

Supplement 2 to the agenda (post meeting)

Wye Catchment Nutrient Management Board

Wednesday 29 April 2026, 2.00 pm

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10.	Wider updates from members of the board The attached document includes the following matters arising from the meeting: a response from the Environment Agency on Ground Water Source Protection Zones; a response from the Environment Agency on Fixed Monetary Penalty trial; and Herefordshire Council: April 2026 update.	31 - 34

BRIEFING NOTE

Wye Catchment Living Labs Programme

To: Members of the Nutrient Management Board
From: Dr Rounaq Nayak, Principal Investigator, UWE Bristol
Date: May 2026
Re: Response to questions raised at the NMB meeting

Purpose of this note

Thank you to all members who engaged with the programme presentation at the NMB meeting. A number of important questions were raised and this note responds to each of them directly. The questions covered four main areas: how farm sites will be selected; whether Welsh farmers will be equally involved; how the programme will ensure environmental need is not sacrificed to farming business interests; and how we will avoid duplicating the Haskoning evidence review.

What the existing evidence tells us

Before responding to the specific questions, it is worth being clear about what the existing evidence already shows us about the scale of the challenge, because it provides the scientific baseline against which this programme's work must be measured.

The Mott MacDonald modelling (2024), commissioned by the Environment Agency, is a comprehensive quantitative analysis of the catchment to date. Its headline findings are clear: the management of manures and fertiliser application is the single largest lever for improving water quality in the Wye. Even a 25% reduction in manure and fertiliser application would reduce average dissolved inorganic nitrogen in the river by 12–28% and average soluble reactive phosphorus by 3–25%, depending on location. The most ambitious scenario modelled - combining a 49% reduction in manure and a 75% reduction in fertiliser with improved soil health across 65% of English agricultural land and 40% in Wales, increased tree cover, and wastewater treatment upgrades - could achieve nitrogen reductions of 35–72% and phosphorus reductions of 29–82%. But even that most ambitious combination does not guarantee Good Ecological Status across the whole catchment.

The Lantra workshops (March 2026), funded by the Welsh Government, found that the problems of the Wye are broadly understood and that the priority is no longer more theoretical and primary research but trial-based science: living labs and solutions-based projects that can quantify and validate what specific interventions actually deliver in practice. That is precisely what this programme is designed to do. 84% of participants in the Lantra process said there is currently not enough collaboration across the catchment, especially between England and Wales, and the biggest barriers to change identified were inconsistent funding (30%) and financial constraints on farm businesses (23%).

How will farm sites be selected?

Farm sites will not be selected until we have completed the first phase of the programme, which runs for approximately five months. Critically, site selection will be led by the evidence, and not by landowner access or convenience. This is a deliberate methodological choice and one that distinguishes this programme from previous work in the catchment.

The approach will work as follows. We will use existing data (including from the Wye Alliance Data Group and the current Haskoning evidence review) to identify where in the catchment interventions would have the greatest measurable impact on water quality. From that data-informed shortlist of locations, we will then work with Herefordshire Rural Hub and our wider partner network to identify and approach suitable farms. This means the geography shapes the farm selection, not the other way around. We are also deliberately avoiding the default of recruiting through dominant landowners, which can skew both where the living labs are sited and what interventions it is realistic to test. Based on initial assessment, the most important hotspot areas are likely to span the English and Welsh border given the watercourses involved, which is consistent with the co-funded, cross-border nature of the programme.

The criteria for confirming specific sites, once the evidence has identified the right geography, will include farm type (with a specific focus on intensive poultry operations and farms on shorter tenancies), monitoring feasibility, and farmer willingness to participate.

The Mott MacDonald evidence also shows that improving soil health across large areas of agricultural land is critical for flow management. This will inform the range of farming systems and soil types we look to represent across the three sites.

Will Welsh farmers be equally involved?

Yes. Welsh Government is a co-funder of the programme alongside Defra and Welsh perspectives are formally embedded in its governance. Natural Resources Wales and the Wye and Usk Foundation are partners, and the Lantra Wales workshops (funded by the Welsh Government specifically to inform this research programme) were designed to ensure Welsh catchment voices shaped the research priorities from the outset.

The Mott MacDonald modelling confirms that while nutrient loads are higher in the English sub-catchments, the Welsh part of the catchment plays a significant role in overall flow management and in the upper river's water quality. Interventions in the Welsh part of the catchment are therefore important in their own right, not an afterthought. We are committed to ensuring that the farm sites, the workshops, and the governance of the programme reflect both sides of the catchment.

Will farming business interests shape what interventions are tested?

The concern about the Farm Scope modelling process is well-founded and the programme team takes it seriously. The process progressively narrowed its intervention list through consultation until the options that remained, even if fully implemented across every farm in the catchment, are modelled as insufficient to restore the river to Good Ecological Status. Options that were considered unpalatable to farming interests were removed at early stages.

This programme is designed differently in three specific ways.

The science sets the floor, not the consultation

The first five months of the programme are focused on establishing what the evidence actually shows about the scale of intervention needed, drawing on the Mott MacDonald modelling, the Haskoning evidence review, and all other available catchment evidence. That scientific baseline is established before any conversation about feasibility or acceptability. Candidate interventions will be assessed against whether they are measurable and whether the modelling shows they can make a meaningful difference to water quality. Interventions that cannot meet that bar will not be taken forward, regardless of who advocates for them.

Independent scientific scrutiny

A Technical Group of independent scientific experts (covering water quality science, soil science, hydrology, ecological monitoring, and catchment governance) will provide independent assessment of which interventions are scientifically robust before any prioritisation decisions are made by the wider governance body. If any interest group were to push for interventions that the evidence does not support, the Technical Group provides a check on that which is not subject to political pressure. This is not a process where everyone holds a veto on the science, but it is a process where the science sets what is on the table.

Co-design is not the same as a veto

Farmers' knowledge and practical experience is valuable in this programme, not because we need permission, but because understanding why previous interventions have not worked, what the real constraints are on different farm types, and how interventions might be designed to be more effective are all things that farmers know and researchers do not. That is a different thing from allowing farming interests to remove inconvenient interventions from consideration. The first five months of the programme are specifically about creating a space where difficult conversations can happen honestly, including conversations about interventions that are not currently palatable but which the evidence says are needed.

What this programme cannot promise is that the interventions it tests will on their own be sufficient to restore the river. The Mott MacDonald modelling makes clear that even the most ambitious combination of agricultural interventions is not enough. That is a structural challenge for the catchment that extends beyond the scope of this research programme. What the programme can do is generate rigorous, credible evidence about what specific on-farm interventions actually deliver in real-world conditions; evidence that currently does not exist in sufficient quality to drive the scale of change needed. That evidence is a tool for the catchment, not a ceiling on ambition.

