

SUPPLEMENT TO THE AGENDA FOR

Environment and Sustainability Scrutiny Committee

Monday 22 January 2024

10.00 am

**Herefordshire Council Offices, Plough Lane, Hereford, HR4
0LE**

7. NUTRIENT MANAGEMENT BOARD

Pages

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Title of report: Nutrient Management Board

Meeting: Environment and Sustainability Scrutiny Committee

Meeting date: Monday 22 January 2024

Report by: Head of environment, climate emergency and waste services, Service Manager Built and Natural Environment Services, Interim Delivery Director, Sustainability & Climate Change Manager

Classification

Open

Decision type

This is not an executive decision

Wards affected

(All Wards);

Purpose

This report seeks to provide an overview of the role and purpose of the Nutrient Management Board to the Environment and Scrutiny Committee. It will address the following queries raised by Scrutiny:

- The role of the Nutrient Management Board;
- Aims & Objectives;
- Terms of Reference;
- Governance Arrangements;
- Agreed Targets and Key Performance Indicators

Recommendation(s)

That:

Further information on the subject of this report is available from Ben Boswell, Elizabeth Duberley, Rachael Joy, Richard Vaughan, Tel: 01432 261930, , Tel: 01432 383535, Tel: 01432 260192, email: bboswell@herefordshire.gov.uk, Elizabeth.Duberley@herefordshire.gov.uk, Rachael.Joy@herefordshire.gov.uk, Richard.Vaughan@herefordshire.gov.uk

- a) **The Committee notes the role and purpose of the Nutrient Management Board and recognises the role the Council has as an active member of this board, and**
- b) **The Committee determines any other actions or recommendations it may seek to make.**

Alternative options

1. None identified, this report seeks to provide an update to the Environment and Sustainability Scrutiny Committee.

Key considerations

2. The Nutrient Management Board was established in 2014 following a Review of Consents (RoC) of Waste Water Treatment Works (WWTW) under the Habitats Regulations carried out by the Environment Agency in 2010. It revealed the River Lugg section of the River Wye SAC was exceeding its phosphate target (0.05mg/l phosphate) and that despite measures undertaken to address point source pollution via the consents on WWTW, the levels continued to exceed conservation targets. A need was identified for a Nutrient Management Plan to set out how the reduction in concentrations could be delivered from all sources of pollution. The report highlighted that future growth must not compromise the achievement of conservation targets
3. The Nutrient Management Board was established in 2014 by the Environment Agency in partnership with Natural England. It instigated the development of a Nutrient Management Plan setting out an Evidence Base; incorporating source apportionment modelling, with Options Appraisal and Action Plan agreed by the board, which would set out a trajectory to bring the watercourse back into favourable condition with respect to phosphate levels.
4. The Board proposed that the plan would also take into account the proposed development growth within Herefordshire and Powys, to ensure the predicated impact on phosphate levels are calculated and considered within the plan, this would ensure that future growth would not compromise the achievement of conservation targets. *'The production of the NMP will thus allow Hereford Council to 'rely' on the decisions made under RoC when considering the impacts of future growth.'* p2 Evidence Base of NMP. By adopting the plan it ensured that the new Local Plan, which sets out the county's strategy for growth complied with Habitats Regulations and would pass examination by the Inspectorate.
5. The overarching aim of the NMP is set out in the explanatory note prepared by the Environment Agency and Natural England to the Council and is shown as Appendix 1 *The Environment Agency in partnership with Natural England have instigated the development of a Nutrient Management plan to ensure that the River Wye Special Area of Conservation (SAC) achieves and maintains favourable condition with respect to phosphate. The plan also takes into account proposed development growth within Herefordshire and calculates the predicted impact that development will have on the phosphate levels within the SAC.*
6. The original Terms of Reference shown as Appendix 2, sets out the functions of the Board, with attendees from all representative groups. It highlights the need at the time for collaborative working between statutory agencies and the landowning community and that through engagement with the proposals in the Action Plan from all parties will secure delivery of the aims. It defines the parameters of the role, the Council has on the Board: *'Herefordshire Council will chair and provide secretariat for the NMP Board, including minutes being published on the CC website.'*

7. The monitoring and surveillance programme will comprise monthly monitoring of phosphate levels from 3 locations (Carrots Pool, Holme Lacy, Mordiford) along the Rivers Wye and Lugg by EA and tracking of uptake on voluntary measures for agriculture through for example Catchment Sensitive Farming by NE.
8. Source apportionment modelling which identified the two main sources of pollution as WWTW and agricultural within the Evidence Base, of the Plan; shown as Appendix 3, could be rerun and revised in later iterations of the Plan, thereby providing an indicator of progress.
9. As Figure 3.3 taken from the Plan's Evidence Base shows spikes in orthophosphate levels have been in evidence since monitoring has been recorded in 2004 and the accompanying report states the following: *'The orthophosphate monitoring data from the River Lugg at Mordiford Bridge also suggests a similar falling trend over the same timeframes, again suggesting the phosphate levels overall are also gradually falling within both the upper River Wye sub-catchment and the Lugg sub-catchment. Although it is not possible to specify the exact causes of the fall in orthophosphate levels within the rivers, it could in part be due to a combination of improvements in water company treatment processes as well as improvements in land management practices.'* p24 Evidence Base NMP

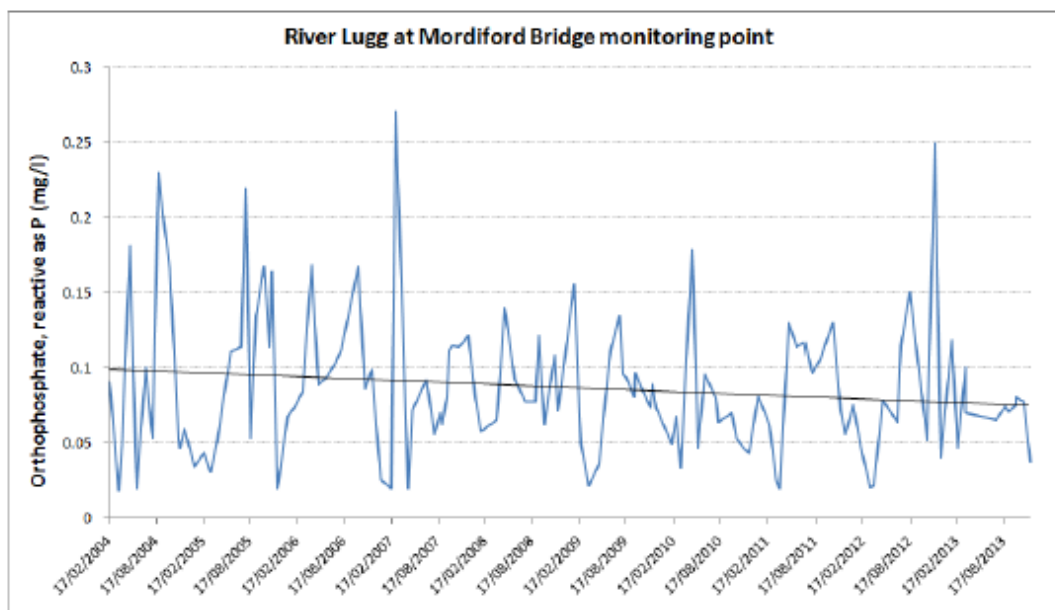


Figure 3-3: Orthophosphate monitoring data (2004-2013) - River Lugg at Mordiford Bridge

- 10.
11. With the developments in case law relating to Habitats Regulations, as a consequence of the Dutch judgement (2018) Natural England advised that as the River Lugg is already exceeding its recommended phosphate levels the Plan could not be relied upon to ensure no likely significant effects upon the integrity of the internationally protected river. All development within the Lugg catchment (the majority of the north of the county) from 2019 was now required to demonstrate Nutrient Neutrality. This had led to a renewed impetus driven by the Council as Chair of the Board to review and update the Plan.
12. In 2021 an updated version of the Plan; shown as Appendix 4, drafted by the statutory agencies advised that the River Lugg continues to exceed its phosphate targets, SAGIS modelling indicating a source apportionment similar to that shown in the original plan of 2014; 66% agriculture, 25% WWTW and 9% other sources. The predicted concentration of

phosphate at Mordiford Bridge once AMP7 measures are implemented, is shown as 0.055mg/l which suggests a falling trajectory.

13. The current Plan recognises the need to explore additional measures to reduce phosphate in the Lugg as the only quantifiable measure included to date is the Council's wetland initiative.
14. In January 2022 the Nutrient Management Board requested a Water Protection Zone to be considered for the River Wye. The Environment Agency advised this decision could only be taken by Defra following a recommendation from the Agency with a supporting evidence base and that Defra were unlikely to progress this course of action.
15. As an alternative measure the statutory agencies have undertaken a comprehensive review of the governance of the Board. The revised governance document as shown in Appendix 5 sets out the purpose of the River Wye Nutrient Management Board as:

A wide group of partners with an interest in improving water quality in the catchment and a role in delivering that outcome who come together to:

- To influence decisions and actions that have an impact directly or indirectly on the catchment
- To advise decision makers on their proposals, plans and decisions/actions
- To challenge decision makers on their proposals, plans and decisions/actions.

Works with the Technical Advisory Group to contribute to delivery of actions as required.

16. Whilst seeking to work collaboratively, it recognises the limitations of the Board, in terms of the need for the organisations with statutory responsibility to agree collective decisions with their own organisations in the first instance.
17. It has sought to develop a single, joined up, cross border approach at operational level which now includes Natural Resources Wales as the third statutory agency. It has also sought to ensure all Authorities with a planning remit now encompassing Brecon Beacons National Park Bannau Brycheiniog, Monmouthshire County Council and Forest of Dean District Council are attendees on a new Statutory Officers Group (SOG) which enables members to reach agreement on how they will collectively use their powers and resources to improve the condition of the catchment.
18. A revised Technical Advisory Group which now has broader representation from all specialist fields including agriculture, Ecology and Hydrology will continue to provide technical analysis and recommendations to an impartial Board who can call for change, be that political or otherwise.
19. The Council continues to play a participative role in all levels of the Board from technical through to Chair and, recognising the necessary limitations of its role, also seeks to influence change through direct action in securing funding for strategic mitigation as well as lobbying central government on the effects of Nutrients at a national scale.

Community impact

20. The work to progress the restoration of the River Wye and River Lugg Special Area of Conservation will positively contribute to the ambitions within the County Plan 2020-24:

- a. Protect and enhance the county's biodiversity value and uphold environmental standards through River Betterment.
 - b. Seek strong stewardship of the county's natural resources
 - c. Invest in low carbon projects
 - d. Support an economy which builds on the county's strengths and resources.
 - e. Develop environmentally sound infrastructure that attracts investment
 - f. Spend public money in the local economy wherever possible.
21. Farming and agriculture, home building and tourist industries as well as resident access to countryside leisure amenity are all essential to the vibrancy and life of rural communities. The restoration of both the River Wye and Lugg catchment will assure the vibrancy and future prosperity of all our communities.

Environmental Impact

22. The River Wye and River Lugg are considered important in terms of nature conservation, as a consequence both rivers are designated as Sites of Special Scientific Interest (SSSI). In addition the lower stretch of the River Lugg; from Hope under Dinmore, along with the River Wye are also designated as a Special Area of Conservation ("SAC") under the European Community Habitats Directive (Council Directive 92/43/EEC).

Equality duty

23. Under section 149 of the Equality Act 2010, the 'general duty' on public authorities is set out as follows:

A public authority must, in the exercise of its functions, have due regard to the need to –

- a) eliminate discrimination, harassment, victimisation and any other conduct that is prohibited by or under this Act;
- b) advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it;
- c) foster good relations between persons who share a relevant protected characteristic and persons who do not share it.

As a committee report this will not have an impact on our equality duty.

Resource implications

24. There are no resource implications associated with providing this progress update to the Environment and Sustainability Scrutiny Committee.

Legal implications

25. It is a function of the Environment and Sustainability scrutiny committee to consider, as part of its work programme activities, integrated wetlands & water quality. The work of the Nutrient Management Board is a key partner and influencer in this regard.

Risk management

26. There are no risks associated with providing a progress report to the Environment and Sustainability Scrutiny Committee.

Consultees

27. None

Appendices

Appendix 1 – Explanatory Note

Appendix 2 Terms of Reference

Appendix 3 Nutrient Management Plan 2014

Appendix 4 Phosphate Action Plan 2021

Appendix 5 River Wye Management Board Governance 2023

Background papers

None

Report Reviewers Used for appraising this report:

Please note this section must be completed before the report can be published		
Governance	Click or tap here to enter text.	Date Click or tap to enter a date.
Finance	Click or tap here to enter text.	Date Click or tap to enter a date.
Legal	Click or tap here to enter text.	Date Click or tap to enter a date.
Communications	Click or tap here to enter text.	Date Click or tap to enter a date.
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Procurement	Click or tap here to enter text.	Date Click or tap to enter a date.
Risk	Click or tap here to enter text.	Date Click or tap to enter a date.
Approved by	Mark Averill	Date 16/01/2024



Geoff Hughes
Director for Places and Communities
Hereford Council
Brockington
35 Hafron Road
Hereford
HR1 1SH

Our ref: WYE NMP
Your ref:
Date: 14th May 2014

Dear Geoff

The Environment Agency in partnership with Natural England have instigated the development of a Nutrient Management plan to ensure that the River Wye Special Area of Conservation (SAC) achieves and maintains favourable condition with respect to phosphate. The plan also takes into account proposed development growth within Herefordshire and calculates the predicted impact that development will have on the phosphate levels within the SAC.

The plan consists of three parts, Evidence Base, Options Appraisal and Action Plan. The Evidence base has been produced using source apportionment modelling software to identify the phosphate contributions from the different sources within the catchment. The evidence base also contains the predicted impact of growth in Powys and Herefordshire on the SAC. The Options appraisal section explores some of the measures available to reduce the phosphate loads. Four different scenarios were developed – all of which are predicted by the model to achieve the favourable condition within the SAC. These include a range of scenarios for increasing reductions from the agricultural sector (diffuse sources) alongside further P-stripping at sewage treatment works. All of the scenarios achieve phosphate levels just below the required target because we designed the plan to achieve the required target with the minimum possible disruption to the contributing sectors. We have a high level of confidence in the options appraisal as we have a variety of “routes to compliance” available to us which gives us a broad base from which to develop the Action Plan.

We are currently consulting with our catchment partners on how to take this plan forward. As shown in the options appraisal we have a variety of ways to achieve the required standards

and envisage the Action Plan to be based on a consensus of opinion on how to distribute the improvements throughout the catchment. Hence we feel confident of the success of the plan due to this broad base of options. Furthermore this plan is not designed to be a one hit solution, it is very much an iterative process that will be exposed to regular review. As such, the Action plan that will be produced by September 2014 will undoubtedly need to be adapted through time to take account of new evidence.

If you do have any queries relating to this then please do not hesitate to contact either of us.

Yours Sincerely



Dave Throup
Environment Manager
Environment Agency
07879 434670



Roger Owen
Area manager
Natural England
07811 448956

Riversmeet House, Newtown Industrial Estate, Northway Lane, Tewkesbury, Gloucestershire,
GL20 8JG

River Wye Special Area of Conservation Nutrient Management Plan Board

Terms of Reference:

1. The objective of the Board is to identify and deliver actions that achieve the phosphorous conservation target of the River Wye SAC. The primary mechanism for achieving this will be through the delivery of the Nutrient Management Plan.
2. Board Members will be responsible and accountable for the delivery of identified actions for their respective organisations and for identifying and obtaining the necessary resources to deliver the actions.
3. The Board will work together to review contributions across all organisations, working collaboratively to achieve the objectives and ensuring all members understand the issues and work together to resolve them.
4. The Board will review performance and delivery of actions within the plan and take timely corrective action where identified. The contributions of all organisations will be discussed as a whole.
5. The Nutrient Management Action Plan will initially be reviewed annually and be subject to regular updates. The Nutrient Management Plan will be reviewed every 4 years as detailed in the action plan.
6. The Board will be supported by input from a Technical Group to help inform their decisions with the Board agreeing the frequency of Technical Group meetings.
7. The Board will direct the Technical Group where additional actions or evidence is required.

River Wye SAC NMP Board Role and Structure:

Chair: Herefordshire Council Cllr Price, Cabinet member: Infrastructure

Role: NMP Board will be the responsible body for ensuring the delivery of the Conservation Objectives for the River Wye Special Area of Conservation. It will provide oversight and direction to all involved in delivering the Nutrient Management Plan.

Attendees:

Area level Managers from Natural England, the Environment Agency, Natural Resources Wales

Director of Environment Welsh Water

Director / Assistant Director Herefordshire Council

Elected Member / Director / Assistant Director Powys County Council

Nominated member from the Countryside Land and Business Association (CLA)

Nominated Member from the National Farmers Union (NFU)

Nominated member from the Catchment Partnership

Chair of the stakeholder group

The Board may co-opt further members as it deems appropriate.

River Wye Water Technical Group:

Chair: EA and NE

Role: The Technical Group will be responsible for identifying and analysing options to deliver improvements to Water Quality. This will result in the Technical Group presenting options and recommendations to the Board. The Board will then decide upon the appropriate course of action and whether further evidence is required.

Attendees:

Officers/Senior Officers from Natural England, the Environment Agency, Natural Resources Wales.

