



Monmouthshire Replacement Local Development Plan 2018-2033

Phosphate Position Paper
April 2026



monmouthshire
sir fynwy

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PHOSPHATE POSITION PAPER

1. Introduction and Background

Purpose and Scope

- 1.1. The purpose of this Paper is to provide additional information on the Council's approach to addressing the effect of proposed development in the Replacement Local Development Plan (RLDP) on riverine Special Areas of Conservation (SACs) in relation to the discharge of phosphorous, as requested by the inspectors appointed to examine the RLDP. Full details of the matters raised by the inspectors are set out in their letter to the Council (1st December 2025) attached at Appendix 1.
- 1.2. This Paper is an update to the February 2026 version. It provides further evidence to demonstrate that proposed developments in the RLDP can be brought forward without having a likely significant effect on the condition of the European designated sites. To assist the Council in responding the inspectors' requests, AECOM have been appointed to provide supporting nutrient neutrality information, including nutrient budget calculations associated with the implementation of the RLDP and the identification of strategic options to mitigate any impacts, where necessary. This Paper has regard to the accompanying documents produced by AECOM which are referenced throughout, and appended to, this Paper.
- 1.3. To address the matters raised by the inspectors, the Paper sets out the following:
 - The significant environmental challenge posed by water quality issues in the River Wye and River Usk SAC catchments and an overview of the approach and work undertaken to date by Monmouthshire County Council (MCC) and its partners in addressing the issues, including an overview of the current and future strategies and actions of MCC and relevant Nutrient Management Boards.
 - Information on the potential increase in nutrient loading from the implementation of the RLDP, as provided in AECOM's Technical Note on the Monmouthshire RLDP 2018-2033 Nutrient Budget Calculations for the Usk and Wye Catchments, attached at Appendix 2.
 - Further investigation of whether phosphorus contributions from the developments proposed within the RLDP via foul wastewater treated at Monmouth Wastewater Treatment Works (WwTW) could cause deterioration of the Lower River Wye back to a failing condition, and the implications of this on nutrient neutrality restrictions and the need for any mitigation. This associated Technical Note is set out in Appendix 3.
 - Consideration of the recent judgement of *CG Fry & Sons Ltd v SSHCLG* [2025] UKSC 35 (in relation to the requirement for HRA on the discharge of planning conditions) on the delivery of committed sites and identify any assumptions made in relation to windfall allowances.
 - Consideration of whether nutrient contributions from non-residential development need to be considered.
 - Investigation of strategic mitigation solutions for RLDP development proposals in the Usk and Wye catchments. A Strategic Mitigation Options Report is attached at Appendix 4.
 - A Nutrient Mitigation Action Plan which is provided at Appendix 5.
 - A high-level overview of the viability implications of potential mitigation measures.
 - A review of the Deposit RLDP policies, identifying any amendments required in light of the matters raised. Updates to the Infrastructure Delivery Plan are also set out. A

schedule of proposed changes to the RLDP capturing these updates has been prepared and is attached at Appendix 6.

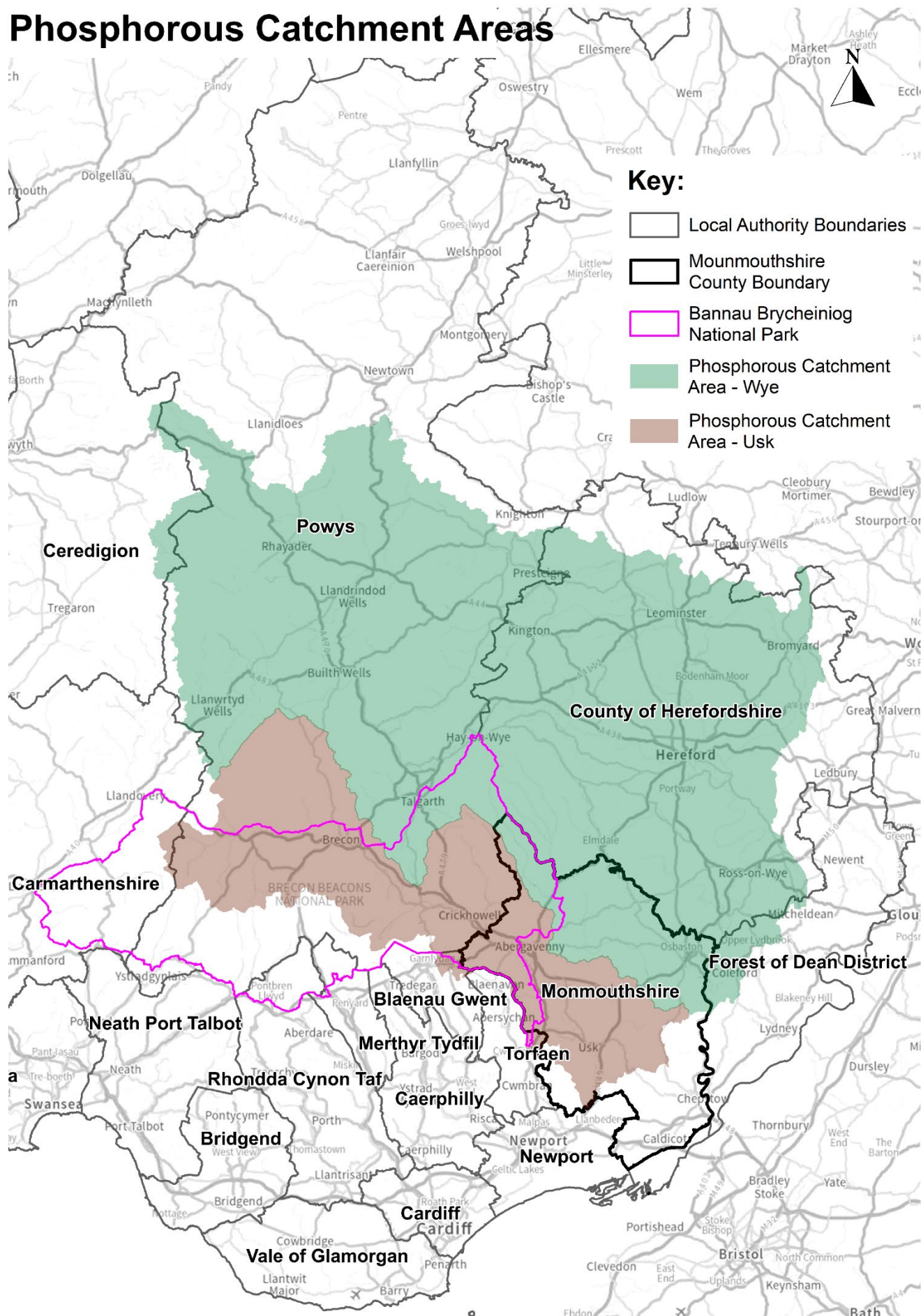
- An updated Habitats Regulations Assessment (HRA) Addendum to consider the aforementioned nutrient neutrality evidence base and updated national guidance has been prepared and is attached at Appendix 7.

- 1.4. A Developer Mitigation Handbook will be prepared which will reflect the Nutrient Mitigation Action Plan. Developers will be able to use the handbook to better understand the range of mitigation options available for phosphorous and their implementation.
- 1.5. It is recognised that addressing the impacts of phosphates is an evolving process. This Position Paper will form part of the forthcoming SPG on water quality, and as additional information becomes available will continue to be updated as necessary to reflect the evolving context.

Background and Context

- 1.6. The impact of excess nutrients, including phosphates, has become a significant environmental challenge in riverine SACs across the country, including Wales. These rivers are designated for their high ecological value, however, many are failing to meet strict phosphorous targets designed to protect sensitive habitats and species. High concentrations of nutrients, including phosphorus, can lead to the process of nutrient enrichment (i.e. eutrophication) and can alter the balance of plant species in our rivers causing significant ecological damage. Evidence from Natural Resources Wales (NRW) in January 2021 indicated that over 60% of SAC river water bodies in Wales were failing to meet the revised water quality targets for phosphorus, including the Usk and Wye in Monmouthshire.
- 1.7. Monmouthshire lies at the lower reaches of both the River Usk and River Wye, before they enter the Severn Estuary. While the issues set out affect the whole of the non-tidal stretches of both rivers, this paper focuses on the implications for Monmouthshire in terms of the development of the RLDP.
- 1.8. The Rivers Usk and Wye within Monmouthshire are designated as SACs and are, therefore, subject to strict protection under the Habitats Regulations. The extent of the SAC river catchments is illustrated in Map 1. Evidence published in 2021 indicated that both rivers had unacceptably high levels of phosphates resulting in harm to water quality and the ecosystem. More recent data does, however, indicate that water quality across the rivers in Monmouthshire has improved since 2021, and is considered further below.

Phosphorous Catchment Areas



- 1.9. Evidence demonstrates that approximately two-thirds of phosphate pollution within these river catchments derives from agricultural sources, including intensive poultry farming, fertiliser spreading and run-off from agricultural fields.

Table 1: Phosphates Source Apportionment

Source	River Usk	River Wye
Agriculture	67%	72%
Wastewater Treatment Works	21%	23%
Intermittent Discharges	1%	2%
Other	11%	3%

Source: SAGIS (Source Apportionment Geographical Information System) Modelling, 2022

- 1.10. In light of evidence demonstrating the environmental impacts of excess nutrients in rivers, and following the outcome of a high-profile court case, known as the Dutch case¹, it became clear that stronger measures were required beyond traditional Nutrient Management Plans to improve water quality and safeguard river habitats. Consequently, in January 2021 NRW issued planning guidance relating to the output of nutrients, including phosphates, from development proposals to ensure that the environmental capacity of the affected rivers does not deteriorate further. The guidance ensures that developments proposals² in affected areas can only be granted planning permission where they are able to demonstrate a neutral impact or improvement in phosphate levels (i.e. nutrient neutrality or betterment). This planning guidance impacts on the decision-making of a number of local planning authorities across Wales, including Monmouthshire, in relation to their riverine SACs. Of note, NRW issued updated guidance in February 2026, and an all-Wales nutrient budget calculator has been developed to support the assessment of phosphorus and nitrogen impacts from new developments.
- 1.11. As part of the RLDP preparation process, the Council has to evidence that proposed site allocations can demonstrate a deliverable pathway to neutrality or betterment and/or ensure that development proposals do not have a significant adverse impact on water quality within the rivers. Following the introduction of NRW's guidance, Monmouthshire County Council has taken a leading role in working proactively and collaboratively with a range of organisations including NRW, Dŵr Cymru Welsh Water (DCWW), Welsh Government, other local authorities, environmental groups, nutrient management boards, the development industry and other stakeholders to further our understanding of the issue and identify solutions to enable growth and allocate sites through the RLDP process that do not harm the

¹ The ruling in the European Court of Justice of the EU (CJEC) known as the Dutch case resulted in a change to how the Habitats Regulations are applied to plans or projects in the catchments of European designated sites that are under pressure from pre-existing levels of nutrients. As a result of this case, any new development within affected habitats site catchments that could increase nitrogen and phosphate deposition into the protected sites above consented levels must show that they are 'nutrient neutral'. Under the Habitats Regulations, planning authorities must consider the nutrient impacts of proposed developments on water quality within SAC river catchments.

² This guidance applies to a range of development types, including residential, tourism, agricultural buildings and non-residential uses generating wastewater.

environmental capacity of our SAC rivers but instead see the health of these rivers safeguarded and restored. Details of the collaborative work, progress to date and implications for the RLDP are set out below.

Nutrient Management Boards

- 1.12. Monmouthshire County Council is a member of the Usk Catchment Partnership, the Wye Nutrient Management Board and the Wye Statutory Officers Group. These groups seek to address the catchment issues through a whole catchment approach to achieve long-term ecological sustainability within the river catchments.
- 1.13. As part of the Council's commitment to addressing the climate and nature emergency and in recognition of the urgent need to address water quality in the County, the Motion for Rivers and Ocean Action Plan sets out measures to tackle river water quality, utilising existing partnerships to provide a co-ordinated approach. As part of this, the Council has continued involvement with the Wye Nutrient Management Board and Usk Catchment Partnership to identify and implement options for delivering improvements in water quality.

The Usk Catchment Partnership & The River Usk Nutrient Management Plan

- 1.14. The Usk Catchment Partnership is a Welsh Government supported initiative bringing together statutory bodies and interested parties around a shared aim to restore the ecological health and resilience of the River Usk and its catchment. The main contributors include local planning authorities, Wye and Usk Foundation, Gwent Wildlife Trust, NRW, DCWW, farming representatives, community representatives and Cardiff Water School.
- 1.15. In April 2025, the Partnership published The River Usk Nutrient Management Plan (NMP)³. The NMP aims to achieve nutrient neutrality, improve SAC feature conditions, and enable sustainable development while enhancing resilience to climate change and flooding. The plan is the first iteration of a long-term strategy, relevant to 2030 but designed to evolve through bi-annual updates. The Plan provides a useful overview of the main pressures on water quality in the River Usk including sources of phosphorus pollution. As outlined in Table 1 above, agricultural intensive practices and legacy phosphorus in soils are major contributors, accounting for 67% of phosphorus in the River Usk SAC catchment. Wastewater Treatment Works account for an additional 21% of phosphorus load. NRW's permit review imposes tighter phosphate (P) limits of at least 5mg/litre, affecting 30 WwTWs, with AMP upgrades accelerating compliance. Private sewage systems, including septic tanks and package treatment plants, and other factors including biosolids spreading, housing growth (proposing to connect to smaller WwTWs without a phosphorus limit in the environmental permit), climate change (altered rainfall patterns, higher temperatures), modified watercourses, and abstraction pressures account for a small proportion of the phosphorus load.
- 1.16. To address the main causes of water quality issues in the River Usk catchment, the NMP establishes the following key objectives:
 - Reduce phosphorus loading from rural land use, wastewater treatment works (WwTWs), and private sewage systems.
 - Enable nutrient-neutral housing development across the catchment.
 - Promote Nature-based Solutions (NbS) such as soil health improvements, tree planting, wetlands and flow pathway measures to reduce nutrient runoff and provide multiple benefits, including flood mitigation and biodiversity enhancement.

³ https://uskcatchmentpartnership.wales/wp-content/uploads/2025/08/Usk-NMP_Final.pdf

- Engage farmers and communities in co-designing interventions and monitoring progress.
- Develop tools and evidence to guide interventions, notably the Usk Nutrient Portal, an online GIS platform for planning NbS.

1.17. Initial next steps of the NMP are to obtain funding to begin delivery of NbS in priority areas, expand farmer engagement and strengthen monitoring through statutory and citizen science.

River Wye Special Area of Conservation Nutrient Management Board

1.18. The objective of the River Wye Nutrient Management Board (NMB) 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 (NMP). The NMB are the responsible body for ensuring the delivery of the Conservation Objectives for the River Wye SAC and provide oversight and direction in delivering the NMP.

1.19. The NMB provides 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. Monmouthshire County Council sit on the Wye NMB alongside a voluntary board of partners and stakeholders with an interest in improving water quality in the catchment and who have a role in delivering that outcome. This includes local public interest groups, local authorities and statutory organisations. The NMB steer and advise the River Wye Statutory Officers Group and Technical Advisory Groups. The NMB does not have any formal powers or resources, and any decision-making lies with the individual statutory organisations via the Statutory Officers Group, subject to approval within their own organisations as necessary.

River Wye Statutory Officers Group

1.20. The River Wye Statutory Officers Group is responsible for the Nutrient Management Plan and agree actions and provide technical expertise and advice to support action development and delivery via the Technical Advisory Groups. Monmouthshire County Council sit on this group with other statutory organisations and local planning authorities both in England and Wales including NRW, Natural England, Environment Agency, DCWW, Herefordshire Council, Powys County Council, Bannau Brycheiniog National Park Authority (BBNPA) and Forest of Dean District Council. These organisations operate within the catchment to restore the Conservation Status of the River Wye Special Area of Conservation.

1.21. The River Wye SAC Nutrient Management Plan Phosphates Action Plan⁴ (November 2021) will inform the Wye Nutrient Management Plan (NMP) for both the Welsh and English sides of the catchment providing the first step towards a full river restoration plan. This Action Plan recognises that 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. A more holistic ecosystem approach to implement the most appropriate suite of actions at any given location is required.

⁴ Prepared by the Technical Advisory Group

<https://councillors.herefordshire.gov.uk/documents/s50115718/Appendix%204%20for%20Nutrient%20Management%20Board.pdf>

Phosphorus in the River Wye: Evidence Base and Options Report

- 1.22. In order to develop a whole catchment NMP, evidence is required from both the Welsh and English sides of the River Wye catchment. Accordingly, an evidence base and options appraisal has been published specifically for phosphorus pollution in the River Wye in Wales⁵ (in addition to that prepared for the English side). This report provides evidence that the agricultural sector is the largest source of phosphorus concentration at 72%, followed by wastewater final treated effluent discharges (23%), septic tank/urban run-off (3%) and storm overflows (2%) (as set out in Table 1). Extensive modelling and scenario analysis indicated that substantial reductions in agricultural phosphorus loading can be achieved through targeted regulatory compliance, best practice and agri-environmental interventions, supported by planned upgrades to WwTW. It is recognised in the report that water quality across the Welsh River Wye has improved significantly since 2021, with the Lower Wye in Monmouthshire reaching moderate compliance in 2024; this is considered further below. A range of mitigation measures that could be taken forward as part of the updated River Wye NMP to achieve SAC compliance for the Welsh River Wye catchment are included within the report including:

- Improvements to agricultural practices and infrastructure
- Storm overflow improvements
- Further investment in phosphorus treatment in WwTWs
- Private sewerage system upgrades

Wye Catchment Management Plan/Nutrient Management Plan

- 1.23. The River Wye Nutrient Management Board, working with the Wye Catchment Partnership, is preparing a new catchment-wide Nutrient Management Plan as part of the emerging wider updated Wye Catchment Management Plan (CMP) covering the River Wye and River Lugg. The overarching aim of the CMP is to recover the Wye and Lugg SSSIs/SAC to Favourable Condition/Favourable Conservation Status. This work will be informed by updated cross-border evidence to address ongoing phosphate pressures within the whole catchment⁶, thereby ensuring an integrated cross-border approach to nutrient reduction. The CMP will be a fully costed, catchment-wide plan identifying funding opportunities and setting out solutions to key issues, including water-quality impacts from nutrient pollution. It is anticipated that the CMP will be published in 2026.

Dŵr Cymru Welsh Water – WwTW Upgrades

- 1.24. DCWW has committed to investing in the reduction of phosphorus contribution for WwTW discharges as part of their asset management plans (AMPs). This included an initial investment of £100 million within AMP7 (2020-2025) and a further £60 million across Wales by the end of 2025.
- 1.25. DCWW plans further significant investment in AMP8 (2025–2030) to reduce phosphorus pollution in both the River Usk and River Wye catchments. In the River Usk Catchment over £11 million will be invested in phosphorus reduction measures. DCWW expects these actions to remove 36.3 kg/day of total phosphorus by 2032, with major progress in the first five years. In Monmouthshire these upgrades include £2.86 million to be directed to upgrades at

⁵ Phosphorous in the River Wye: Evidence Base for Wales (November 2025)

⁶ Phosphorous in the River Wye: Evidence Base for Wales (November 2025); Diffuse Water Pollution Plan (Natural England, November 2025)

Llanarth, Goytre, and Aberbaiden WWTWs⁷. In the River Wye Catchment over £50 million is allocated for phosphorus reduction, supporting DCWW's goal to meet its fair-share target by 2032. This includes approximately £4 million to improve treated effluent at Monmouth, Grosmont, Pandy, and Dingestow WWTWs. The AMP8 investments will continue to further improve water quality in the Usk and Wye over the Plan period and the impact of these improvements will be reviewed as part of NRW's Water Framework Directive (WFD) which will influence planning decisions at that time.

- 1.26. In preparing the RLDP, the Council has worked closely with DCWW and NRW to implement major upgrades that enable phosphate stripping capability at two key wastewater treatment works in the County: Monmouth (benefiting the River Wye Catchment) and Abergavenny (Llanfoist) (benefiting the upper River Usk catchment). The Raglan WWTW also has phosphate stripping capability in place. This investment has and will continue to significantly reduce the amount of phosphates entering the water environment from the treatment works (and the outfall from the existing population), thereby securing environmental improvements and potentially creating headroom for new development, including housing, commercial and retail proposals, supporting the long-term sustainability of towns and communities while safeguarding water quality and maintaining the integrity of designated sites.

Natural Resources Wales Environmental Permit Review

- 1.27. In parallel, NRW has conducted a targeted review of environmental permits⁸ and associated water quality evidence within the affected catchments to determine the extent of any operational headroom/capacity at the WWTWs to enable development proposals to come forward while ensuring betterment or neutrality of phosphate levels. This pan-Wales headroom-based approach has been progressed with the support of Welsh Government.
- 1.28. NRW's Environmental Permit Review has confirmed the potential to use existing capacity within a number of existing wastewater treatment plants in Monmouthshire to enable sustainable growth in various settlements in the affected catchment areas, subject to consideration through the Habitats Regulation Assessment process being conducted in consultation with NRW and DCWW. In response, the Council is applying the latest NRW guidance, making appropriate use of available permit headroom and implementing the 'fair share approach' when considering development proposals within these catchments. This approach recognises that wastewater discharges represent only one component of overall phosphate load and that significant phosphate contributions also arise from non-wastewater sources, including agriculture. At the planning application stage detailed consideration needs to be undertaken about the level of residual phosphate from a proposed development and whether that proposal would harm the integrity of the River SAC and have the potential to have a significant effect.

Latest Water Quality Status – Lower River Wye and River Usk

- 1.29. Recent data⁹ indicates that water quality across the rivers in Monmouthshire has improved since 2021. The SAC Assessment phosphorus target for the Lower River Wye within

⁷ Aberbaiden Wastewater Treatment Works is within the Monmouthshire part of the Bannau Brycheiniog National Park Authority.

⁸ In December 2023, NRW launched a comprehensive review of WWTW permits in Special Area of Conservation (SAC) river catchments across Wales. This marked a major regulatory intervention intended to tackle rising phosphorus levels and unblock stalled planning processes in affected areas.

⁹ WFD monitoring data '2024 Compliance Assessment' covered the four-year period of 1st January 2020 – 31st December 2023.

Monmouthshire is <39 µg/l. The latest monitoring data demonstrates that phosphorus levels in this part of the River Wye have decreased from 52 µg/l in 2021 to 33.9 µg/l in 2024, and as a result are below the SAC Assessment target. Of note, this monitoring data precedes the implementation of P stripping at the Monmouth WwTW which should further improve water quality. NRW has subsequently confirmed that the Lower Wye in Monmouthshire is no longer a failing SAC and, as such development restrictions on neutrality can be lifted in this part of the water body¹⁰. Continued proposed interventions to address phosphorus levels over the Plan period, including NMB proposals, are expected to further improve water quality in the Lower Wye and, as a consequence the betterment trajectory for this waterbody is considered to be positive. Notwithstanding this, NRW has advised MCC that evidence is needed to demonstrate whether the implementation of the RLDP would return this part of the river to failing status or not. The findings of this assessment are considered in Section 3 of this Paper.

