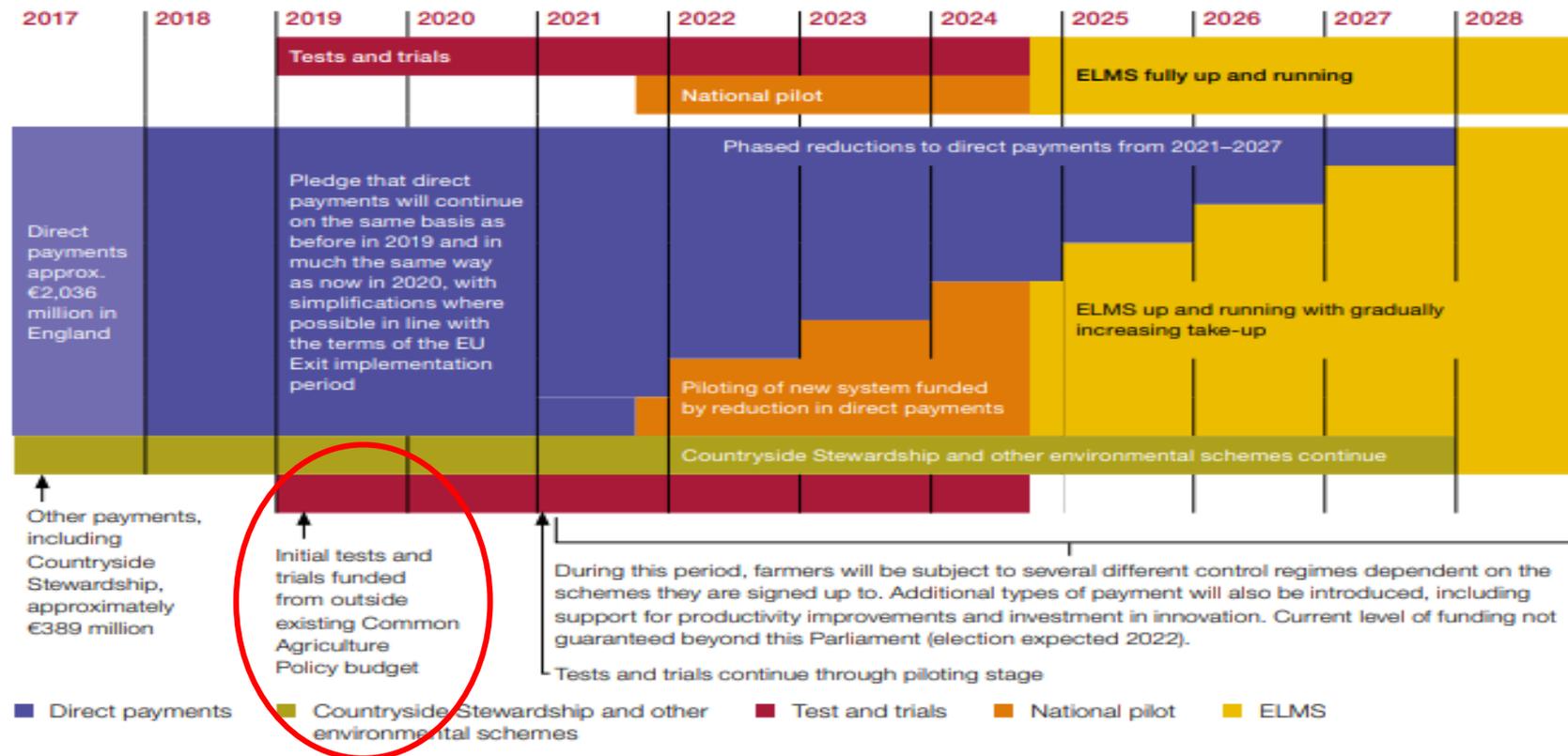
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Phased Implementation

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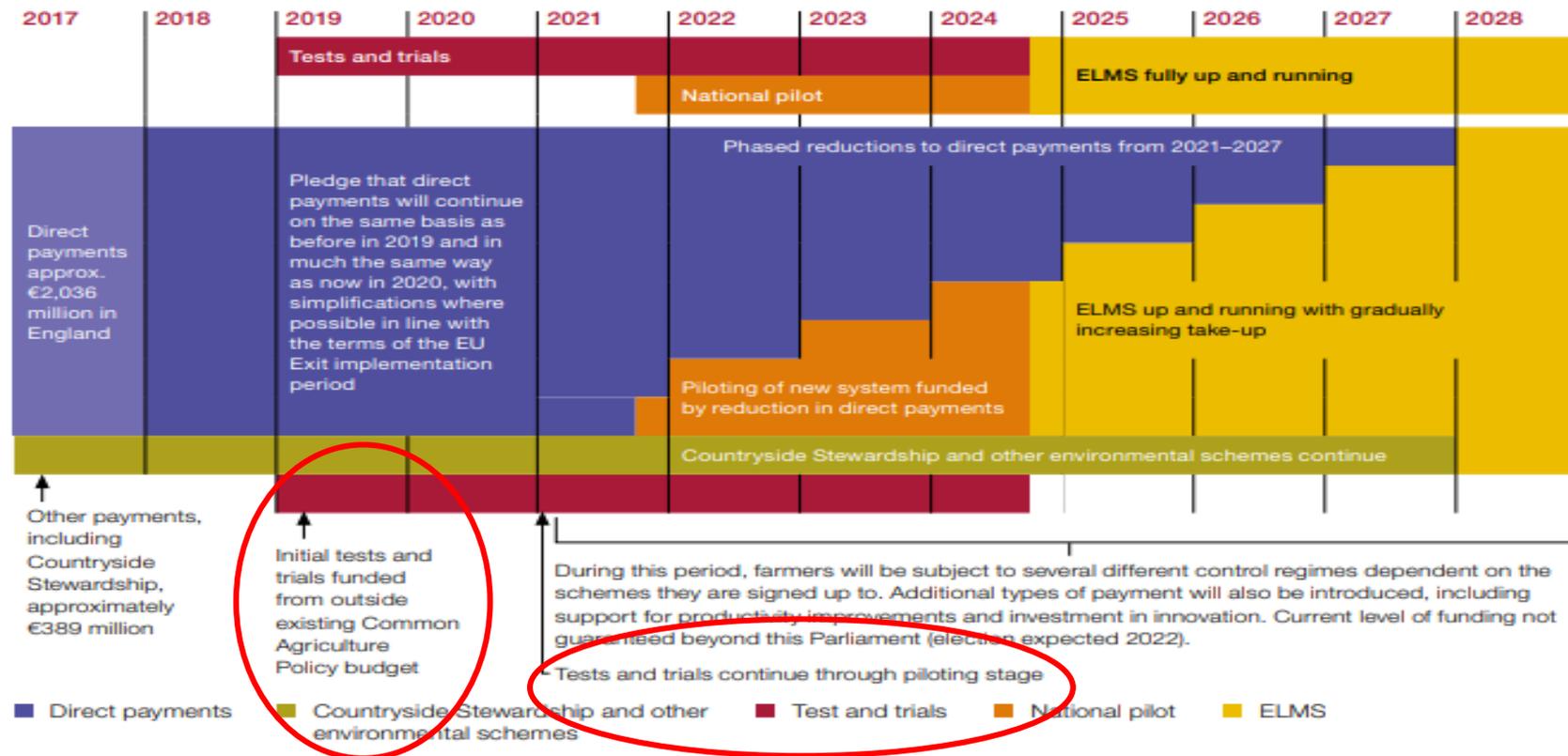
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It is not entirely new