Growth Strategy Manager Dwr Cymru Welsh Water

Officers/Senior Officers of Herefordshire Council, Monmouthshire and Powys County Council

Representative from the Catchment Partnership

Chair of the Stakeholder group

Consultancy support as required.

The NMP Board will meet every 3 months

The Technical Group will meet every 6 weeks initially, with a view to reduce this as the group becomes established.

Herefordshire Council will chair and provide secretariat for the NMP Board, including minutes being published on the CC website.

Agenda's for the meetings should be circulated 2 weeks in advance of the meeting.

At each NMP meeting a member of the Technical Group will provide an update on progress, and provide a steer on options, discussions and decisions required by the Board.

The Technical Group will be jointly chaired by EA and NE with details tbc.

River Wye SAC Nutrient Management Plan Action Plan

Environment Agency & Natural England
Version 1 November 2014

Introduction

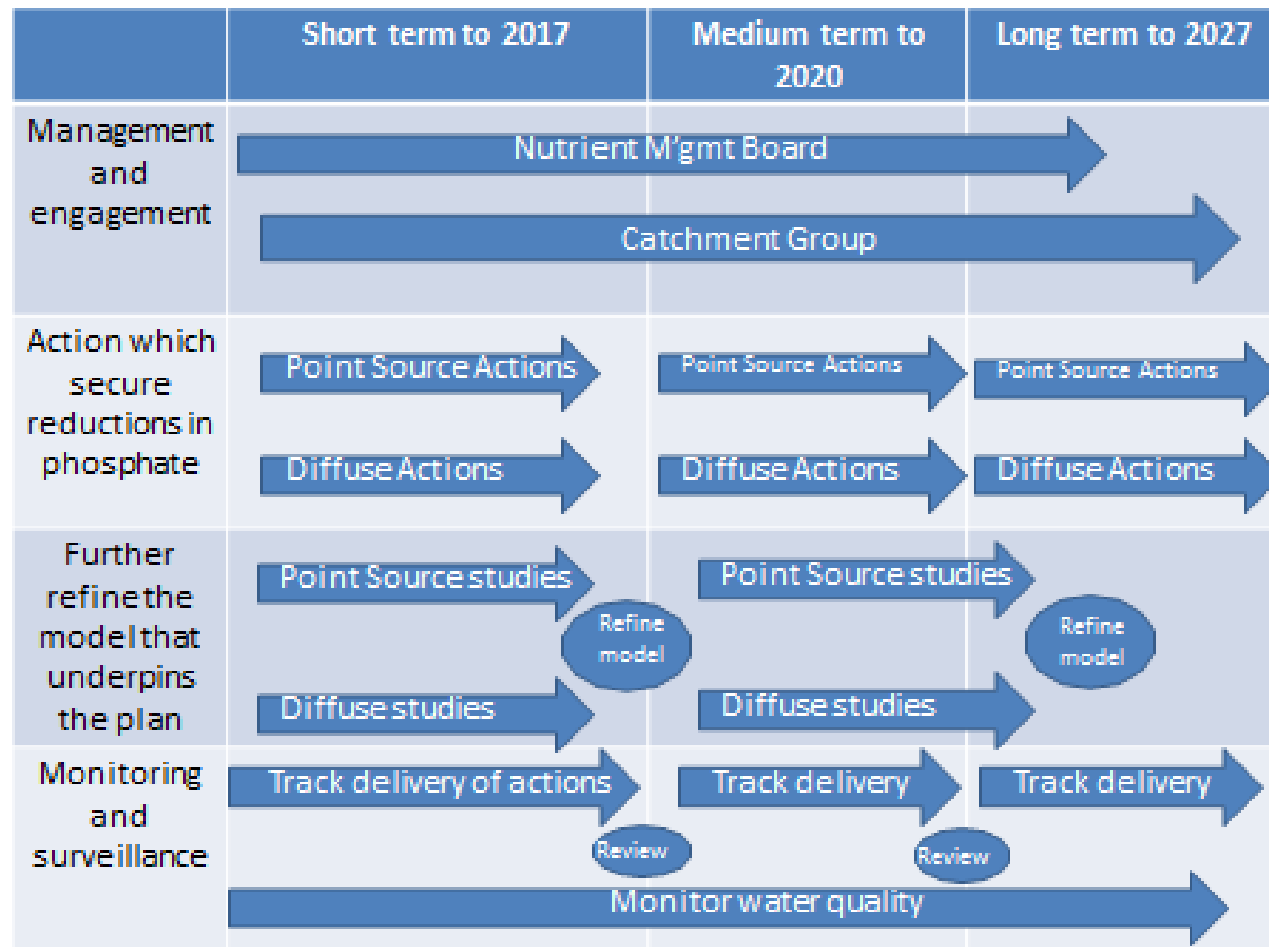
This document forms the third part of the Wye Nutrient Management Plan and as such should be read in conjunction with the Evidence Base and Options Appraisal.

The Nutrient Management Plan (NMP) is designed to enable the desired economic growth in Herefordshire whilst achieving and maintaining Favourable Condition Status for the River Wye SAC, and as such this document is intended to support and be read in conjunction with the Core Strategy for Herefordshire. This plan describes the actions necessary, outside of the planning regime, to allow development in the catchment. The plan is designed to support and assist planning and development considerations but is not designed to reiterate or replace the development of planning policy nor does it duplicate the decision making process associated with developments. Necessary planning policies, to further and support the NMP, will be found within the Core Strategy and associated documents rather than within the NMP.

The development and delivery of the plans objectives will be managed via the Catchment Based Approach (CABA) with oversight from a Nutrient Management Board that holds overall responsibility for the delivery of the plan. Delivery and Engagement at a local scale will be managed by a Nutrient Management Group that is a subsidiary of the larger catchment management group.

The plan will be iterative in nature and go through a series of developments in response to changes within the catchment. The first cycle sets in place:

- The monitoring and surveillance program.
- The management and engagement strategy.
- Actions to further refine the model that underpins the plan.
- Some real reductions in phosphate in the short term.



Sources and Apportionment

The actions prescribed by this plan are based on the data and modelling carried out in parts 1 & 2 of the plan, therefore in order to understand the action plan properly it must be read in conjunction with the evidence base and options appraisal sections of the plan. Action will be required by the water industry to reduce load of phosphorus in existing discharges of sewage together with action by the agricultural sector to reduce diffuse inputs of phosphorus resulting from run-off from the land.

The starting point for assessing the necessary action required is to establish what are the proportional reductions in line with each sector's contribution to the overall load of a pollutant. This is in line with Government's general policy principle that the 'polluter pays'. However, this is not an absolute requirement and variation from it may sometimes be necessary depending on local circumstances and subject to the agreement of affected parties.

Diffuse

The vast majority of the diffuse phosphate load to the catchment arises from agriculture. The short term ambition for managing agriculture's contribution is to increase the uptake of targeted measures and advice to address land use and encourage appropriate mitigation options, funded (where appropriate) through agri-environment schemes and primarily reliant on voluntary uptake (extreme cases will be dealt with by enforcement/notice powers where appropriate). If these advice led voluntary and incentivised approaches do not deliver the reductions required by agriculture, it may be necessary to seek formal restrictive measures through appropriate existing mechanisms.

Point Source

The vast majority of the point source phosphorus load arises from water company consented discharges.

Studies to investigate the effectiveness and practicalities of phosphate reduction, and other load reducing measures, at sewage treatment plants or in their sewerage catchments will be carried out over the next 5 years and the results of these will be used to help inform the suite of measures applicable to reduce the Water Company contribution. In the short term the water companies will review their current operational models to identify any opportunity to reduce phosphate loads.

Oversight and Engagement.

The Wye catchment management partnership jointly hosted by the Wye and Usk Foundation and Natural Resources Wales will be the overall delivery mechanism for the Nutrient Management Plan. This partnership is mature and has developed strong partnerships within the catchment. The major stakeholders are well represented and engaged with the group. This will also ensure that the NMP is affiliated with the wider catchment objectives described by the Water framework Directive and the River Basin Management Plan and that multi-benefit measures are maximised to achieve the objectives of both plans with the minimum of duplication and burden.

Affiliated to the partnership the Nutrient Management Plan Stakeholder group has been set up tasked with enabling delivery on the ground and engaging with the communities affected by the actions in the plan. This group is chaired by the Bulmer Foundation and the membership is open to all interested parties.

Rather than a blanket one size fits all approach to diffuse measures the development of the action plan is intended to be a bottom up process, engaging with the farming community to improve understanding of the challenges of delivering actions from the plan as well as helping to produce a catchment specific set of achievable realistic actions to tackle agricultural diffuse pollution.

To ensure that progress of the plan is monitored and momentum of delivery is maintained a specific Nutrient Management Board has been set up comprising of Herefordshire and Powys Councils, Dwr Cymru/Welsh Water (DCWW), The Environment Agency, Natural England, Natural Resources Wales (NRW), CABA (WUF), National Farmers Union (NFU), the Country Land and Business

Association (CLA). The board will be chaired on a rotation amongst the members. Currently the chair is held by a Herefordshire Council Cabinet Member. The board's purpose is to focus specifically on nutrient management within the Wye catchment and enable the different sectors to develop the necessary strategies to secure delivery; ultimately the board takes overall responsibility for delivery of the plan with the Environment Agency and Natural England taking a lead role...

During the development of the plan the Environment Agency and Natural England have worked closely with our partners in the NFU CLA NRW and DCWW and all of these bodies have committed to supporting the Nutrient Management Plan and to working closely with EA and NE to aid in the development of the action plan and with the wider catchment based group to help in delivering the measures. The approach outlined above builds on and develops these existing relationships.

Monitoring

In addition to its existing programme and that of the 3rd sector, The Environment Agency has put in place a water quality sampling programme specifically to monitor the phosphate levels within the SAC at the 3 points of interest, the River Wye at Carrots Pool and Holme Lacy Bridge and the River Lugg at Mordiford Bridge. Phosphate levels will be monitored on a monthly basis and this data will be used primarily to monitor progress of the plans objectives. Additionally the data will feed into future iterations of the plan and allow an assessment of potential headroom made available as measures take effect. This sampling data will also provide the measure of compliance with the Favourable Condition Target (FCT) of the SAC.

Monitoring of the level of uptake of advice given by WUF, CSF and CFE will be undertaken to understand the effect the voluntary approach is having within the catchment; this will also include an assessment of the level of engagement and behavioural change essential to complement the chemical water quality sampling programme to assess the progress of the plan.

Iteration

The plan will be flexible and iterative and will require re runs of the source apportionment model as things change within the catchment. There is a need for surveillance to assess the uptake of voluntary measures by the diffuse sector along with the number and location of any development. The changes to the agricultural landscape will be tracked and included in the updated model. The action plan will be revisited at each of these iterations to ensure that it reflects the changes that are happening in the catchment. This planned flexibility allows the plan to respond to both environmental and anthropogenic changes and will be able to incorporate any variation in the SAC requirements or impacts due to climate change that may occur and enables the plan to remain targeted and focused over its lifetime.

Measures

This plan promotes the measures required within the catchment to enable the economic development within Herefordshire whilst protecting the integrity of the SAC. The source apportionment study has identified two major contributors to the phosphate enrichment of the SAC and as such the measures contained within this plan will be focussed towards Water Company Sewage Treatment Works (point source) and the agricultural sector (diffuse source).

Point source

Point source measures will not be restricted to “end of pipe” solutions requiring more advanced phosphate stripping at sewage treatment works, there are a number of alternatives to reduce phosphate from point sources such as removing infiltration from sewers and retro fitting suds to reduce the actual volume of effluent produced. The Environment Agency will review how its permitting process could be varied to allow a more flexible approach in the face of more technically challenging phosphate limits. Opportunities to create “headroom” through short term voluntary agreements until such time as formal changes to permits are made will be explored.

The actions arising from the nutrient management plan are based on accepted tried and tested mitigation measures. However there have been some assumptions made over the potential effectiveness of improvements to phosphate stripping at sewage treatment works.

Point source studies

There is currently a UK wide study being undertaken by the Water Companies to investigate the effectiveness and practicalities of advanced phosphate stripping technologies. The findings of these investigations will help to influence and inform future iterations of the plan. In addition to these studies, UKWIR are undertaking research to give more clarity to the relationship of Soluble Reactive Phosphate to total phosphate in both treated sewage effluent and in the aquatic environment. Whilst this won't drive specific actions in the plan it will help to enhance the accuracy of future source apportionment and the targeting of measures.

Diffuse

Diffuse measures are intended to build on the existing regulatory framework and take a holistic approach to the problem of diffuse agricultural pollution. Providing solutions that not only reduce nutrient losses from farms but can also help to make farming in the catchment more resilient to climate change and more sustainable in the long term.

We will be promoting the voluntary uptake of integrated Soil, Water and Nutrient Management plans. The plans will bring a risk based approach to land management decisions to –

- Reduce any excess phosphate available to be lost.
- Reduce the mobility and erodibility of soils to keep nutrients in the fields.
- Intercept the pathways to capture the unavoidable losses.

Farmers need to make an assessment of their nutrient need, with a specific focus on limiting application of phosphates to crop need taking into account soil phosphate index, and planning the timing and method of application of any fertilisers to minimise the risk of losses. Farms will also need to make an assessment of their soil structure, identifying areas at risk of erosion and fields that have compacted layers and put in place an effective management strategy to remove compaction and plant suitable crops to

reduce the erosion risk. The plans will also need to encompass a strategy to increase levels of soil organic matter to help maintain soil structure and increase its ability to retain water in the field. The interaction between soil and water needs to be managed identifying the fields that wash and areas prone to run off and managing these pathways effectively. As part of the options appraisal FARMSCOPER was used to predict possible reductions for different farming types. The top 5 most effective measures for mitigating phosphate losses from farms as predicted by FARMSCOPER are included in appendix 1 Some of these will be relevant and effective on individual farms but these measures are not intended as a blanket requirement for all farms, The intention is to develop a suite of measures that are specific to the individual farming situation and targeted at the most vulnerable areas.

Diffuse Studies

In addition to national projects looking at how best to reduce diffuse pollution in a rural context Cranfield University in partnership with the Environment Agency are undertaking a research project within the catchment to assess the effectiveness of soft engineering measures to intercept and clean agricultural run-off. There are also a number of studies looking at cover crops and the effectiveness of different soil management techniques.

Action Plan Measures

Action	Lead Team	Start Date	Target Date	Outcome	Potential to Reduce Phosphate
Set up and maintain Nutrient Management Board to meet every 6 months	Herefordshire Council	2014	The Nutrient management board will remain in place for the duration of the plan (2027)	The Nutrient Management board ensures the Plan gets strategic oversight throughout its delivery. The board also ensures and the involvement and commitment of the key stakeholders in the catchment	Monitor activity within the catchment to maintain the flexibility of the plan and ensure success of the actions.
Maintain NMP Stakeholder group on behalf of CABA	Bulmer Foundation	2014	2027	Affected groups are engaged at the local level ,the actions within the plan are disseminated, future iterations of the plan are based on feedback from local input	Enables interactions with the affected groups to allow actions to take place
Maintain water quality surveillance monitoring	EA	2014	2027	Robust data is available to measure success of actions in	This is used to effectively target

program				the catchment	measures and prioritise actions
Monitor delivery of Plan Provide annual review of water quality data	CABA/Nutrient Management Board	2014	2027	Actions are re-prioritised and further actions added. There is ongoing monitoring of environmental response.	Monitor and drive the actions within the Plan to ensure continuous reduction in P throughout the catchment to achieve the Conservation Objective for phosphate
Review and modify Plan as new evidence, issues and opportunities are identified on behalf of the NMP Board	NE, EA	2014	The plan will be comprehensively reviewed every 4 years to 2027 with the first review in 2017	The iterative nature of the plan will require regular review and model re runs to keep it current and specific to the catchment as it responds to actions.	Regularly assess the effectiveness of measures within the catchment to ensure compliance
Point Sources					
Seek Extension of Memorandum of	DCWW Herefordshire	2014	2020	Phosphate stripping at Eign and Rotherwas Sewage treatment	Protects the current

Understanding between DCWW and Herefordshire Council	Council			works is maintained through local agreement.	complaint status of the Wye SAC d/s of Hereford
Investigate effects of preventing infiltration to the Herefordshire Sewer network AMP 6	DCWW	2015	2020	Feasibility study to investigate the practicality and effect of preventing groundwater infiltration into the sewer	Potential to significantly reduce the effluent volume from the Eign and Rotherwas works consequently reducing phosphorous contribution.
Review permitting process for Water company discharge permits	EA	2017		Review the way in which compliance is assessed for phosphate limits on water company discharges in response to technical challenges of meeting significantly tightened limits	Provides comfort to the water companies over headroom in P limits

Retrofit SuDS feasibility study	EA, Herefordshire Council, DCWW	2015	2015	Identify key areas of industrial, commercial and residential land and associated highways that would be appropriate for sustainable drainage systems.	Reduction in phosphate reaching river
Develop a suite of schemes for submission to AMP7	EA NE DCWW NRW	2015	2017	Point source contributions to the phosphate loads in the SAC are addressed through a suite of measures in conjunction with Welsh Water	Will significantly reduce levels of phosphates in the SAC
Diffuse Sources / Agriculture					
Promote the development of Integrated Soil, Water and Nutrient management plans	NMP Stakeholder Group	2014	2019	Reduction of excess nutrients and breaking pathways through voluntary uptake of whole farm plans. Specific actions required from the agricultural sector are developed through engagement with the agricultural sector	Potential to reduce the amount of field run off entering watercourses
Identifying and tackling poor practice leading to pollution	EA, NE, NRW	2014	2027	the Water quality improves and the baseline level of regulatory compliance within the catchment is improved through use of existing regulatory powers to address pollution incidents	This will reduce the number of pollution incidents impacting on the SAC

Community Engagement	NMP Group Stakeholder	2015	2017	The general public's appreciation of soils and awareness of soil pollution and how to prevent it improves. Increasing the value people place on soil as a natural resource and celebrating the natural environment of Herefordshire	Reducing the number of soil related pollution incidents
Support Woodlands for Water project	NMP Group Stakeholder	2015	2019	Assist in developing the Woodlands for Water project within the Wye Catchment	Reduction in diffuse phosphate pollution
Actively promote Winter storage reservoirs	NMP Group Stakeholder	2014	2027	Encourage the use of winter storage reservoirs within the horticultural sector	Potential to reduce the amount of field run off entering watercourses, and increase flows through reduced summer abstraction
Promote the uptake of rainwater harvesting	NMP Group Stakeholder	2014	2027	Encourage the use of rainwater harvesting particularly on poly-tunnels	Potential to reduce the amount of field

					run off entering watercourses and increase flows through reduced summer abstraction
Promote SuDS for new and existing developments	Herefordshire Council DCWW	2015	2027	Identify opportunities to remove clean water entering the sewerage networks thereby reducing the volume of effluent requiring treatment	Reduces the volume of sewage effluent discharged.
Pathway identification	EA, NE, Herefordshire Council	2015	2019	Identify highways acting as diffuse pollution pathways and consider potential interventions	Reduction in phosphate reaching river
Misconnection investigations	DCWW, Herefordshire Council, EA	2015	2019	Identify and rectify misconnections impacting on the SAC	Reduced volume of untreated sewage entering the river system will reduce phosphate loads.