- 1.30. The latest monitoring data for the River Usk catchment demonstrates that 54% of waterbodies in the catchment are currently meeting their phosphorus targets¹¹ which is an improvement from 2021. Notwithstanding this, nutrient neutrality remains a requirement across the whole Usk catchment. Ongoing actions, including AMP8 investments, improvements to agricultural practices and work of the Usk Catchment Partnership, to address phosphorus levels in the Usk catchment are expected to continually improve water quality in this waterbody throughout the RLDP period. The position will be kept under review as the Plan progresses.

Implications for the Monmouthshire RLDP

- 1.31. The commitment by DCWW to implement phosphate mitigation at key WwTW, together with the environmental permit approach agreed with NRW, DCWW and Welsh Government, has enabled the allocation of sustainable affordable-led residential and mixed-use sites in the affected catchment areas. Further details of the permit review in relation to proposed RLDP allocations and commitments are set out Section 2 of this Paper. Upgrades to the WwTW have already reduced the volume of phosphates entering riverine SACs from the existing population, providing environmental improvement and reducing the impact from new development, and will further lower phosphate discharge resulting from the limited affordable housing-focused growth proposed in the RLDP. Additional planned WwTW upgrades will further reduce phosphorus levels. However, it is recognised that this approach will not eliminate all increases in total phosphorus (TP) from future development and, therefore, additional mitigation may be required to ensure that development proposed in the RLDP is nutrient neutral in terms of total phosphorus (TP).
- 1.32. In developing the RLDP's growth and spatial strategy, it is notable that the RLDP Preferred Strategy consultation in December 2022 proposed no new allocations in the primary settlement of Monmouth, or within the upper River Wye catchment north of Bigsweir Bridge. This approach was taken due to the lack of an identified strategic solution to the treatment of phosphates at the Monmouth WwTW within the Plan period. However, Welsh Government's response to the Preferred Strategy advised that new site allocations should be considered in Monmouth on the basis that sufficient certainty is provided by DCWW's planning improvements at the Monmouth WwTW by 31st March 2025. The removal of this

¹⁰<https://naturalresources.wales/about-us/news-and-blogs/news/new-water-quality-data-sheds-light-on-health-of-wales-s-waters/?lang=en>

¹¹ River Usk Nutrient Management Plan (April 2025) https://uskcatchmentpartnership.wales/wp-content/uploads/2025/08/Usk-NMP_Final.pdf

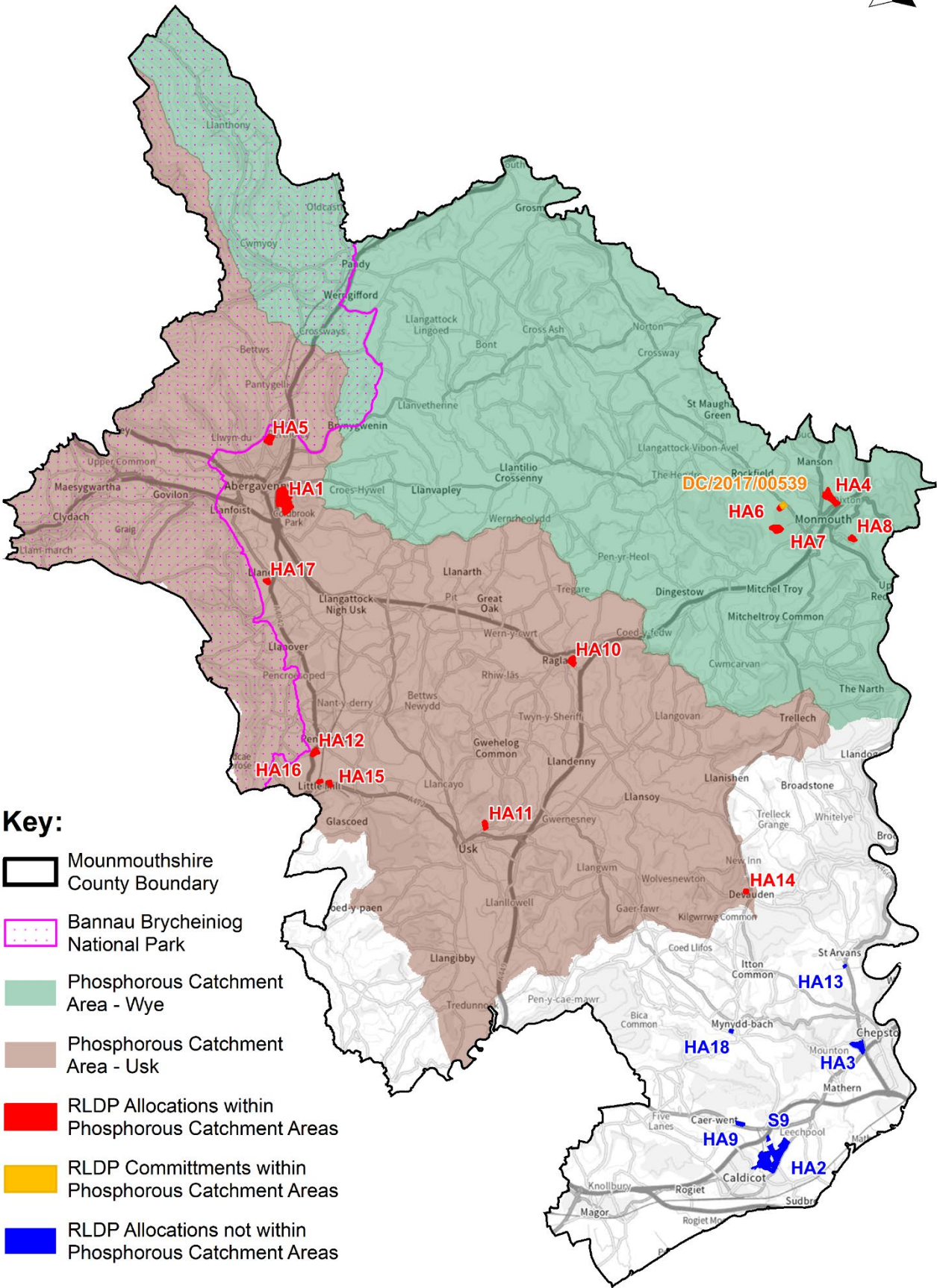
spatial constraint in the Monmouth area meant that the Deposit RLDP could allocate new affordable housing-led development within Monmouth. This was considered essential to assist in addressing the Plan's key objectives, including the delivery of much needed affordable housing and allowing development that supports the economic growth of the area.

- 1.33. The above demonstrates that a range of measurable solutions to address the phosphate issue in the riverine Usk and Wye SACs have, and continue to, emerge. It is, however, recognised that a whole catchment approach and continued/further collaboration is needed across a range of sectors, including government, agriculture, water industry, development industry and communities to ensure the health of our rivers is restored for the long term. As noted, as of 2026 the Lower Wye in Monmouthshire is no longer a failing SAC and in view of the interventions to address phosphorus levels, water quality is expected to further improve in this waterbody over the RLDP period.

2. Riverine SAC Catchment Areas – Affected RLDP Allocations and Commitments

- 2.1. As illustrated by Map 1, approximately one third of the County is impacted by the River Usk phosphorus sensitive catchment area, and one third by the River Wye phosphorus sensitive catchment area. As noted above, the Lower Wye in Monmouthshire is no longer a failing SAC, however, given the sensitivity of this catchment and as a competent authority MCC is considering this catchment as part of this Position Paper to ensure the total phosphorus load of the RLDP is considered as part of the detailed Habitats Regulations Assessment (HRA). The remaining area, situated to the south of the County, is not affected by phosphates and is, therefore, not subject to the nutrient neutrality or betterment requirements.
- 2.2. In order to inform the potential phosphorus (P) load to arise from the implementation of the RLDP, a review of all allocations and residential commitments has been undertaken to identify the sites that could potentially contribute to phosphate levels in each of the SAC riverine catchments, the results of which are set out in Map 2 and discussed below.

Residential & Mixed Use Allocations and Phosphorous Catchment Areas



Residential/Mixed-use Allocations and Commitments within the Phosphorus Sensitive Catchments

- 2.3. With regard to residential proposals, for completeness all residential/mixed-use commitments that have contributed to completions in the Plan period to date (2018 – 2025) or that have an extant planning permission have been reviewed. The results are set out in Appendix 8. An overview of the residential/mixed-use allocations and commitments that are identified as having a potential to impact on the River Usk and River Wye SACs are set out in the tables below.
- 2.4. Within the phosphorus sensitive catchment area of the River Usk SAC, nine residential/mixed-use allocations have been identified and factored into the P load budget calculations, as set out in Table 2. No commitments have been identified in this catchment.

Table 2: RLDP Residential and Mixed-use Allocations within the River Usk SAC Catchment

RLDP Policy Ref	Site Name	Settlement	Status	Proposed Use	No of Units	Open Market Homes	Affordable Homes	Wastewater Treatment Works
HA1	Land to the East of Abergavenny	Abergavenny	Allocation	Mixed-use	500	250	250	Llanfoist
HA5	Land at Penlanlas Farm	Abergavenny	Allocation	Residential	100	50	50	Llanfoist
HA10	South of Monmouth Road	Raglan	Allocation	Residential	54	27	27	Raglan
HA11	Land East of Burrium Gate	Usk	Allocation	Residential	40	20	20	Usk
HA12	Land West of Trem Yr Ysgol	Penperlleni	Allocation	Residential	42	21	21	Goytre
HA14	Land at Churchfields	Devauden	Allocation	Residential	20	10	10	Devauden
HA15	Land East of Little Mill	Little Mill	Allocation	Residential	20	10	10	Little Mill
HA16	Land North of Little Mill	Little Mill	Allocation (Rollover with planning permission)	Residential	15	7	8	Little Mill
HA17	Land Adjacent Llanellen Court Farm	Llanellen	Allocation	Residential	26	13	13	Llanellen

- 2.5. Within the River Wye phosphorus sensitive catchment area, one commitment and four residential allocations have been identified and factored into the P load budget calculations.

Table 3: RLDP Residential Allocations/Commitment within the River Wye SAC Catchment

RLDP Policy Ref	Site Name	Settlement	Status	Proposed Use	No of Units	Open Market Homes	Affordable Homes	Wastewater Treatment Works
HA4	Land at Leasebrook	Monmouth	Allocation	Residential	270	135	135	Monmouth
HA6	Land at Rockfield Road	Monmouth	Allocation	Residential	60	30	30	Monmouth
HA7	Drewen Farm	Monmouth	Allocation (Rollover with resolution to	Residential	110	71	39	Monmouth

			approve subject to a S106 Agreement)					
HA8	Tudor Road	Monmouth	Allocation (Rollover with planning permission)	Residential	50	0	50	Monmouth
N/A	Rockfield Road	Monmouth	Commitment	Residential	70	45	25	Monmouth

Windfall Allowance

- 2.6. Windfall sites are sites with a capacity of 10 or more homes that are not specifically allocated for housing yet come forward during the Plan period. The Council's approach to calculating the windfall allowance factored into the housing supply figures of the RLDP is set out in the Housing Background Paper (Updated October 2025) (SD103). In summary, a Housing Potential Study (HPS) (see Appendix 1 of the Housing Background Paper) has been used as a basis for the windfall allowance. The study has looked at the availability of land and under used buildings within the primary and secondary settlements of Monmouthshire, including possible regeneration schemes and empty homes and upper floors within town centres which have the potential to provide additional homes. Overall, the windfall allowance contributes 200 homes to the overall housing supply figures across the County.
- 2.7. In line with the findings of the HPS, 120 units have been factored into the budget calculations for the Usk SAC catchment (100 in Abergavenny and 20 for the Rural Secondary Settlements of Raglan, Penperlleni and Usk) and 10 units for the Wye SAC catchment for Monmouth. The remaining units of the windfall allowance are in areas outside of the affected SAC catchment areas.
- 2.8. The allocations, commitments and windfall allowance outlined above have formed the basis of the nutrient budget estimates discussed in Section 3 and include several developments which already have planning permission. The findings of the nutrient neutrality budget calculations have been considered in the updated Habitats Regulations Assessment Addendum. In this respect, the technical work undertaken on the estimated phosphorus load of the RLDP is considered to have regard to the recent judgement of *CG Fry & Sons Ltd v SSHCLG* [2025] UKSC 35, which confirms the requirement for a HRA applies to the consideration of reserved matters and discharge of conditions.

Gypsy and Traveller Allocation

- 2.9. Strategic Policy S9 – Gypsy and Travellers, of the RLDP allocates Land at Bradbury Farm, Crick for seven pitches to accommodate unmet Gypsy and Traveller accommodation needs. The allocation is located in the south of Monmouthshire, outside of the affected riverine SAC catchment areas, and has therefore not been factored into the potential P load of the RLDP.

Employment and Solar Allocations

- 2.10. Table 4 and Map 3 set out the RLDP employment allocations and a potential site for ground mounted solar that are within either the River Wye or River Usk SAC phosphorus sensitive catchment areas. NRW advice regarding nutrient neutrality applies to any development that increases nutrient levels within affected catchments. In relation to non-residential developments, it notes this involves developments expected to serve a population from outside of a nutrient neutrality catchment who are not already served by residential connections to existing public or private sewers discharging within the nutrient neutrality

catchment. In relation to commercial and industrial developments, the example of a conference centre facility is given.

- 2.11. Whilst there are a number of employment allocations within the River Usk and River Wye SAC catchments, these have not been factored into the nutrient budget estimates discussed in Section 3. The proposed level of growth set out in the RLDP aims to provide a balance of housing and employment growth, as required by national planning policy. This alignment aims to deliver employment opportunities for local residents, that are not reliant on unjustified levels of in-commuting. The employment allocations listed in Table 4, are considered to be locally scaled, ranging in size from 0.59ha to 4.5ha. The larger, more strategic employment allocations, are located in the south of the County and outside of an affected SAC catchment area, for example, EA1h – Gwent Euro Park (7ha) and EA1f – Quay Point (14ha), both of which are located in Magor. The employment allocations located within the SAC catchment areas are, therefore, assumed to be providing employment opportunities for the local population already served by residential connections to existing public or private sewers discharging within the SAC river catchments or within the calculations factored in for the residential allocations/commitments. Specific proposals will, however, be assessed on a case-by-case basis at the planning application stage, once firmer details are known in relation to the end users, to determine if the proposal will have an adverse effect on the integrity of the river SACs, in accordance with the RLDP policy framework and relevant NRW guidance. Each proposal would conduct a Habitats Regulations Assessment (HRA) to determine whether it would have a significant impact on the integrity of the river. Of note, the larger employment sites in the north of the County at Raglan and Monmouth would be connected to treatment systems that have phosphate stripping capability and, therefore, there would only be a residual amount of phosphate to mitigate if necessary.
- 2.12. The proposed solar allocation has not been factored into the budget calculations as consistent with NRW's exemption guidance, it is considered to represent a form of development that does not increase the volume and concentration of nutrients in wastewater.

Table 4: RLDP Employment Allocations within the River Usk and River Wye SAC Catchments

RLDP Policy Ref	Site Name	Settlement	Riverine SAC Catchment	Area (Ha)	Use Class
EA1a	Land at Nantgavenny Business Park	Abergavenny	Usk	0.59	B1
EA1b	Poultry Units, Rockfield Road	Monmouth	Wye	1.3	B1
EA1c	Land North of Wonastow Road	Monmouth	Wye	4.5	B1, B2, B8
EA1i	Raglan Enterprise Park (Policy CC2 – Renewable Energy Allocation allocates approximately 16ha of land as having potential for a ground mounted solar development).	Raglan	Usk	1.5 (plus 16ha for solar)	B1, B2, B8
EA1j	Land West of Raglan	Raglan	Usk	4.5	B1, B2, B8
EA1k	Land to the East of Abergavenny (forms part of residential allocation HA1)	Abergavenny	Usk	1	B1



Not to Scale

Other Proposals

- 2.13. The RLDP does not propose any site allocations for uses other than residential (including mixed-uses), employment, renewable energy (solar development) and a Gypsy and Traveller site. The potential impact on phosphates from other relevant uses, such as tourism, will be considered on a case-by-case basis against the policy framework in the RLDP and any other relevant guidance issued by NRW as part of the planning application process. These have therefore not contributed to the P load calculations. Further details on the consideration of planning applications are set out in Section 5 below.

Approach to Dwelling Numbers and Densities and Implications for On-site Mitigation

- 2.14. The incorporation of sustainable placemaking, high quality sustainable design and green infrastructure within new development is a key objective of the RLDP and is key theme running through a number of policies, most notably Strategic Policy S3 – Sustainable Placemaking & High-Quality Design, GI1 – Green Infrastructure, Strategic Policy S8 – Site Allocation Placemaking Principles and the site-specific allocation policies HA1 – HA18. Similarly, the incorporation and distribution of sustainable drainage systems (SuDS) within the residential allocations is a key requirement of proposals as required by Schedule 3 of the Flood and Water Management Act 2010 and Policy CC1 – Sustainable Drainage Systems.
- 2.15. These over-arching principles have formed an integral part in determining the approach to the dwelling numbers and densities of the allocations in the RLDP. The allocated sites have been assessed through the candidate sites assessment process as set out in the Candidate Sites Assessment Methodology (SD177), the outcome of which is set out in the Candidate Sites Assessment Report (SD179). Consultation and dialogue with external and internal stakeholders have been undertaken throughout the plan making process in relation to the candidate sites and continued in relation to allocated sites as the Plan has progressed. This has been instrumental in influencing key parameters of site allocations such as SuDS, necessary buffer zones within the sites and key landscape settings such as the Bannau Brycheiniog National Park (BBNP) and the green infrastructure and placemaking-led approach discussed above. Input from the Design Commission from Wales has also helped shape the progression of strategic housing allocations HA1 – HA4.
- 2.16. These considerations have informed the proposed dwelling numbers and densities of the residential allocations and have informed policy requirements set out in the site-specific allocation policies. As such, the dwelling numbers and densities have been driven by the individual site context and setting rather than a blanket target density. This approach has resulted in a range of gross densities ranging from 9.52 dwellings per hectare to 40 dwellings per hectare, and an average gross density of 16.83 dwellings per hectare. A breakdown of each residential allocation and associated densities is set out in Appendix 9. Once allowance is made for green infrastructure and open space, SuDS and non-residential uses on the mixed-use sites, the net density ranges from 20 dwellings per hectare to 47 dwellings per hectare, and an average of 29 dwellings per hectare across all the site allocations. This approach is considered appropriate in a Monmouthshire context, given its rural character, associated environmental constraints, the green infrastructure and placemaking-led approach to development and the site-specific considerations that influence the appropriate level of development. Further details on site specific considerations can be found in the supporting evidence base relating to the site allocations.
- 2.17. The Council's overarching approach to green infrastructure and SuDS, and resultant site allocations densities provide the potential to contribute to on-site mitigation and to reduce phosphorus loads in surface water run-off. The Technical Note prepared by Aecom

(Appendix 2) advises that most SuDS features can provide an opportunity to remove nutrients from surface water drainage if they are suitably designed and maintained, with details on the varying effectiveness of different SuDS features discussed further in the Technical Note. The incorporation of SuDS within the proposed site allocations has been an integral part of the development plan process from the outset and, as such, site promoters have factored this into illustrative masterplans and associated viability assessments. The provision of SuDS is, therefore, considered to be a deliverable element of the site allocations.

Wastewater Treatment Works and Permit Reviews

- 2.18. The proposed RLDP residential/mixed-use allocations and commitments will connect to eight different Wastewater Treatment Works (WwTWs) situated within the County. As noted above, DCWW are investing in their WwTWs to reduce phosphate in the failing SAC rivers within their operating area, this includes upgrades completed to date at Monmouth and Llanfoist WwTWs that incorporate phosphate stripping. Of note, the Raglan WwTW also has phosphate stripping in place. The latest DCWW data (January 2026) indicates that the phosphorus stripping infrastructure in these WwTWs achieves the following phosphorus removal rates:
- Llanfoist: 82.86%
 - Monmouth: 80%
 - Raglan: 91.43%
- 2.19. DCWW have made a commitment in AMP8, covering the period 2025 to 2030, that none of their WwTWs will be the cause of ecological failure. Through their phosphorus investment plan, DCWW aim to remove 90%¹² of the phosphorus load from their WwTWs discharging to failing SAC rivers and expect this programme of works to be completed by 2032.
- 2.20. Table 5 provides details of the relevant WwTWs in Monmouthshire that the proposed RLDP site allocations and commitments will discharge into. This includes permit issue dates and phosphorus (P) limits, together with the latest rolling average provided by DCWW in December 2025. All of the associated WwTWs have relevant permits in place and are operating within the effective P limits in place at the WwTW, with the exception of Devauden. DCWW are committed to delivering a scheme to ensure compliance at the Devauden WwTW by January 2027. Accordingly, the first housing completions are not anticipated at the proposed allocation at Land at Churchfields, Devauden (HA14) until 2028/2029.

¹² DCWW note that this is as a collective across all WwTW, some remove more than 90% and some less than 90%, based on permit requirements.

Table 5 – Wastewater Treatment Works, Permit Information and P limit across sites within the River Usk and River Wye SAC Catchments

Wastewater Treatment Works	Allocated sites/commitments that utilise WwTW	Permit Issue Date	P limit mg/l (1)	Effective Date P limit (1)	P limit mg/l (2) (limit will be reduced to)	Effective Date P limit (2)	Latest rolling average (DCWW, January 2026)
Llanfoist	HA1 Land to the East of Abergavenny HA5 Land at Penlanlas Farm	06/11/2023	5mg/l	13/11/2023	2mg/l	31/12/2025	2.64mg/l ¹³
Monmouth	HA4 Land at Leasbrook HA6 Land at Rockfield Road HA7 Land at Drewen Farm HA8 Land at Tudor Road, Wyesham DM/2017/00539 – O/L permission at West of Rockfield Road, Monmouth	06/11/2023	2mg/l	13/11/2023	-	-	0.99mg/l
Raglan	HA10 South of Monmouth Road	13/04/2023	1mg/l	13/04/2023	-	-	0.24mg/l
Usk	HA11 Land East of Burrium Gate	12/12/2023	5mg/l	19/12/2023	-	-	4.25mg/l
Goytre	HA12 Land West of Trem Yr Ysgol	27/11/2023	5mg/l	04/12/2023	1.4mg/l	31/03/2030	4.54mg/l
Devauden	HA14 Land at Churchfields	15/05/2024	5mg/l	26/01/2027	-	-	Permit not live.
Little Mill	HA15 Land East of Little Mill HA16 Land North of Little Mill	31/01/2024	5mg/l	07/02/2024	-	-	5.35mg/l ¹⁴
Llanellen	HA17 Land adjacent Llanellen Court Farm	08/02/2024	5mg/l	15/02/2024	-	-	3.64mg/l

¹³ DCWW confirm that Llanfoist WwTW is compliant with the 2mg/l limit in terms of spot concentration however, this is not seen in the rolling average to date due to the nature of the assessment taking into consideration historic data.