A new way of
paying for farming
that benefits the
environment



“National Trust farm tenants trial a new approach to payments for methods of farming”

Current payments for environmentally-friendly farming require specific management methods, but we are putting the emphasis on the outcomes for the environment – often called a results-based approach”

“The better the outcome for nature, the higher the payment”.

“Our focus is on soils and pollinators which are crucially important for productive farming and our ecosystems, so healthier soils and better habitats for pollinators are a win-win”.

“Farmers have played the central role in the trial, taking part in monitoring, telling other farmers what it’s been like to take part, and giving feedback about what works and what doesn’t”.

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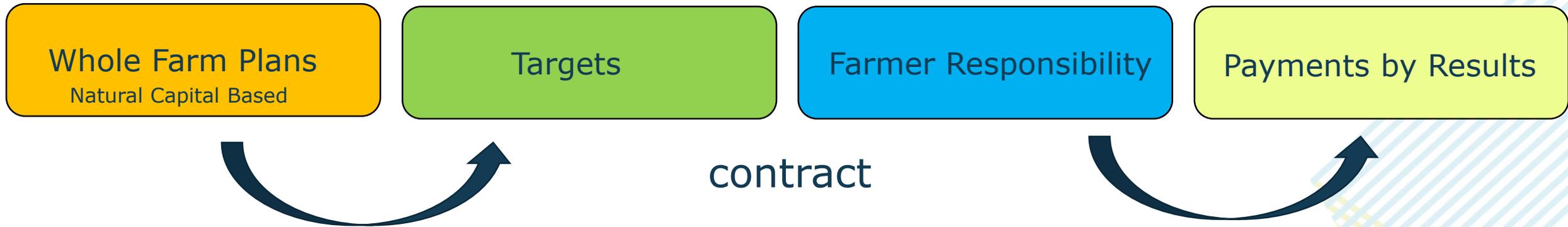
Results Based Agri-environment Payment Scheme (RBAPS)

Grassland Pilot: Wensleydale, Yorkshire Dales

Restore plant diversity, semi-natural pastures and meadows.
Enhanced habitats for breeding waders

How?

Advisers



Where is NFM in the agenda?

Ecosystem service	Farmer ranking
Aesthetic Landscape	1
Wildlife / biodiversity	2
Recreation – health and wellbeing	3
Water quality	4
Education	5
Animal health and welfare	6
Soil quality – erosion control	7
Inspiration / Sense of Place	8
Flood Alleviation	9
Climate regulation	10
Heritage / Sense of place	11
Pollination	12
Air quality	13
Pest control	14

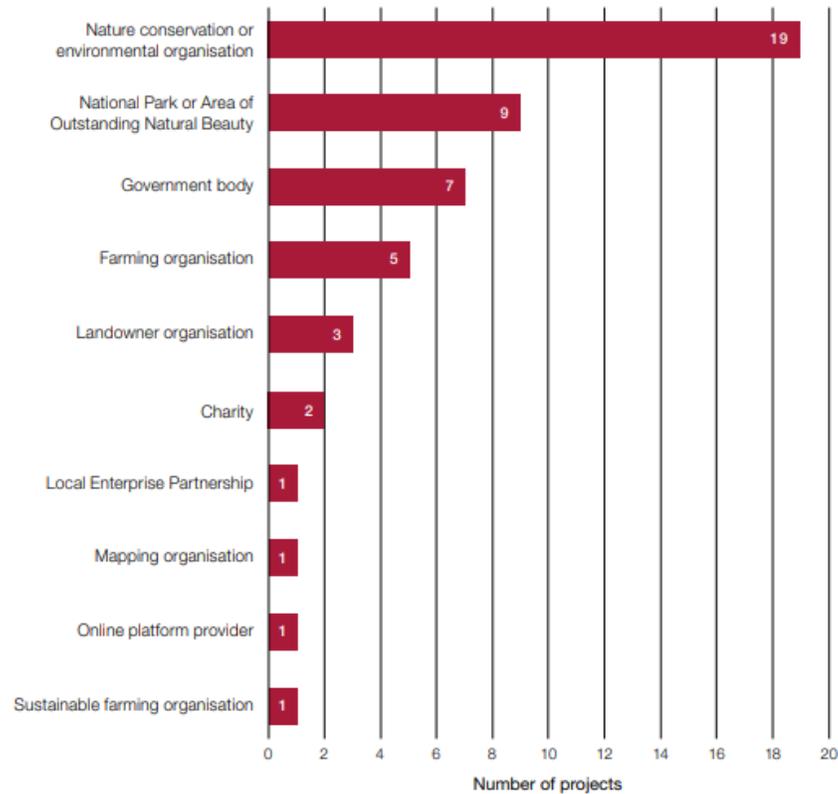


Testing and Trialling

Figure 7
Environmental Land Management System phase one tests and trials by organisation type

Relatively few phase one projects are being run directly by farmers or farming organisations

Type of organisation



Source: National Audit Office analysis of accepted phase one proposals

Co-Design
Test and Trial
“work with land managers to test and trial ELM”