Research	EA Cranfield University	2014	2017	PhD Study into the effectiveness of soft engineering options to control run off	Physical interventions that could significantly reduce the phosphorous loads in field run off
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Glossary

CABA – Catchment Based Approach – Partnership hosted by Wye and Usk Foundation and Natural Resources Wales

CFE – Campaign For the Farmed Environment

CLA – Country Land and Business Association

CSF – Catchment Sensitive Farming

DCWW – Dwr Cymru/Welsh Water

EA – Environment Agency

NE – Natural England

NFU – National Farmers Union

NMP – Nutrient Management Plan

NRW – Natural Resources Wales

SAC – Special Area of Conservation

SuDS – Sustainable Drainage Schemes

WUF – Wye and Usk Foundation

Appendix 1 “Top 5” Farmscoper Measures to reduce phosphate loss

Farm type: Roots and combinable	River Wye	River Lugg
Establish cover crops in the autumn	Y	Y
Adopt reduced cultivation system	Y	Y
Allow field drainage systems to deteriorate	Y	Y
Use a fertiliser recommendation system	Y	Y
Incorporate manure into the soil	Y	Y
Farm type: Mixed combinable	River Wye	River Lugg
Establish cover crops in the autumn	Y	Y
Adopt reduced cultivation system	Y	Y
Establish riparian buffer strips	Y	Y
Store solid manure heaps on an impermeable base and collect effluent	Y	Y
Incorporate manure into the soil	Y	Y
Farm type: Upland grazing	River Wye	River Lugg
Do not spread FYM to fields at high-risk times	Y	Y
Capture dirty water in dirty water store	Y	Y
Use dry cleaning techniques to remove solid waste from yards prior to cleaning	Y	Y
Establish and maintain artificial wetlands – steady runoff	Y	Y
Fence off rivers and streams from livestock	Y	Y
Farm type: Lowland grazing	River Wye	River Lugg
Do not spread FYM at high risk times	Y	Y
Avoid spreading manufactured fertiliser to fields at high risk times	Y	Y
Fence off rivers and streams from livestock	Y	Y

Do not apply P fertiliser to high P index soils	Y	Y
Uncropped cultivated areas	Y	Y

River Wye SAC

Nutrient Management Plan

Phosphate Action Plan

Natural Resources Wales, Environment Agency & Natural England
November 2021



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Summary

This Phosphate Action Plan forms the third part of the [Wye Nutrient Management Plan](#) and as such should be read in conjunction with the Evidence Base, Options Appraisal, and the first cycle of the Action Plan. It sits under the River Basin Management Plan and Special Area of Conservation Management Plan. It is a first step towards a full river restoration plan.

Phosphate levels in the River Wye catchment need to be reduced. Phosphate limits are already being exceeded at 31 points in the river catchment, with further failures likely in the future. The [River Wye Nutrient Management Plan 2014](#) demonstrates that the river phosphate limits are technically achievable. However, recent case law known as the Dutch Nitrogen Judgement¹ has clarified that where a site is already exceeding its environmental limits, further inputs are 'necessarily limited'. Furthermore, the judgement clarifies that plans such as the Nutrient Management Plan (NMP) can only be relied upon as strategic mitigation where there is sufficient certainty actions will be delivered, and the target will be met. The River Wye NMP does not give this certainty and therefore cannot be relied upon as strategic mitigation. Plans and projects that increase phosphate discharges into failing parts of the River Wye Special Area of Conservation (SAC) will have adverse effects on the integrity of the site and cannot proceed, unless they provide their own mitigation – i.e., unless they are nutrient neutral.

The aim of the Phosphate Action Plan is to give certainty that river targets will be achieved. Plans and projects will then be able to rely on the Action Plan as strategic mitigation, passing through the Habitat Regulations Assessment with no adverse effects on integrity. It should be noted that legacy phosphate is a significant issue in the catchment, and this may mean that despite a programme of actions, physical improvements in the river are not seen for some time.

As of yet there are no Diffuse Water Pollution Plans or Nutrient Management Plans in the UK that have enough certainty to be relied upon as strategic mitigation. The Wye Phosphate Action Plan is blazing a trail and open collaborative working is essential as we explore how we can achieve this end goal. This is the first re-draft of the Action Plan since the Dutch Nitrogen judgement, and it is likely to take several versions before the plan delivers enough certainty. The Action Plan sits in a changing context and revisions to the Government's approach to fair share, the ongoing Judicial Review Consents Order work and the work around River Basin Management Planning will change the landscape and may trigger reviews of this plan.

This Action Plan starts by outlining the current situation regarding phosphate levels in the River Wye catchment. The main body of the Action Plan is subdivided into sections on point

¹ The CJEU judgment on the joined [Coöperatie Mobilisation for the Environment cases](#) (often referred to as the Dutch Nitrogen cases) affects how the assessment of plans and projects under the Conservation of Habitats and Species Regulations 2017 (as amended) ('the Habitats Regulations') must be interpreted and applied by competent authorities (local planning authorities in relation to planning matters).

sources, diffuse sources, evidence and monitoring and action plans for the main sub-catchments. A list of practical measures available to reduce phosphates is provided in an Annex. The certainty of each of the measures listed has been assessed and ranked. Sub-catchment action plans should be populated with measures listed in Annex 1 that are deemed sufficiently certain, thus demonstrating how the target will be met. Over-delivery will be required in order to account for uncertainties, and in accordance with the precautionary principle.

This Phosphate Action Plan has been drafted by the representatives from NE, EA and NRW who sit on the Technical Advisory Group (TAG) that sits under the Nutrient Management Board. Comments from the wider TAG have been incorporated. Considerable further work would be required to turn this Action Plan into a full river restoration plan. The plan authors propose that the TAG revisits this plan when vital contextual work including target reviews have been concluded, likely to be Autumn/Winter 2021. From then on the Action Plan should be reviewed annually, to tie in with the monitoring dashboard.

The next steps to be undertaken as a priority are:

- **Project officer** – Employment of a project officer to coordinate and drive this work.
- **Other point sources** – TAG to discuss the potential for prioritised actions on specific point sources, such as industry, septic tanks or CSO's.
- **Base flows and abstractions** – TAG to discuss.
- **Regulation** - Fuller application of regulatory powers around agricultural practices in the catchment. Build collaboration between farmers and regulators to raise levels of regulatory compliance.
- **Farm advice** – Consider undertaking a review of the successes and shortcomings of farm advice and voluntary action in the catchment. This may need to be commissioned by Defra.
- **Modelling** – Further modelling may be required to increase confidence in the measures and mechanisms required, including Source Apportionment Geographic Information Systems (SAGIS) tool recalibration and further Farmscoper scenario modelling.
- **Lugg actions** – Partners should explore what additional measures should be employed to reduce phosphate in the Lugg, with enough certainty to meet the requirements of the Habitat Regulations in light of the Dutch Nitrogen Judgement.
- The other **sub-catchment plans** should be significantly worked up.

Introduction

The River Wye is an area of special importance for nature conservation. The Wye and the Lugg are designated as Sites of Specific Scientific Interest (SSSIs), with the River Wye and the lower stretches of the River Lugg designated as a Special Area of Conservation (SAC) under the European Community (EC) Habitats Directive (see Appendix 2 meeting Favourable Condition Status).

The River Wye SAC is primarily designated for being a largely unmodified river. It has a geologically mixed catchment, including shales and sandstones, and shows a clear transition between its upland reaches, with characteristic bryophyte-dominated vegetation, and the lower reaches, with extensive *Ranunculus* beds. The river channel includes gorges and significant areas of associated woodland. Annex 1 species covered by the designation are white-clawed crayfish, sea lamprey, brook lamprey, river lamprey, twaite shad, Atlantic salmon, freshwater pearl mussel, bullhead and otter. The SAC designation also extends to its largest tributary the river Lugg, up as far as Hope under Dinmore.

The River Wye stretches for 134 miles from Plynlimon in mid-Wales to the Severn estuary. For much of its lower length it forms the border between Wales and England. The Wye is the largest SAC river in Wales, with a catchment covering much of southern Powys and part of the Brecon Beacons National Park before crossing the border into England near Hay-on-Wye. It is divided into 43 water bodies in Wales, two of which straddle the border, and four water bodies entirely in England. The principle towns in the Wye catchment are Rhayader, Llandrindod, Builth Wells, Hay-on-Wye, and Hereford city, with Presteigne and Leominster on the River Lugg, and Ross-on-Wye then Monmouth near to the confluence with the River Severn.

As a part of measuring the rivers condition, limits have been set for nutrients and other water quality markers. The limits set for phosphate are currently being exceeded along parts of the River Wye SAC, and there are risks of further exceedances without adequate mitigation. The work that went into producing the NMP in 2014 established that phosphate limits were achievable, including when considering growth plans across the catchment. The NMP established that a combination of discharge reductions from wastewater treatment works (WwTW), land use change and changes to agricultural practice would be required to meet the targets. Improvements to WwTW were included in Dwr Cymru - Welsh Water's (DCWW) work plans for investment in 2020-2025, whilst land use changes and changes to agricultural practice were to be progressed on a voluntary basis with support from schemes such as Catchment Sensitive Farming. At the time, this was considered an adequate level of information to allow development proposals to proceed and councils to plan for growth.

However, recent case law known as the Dutch Nitrogen Judgement has clarified the interpretation of the Habitats Regulations. The European Court concluded that where the conservation status of a natural habitat is unfavourable, the possibility of authorising activities which may subsequently affect the ecological situation of the site seems "necessarily limited". The CJEU concluded that an Appropriate Assessment (AA) allowing



deterioration may not take into account the benefits of conservation, preventative or other measures if the expected benefits of those measures are not “certain” at the time of the assessment. This means that where an Appropriate Assessment relies on delivery of a strategic plan (such as the Nutrient Management Plan) to avoid or mitigate for an impact on a European site that is already failing to meet its favourable conservation status, there must be sufficient scientific and practical certainty that the measures identified in that plan will achieve the required reductions and that the measures will be in place at the relevant time. Absolute certainty is not required; a competent authority could be certain that there would be no adverse effects even though, objectively, absolute certainty is not proved.

This Action Plan is first and foremost about restoring the ecological functioning of the River Wye, by reducing phosphate to below set limits. It is not designed to facilitate further growth and development as such. However, if it can set out how Favourable Conservation Status will be achieved, with adequate certainty to satisfy the Habitat Regulations in light of the Dutch Nitrogen Judgement, and if it can be shown that further growth and development in the catchment does not compromise this, then the Phosphate Action Plan will be able to be relied upon as strategic mitigation. In this scenario a Habitat Regulations Assessment could refer to the Action Plan, and it could be concluded that the plan or project had no adverse effects on integrity. The development would be able to proceed in a more business as usual way.

If certainty cannot be achieved, then the Plan still achieves its main aim of driving river restoration. Plans and projects (development) on failing stretches of the watercourse could still proceed by offsetting their impacts, i.e., taking a nutrient neutrality approach. This Action Plan is iterative in nature, and it is likely to take several versions before the plan has enough certainty to be relied upon as strategic mitigation.

The Phosphate Action Plan needs to:

- Quantify the phosphate reductions required, taking all possible inputs into account,
- Identify all possible actions/measures to reduce phosphate levels,
- Rate the ‘certainty’ of the measures, defining measure that have enough certainty to be used in a plan that complies with the Dutch Nitrogen Judgement,
- Quantify the phosphate reductions from the measures listed,
- Add up the total phosphate reductions from measures that have good levels of certainty, aiming to demonstrate how the target will be achieved,
- Demonstrate over-delivery against targets to provide a buffer, thereby applying a precautionary approach,
- Set out a programme of monitoring and ensure it is funded,
- Use monitoring results to track actual phosphate levels in waterbodies, in order to steer ongoing actions.

This Phosphate Action Plan is a first step towards a full plan to restore the river. It should be recognised that phosphate is not an end in itself to achieving the favourable conservation status of the designated features in the River Wye SSSI/SAC. It is recognised as an important factor in reaching this goal due to failing its target values across the catchment.

The solution is not simply one of reducing the flow of nutrients into the system, but rather understanding and responding to the complex interactions that determine the overall SAC condition. It will be important to take a more holistic ecosystem approach to implement the most appropriate suite of actions at any given location. For example, restoring and improving river and floodplain habitat and physical processes through for example river restoration works, floodplain re-connection and floodplain and riparian woodland, natural flood management and river regulation, to help to lessen the negative impacts of nutrients in the system.

Phosphate limits for the River Wye SAC

The River Wye and Lugg targets must be met as an annual average, a 3-year rolling mean and as a growing season mean (March to September inclusive). Common Standards Monitoring Guidance (CSMG) from which targets are derived can be found here: <mailto:https://hub.jncc.gov.uk/assets/1b15dd18-48e3-4479-a168-79789216bc3d>. Water Framework Directive and SAC water quality targets differ but for SAC sites the higher target is the one monitored against.

A summary of the targets for soluble reactive phosphorus (SRP) for the Wye and Lugg can be found in the appendices, along with information on the river levels in comparison to targets. Throughout this report levels are given in milligrams per litre, in line with the original NMP.

The current situation

Data used to inform this section comes from the following sources:

- Dwr Cymru Welsh Water's Asset Management Programme 6 (AMP6) investigation, 2018.
- Evidence review undertaken by EA in June 2020.
- Phosphate compliance review for SAC rivers in Wales (NRW, 2020).
- Herefordshire Council Interim Phosphate Delivery Plan (Ricardo, 2021).
- This section will be updated with information from the recent re-runs of SAGIS modelling.

As part of developing the programme of work for AMP7 and AMP8, Dŵr Cymru Welsh Water (DCWW) commissioned a project to update and calibrate the SAGIS model for Upper River Wye sub-catchment using the latest river quality data (for phosphate) collated by Natural Resources Wales (NRW), under the JNCC target. The ultimate objective is to use the updated model to improve confidence that proposed/planned phosphorus removal schemes will deliver the intended outcomes.

In Wales, comparison of orthophosphate concentrations against targets indicate failures, some of them significant. Fourteen water bodies met their targets, twenty-seven failed and

three were unknown. Water bodies achieving their orthophosphate targets were in the Upper Wye above Rhayader, about half of the Ithon, and two water bodies in the Irfon. All of the middle Wye tributaries, the remaining Irfon and Ithon and the Llynfi failed to meet their targets. The most significant failures were the Wye near Newbridge, the Cammarch, Clettwr Brook, Mithil Brook, lower Irfon, Garth Dulas and the three water bodies in the Llynfi catchment. Failing waterbodies in Wales can be found in the NRW SAC Phosphate Compliance Report at: [Natural Resources Wales / Compliance Assessment of the River Wye SAC Against Phosphorus Targets](#).

In England, the River Wye achieves its target along most of its length. The most upstream site for EA monitoring at Bredwardine Bridge is very close to the target. From here there is a reduction in orthophosphate at the next downstream site at Sollars Bridge from where it increases gradually down the course of the river until the target is exceeded at Hoarwithy Bridge (downstream of the Lugg confluence). Orthophosphate levels then gradually reduce along the length of the Wye.

The River Lugg in Wales achieves mainly 'good' Water Framework Directive status for Soluble Reactive Phosphorous with only the Norton Brook at 'poor' status (2016-2018 data). The River Lugg in England is exceeding its phosphate targets. Highest mean values occur in the lower reaches of the Lugg but results suggest that even at the most upstream monitoring point in England orthophosphate levels significantly exceed the target.