Avoiding duplication with the Haskoning evidence review

The point was well made and the short answer is that the two workstreams have different and complementary purposes, and we are already in active contact.

The Haskoning review, like the Mott MacDonald modelling before it, is an evidence synthesis exercise: it brings together what is already known about the catchment. The NMB has kindly shared the current iteration of the Haskoning evidence with us and we are treating it as a foundational input into our own WP1 evidence review, not as something to be repeated. The Lantra report itself concluded that the priority for the catchment is no longer more desk-based evidence synthesis but trial-based research that validates what works in practice, and that is the explicit purpose of this programme.

The relationship between the two workstreams is therefore additive: Haskoning identifies what the evidence says and where the gaps are; this programme tests specific on-farm interventions in those gap areas and generates new evidence. If we work closely together, and we intend to, the outputs of Haskoning will inform which interventions this programme prioritises, and the outputs of this programme will provide the trial-based evidence that Haskoning cannot.

A WCP meeting on 29th May and the lunchtime webinar being organised with Judith Whateley, Herefordshire Council, for the week of 8th June will both be opportunities to discuss how the two workstreams are joined up in practice.

Offer of support from the CLA

Thank you for the CLA's offer of support on farmer and landowner engagement. The Lantra workshops identified engagement through trusted intermediaries as critical to the success of any research programme in the catchment: farmers are more likely to engage honestly

through networks they already trust than through direct approaches from a university. We will be in touch about how the CLA can support the farmer engagement process, particularly in reaching farms not already connected through our current partner networks.

Next steps

The programme is currently in its first five months, focused on evidence review and workshop planning. Key upcoming touchpoints for the NMB and catchment participants include:

- WCP online meeting, 29th May: an opportunity to discuss the programme's approach and early evidence review.
- WCP lunchtime webinar, week of 8th June: being organised with Judith Whateley as a broader briefing on the programme's direction.
- Participatory workshops, months 2-5: the NMB is well placed to contribute to these workshops, both through Cllr Swinglehurst's role on the Project Steering Group and through the wider evidence and intelligence the NMB holds on nutrient management in the catchment.

We welcome the NMB's continued engagement and are grateful for the rigour of the questions raised at the meeting. Please do not hesitate to contact me directly with any further questions.

Dr Rounaq Nayak

Principal Investigator, Wye Catchment Living Labs Programme
UWE Bristol

Wye Nutrient Balance Pilot Programme



- In 2024 & 2025 a pilot was launched across 140 holdings covering >30000hectares.
- Range of farm sizes and enterprises including sheep, dairy, arable, beef, poultry.

PLANET's Farmgate tool is used to:

- Collate data on imports :
 - Fertiliser or manures
 - Livestock bought on to holding
 - Feed or bedding
- Collate data of exports :
 - Manures
 - Livestock sold off the holding
 - Crops and product
- Balance given of Total Nutrient Load and Load/hectare for the holding.