¹⁴ DCWW note the Life Cycle Inventory (LCI) is compliant.

3. Phosphate Budget Calculations

Potential Increase in Nutrient Loading from the Implementation of the RLDP

- 3.1. In recognition of the need to ensure the RLDP is supported by suitably robust nutrient budget calculations, AECOM have undertaken budget calculations for all proposed RLDP allocated and committed residential/mixed-use development using the Wales Nutrient Budget Calculator, which covers both the River Usk and River Wye catchments. This is needed to give confidence that the quantum of residential/mixed-use development proposed in any allocated or committed sites in areas where nutrient neutrality restrictions apply can reasonably be developed, and whether any additional mitigation is needed above that provided through the tightening of phosphorous permit limits at some WwTW. As noted above, although recent data demonstrates that the Lower Wye in Monmouthshire is no longer a failing SAC, the P load of RLDP allocations and commitments needs to be determined to evidence whether the RLDP can be implemented without causing P levels to increase above the SAC Assessment target. Budget calculations have, therefore, been undertaken for both the Usk and Wye catchments.
- 3.2. The nutrient budget for each development in each year of the Plan period has been calculated based on agreed data and assumptions¹⁵. This information has been used to generate a cumulative budget for each proposed development which would require mitigation throughout the course of the implementation of the RLDP. This will inform the future delivery of any potential strategic mitigation solutions.

Cumulative Nutrient Budgets within the Usk and Wye SAC Catchments

- 3.3. Full details of the cumulative nutrient budget associated with the RLDP allocations and commitments in the Usk and Wye catchments are set out in the appended Technical Note prepared by AECOM (Appendix 2). An overview of the final nutrient budget for each catchment is provided in the table below, with worst-case¹⁶ and best-case scenarios¹⁷ set out. This demonstrates that in both cases the proposed development proposals in the RLDP result in the generation of a limited amount of residual excess phosphorus, with higher levels in the Usk catchment reflecting the amount of development proposed in this catchment.
- 3.4. The calculated nutrient budgets for the proposed RLDP have been compared with what the final nutrient budgets would have been in the absence of DCWW phosphorus removal upgrades which are being rolled out to WwTW in the two catchments. This shows that for the Usk catchment the WwTW permit upgrades will have a large impact on the final nutrient budget, mostly due to upgrades at Llanfoist WwTW. The ongoing and proposed interventions to address phosphorus levels in this catchment will have a significant impact on the existing population and, as a result, water quality in the Usk is expected to improve over the Plan period. All developments in the Wye catchment are served by Monmouth WwTW, which was upgraded in 2023 to improve treatment of TP, and, therefore, there are no additional relevant improvements.

¹⁵ Informed assumption that 50% of the affordable homes are discounted on the basis that those moving into affordable homes are likely to already be local residents and thus probably reside within the county and the nutrient neutrality catchment area. As such, they do not need to be included in the nutrient budget estimation.

¹⁶ Worst-case scenario includes all housing types with no reduction in occupancy for affordable homes.

¹⁷ Best-case scenario Discounts 50% of affordable homes on the basis that half of allocated affordable homes are provided to local people who are likely to already be living within the nutrient neutrality catchment.

Table 6- Summary Results for the Final Nutrient Budget in each Catchment in 2033

Scenario	Usk Nutrient Budget 2033 (kg/yr TP)	Wye Nutrient Budget 2033 (kg/yr TP)
Scenario 1 (Worst-Case Scenario)	265	136
Scenario 2 (Best-Case Scenario)	199	103
<i>Nutrient budget if proposed AMP8 phosphorus removal upgrades to WwTW had not taken place</i>	534	136

Source: AECOM Technical Note, February 2026

Impact of RLDP Proposals on the Lower River Wye SAC

- 3.5. The above calculations demonstrate that the proposed development proposals in the RLDP result in the generation of a limited amount of residual excess phosphorus in Usk and Wye SAC catchments. Furthermore, NRW has confirmed that as of March 2025 the Lower Wye in Monmouthshire is no longer failing for phosphorus and as such, development restrictions on neutrality can be lifted in this part of the water body¹⁸. Notwithstanding this, NRW has advised MCC to consider whether the proposed future development in the Wye catchment can be delivered without the river reverting to failing status. Additional work has, therefore, been undertaken by AECOM to investigate whether phosphorus contributions from the developments proposed within the RLDP via foul wastewater treated at the Monmouth WwTW could cause deterioration of the Lower Wye back to failing status. This will inform whether nutrient neutrality restrictions will need to be applied to the Lower River Wye catchment.
- 3.6. NRW have confirmed that the WFD receiving water body is currently at good WFD status for phosphorus, and thus the specific aim is to confirm with as much confidence as possible, that the proposed developments in the RLDP can be developed without causing deterioration that might trigger a return in the SAC back to an unfavourable condition.
- 3.7. The findings of this assessment are set out in AECOM's Lower River Wye Assessment at Appendix 3. Overall, the report concludes that in principle the quantum of RLDP proposed development in the Lower River Wye catchment can be delivered without resulting in a significant increase in phosphorous or a reduction in the conservation status of the SAC. However, it also stated that these conclusions should be reviewed over time to confirm the receiving water remains at low risk in the context of evolving inputs to the river system as a whole. Therefore, future planning applications for development are still likely to need to be supported by site specific Habitat Regulations Assessments, including consideration of water quality risks to the Wye SAC. The Council will prepare supplementary planning guidance to assist developers with these assessments.

¹⁸ A similar situation may occur in the Usk catchment following the proposed phosphorus removal upgrades, although this is not yet evident in current monitoring data. This situation will be monitored over the Plan period.

4. Strategic Mitigation Options and Nutrient Management Action Plan

- 4.1. The findings of the nutrient budget calculations suggest that mitigation solutions will be needed to address the forecast excess phosphorus loads to the catchments where nutrient neutrality restrictions apply.
- 4.2. A range of high-level mitigation options were identified in AECOM's February 2026 Technical Note (Appendix 2) which included:
 - Arable land conversion to less nutrient intensive land use
 - PTP upgrades
 - Treatment wetland SuDS
 - SuDS
 - Water usage
- 4.3. In order to determine the most appropriate mitigation options for the proposed sites in the affected catchments, AECOM has undertaken further investigation of strategic scale phosphorous reduction opportunities in the River Usk and Wye catchments. While all of the above options could provide potential mitigation opportunities in Monmouthshire, it was considered that two options should be explored in more detail as having the most potential for delivering strategic phosphate mitigation. These are constructed wetlands¹⁹ and retrofit SuDS²⁰. These options have been explored in greater depth through engagement with relevant Council officers and departments, desk studies and consideration of constraints and limitations, consultation with relevant partners where appropriate (including DCWW) and further scenario testing to assess likely phosphorous removal potential. High-level cost estimates have also been considered, where possible.
- 4.4. The findings of this assessment are set out in the Strategic Mitigation Opportunities Report (SMOR) prepared by AECOM, attached at Appendix 4. This provides a comprehensive, qualitative review of all potential strategic scale nutrient mitigation solutions that are currently known, including the approaches currently operational across England and Wales, and provides information and advice to adequately consider phosphorus neutrality in planning submissions within the affected catchments. Detailed consideration is given to constructed wetlands and retrofit SuDS.
- 4.5. The SMOR concludes that constructed wetlands have emerged as the key strategic option with the potential to deliver the most nutrient mitigation benefit for the Usk catchment, noting that as the Lower River Wye has moved out of unfavourable status there is no immediate need for mitigation. Preferred sites have been identified at Goytre WwTW, Aberbaidan WwTW and Usk WwTW. These have the potential to deliver phosphorus reductions in the region of around 260 kg/yr, 701 kg/yr and 300 kg/yr, respectively. Aberbaidan WwTW is located upstream of all allocated sites in the Usk catchment of the RLDP and as such may be able to provide mitigation across all RLDP sites, subject to appropriate design and implementation. It has the potential to deliver 260 kgTP/yr reduction, against the overall budget for the RLDP in the Usk catchment of 264 kgTP/yr. It is recognised that further investigations, scheme development, and consultation with DCWW, landowners and NRW etc. is required if a viable scheme is to be developed. The Report also determined

¹⁹ Nature-based nutrient mitigation option capable of providing additional nutrient removal downstream of WwTWs.

²⁰ Nature-based mitigation option capable of providing nutrient removal from surface water runoff from highways. SuDS interventions including bioswales, raingardens, and permeable paving can provide treatment of surface water runoff through specially designed filter layers, particularly when deployed in 'treatment trains'.

that retrofit SuDS would provide very limited nutrient mitigation in comparison to wetlands based on available sites and are therefore not considered to be a cost-effective solution. On this basis they are not recommended to be progressed. A number of recommended steps to further investigate and deliver a strategic wetland are set out in the Report with further details set out in the Nutrient Mitigation Action Plan.

- 4.6. MCC will continue to liaise with site promoters to explore appropriate mitigation options, including on-site measures. Consideration will also be given to the on-going mitigation work being progressed by the NMBs, including whole catchment options.

Nutrient Mitigation Action Plan

- 4.7. Reflecting the requirements of Welsh Government's March 2026 clarification note²¹, a Nutrient Mitigation Action Plan has been prepared which sets out how MCC propose to manage nutrient issues associated with proposed RLDP development in the affected catchments, thereby demonstrating that there is reasonable certainty that a viable phosphorus mitigation solution can be developed and implemented to support the delivery of proposed development. It sets out the mitigation pathways and associated requirements that ensure nutrient mitigation can be implemented and secured when needed, demonstrating that the RLDP is deliverable in line with its milestones. Monitoring proposals are also provided in relation to each mitigation pathway and action, where relevant, and will be reviewed as part of the action plan review process. It has been developed in conjunction with key stakeholders including DCWW, and aligns with the objectives and initiatives of relevant partner organisations, including the Usk NMB and Wye CP. The Action Plan should be read in conjunction with the Strategic Mitigation Opportunities Report, which as noted above seeks to further develop the understanding of feasible, strategic mitigation opportunities and pathways within the affected catchments in Monmouthshire.
- 4.8. The Nutrient Mitigation Action Plan is attached at Appendix 5. It identifies that there are five key pathways to the Action Plan through which it is possible to screen out or mitigate phosphorus loadings relating to the RLDP. The Action Plan provides a suitably robust roadmap for ensuring that appropriate mitigation can be delivered to mitigate any increase in phosphorus loading to the SACs as a result of the implementation of the RLDP. This will ensure that any adverse significant effects on the site integrity of the riverine SACs can be prevented. Further details on the mitigation measures and outcomes, identification of stakeholders, timescales for implementation, dependencies, costs/funding considerations and monitoring requirements are set out in the Action Plan.

Developer Mitigation Handbook

- 4.9. A Developer Mitigation Handbook will be prepared which can be used by developers to better understand the range of mitigation options available for phosphorus and their implementation. Linked to the Action Plan, it will outline further details that will allow different mitigation approaches to be taken forward, whether it be threshold, integrated catchment improvements, strategic or developer-led nutrient neutrality approaches. This will form part of supplementary planning guidance to support the implementation of the Plan's water quality policy (NR3). As national guidance and requirements in relation to nutrient neutrality continue to evolve, the Developer Mitigation Handbook will be reviewed

²¹ Welsh Government Clarification Note – Applying the Tests of Soundness to LDPs where additional nutrients may impact on SACs, March 2026

and updated periodically to reflect changes in nutrient mitigation requirements as and when required.

Viability Implications

- 4.10. A Preliminary Financial Viability Report (September 2024) (SD86) was undertaken to support the Deposit RLDP. This included a County-wide viability assessment used to inform the proposed policies within the Plan, with a particular focus on the financial viability of affordable housing provision and other Section 106 obligations. An Addendum Update to the 2024 Preliminary Viability Report (July 2025) (SD87) has been prepared which reviews the updated financial viability assessments (FVAs) submitted by site promoters for residential and/or mixed-use allocations in the Deposit RLDP.
- 4.11. The addendum acknowledges that each FVA incorporates a viability buffer of approximately £12,000 per dwelling to cover additional costs that were not factored into the FVAs. This buffer reflects the fact that average house prices have increased at a faster rate than build costs since the assessments were undertaken in 2024. Therefore, although the site-specific FVAs do not explicitly include allowances for potential phosphorus mitigation measures, this overall viability buffer is expected to be capable of absorbing such costs as demonstrated below.
- 4.12. The SMOR sets out indicative costs associated with the provision of strategic phosphorus mitigation, namely constructed wetlands at various WwTW in the affected SAC catchments, including the three preferred sites at Goytre, Usk and Aberbaiden, as identified in Table 7.

Table 7: Indicative Constructed Wetland Construction Costs

WwTW name	Maximum wetland area (hectares)	Material cost (£)	Additional fees (£)	Estimated cost (£)	Estimated cost inc. pumping (£)
Goytre	3.49	1,099,350.00	365,500.00	1,464,850.00	-
Usk	1.25	393,750.00	365,500.00	759,250.00	1,109,250.00
Aberbaidan	0.80	252,000.00	365,500.00	617,500.00	967,500.00

Source: SMOR, AECOM, April 2026

- 4.13. The SMOR makes clear that these costs are indicative, accounting for construction costs only, and exclude full life and maintenance costs. It further notes that it is good practice, when costing at this level of detail, to include an optimism bias to cover unknown factors. It is generally recommended to allow for a 60% optimism bias for anything up to feasibility design, which has not been quoted in the figures above. As the design progresses, the optimism bias associated with the costing would decrease as the level of confidence in the design increases.
- 4.14. Having regard to the above and taking Aberbaiden WwTW constructed wetlands as an example for providing strategic mitigation in the Usk SAC catchment, an indicative viability calculation for the RLDP allocation at Land to the East of Abergavenny (HA1) is provided below.

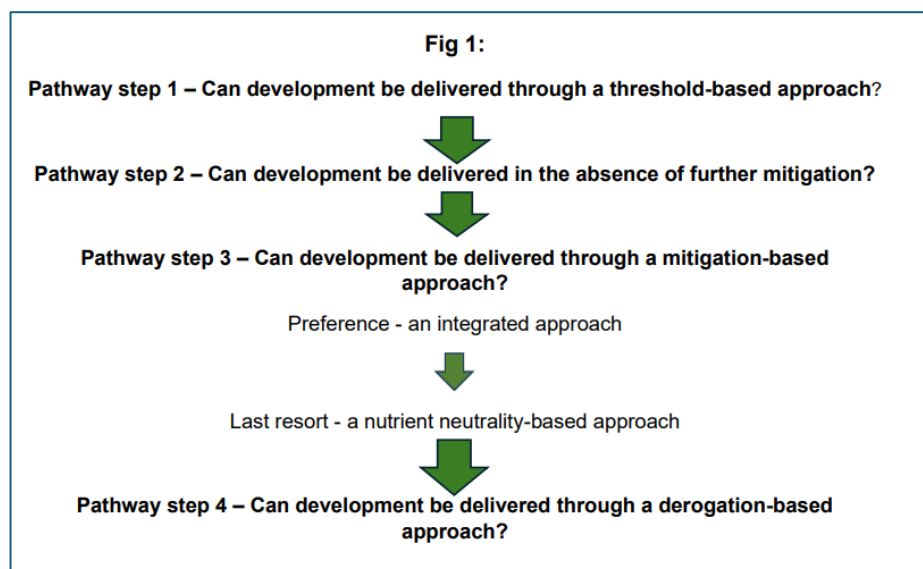
RLDP Site Allocation HA1 – Land to the East of Abergavenny (500 dwellings)

- The site is within the Usk SAC Catchment.
- Based on worst case scenario, the Final Nutrient Budget in this catchment in 2033 would be 265 kg/yr TP.
- Based on worst case scenario, site HA1 contributes 119.40 kg/yr TP of this.
- The strategic solution at Aberbaidan could at full area could account for 260 kg TP/yr (leaving just 4 kg TP/yr).
- At the stage with the cost of the works at Aberbaidan would be £967,500.00 + 60% optimism bias, therefore £1,548,000. Noting that this figure does not account for possible land acquisition and maintenance.
- Based on the indicate figure of £1,548,000 accounting for 260 kg TP/yr this equates to approx. £5954 per kg TP/yr.
- On the basis that HA1 accounts for approx. 120 kg TP/yr then the scheme would need to contribute £714,480 overall (5954 x 120). This would equate to a contribution of approximately £1,428.96 per dwelling.

- 4.15. Given that the FVAs incorporate a viability buffer of approximately £12,000 per dwelling, the above high-level, indicative example demonstrates that the proposed sites could contribute to strategic phosphorus mitigation in the form of constructed wetlands without this impacting on viability. At this stage of the plan process, the Council is confident that mitigation solutions on the impacted sites would not have an adverse impact on the viability of the sites to warrant exclusion from the RLDP. Detailed consideration will be given to mitigation requirements and associated costs at the planning application stage.

5. RLDP Policy Framework

- 5.1. As discussed, and evidenced throughout this Paper, the position relating to the Usk and Wye SAC catchments is an evolving situation reflecting ongoing consideration of the issue by the Council, NMBs, NRW, DCWW, Welsh Government and other relevant parties.
- 5.2. The Welsh Government guidance for mitigation of phosphorus in river SACs (2025) and the recent guidance on “Tests of Soundness” (March 2026) indicates pathways of mitigation that may be applied to LDPs where the impact of additional nutrients on SAC’s has been identified. NRW have also provided updated guidance with regard to mitigating nutrients within SACs (2026). Within these guidance documents are several hierarchical approaches (or ‘pathways’) to mitigation, through which it would be feasible to mitigate the phosphorus loads associated with the RLDP, thereby providing confidence that no adverse effects on the site integrity of the SACs would occur. These include a threshold-based approach, a mitigation-based approach and a derogation-based approach. Details on these approaches are set out in the clarification note and summarised below and in Figure 1.



Source: WG Clarification Note (March 2026)

- 5.3. Prior to considering mitigation pathways, it is notable that the current NRW guidance suggests that if the relevant WwTW for proposed developments has an environmental permit that has been reviewed against the nutrient targets set out in the conservation objectives for the river SAC, it may be possible for a planning authority to conclude that there will be no likely significant effect with regard to phosphorus. Further mitigation can therefore be 'screened out'. Further details on this are set out in the Nutrient Mitigation Action Plan (Appendix 5).
- 5.4. Having regard to current planning guidance and the nutrient neutrality evidence base that has been prepared to inform the RLDP, it is considered that amendments to the RLDP policy framework are necessary to provide a clear framework to ensure that development proposals with the potential to affect the integrity of European sites are assessed appropriately and consistently, in accordance with national legislation and guidance, enabling proposals to proceed where impacts can be avoided or adequately mitigated. Policy NR3– Protection of Water Sources and the Water Environment and supporting text have been amended as follows.

Policy NR3 – Protection of Water Sources and the Water Environment

Development, which may impact upon the water environment and associated land, will only be permitted where it:

- a) Would not harm or pose an unacceptable risk to the capacity or flow of groundwater, surface water or coastal water systems;
- b) Would not harm or pose an unacceptable risk to the quality and quantity of ground waters, surface waters, wetlands or coastal water systems including, where appropriate, their ecological and amenity value; and
- c) Where practicable and reasonable, improves water quality.

Development likely to result in a significant effect on a European site will only be permitted where the competent authority is satisfied, through a Habitats Regulations Assessment, that there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation.

Support Text to Policy NR3:

Nutrient Impacts on Water Quality in Riverine Special Areas of Conservation (SAC)

The impact of excess nutrients, including phosphates, has become a significant environmental challenge in riverine SACs across the country, including Wales. These rivers are designated for their high ecological value; however, many are failing to meet strict phosphorus targets designed to protect sensitive habitats and species.

The Rivers Usk and Wye in Monmouthshire are designated as SACs and are, therefore, subject to strict protection under the Conservation of Habitats and Species Regulations 2017 which require any plan or project likely to have a significant effect on a European site to be subject to Habitats Regulations Assessment (HRA). The extent of the Usk and Wye River SAC catchments in Monmouthshire are illustrated in Map XX and the Constraints Map accompanying the RLDP.

In January 2021, NRW published a report that presented the assessment of compliance against recently tightened phosphorus water quality targets for SAC rivers. The report indicated that over 60% of SAC water bodies were failing the new targets for phosphorus. More recent data does, however, indicate that water quality across the rivers in Monmouthshire has improved since 2021.

The latest monitoring data for the River Usk catchment demonstrates that 54% of waterbodies in the catchment are meeting their phosphorus targets which is an improvement from 2021. Notwithstanding this, as of 2026 nutrient neutrality remains a requirement across the whole Usk catchment. As a result, new developments leading to an increase in phosphorus discharges to this site may contribute to the unfavourable condition of the designated site or make its restoration to favourable status more difficult to achieve. Ongoing actions to address phosphorus levels in the Usk catchment are expected to continually improve water quality in this waterbody throughout the RLDP period. The position will be kept under review.

Whilst previously failing the Lower River Wye is now considered by NRW (as of 2026) to no longer be failing for phosphorus. However, it is still important that any new development that may lead to an increase in phosphorous discharged to the SAC considers whether that discharge would risk causing deterioration of the river back to less than good conservation status.

The Council is required to ensure, through the RLDP and development management process, that development within the relevant catchments is nutrient neutral and will not result in adverse effects on the integrity of the European sites, either alone or in combination with other plans and projects. Development proposals within catchments must, therefore, demonstrate nutrient neutrality to ensure that there is no net increase in nutrient loading to the affected sites.

Reflecting the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales²², Policy NR3 makes clear that development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures. As such, planning permission may only be granted where the competent authority is able to conclude that there will be no likely adverse effect on the integrity of a European site, either alone or in combination with other plans and projects.

The policy provides a clear framework to ensure that development proposals with the potential to affect the integrity of European sites are assessed appropriately and consistently, in accordance with national legislation and guidance. It allows proposals to proceed where impacts can be avoided or adequately mitigated.

Prior to considering mitigation pathways, current NRW guidance suggests that if the relevant Wastewater Treatment Works (WwTW) for proposed developments has an environmental permit that has been reviewed against the nutrient targets set out in the conservation objectives for the river SAC, it may be possible for a planning authority to conclude that there will be no likely significant effect with regard to phosphorus. Further mitigation can therefore be 'screened out'. Further detail on this approach will be set out in SPG.