Testing and Trialling

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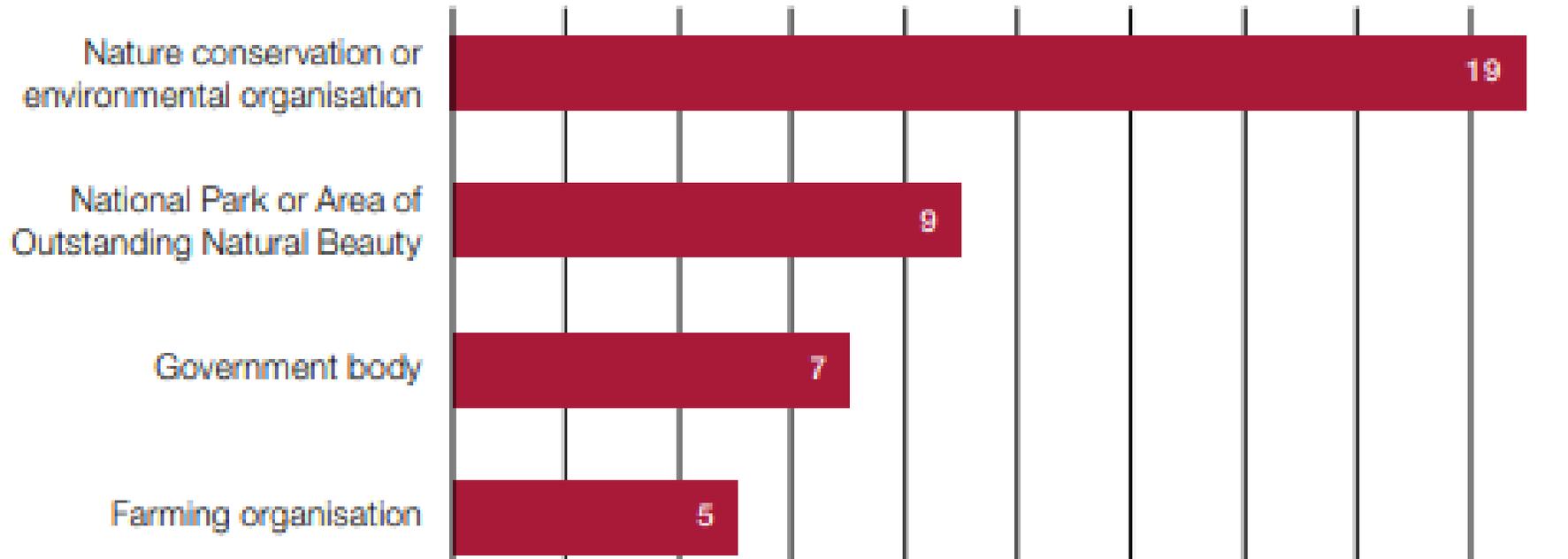
Testing and Trialling

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Where is NFM in the agenda?



- Blackdown Hills and East Devon AONB Partnerships
 - Cornwall AONB Partnership
 - Cotswold Conservation Board
 - Dorset AONB Partnership
 - Forest of Bowland, Nidderdale and North Pennines AONB Partnership
 - Kent Downs AONB Partnership
 - Quantocks AONB Partnership
 - Surrey Hills AONB Partnership
 - Tamar Valley AONB Partnership
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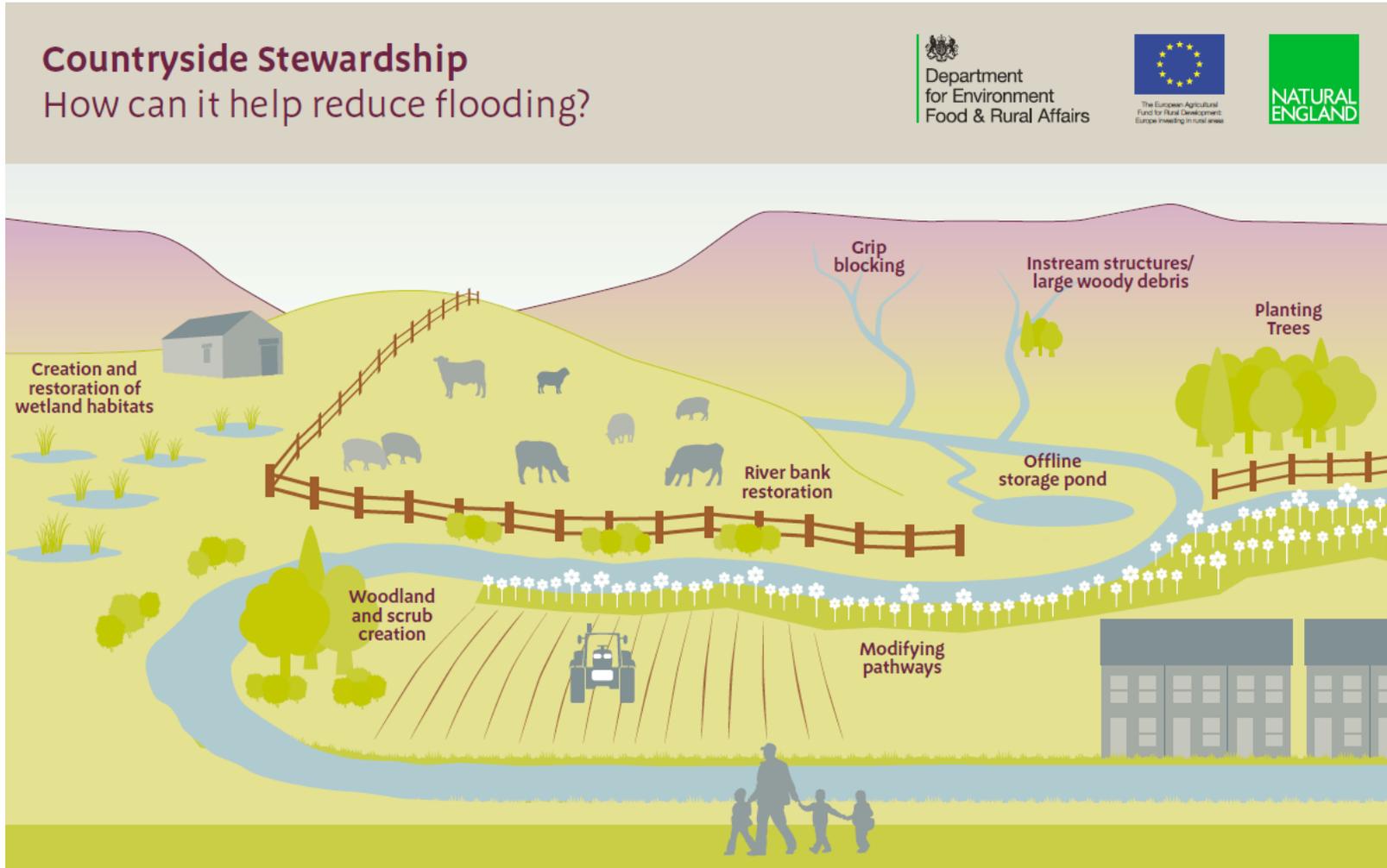
Where is NFM in the agenda?