The 'reasons for failure' attributed to the River Wye and its tributaries suggest nutrients are likely to be from a diverse range of sources, including mains sewerage, septic tank discharges and diffuse agricultural pollution. In both the Upper Wye sub-catchment and the Lugg sub-catchment, source apportionment modelled analysis suggests that 66% of the total Phosphate load comes from agriculture, 25% from Wastewater Treatment Works and 9% from other sources. DCWW AMP 7 improvements will be completed between 2020 – 2024 and these percentages will change slightly to 67% agriculture, 23% WwTW and 10% other. In the Lower Wye sub-catchment, 61% is from agricultural sources, 33% is from WwTW, with 6% other². Much of the Wye catchment is rural and until recently has been predominantly farmed for sheep and beef cattle, with a rapid expansion of chicken farms and pig production more recently.

'Other' sources include highway discharges, industry and intermittent sewage discharges which includes combined sewer overflows (CSO's). CSO's contribute up to 7% of this figure. However, it should be noted that although SAGIS is a Standard modelling tool used by Environmental Regulators and Water Industry, it is not well suited to assessing intermittent discharging assets like storm overflows. The more recent SAGIS reruns give the contribution of CSO's as a separate figure.

² Evidence Review - Phosphate in the Wye/Lugg SAC Catchment. Environment Agency & Natural England. June 2020.

DCWW have recently commissioned a revised River Wye SAGIS model using more recent data and calibration to review the funded improvements that were identified on the NEP (National Environment Plan) for AMP7 (Asset Management Plan 7) for delivery over the period 2020-2025. The Model build and calibration phase is complete. NRW are currently reviewing 'modelling rules' for modelling scenarios that are consistent with Habitats Directive Review of Consents principals. These rules will be subject to Policy review and legal test to ensure that they are robust and appropriate in light of the 'Dutch Case'.

Phosphate load in Wye Catchment. Load is cumulative and does not reflect phosphate concentration as river flow will be greater downstream.

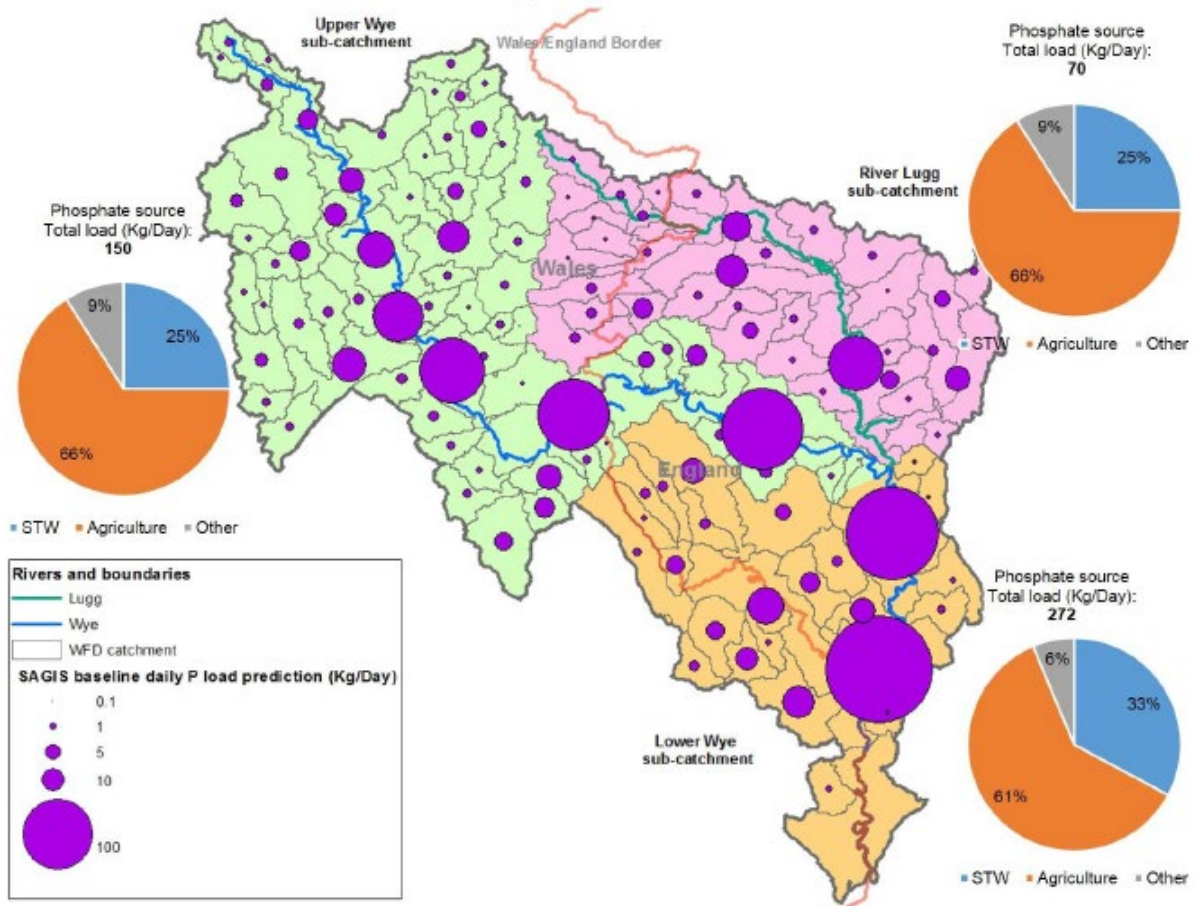


Figure 1: Phosphate load in Wye Catchment.

The Changing Context

This Action Plan does not exist in isolation. There are critical discussions and pieces of work underway across the Defra arms-length bodies and Natural Resources Wales at a national level, the conclusions of which could mean that the Phosphate Action Plan needs to be revised.

River Basin Management Plans

River basin management plans (RBMPs) set out how organisations, stakeholders and communities will work together to improve the water environment. There are 11 River Basin Districts (RBDs) in England and Wales. The Environment Agency manages the 7 RBDs in England. Natural Resources Wales (NRW) manage the Western Wales RBD. NRW and the Environment Agency jointly manage the Dee and Severn RBDs.

There is a recognised issue where targets applied on the lower Wye in Wales by Natural Resources Wales are tighter than those applied on the other side of the river, in England, by the Environment Agency and Natural England. The Environment Agency and Natural England are discussing the targets set for the Wye as a part of the objective setting work for RBMP. If the river targets change, this Action Plan will need to be revised.

Fair share

To date, the starting point for assessing the action required to reduce phosphate levels to targets has been to establish what the proportional reductions are, in line with each sector's contribution, to the overall load of a pollutant. This is in line with Government's general policy principles around the 'polluter pays' and 'fair share'. The expectation is that each sector will reduce their phosphate inputs in proportion to their contributions, so every sector has to make reductions in phosphate entering the catchment. However, the 'fair share' approach is currently being reviewed. If the fair share approach is amended, then this could substantially change the actions that are taken on the river. In addition, amended phosphate limits through the RBMP could mean an update to what is considered fair share for the river.

Judicial Review Consent Order Work

The outcome of this ongoing legal challenge from WWF-UK, The Angling Trust and Fish Legal could influence future iterations of this plan.

Oversight and Engagement

Responsibility for the production of the NMP and its Action Plan and the delivery of its actions sits with the Nutrient Management Board. The Board comprises representatives from Herefordshire Council, Monmouthshire Council, Forest of Dean District Council, Powys and the Brecon Beacons National Park Authority, Dwr Cymru/Welsh Water (DCWW), Natural Resources Wales (NRW), the Environment Agency, Natural England, the Wye and Usk Foundation (WUF), the National Farmers Union (NFU), the Country Land and Business Association (CLA), Farm Herefordshire and the Herefordshire Construction Industry Lobby



Group. The Board is currently chaired by Herefordshire Council. The Board's purpose is to focus specifically on nutrient management within the Wye catchment and enable the different sectors to develop the necessary strategies to secure delivery; ultimately the Board is responsible for the delivery of the plan.

The Action Plan – how it works

This Phosphate Action Plan is subdivided into sections on point sources, diffuse sources, evidence and monitoring and sub-catchment plans. A long list of all the potential practical measures that could reduce phosphate in the River Wye SAC is provided as an Annex to this report. The idea is that if a measure is required for site restoration, it is drawn up from this long list and added into the relevant sub-catchment plan. Sub-catchment plans should be populated with measures that have a defined phosphate reduction figure and are sufficiently certain, thus demonstrating how the target will be met.

Table 1: Example action plan table

Action	Detail	Lead organisation	Phosphate reduction	Certainty	End date	Progress	Next steps
<i>Name</i>	<i>Further description as necessary</i>	<i>Named organisation or individual</i>	<i>Amount of Phosphate the measure will remove</i>	<i>How scientifically and practically certain is the action? Is there a named lead? Can the measure be secured?</i>	<i>Date for completion</i>	<i>Progress against the action to date.</i>	<i>What needs to happen next to progress the action.</i>
			<i>Running total of reductions against target</i>				

Point Sources

The vast majority of the known point source phosphorus load arises from water company discharges via Wastewater Treatment Works (WwTW). Dwr Cymru - Welsh Water (DCWW) carried out studies to investigate the effectiveness and practicalities of phosphate reduction and other load reducing measures at WwTW and in their sewerage catchments, as a part of AMP6. These studies informed the development of a suite of schemes at various WwTW within the catchment that DCWW proposed to the Water Service Regulation Authority (OFWAT) to form part of their AMP7 programme. Modelling was re-run to support the development of proposals by DCWW to address the point source element as part of their AMP7 (Asset Management Plan) which runs from 2020 to 2025.

DCWW will be investing circa £50m in Phosphorus removal at 11 WwTW during the period 2020-25. Six DCWW WwTW in the catchment have had Phosphorus reduction schemes already (prior to 2020). In combination, the reductions proposed for these works in the 2014 Action plan means that water company discharges have been reduced by their 'fair share'. However, this does not mean that further reductions cannot be made. Fair share is a policy position and is currently being reviewed. The list of sewage works below shows where a phosphate limit will be introduced by 2027 at works that do not currently have a limit on phosphate discharged to surface water. WwTW sites in the catchment that had phosphate removal installed prior to AMP7 (i.e., before 2020) are represented in the table overleaf.

Table 2: Sewage works receiving phosphate limits between 2025 and 2027

WwTW	Regulator	Current P limit (mg/l)	New P limit (mg/l)	In-river load saving (kg/d)	Delivery date
EIGN STW	EA	1	0.40	12.38	2025
KINGSTONE & MADELY STW	EA	none	2.00	1.98	2025
LEOMINSTER STW	EA	1	0.50	1.75	2025
PONTRILAS STW	EA	none	1.80	1.07	2025
ROTHERWAS STW	EA	1	0.40	20.14	2025
WEOBLEY STW	EA	none	1.50	2.39	2025
ABERLLYNFI (THREE COCKS) STW	NRW	none	1.50	0.33	2027
BEULAH STW	NRW	none	0.80	0.29	2027
BUILTH WELLS STW	NRW	none	2.50	5.06	2025
CROSSGATES STW	NRW	none	0.80	0.78	2027
DINGESTOW STW	NRW	none	2.00	0.20	2027
LLANDEWI YSTRADENNY STW	NRW	none	2.00	0.20	2027
LLANDRINDOD WELLS STW	NRW	1.25	0.30	2.07	2025
LLANGAMMARCH WELLS STW	NRW	none	1.00	0.22	2027
LLANWRTYD WELLS STW	NRW	none	0.30	0.41	2027
PRESTEIGNE STW	NRW	none	1.00	3.11	2025
RHAYADER STW	NRW	none	0.70	2.38	2025
TALGARTH STW	NRW	2	0.60	1.44	2027

Point source							
Action	Detail	Lead	Phosphate reduction	Certainty (RAG)	End date	Progress	Next Steps
Practical actions							
Improvements to WwTW listed above.			All schemes above will deliver 56.2kg/d		2027		Continue to update NMP on site-by-site progress, and impact of investment programme due to JNCC SAC target assessment.
Ongoing compliance work on trade effluent discharges in the catchment.	Limited number of sites. Talgarth AD plant.	NRW		No details.			
Action	Detail	Lead	Phosphate reduction	Certainty (RAG)	End date	Progress	Next Steps
Investigative actions							
DCWW Storm Overflow Assessment Framework (SOAF)	Investigation of highly and frequently spilling discharges from WwTW and Combined Sewer	DCWW		None given, as this is an investigative action.	2025		DCWW will keep TAG informed, with a view to identifying practical actions for inclusion in the Action Plan.

Point source							
	<p>Overflows (CSO's).</p> <p>Over the next 5 years (2020-2025) this programme will use data from the Event Duration Monitor sites to prioritise wastewater assets for investigation, with the aim to reduce both the number and volume of storm water discharges to the environment.</p>						
Investigations into Combined Sewer Overflows and spills in England		DCWW			Not identified		DCWW should report on this to TAG, with a view to identifying practical actions for inclusion in the Action Plan.
Investigation into inputs from septic tanks		Not identified			Not identified		TAG to discuss.

Point source							
Investigation into inputs from Industry		NRW / EA			Not identified		TAG to discuss. Review data to determine actions.
Investigations based on geography i.e. 'hot spots'.		Not identified			Not identified		TAG to discuss.

Diffuse phosphate sources

Diffuse sources are sources of phosphate that are widespread within the catchment and arise from multiple sites. Each individual source of phosphate may be small however the widespread nature of the sources contributes significant phosphate to the catchment.

Modelling at the present time suggests that a 13-20% reduction in Phosphates from diffuse sources in conjunction with the AMP7 point source reduction measures proposed should achieve the current Phosphate targets for the whole of the Wye SAC in England. In Wales, similar work is underway with DCWW through the AMP process to prioritise and define actions across their assets that will be most effective in reducing phosphate loading. Event Duration Monitoring and permit improvement conditions are other areas of work contributing to the management of phosphate.

Modelling indicates that most of the diffuse phosphate load to the catchment arises from agriculture. The short-term ambition for managing agriculture's contribution is to increase the uptake of targeted mitigation measures and advice to improve soil management, water management and the storage and spreading of organic manures, bio-solids, alongside effective implementation and enforcement.

It is important to be aware of the impact of 'legacy phosphate' in the catchment, which is essentially excess phosphate stored in catchment soils and sediment that will be slowly released over many years and will extend the period between actions to reduce phosphate and measured in-river orthophosphate. Currently unpublished research by Lancaster University has raised issues around the potential impacts of legacy phosphorus in specific soil types. Research shows that the Wye catchment is currently in phosphate surplus by about 2000t P/year (7.7 kg/ha) and therefore continuing to add to legacy phosphate³.

Regulation and enforcement

The regulatory controls for nutrient management are complex and some aspects differ in Wales and England. The *Environmental Permitting Regulations (England & Wales)* are an existing mechanism for controlling activities that release emissions to land air and water or waste management. This includes discharges to ground or surface waters and includes the recovery to land by landspreading of listed waste materials. It is an offence to cause or knowingly permit the entry of polluting matter to inland freshwaters or coastal waters. Application of biosolids to agricultural land is controlled under the Sludge Use in Agriculture Regulations and the industry Biosolids Assurance Scheme (BAS).

On 1 April 2021 the Welsh Government introduced the *Control of Agricultural Pollution (Wales) Regulations, 2021*. These regulations detail the construction and capacity

³ RePhOKUS presentation, Lancaster University

standards for the storage of organic manures and silage and set limits and conditions for spreading all fertilising materials containing nitrogen.

From April 2018 all farmers in England have needed to comply with *The Reduction and Prevention of Agricultural Diffuse Pollution (England) Regulations, 2018*, commonly referred to as the 'Farming Rules for Water'. The rules were introduced with a view to reducing agricultural pollution and have standardised good farming practices that many farmers already carry out. They encourage farmers to think about the risk of water pollution, how to keep valuable topsoil on their fields and to apply fertilisers only when it is required. The Environment Agency is the regulator for these rules and ensures farmers comply through an existing targeted programme of work. Farmers in England must also comply with the regulations on *Storing silage, slurry and agricultural fuel oil, 2018*.

Compliance with existing regulations will need to play a significant role in achieving a 13-20% reduction from agricultural activities. Compliance with any regulation is directly related to the level of enforcement. Regulatory inspections are carried out by the Environment Agency in England and Natural Resources Wales in Wales, but also some regulations are included with industry led Quality Assurance Schemes such as Red Tractor Standards which are also assessed for compliance. Farmers, regulators and assessors are responsible for compliance with regulatory requirements.

Lack of enforcement is an issue and a source of uncertainty. Low levels of enforcement results in uncertainty in compliance rates. Resources will always be an issue for all concerned so additional approaches to traditional enforcement are required and being explored in England and Wales. NRW is developing additional enforcement measures relating to landspreading activities.

NRW is working with Welsh Government and key stakeholders through the Wales Land Management Forum Agricultural Pollution sub-group on alternative approaches to gaining compliance and reducing agricultural pollution, accepting that it cannot be delivered through regulation alone. They are also developing Advice and Guidance, Voluntary Approaches, Investment and Innovation which evidence has shown need to be utilised in combination not isolation of each other. The future agricultural regulation in Wales is currently under review as part of the EU exit programme which is also looking at additional enforcement powers for NRW.