Mitigation measures may be secured where necessary to ensure there is no adverse impact on the integrity of European sites. In accordance with Welsh Government and NRW guidance, mitigation may take a variety of forms, including on-site and off-site measures, contributions to strategic mitigation schemes or developer-led/project specific mitigation, provided that such measures are demonstrated to be effective and deliverable.

Supplementary Planning Guidance (SPG) will be prepared to provide further clarification on the implementation of this policy. This will reflect the nutrient neutrality evidence base that has been prepared to inform the RLDP, including a Strategic Mitigation Options Report, Nutrient Mitigation Action Plan and Developer Mitigation Handbook. These documents identify and provide detail on the range of mitigation options available and their implementation, including consideration of threshold, integrated catchment improvements, strategic or developer-led nutrient neutrality approaches.

²² Including NRW advice [Natural Resources Wales / Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation](#) and WG planning guidance [Clarification note: applying the tests of soundness to Local Development Plans \(LDPs\)](#) and [Planning Guidance - Development in SAC Rivers](#)

As national guidance and requirements in relation to nutrient neutrality continue to evolve, the Developer Mitigation Handbook will be reviewed and updated periodically to reflect changes in nutrient mitigation requirements as and when required.

~~Following evidence of the environmental impacts of eutrophication and in particular the nutrient phosphates in Monmouthshire's rivers, namely the River Usk and River Wye, NRW has issued detailed planning guidance to ensure that the water quality of our rivers does not deteriorate any more.~~

~~Any proposed development that increases the volume of concentration of wastewater and is within the catchment areas of the River Usk and River Wye will need to evidence within a planning application that the development proposal is in accordance with the latest NRW guidance. Development proposals need to ensure they would not result in an unacceptable impact of the water quality of our SAC rivers.~~

~~In most cases there will be a requirement to connect to the public sewerage system. DCWW have confirmed that there is a firm commitment to secure improvements to their WwTW to reduce the amount of phosphates entering the water environment providing water quality improvement and capacity for new sustainable development.~~

- 5.5. The site allocation policies in the Usk and Wye catchments have also been updated. It is proposed to include the following additional criterion and supporting text to site allocation policies in the River Usk catchment and River Wye catchment respectively:

Site allocations in the River Usk Catchment- HA1, HA5, HA10, HA11, HA12, HA14, HA15, HA16 and HA17

Protection of Water Quality

- ***The site is within the River Usk Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.***

The site is within the River Usk Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.

Site allocations in the River Wye Catchment- HA5, HA6, HA7 and HA8

Protection of Water Quality

- ***The site is within the River Wye Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.***

The site is within the River Wye Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water

Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.

- 5.6. It is also proposed to update the Infrastructure Deliver Plan (IDP) as set out in Appendix 8 of the Deposit RLDP and the IDP Background Paper to reflect the above position. These changes are set out in the Schedule of Proposed Changes to the Deposit RLDP (SD8) – Phosphate Related Matters, April 2026 which is attached at Appendix 6. It is also proposed to develop Supplementary Planning Guidance (SPG) to provide further clarification on the implementation of the revised water quality policy. This will reflect the nutrient neutrality evidence base that has been prepared to inform the RLDP, including the Strategic Mitigation Options Report, Nutrient Mitigation Action Plan and Developer Mitigation Handbook. This will be added to the schedule of SPG preparation set out in Appendix 11 of the Deposit RLDP.

6. Next Steps

- 6.1. It is important to note that the way in which nutrient neutrality is mitigated in Wales is a dynamic space at present and any approach will need flexibility to adapt and adjust to changes in policy positions taken by Welsh Government and NRW. This Position Paper will form part of the forthcoming SPG on water quality, and as additional information becomes available will continue to be updated as necessary to reflect the evolving context.

Appendix 1 - PEDW Inspectors' letter to Monmouthshire County Council dated 01/12/25

Archwiliad Cynllun Datblygu Lleol Newydd Sir Fynwy 2018-2033 Monmouthshire Replacement Local Development Plan 2018-2033 Examination

Arolygwyr/Inspectors: J de-Courcey BSc LLB MTPI MRTPI
C MacFarlane BSc (Hons) MSc MRTPI

Swyddog Rhaglen/Programme Officer: Helen Wilson
helen@programmeofficers.co.uk
01432 639547 / 07879 443035

Andrew Jones
Head of Planning
Monmouthshire County Council

01 December 2025

Dear Mr Jones

Replacement Monmouthshire Local Development Plan (LDP) – Initial questions

Having reviewed the Deposit LDP and submission documents, we consider further information to address the issue of the effect of proposed development on riverine Special Areas of Conservation (SACs) is required before the examination can proceed any further.

It may be that some of the information we seek is contained within the submission documents. If so, this information should be signposted rather than duplicated.

The LDP identifies several allocations as connecting to a wastewater treatment works (WwTW) ultimately discharging to a riverine SAC which is presently failing to meet water quality targets in relation to phosphorus. The Habitat Regulations Assessment (HRA) notes that allocations have been made having regard to WwTW permit limits and phosphates solutions proposed as part of a wider approach to the issue with Natural Resources Wales and Dŵr Cymru Welsh Water. The Infrastructure Delivery Plan Background Paper (updated October 2025) also refers to collaborative working to find solutions to enable growth through the LDP process that do not harm the environmental capacity of watercourses.

Whilst the Infrastructure Delivery Plan Background Paper provides some information on WwTW permit capacity, based on the Deposit consultation response from Dŵr Cymru Welsh Water, this is limited. We also consider the information provided in respect of other measures to be insufficient to meet the requirements of Welsh Government's 'Interim Planning Policy Statement on Development in SAC Rivers' (5 August 2025), particularly the need to demonstrate that appropriate steps to avoid deterioration have been secured.

We also consider that the viability and deliverability implications of securing any potential mitigation has not been made clear.

You are also asked to address:

- The implications of the recent judgement of *CG Fry & Son Ltd v SSHCLG [2025] UKSC 35*, which confirms that the requirement for HRA applies to the discharge of planning conditions, for the delivery of housing commitments i.e. those sites not yet complete and subject to the discharge of conditions;
- Your approach to non-residential allocations, particularly given the findings of Annex B to the HRA that policies in relation to Gypsy and Traveller sites, and employment sites, should be screened in for Appropriate Assessment; and
- Additional points set out in the annex to this letter.

Given the potential importance of this matter to ensuring delivery of the LDP strategy, we request the information contained within the attached annex be provided before the examination can proceed further. In recognition of this, we are suspending the examination for a period of **12 weeks** to enable you to complete the additional work and engage with relevant stakeholders.

The Council should prepare a **work programme** for undertaking all additional work, identifying key tasks, and target dates for completion and submission of new/updated documents. The work programme should be submitted to us via the Programme Officer no later than **15 December 2025**. The Council should provide an update to the Programme Officer every **4 weeks**.

The Council must submit the required information and documents by **23 February 2026**, after which we will inform you of the next steps in the examination process. Upon reflection, if the Council consider this period to be insufficient to enable submission of the further evidence that is required to progress with the examination, please advise the Programme Officer of a likely timescale and keep her apprised of any updates.

If any of the matters we have set out above are unclear, please contact the Programme Officer as soon as possible.

This letter will be published on the examination website. We are not inviting any comments or responses from interested parties.

Yours sincerely,

J de-Courcey and C MacFarlane

INSPECTORS

Annex:

The matters contained within the body of the letter should be addressed, including the information below, with an updated HRA, Infrastructure Delivery Plan, mitigation action plan, explanatory/background paper, and schedule of proposed changes to the LDP.

- Clear information on current and future strategies and actions of the Council/Nutrient Management Board; potential timescales and delivery mechanisms; and possible mitigation solutions and their likely effectiveness in reducing nutrient loads.
- For affected sites (allocations and commitments), confirm:
 - Forecast increases in volumes of phosphorus in each year of the LDP (making reasonable assumptions for units/floorspace, phasing, build out and occupancy).
 - Overall total loads for each catchment.
 - The name of the relevant WwTW, permit limits and how any identified capacity relates to the objective of nutrient neutrality.
 - Updated information on planned/recent improvements for phosphorus stripping (including the percentage efficiency of such stripping) at any relevant WwTW.
 - Where additional phosphorus loadings would arise from the site (i.e. less than 100% stripping), signpost potential suitable on-site or off-site mitigation measures to avoid or reduce adverse effects on the SACs, including the predicted duration of any effects and potential load reductions.
- Ensure that the approach to identifying affected sites is undertaken on a consistent basis, providing a justification for that taken to non-residential development.
- Clarify the potential effect of the *CG Fry* judgement (in relation to the requirement for HRA on the discharge of planning conditions) on the delivery of committed sites and identify any assumptions made in relation to windfall allowances.
- Clarify how dwelling numbers and densities for each allocated site have been arrived at and the implications for on-site mitigation measures.
- Clarify whether the Preliminary Viability Report and Addendum Update include a sufficient allowance for any potential mitigation measures.
- A review of the relevant Deposit LDP policies, and identify any amendments required, in light of the matters raised and information requested.
- Consultation with NRW on the updated HRA and their response.

Appendix 2: Technical Note on the Monmouthshire RLDP 2018-2033 Nutrient Budget Calculations for the Usk and Wye Catchments (AECOM, February 2026)

To: Rachel Lewis, Monmouthshire County Council

CC: n/a

By e-mail

**Project name: Monmouthshire rLDP
Nutrient Budget Calculations for the
Usk and Wye Catchments**

Project ref: FINAL

From: AECOM

Date:
February 17th 2026

Monmouthshire RLDP 2018-2033 – Nutrient Budget Calculations for the Usk and Wye Catchments

Introduction

Monmouthshire County Council (MCC) received correspondence from the Inspectors examining the Replacement Local Development Plan (rLDP) requesting further information to address the issue of the effect of proposed development on riverine SACs in respect to the discharge of phosphorus. A copy of this letter is provided in Appendix A but in summary it requires:

- a. Further information on the potential increase in nutrient loading from implementation of the rLDP.
- b. Further information on the approach to mitigation on a 'year by year' and catchment basis.
- c. Details of the steps being taken to implement mitigation measures and how they will be secured.
- d. Consideration of the recent judgement of *CG Fry & Sons Ltd v SSHCLG* [2025] UKSC 35, which relates to committed developments and identify any assumptions made in relation to windfall allowances.
- e. Consideration of whether nutrient contributions from non-residential development need to be considered.

This interim technical note details how the potential increase in nutrient loading from implementation of the rLDP 'year by year' was determined (points (a) and (b) above) for the Usk and Wye catchments only. The technical note also provides a high-level review of mitigation options (point (c) above), the approach to non-residential development (point (e) above) and consideration of the Fry judgment (point (d) above).

Background to Nutrient Neutrality

In many designated estuarine and freshwater habitats sites across the UK, poor water quality due to nutrient enrichment is one of the main reasons for sites being in an unfavourable condition. Excessive levels of nutrients can cause the rapid growth of certain plants through the process of eutrophication. This in turn can lead to reduced biodiversity, and the condition of a site being considered 'unfavourable'. To improve the water quality in these sites, reductions in nutrients are required. As such, and in line with rulings from the European Court of Justice in combined cases C-923/17 and C294-17 (the Dutch Nitrogen case), any new development within affected habitats site catchments that could increase nitrogen and phosphate deposition into the protected sites above consented levels must show that they are 'nutrient neutral'. Under Regulation 63 of the Conservation of Habitats and Species Regulations 2017¹ an LPA (competent authority) cannot legally consent a plan or project that will have an adverse effect on the integrity of any European protected nature conservation site.

These nutrient neutrality requirements for new development now apply in many areas of the country, including the catchments of the River Wye Special Area of Conservation (SAC) and the River Usk SAC. AECOM has experience providing technical support to Local Planning Authorities (e.g. Carmarthenshire County Council, Dorset County Council)

¹ The Conservation of Habitats and Species Regulations 2017 [Online]. Available at:
<https://www.legislation.gov.uk/uksi/2017/1012/contents>

and undertaking nutrient neutrality assessments (NNA) in a number of affected catchments across Wales and England, including the Carmarthen Bay and Estuaries SAC, Somerset Levels and Moors Ramsar site, River Camel SAC, Stodmarsh SAC/Ramsar, Chesil and the Fleet SAC/Special Protection Area (SPA), River Axe SAC, Teesmouth and Cleveland Coast SPA/Ramsar, Poole Harbour SPA/Ramsar, River Avon SAC, River Wensum SAC, the Broads SAC, River Derwent and Bassenthwaite Lake SAC and River Eden SAC.

One way that the potential impact of new development can be determined is by using nutrient neutrality calculations to create a nutrient budget. A calculation methodology covering both nitrogen and phosphorus has been developed by the Welsh Government. Individual county councils have in some cases also produced calculators for calculating total phosphorous (TP) nutrient budgets. For Monmouthshire, the standard Nutrient Budget Calculator for Wales is adopted.

Monmouthshire Replacement Local Development Plan 2018-2033

In the Infrastructure Delivery Plan, Background Paper (Updated October 2025)² the Council sets out in brief how they are planning to deal with an increase in phosphorus emissions from new development. The Council has been working collaboratively with Natural Resources Wales (NRW), Dŵr Cymru Welsh Water (DCWW), Welsh Government, the development industry and their biodiversity officers to find solutions to enable growth and allocate sites through the RLDP process that do not harm the environmental capacity of watercourses in their area. Dŵr Cymru Welsh Water (DCWW) has recently upgraded in 2023 the phosphorus stripping capacity of Monmouth WwTW reducing contributions in the River Wye catchment and prioritised improvement works at the Llanfoist WwTW serving Abergavenny (benefitting the River Usk catchment) by the end of 2025. This was in addition to an initial investment of £100m in phosphorous reduction within their previous AMP7 (2020-2025) as well as further investment proposed throughout the AMP8 (2025-230) period. This investment will significantly reduce the amount of phosphates entering the water environment from the treatment works, providing environmental improvement and reducing the impact from new development. However, it will not eliminate all increases in phosphorous from future development and thus additional mitigation will be required to ensure that development proposed in the RLDP is nutrient neutral in terms of phosphorous.

Budget Calculations

The nutrient budget for all allocated and committed developments in the Usk and Wye SACs was undertaken using the Wales Nutrient Budget Calculator³. This calculator is used to determine phosphorous and nitrogen mitigation requirements for development within the catchments of affected SAC rivers and marine water bodies. It covers the River Wye and River Usk catchments which are within Monmouthshire. Developments in both the River Wye and Usk are only required to mitigate for phosphorous.

There are a total of nine allocated developments in the Usk SAC catchment (HA1, HA5, HA10, HA11, HA12, HA14, HA15, HA16, and HA17) and four allocated or committed developments in the Wye SAC catchment (HA4, HA6, HA7, HA8) and the committed development West of Rockfield Road (DC/2017/00539). MCC provided the following data for these developments:

- SAC nutrient neutrality catchment area (shapefile).
- Proposed allocated and committed site locations (shapefile), total site areas (hectares), current land use and number of dwellings per development including occupancy.
- The number of dwellings to be completed in each year of the RLDP (2025-2033).
- The proportion of open market dwellings and affordable homes per development.
- The proportion of each development expected to be Green Infrastructure and / or SuDS.
- The relevant WwTW that will serve the development and WwTW catchment areas (shapefile).
- Current and future permit limits of the relevant WwTW.

The initial data provided for allocated and committed sites by MCC is detailed in Appendix B, and Figure 1 and Figure 2 show the location of each allocated site in relation to the Usk and Wye SAC nutrient neutrality catchments and DCWW WwTW areas, respectively.

² Infrastructure Delivery Plan, Background Paper [Online]. Available at: <https://www.monmouthshire.gov.uk/app/uploads/2025/10/SD104-Infrastructure-Delivery-Plan-Background-Paper-Updated-October-2025.pdf>

³ [Nutrient budget calculator | GOV.WALES](#)

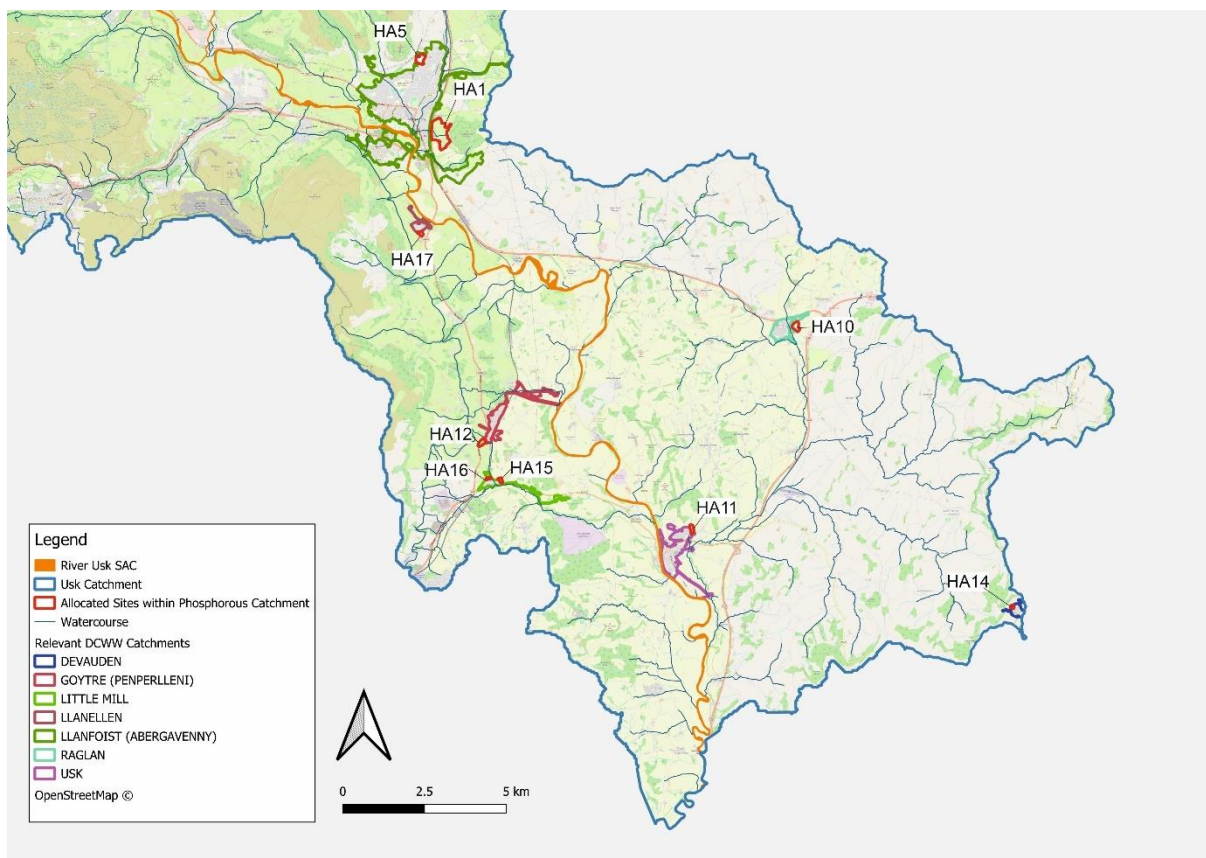


Figure 1 Usk SAC and Nutrient Neutrality Catchment Area

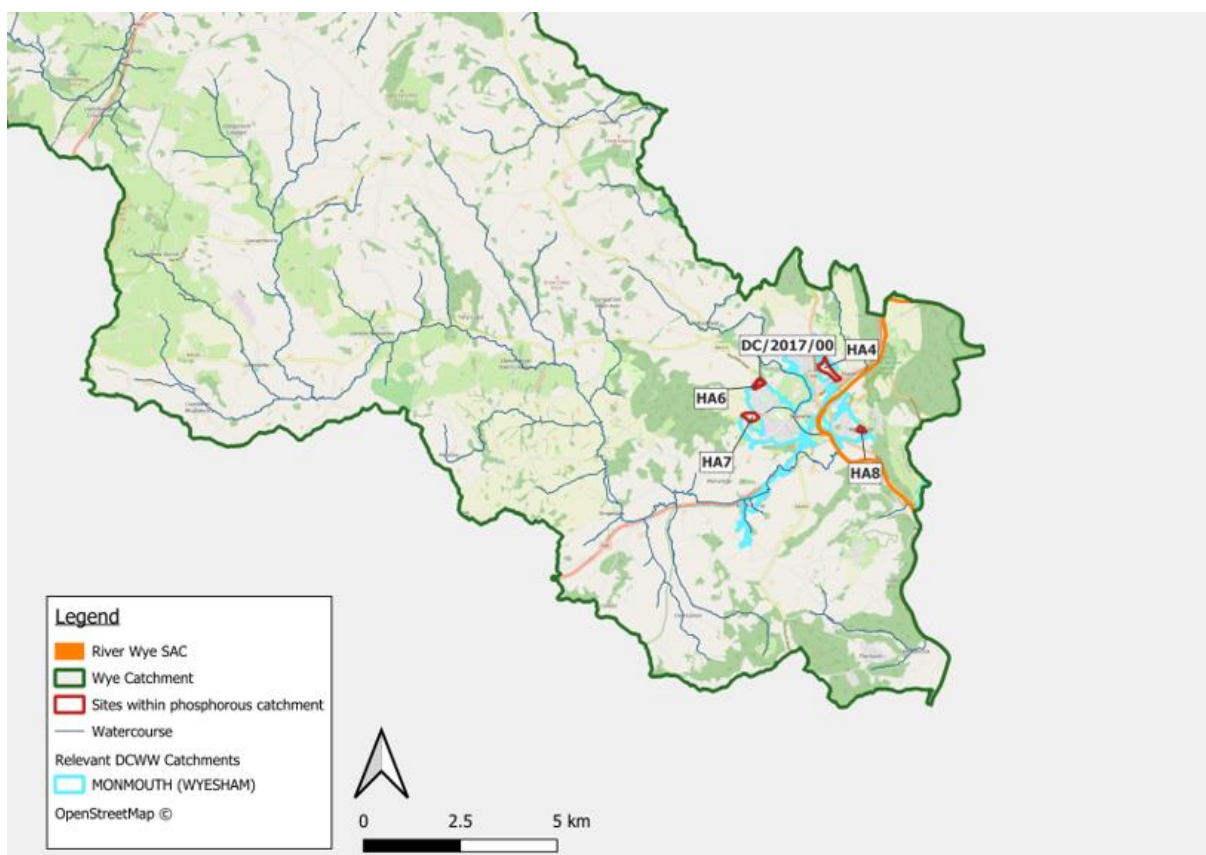


Figure 2 Wye SAC and Nutrient Neutrality Catchment Area

This data was used to calculate the nutrient budget for each development in each year of the rLDP as required by the Inspectors. This was then used to create a cumulative budget taking into account WwTW upgrades and phosphorous

stripping. The final nutrient budget will require mitigation throughout the course of the rLDP, which will inform future delivery of any strategic mitigation solutions should MCC consider that approach.