Only two include NFM

- Blackdown Hills and East Devon AONB Partnerships
- Cornwall AONB Partnership
- Cotswold Conservation Board
- Dorset AONB Partnership
- Forest of Bowland, Nidderdale and North Pennines AONB Partnership
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What might be funded?



There are a range of grants available under the Countryside Stewardship scheme to support farmers and land managers who wish to adopt a variety of natural flood management techniques and help slow the flow of water within a catchment and to reduce the impact of flooding downstream.

What might be funded?

Countryside Stewardship How can it help reduce flooding?



Woodland and scrub creation

Planting and managing woodland areas at a range of scales throughout the catchment.

CS includes a range of woodland and scrub creation and management options (WD1- 9) and associated capital items to plant and protect young trees, and manage existing mature trees along river banks (TE4-6 – supply and plant tree /tree guards & shelters TE 10 – coppice bank side trees).

Grip blocking

Modifications to agricultural drainage systems to reduce runoff and to improve the condition of peatlands.

CS has a capital item for grip (upland drain) blocking - WN1. There are also management payments for upland moorland – UP3, for modifications to existing moorland burning regimes –UP4 and a supplement for moorland re-wetting – UP5.

River bank restoration

Stabilising eroding river banks to reduce deposition of sediment downstream.

CS capital items are available for stock fencing to allow river bank restoration – (FC1 & 2). There are also management payments available to restore riparian zones along river banks –water course buffers on arable land (SW4), riparian management strip (SW11), and taking field corners out of management (CS1).

Instream structures/large woody debris

Using woody material or boulders in a natural channel to slow the flow, increase instream water levels during moderate to high flows, and thereby increase water storage on the floodplain.

CS capital items such as check dams (RP12) provide this type of instream structure.

Wetlands

Creating wetlands can help to reduce and slow down runoff and capture sediment.

CS has a number of management options for raising water levels and creating habitats that should include areas of standing water. These include making space for water (SW12), pond and reedbed creation management (WT4 -7), creation and management of wet grassland for breeding and wintering wader and wildfowl (CS9-12).

There are also a number of relevant capital items for creation of scrapes (WN2), creation of water penning features (WN10), constructed wetlands for the treatment of pollution (RP8)

Overland sediment traps

Sediment laden runoff is detained to allow sediment to settle out.

CS has a number of capital items relating to this measure – sediment ponds and traps (RP7), RP9 (earth banks and soil bunds), silt infiltration dams/seepage barriers (RP10), swales (RP11). Other capital items such as resurfacing gateways/gateway relocation (RP1 &2), cross drains (RP5), watercourse crossings (RP3) and installing piped culverts in ditches (RP6) may also be useful.

Offline storage ponds and washlands

The making space for water (SW12) and the creation and management of wet grassland options for breeding and wintering waders and wildfowl (CS9 - 12) are the main CS options for this measure. Capital items such as the construction of water penning features (WN10) and sluices (WN9) can also contribute.

Land and soil management practices – modifying pathways

CS land management options that might slow the pathway for water entering watercourses by ensuring that more vegetation is present (and at an advantageous orientation) compared with typical cropping regimes for example:

- AB1 Nectar flower mix
- AB3 Beetle banks
- AB8 Flower rich margins and plots
- AB9 Winter bird food
- AB16 Autumn sown bumblebird mix
- OP2 Wild bird seed mixture
- SW1 4-6m buffer strip on cultivated land
- SW3 In-field grass strips
- SW4 12-24m watercourse buffer strip on cultivated land
- WT2 Buffering in-field ponds and ditches in arable land

CS capital items are available for hedgerow gapping up and creation (BN7 & 11) may also be relevant in some circumstances.

Land and soil management practices – beneficial land use change (temporary)

CS options can contribute to flood management by selecting options that increase the chance of infiltration rather than run-off. Relevant options include:

- AB2 Basic overwinter stubble
- AB6 Enhanced overwinter stubble
- AB15 Two year sown legume fallow
- OP1 Overwinter stubble (organic land)
- SW5 Enhanced management of maize crops
- SW6 Winter cover crops

Land and soil management – beneficial land use change (at least 5 years)

CS options can assist with beneficial land use change (see above for woodland) on arable land that can slow the movement of water and increase the rate of infiltration. For example:

- SW7 Arable reversion to grassland with low fertiliser input
- WT7 Creation of reedbed
- WT9 Creation of fen

What is the track record?