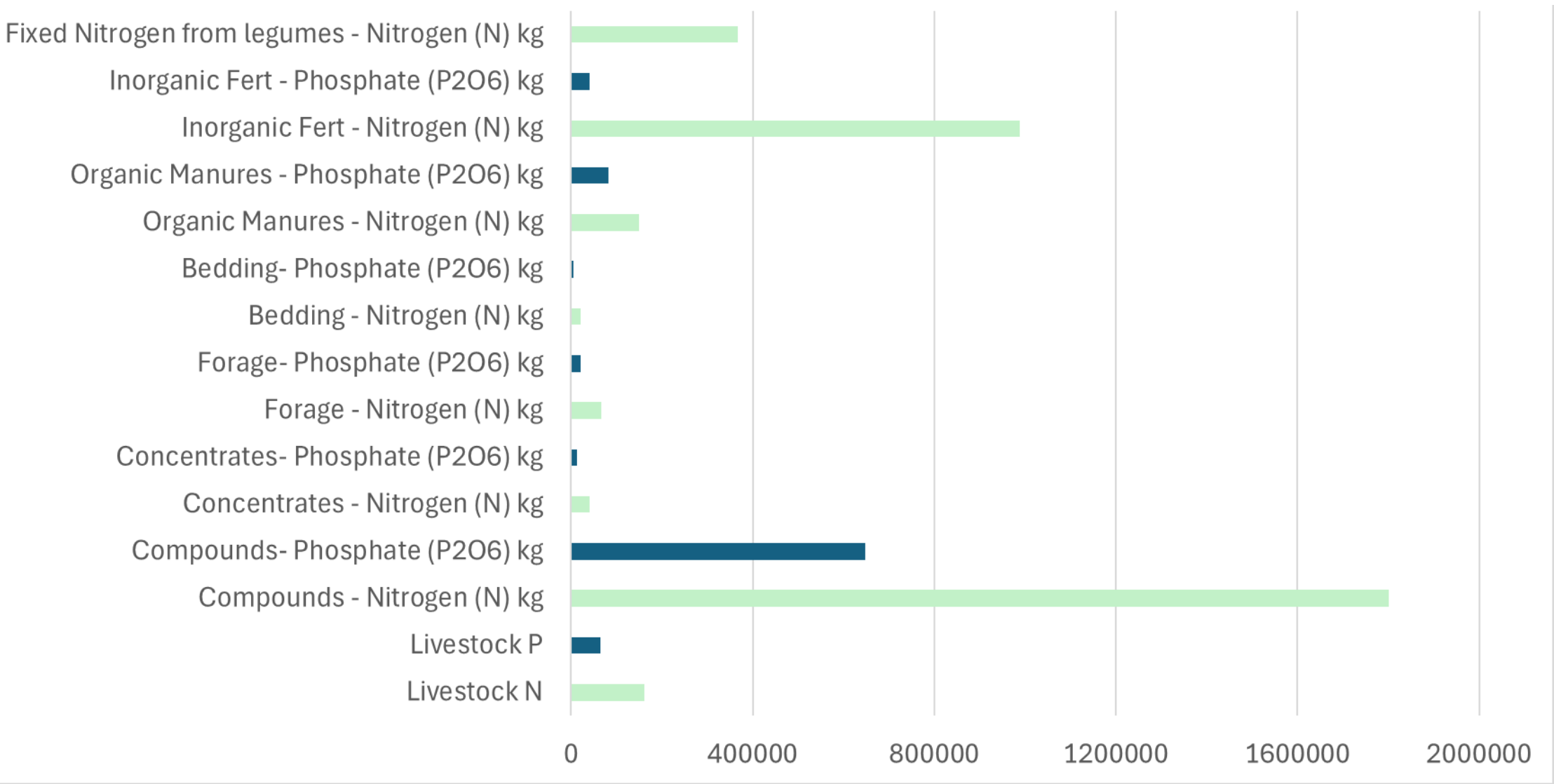
Rural Hub
Herefordshire



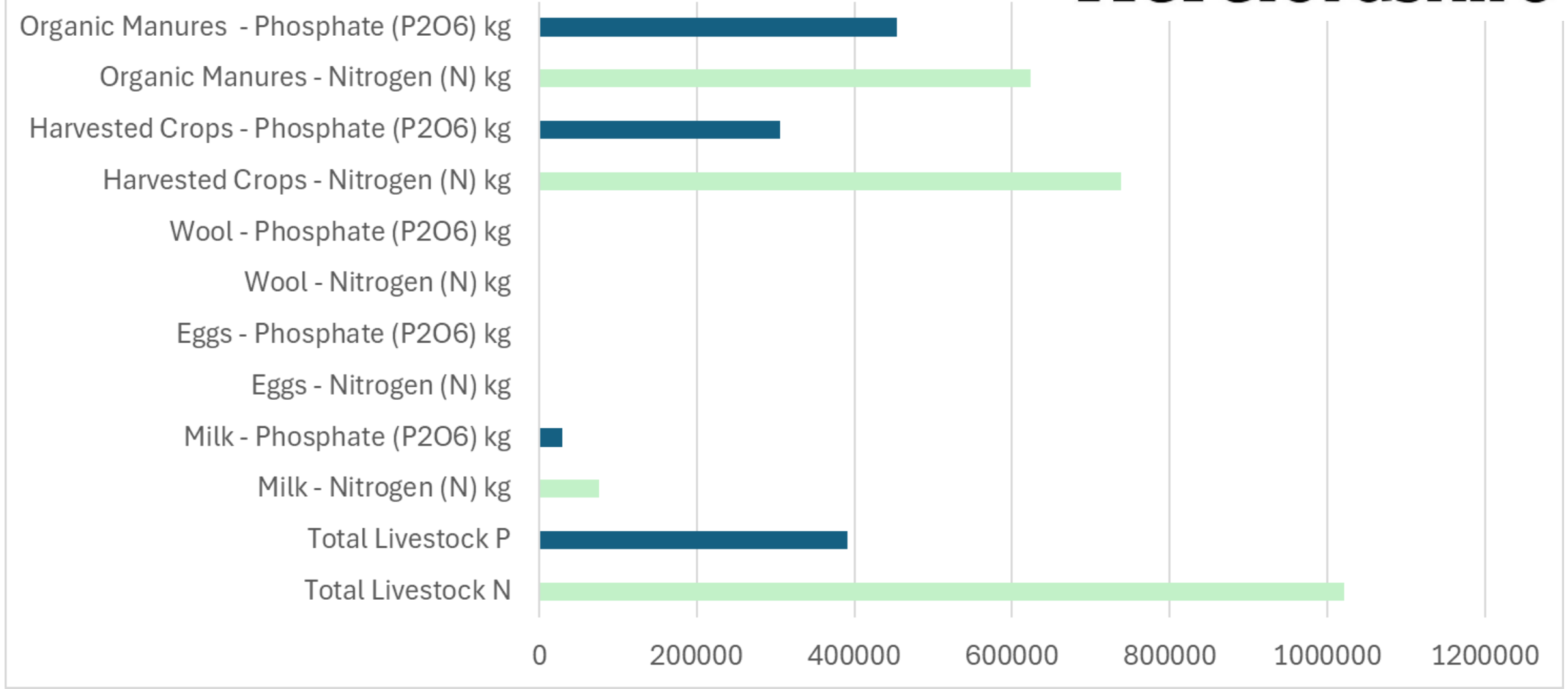
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Nutrient Imports by Category