Affordable Homes

There was some uncertainty regarding how occupation of affordable homes should be included in the budget. Welsh Government guidance indicates that on a precautionary basis it is acceptable to estimate the maximum % of occupants which might represent new residents to the catchment⁴. It is accepted that those moving into affordable homes are likely to already be local residents and thus probably reside within the county and the nutrient neutrality catchment area. Thus, they are already present in the baseline and do not need to be included in the nutrient budget estimation. As there is a requirement for 50% of development to be for affordable homes, this is potentially an important consideration when estimating the overall nutrient budget for each allocated site.

MCC undertook a review of Homesearch data for new build affordable homes in Monmouth and Abergavenny over the last two years and concluded that approximately 50% of these homes were allocated to people already living in the local area.

This value is an informed assumption, but adopting a precautionary principle, two different housing scenarios have been assessed. The worst-case scenario in terms of excess TP generated by each allocated site does not include any reduction in occupancy for affordable homes. The best-case scenario includes all open market homes and 50% of the affordable homes (i.e. it ignores wastewater from 50% of the affordable homes on the basis that those occupying them already reside in the nutrient neutrality catchment).

Additional Phosphorous from Wastewater

In order to calculate the additional phosphorous generated by wastewater from the allocated site developments the following data is required for the Wales Nutrient Neutrality Calculator:

- **SAC Catchment** – Provided by MCC.
- **Postcode** – Inferred using the relevant Candidate Sites Assessment Proforma⁵ for the development and identifying the closest postcode to the site. The postcode is used to automatically update the site characteristics including average annual rainfall.
- **Number of dwellings** – Data provided by MCC. The number of dwellings was phased over the period of the rLDP, so the number of dwellings completed in each year was input into the calculator.
- **Occupancy** – The Welsh Calculator automatically uses an LPA specific occupancy rate based on the postcode for the development. This value is 2.27 for Monmouthshire. An alternative option was considered where it is assumed that each bedroom within the development will be occupied by one person, but this results in a higher occupancy value than the default and would not be representative of average occupancy rates throughout the region.
- **Water usage** - This is set to a default of 120 litres/person/day which is 10 litres higher than the Building Regulations standard set by the Welsh Ministers of 110 litres/person/day of wholesome water where a dwelling/unit is erected. The standard is based on a 'fittings approach' where water efficiency compliance is achieved through water efficient fittings. The extra 10 litres/person/day is a precautionary approach to account for water usage variations and account for any potential future changes to the water fittings in perpetuity.
- **Waste Water Treatment Works** – Identification of the wastewater treatment works the development would be served by is required. This was provided by MCC along with details of any upgrades that will take place during the rLDP period.

The wastewater nutrient loading of each allocated site development is then calculated based on these inputs. This process was then repeated for each year of the rLDP.

Surface water discharges from development

NRW's advice to planning authorities for planning applications affecting nutrient sensitive SAC's states that for the purpose of nutrient balance calculations, surface water discharges do not need to be considered as a source of nutrients. This is based on the presumption that for all developments, rainwater is kept separate from foul wastewater and discharged in line with planning guidance on rainfall disposal. This means that water discharges should not be contaminated with foul water or pollutants (i.e. the assumption is the SuDS will remove 100% of the phosphorous in the runoff)⁶. Based on this guidance the surface water loads generated by developments due to change in land use have not been included in the calculations and final nutrient budget, despite this option being available in the calculator.

⁴ [Planning Guidance - Development in SAC Rivers](#)

⁵ [RLDP Submission - Monmouthshire](#)

⁶ [Natural Resources Wales / Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation](#)

WwTW Upgrades

Several WwTW within the affected catchments, most notably Llanfoist (Abergavenny) and Goytre within the Usk Catchment, have proposed permit limit upgrades which will reduce the wastewater loading within the catchment. Other key WwTW's, including Monmouth in the Wye catchment and Raglan in the Usk catchment have already implemented P stripping in the previous AMP7 cycle but have no proposed upgrades to P treatment during the rLDP period. These reductions in the permit limits of key WwTW will reduce the existing wastewater loads entering the catchment. However, nutrient neutrality restrictions require that all developments in the affected catchments must demonstrate nutrient neutrality. In AMP8 (2025-2030) DCWW are investing over £9 million to improve treated effluent quality in multiple WwTWs in the Usk catchment including Usk, Little Mill and Llanellen as part of their Sanitary Determinants programme (Ammonia, Biological Oxygen Demand and Suspended Solids). This is also the case in the Wye catchment where £4 million is being invested as part of the sanitary determinants programme (including at Monmouth WwTW). However, further improvements to P permit limits are not proposed at these WwTW's.

CG Fry & Sons Ltd v SSHCLG [2025] UKSC 35

The judgment of this case means that appropriate assessment may be required at reserved matters or discharge of condition stage for any development that was granted outline permission before decision makers were aware of the nutrient impacts to the SAC. The nutrient budget estimates presented here are based on development information provided to us by Monmouthshire County Council and include several developments which already have outline planning permission, thus being in accordance with this recent caselaw.

Assessment Scenarios

Reflecting assumptions that need to be made at this stage, two scenarios have been assessed to provide a range of potential outcomes to support decisions regarding future mitigation approaches. It is recommended that the assumptions used and the scenarios tested are kept under review and are revisited if more data becomes available. The current scenarios evaluated as part of this assessment are as follows:

- **Scenario 1 (Worst Case Scenario)** – Includes all housing types with no reduction in occupancy for affordable homes.
- **Scenario 2 (Best Case Scenario)** – Discounts 50% of affordable homes on the basis that half of allocated affordable homes are provided to local people who are likely to already be living within the nutrient neutrality catchment.

Final Nutrient Budget and Results

The TP budget is calculated automatically once all required inputs have been entered into Stage 1, Stage 2 and Stage 3 of the calculator.

- **Stage 1** – Calculates the nutrient wastewater loading of a development based on the number of properties, occupancy rate, water usage and WwTW permit.
- **Stage 2** – Calculates the baseline surface water nutrient loading from the development due to its current land use.
- **Stage 3** – Calculates the future wastewater nutrient loading based on the proposed future land use of the developed site.
- **Stage 4** – Calculates the overall nutrient budget plus an additional 20% buffer.

The calculation involves adding the values from Stage 1 and Stage 3 and then subtracting the values from Stage 2. A 20% precautionary buffer is then added to the result. This calculation is completed automatically in the Stage 4 worksheet. This can be summarised as:

$$(Stage\ 1 - Stage\ 2 + (Stage\ 3)) * 1.2 = Stage\ 4$$

Based on NRW guidance the final nutrient budget only includes the Stage 1 wastewater loading and a 20% buffer. This value is the residual TP taking account of upgrades at WwTW. Results are presented for each year of the rLDP.

Usk Catchment Results

Scenario 1 (Worst-Case Scenario)

The results for the worst-case scenario for the Usk catchment are displayed in Table 1.

Table 1 Cumulative Nutrient Budgets within the Usk SAC Catchment (kg TP/year) – Scenario 1 (Worst-Case Scenario)

Site ID	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mths
HA1	0.00	0.00	0.00	16.72	38.21	59.70	81.19	102.68	119.40
HA5	0.00	0.00	11.94	23.88	23.88	23.88	23.88	23.88	23.88
HA10	0.00	0.00	4.78	6.44	6.44	6.44	6.44	6.44	6.44
HA11	0.00	5.96	23.87	23.87	23.87	23.87	23.87	23.87	23.87
HA12	0.00	0.00	17.90	25.07	25.07	7.02*	7.02*	7.02*	7.02*
HA14	0.00	0.00	0.00	5.96	11.93	11.93	11.93	11.93	11.93
HA15	0.00	2.99	11.94	11.94	11.94	11.94	11.94	11.94	11.94
HA16	2.99	8.95	8.95	8.95	8.95	8.95	8.95	8.95	8.95
HA17	0.00	0.00	0.00	0.00	5.96	15.52	15.52	15.52	15.52
Windfall 1 (Abergavenny)	0.00	0.00	0.00	0.00	0.00	7.15	14.30	21.46	23.84
Windfall 2 (Rural Secondary Settlement)	0.00	0.00	0.00	0.00	0.00	5.96	11.93	11.93	11.93
Total Cumulative	2.99	17.90	79.38	122.83	156.25	182.36	216.97	245.62	264.72

*new WwTW permits apply from 2030/31 onwards hence the reduction in TP load.

These results are a cumulative nutrient budget which reflect the current proposed phasing of the proposed developments across the rLDP. As more houses are completed, the phosphorous budget requiring mitigation in that year also increases. In some cases, the permit limit of the relevant WwTW will be reduced during the rLDP period, which will reduce the nutrient budget of the development as more of the P load in the wastewater will be removed. However, this was only the case for one development in the Usk catchment (HA12). The results are displayed in Figure 3.

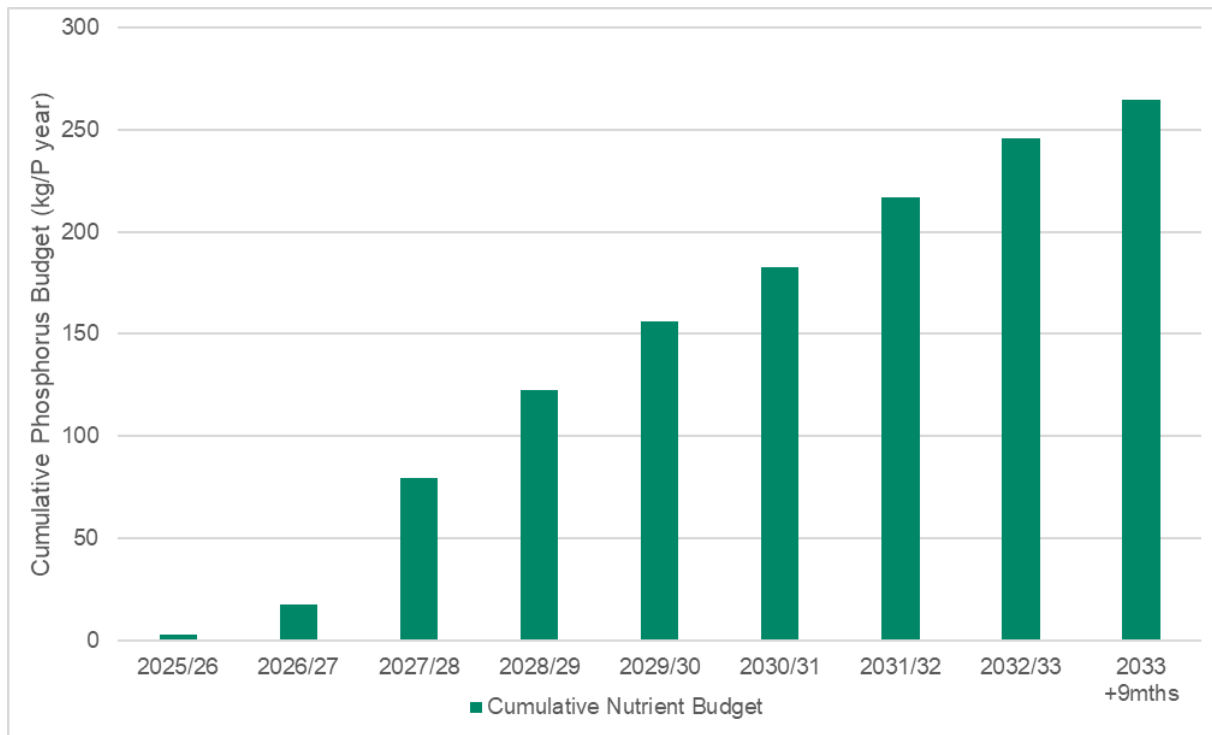


Figure 3 Usk Catchment Cumulative Nutrient Budget Scenario 1 (Worst Case Scenario)

The total nutrient budget for phosphorous in the Usk catchment increases year on year throughout the RLDP period and is a maximum value of 265 kg TP/year in 2033. The largest contribution to this nutrient budget is the HA1 development in Abergavenny.

Scenario 2 (Best-Case Scenario)

The results for the best-case Usk catchment scenario which includes all the open market homes but only 50% of affordable homes for the reasons described earlier are shown in Table 2.

Table 2 Cumulative Nutrient Budgets within the Usk SAC Catchment (kg TP/year) – Scenario 2 (Best-Case Scenario)

Site ID	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mths
HA1	0.00	0.00	0.00	12.42	28.66	44.89	61.13	77.12	89.54
HA5	0.00	0.00	9.07	17.90	17.90	17.90	17.90	17.90	17.90
HA10	0.00	0.00	3.58	4.88	4.88	4.88	4.88	4.88	4.88
HA11	0.00	4.18	17.90	17.90	17.90	17.90	17.90	17.90	17.90
HA12	0.00	0.00	13.73	19.10	19.10	5.35	5.35	5.35	5.35
HA14	0.00	0.00	0.00	4.18	8.95	8.95	8.95	8.95	8.95
HA15	0.00	2.39	8.95	8.95	8.95	8.95	8.95	8.95	8.95
HA16	2.39	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56
HA17	0.00	0.00	0.00	0.00	4.78	11.94	11.94	11.94	11.94
Windfall 1	0.00	0.00	0.00	0.00	0.00	5.50	10.99	16.49	18.16
Windfall 2	0.00	0.00	0.00	0.00	0.00	4.78	8.95	8.95	8.95
Total Cumulative	2.39	13.13	59.80	91.91	117.70	137.62	163.52	185.02	199.10

In this scenario, the total cumulative budgets year-on-year are lower with a final nutrient budget for the whole catchment of 199 kg TP/year. The largest contribution still arises from the HA1 development. Figure 4 presents the cumulative nutrient budgets for all Usk catchment developments across each year of the rLDP, for the best-case scenario.

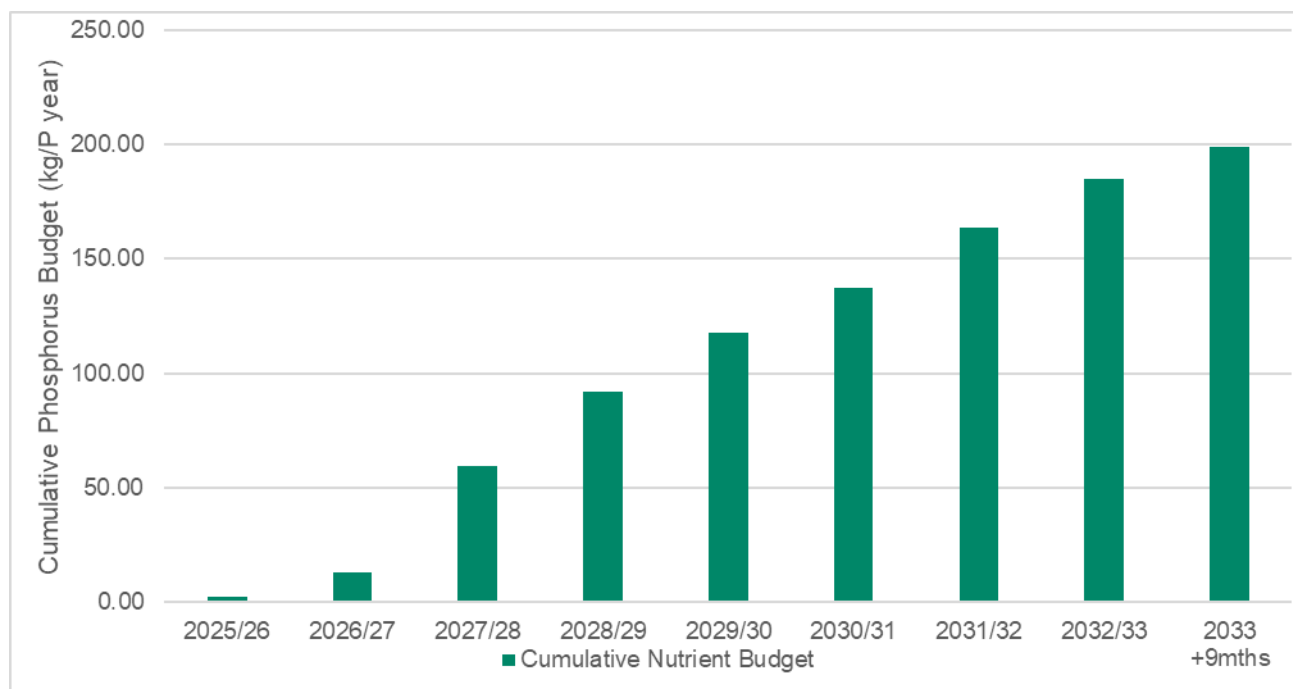


Figure 4 Usk Catchment Cumulative Nutrient Budgets for all Developments by Year of the rLDP Scenario 2 (Best-Case scenario)

Wye Catchment Results

Scenario 1 (Worst-Case Scenario)

The results for the worst-case scenario for the Wye catchment are displayed in Table 3.

Table 3 Cumulative Nutrient Budgets within the Wye SAC Catchment (kg TP/year) – Scenario 1 (Worst-Case Scenario)

Site ID	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mths
HA4	0.00	0.00	5.96	17.90	29.84	41.78	53.72	64.46	64.46
HA6	0.00	0.00	0.00	0.00	9.55	14.33	14.33	14.33	14.33
HA7	0.00	2.39	14.33	26.27	26.27	26.27	26.27	26.27	26.27
HA8	5.96	11.93	11.93	11.93	11.93	11.93	11.93	11.93	11.93
West of Rockfield Rd	0.00	8.35	16.70	16.70	16.70	16.70	16.70	16.70	16.70
Windfall	0.00	0.00	0.00	0.00	0.00	0.48	0.96	1.44	1.92
Total Cumulative	5.96	22.67	48.92	72.80	94.30	111.49	123.91	135.13	135.61

The total nutrient budget for phosphorous in the Wye catchment increases year on year throughout the RLDP period and is a maximum value of 136 kg TP/year in 2033. The largest contribution to this nutrient budget is the HA4 development in Monmouth.

Figure 5 presents the cumulative nutrient budgets for all Wye catchment developments across each year of the rLDP, under the worst-case scenario.

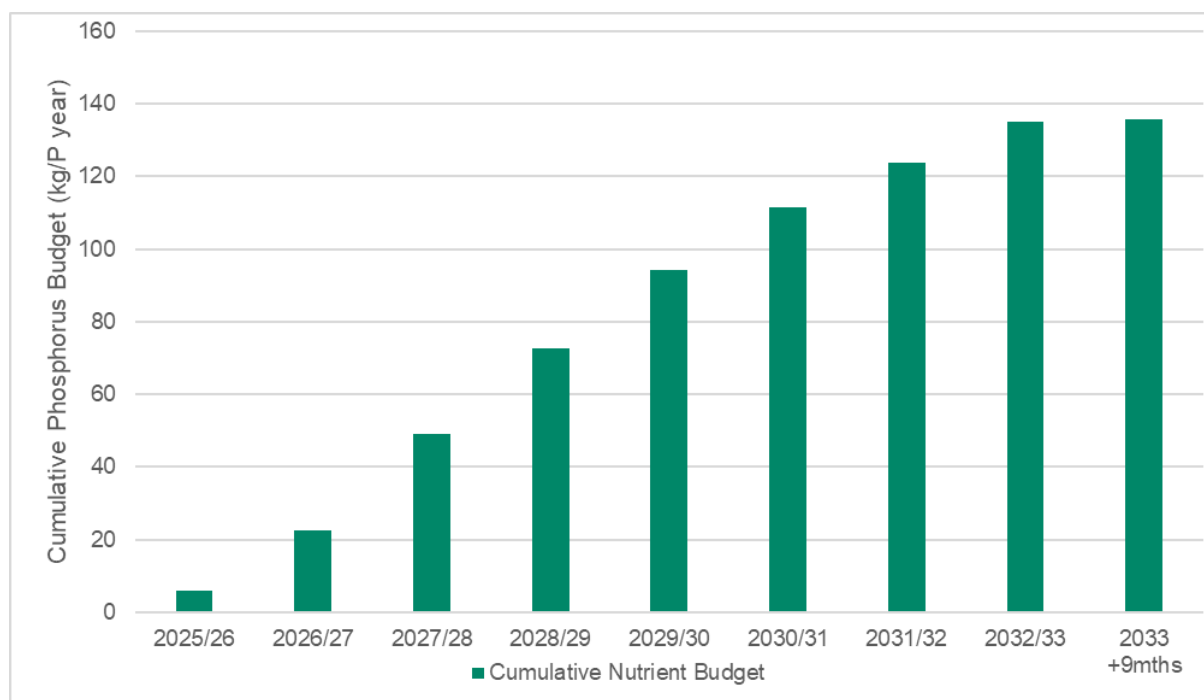


Figure 5 Wye Catchment Cumulative Nutrient Budgets for all Developments by Year of the rLDP Scenario 1 (Worst-case scenario)

Scenario 2 (Best-Case Scenario)

The results for the best-case Wye catchment scenario which includes all the open market homes but only 50% of affordable homes based on the reasons described earlier are shown in Table 4.

Table 4 Cumulative Nutrient Budgets within the Wye SAC Catchment (kg TP/year) – Scenario 2 (Best Case Scenario)

Site ID	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mths
HA4	0	0	4.536	13.608	22.68	31.512	40.344	48.468	48.468
HA6	0	0	0	0	7.164	10.74	10.74	10.74	10.74
HA7	0	2.148	11.94	21.732	21.732	21.732	21.732	21.732	21.732
HA8	3.108	5.976	5.976	5.976	5.976	5.976	5.976	5.976	5.976
West of Rockfield Rd	0	6.924	13.848	13.848	13.848	13.848	13.848	13.848	13.848
Windfall	0	0	0	0	0	0.48	0.96	1.44	1.92
Total Cumulative	3.108	15.048	36.3	55.164	71.4	84.288	93.6	102.204	102.684

In this scenario, the total cumulative budgets year-on-year are lower with a final nutrient budget for the whole Wye catchment of 103 kg TP/year. The largest contribution still arises from the HA4 development. The final cumulative values for each year of the RLDP are displayed in Figure 6.