217,000 farms in the UK

17.5 million hectares of land, almost three-quarters (72%) of the land in the UK

Defra hopes to have 82,500 farmers enrolled on ELMS by 2028

Defra has two years to test how well ELMS will work at scale

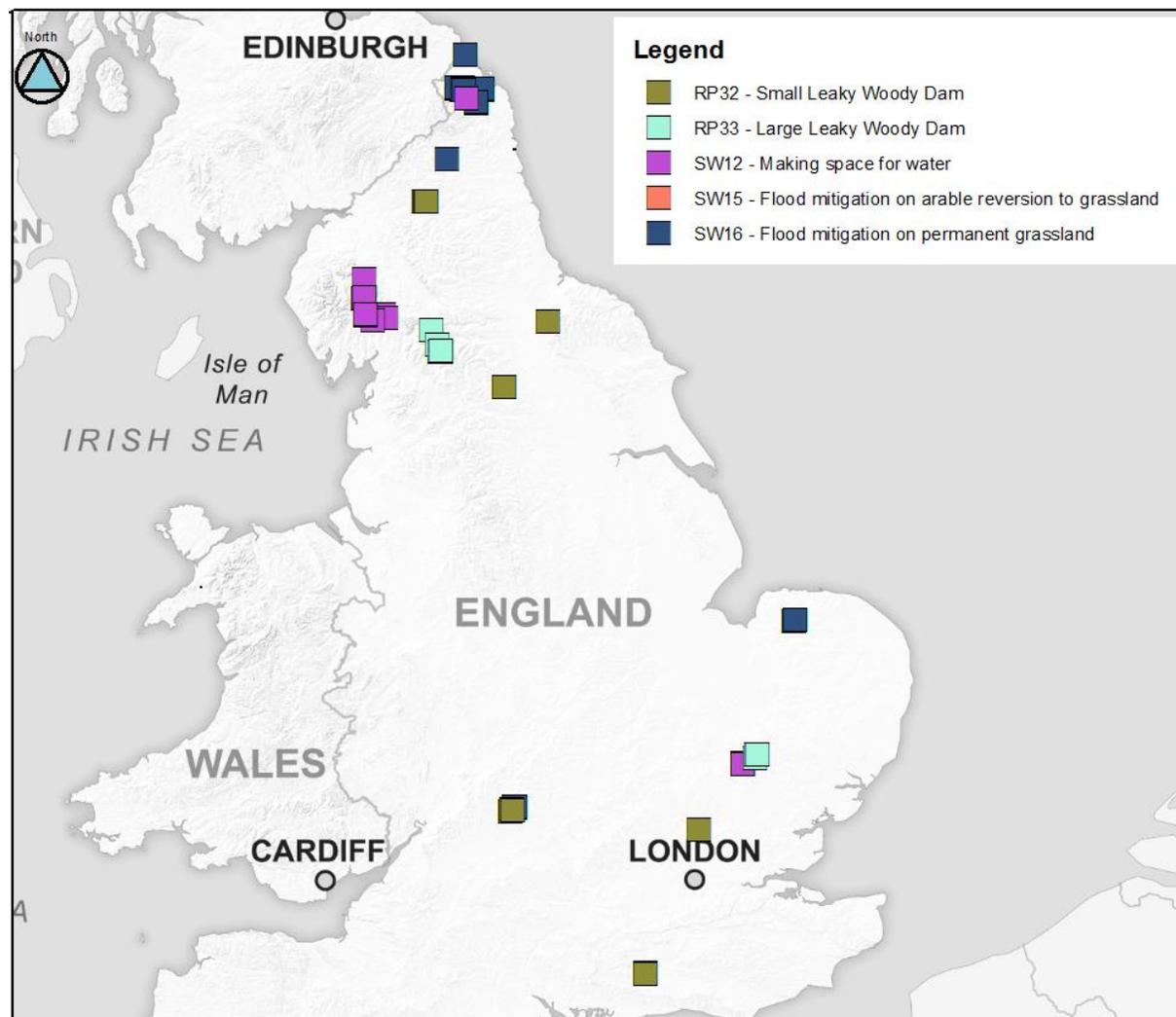
Ambitions for the level of take-up of ELMS during the first year of the three-year pilot, down from 5,000 farmers to 1,250

(NB. Farmers in England received €2.4 billion in subsidies in 2017)

What is the track record?

Countryside Stewardship

80,000 HT schemes in place
86 entries relating to NFM
31 farms total



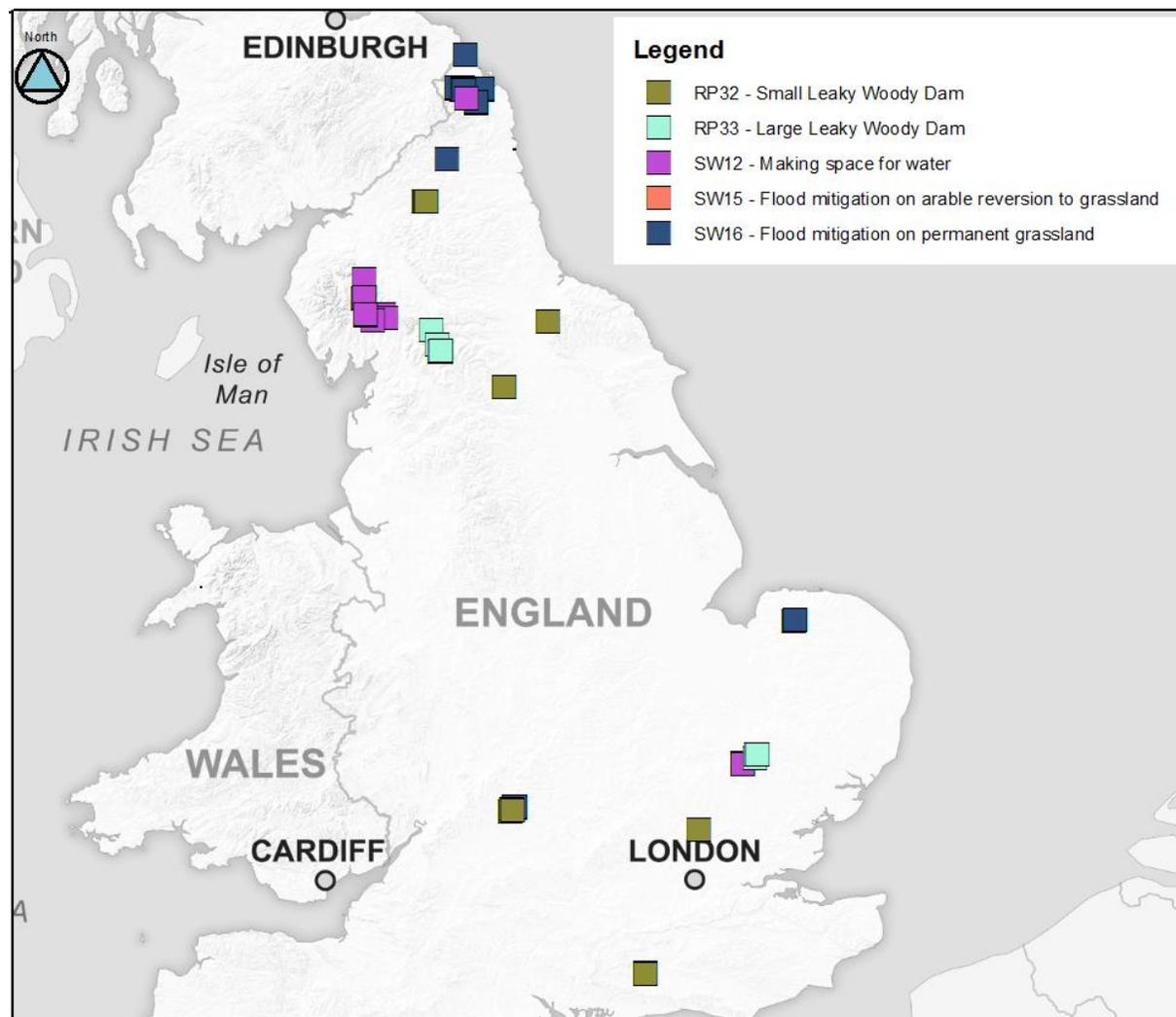
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For comparison
100 traditional orchards

NFM is 'Niche'



What might be funded?