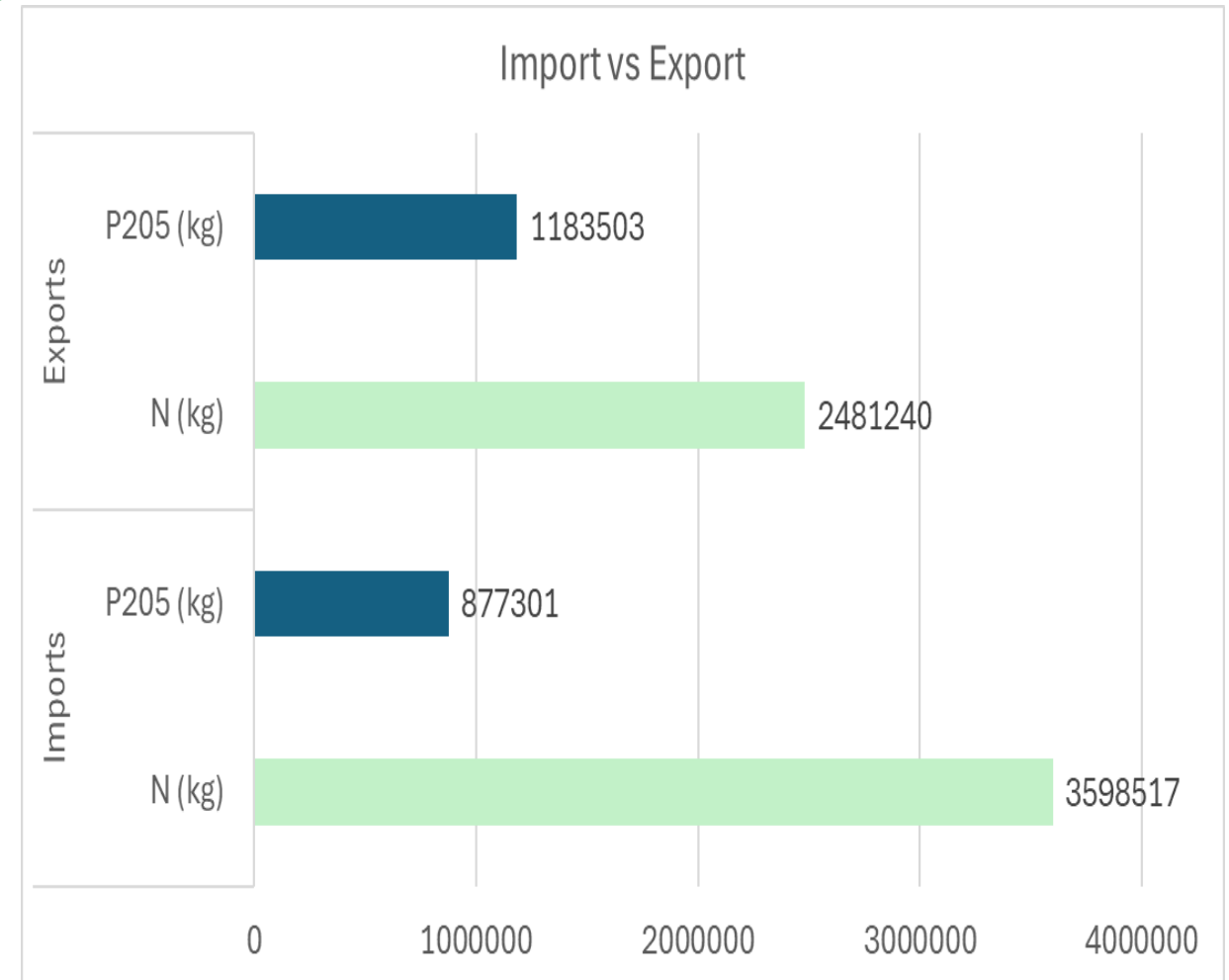
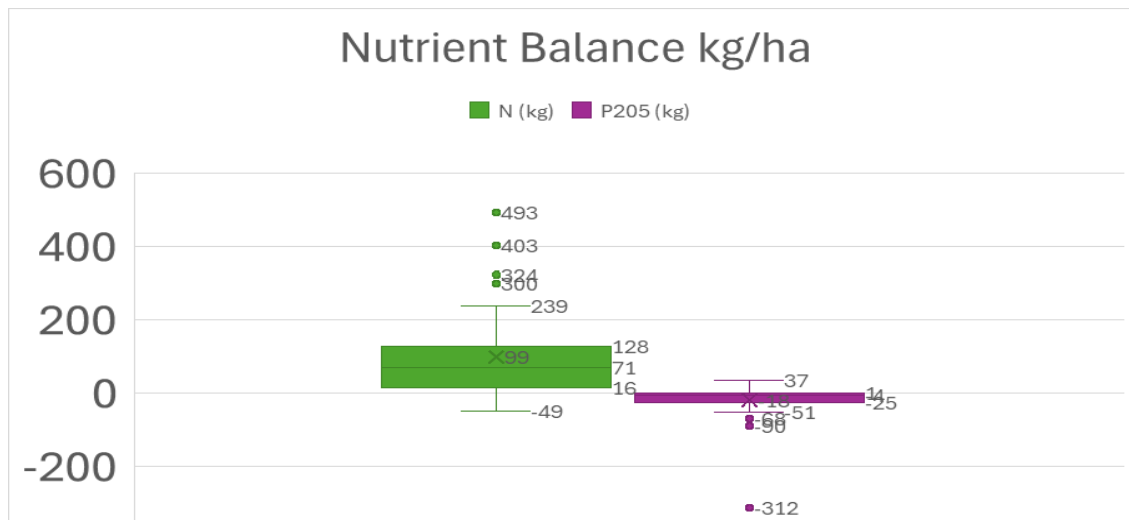


Nutrient Exports by Category



Wye Nutrient Balance Pilot Programme

- REPHOKUS estimates +6.2kg P/ha
- Pilot average -6 kg P/ha
- Pilot average +82kg N/ha





Nutrient Load Scenarios:

Lancaster modelled scenarios to determine the impact of different levels of intervention. These are summarised below:

	REPHOKUS 2023	REPHOKUS 2025 Including export 600t P	Herefordshire 2024 Pilot
Total P Surplus	2300t	1700t	-180t
P Surplus kg/ha	8.3	6.2	-6

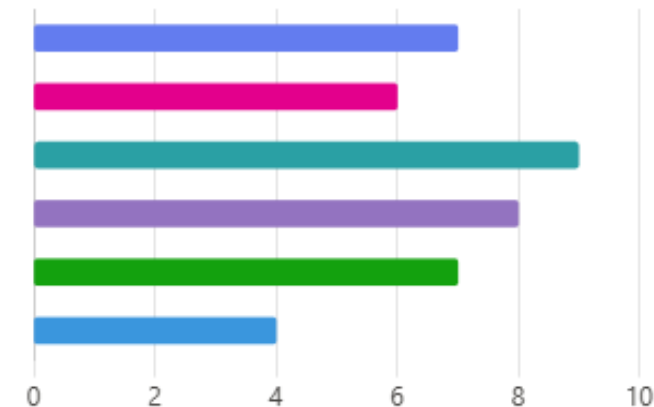
A Net zero P scenario includes a combination of; reduction in artificial fertiliser use, increased export of manures from the catchment and reduction in livestock.

What next?

- Positive feedback from participants who found process informative for planning how to reduce nutrient load of their farming enterprises.
- Pilot findings differ enough from national datasets to justify expansion of the project during 2025 & 2026 – funding committed by Environment Agency
- Tesco supporting this initiative and encouraging engagement through their supply chain with visits for ABP, Dunbia & Kepak suppliers.
- Expansion of the pilot during 2026 & 2027

What are the barriers preventing farms from making further changes to nutrient management?

Financial constraints	7
Uncertainty about regulations	6
Lack of clear, practical guidance	9
Difficulty accessing reliable advice	8
Concerns about the impact on productivity	7
Other	4



Garnstone Farms – Case Study Nutrient Balance

2022	Nitrogen (N) kg	Phosphate (P ₂ O ₅) kg	Potash (K ₂ O) kg
Total Imports	163,661	71,215	89,857
Total Exports	94,225	38,380	57,582
Nutrient balance for the whole farm	69,436	32,835	32,275
Benchmark	No benchmark	No benchmark	No benchmark
Nutrient balance per each ha or acre of farmed land (excluding rough grazing)	61	29	29
Benchmark	30 to 120	0 to 30	0 to 60

Garnstone Farms – Case Study Nutrient Balance

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2024	Nitrogen (N) kg	Phosphate (P ₂ O ₅) kg	Potash (K ₂ O) kg
Total Imports	115,473	2,258	31,258
Total Exports	84,420	35,200	47,923
Nutrient balance for the whole farm	31,053	-32,942	-16,665
Benchmark	No benchmark	No benchmark	No benchmark
Nutrient balance per each ha or acre of farmed land (excluding rough grazing)	27	-29	-14
Benchmark	30 to 120	0 to 30	0 to 60

Total P Testing Pilot

Background & Rationale



- Standard approach measures **Olsen P (available P)**
 - **Total P (full soil phosphorus reserve)** not tested for or well understood on farm
 - Farmers continue to identify a knowledge gap between:
 - soil testing
 - nutrient advice
 - water quality outcomes
- 👉 Pilot designed to:
Build on Lancaster Uni's initial work and continue to build understanding on farm of how much phosphorus is actually held in soils and what this could mean for management