In England, the enforcement of Farming Rules for Water, Nitrate Vulnerable Zones and regulations around the storage of silage, slurry and agricultural fuel oil is the responsibility of the Environment Agency. There is a need for greater funding of officers to carry out inspections. Supporting methods could be used to collect evidence of non-compliance to help target in-person farm inspections. For example, for SSAFO regulations, where there is a need for a national survey of silage and slurry stores, aerial photography could be used to locate and provide some information on the condition of the tanks. The information gathered could then be used to make an initial assessment and identify which farms require a full inspection.



Farm Herefordshire have advised seriously considering whether to take a similar approach on the Lugg to the approach taken on the River Axe⁴, where the EA ran a 3-year, £120,000 campaign of regulatory audits. Despite over a decade of advisory visits in the Axe catchment, there had been no significant improvement in farming practices and the river had continued to decline. 95% of farms did not comply with storage regulations and 49% of farms were polluting the river. As a result of these advice-led but regulatory visits, farmers in the catchment made infrastructure investments estimated to total nearly £4 million⁵. A similar approach could be taken in the Wye catchment, which is a similarly high priority work area. The full application of existing regulatory powers might be considered a necessary step before considering the implementation of additional regulation i.e., through a Water Protection Zone.

There are also a number of civil actions under a number of regulatory regimes that could be utilised to protect the Wye. Where damage is occurring a Special Nature Conservation Order (SNCO) and follow-up Stop Notice could be utilised. This provides a strict, regulatory way of stopping damage to a protected European site. They can be used to limit activities both on and near to a European site (SAC or SPA). A SNCO Stop Notice would need to be applied to a specific action and requires approval by the Secretary of State.

Water Protection Zone

If additional regulation is deemed to be necessary, then a Water Protection Zone could be established. This would require polluters to start, stop or limit certain activities. Breaching the requirements of a WPZ is an offence. If the EA wants to implement a Water Protection Zone, a business case would need to be prepared for Defra to show that additional measures to reduce pollution are needed. Each WPZ is bespoke. It might cover a whole catchment or target localised areas. If Defra agrees, a draft WPZ order is produced for public consultation and parliamentary approval. So far, only one WPZ has been designated. The River Dee WPZ was designated in 1999 to control the storage of dangerous substances in the freshwater catchment area to protect drinking water abstractions.

New basic minimum measures enforced by a WPZ could include:

- not leaving land bare over winter,
- mandatory physical buffer strips of semi-natural habitat next to rivers,
- annual calibration of fertiliser spreaders,
- certification of slurry stores,
- no sediment dredging from rivers without consent.

⁴ Proposals from Farm Herefordshire to the Nutrient Management Plan Technical Advisory Group, Options to reduce phosphate levels in the Wye Catchment from Diffuse-Agri Sources; July 2020

⁵ River Axe N2K Catchment Regulatory Project Report

Voluntary measures – Land Management schemes

In addition to regulatory measures, agricultural practices in the Wye catchment can be positively influenced through advice and voluntary schemes. Increased uptake of further voluntary measures will be required. Non-regulatory measures are not intended as a blanket requirement for all farms but to develop a suite of measures that are specific to the individual farming situation and targeted at the most vulnerable areas. Further work is needed identify the measures, the scale of uptake and where to target them with more confidence, how these can realistically be implemented, over what timescale and the resources required, so that measures can be secured with sufficient certainty in subsequent iterations of this Action Plan.

In England, the most relevant land management scheme is Catchment Sensitive Farming (CSF). CSF is a partnership approach between Defra, the Environment Agency and Natural England that works with farmers and other partners to improve water and air quality in high priority areas. CSF offers farmers free training, advice and support for grant applications. CSF advice seeks to encourage appropriate mitigation options, funded (where appropriate) through the appropriate grant aid e.g., Countryside Stewardship and the new Environmental Land Management Scheme, but is primarily reliant on voluntary uptake.

The Wye is a Catchment Sensitive Farming (CSF) high priority catchment and has had high levels of investment for the last 14 years. The monitoring [dashboard](#) indicates that there were 580 CSF visits in 2019. As part of the NMP options appraisal, FARMSCOOPER modelling was used to identify possible phosphate reductions for different farming types. Further work is required to increase confidence in the measures and mechanisms required, the resources needed to implement these and the timescale for delivery. This could include some further FARMSCOOPER scenario modelling (which can be done using latest FARMSCOOPER 4, which is available to anyone).

A key concern with voluntary mechanisms is the lack of confidence in the uptake of measures. A lack of un-biased information on uptake and compliance rates within specific catchments contributes to these uncertainties, for example there is an issue with the accuracy and reliability of self-reporting in farm surveys. Uncertainty in uptake and compliance data leads to further uncertainty in model outputs and predictions. What is certain is that 100% uptake of measures through a solely voluntary scheme is highly unlikely. An uptake of voluntary measures of around 70% within a catchment is considered high through CSF; in a 2016/17 CSF audit the highest implementation rates across the regions studied were 68-69% for Anglian North and Anglian South regions. It is generally agreed that approximately a 20-30% nutrient reduction is the maximum achievable through voluntary measures⁶.

To gain a better understanding of uptake and compliance in the Wye catchment, regular checks on a greater number of farms in a catchment should be carried out by trained

⁶ Catchment Sensitive Farming Audit 2016-17, WRc for the Environment Agency, October 2017. Report reference UC12569.03.

officers. Monitoring of the level of uptake of advice given by EA, NRW, NE, Farming Connect, WUF, CSF and CFE needs to be undertaken to understand the effect the voluntary approach is having within the catchment. This could be funded through either voluntary agri-environment schemes or government funded regulatory audits/assessments of compliance with regulatory measures. Provision of a greater number of trained officers to provide advice and to collect un-biased information on the level of uptake would be an improvement. Increased funding to incentivise specific measures identified as having both poor uptake and the capability of achieving the greatest reductions in nutrients would also be valuable. One measure with poor uptake and potential for significant nutrient reductions is land use change. This is being considered within the new Environmental Land Management Schemes.

Targeted projects

There have been numerous targeted / specific projects delivered in the Wye catchment.

In Wales, Farming Connect delivered a targeted pollution prevention campaign during 2018/19/20 in NRW priority WFD failing waterbodies. This included the Wye catchment, namely the Ithon, Arran, Llynfi, Ennig and Trothy focussing on nutrient and soil management. Farming Connect held on farm events, hosted local discussion groups, produced e learning, fact sheets and a video on pollution sources and prevention. The Farming Connect Advisory service continues to provide technical advice on a range of subjects including infrastructure and nutrient management to farmers and foresters frequently following NRW inspections.

An NRW, Welsh Government funded Dairy Project is in progress providing infrastructure, silage, slurry and fuel oil improvement plans for individual farms. These reports have a regulatory follow up component. A programme of Poultry and Pig farm Regulatory visits will be undertaken in targeted sub-catchments.

The Wye and Usk Foundation WISE project ran until June 2021, with plans to visit at least 275 farms covering 41,000 hectares of agricultural land in mid Wales: [The Wye Ithon Severn Ecosystems \(WISE\) Project | The Wye and Usk Foundation \(weuskfoundation.org\)](https://www.wyeuskfoundation.org/).

Another example is the River Ithon Opportunity Catchment Programme project, which was designed to deliver multiple benefits in this sub-catchment. The Living Wales project on mapping of land-use / geoscience satellite mapping of vegetation change trends and locations to identify nutrient changes may be useful in enabling supplier to farm data, land use data and impacts of farming land use change to be understood.

In England, the Environment Agency continue to use satellite imagery and Lidar data to identify areas of land at high risk from soil run off and contact is made with landowners where necessary to provide advice, guidance and regulatory advice when appropriate. During 2021/22 the Environment Agency provided an additional 60 site visits to farms in the Lugg catchment and to all anaerobic digestion plants in Herefordshire. As a part of 'Soil

Patrol', all landowners in the Lugg catchment were written to, 164 high risk fields were visited, 29 potential breaches in compliance were identified, and 1 referral was made to the Rural Payments Agency.

Citizen Science Project

Action: We now have six established Citizen Science groups set up across the Wye Catchment. These are: Campaign to Protect Rural England (CPRE), Campaign to Protect Rural Wales (CPRW), Friends of the Upper Wye, Friends of the Lower Wye, Friends of the Lugg, and Wye Salmon Association. Information collected will be used to target action measures within the catchment and in particular actions to reduce phosphate from both point source and agricultural diffuse inputs.

Detail: Monitoring Data is being collected by these groups which includes a standard set of parameters (phosphate, nitrate, conductivity, temperature and turbidity) in a range of locations. Data is being recorded using Epicollect with the intention of sharing data more widely in a centralised way through the Wye Catchment Partnership. In addition, the groups are providing reports (eg recent report on the Dore / Worm catchment by WSA) that will help target resources accordingly.

Lead(s): Elle Von Benzon (Cardiff University), Andrew Osbaldiston (EA), Fiona Groves (WUF)

End date: October / November 2021 from Cardiff Uni however funding will be sought to continue the project into 2022 and beyond.

P reduction: The monitoring will drive the targeting of P reduction measures in priority areas. This will be a combination of regulation, guidance and project driven measures.

Certainty (red, amber, green):

Green for delivery of the project and measures. Amber regarding the certainty of P reduction across waterbodies and would need to be calculated on a case-by-case basis. Green for some P reduction.

Progress: On track.

Next steps: In October / November there will be a meeting to review the data collection and to share best practice / lessons learnt. Funding bid through the Environment Programme and key partners / stakeholders to secure funding for 2022.

Desktop Study - Phosphate treatment of Farm wastes

Action: This project is to establish innovative approaches to reducing phosphate losses from agricultural sources. Specifically, supporting field trials and investigating the feasibility of technology for stripping phosphate from agricultural slurries and manures. Information will feed into the wider strategic catchment partnership including the NMP Board and will be used for a range of phosphate modelling scenarios across the catchment, providing greater certainty of the measures.

Detail: Discussions are underway with a number of organisations / businesses including AVARA regarding potential treatment processes eg pyrolysis for the treatment of farm wastes. This also includes the wider benefits of energy production and carbon capture as part of the treatment process. This is being made possible by freeing up some resource enabling WUF to steer and facilitate some of these discussions. An outcomes paper will be produced identifying what can potentially be achieved and how much benefit this can provide for P reduction in the catchment.



Leads: Andrew Osbaldiston (EA), Kate Speke Adams (WUF)

End date: March 2022

Certainty (red, amber, green): Green for project delivery, amber for the effectiveness of large scale take up of the method / technology

Progress: On track

Farm trial to produce “Johnson-Su compost” at Townsend Farm, Brampton Abbots, Herefordshire

Action: This project is to establish a sustainable method to unlock Legacy Phosphate in soils, initially at Farm scale prior to wider engagement and potential wider coverage at a catchment scale. EA have part funded a trial at Townsend Farm, Ross on Wye, to establish the effectiveness of the treatment system that will be demonstrated and promoted more widely with the support of the Wye and Usk Foundation.

Detail: A pilot plant is under construction to produce Johnson-Su compost that effectively creates an enzyme that will free up legacy P in soils therefore allowing phosphate levels to be run down within the catchment. On site farm trials will be run and demonstrated more widely to show the effectiveness of this method which, together with other regenerative farming techniques, enables the nutrients in soils (phosphate) to become more readily available to crops without the need for additional manufactured fertilizers being added.

Leads: Ben Taylor Davies (Townsend Farm), Andrew Osbaldiston (EA), Kate Speke Adams (WUF)

End date: March 2022 although funding bid in place to develop the coordination and demonstration of best practice through 2022 and beyond

Certainty (red, amber, green): Green for project delivery, amber for the effectiveness of large scale take up of the method / technology

Progress: On track

Next steps: Demonstrator event(s) and implementation more widely

Integrated NFM / Working with Natural Processes

- Herefordshire Wye and Lugg Integrated NFM
- Yazor Brook
- Wellington Brook
- Dore
- Garren / Gamber
- Valley Brook

Diffuse							
Action	Detail	Lead	End date	Phosphate reduction	Certainty (RAG)	Progress	Next steps
Thinking actions							
Certainty from voluntary actions / farm advice	TAG to consider how much 'certainty' can be attributed to voluntary actions.						TAG to discuss.
Legacy phosphate	Consider outcomes of RePhokUS project and implications.						TAG to seek update.
Water Protection Zone	EA to lead thinking on whether a Water Protection Zone is required.	EA					EA to lead discussion at TAG.
Desk study into Phosphate treatment of Farm wastes	This project is to establish innovative approaches to reducing phosphate losses from agricultural sources. Specifically, supporting field trials and investigating the feasibility of technology for stripping phosphate	Andrew Osbaldiston (EA), Kate Speke Adams (WUF)	March 2022			On track.	An outcomes paper will be produced identifying what can potentially be achieved and how much benefit this can provide for P reduction in the catchment.

Diffuse							
Action	Detail	Lead	End date	Phosphate reduction	Certainty (RAG)	Progress	Next steps
	from agricultural slurries and manures. Information will feed into the wider strategic catchment partnership including the NMP Board and will be used for a range of phosphate modelling scenarios across the catchment, providing greater certainty of the measures.						
Evidence actions							
Evidence review	Review existing evidence and define what further work is required.						TAG to discuss whether this has value and should be commissioned.
Farmscoper runs	Consider whether re-runs of farmscoper would add value.						TAG to discuss.

Diffuse							
NRW project to review and map all known data – WQ, farms, discharges.	Review and map all known data – WQ, ecological, agricultural data (livestock numbers) permitted discharges/deployments, Biosolids notifications to prioritise work programme.	NRW	March 2021				NRW to provide an update to TAG.
CSF review	Project to increase understanding of the successes, shortcomings of CSF, and future opportunities. Quantify reductions from CSF, list measures that reduce P, rank certainty, forecast future reductions from CSF.	NE / EA / WUF					NE / EA / WUF to discuss. Work may need to be commissioned.
Groundwater /surface water abstractions	Assess potential to effect base flow and dilution of discharges. Need to consider whether there would be any benefits of dilution	NRW/EA					

Diffuse							
	and changing licences.						
Citizen science	There are six citizen science projects in the Wye catchment.	Elle Von Benzon (Cardiff University), Andrew Osbaldiston (EA), Fiona Groves (WUF)	October / November 2021 from Cardiff Uni however funding will be sought to continue the project into 2022 and beyond.	Evidence project will not lead to reductions but is expected to lead to improved enforcement and targeted practical projects.			In October/ November 2021 there will be a meeting to review the data collection and to share best practice / lessons learnt. Funding bid through the Environment Programme and key partners / stakeholders to secure funding for 2022.
Action	Detail	Lead	End date	Phosphate reduction	Certainty (RAG)	Progress	Next steps
Practical projects							
Farming Connect: Review of catchments and priorities	Targeted pollution prevention campaign phase 2	NRW/ Farming Connect	March 2021				Farming Connect to report on this to TAG. Future targeted catchments to input to this Plan.

Diffuse							
NRW: Targeted farm inspection programme	Dairy project, Poultry/pig farm visits. Ithon Opportunity Catchment Partnership Programme.	NRW	Funded until March 2022.			Dairy project likely to morph into staff that enforce the Control of Agri Pollution (Wales Act)	NRW to report on this to TAG.
Herefordshire Wye and Lugg Integrated Natural Flood Management (NFM)	A significant number of NFM measures have been and continue to be delivered across the Wye and Lugg Priority Catchments	EA / Herefordshire Council	March 2022 and beyond	Reduces P in catchments by reducing run-off of P laden soil. Would need to be calculated on a case-by-case basis.	Green if P reduction can be calculated.	Significant progress to date.	Business case being developed for six-year funding (FCRM programme). Best practice to be shared.
Farm trial to produce "Johnson-Su compost" at Townsend Farm, Brampton Abbots, Herefordshire	This project is to establish a sustainable method to unlock Legacy Phosphate in soils, initially at Farm scale prior to wider engagement and potential wider coverage at a catchment scale. EA have part funded a trial at Townsend Farm,	Ben Taylor Davies (Townsend Farm), Andrew Osbaldiston EA, Kate Speke Adams (WUF)	March 2022 although funding bid in place to develop the coordination and demonstration of best practice through 2022 and beyond.	Would need to be calculated.	Green if P reduction can be calculated.		Demonstrator event(s) and implementation more widely.

Diffuse							
Action	Detail	Lead	End date	Phosphate reduction	Certainty (RAG)	Progress	Next steps
	Ross on Wye, to establish the effectiveness of the treatment system that will be demonstrated and promoted more widely with the support of the Wye and Usk Foundation.						
Other diffuse sources							
Identify highways acting as diffuse pollution pathways and consider potential interventions		Local Authorities					Set this out as a project, with a clear strategy, timeframes and identified lead.

Evidence and Monitoring

There are three main types of monitoring:

- **Surveillance:** designed to assess general environmental trends or patterns, with no specific targets. Surveillance sites are often monitored long-term and at higher frequency than other types of monitoring.
- **Monitoring:** where a series of measurements are taken with the aim of comparing them to a specific target. This is used for compliance reporting and to identify whether a problem exists;
- **Investigations:** these are generally time-limited pieces of work designed to diagnose the causes of failures detected by monitoring or by incident reports, and to identify a suitable course of action.

Monitoring data is collated by the EA and NRW and phosphate levels and trends are reported on the River Wye dashboard. The Dashboard provides data from several sectors including housing development, water undertaker compliance with phosphate limits on their discharges and number of pollution incidents from soil run off in the Wye catchment. The data is updated after April every year, when the figures for the previous calendar year are made available. The primary purpose of this dashboard is to provide information to the Board. For interested members of the public a useful source of information can be found on the Catchment Data Explorer - <https://environment.data.gov.uk/catchment-planning/>.