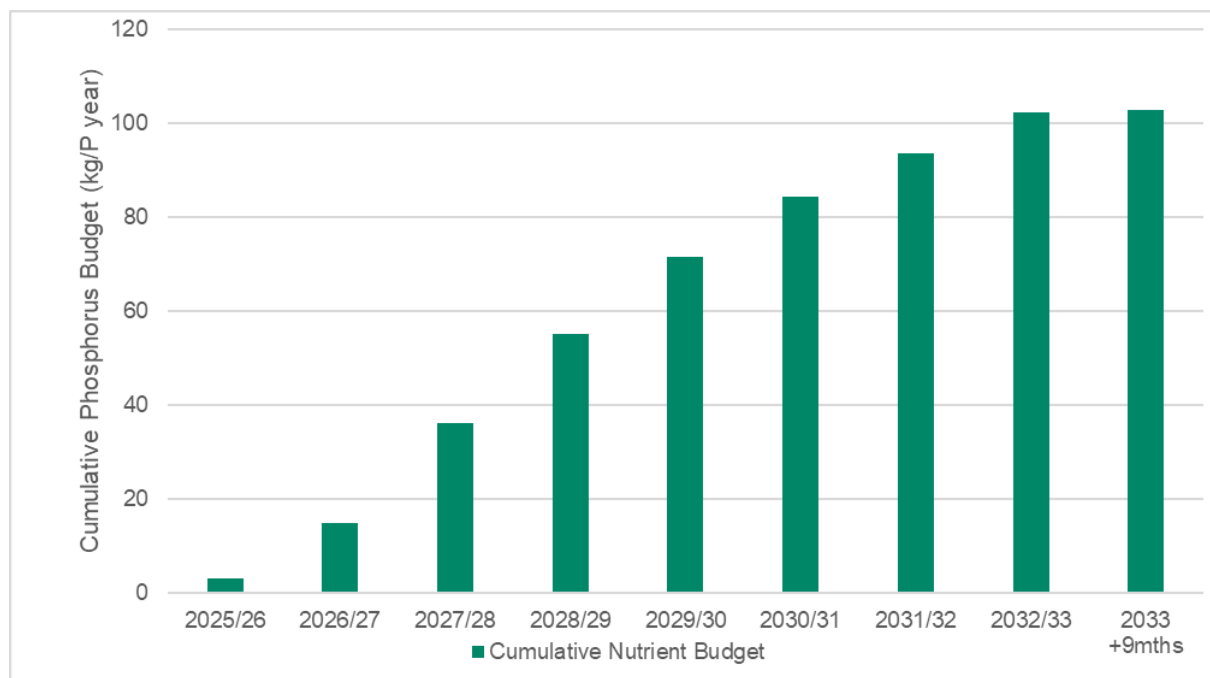


Figure 6 Wye Catchment Cumulative Nutrient Budgets for all Developments by Year of the rLDP Scenario 2 (Best Case Scenarios)

Non-residential Development

New development, including housing or agricultural enterprises, can lead to increased loads of nutrients entering the catchments of the Usk and Wye (and hence their respective affected SACs) from additional wastewater or land management⁷. NRW advice regarding nutrient neutrality applies to any development within nutrient neutrality catchments that increases nutrient levels.

It is a matter for the Planning Authority to determine whether a plan or project is likely to have a significant effect on a SAC. In general, key affected developments within a nutrient neutrality catchment include, and are not restricted, to the following⁷.

Residential development: New homes or houses which may lead to an increase in occupancy within the nutrient neutrality catchment.

⁷ Habitats regulations assessment (HRA) guidance | GOV.WALES (2025). Available at: <https://www.gov.wales/habitats-regulations-assessment-hra-guidance> (Accessed: 8 January 2026).

Domestic extension with increased occupancy / change in use: Domestic extension that will lead to the creation of independent living accommodation as a separate planning unit may lead to an increase in occupancy by residents from outside a nutrient neutrality catchment.

Non-residential development: Developments expected to serve a population from outside of a nutrient neutrality catchment who are not already served by residential connections to existing public or private sewers discharging within the nutrient neutrality catchment. For example, this can include self-service and serviced tourist accommodation such as hotels, guest houses, bed and breakfasts, self-catering holiday facilities, camping and caravan sites. New commercial or industrial developments, such as conference facilities, large retail sites or major tourist attractions may also result in the release of additional nutrients to the system.

Temporary events: Sites with planning consent to hold frequent seasonal events or activities on a long-term basis should be considered permanent development. These include, but are not restricted to, seasonal wedding venues, touring caravan parks and outdoor activity venues.

Developments involving wastewater connections: Any proposal that connects to public WwTW or uses Package Treatment Plants (PTPs) within a nutrient neutrality catchment.

Agricultural: New agricultural developments involving the production, storage, management and spreading of organic manures and slurries, which have the potential to contribute towards the amount of nutrients entering a designated site. Agricultural development that are not considered to have a likely significant effect on SAC features in relation to water quality impacts include covering an existing yard and roofing for manure / slurry or silage storage that does not impact the existing store structure.

Exemptions and exceptions cited by NRW:

Any development that improves existing water quality discharges by reducing the nutrient concentration of wastewater without increasing volume, or by decreasing the volume of wastewater produced without increasing the concentration of nutrients.

- Domestic extensions are considered by NRW to provide increased living space within existing properties that may not result in a change in the number of occupants. This is the case provided that the extension will not result in the creation of independent living accommodation, a separate planning unit and/or a change in use.
- Developments using PTPs: Where PTPs can be justified (i.e. it can be shown to the satisfaction of the LPA that connection to a public sewer is not feasible), small discharges to ground (<2 m³/day) via a suitable drainage field are considered unlikely to have a significant effect on a SAC. For this to be the case the PTP should be built to the relevant British Standard (BS 6297:2007+A1:2008), the drainage field must be located more than 40 m from any surface water feature such as a river, stream, ditch or drain, located more than 50 m from a SAC boundary, and at least 50 m from any other known discharge to ground⁷.
- Developments intended to provide services, facilities, commercial sites, or places of employment (e.g., community buildings, schools etc.) for a local population already served by residential connections to existing public or private sewers discharging within the nutrient neutrality catchment.
- Community or employment facilities serving an existing local population.
- Certain agricultural improvements with no livestock increase.

High Level Review of Mitigation Options

There are several typical nutrient neutrality mitigation options which could be implemented for developments. These may include Nature Based Solutions such as the creation of wetlands, water efficiency measures and fallowing agricultural land, all of which slow the movement of, and store water, on site allowing physical and biogeochemical processes to permanently remove nutrients. Some of the more common and relevant mitigation options are described below and further examples of treatment efficiencies provided within Table 5. As part of the high-level review of mitigation options, estimates have been made to give an indication of the scale of each mitigation that would be required to fully mitigate the nutrient budgets calculated for the rLDP. These are only examples based on assumptions. However, they are useful to put the scale of mitigation needed into context.

Arable land conversion to less nutrient intensive land use: This could include converting nutrient intensive agricultural land to woodland, grassland or natural wetlands. However, this method of mitigation would require a significant area of land to offset the estimated phosphorous loads for development in the Usk and Wye catchments. Therefore, this option may only be applicable for developments with a large amount of land availability or in areas where purchasing additional off-site land for conversion is a financially or technically viable option. It could, however, be used in conjunction with other options to provide partial mitigation through the allocation of some of the site to greenspace,

woodland or other natural habitats. To estimate the mitigation provided by arable land conversion several assumptions were required. For this high-level review of mitigation options, it has been assumed that the site would have slightly impeded drainage, which was the case for most sites assessed and would receive between 1400-1600 mm⁸ of rain annually for the Usk and 1100-1200 mm of rain annually for the Wye⁹ as per catchment statistics. The current land use has also been assumed to be lowland grazing given that much of the catchment appears to be used for this purpose. Land used for arable farming would likely result in more phosphorus saving.

Domestic Package Treatment Plants (PTP) upgrades: Nutrient credits could also be generated by upgrading existing PTP and septic tank units. For example, an applicant proposing new houses could replace septic tanks at existing neighbouring properties, or elsewhere in the catchment. This would require contacting third party properties and coordinating replacements throughout the catchment and may not be viable strategically given the practical difficulties delivering this at a strategic scale. To calculate the potential mitigation provided it has been assumed that existing septic tanks would discharge waste at the concentration levels specified in the nutrient budget calculator for the default septic tank (i.e. 11.2 mgP/l). The upgraded septic tank has been assumed to be a Graf OneAdvanced system with phosphate reduction package. This is a high performing PTP with regards to phosphorus treatment which can achieve effluent concentrations of 0.4 mg/l¹⁰. This is not an endorsement of the PTP model but gives an indication of the potential treatment efficiencies that could be achieved using a PTP as opposed to a septic tank. If other models are used it may not be possible to achieve the same reductions in phosphorus. It is also important to confirm that any discharge from a PTP to a watercourse or to ground is in fact a discharge to the SAC before an upgrade can be accepted as mitigation.

Treatment wetlands: Wetlands can be implemented to capture runoff from agricultural land, receive loads from diverted rivers or treat WwTW effluents. If designed and sited appropriately treatment wetlands can offer some of the best nutrient outcomes per hectare of land. Generally, the greater the nutrient load input into the wetland the greater potential for reduction in nutrients. Wetland design is site specific and dependant on the incoming concentrations and flows from a wastewater treatment plant. However, initial feasibility calculations for potential constructed wetlands elsewhere in South Wales provide an indication of the phosphorous removal that could be achieved, these are discussed in Table 5. It should be noted that phosphorus permits are tighter in the Wye catchment and so the potential for wetlands is less but may still be a suitable option.

SuDS: All development within the Usk and Wye catchments will be Sustainable Drainage Approving Body (SAB) compliant and as such the majority, if not all, of the developed site will be routed through SuDS drainage systems which has the potential to reduce phosphorous loads in surface water runoff. Retrofitting SuDS to existing urban land to claim additional mitigation credits is also a potential mitigation option. Retrofitting SuDS could be implemented to capture and treat surface runoff, some of which may also be draining existing urban land to combined sewers and subsequently WwTW. Reducing spills from combined sewers is another similar option, although there are significant issues with evidencing the benefit and this is not recommended.

Most SuDS features can provide an opportunity to remove nutrients from surface water drainage if they are suitably designed and maintained. CIRIA have provided guidance as to how SuDS should be designed to achieve nutrient removal, this information is available in the CIRIA SuDS Manual (C753F)¹¹, the CIRIA guidance regarding phosphorous removal (C808F)¹², and guidance on nitrogen removal using SuDS (C815)¹³. Sustainable Drainage Approving Body (SAB) can ensure that good practice is followed.

To estimate a percentage removal efficiency for the retrofitting SuDS mitigation option several assumptions have been applied to calculate a precautionary value for SuDS phosphorus reductions, and these are listed below:

- Runoff will be discharged to surface watercourses. If surface water is infiltrating there are circumstances where it may not be considered a source to the designated site, in which case the location would not be appropriate for retrofitting SuDS mitigation.
- It has been assumed that there would be one SuDS management train component and that the SuDS systems predominantly used will be swales, detention basins, retention basins and ponds, which are most appropriate for regional site control and discharges to watercourses.
- As stated within the CIRIA C808 (2022) "Using SuDS to reduce phosphorous in surface water"¹⁴ guidance, 55% of phosphorus (P) in surface runoff is typically bound to sediment, and 45% is dissolved P, respectively.

⁸ [NRFA station catchment information for 56001 - Usk at Chainbridge](#)

⁹ [NRFA station catchment information for 55023 - Wye at Redbrook](#)

¹⁰ [pia_oneadvanced_10 - 50_pe_.pdf](#)

¹¹ [CIRIA SuDS Manual \(C753F\)](#)

¹² [Using SuDS to reduce phosphorus in surface water runoff C808F](#)

¹³ [Using SuDS to reduce nitrogen in surface water runoff\(C815\)](#)

¹⁴ [Using SuDS to reduce phosphorus in surface water runoff C808F](#)

- Based on CIRIA C808 (2022) guidance:
 - Swales have 28% P removal from sediment and 0% dissolved P removal.
 - Detention basins have a 28% P removal from sediment and 12% dissolved P removal.
 - Retention basins have a 28% P removal from sediment and 50% dissolved P removal.
 - Ponds have a 38% P removal from sediment and a 50% dissolved P removal.
 - This gives an overall removal for each SuDS system of 15.4% for swales, 20.8% for detention basins, 37.9% for retention basins and 43.4% for ponds, respectively.

For the high-level appraisal of this mitigation option, we have taken a mean TP removal of the above listed SuDS treatment options. Therefore, the average TP removal applied for SuDS drainage for the developments is 29%. However, we note NRW may hold the view that SuDS are more effective and further consultation with them is recommended to define the most appropriate removal percentage that should be applied.

Water usage: This relies on the increased efficiency of water in new developments by using higher efficiency fittings and appliances to reduce the average water consumption per capita. If scaled up across all new development this option has the capacity to reduce wastewater loads generated by new development but alone will not fully mitigate the calculated nutrient budgets. Similarly, if water efficiency measures were retrofitted to existing housing stock and properties owned and managed by MCC or suitable third parties, a similar nutrient saving can be achieved. However, this option is only possible where the WwTW has a permit for phosphorus and is operating at 90% of this, as it requires a linear relation between water use and phosphorus load from the WwTW to be established. Securing this mitigation will require these solutions to be maintained in perpetuity.

Examples and estimations of the potential treatment for TP for each mitigation option is provided below in Table 5.

Table 5 Mitigation- High level mitigation option appraisal and potential nutrient reduction estimates

Arable land conversion to less nutrient intensive land use ¹⁵	PTP upgrades	Treatment Wetlands SuDS	SuDS Retrofit	Water Usage
				
Usk Catchment				
Converting lowland grazing land to woodland or greenspace creates a nutrient offset by reducing the nutrient loads in surface water runoff. For the assumed rainfall and soil type in the Usk catchment 1 ha of lowland grazing has a nutrient load of 0.43 kg TP/year and 1 ha of greenspace/woodland has a nutrient load of 0.02 kg TP/year, creating an offset of 0.41 kg TP/year. To mitigate against the calculated nutrient budgets, it is estimated that between 520-650 hectares of land would need to be converted depending on the scenario.	Upgrading one dwelling from the default septic tank to an improved PTP (Graf OneAdvanced system with phosphate reduction package, discussed above) can reduce phosphorous discharges to the environment by around 1.11 kg TP/year. Therefore, to mitigate the calculated nutrient budget it is estimated that between 190 - 240 septic tanks in the catchment would need to be upgraded depending on the scenario.	AECOM is currently working on a wetland concept design project where a treatment area of around 1 ha could potentially remove in the region of 250 kg TP/year with effluent concentrations of 5 mg P/l and average flows of 250 m³/day. Therefore, to mitigate against the range of scenarios calculated for the Usk catchment may require between one or two wetlands of this size treating effluents of similar concentrations ¹⁶ .	Retrofitting SuDS to existing urban areas can provide a mitigation benefit by treating surface water flows prior to final discharge. Retrofitting between 350 to 450 ha of urban residential land could provide mitigation for development in the Usk catchment assuming TP removal via SuDS of around 29% can be achieved. However, we note NRW may hold the view that SuDS are more effective and further consultation with them is required, to understand the removal percentage that should be applied.	Taking the largest allocated development in the Usk (HA1) as an example, if a reduced water usage of 100 l/p/d was applied the final nutrient budget in 2033 would reduce to 99.49 kg TP/year and if water usage is reduced further to 80 l/p/d the final nutrient budget would be 79.6 kg TP/year. Compared with the unmitigated and worst-case scenario budget of 119.4 kg TP/year, this represents total reductions of 17% and 33% respectively. There is also potential to retrofit water efficiency measures to existing housing stocks which has the potential to provide mitigation.
Wye Catchment				
Converting lowland grazing land to woodland or greenspace creates a nutrient offset by reducing the nutrient loads in surface water runoff. For the assumed rainfall and soil type in the Wye catchment 1 ha of lowland grazing has a nutrient load of 0.27 kg TP/year and 1 ha of greenspace/woodland has a nutrient load of 0.02 kg TP/year, creating an offset of 0.25 kg TP/year. To mitigate against the calculated nutrient budgets, it is estimated that between 410-550 hectares of land would need to be converted depending on the scenario.	Upgrading one dwelling from the default septic tank to an improved PTP can reduce phosphorous discharges to the environment by around 1.11 kg TP/year. Therefore, to mitigate calculated nutrient budget it is estimated that between 90 - 125 septic tanks in the catchment would need to be upgraded depending on the scenario.	AECOM is currently working on a wetland design project where a treatment area of around 1 ha could potentially remove in the region of 250 kg TP/year with effluent concentrations of 5 mg P/l and average flows of 250 m³/day. Therefore, for the Wye catchment a wetland of a similar size could have the capacity to mitigate the nutrient budget.	Retrofitting SuDS to existing urban areas can provide a mitigation benefit by treating surface water flows prior to final discharge. Retrofitting between 210 - 275 ha of urban residential land could provide mitigation for development in the Wye catchment assuming P removal via SuDS of around 29% can be achieved. However, we note NRW may hold the view that SuDS are more effective and further consultation with them is required, to understand the removal percentage that should be applied.	Taking the largest allocated development in the Wye (HA4) as an example, if a reduced water usage of 100 l/p/d was applied the final nutrient budget in 2033 would reduce to 53.72 kg TP/year and if water usage is reduced further to 80 l/p/d the final nutrient budget would reduce to 42.98 kg TP/year. Compared with the unmitigated and worst-case scenario budget of 64.5 kg TP/year, this represents total reductions of 17% and 33% respectively. There is also potential to retrofit water efficiency measures to existing housing stocks which has the potential to provide mitigation.

¹⁵ Lowland grazing is the predominant agricultural land use type within both catchments and has therefore been used to evaluate nutrient reductions from a change in land use.

¹⁶ Wetland design is site specific and dependant on the incoming concentrations and flows from a wastewater treatment plant. These values represent an estimate of achievable phosphorous reductions based on a feasibility study AECOM has recently undertaken. Further design and site-specific assessment would be required to determine whether wetlands could be provided to WwTW in the Usk and Wye catchments, and what benefit they might achieve. In this case, 5 mg/l was chosen as the effluent P concentration as there were several WwTW plants in the Usk catchment with this permit limit including the Usk, Little Mill and Llanellen WwTW's. However, if a wetland were to treat effluents from a WwTW with a lower permit limit the treatment benefit would be reduced.

Summary

The final cumulative nutrient budget for each catchment under both scenarios is presented in Table 6. For both scenarios and both catchments the proposed development allocated in the rLDP results in the generation of excess phosphorus. Significantly more phosphorus requires mitigation in the Usk catchment compared with the Wye, reflecting the quantum of proposed development in each catchment.

The calculated nutrient budgets for the proposed rLDP have also been compared with what the final nutrient budgets would have been in the absence of AMP8 phosphorus removal upgrades, which are being rolled out to WwTW in the two catchments by DCWW. This shows that for the Usk catchment the WwTW permit upgrades will have a large impact on the final nutrient budget, mostly due to upgrades at Llanfoist WwTW. All developments in the Wye catchment are served by Monmouth WwTW, which was upgraded in 2023 to improve treatment of TP. There are additional improvements planned at Monmouth WwTW as part of DCWW's AMP8 Sanitary Determinants Programme but no additional improvements to P treatment are proposed.

Table 6 Summary results for the final nutrient budget in each catchment in 2033

Scenario	Usk Nutrient Budget 2033 (kg/yr TP)	Wye Nutrient Budget 2033 (kg/yr TP)
Scenario 1 (Worst-Case Scenario)	265	136
Scenario 2 (Best-Case Scenario)	199	103
<i>Nutrient budget if proposed AMP8 phosphorus removal upgrades to WwTW had not taken place</i>	534	136

A number of strategic mitigation options have been considered that can address the forecast excess phosphorus emissions to the Usk and Wye catchments, alone or in combination. There may also be other options that can be considered. Monmouthshire County Council are planning to explore these mitigation options further to determine those that are most suitable and additional information will be made available to Planning and Environment Decisions Wales (PEDW) at a later stage.

It should be noted that NRW have confirmed that as of March 2025 the Lower Wye through Monmouthshire is no longer failing for phosphate¹⁷. The 2024 interim WFD classifications record a result of 33.9 µg/l of phosphate¹⁸ which is below the target of 39 µg/l. It has been suggested by NRW that Monmouthshire County Council may no longer need to enforce nutrient neutrality restrictions but should still consider whether the proposed future development in the Wye catchment can be delivered without causing deterioration of phosphate concentrations back above the 39 µg/l target standard. NRW will be consulted further on this to agree a suitable method for the additional investigation. Ensuring that future development is compliant with the objectives of the Water Environment (WFD) (England and Wales) Regulations 2017 (WER) is also important. A similar situation may occur in the Usk catchment following the proposed phosphorus removal upgrades, although this is not yet evident in current monitoring data.

¹⁷ [Natural Resources Wales / New water quality data sheds light on health of Wales's waters](#)

¹⁸ [Water Watch Wales](#)

Appendix A Inspectors Correspondence

Archwiliad Cynllun Datblygu Lleol Newydd Sir Fynwy 2018-2033 Monmouthshire Replacement Local Development Plan 2018-2033 Examination

Arolygwyr/Inspectors: J de-Courcey BSc LLB MTPI MRTPI
C MacFarlane BSc (Hons) MSc MRTPI

Swyddog Rhaglen/Programme Officer: Helen Wilson
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01432 639547 / 07879 443035

Andrew Jones
Head of Planning
Monmouthshire County Council

01 December 2025

Dear Mr Jones

Replacement Monmouthshire Local Development Plan (LDP) – Initial questions

Having reviewed the Deposit LDP and submission documents, we consider further information to address the issue of the effect of proposed development on riverine Special Areas of Conservation (SACs) is required before the examination can proceed any further.

It may be that some of the information we seek is contained within the submission documents. If so, this information should be signposted rather than duplicated.

The LDP identifies several allocations as connecting to a wastewater treatment works (WwTW) ultimately discharging to a riverine SAC which is presently failing to meet water quality targets in relation to phosphorus. The Habitat Regulations Assessment (HRA) notes that allocations have been made having regard to WwTW permit limits and phosphates solutions proposed as part of a wider approach to the issue with Natural Resources Wales and Dŵr Cymru Welsh Water. The Infrastructure Delivery Plan Background Paper (updated October 2025) also refers to collaborative working to find solutions to enable growth through the LDP process that do not harm the environmental capacity of watercourses.

Whilst the Infrastructure Delivery Plan Background Paper provides some information on WwTW permit capacity, based on the Deposit consultation response from Dŵr Cymru Welsh Water, this is limited. We also consider the information provided in respect of other measures to be insufficient to meet the requirements of Welsh Government's 'Interim Planning Policy Statement on Development in SAC Rivers' (5 August 2025), particularly the need to demonstrate that appropriate steps to avoid deterioration have been secured.

We also consider that the viability and deliverability implications of securing any potential mitigation has not been made clear.