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Lancaster
University

Environment
Agency

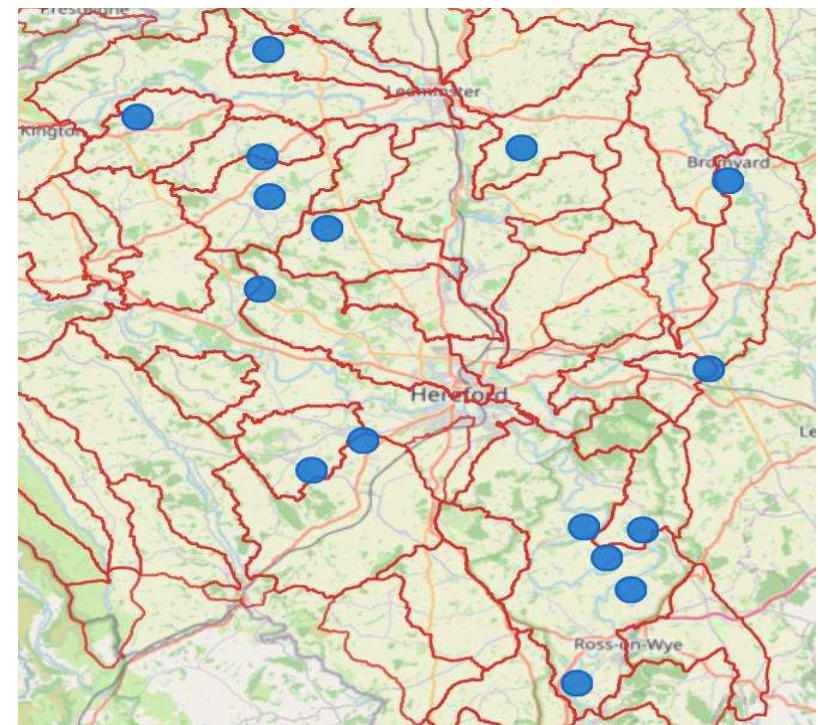
Total P Testing Pilot

Approach Taken

- Soil sampling across **16 farm holdings**
- Sampling undertaken by Cobb Agri
- Measured:
 - **Available P (ppm)**
 - **Total P (mg/kg)**

👉 Building another locally owned, real-world dataset from commercial farms

Rural Hub
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Total P Testing Pilot



Key Findings

1. Significant legacy phosphorus present

Avg Available P: ~36 ppm

Avg Total P: ~691 mg/kg

Max: >2200 mg/kg

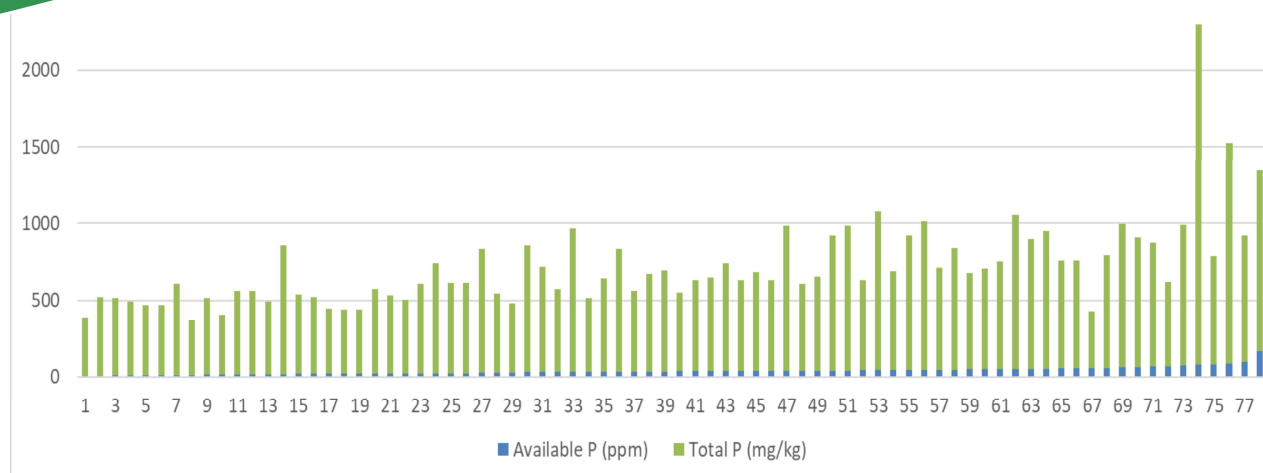
2. Available P ≠ Total P

Only a **moderate relationship** between these two parameters found in our dataset whereas Lancaster Phase 3 study indicated that Olsen P ≈ ~4% of **Total P** and they indicated a ~7 mg/kg Olsen P increase per 100 mg/kg Total P

👉 Key point:

Olsen P is not a reliable indicator of total phosphorus reserves

Soil Test Results 25/26



Total P Testing Pilot



More questions than answers...

1. How do soils release phosphorus?

How quickly does legacy P become available?

Does release differ by:

- soil type (sandy vs loam)
- biology / organic matter
- management history

2. Where does risk actually occur?

Which fields are:

- actively losing P
- vs simply storing it

Role of:

- drainage
- runoff pathways
- compaction / structure
- storm events

3. What works in practice?

Which actions reduce loss most effectively:

- input reduction?
- soil structure improvement?
- timing of applications?

Where can we:

- maintain yield
- while reducing inputs

👉 Key gap:

We currently lack **field-scale evidence linking soil P → crop response → water outcomes**

Total P Testing Pilot



What next?

Participating farmers keen to test & trial reduced / no P inputs, alongside monitoring:

Production monitoring

- yield
- crop quality

Nutrient tracking

- crop offtake
- nutrient balance

They want to know...

- What are the links between:
soil phosphorus → crop performance → nutrient loss
- Can we identify:
highest risk fields
most effective interventions
- To build **practical, farmer-led evidence base** to enable change on the ground.

Opportunity through Defra Living Labs

👉 Build on the momentum and appetite in farming community to build practical, farmer-led evidence base to enable change on the ground.