Funding for ELMS

Soil Management



Flood Storage



What might be funded?

Funding for ELMS and/or FCERM

Soil Management

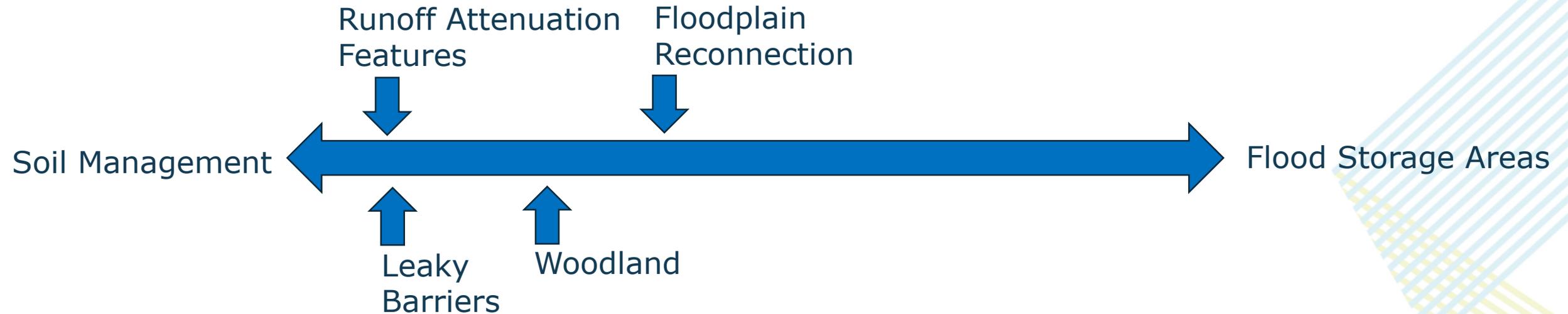


Flood Storage Areas



What might be funded?

Funding for ELMS and/or FCERM



What might be funded?

Funding for ELMS and/or FCERM

It is all land use and land management



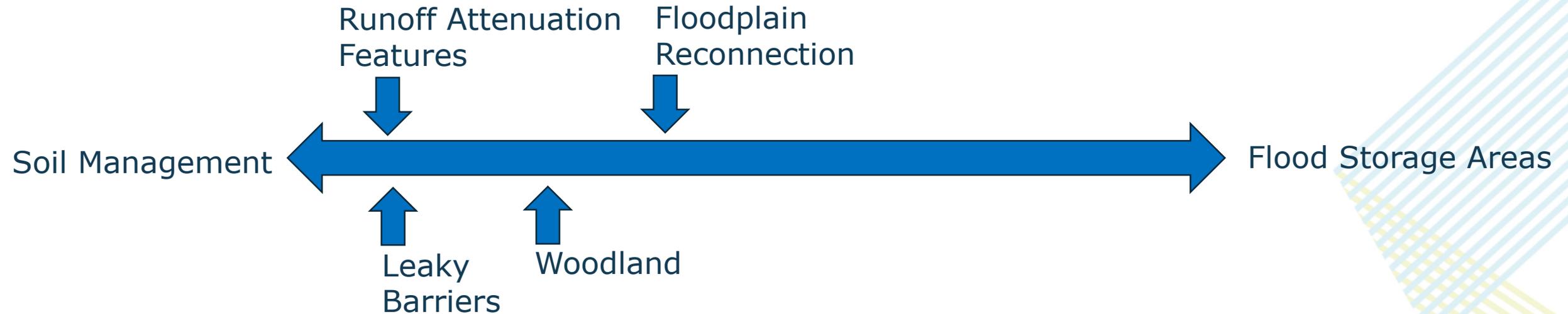
What might be funded?

Funding for ELMS and/or FCERM

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It is all Defra

Defra fund ELMS and FCERM



Results and Outcomes - measuring and monitoring

2028 will be a different age



Results and Outcomes - measuring and monitoring

2028 will be a different age

In 2013 Selfies went viral “everyone's a photographer now”



iPhone 4s and 5

Results and Outcomes - measuring and monitoring

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iPhone 4s and 5



Pit Field	30.1 miles
The Downs	30.2 miles
Esone	30.2 miles
Chalkens	30.1 miles

Results and Outcomes - measuring and monitoring

2028 will be a different age

In 2013 Selfies went viral "everyone's a photographer now"



iPhone 4s and 5

On the possibility of using mobile phone cameras for quantitative flow visualization

Rainer Hain^{1,*}, Nicolas A. Buchmann, Christian Cierpka¹

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* Correspondent author: rainer.hain@unibw.de

Keywords: PIV, mobile phone camera, cw-laser

ABSTRACT

Results and Outcomes - measuring and monitoring

Megan Robertson (MRes in River Science): New Project; Natural Flood Management and assessing sediment delivery to rivers using drones



Funder: Environment Agency

Results and Outcomes - measuring and monitoring

New technology has and is transforming how we measure, map and monitor rivers including the depth of shallow sites, velocities, habitats and channel change

- Drone video for **surface velocity measurement**: Image Velocimetry
- Drone photos for **topographic surveys**: SfM Photogrammetry
- Repeat surveys for **geomorphic change detection and soil erosion**
- These are important new tools in the river scientists toolbox
- **Ultra High Resolution Data**: Understand geomorphic and hydraulic processes, map and monitor habitats and measure flow velocity in ways not possible previously

Results and Outcomes - measuring and monitoring

2028 will be a different age

Technology for on-farm evidence gathering and remote sensing will make great strides over the next 8 years



Where? – prioritising and targeting NFM

ELM funded NFM needs to be targeted

Why?