You are also asked to address:

- The implications of the recent judgement of *CG Fry & Son Ltd v SSHCLG [2025] UKSC 35*, which confirms that the requirement for HRA applies to the discharge of planning conditions, for the delivery of housing commitments i.e. those sites not yet complete and subject to the discharge of conditions;
- Your approach to non-residential allocations, particularly given the findings of Annex B to the HRA that policies in relation to Gypsy and Traveller sites, and employment sites, should be screened in for Appropriate Assessment; and
- Additional points set out in the annex to this letter.

Given the potential importance of this matter to ensuring delivery of the LDP strategy, we request the information contained within the attached annex be provided before the examination can proceed further. In recognition of this, we are suspending the examination for a period of **12 weeks** to enable you to complete the additional work and engage with relevant stakeholders.

The Council should prepare a **work programme** for undertaking all additional work, identifying key tasks, and target dates for completion and submission of new/updated documents. The work programme should be submitted to us via the Programme Officer no later than **15 December 2025**. The Council should provide an update to the Programme Officer every **4 weeks**.

The Council must submit the required information and documents by **23 February 2026**, after which we will inform you of the next steps in the examination process. Upon reflection, if the Council consider this period to be insufficient to enable submission of the further evidence that is required to progress with the examination, please advise the Programme Officer of a likely timescale and keep her apprised of any updates.

If any of the matters we have set out above are unclear, please contact the Programme Officer as soon as possible.

This letter will be published on the examination website. We are not inviting any comments or responses from interested parties.

Yours sincerely,

J de-Courcey and C MacFarlane

INSPECTORS

Annex:

The matters contained within the body of the letter should be addressed, including the information below, with an updated HRA, Infrastructure Delivery Plan, mitigation action plan, explanatory/background paper, and schedule of proposed changes to the LDP.

- Clear information on current and future strategies and actions of the Council/Nutrient Management Board; potential timescales and delivery mechanisms; and possible mitigation solutions and their likely effectiveness in reducing nutrient loads.
- For affected sites (allocations and commitments), confirm:
 - Forecast increases in volumes of phosphorus in each year of the LDP (making reasonable assumptions for units/floorspace, phasing, build out and occupancy).
 - Overall total loads for each catchment.
 - The name of the relevant WwTW, permit limits and how any identified capacity relates to the objective of nutrient neutrality.
 - Updated information on planned/recent improvements for phosphorus stripping (including the percentage efficiency of such stripping) at any relevant WwTW.
 - Where additional phosphorus loadings would arise from the site (i.e. less than 100% stripping), signpost potential suitable on-site or off-site mitigation measures to avoid or reduce adverse effects on the SACs, including the predicted duration of any effects and potential load reductions.
- Ensure that the approach to identifying affected sites is undertaken on a consistent basis, providing a justification for that taken to non-residential development.
- Clarify the potential effect of the *CG Fry* judgement (in relation to the requirement for HRA on the discharge of planning conditions) on the delivery of committed sites and identify any assumptions made in relation to windfall allowances.
- Clarify how dwelling numbers and densities for each allocated site have been arrived at and the implications for on-site mitigation measures.
- Clarify whether the Preliminary Viability Report and Addendum Update include a sufficient allowance for any potential mitigation measures.
- A review of the relevant Deposit LDP policies, and identify any amendments required, in light of the matters raised and information requested.
- Consultation with NRW on the updated HRA and their response.

Appendix B Allocated Site Data

Table B1 Housing Development Data provided by MCC for the Usk Catchment

RLDP Policy Rep	Site Name	Settlement	Catchment Area	Status	Gross Site Area (ha)	Total Site Capacity	Open Market Homes	Affordable Homes	Phasing of Development (Base Date 1 st April 2025) Estimated Completions								
									2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mnths
HA1	Land to the East of Abergavenny	Abergavenny	Usk	Allocation	35.9	500	250	250	0	0	0	70	90	90	90	90	70
HA5	Land at Penlanlas Farm	Abergavenny	Usk	Allocation	6.17	100	50	50	0	0	50	50	0	0	0	0	0
HA10	South of Monmouth Rd	Raglan	Usk	Allocation	4.5	54	27	27	0	0	40	14	0	0	0	0	0
HA11	Land East of Burrium Gate	Usk	Usk	Allocation	2.6	40	20	20	0	10	30	0	0	0	0	0	0
HA12	Land West of Trem yr Ysgol	Penperlleni	Usk	Allocation	3.4	42	21	21	0	0	30	12	0	0	0	0	0
HA14	Land at Churchfields	Devauden	Usk	Allocation	1	20	10	10	0	0	0	10	10	0	0	0	0
HA15	Land East Little Mill	Little Mill	Usk	Allocation	1.68	20	10	10	0	5	15	0	0	0	0	0	0
HA16	Land North of Little Mill	Little Mill	Usk	Rollover allocation	0.87	15	7	8	5	10	0	0	0	0	0	0	0
HA17	Land adjacent Llanellen Court Farm	Llanellen	Usk	Allocation	1.56	26	13	13	0	0	0	0	10	16	0	0	0
N/A	Windfall Allowance	Abergavenny	Usk	Windfall		100	50	50	0	0	0	0	0	30	30	30	10
N/A	Windfall Allowance	Secondary Settlements of Raglan, Penperlleni, Usk	Usk	Windfall		20	10	10	0	0	0	0	0	10	10	0	0

Table B2 Housing Development Data provided by MCC for the Wye Catchment

RLDP Policy Ref	Site Name	Settlement	Catchment Area	Status	Gross Site Area (ha)	Total Site Capacity	Open Market Homes	Affordable Homes	Phasing of Development (Base Date 1 st April 2025) Estimated Completions								
									2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mths
HA6	Land at Rockfield Road	Monmouth	Wye	Allocation	1.5	60	30	30	0	0	0	0	40	20	0	0	0
HA4	Land at Leasbrook	Monmouth	Wye	Allocation	11	270	135	135	0	0	25	50	50	50	50	45	0
HA7	Land at Drewen Farm	Monmouth	Wye	Rollover allocation with planning permission	6.6	110	71	39	0	10	50	50	0	0	0	0	0
HA8	Tudor Road, Wyesham	Monmouth	Wye	Rollover allocation with planning permission	2.1	50	0	50	25	25	0	0	0	0	0	0	0
N/A	West of Rockfield Road	Monmouth	Wye	Commitment	2.86	70	45	25	0	35	35	0	0	0	0	0	0
N/A	Windfall Allowances	Monmouth	Wye	Windfall		10	6	4	0	0	0	0	0	2	2	2	2

Appendix 3: Lower River Wye Assessment (AECOM, April 2026)

Monmouthshire rLDP Nutrient Neutrality Support

Task 4 - No Deterioration Assessment - River Wye

Monmouthshire County Council

April 2026

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1. Introduction

In February 2026 AECOM completed a study to estimate the potential increase in phosphorus loading from implementation of Monmouthshire County Council's (MCC) Replacement Local Development Plan (rLDP).

Further evidence was required by Planning and Environment Decision Wales (PEDW) to ensure that the allocated developments in the rLDP can be brought forward without having a likely significant effect on the condition of riverine Special Area of Conservation (SACs) (i.e. the Usk and Wye).

To support that evidence need AECOM produced a proposal in March 2026 entitled 'rLDP Nutrient Neutrality Support', which was subsequently agreed by MCC. This report specifically addresses one of the tasks as characterised in that proposal, specifically:

Task 4 – Investigate whether phosphorus contributions from the developments proposed within the rLDP via foul wastewater treated at Monmouthshire WwTW could cause deterioration of the Lower Wye back to a failing condition.

2. Aim of the No Deterioration Assessment

The Lower River Wye is no longer failing for phosphorus (P), so the remit of investigation as regards this river is simply to determine whether the development proposed in the rLDP risks causing deterioration of the river to less than good conservation status¹.

Therefore, it is necessary to determine the effect on phosphorus concentrations in the Lower Wye from the projected increase in phosphorus load arising from the rLDP proposed developments. Only additional input via Monmouth WwTW (at SO 51532 11795) is required to be considered, as all the allocated or committed development sites fall within its catchment.

Figure 1. Monmouth WwTW and nearby water quality and flow monitoring stations. below shows the locations of Monmouth WwTW and surrounding water quality monitoring stations, with River Wye at Redbrook Railway Bridge highlighted, as data from this location has been used in the assessments below. The figure also highlights the nearby flow gauging station – River Wye at Redbrook Gauging Station.

¹ Monmouthshire Replacement Local Development Plan 2018-2033 – Phosphate Position Paper. MCC February 2026.
AECOM

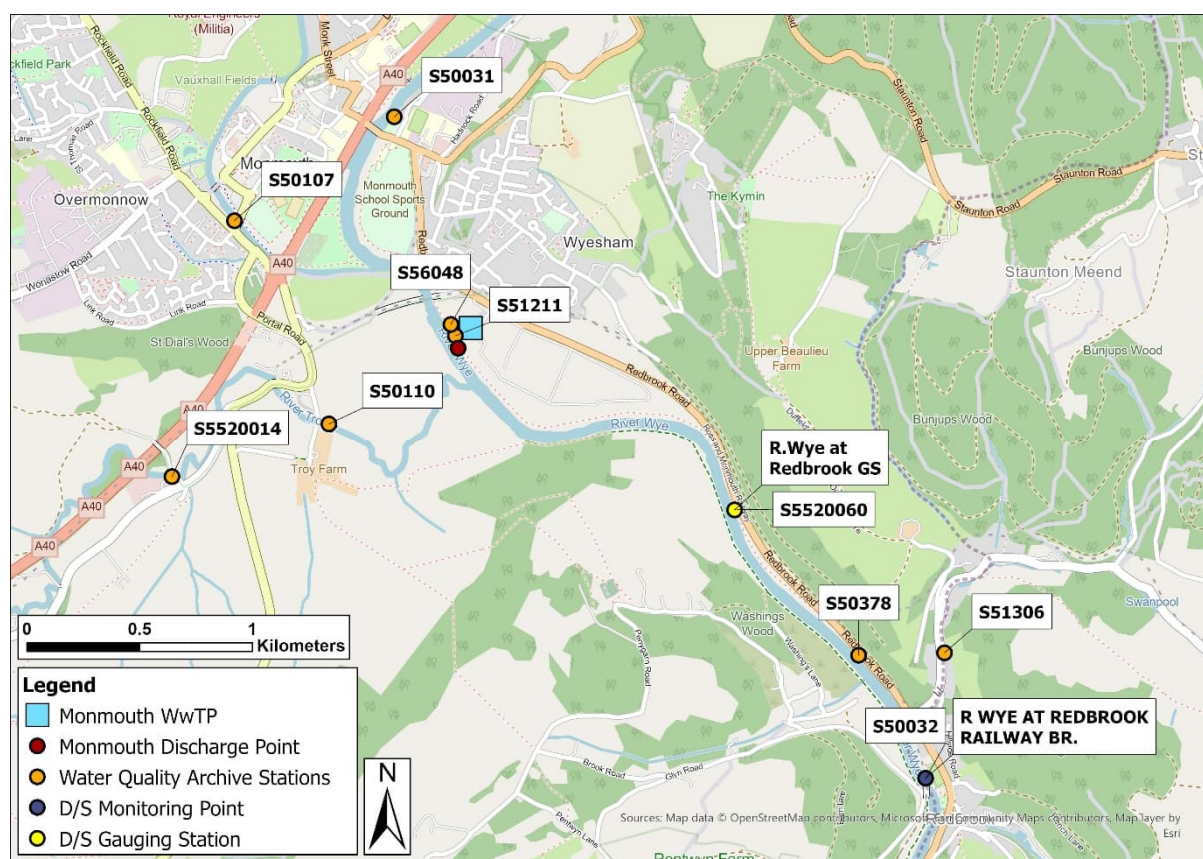


Figure 1. Monmouth WwTW and nearby water quality and flow monitoring stations.

2.1 Environmental Quality Standards

The applicable Water Framework Directive (WFD) receiving water body is the 'Wye - confluence Walford Brook to Bigsweir Bridge' (NRW Water Body ID GB109055037111), as classified using water quality data from a Natural Resources Wales (NRW) monitoring station on the River Wye at Redbrook Railway Bridge (Monitoring Station S50032 (NGR SO 53607 09884)). This water body is currently at Good Overall WFD status for phosphorus, and thus as stated earlier, the specific aim is to determine whether the proposed rLDP developments can proceed without causing deterioration which might risk a return in the SAC to an unfavourable condition.

It is acknowledged that any increase in P loading to the river (if unmitigated and in the absence of other factors such as changing flow state) will inevitably produce a rise in river P concentration. This task considers the significance of that potential rise, and whether it could be sufficient to cause a breach of the SAC threshold. NRW have advised that the boundary for P between 'unfavourable' and 'favourable' conservation condition of the SAC is as per the WFD environmental quality standard (EQS) for Good Ecological Status at this location – 0.39 mg/l of soluble reactive phosphorus (SRP).

2.2 Consultation

A meeting was held between AECOM and NRW on the 8th April 2026 to ensure alignment between the approach proposed and requirements of the assessment.

A bespoke approach was agreed to by NRW, provided clear conclusions could be drawn as to whether the receiving water was likely to be at risk of deteriorating to unfavourable status for P by the proposed developments in the rLDP. NRW environmental compliance data and information on standards applied in SAC determinations were also provided by NRW.²

3. Risk assessment approach and results

Phosphorus loads from the rLDP proposed developments have been estimated using the All Wales Nutrient Budget Calculator (in February 2026). The nutrient budget results from the calculator are expressed in terms of

² [Common Standards Monitoring Guidance for Freshwater Habitats | JNCC Resource Hub](#)

total phosphorus (TP), as are the measured discharge concentrations and permit threshold from Monmouth WwTW. However, the EQS for phosphorus in rivers under the WFD is expressed in terms of SRP, which is a subset of TP. This incongruity presents a challenge in terms of assessing water quality impacts of a TP discharge relative to WFD quality status bands. However, if a given environmental (river) concentration of TP is determined (through modelling or monitoring) to be less than the EQS, then we can assume SRP is also less than EQS (though we may not know by how much).

Therefore, a simplified screening step was considered appropriate in the first instance to ascertain the likelihood of triggering a downgrade for P in the river. As with any screening process, this was done in a precautionary manner, to ensure that the simplification did not mask any greater risks. If despite all these precautions, an exceedance of the SAC EQS threshold is not predicted, it can be concluded that no further or more complex risk assessment would be required.

Thus, a bespoke and logic-based risk assessment has been undertaken, to provide efficiency and clarity. This approach was broken down into two key questions to provide the certainty required concerning the risk to receiving water:

A) How much could discharge concentration at Monmouth WwTW increase if the maximum planned development occurred?

B) Does the River Wye provide sufficient dilution at the discharge point to prevent this increase causing a downgrade in water quality?

The assessments were carried out with respect to 2033 projected loadings (i.e. the maximum projected additional loading). The results of these 2033-based assessments did not indicate a need to apply the assessments to earlier years, as no significant risk to deterioration of River Wye water quality was indicated. The assessments are described below.

3.1 Assessment A

Assessment A was designed to answer the first of these two questions: **How much could discharge concentration at Monmouth WwTW increase if the maximum planned development occurred?**

This question can be answered by transposing the maximum P loading anticipated from the rLDP development into an increase in Monmouth WwTW discharge concentration (assuming permitted dry weather flow – DWF – as representative of average discharge concentration).

- According to the Monmouthshire rLDP Phosphate Position Paper produced in February 2026³, the maximum projected TP loading arising from development (by 2033) is 135.61 kg/year, which equates to **4,297 ug/s**.
- Monmouth WwTW DWF (from NRW permit AS1003201) is expressed as 2845 m³/day, or **0.0329 m³/s**⁴.
- Therefore, the increase in average concentration would be $4297/0.0329 = 130502 \text{ ug/m}^3$, or **0.13 mg/l**.
- Current average discharge TP concentration (from 24 monthly measured 2024/2025 samples at S51211) = **1.19 mg/l**.
- Therefore, all other factors being equal, the maximum permitted development would result in an average discharge concentration of $1.19 + 0.13 = \mathbf{1.32 \text{ mg/l}}$.

This remains comfortably within the existing permit threshold of 2 mg/l.

This assessment allows confidence that the development is unlikely to precipitate a breach in permit conditions. Furthermore, there are no plans to increase the permitted concentration of TP in this discharge. However, to further demonstrate that the receiving water would not be downgraded by the increase, see Assessment B below.

3.2 Assessment B

Assessment B was designed to answer Question 2: **Does the River Wye provide sufficient dilution at the discharge point to prevent this increase causing a downgrade in water quality?**

³ Monmouthshire Replacement Local Development Plan 2018-2033 – Phosphate Position Paper. MCC February 2026.

⁴ Calculation assumes 365.25 days per year.

If precautionary and representative values can be derived to describe discharge and river flow and concentrations, then simple mass balance modelling can provide an estimate of the increase in river concentration we may expect from a given increase in discharge flow and/or concentration.

The DWF stated in the Monmouth WwTW permit is **2845 m³/day**. The average flow as per 2025 data received from NRW from downstream of Monmouth WwTW - Wye at Redbrook Gauging Station (S05520060, NGR SO 52759 11075) is **5,849,280 m³/day**.

This rudimentary comparison indicates the typical flow in the river is approximately **2000 times** greater than the typical discharge from Monmouth WwTW. This immediately provides assurance that a very substantial increase in discharge flow or concentration would be required to significantly impact river P concentration.

Building on this, simple mass balance principles assume the P concentration in the river downstream of the WwTW will be governed by upstream river concentration, discharge concentration, and dilution provided by the river. For a discharge to a river, this can be described by the following equation:

$$C_d = (Q_r \times C_r + Q_e \times C_e) / (Q_r + Q_e)$$

Where:

- **C_d** = downstream concentration (after discharge has mixed with the river).
- **C_r** = background river concentration (prior to receipt of discharge).
- **C_e** = effluent concentration.
- **Q_r** = river flow (prior to receipt of discharge).
- **Q_e** = effluent flow (discharge flow).

The simple mass balance method assumes uniform mixing and a continuous steady state of these parameters. However, it is suitable for a precautionary screen such as that required here, provided the input variables are selected with precaution in mind.

For a simplistic screen such as this, a precautionary worst-case scenario should be modelled. To do this, each factor and input variable should be defined in a precautionary fashion. To this end the following assumptions were made.

- All TP discharged from the WwTW would become available as SRP in the river.
- The largest increase in development permitted in the plan (for 2033) should be assumed, with the corresponding projected increase in TP loading assumed. i.e. 135.61 kg/year. As this was carried out for Assessment A, predicting a discharge concentration considerably lower than current permit threshold, average discharge concentration was set as the maximum permitted TP concentration. i.e. 2 mg/l (**2000 ug/l**).
- Precautionary assessment of river flow (available dilution) should be applied. Using gauged flow from downstream of the works (rather than upstream) would build in a very slight over-estimate of dilution. To ensure a precautionary assessment the upstream flow will be assumed to be half the 2025 gauged average value (**2,744,640 m³/day**). This will also comfortably account for year-to-year variation in river flow.
- The SAC satisfactory/unsatisfactory threshold should be assumed equivalent to WFD good/moderate status boundary for this water body (**39 ug/l**).
- Upstream/background river SRP concentration is assumed to be as reported under the WFD classification (**33.9 ug/l**) as assessed at River Wye at Redbrook Railway Bridge, which is downstream of the discharge point and so already accounts for existing discharge from the WwTW.
- Various scenarios of discharge flow should be considered (i.e. multiples of DWF) rather than simply assuming DWF.

Using the simple mass balance equation as set out above:

$$C_d = (Q_r \times C_r + Q_e \times C_e) / (Q_r + Q_e)$$

Therefore, downstream river P concentration (**C_d**) resulting from increased loading from the WwTW at 1DWF =

$$C_d = ([2,744,640 \times 33.9] + [2845 \times 2000]) / (2,744,640 + 2845)$$

$$= (93,043,296 + 5,690,000) / 2,747,485$$

$$= 98,733,296 / 2,747,485$$

$$= \mathbf{35.94 \text{ ug/l at DWF}}$$

Therefore, this very precautionary assessment (albeit assuming DWF) predicts only a modest increase in downstream river concentration, and still well within the SAC target of 39 ug/l.

A further step was carried out to add a further assurance whereby the steps were repeated but with an effluent flow value of 5 xDWF (which is out with the realms of feasible worst-case scenario), to see even in these very extreme modelled conditions the EQS would be exceeded downstream.

$$C_d = ([2,744,640 \times 33.9] + [5690 \times 2000]) / (2,744,640 + 5690)$$

$$= (93,043,296 + 11,380,000) / 2,750,330$$

$$= 104,423,296 / 2,750,330$$

$$= \mathbf{37.9 \text{ ug/l at 5 xDWF}}$$

Even with this additional and unrealistic degree of precaution built into account for a continuous flow at 5 xDWF, mass balance modelling still indicates downstream compliance with the EQS and consequently the SAC threshold.

4. Conclusions

The following conclusions can be made:

- Assessment A shows that when allowing for the maximum planned level of development (by 2033), the additional TP loading projected (i.e. 135.61 kg/year) would result in an estimated additional 0.13 mg/l TP in the average discharge concentration at Monmouth WwTW. This would increase the average to around 1.3 mg/l, which remains well within the permitted concentration of 2 mg/l.
- Assessment B shows that even very precautionary mass balance calculations do not predict an exceedance of EQS downstream of Monmouth WwTW. The receiving water is estimated to maintain good WFD status for SRP and therefore be at favourable conservation status even if the following worst-case assumptions are applied:
 - Effluent flow is modelled as five times the DWF.
 - Effluent concentration is continuously at the permit threshold (i.e. 2 mg/l).
 - The predicted dilution in the river is halved.
 - We assume all TP becomes available as SRP.
- There was no requirement to apply the assessments to projected TP loadings for years other than 2033, as even under these worst-case scenarios no significant likelihood of a downgrade in water quality was indicated.
- This report concludes that in principle the quantum of rLDP proposed development in the Lower Wye catchment can be delivered without resulting in a significant increase in phosphorous or a reduction in the conservation status of the SAC. However, these conclusions should be reviewed over time to confirm the receiving water remains at low risk in the context of evolving inputs to the river system as a whole. Therefore, future planning applications for allocated development will still need to be supported by site specific Habitat Regulations Assessments including consideration of water quality risks to the Wye SAC. MCC will develop guidance to assist developers with these assessments, and this will be a commitment in the forthcoming Nutrient Mitigation Action Plan.