OFFICIAL

Gypsum: Reducing Phosphate Loss in Herefordshire Soils

29.04.26

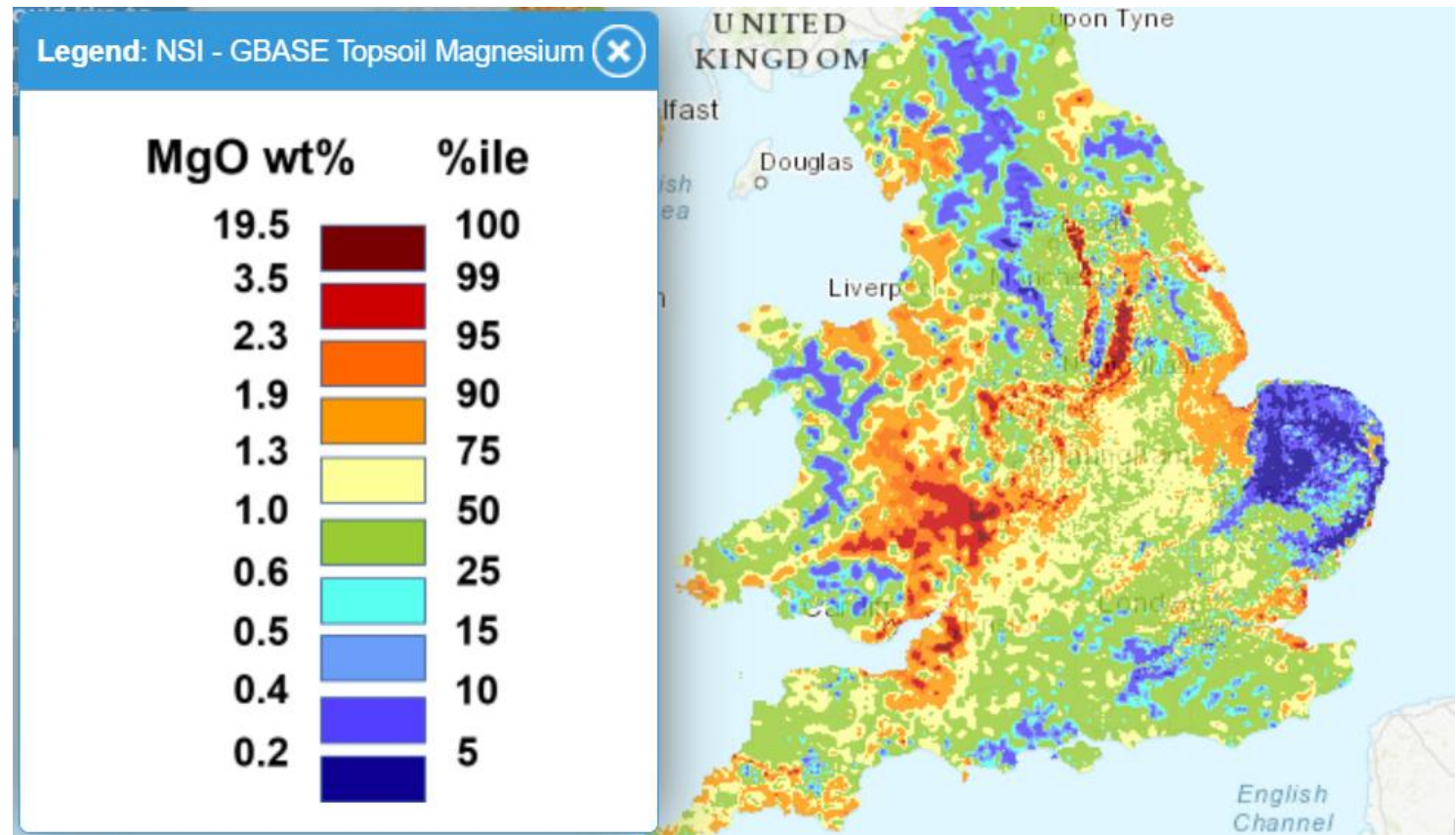
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Gypsum

- Calcium sulfate dihydrate
- Available as a mined product or recycled from plasterboard

Herefordshire

- Magnesium rich, calcium poor
- High legacy phosphorous



[UK Soil Observatory](https://www.uksoilobservatory.org/)

International evidence base

- [Transport of P decreased by 35 and 54% in soils amended with 4.5 and 9.0 M.T./ha gypsum](#)
- [Gypsum amendments as a potential tool for slowing P loss from agricultural areas with high P loss potential](#)
- [Gypsum \(\$\text{CaSO}_4 \cdot 2\text{H}_2\text{O}\$ \) amendment can reduce phosphorus \(P\) export from agricultural fields and protect water quality.](#)