Monitoring data will feed into future iterations of this Action Plan and allow an assessment of potential headroom made available as measures take effect. This sampling data will also provide the measure of compliance with the Favourable Conservation Status of the SAC.

Wales

NRW supports several surveillance sites within the Wye catchment, all of which have co-located water quality and biological data. The [Afon Gwy Upland Waters Monitoring Network](#) site lies in the Upper catchment and is part of a network of sites targeted at monitoring recovery from acidification. Llangorse Lake, which historically suffered from severe sewage pollution, is also a surveillance site. Finally, NRW operates the Environmental Change Network.

NRW monitors phosphorus at more than 50 sample points in the Wye and its tributaries in Wales. These provide an effective overall picture of phosphorus concentrations in different water bodies across the upper part of the catchment, as recently described by Hatton-Ellis & Jones (2021). Although NRW is facing pressure to its monitoring budget, SAC water bodies – including the Wye – receive priority. As well as monitoring phosphorus, NRW recognises the importance of monitoring other water quality parameters linked to nutrient pollution, notably biochemical oxygen demand (BOD) and ammonia. NRW also recognises the importance of monitoring ecological responses to high nutrient levels, for example by monitoring diatoms and other algae and invertebrates. Finally, rivers differ in their resilience to nutrient pressures depending on other stressors, notably hydromorphology (habitat

structure) and NRW therefore intends to collect data on this so that we can assess areas where poor habitat structure is likely to aggravate the effects of nutrient failures.

NRW has set targets for the Wye following the most recent JNCC Guidance (JNCC 2016). These targets are published in our SAC Core Management Plan for the Wye (NRW 2017).

England

The Environment Agency has a water quality surveillance sampling programme in place to monitor the Phosphate levels within the SAC at 3 points of interest; the River Wye at Carrots Pool and Holme Lacy Bridge, and the River Lugg at Mordiford Bridge. Phosphate levels are monitored on a monthly basis and this data is used primarily to track Phosphate levels and monitor progress of the plan's objectives. There are also other locations within the catchment where phosphate levels are regularly monitored.

In June 2020, the Environment Agency carried out a review of phosphate monitoring in the River Wye catchment and concluded that the existing monitoring was appropriate. It would not be possible to maintain a large network of sample sites utilising traditional chemical sampling techniques. However, moving forwards, this programme will be supplemented with more agile monitoring, directed to areas of highest priority. This will include utilising more agile methods of monitoring and investigations such as targeted use of phosphate sondes, remote sensing and algal surveys. The programme will aim to use all the data sources available from statutory bodies and partner organisations to identify and fill remaining gaps in evidence.

Additional investigative monitoring will be employed where a more detailed assessment is required in order to identify sources and target measures. This could include 'spot-sampling' of orthophosphate to look at relative concentrations across a sub-catchment or could involve the deployment of sondes with phosphate probes or in order to identify areas of increased run-off through the use of turbidity probes.

Monitoring							
Action	Detail	Lead organisation	Target end date	Phosphate reduction	Certainty	Progress	Next steps
RBMP working group to agree targets across Wales and England.	Being discussed as a part of the River Basin Management Plan review.	NRW / EA / NE	Autumn 2021				NRW / EA / NE to report to TAG.
Agree monitoring requirements, ensuring consistency across Wales and England.		NRW / EA / NE					

Sub-catchment plan – Upper Wye

The Upper Wye above Rhayader is meeting its orthophosphate targets. All of the middle Wye tributaries, the remaining Irfon and Ithon and the Llynfi failed to meet their targets. The most significant failures were the Wye near Newbridge, the Cammarch, Clettwr Brook, Mithil Brook, lower Irfon, Garth Dulas and the three water bodies in the Llynfi catchment. Failing waterbodies in Wales can be found in the NRW SAC Phosphate Compliance Report at: [Natural Resources Wales / Compliance Assessment of the River Wye SAC Against Phosphorus Targets](#).

In England, the River Wye achieves its target along most of its length. The most upstream site for EA monitoring at Bredwardine Bridge is very close to the target. From here there is a reduction in orthophosphate at the next downstream site at Sollars Bridge from where it increases gradually down the course of the river until the target is exceeded at Hoarwithy Bridge (downstream of the Lugg confluence). Orthophosphate levels then gradually reduce along the length of the Wye.

Generic actions:

- Need for river restoration work along main river and tributaries to reduce pollution risk and ecological resilience;
- Identify potential problem point sources and loading discharging to the river network including DCWW, private works, septic tanks, Combined Sewer Overflows, agricultural units, anaerobic digester plants;
- Encourage natural flood management and natural flooding including creation of floodplain meadows,
- Identify sources discharging to ground including septic tanks, land spreading etc.
- Identify and tackle pathways of runoff from land;
- Target work by sub-catchments based on phosphates evidence report but also taking into account other relevant evidence.
- Where large changes to farming practice are occurring, use catchment officers to approach farmers and encourage changes to farm design, including much wider buffer strips, interception ponds to trap runoff and slow flow etc.
- Ditch blocking and wetland restoration to increase baseflows.

Upper Wye actions							
Action	Detail	Lead	Target end date	Phosphate reduction	Certainty	Progress	Next Steps
Monitor levels at Marteg.		NRW					
Ensure agriculture at Marteg is compliant with regulations.		NRW					
Investigate failures / problems at Newbridge and take appropriate action.		NRW			Could lead to projects which then have some certainty.		
Investigate whether reservoir discharges can be modified to flush algae.		NRW			Could lead to projects which then have some certainty.		
Consider delivery of liming at Elan.		WUF / NRW			Could lead to projects which then have some certainty.	WUF have not been able to progress this due to delay in SAF funding from NRW.	
Consider opportunities for wetlands.					Could lead to projects which then have some certainty.		

Sub-catchment plan – River Ithon

About half of the River Ithon is meeting its orthophosphate targets. Failing waterbodies in Wales can be found in the NRW SAC Phosphate Compliance Report at: [Natural Resources Wales / Compliance Assessment of the River Wye SAC Against Phosphorus Targets](#).

Generic actions:

- Need for river restoration work along main river and tributaries to reduce pollution risk and ecological resilience;
- Identify potential problem point sources and loading discharging to the river network including DCWW, private works, septic tanks, Combined Sewer Overflows, agricultural units, anaerobic digester plants;
- Encourage natural flood management and natural flooding including creation of floodplain meadows,
- Identify sources discharging to ground including septic tanks, land spreading etc.
- Identify and tackle pathways of runoff from land;
- Target work by sub-catchments based on phosphates evidence report but also taking into account other relevant evidence.
- Where large changes to farming practice are occurring, use catchment officers to approach farmers and encourage changes to farm design, including much wider buffer strips, interception ponds to trap runoff and slow flow etc.
- Ditch blocking and wetland restoration to increase baseflows.

River Ithon actions							
Action	Detail	Lead	Target end date	Phosphate reduction	Certainty	Progress	Next Steps
Opportunity catchment work, including tackling bank erosion and lack of instream habitat diversity.	WUF completing opportunity mapping for Ithon by end of July 2021 (HLF funded).				Could lead to projects which then have some certainty.		NRW to update TAG.
Encourage natural flood management and natural flooding including creation of floodplain meadows.	WUF completing opportunity mapping for Ithon by end of July 2021 (HLF funded).	NRW / WUF			Could lead to projects which then have some certainty.		NRW and WUF to discuss.
Identify sources discharging to ground, including septic tanks, landspreading etc.	WUF have completed SCIMAPs for Ithon.				Could lead to projects which then have some certainty.		NRW and WUF to discuss how best to utilise information.
Identify areas where large changes to farming practice are occurring, use catchment officers to approach farmers and encourage changes	WISE project already delivered in Ithon, need to ensure engagement is understood and shared.				Could lead to projects which then have some certainty.		WUF to speak to NRW.

River Ithon actions							
to farm design, including much wider buffer strips, interception ponds to trap runoff and slow flow etc.							

Sub-catchment plan – River Irfon

Two water bodies in the Irfon are achieving their orthophosphate targets. The remainder is failing, with significant failures in the lower Irfon. Failing waterbodies in Wales can be found in the NRW SAC Phosphate Compliance Report at: [Natural Resources Wales / Compliance Assessment of the River Wye SAC Against Phosphorus Targets](#).

Generic actions:

- Need for river restoration work along main river and tributaries to reduce pollution risk and ecological resilience;
- Identify potential problem point sources and loading discharging to the river network including DCWW, private works, septic tanks, Combined Sewer Overflows, agricultural units, anaerobic digester plants;
- Encourage natural flood management and natural flooding including creation of floodplain meadows,
- Identify sources discharging to ground including septic tanks, land spreading etc.
- Identify and tackle pathways of runoff from land;
- Target work by sub-catchments based on phosphates evidence report but also taking into account other relevant evidence.
- Where large changes to farming practice are occurring, use catchment officers to approach farmers and encourage changes to farm design, including much wider buffer strips, interception ponds to trap runoff and slow flow etc.
- Ditch blocking and wetland restoration to increase baseflows.

River Irfon actions							
Action	Detail	Lead	Target end date	Phosphate reduction	Certainty	Progress	Next Steps
Need for river restoration work along main river and tributaries to reduce pollution risk and ecological resilience.	Afonydd Cymru manage river restoration activities under the Fisheries Habitat Restoration Plan.				Could lead to projects which then have some certainty.		NRW to meet with WUF to discuss a programme of restoration across Wales.

Sub-catchment plan – Middle Wye including Tributaries (Builth Wells to Boughrood)

Failing waterbodies in Wales can be found in the NRW SAC Phosphate Compliance Report at: [Natural Resources Wales / Compliance Assessment of the River Wye SAC Against Phosphorus Targets](#).

Generic actions:

- Need for river restoration work along main river and tributaries to reduce pollution risk and ecological resilience;
- Identify potential problem point sources and loading discharging to the river network including DCWW, private works, septic tanks, Combined Sewer Overflows, agricultural units, anaerobic digester plants;
- Encourage natural flood management and natural flooding including creation of floodplain meadows,
- Identify sources discharging to ground including septic tanks, land spreading etc.
- Identify and tackle pathways of runoff from land;
- Target work by sub-catchments based on phosphates evidence report but also taking into account other relevant evidence.
- Where large changes to farming practice are occurring, use catchment officers to approach farmers and encourage changes to farm design, including much wider buffer strips, interception ponds to trap runoff and slow flow etc.
- Ditch blocking and wetland restoration to increase baseflows.

Sub-catchment plan – Llynfi and Hay tributaries

This part of the catchment is failing. Three water bodies in the Llynfi catchment are significantly failing their orthophosphate targets. Failing waterbodies in Wales can be found in the NRW SAC Phosphate Compliance Report at: [Natural Resources Wales / Compliance Assessment of the River Wye SAC Against Phosphorus Targets](#)

Generic actions:

- Need for river restoration work along main river and tributaries to reduce pollution risk and ecological resilience;
- Identify potential problem point sources and loading discharging to the river network including DCWW, private works, septic tanks, CSOs, agricultural units, AD plants;
- Encourage natural flood management and natural flooding including creation of floodplain meadows,
- Identify sources discharging to ground including septic tanks, land spreading etc.
- Identify and tackle pathways of runoff from land;
- Target work by subcatchments based on P evidence report but also taking into account other relevant evidence.
- Where large changes to farming practice are occurring, use catchment officers to approach farmers and encourage changes to farm design, including much wider buffer strips, interception ponds to trap runoff and slow flow etc.
- Ditch blocking and wetland restoration to increase baseflows.

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Llynfi and Hay tributaries actions							
Action	Detail	Lead	Target end date	Phosphate reduction	Certainty	Progress	Next Steps
Reduce nutrient inputs into Llangorse Lake; restore the inflow and outflow to encourage nutrient deposition on floodzones.					Unknown.		Discuss at TAG.

Sub-catchment plan – River Lugg

The River Lugg in Wales achieves mainly 'good' Water Framework Directive status for Soluble Reactive Phosphorous with only the Norton Brook at 'poor' status (2016-2018 data). The highest mean values occur in the lower reaches of the Lugg, but results suggest that even at the most upstream monitoring point in England orthophosphate levels significantly exceed the target.

In both the Upper Wye sub-catchment and the Lugg sub-catchment, source apportionment modelled analysis suggests that 25% of the total Phosphate load comes from Wastewater Treatment Works, 66% from agriculture and 9% from other sources. DCWW AMP 7 improvements will be completed between 2020 – 2024 and these percentages will change slightly to 67% agriculture, 23% sewage treatment works and 10% other. In the Lower Wye sub-catchment, 33% is from WWTW, 61% from agricultural sources with 6% other⁷. The other sources include highway discharges, industry and intermittent sewage discharges (which includes combined sewer overflows). Much of the Wye catchment is rural and until recently has been predominantly farmed for sheep and beef cattle. More recently there has been a rapid expansion of chicken farms and pig production.

Post PR19 – Fully Permitted Scenario⁸

- Target Concentration of 0.05mg/l is only predicted to be breached at the Mordiford Bridge sample point
- Predicted concentration = 0.055mg/l
- The predicted load at this location is 67.529kg/d compared with a target load based on the CSMG target of 0.05mg/l and flow of 1362Ml/d of 66.400kg/d
- Load to be removed after sewage works fair share has been achieved = **1.129kg/d**
- Agriculture as a whole appears to be responsible for approx. 90% of this remaining deficit. Load removal from agriculture to ensure compliance with the CSMG = 2.5kg/d which is 5.5% of current agricultural load.
- This represents a fully permitted PR19 scenario. Providing any growth can be accommodated within permitted headroom, we would expect this to be a worst-case scenario.

Next steps:

- TAG needs to explore additional measures that could be employed to reduce phosphate in the Lugg. The long list of measures in annex 1 can be referred to.
- Statutory agencies and other partners need to agree an appropriate safeguarding buffer, i.e., to overshoot the target to allow some flexibility. For example, in the Solent catchment an additional 20% is added on to nutrient neutrality proposals.

⁷ Evidence Review - Phosphate in the Wye/Lugg SAC Catchment. Environment Agency & Natural England, June 2020.

⁸ Nutrient Management Plan Technical Advisory Group summary paper on updating the NMP Action Plan, June 2020

River Lugg actions							
Action	Detail	Lead organisation	Target end date	Phosphate reduction	Certainty	Progress	Next Steps
Practical actions							
Integrated wetlands.	Herefordshire Council is investigating integrated wetlands to provide additional treatment below WwTWs.	Herefordshire Council		The Percentage of the reduction to be reserved for in river benefits has not yet been agreed.	High – Good level of scientific certainty around P removal. Good certainty around delivery as planning permission required.		Herefordshire Council to continue to progress.
Action	Detail	Lead organisation	Target end date	Phosphate reduction	Certainty	Progress	Next Steps
Thinking actions							
Strategic assessment of potential Phosphorus reduction interventions in the River Lugg catchment.	To take national datasets and map them against WUF data held at farm level, to try and identify and prioritise practical measures on the ground. To include a range of measures. This is a first attempt to try and see if on the ground knowledge can be mapped and	WUF/Herefordshire	Complete and submitted to Hereford.			Provided to HC on the understanding it is for internal use only due to the nature of the information. To assist with projects to target diffuse pollution.	Herefordshire Council & WUF to lead discussion at TAG.

River Lugg actions							
	used to drive strategic change.						
What further reduction options are there? Refer to shopping list.	List voluntary measures that reduce phosphate, quantify reduction, rank their certainty.	NE / EA / WUF	April 2021				Discuss at TAG.

Sub-catchment plan – Lower Wye

Generic actions:

- Need for river restoration work along main river and tributaries to reduce pollution risk and ecological resilience;
- Identify potential problem point sources and loading discharging to the river network including DCWW, private works, septic tanks, CSOs, agricultural units, AD plants;
- Encourage natural flood management and natural flooding including creation of floodplain meadows,
- Identify sources discharging to ground including septic tanks, land spreading etc.
- Identify and tackle pathways of runoff from land;
- Target work by subcatchments based on P evidence report but also taking into account other relevant evidence.
- Where large changes to farming practice are occurring, use catchment officers to approach farmers and encourage changes to farm design, including much wider buffer strips, interception ponds to trap runoff and slow flow etc.
- Ditch blocking and wetland restoration to increase baseflows.

Next steps

- NRW/EA/NE to keep TAG and NMP Board informed regarding river targets review.
- NRW/EA/NE to lead discussion at TAG on river monitoring programme.
- DCWW to lead discussion at TAG on Combined Sewer Overflows.
- TAG to discuss projects around inputs from septic tanks, inputs from industry, and hot spot localities. NRW & EA to provide data.
- TAG to discuss regulatory enforcement in the catchment and how it can be improved. Input from NRW & EA.
- TAG to consider how much 'certainty' can be attributed to voluntary actions such as land use change / on farm action, for next review of this Action Plan.
- TAG to consider whether there would be value in farmscoper re-runs and who could undertake them.
- TAG to discuss the value of a project to establish successes and failures from voluntary mechanisms e.g., CSF. This may need to be commissioned by Defra, to access data held by the Rural Payments Agency.
- TAG to seek update on RePhOKUS project.
- Farming Connect to update TAG on its catchments and priorities.
- NRW to update TAG on its targeted farm inspection programme.
- LPA's to consider a project around diffuse inputs from Highways.
- NRA & EA to lead discussion on relationship base flows, dilution, and surface/ground water abstractions to water quality in the catchment.
- EA/NE and other partners need to agree an appropriate safeguarding buffer for the River Lugg, i.e., to overshoot the target to allow some flexibility.
- Herefordshire Council to keep TAG informed of progress on integrated wetlands.
- Herefordshire Council and WUF to lead discussion at TAG on potential interventions in the Lugg catchment.
- NRW to monitor levels at Marteg and undertake regulatory enforcement.
- NRW / DCWW to investigate issues at Newbridge and establish actions.
- NRW to lead discussions around the best options for the Upper Wye.
- NRW & WUF to update TAG on River Ithon opportunity catchment work.
- Sub-catchment plans to be worked up.