- NFM needs to reduce flood risk for 'at risk receptors'
 - Resources are limited
 - Some NFM measures deliver other 'public goods' – some 'public goods' (thriving plants and wildlife) can deliver flood risk benefits
-

Where? – prioritising and targeting NFM

ELM funded NFM needs to be targeted

Where?

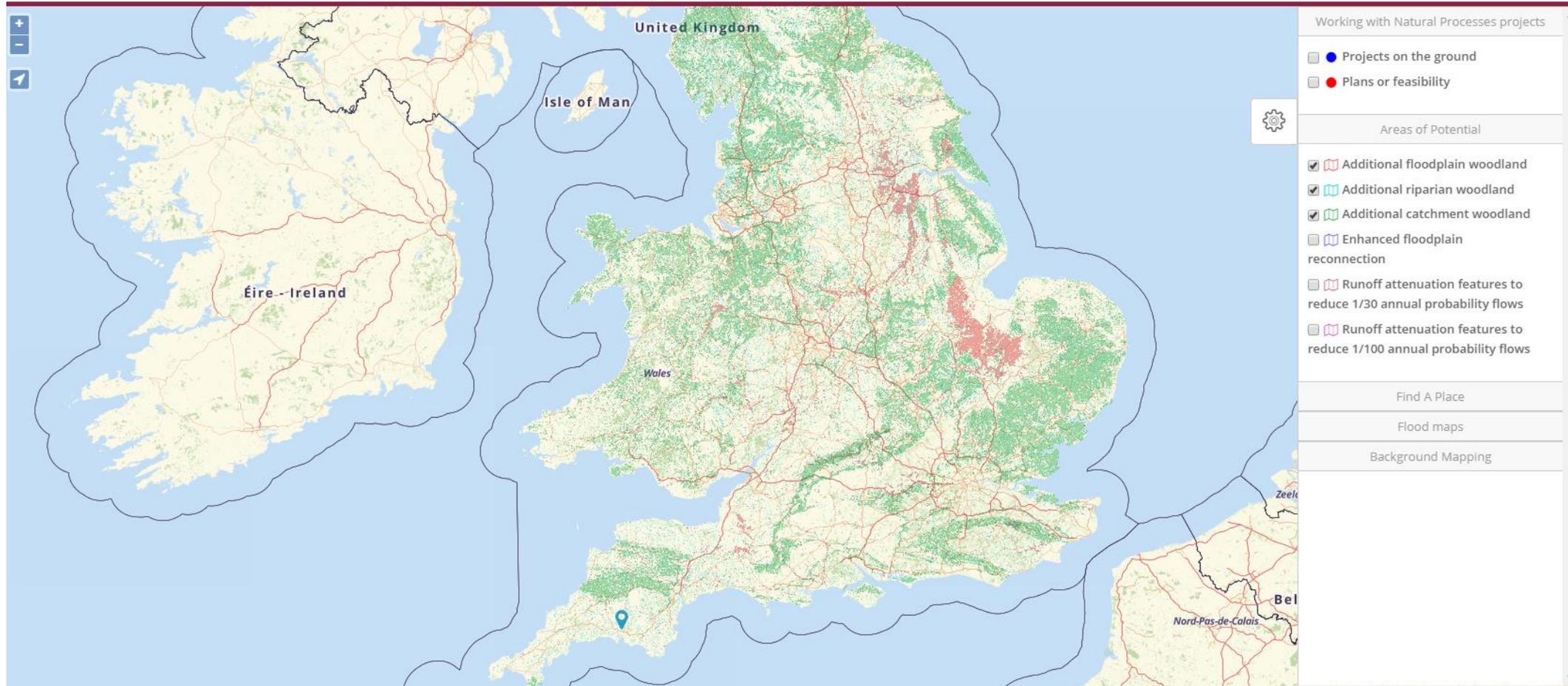
- Where NFM modelling supports benefits to 'at risk receptors'
- Where NFM supports climate resilience for conventional FCERM projects
- Where NFM measures deliver other valued 'public goods'

What is the alternative?

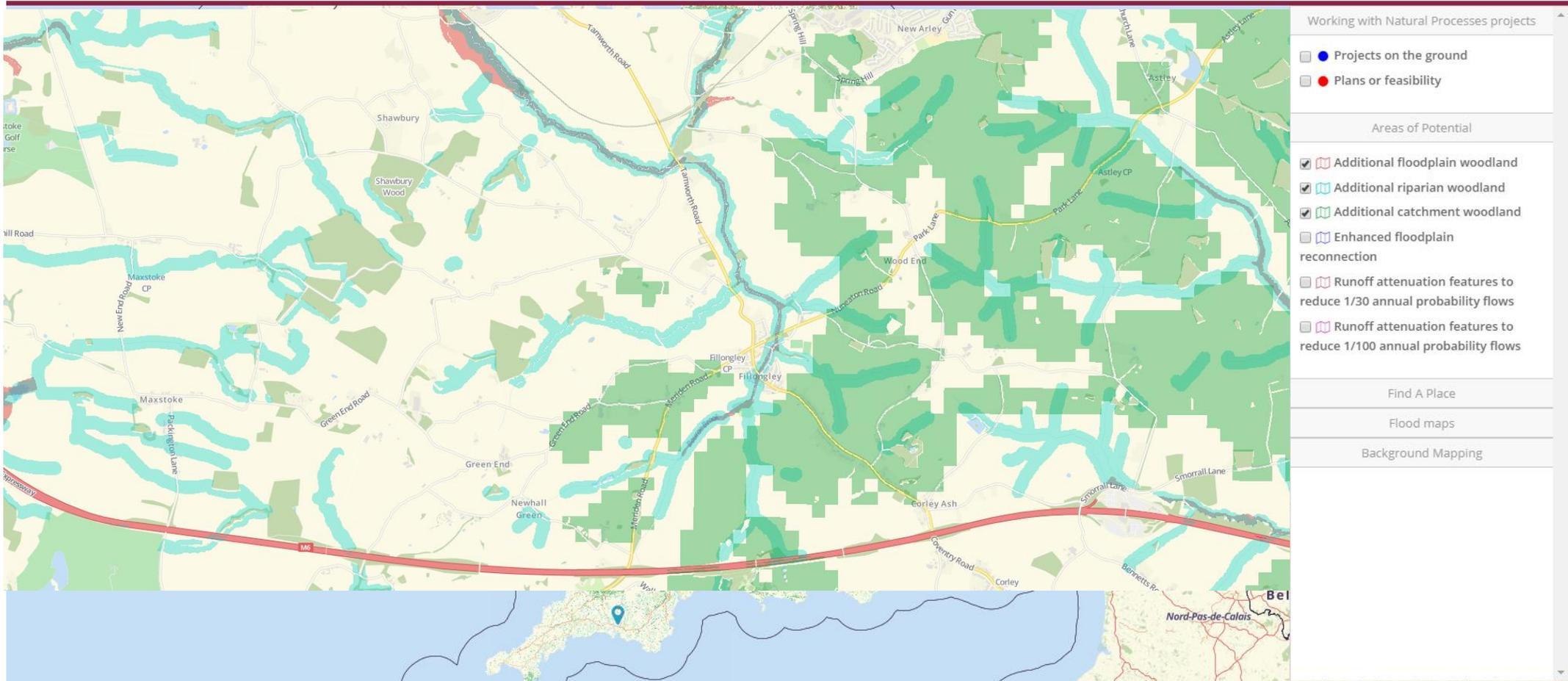
NFM is funded and spatially distributed based on enthusiasm, existing networks and patterns of land ownership.