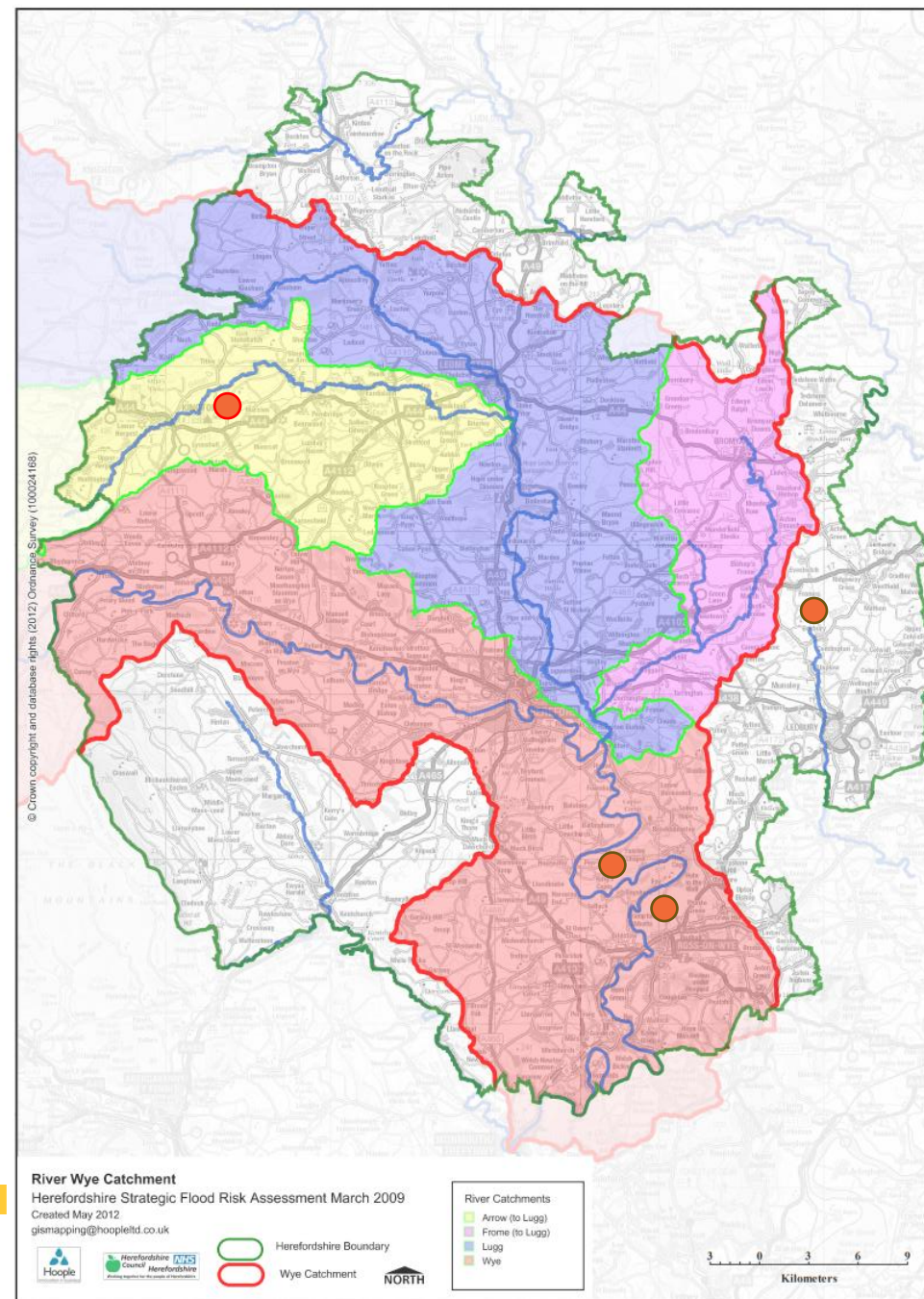


[GYPREG - Interreg Baltic Sea Region](#)

The project GYPREG brings together national and public authorities, NGOs, farmers and farmers' associations to increase the uptake of gypsum treatment of agricultural fields to reduce phosphorus losses from agriculture.

Rapid analysis of Herefordshire soils

- Partnership with Lancaster University
- 4 soil types from 4 farms spanning the county
 - Sandy Loam
 - Sandy Silt Loam
 - Silty Clay Loam
 - Clay Loam



Rapid analysis of Herefordshire Soils



- Utilising recycled gypsum
- 3 application rates:
 - 1 tonne/ha
 - 3 tonne/ha
 - 5 tonne/ha
- Analysis pre and post application
 - Water extractable phosphate
 - Plant available phosphate

Outcomes

Measurable and statistically significant reductions in water-extractable phosphorus

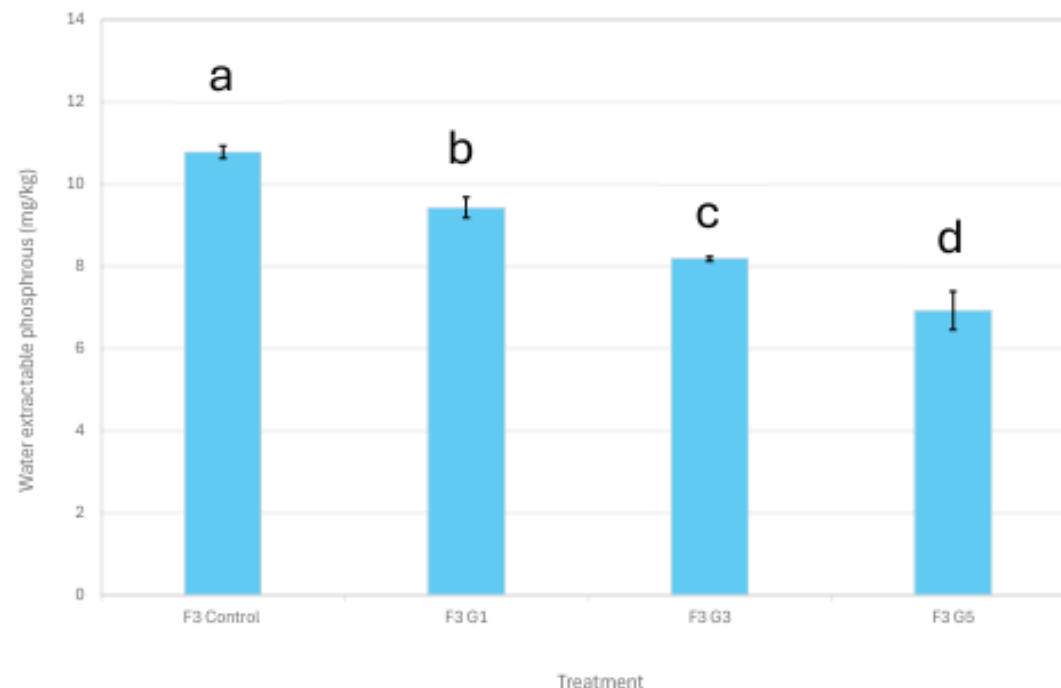
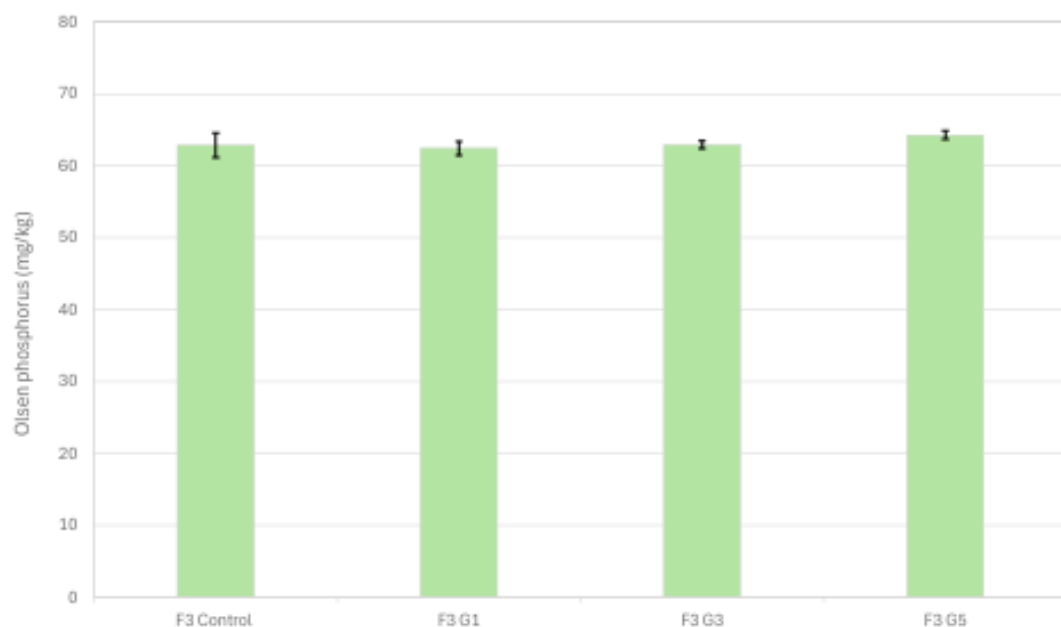