Annex: Long list of practical measures for phosphate reduction

This section lists all the potential practical measures that could reduce Phosphate in the River Wye SAC. If a measure is required for site restoration, then it can be added into the relevant section of the action plan e.g., the relevant sub-catchment plan. Catchment scale action plans should be populated with measures that have a definable P reduction figure and are considered sufficiently certain.

Point source actions				
Measure	Detail	P reduction	Certainty	Source / Further information
Project to list and rank possible additional actions.				
Increased treatment of effluent	Through improvements planned and funded through Periodic Review process.	Would need to be calculated on a case by case basis.	High scientific and practical certainty.	
Foul water inception wetlands	Wetlands can be deployed either "in catchment" to remove phosphorous from surface runoff or stream flow, or to remove phosphorous from final effluent at WwTWs or package treatment plants.	<p>Would need to be calculated on a case by case basis.</p> <p>The main phosphorous removal mechanisms in wetlands are sedimentation of particulate phosphorous, sorption (binding) of dissolved phosphorous to sediment and plant uptake of bioavailable</p>	<p>Wetlands integrated into WwTW have high scientific and practical certainty</p> <p>Assuming maintenance requirements can be secured in perpetuity, wetlands provide a very promising mitigation option that can provide significant reductions in</p>	Stage 2 Mitigation report, Ricardo 2021

Point source actions				
		<p>phosphorous (Kadlec & Wallace, 2008).</p> <p>Reviews of wetland studies have reported median removal rates of around 60% of the inflow phosphorous concentrations for urban wetlands (Strecker, et al., 1992; Shatwell & Cordery, 1999) and 46% for wetlands with a variety of sources of water (Land, et al., 2016).</p>	<p>phosphorous loading to the Wye SAC.</p>	
Diverting surface water flows away from the sewage network	E.g., retrofitting SuDS	Would need to be calculated on a case-by-case basis.	Assumed high practical certainty, as it would be funded and secured.	
Addressing misconnections	This could be an important action.	Difficult to forecast. Might be possible on a case-by-case basis.	<p>Assumed high practical certainty, as it would be funded and secured.</p> <p>More misconnections in the future. Outside of anyone's</p>	

Point source actions				
			control / private occupiers.	
Reducing leakage from foul sewerage network		Difficult to forecast. Might be possible on a case-by-case basis.	Assumed high practical certainty, as it would be funded and secured. More leaks in the future.	
Reducing leakage from potable water supply	Most relevant where abstraction is an issue.	Difficult to forecast. Might be possible on a case-by-case basis.	Assumed high practical certainty, as it would be funded and secured. Likely to be more leaks in the future.	
Highways	Further work required to quantify action.			

On-farm actions				
Measure	Detail	P reduction	Certainty (an initial assessment only)	Source / Further information
Continued enforcement of regulations including Farming Rules for Water introduced in 2018		Further work is required to establish P reduction	Regulation so enforceable	
Regulatory controls on agricultural phosphorus		Further work is required to establish P reduction	Regulation so enforceable	

On-farm actions				
Concrete yard renewal	Mid-tier capital option, code RP15	Uptake of measures cannot be forecast. Phosphate reduction across catchment cannot be forecast, but case by case assessment may be possible.	Funded and more permanent due to being concrete.	
Sediment ponds and traps	Mid-tier capital option, code RP7	As above	Funded, which gives higher confidence. Features are likely to have a degree of permanence in the landscape. Management can be secured.	
Do not apply P fertilisers to high P index soils	This could have greater impact & certainty as is a legal requirement that currently lacks enforcement.	Potential.	Potential.	
Roofing (sprayer washdown, manure storage, livestock gathering, slurry stores and silage stores)	Mid-tier capital option, code RP28	As above	Funded, which gives higher confidence. Likely to have a degree of permanence as involves infrastructure. But could be changed in the future without input.	

On-farm actions				
Check dams	Mid-tier capital option, code RP12	As above		
Cross drains	Mid-tier capital option, code RP5	As above	Possibly better permeance due to involving infrastructure.	
Earth banks and soil bunds	Mid-tier capital option, code RP5	As above	Possibly better permeance due to involving earthworks, therefore more difficult to change.	
Piped culverts in ditches	Mid-tier capital option, code RP6	As above	Possibly better permeance due to involving infrastructure.	
Livestock trough pipework	Mid-tier capital option, code LV8	As above	Possibly better permeance due to involving infrastructure.	
Rainwater goods	Mid-tier capital option, code RP16	As above	Possibly better permeance due to involving infrastructure.	
Hard bases for livestock drinkers / feeders	Mid-tier capital option, code LV3/4	As above	Possibly better permeance due to involving infrastructure.	
Gateway relocation	Mid-tier capital option, code RP2	As above	Funded, which gives higher confidence. But easy to change and could be changed in the future without input.	
Livestock tracks	Mid-tier capital option, code RP4	As above	Possibly better permeance due to involving infrastructure. But could be	

On-farm actions				
			changed in the future without input.	
Pasture pumps	Mid-tier capital option, code LV5	As above	Possibly better permeance due to involving infrastructure. But could be changed in the future without input.	
Ram pumps	Mid-tier capital option, code LV6	As above	Possibly better permeance due to involving infrastructure.	
Arable reversion to absorb nutrients in flood water	Also need to be aware of nutrient/manure displacement. Any manure applied to land before reversion would be displaced to another site within the catchment.	As above	Would need to think about how to secure.	
Site solid mature heaps away from watercourses / field drains		As above	Possibly better permeance due to involving infrastructure.	
Do not apply manure to high-risk areas		As above	Would need to think about how to secure.	
Fence off rivers and streams from livestock		As above	Possibly better permeance due to involving infrastructure.	
Promote uptake of rainwater harvesting		As above	Possibly better permeance due to involving infrastructure.	

On-farm actions				
Reducing the intensity of agricultural production		As above	Would need to think about how to secure.	
Transporting excess phosphorous from dairy farms to arable farms		As above	Would need to think about how to secure.	
Livestock troughs	Mid-tier capital option, code LV7	As above	Easy to move.	
Make available compost to improve soil condition		As above	Not permanent.	
Do not spread FYM to fields at high risk times		As above	Not permanent.	
Establish cover crops in Autumn		As above	Not permanent.	
Leave autumn seedbeds rough		As above	Not permanent.	
Manage over-winter tramlines		As above	Not permanent.	
Use a fertiliser and manure nutrient supply		As above	Not permanent.	
Move feeders at regular intervals		As above	Not permanent.	

Land-use change				
Measure	Detail	P reduction	Certainty	Source / Further information
Agricultural land abandonment and woodland planting /	The main reductions in phosphorous leaching to the	Varies considerably, would need to be calculated	• Good potential but on a case-by-case basis	Stage 2 Mitigation report, Ricardo 2021

Land-use change				
reversion to semi-natural habitat	<p>environment from agricultural land abandonment come from halting fertiliser applications and removing animal waste inputs. However, there is the risk of nutrients being spread elsewhere in catchment.</p> <p>If land is being purchased, reversion to woodland or other semi-natural habitats, including orchards, can be used to secure the conversion from agricultural use.</p> <p>Woodland planting or facilitating the reestablishment of semi-natural vegetation cover may also increase phosphorous uptake in the short-term.</p>	on a case-by-case basis.	<ul style="list-style-type: none"> • Would require monitoring to determine short-term reductions in phosphorous export • Maintenance agreements would be required and need to be secured contractually to cover the mitigation scheme in perpetuity. 	
Woodland creation or	One of the main benefits of woodland	Woodland planting on agricultural land	Low potential in its own right, however the	Stage 2 Mitigation

Land-use change				
semi-natural reversion	planting is that it makes the cessation of intensive agriculture and associated P inputs more permanent and easier to monitor.	could accelerate the transition back to more natural soil phosphorous export, however there is uncertainty around the time taken for tree planting to reduce phosphorous loading from natural levels and different studies have reported increases, decreases and no effect of afforestation on total phosphorous in soils (Deng, et al., 2017). ... It should be noted that woodland planting or semi-natural revegetation have large uncertainties associated with scale of reductions in phosphorous loadings it can achieve.	main benefits are around ceasing the existing inputs rather than through the trees themselves.	report, Ricardo 2021
Wetland creation	Wetlands can be deployed either "in	Reviews of wetland studies have reported	Assuming maintenance requirements	Stage 2 Mitigation

Land-use change				
	<p>catchment" to remove phosphorous from surface runoff or stream flow, or to remove phosphorous from final effluent at WwTWs or package treatment plants.</p> <p>The main phosphorous removal mechanisms in wetlands are sedimentation of particulate phosphorous, sorption (binding) of dissolved phosphorous to sediment and plant uptake of bioavailable phosphorous (Kadlec & Wallace, 2008).</p>	<p>median removal rates of around 60% of the inflow phosphorous concentrations for urban wetlands (Strecker, et al., 1992; Shatwell & Cordery, 1999) and 46% for wetlands with a variety of sources of water (Land, et al., 2016).</p>	<p>can be secured in perpetuity, wetlands provide a very promising mitigation option that can provide significant reductions in phosphorous loading to the Wye SAC.</p>	<p>report, Ricardo 2021</p>
Riparian buffer creation	<p>A riparian buffer is a strip of land with permanent vegetation cover that runs along the edge of a river, separating the river from adjacent land uses. These</p>	<p>Median total phosphorous retention rates of 67% in riparian buffers have been reported (Hoffmann et al., 2009). However, riparian buffers</p>	<ul style="list-style-type: none"> • Good potential • Needs securing to give practical certainty • Monitoring and maintenance required to meet "in- 	<p>Stage 2 Mitigation report, Ricardo 2021</p>

Land-use change				
	buffers reduce surface flow rates and promote various mechanisms of phosphorous removal that lead to an improvement in river water quality.	require maintenance in perpetuity to stop them from switching from a sink to a source of phosphorous (Weigelhofer, et al., 2018).	perpetuity” requirements.	
Short rotation coppice	Energy crops such as poplar and willow can be grown on former arable land or on riparian buffer strips.	These crops can remove up to 15.8 kg P per 10 oven dry tonnes (ODT) per hectare per year (Potter, 1999). agricultural land abandonment.	<ul style="list-style-type: none"> • Good potential • Monitoring to assess the efficacy of the scheme may be required. • The ~30-year period of productivity of a single SRC plantation would require more mitigation/replanting of trees to maintain mitigation in perpetuity. 	Stage 2 Mitigation report, Ricardo 2021
Rewilding	See ‘Agricultural land abandonment and woodland planting / reversion to semi-natural habitat’.			
Reduced or Non-intensive agricultural use of farming land	See ‘Agricultural land abandonment and woodland planting /			

Land-use change				
	reversion to semi-natural habitat'.			

Actions on existing built environment				
Measure	Detail	P reduction	Certainty	Source / Further information
Replacing existing drainage system with something better	Such as a Package Treatment Plants (PTPs)	Variable with design, size, conditions. Would need to be quantified on a case-by-case basis. The final effluent phosphorous concentration is dependent on the device used and there are now highly efficient systems available that can reportedly achieve phosphorous concentrations of < 1.5 mg P/l.	High	Stage 2 Mitigation report, Ricardo 2021
Increasing the proportion of green infrastructure	Securing land with no P inputs Could include space for SuDS	Would need to be quantified on a case-by-case basis.	Assuming secured in perpetuity	
Promote update of Rural Sustainable Drainage Systems		Variable with design, size, conditions. Would need to be quantified on	Assuming secured in perpetuity	

Actions on existing built environment				
(RSuDS) / Silt traps on rural land		a case-by-case basis.		
Diverting surface water flows away from the sewage network		Possible to calculate on a case-by-case basis.	Assuming secured and delivered as a standalone.	
Water efficiency measures	<p>Water efficiency measures typically involve installation of water efficient bathroom and kitchen fittings.</p> <p>Reducing water usage reduces phosphorous loading from WwTWs by reducing the flow of wastewater to a treatment works and thus reducing the load. However, it is important to note that increasing water efficiency will only reduce phosphorous loading at works that have phosphorous permits.</p>	Would need to be quantified on a case-by-case basis.	The effectiveness of this method is difficult to measure without household monitoring using smart meters and the potential for changes to less water efficient fittings within the lifetime of a development raises questions over whether this mitigation measure would pass the test of in perpetuity reduction in phosphorous loading.	Stage 2 Mitigation report, Ricardo 2021
Addressing misconnections	See point source actions	Would need to be quantified on a case-by-case basis.	More misconnections in the future.	
Reducing leakage from	See point source actions	Would need to be quantified on	More leaks in the future.	

Actions on existing built environment				
foul sewage network		a case-by-case basis.		
Reducing leakage from potable water supply	See point source actions	Would need to be quantified on a case-by-case basis.	More leaks in the future.	

Actions on new developments				
Measure	Detail	P reduction	Certainty	
Increasing the proportion of green infrastructure	Securing land with no P inputs. Could include space for SuDS.	Would need to be quantified on a case-by-case basis.	Assuming secured in perpetuity	
Sustainable Drainage Solutions	SuDS comprise a range of different types of blue-green infrastructure to reduce runoff rates and provide natural water quality treatment, including phosphorous removal.	Would need to be quantified on a case-by-case basis. The long-term performance of SuDS would also need to be secured through maintenance agreements.	<ul style="list-style-type: none"> • Compliance is likely if a scheme is well designed and scaled appropriately. • There is an evidence base to support the use SuDS wetlands to phosphorous removal. • Maintenance agreements can secure mitigation in perpetuity. 	Stage 2 Mitigation report, Ricardo 2021

Appendix 1: Phosphate levels and targets

Targets from the source to the Welsh/English border can be found here: [Natural Resources Wales / Compliance Assessment of the River Wye SAC Against Phosphorus Targets](#) along with additional information. The individual waterbodies in Wales and their targets are also set out below.

Compliance for the River Wye SAC Soluble Reactive Phosphate targets in Wales

Waterbody Name	Sample Point Target ($\mu\text{g l}^{-1}$)	N Samples	Annual Mean ($\mu\text{g l}^{-1}$)	Growing Season Mean ($\mu\text{g l}^{-1}$)	Assessment	
Wye - conf Afon Tarenig to conf Afon Bidno	50361	10*	29	2	2	Pass
Wye - conf Afon Bidno to conf Afon Marteg	50004	10	33	2	2	Pass
Afon Bidno - source to conf R Wye	50003	10	29	1	1	Pass
Wye - conf Afon Marteg to conf Afon Elan	50177	20	34	11	14	Pass
Afon Marteg - source to conf R Wye	50005	13	33	7	6	Pass

Waterbody Name	Sample Point Target ($\mu\text{g l}^{-1}$)	N Samples	Annual Mean ($\mu\text{g l}^{-1}$)	Growing Season Mean ($\mu\text{g l}^{-1}$)	Assessment
Afon Elan - Caban-coch Rsvr to conf R Wye	50008	10	-	-	Not Assessed
Wye - conf Afon Elan to conf R Ithon	50010	10	29	37	Fail
Ithon - source to conf Llaethdy Bk	51354	10	29	8	Pass
Llaethdy Bk - source to conf R Ithon	51352	10	16	7	Pass
Gwenlas Bk - source to conf R Ithon	51353	10	23	24	Fail
Ithon - conf Llaethdy Bk to conf Gwenlas Bk	50086	10	29	13	Fail
Camddwr Bk - source to conf R Ithon	50820	13	17	20	Fail
Ithon - conf Gwenlas Bk to conf Camddwr Bk	50086	10	29	13	Fail
Aran - source to conf R Ithon	50084	15	-	-	Not Assessed
Mithil Bk - source to conf R Ithon	50825	15	18	40	Fail
Howey Bk - source to conf R Ithon	50089	15	16	25	Fail

Waterbody Name	Sample Point Target ($\mu\text{g l}^{-1}$)	N Samples	Annual Mean ($\mu\text{g l}^{-1}$)	Growing Season Mean ($\mu\text{g l}^{-1}$)	Assessment	
Nantmel Dulas - source to conf R Ithon	50821	10	17	21	17	Fail
Ithon - conf Camddwr Bk to conf R Wye	50085, 50090	25	31	17	16	Pass
Clywedog Bk - source to conf Bachell Bk	50823	10	17	9	8	Pass
Bachell Bk - source to conf Clywedog Bk	50824	10	8	4	-	Pass
Clywedog Bk - conf Bachell Bk to conf R Ithon	50087	10	26	15	16	Fail
Wye - conf R Ithon to conf R Irfon	50813	15	29	8	8	Pass
Afon Gwesyn - source to conf R Irfon	57103	10	15	12	10	Fail
Irfon - conf Afon Gwesyn to conf Cledan	57712	10	27	8	7	Pass
Cledan - source to conf R Irfon	50818	10	21	18	11	Fail
Tirabad Dulas - source to conf R Irfon	50077	10	19	8	8	Pass
Afon Cammarch - source to conf R Irfon	50078	10	27	46	13	Fail

Waterbody Name	Sample Point Target ($\mu\text{g l}^{-1}$)	N Samples	Annual Mean ($\mu\text{g l}^{-1}$)	Growing Season Mean ($\mu\text{g l}^{-1}$)	Assessment	
Garth Dulas - source to conf R Irfon	50079	10	28	15	22	Fail
Chwefru - source to conf R Irfon	50081	10	29	22	26	Fail
Irfon - conf Cledan to conf R Wye	50080	10	27	24	38	Fail
Builth Dulas Bk - source to conf R Wye	50501	15	16	16	19	Fail
Duhonw - source to conf R Wye	50012	15	29	15 ^x	15 ^x	Fail
Edw - source to conf Colwyn Bk	51355	15	28	30	39	Fail
Camnant Brook - source to confluence R Edw	50510	15	24	24	32	Fail
Edw - conf Camnant Bk to conf Clas Bk	50815	15				Not Assessed
Edw - conf Clas Bk to conf R Wye	51305	15	28	20	23	Fail
Clettwr Bk - source to conf R Wye	50015	15	21	41	50	Fail
Bach Howey Bk - source to conf R Wye	50016	15	22	29	36	Fail

Waterbody Name	Sample Point Target ($\mu\text{g l}^{-1}$)	N Samples	Annual Mean ($\mu\text{g l}^{-1}$)	Growing Season Mean ($\mu\text{g l}^{-1}$)	Assessment	
Scithwen Bk - source to conf R Wye	50017	15	21	19	21	Fail
Wye - conf R Irfon to Scithwen Bk	50440	16	29	23	29	Fail
Triffwrdd - source to Dulas	50811	15	14	70	40	Fail
Dulas Bk - source to conf Afon Llynfi	50094	25	9	74	-	Fail
Afon Llynfi - conf Dulas Bk to conf R Wye	50098	25	26	77	90	Fail
Wye - Scithwen Bk to Bredwardine Br (Wales)	50018 ^[1]	30	34	<21 ^[2]	<23	Pass
Wye - conf Walford Bk to Bigsweir Br	50032	39	34	52	55	Fail

- ^[1] This is a cross-border unit.