NFM funding, FCERM funding and other pots are confused and conflicted

Where? – prioritising and targeting NFM

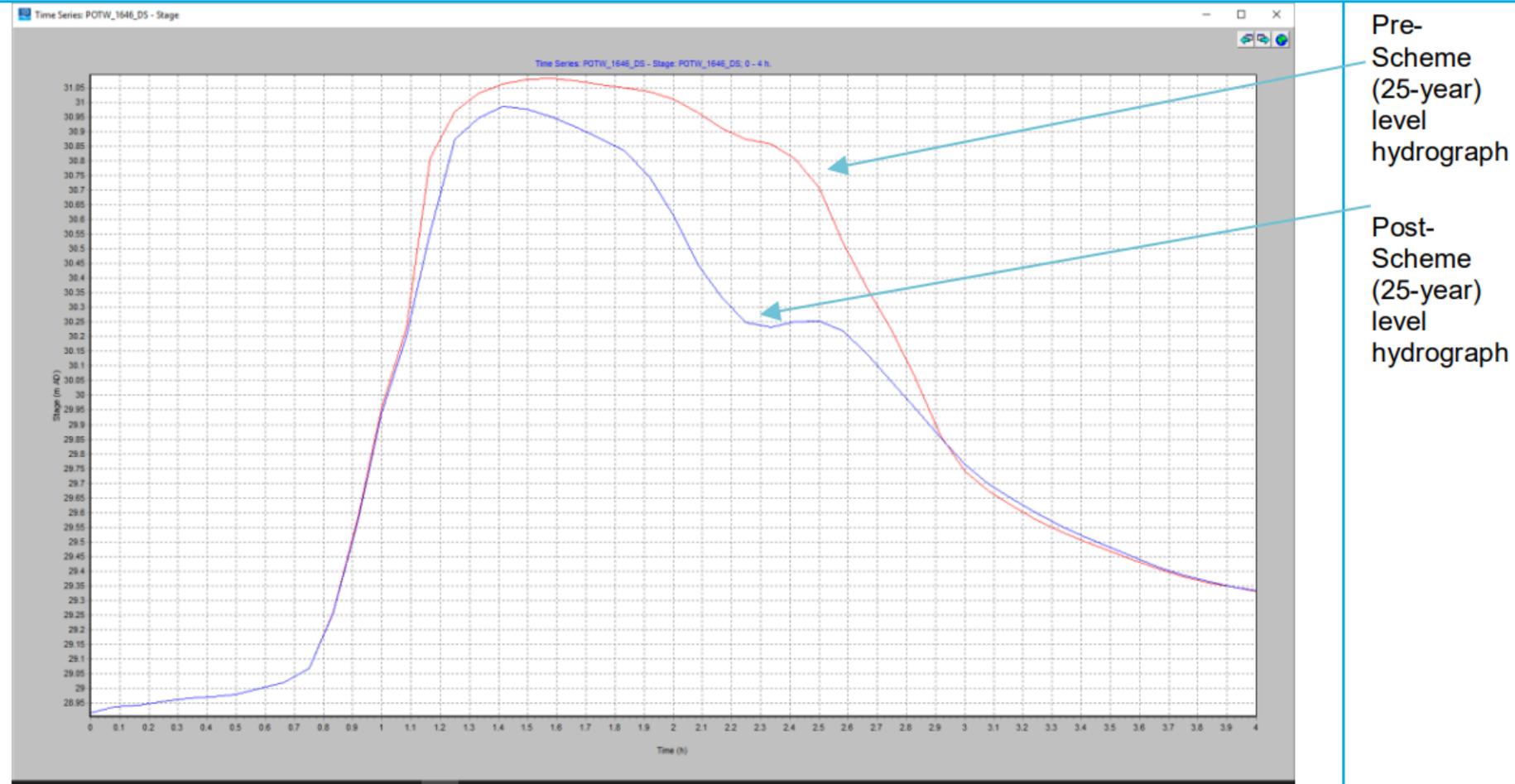


Where? – prioritising and targeting NFM



Where? – prioritising and targeting NFM

Figure 3.8 - Pre- and Post-scheme modelled event hydrographs - Upper Potwell (25-year)



Natural Capital Farm Accounts and Plan



What has ELMS in store for NFM?



What has ELMS in store for NFM?

Can ELM deliver effective flood risk management benefits?

What has ELMS in store for NFM?

Can ELM deliver effective flood risk management benefits?

Yes

What has ELMS in store for NFM?

Am I confident it will deliver these benefits?

What has ELMS in store for NFM?

Am I confident it will deliver these benefits?

That all depends how receptive Defra is during the testing period - the next 2 years and subsequent piloting stage and

How receptive the Defra 'testing' partnerships are to NFM

What has ELMS in store for NFM?

Am I confident it will deliver these benefits?

The opportunity is to delink funding from 'prescribed' flood risk reduction benefits with a loser system

and which

Targets communities at risk

Am I optimistic on ELMS and NFM?



Am I optimistic on ELMS and NFM?

Not really.

Am I optimistic on ELMS and NFM?

Not really.

But there is still time

ELMS and NFM

Thanks to Steve Rose, Rachelle Ngai, Jenny Broomby, Katie Chorlton, Alex Jones and Barry Hankin for stats, graphics and ideas rolled up into this presentation.

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