Figure 3. Olsen extractable phosphorus and water extractable phosphorus concentrations for F3 soil

Outcomes

Water extractable phosphorous

- 1 tonne/ha
 - 2.6 – 12.5 % reduction
- 3 tonne/ha
 - 13.4 – 25.8% reduction
- 5 tonne/ha
 - 18.3 – 35.8% reduction

No significant change in plant available phosphorous

- Most significant reduction in WEP seen in soils with high baseline phosphorous content
- Other factors at play:
 - Soil type
 - C:Mg ratio
 - Calcium content

Next steps

Field scale trial:

- 12-month trial
- Single application
- 5 sampling events
- Additional analyses
 - PH
 - Total P/ N/ Carbon
 - C:Mg ratio
 - Infiltration rates



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Environment Agency: Ground Water Source Protection Zones**Question from Councillor Elissa Swinglehurst, Chairperson of the Wye Catchment Nutrient Management Board**

With reference made to note 31 (Diffuse Water Pollution Plan Update) paragraph n. (notes of the meeting held on 21 January 2026), it was noted that a response was awaited in relation to the query ‘whether the number of Ground Water Source Protection Zones within the English portion of the catchment, as referenced at page 67 of the DWPP, had resulted in guidance being issued.’

Response from the Environment Agency, provided by Martin Quine

The Environment Agency monitors groundwater quality using our network of boreholes in the catchment, alongside some third-party assets. We aim to expand the network in the area to provide wider coverage and have added five new sample sites for 2026/27 and 2027/28.

Further information on the groundwater body, the “Wye Secondary Devonian ORS,” can be found at:

- <https://environment.data.gov.uk/catchment-planning/WaterBody/GB40902G205200>
- <https://environment.data.gov.uk/water-quality>

The connectivity between surface water and groundwater is predominantly in the Secondary gravel aquifers, with any interaction with solid bedrock geology typically occurring at shallow depths.

Groundwater is protected through land management practices within Source Protection Zones and Nitrate Vulnerable Zones, as well as through targeted farm inspections in areas of concern. We also promote and protect groundwater quality through the planning and permitting processes when consulted.

Environment Agency: Fixed Monetary Penalty (FMP) trial**Queries from Councillor Elissa Swinglehurst, Chairperson of the Wye Catchment Nutrient Management Board**

Further to the brief update provided in the meeting, the Chairperson forwarded the following queries to the Environment Agency:

1. When does the fixed penalty pilot project start?
2. Does it cover the whole of the English catchment or specific areas?
3. Are NRW doing a similar project?
4. What types of infraction are likely to be included?
5. What is the length of the pilot?
6. Where else have pilots taken place and what was the learning?
7. What is the criteria for success?
8. What are the specifics of the new enforcement role and when will the new person be in post?

Response from the Environment Agency, provided by Martin Quine

The Fixed Monetary Penalty trial isn't specific to the Wye. It is being coordinated through our national team and like project TARA will also review our internal processes.

It is still in the early stages, but these are the key headlines:

- We are in the early stages of a national Fixed Monetary Penalties Trial.
- Under the Farming Rules for Water and the Nitrate Pollution Prevention Regulations, Fixed Monetary Penalties can be issued for low-level agricultural offences where the offence is clear, the offender is known, and no serious pollution incident has occurred.

Wye Catchment Nutrient Management Board**Matters arising from the meeting held on 29 April 2026**

- The FMP amount is set by legislation and is based on the type of offender (£100 for individuals and £300 for corporate bodies). The amount can vary depending on when payment is made, with a 50% reduction for early payment and an increase of up to 150% for late payment.
- The Fixed Monetary Penalty trial will consider how we can use our powers for some agricultural offences.
- The trial isn't specific to the Wye and at this stage will not form part of a wider roll out across the catchment. Civil Sanctions imposed by the Environment Agency form part of our [Offence Response Options](#) for environmental offending and can be found here: [Civil sanctions imposed by the Environment Agency: 1 January 2025 to 30 September 2025 - GOV.UK](#).

Civil sanctions aren't new and because they relate to our enforcement work, there is a limit to what can be shared publicly. Once a civil sanction has been issued, they are published on gov.uk ([Civil sanctions imposed by the Environment Agency: 1 January 2025 to 30 September 2025 - GOV.UK](#)).

Herefordshire Council: April 2026 Update**Wye Catchment Partnership Plan**

Oliver Bowers, Haskoning UK Ltd, provided an update at the [Wye Catchment Nutrient Management Board on Wednesday 29 April 2026 \(link\)](#).

Motion to support Charter for the Rights of the River Wye

Cllr Swinglehurst, Chairperson, provided an update at the [Wye Catchment Nutrient Management Board on Wednesday 29 April 2026 \(link\)](#).

Environmental Development Plans (EDPs)

Herefordshire Council is committed to working collaboratively with statutory agencies, to improve outcomes for both the environment and sustainable development. We have therefore welcomed recent engagement between Natural England's regional and national teams in preparation for the Environmental Development Plans (EDPs), as well as discussions on how to accelerate practical solutions for phosphate credit generation while EDPs are being developed. Officers are seeking to enable private mitigations as well as continuing to explore opportunities for the council to generate credits.

Herefordshire Local Nature Recovery Strategy (LNRS)

The LNRS has been through a successful public consultation and is now being refined into its final version for publication.

Approx 400 individual comments were submitted through the website, as well as approx. 200 comments received through emails, telephone calls, events and partners. Team carried out 22 events, including webinars, market stalls, parish summit, wildlife trust branch meetings and nature conservation group meetings. Plus adverts on social media and relevant partner newsletters and Hereford Times news article. Ran from Thursday 5 February and closed on Sunday 29 March 2026 (7 weeks).

Refinements are being made to the map functionality, map specific layer data, priority species suggestions, priorities and measures detail and strategy area description additions. A public consultation summary document is being produced. The aim for the work to be completed during May, with final reviews and corporate sign off in June.

Work has begun on setting out how the LNRS will be implemented, with HC having a facilitation role, together with monitoring and annual reporting to DEFRA / NE. This will include setting up a delivery group to cover both strategic county wide nature recovery and networking with local groups for on-the-ground delivery. It is also intended to work in collaboration with the Herefordshire Environment Board.