Current Water Framework Directive Soluble Reactive Phosphate targets for the R. Lugg (SSSI) in Wales

WB ID	Waterbody Name	Spt No.	Spt Name	Altitude (m)	Alkalinity (mg/l CaCO ₃ at pH 4.5)	High (mg/l)	Good (mg/l)	Moderate (mg/l)	Poor (mg/l)
GB109055042100	Lugg Bk - source to conf Bleddfa Bk	50869	RIVER LUGG AT MONAUGHTY	194	128	0.021	0.043	0.12	0.862
GB109055042020	Lugg - conf Bleddfa Bk to conf Cascob Bk	50832	R LUGG AT WHITTON	179	111	0.021	0.042	0.12	0.861
GB109055042010	Lugg - conf Cascob Bk to conf Norton Bk	Not sampled							
GB109055042030*	Lugg - conf Norton Bk to conf R Arrow*	50037	R.LUGG @ ROSSERS BR.PRESTEIGNE	130	117	0.025	0.051	0.137	0.911

* WBs managed by EA

Orthophosphate/SRP targets relating to the Wye and Lugg in England

	Current NMP P target (mg/l)	Common Standards Monitoring Guidance P near natural (mg/l)	Common Standards Monitoring Guidance proposed max P (mg/l).	NRW P target (mg/l)	WFD HES (mg/l)	Water Framework Directive Good Ecological Status (mg/l)	SSSI unit
R.WYE AT BREDWARDINE BRIDGE	0.03	0.03	0.05	0.03			5
R WYE AT BRIDGE SOLLARS BRIDGE	0.03	0.03	0.05		0.024	0.048	5
R WYE AT VICTORIA BRIDGE	0.03	0.04	0.06		0.026	0.051	4
R.WYE AT HOARWITHY BRIDGE	0.05	0.04	0.06		0.033	0.063	4
R.WYE AT WILTON BRIDGE.	0.05	0.04	0.06		0.034	0.065	3
R.WYE 800M D/S KERNE BRIDGE, GOODRICH	0.05	0.04	0.06		0.035	0.067	3
R.WYE,HUNTSHAM BR.SYMONDS YAT	0.05	0.04	0.06	0.039	0.036	0.069	3
							1
R LUGG @ MORTIMERS CROSS BR.	0.05	0.015	0.025		0.03	0.05	2
R LUGG AT FORD BRIDGE	0.05	0.03	0.05		0.037	0.07	2
R LUGG AT WERGINS BRIDGE	0.05	0.03	0.05		0.039	0.074	2

Appendix 2: Habitats Directive

The achievement of Favourable Conservation Status (FCS) is not an objective that applies at the level of the individual sites. Rather it is a wider objective to which each individual site contributes. Therefore, favourable conservation as defined in Articles 1(e) and 1(i) of the Habitats Directive the conservation objectives for an individual site are intended to express what is considered to be that site's appropriate contribution to achieving FCS.

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- its natural range and areas it covers within that range are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' when:

- population dynamics data on the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis."

List of Abbreviations

AA – Appropriate Assessment
 AD – Anaerobic Digestion
 AMP – Asset Management Plan
 BAS – Biosolids Assurance Scheme
 CFE – Campaign for the Farmed Environment
 CJEU – Court of Justice for the European Union
 CSF – Catchment Sensitive Farming
 CSMG – Common Standards Monitoring Guidance
 CSO – Combined Storm Overflow
 DCWW – Dwr Cymru Welsh Water
 DWPP – Diffuse Water Pollution Plan
 EA – Environment Agency
 FCS – Favourable Condition Status
 HCILG – Herefordshire Construction Industry Lobby Group
 HRA – Habitats Risk Assessment
 JNCC – Joint Nature Conservation Committee
 LPA – Local Planning Authority
 NE – Natural England
 NFU – National Farmers Union
 NMP – Nutrient Management Plan
 NRW – Natural Resources Wales
 PTP – Private Treatment Plant
 RBD – River Basin District
 RBMP – River Basin Management Plan
 RephoKus – Re-focusing phosphate use in the UK food system
 RPA – Rural Payments Agency
 RSuDS – Rural Sustainable Drainage Systems
 SAC – Special Area of Conservation
 SAGIS – Source Apportionment Geographical Information System
 SNCO – Special Nature Conservation Order
 SOAF – Storm Overflow Assessment Framework
 SPA – Special Protection Area
 SRP – Soluble Reactive Phosphorus
 SSAFO – Silage, Slurry and Agricultural Fuel Oil Regulations
 SSSI – Site of Special Scientific Interest
 STW – Sewage Treatment Works
 SuDS – Sustainable Drainage Systems
 TAG – Technical Advisory Group
 WB – Water Body
 WFD – Water Framework Directive
 WPZ – Water Protection Zone
 WUF – Wye and Usk Foundation
 WwTW – Wastewater Treatment Works

River Wye governance

October 2023

How do we want to work?

- Open collaboration that informs and builds consensus
- Clear decisions on priorities, actions and timescales – including ownership – with transparency
- A single joined-up cross-border approach at an operational level with influence to ensure the same at a political level
- Clear route to influence that can call for changes that need political, industry and societal buy-in
- A constructive, impartial ‘board’ which can:
 - Influence – government, industry, communities etc
 - Advise – decision makers on their proposals, plans and decisions/actions
 - Challenge – decision makers on their proposals, plans and decisions/actions
- Sharing achievements / progress being made

Wider framework for the Wye

Statutory bodies (English & Welsh environmental bodies, local authorities & DCWW) have formed a River Wye Statutory Officers Group (SOG)

Senior officers from the organisations with statutory responsibility will meet to discuss and agree collective decisions (to be ratified by their own organisations as necessary) about actions, priorities and resources

- It owns the Nutrient Management Plan (NMP) – it will revise the current plan then oversee delivery of and maintain the new plan*
- It supports and directs the Technical Advisory Group (TAG) working groups*
- It works collaboratively with the NMB, seeking input on proposals and working jointly on delivery where appropriate*
- This formalises a pre-existing collaboration*

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Refocussed Technical Advisory Groups (TAG)

- Will be reshaped and resourced, linked to priorities set by SOG*
- Membership will be drawn from SOG members with members/volunteers from the wider stakeholder community*
- Strong link to the Catchment Partnership*
- This is not a new group*

River Wye Statutory Officers Group (SOG)

<p>Purpose</p>	<p>A collaboration of the statutorily responsible organisations operating within the catchment to restore the Conservation Status for the River Wye Special Area of Conservation.</p> <p>The group as a whole does not have any formal powers or resources and as such cannot make any decisions collectively but it's members can on behalf of their individual organisations and Government. The purpose of this group is for members to reach agreement (subject to ratification within their own organisations as necessary) on how they will collectively use their powers and resources to improve the catchment condition. The SOG will share this via a revised Nutrient Management Plan.</p>					
<p>Membership</p>	<p>Voluntary forum made up of officers from the bodies with relevant statutory responsibilities within the catchment.</p> <table border="1" data-bbox="496 511 2435 682"> <tr> <td data-bbox="496 511 1141 682"> <ul style="list-style-type: none"> • Natural England • Natural Resources Wales • Environment Agency • Dwr Cymru Welsh Water </td> <td data-bbox="1141 511 1786 682"> <ul style="list-style-type: none"> • Herefordshire Council • Powys County Council • Forest of Dean District Council </td> <td data-bbox="1786 511 2435 682"> <ul style="list-style-type: none"> • Monmouthshire County Council • Brecon Beacons National Park Bannau Brycheiniog </td> </tr> </table>			<ul style="list-style-type: none"> • Natural England • Natural Resources Wales • Environment Agency • Dwr Cymru Welsh Water 	<ul style="list-style-type: none"> • Herefordshire Council • Powys County Council • Forest of Dean District Council 	<ul style="list-style-type: none"> • Monmouthshire County Council • Brecon Beacons National Park Bannau Brycheiniog
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<p>¹⁰⁶ Operating principles</p>	<ul style="list-style-type: none"> • Meetings will be held quarterly (monthly initially) in order to allow the SOG to task work resulting from its discussions. • Meetings will be held privately with updates and progress against the plan being shared publicly – this will be reviewed after 6 months. • The group will work openly and collaboratively with the NMB, seeking and taking into account the NMBs views in its decision making. • Individual officers will make decisions on behalf of their organisations in line with delegated powers for specified remits and spend. 					
<p>Terms of reference</p>	<ul style="list-style-type: none"> • The SOG will work together to review contributions across all bodies, working collaboratively to achieve the objectives and ensuring all members understand the issues and work together to resolve them. • The group may make recommendations or requests of the bodies that make up its membership, via the relevant SOG member. • The SOG will produce a publicly available Nutrient Management Plan setting out these actions. It will keep it under review proportionately annually and carry out a fuller review once every 4 years. • Members will be responsible for delivery of the actions their organisation commits to on the basis of the SOG's recommendations or requests. • The SOG will review performance and delivery of agreed actions as a whole and report on progress publicly. • The SOG will commission the Technical Advisory Groups where additional actions or evidence is required to help inform its formation of views and recommendations / requests. • Where actions are driven by a particular remit or have a particular consequence, no one area or sector has automatic priority. Each organisation remains responsible for decisions on and delivery of its own remit, but it is expected to do this in full understanding of the impact this has on others' ability to discharge their own remit. • The SOG will share its plan and progress with the NMB seeking advice / views in advance of changes and being open to questions / challenge on progress. It will also work collaboratively with NMB members on delivery where appropriate. 					

Technical Advisory Groups (TAGs)

<p>Purpose</p>	<p>A collective of task and finish (T&F) groups supporting the SOG by providing technical information and analysis. The role is to identify, develop and analyse options to reduce nutrients, advise the SOG and Forum and, where appropriate, lead or support delivery. This includes providing a technical analysis of progress against the action plan.</p> <p>The group is commissioned by the SOG and focusses on the most immediate and important tasks. Initial main priorities are:</p> <ul style="list-style-type: none"> • Action plan T&F group – a group which updates the action plan, led by a dedicated project officer • Data & Evidence Group- providing the required data and analysis to support the above group as well as a forward look • NMP Tools T&F group – finalising the immediate priority development of P tool 		
<p>Membership</p> <p>107</p>	<p>Action Plan:</p> <ul style="list-style-type: none"> • Environment Agency • Natural England • NRW • Dwr Cymru • Farm Herefordshire • Wye and Usk foundation • Herefordshire Council 	<p>Data & Evidence</p> <ul style="list-style-type: none"> • Environment Agency • Natural England • NRW • Dwr Cymru 	<p>NMP tools</p> <ul style="list-style-type: none"> • Farm Herefordshire • Environment Agency • Wye and Usk Foundation • Natural England • NRW
<p>Operating principles</p>	<ul style="list-style-type: none"> • The TAG is commissioned by SOG with oversight by a project manager reporting back to the SOG and NMB. • The T&F groups will meet as required in private, with the action plan group meeting monthly as a minimum initially. • Membership will be as required for each T&F group and will develop and change as the task evolves. • The TAG will engage with the NMB to ensure relevant data, evidence and information is understood and considered. NMB members may join a TAG group as appropriate to provide technical information. • The TAG will ensure strong communication with the Caba to avoid duplication and drive efficiency through shared evidence and data. 		
<p>Terms of reference</p>	<ul style="list-style-type: none"> • The TAGs are technical groups working collaboratively across the relevant bodies involved for their individual remit. They are not decision-making bodies and they are responsible but not accountable for their work. • The TAGs are responsible for delivering and reporting on progress of NMP actions as commissioned by the SOG. • The TAG has a dedicated project officer who leads the Action plan T&F group and coordinates all TAG T&F groups. • The TAG project manager will sit on the Catchment Partnership steering group to ensure strong two-way communication between the groups 		

River Wye Nutrient Management Board

Stakeholders coming together to influence, advise and challenge those having an impact on the river or delivering improvements across the catchment

- *Wide group of partners with an interest in improving water quality in the catchment and a role in delivering that outcome who come together to:*
 - *to influence decisions and actions that have an impact, directly or indirectly, on the catchment,*
 - *to advise decision makers on their proposals, plans and decisions/actions,*
 - *to challenge decision makers on their proposals, plans and decisions/actions.*
- *Works with TAG to contribute to delivery of actions as required*
- *This is a refocussing of the existing Board, not a new group*

Nutrient Management Board (NMB)

<p>Purpose</p>	<p>The Board does not have any formal powers or resources and as such cannot make any decisions, this lies with the statutory organisations via the SOG. Its primary role is to provide a forum for all stakeholders to come together to influence, advise and challenge those having an impact on the river or delivering improvements across the catchment.</p>
<p>Membership</p> <p>109</p>	<p>Voluntary board of all partners and stakeholders with an interest in improving water quality in the catchment and a role in delivering that outcome. The Board retains the right, though it is considered likely to be used infrequently, to vote on issues.</p> <ul style="list-style-type: none"> • Herefordshire Council Powys County Council • Forest of Dean District Council • Monmouthshire County Council • Brecon Beacons National Park Bannau Brycheiniog • Catchment based public interest groups – e.g. Friends of Upper Wye, Friends of Lower Wye, Save the Wye Coalition • Countryside Land & Business Association • Catchment Partnership member • Chair of the stakeholder group • National Farmers Union • Herefordshire Construction Industry rep • A representative for the river • Other members as Board see appropriate <p>Members of the River Wye SOG who will attend in a full partnership capacity but not vote:</p> <ul style="list-style-type: none"> • Natural England • Natural Resources Wales • Environment Agency • Dwr Cymru Welsh Water
<p>Operating principles</p>	<ul style="list-style-type: none"> • The Board will be transparent and open, whilst being mindful to the sensitivity of discussing draft evidence, proposals and information. • The Board will be inclusive of all and will work collaboratively across all partners. • Meetings will be held quarterly and will include an open session, broadcast digitally, where all interested individuals can ask questions (in advance) or watch proceedings. Meetings will also include a closed session, if needed, to discuss advise to the SOG on any material that cannot be made public at that time. • The Board will be chaired by Local Authority elected representatives with one (Herefordshire) taking the Chair and a second (Powys) acting as Vice-Chair.
<p>Terms of reference</p>	<ul style="list-style-type: none"> • The role of the NMB is three-fold: <ul style="list-style-type: none"> • to <u>influence</u> decisions and actions that have an impact, directly or indirectly, on the catchment, • to <u>advise</u> decision makers on their proposals, plans and decisions/actions, • to <u>challenge</u> decision makers on their proposals, plans and decisions/actions. • The NMB will work with all other organisations or groups as necessary to support this aim including, but not limited to, the Caba, the Cabinet Commission and any TaskForce that may be appointed by either government. • The NMB will communicate widely with stakeholders about its common views of the SOG’s updated plan and progress to deliver this (the actual plan and progress will be communicated by the SOG) both as a way of keeping people informed and of having wider influence. • Members of the NMB will sit on the TAGs or contribute to delivery of actions as appropriate. • The NMB will be bound by the Nolan principles of selflessness, integrity, objectivity, accountability, openness, honesty and leadership.