Appendix 4: Strategic Mitigation Opportunities Report (AECOM, April 2026)

rLDP Nutrient Neutrality Support

Task 5 Strategic Mitigation Opportunities
Volume I Main Report

Monmouthshire County Council

April 2026

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Abbreviations

Table 1. List of abbreviations

Abbreviation	Description
AMP	Asset Management Plan
AONB	Area of Outstanding Natural Beauty
ANCB	Appropriate Nature Conservation Body
DCWW	Dŵr Cymru Welsh Water
DwPA	Drinking Water Protected Area
DWF	Dry Weather Flow
ECJ	European Court of Justice
EQS	Environmental Quality Standard
HRA	Habitats Regulations Assessment
LPA	Local Planning Authority
rLDP	Replacement Local Development Plan
MCC	Monmouthshire County Council
NMB	Nutrient Management Board
NRW	Natural Resources Wales
PTP	Package Treatment Plant
RAG	Red-Amber-Green traffic light grading system
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SMOR	Strategic Mitigation Opportunities Report
SPA	Special Protection Area
SPG	Supplementary Planning Guidance
SRP	Soluble Reactive Phosphorus
SSSI	Site of Special Scientific Interest
SuDS	Sustainable [urban] drainage systems
TP	Total Phosphorus
WFD	Water Framework Directive
WwTW	Waste Water Treatment Works

Glossary

Table 2. Glossary of terms

Term	Description
Appropriate Assessment	An assessment to evaluate the significance of the impacts of a proposed plan or project (either individually or in combination with other proposals) on sites of EU importance (Natura 2000 sites), to inform the decision-making process.
Diffuse	The movement of ions or molecules from an area of higher concentration to an area of lower concentration
Diffuse Pollution	Pollution arising from multiple, widespread sources (e.g. agriculture, surface water runoff), rather than a single discharge point.
Eutrophication	The enrichment of water by nutrients leading to excessive algal growth, reduced oxygen levels, and harm to aquatic ecosystems.
Habitats Regulations Assessment	A competent authority must carry out an assessment under the Habitats Regulations, known as a habitats regulations assessment (HRA), to test if a plan or project proposal could significantly harm the designated features of a European site.
Nutrient Budget	An assessment quantifying nutrient inputs and outputs associated with a development.
Nutrient Loading	The amount of nutrients entering a waterbody over a given period, often measured in kilograms per year.
Nutrient Neutrality	A principle whereby a development must not increase nutrient loading (e.g. nitrogen or phosphorus) to sensitive water bodies.
Section 106 Agreement (Planning Obligation)	A legally binding agreement used to secure mitigation measures related to a development.
SPON costing	Refers to using Spon's price books and estimating guides to accurately calculate construction costs, including labour, materials, overheads, and profit.
Strategic scale mitigation	Refers to nutrient reduction measures that are planned, delivered, and managed at a catchment, sub-catchment or authority-wide level, rather than being tied to a single development site. The focus is on longer-term, coordinated interventions that can offset nutrient inputs from multiple developments or sources.

1. Introduction

The Inspectors appointed to examine the Monmouthshire County Council (MCC) Replacement Local Development Plan (rLDP) have requested additional information on the Council's approach to addressing the effect of proposed development in the rLDP on riverine Special Areas of Conservation (SACs) in relation to the discharge of phosphorus. The affected riverine SACs are the River Wye and River Usk sites.

In February 2026, MCC commissioned a study to estimate the potential increase in nutrient (phosphorus) loading from implementation of the rLDP. This study has been published within the Monmouthshire Replacement Local Development Plan 2018-2033 – Phosphate Position Paper (February 2026)¹. The determination of phosphorus budgets was undertaken for all allocated and committed development in both the River Usk and River Wye catchments, with results presented on a 'year by year' basis. This study concluded that there will be an excess of phosphorus from foul wastewater from the proposed developments.

Since the completion of the first phase of this project, NRW have confirmed that the Lower River Wye through Monmouthshire, part of the River Wye SAC, is no longer failing for phosphorus, and as a result the nutrient neutrality regulations may no longer apply. However, developments proposed in the rLDP must not cause deterioration to less than good conservation status.

New developments that lead to an increase in phosphorus discharging directly to these SAC sites, or to catchments draining to these sites may contribute to unfavourable condition of, or undermine measures to restore, these features. **As such, proposed developments that drain to the SAC catchments and introduce new or increased nutrient loads need to demonstrate that they would not harm the integrity of SAC, and it may be that secured strategic or developer-led mitigation is required in order for projects to be consented, in the of absence of other wider initiatives (e.g. Review of WwTW Permits) or mitigation pathways.**

1.1 Purpose and Objectives of this Report

This Strategic Mitigation Opportunities Report (SMOR) provides a review of opportunities for strategic scale phosphorus reduction in Monmouthshire. Specifically, this refers to nutrient reduction measures that are planned, delivered, and managed at a catchment, sub-catchment, or authority-wide level, rather than being tied to a single development site. The focus is on longer-term, coordinated interventions that can offset nutrient inputs from multiple developments or sources, as opposed to an integrated approach or developer-led mitigation, which is not the subject of this report.

The SMOR provides a comprehensive, qualitative review of all potential strategic scale nutrient mitigation solutions that are currently known, including the approaches currently operational across England and Wales. This SMOR provides information and advice to adequately consider phosphorus neutrality in planning submissions within the River Usk SAC and the River Wye SAC water body catchment. Overall, this SMOR provides the following:

- An overview of how each strategic mitigation option functions.
- The mechanisms by which nutrient reductions may be achieved.
- The key considerations affecting their effectiveness and deliverability at scale.

The objectives of this SMOR are:

1. To provide an overview of mitigation options that may be suitable at a strategic scale, building on the existing NRW Mitigation Menu² (see **Section 5**).
2. To screen a long list of possible strategic solutions based on defined criteria, including two preferred options outlined by MCC (see **Section 6**).
3. To explore a short-list of options through engagement with the relevant Council Officers and Departments, desk studies and consideration of constraints and limitations, consultation with relevant

¹ Phosphate Position Paper February 2026

² NRW Mitigation Measures Menu (2025) Available at: [mitigation-measures-menu.xlsx](#)

partners where appropriate (e.g. Dŵr Cymru Welsh Water (DCWW) etc.) and through further scenario testing to assess likely phosphorus removal potential (see **Section 7**).

4. To provide worked examples of the preferred option(s) to estimate phosphorus load reduction for these measures, alongside outputs from the Welsh Government nutrient budget calculator or bespoke calculations. These include retrofitting SuDS to treat surface water runoff and treatment wetlands receiving flows from WwTWs. A viability and constraints assessment of the options with the greatest potential will be undertaken. High-level cost estimates will be provided where possible and where there is sufficient data available (see **Section 7**).
5. To provide recommendations as to the next steps (see **Section 8**).

1.2 Approach

This SMOR is primarily illustrated using residential development examples requiring nutrient mitigation as these are of most relevance to the rLDP. Nonetheless, nutrient mitigation requirements apply to most forms of development within the phosphorus nutrient neutrality catchment that have the potential to contribute new phosphorus loads through domestic wastewater or surface water runoff, including tourism, medical facilities/care institutions, education, mixed use and commercial schemes. Developments with effluent discharge permits must also ensure that no increase in phosphorus to habitats sites, but permitting process is outside the scope of this report.

The development of strategic options also draws on NRW's Mitigation Menu² as well as readily available literature and other evidence sources. This review provides an overview of the various successful approaches adopted to date at a strategic scale, before considering which of these may have applicability to Monmouthshire.

This SMOR has been prepared in April 2026 and is based on the current understanding and guidance of the nutrient neutrality issues affecting sensitive SACs and relevant mitigation approaches at that point in time.

1.3 Structure of this Report

The SMOR has been presented in the following sections:

- **Section 2:** Overview of the Southeast Wales designated sites.
- **Section 3:** Background to the phosphorus issue and nutrient neutrality in Wales.
- **Section 4:** Summary of potential mitigation pathways, including strategic solutions for nutrient neutrality.
- **Section 5:** Review of potential strategic scale nutrient mitigation solutions.
- **Section 6:** Comparative analysis of strategic options (including for example, effectiveness, cost and feasibility of implementation).
- **Section 7:** Development of short-listed strategic opportunities including practical case studies demonstrating the application of the Welsh Government (WG) All Wales Nutrient Budget Calculator and mitigation measures, illustrating the feasibility of strategic mitigation options.
- **Section 8:** Recommendations for further steps.

This report is supported by the following technical appendices included in a separate Volume II that can be made available upon request:

- **Appendix A:** Review of a long list of potential strategic scale nutrient mitigation solutions.
- **Appendix B:** Treatment wetlands viability and constraints assessment.
- **Appendix C:** Treatment SuDS viability and constraints assessment.

2. Southeast Wales Designated Sites

This SMOR focuses on the River Usk SAC and the River Wye SAC where phosphorus pressures have contributed to unfavourable site conditions. Figure 1 illustrates the location of the two SACs, along with their phosphorus nutrient neutrality catchment, and the Local Planning and National Park Authority boundaries.

The River Wye SAC is the largest Welsh SAC river, with its catchment divided into 43 Water Framework Directive (WFD) water bodies in Wales, while the River Usk SAC consists of 23 water bodies. Both SACs are designated under the Conservation of Habitats and Species Regulations 2017³ for the protection of Annex I habitats and Annex II species.

In January 2021, NRW published a report⁴ that presented the assessment of compliance against recently tightened phosphorus water quality targets for SAC rivers. The report showed that over 60% of SAC water bodies were failing the new targets for phosphorus.

Within the Usk, 88% of its water bodies were failing for phosphorus. As a result, new developments leading to an increase in phosphorus discharges to this site may contribute to the unfavourable condition of the designated site or make its restoration to favourable status more difficult to achieve. This is typically undertaken as part of a Habitat Regulations Assessment supported by Nutrient Neutrality and Mitigation Assessments.

Whilst previously failing (2021) the Lower River Wye is now considered by NRW (as of 2026) to no longer be failing for phosphorus. However, it is still important that any new development that may lead to an increase in phosphorus discharged to the SAC considers whether that discharge would risk causing deterioration of the river back to less than good conservation status.

Further details for the two riverine SACs are provided below.

³ Participation, E. (no date) The Conservation of Habitats and Species Regulations 2017. Statute Law Database. Available at: <https://www.legislation.gov.uk/ukxi/2017/1012/contents> (Accessed: 8 January 2026).

⁴ Natural Resources Wales / Compliance Assessment of Welsh River SACs against Phosphorus Targets (2021). Available at: [compliance-assessment-of-welsh-sacs-against-phosphorus-targets-final-v10.pdf](#) (Accessed: 13 April 2026).

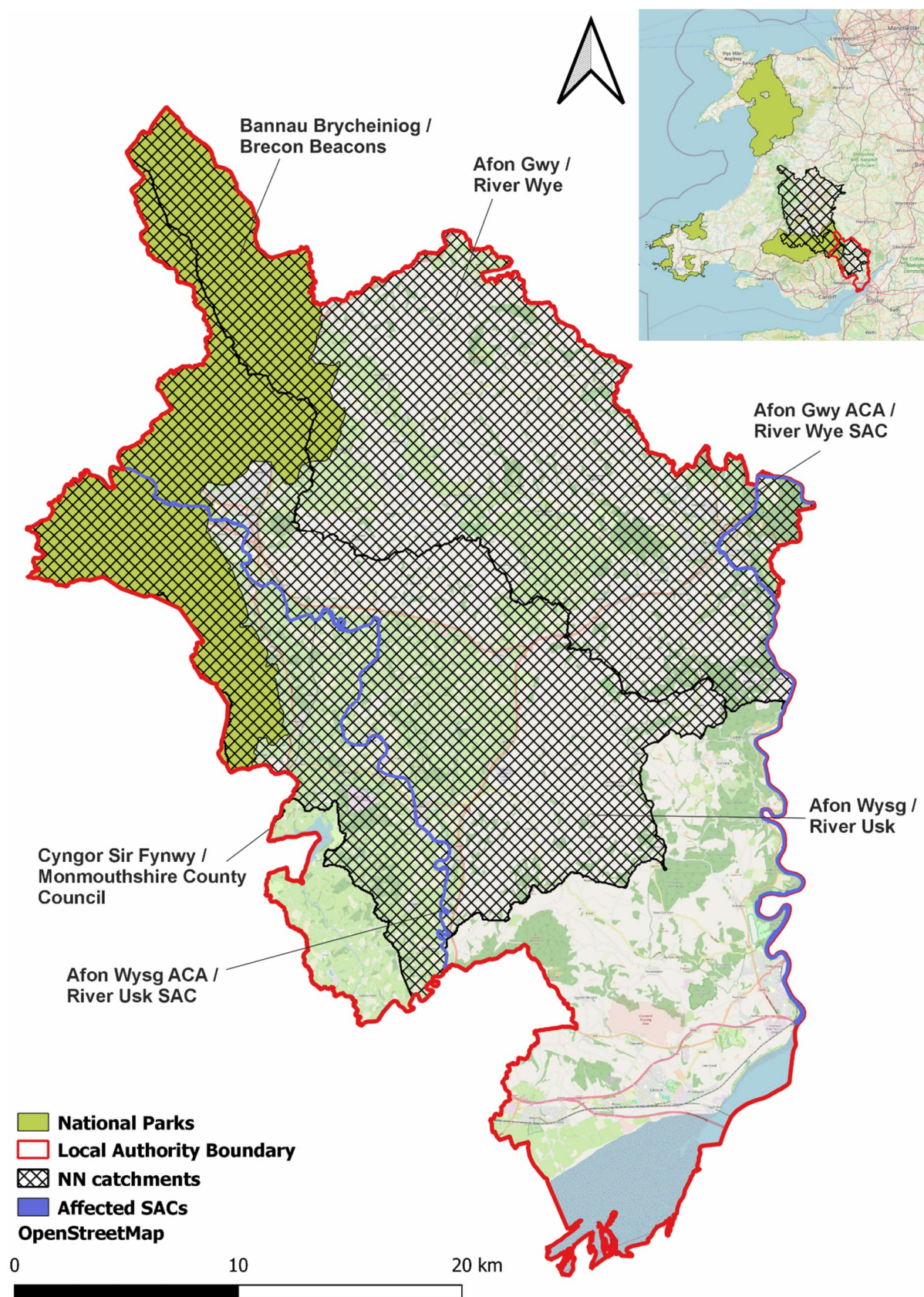


Figure 1 Location of the two SACs in South East Wales (River Usk SAC and River Wye SAC) where phosphorus pressures have contributed to unfavourable site conditions (source: Welsh Government Data Map Wales online data)

2.1 River Usk SAC



Figure 2 River Usk at Usk Island⁵

Summary Description

The Usk is a medium sized catchment in southeast Wales with a primarily sandstone geology and frequently carries heavy sediment loads following periods of rainfall⁶. The Usk is by some distance the worst performing SAC river in Wales with respect to its phosphorus targets and is the only river where there are extensive failures in the headwaters.

Annex I habitats that are a primary reason for designation⁷:

- Not Applicable

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site⁷

- Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation

Annex II species that are primary reason for selection of this site⁷:

- Sea lamprey (*Petromyzon marinus*)
- Brook lamprey (*Lampetra planeri*)
- River lamprey (*Lampetra fluviatilis*)
- Twait shad (*Alosa fallax*)
- Atlantic salmon (*Salmo salar*)
- Bullhead (*Cottus gobio*)
- Otter (*Lutra lutra*)

Annex II species present as a qualifying feature, but not primary reason for designation⁷:

- Allis shad (*Alosa alosa*)

⁵ Monmouthshire County Council (2025). Available at: <https://www.monmouthshire.gov.uk/our-main-parks-and-gardens/#Usk> (Accessed: 14 April 2026).

⁶ Natural Resources Wales (2021). Compliance Assessment of Welsh River SACs against Phosphorus Targets. Available at: <https://cdn.cyfoethnaturiol.cymru/693025/compliance-assessment-of-welsh-sacs-against-phosphorus-targets-final-v10.pdf?mode=pad&rnd=132557227300000000> (Accessed: 14 April 2026).

⁷ River Usk / Afon Wysg - Designated Special Area of Conservation (SAC) (no date). Available at: <https://sac.jncc.gov.uk/site/UK0020020> (Accessed: 14 April 2026).

2.2 River Wye SAC



Figure 3 River Wye at Bigsweir⁸

Summary Description	The Wye is the largest SAC river, with a catchment covering much of southern Powys and part of the Bannau Brycheiniog National Park before crossing the border into England. Much of the Upper Wye catchment is rural and until recently has been predominantly farmed for sheep and cattle. More recently there has been a rapid expansion of poultry units, which has been the source of public concern ⁹ .
Annex I habitats that are a primary reason for selection of this site⁹:	• Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site⁹:	• Transition mires and quaking bogs
Annex II species that are primary reason for selection of this site⁹:	• White-clawed (or Atlantic stream) crayfish (<i>Austropotamobius pallipes</i>) • Sea lamprey (<i>Petromyzon marinus</i>) • Brook lamprey (<i>Lampetra planeri</i>) • River lamprey (<i>Lampetra fluviatilis</i>) • Twaite shad (<i>Alosa fallax</i>) • Atlantic salmon (<i>Salmo salar</i>) • Bullhead (<i>Cottus gobio</i>) • Otter (<i>Lutra lutra</i>)
Annex II species present as a qualifying feature, but not primary reason for site selection⁹:	• Allis shad (<i>Alosa alosa</i>)

⁸ Monmouthshire County Council (2025). Available at: https://www.monmouthshire.gov.uk/2025/03/mcc-welcome-investment-to-transform-the-river-wye/river-wye-at-bigsweir_14589368845_of (Accessed: 14 April 2026).

⁹ River Wye / Afon Gwy- Designated Special Area of Conservation (SAC) (no date). Available at: <https://sac.jncc.gov.uk/site/UK0012642> (Accessed: 14 April 2026).

3. Background

3.1 Phosphorus as an Issue in SACs

Phosphorus pollution is a significant environmental pressure on riverine SACs in Wales. Although phosphorus is naturally occurring, released slowly at low levels from natural sources such as natural bankside erosion, anthropogenic factors are also responsible for phosphorus being released into the environment. Key factors include land management and wastewater and sewerage discharge¹⁰.

Elevated concentrations of phosphorus can lead to the process of eutrophication and can cause significant ecological damage to rivers including altering the balance of plant species. Excessive nutrient enrichment stimulates algal and plant growth which can lead to reduced dissolved oxygen concentrations, degradation of habitat quality, and loss of biodiversity. This can threaten the ecological integrity of SAC-designated rivers and the species they support, such as salmonids and freshwater invertebrates¹⁰.

Assessments by NRW have shown that the majority of SAC river water bodies in Wales have failed to meet revised phosphorus targets, with over 60% of water bodies failing the new targets for phosphorus⁴.

3.2 Nutrient Neutrality in Wales

Poor water quality caused by nutrient enrichment is one of the main reasons many designated marine, estuarine and freshwater habitats in Wales are in an unfavourable condition. Excessive nutrients drive eutrophication leading to deterioration of site integrity. To restore water quality, reductions in nutrient inputs are essential, as well as controlling future increases in nutrient loads (including from new development).

Nutrient neutrality has therefore become a critical requirement for development in parts of Wales. Initially focused on phosphorus in riverine SACs such as the River Wye, River Usk, River Tywi, River Teifi, River Dee, River Eden, River Glaslyn, River Gwyrfai and River Cleddau¹¹, nutrient neutrality now also concerns total nitrogen (recorded as DIN) pressures following the publication of additional studies into the current conservation status of coastal, marine or estuarine SACs¹². However, the focus of this report is on the River Wye and River Usk SAC catchments.

Rather than a single policy announcement or legislative change, the Welsh approach to nutrient neutrality has evolved incrementally as NRW and LPAs responded to deteriorating water quality conditions at designated sites and the need to ensure compliance with the Habitats Regulations 2017. This Wales-specific approach is aligned with the broader UK concept but has been shaped by local policy drivers and the regulatory roles of NRW and the Welsh Government. It ultimately stems from the ruling of the European Court of Justice (ECJ) in combined cases C-293/17 and C-294/17 (a Dutch Nitrogen case).

In addition, the ruling reaffirmed that if a designated nature conservation site is in a deteriorating condition (such as due to excess nutrient levels that may also be forecast to increase) there are very limited circumstances under which further discharges of nutrients to a site can legally be permitted. As a result, in the absence of any empirically derived threshold by which additional aquatic inputs of nitrogen and phosphorus can be deemed nugatory or *de minimis*, it must be concluded that new development within the affected habitats site catchment could increase nutrient deposition into the protected sites above already harmful levels and thus interfere with the ability of the site to achieve its conservation objectives and the integrity of the European protected nature conservation site. This is relevant because under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 an LPA (i.e. the Competent Authority) cannot legally consent a plan or project that will have an adverse effect on the integrity of any European protected nature conservation site.

¹⁰ Natural Resources Wales / Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation (2026). Available at: <https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/advice-for-planning-authorities/advice-to-planning-authorities-for-planning-applications-affecting-phosphorus-sensitive-special-areas-of-conservation> (Accessed: 14 April 2026).

¹¹ Natural Resources Wales (2025). *Principles of nutrient neutrality in relation to development or water discharge permit proposals*. [Online] Available at: [Natural Resources Wales / Principles of nutrient neutrality in relation to development or water discharge permit proposals](#) (Accessed: 02 January 2026).

¹² Natural Resources Wales (2025). *Further action needed to protect Wales's marine protected areas*. [Online] Available at: [Natural Resources Wales / Further action needed to protect Wales's marine protected areas](#) (Accessed: 14 January 2026).

Welsh Government guidance has been released which suggests that in certain circumstances it may be possible to define a *de minimis* threshold applicable to Local Development Plans¹³. This is being explored by MCC in a forthcoming Developer Mitigation Handbook, but at the time of writing (April 2026) MCC is not aware of this having yet been successfully implemented elsewhere in Wales. Further information on all mitigation pathways in Wales is discussed in more detail in Section 3.4.

3.3 Monmouthshire rLDP 2018-2033

In the Infrastructure Delivery Plan: Background Paper (Updated October 2025)¹⁴ MCC set out how they plan to deal with an increase in phosphorus emissions from new development. The Council has been working collaboratively with NRW, DCWW, Welsh Government, the development industry and biodiversity officers to find solutions to enable growth and allocate sites through the rLDP process that do not harm the environmental capacity of watercourses. DCWW has recently upgraded (in 2023) the phosphorus stripping capacity of Monmouth WwTW reducing contributions in the River Wye catchment and has committed to prioritising improvement works at the Llanfoist WwTW serving Abergavenny (benefitting the River Usk catchment) by the end of 2025. This is in addition to an initial investment of £100m in phosphorus reduction within their previous AMP7 (2020-2025). This investment will significantly reduce the amount of phosphates entering the water environment from the treatment works, providing environmental improvement and reducing the impact from new development. However, it will not eliminate all increases in phosphorus from future development and thus additional mitigation will be required to ensure that development proposed in the rLDP does not adversely affect SAC site integrity, particularly for the River Usk.

The allocated and committed development sites within each catchment considered in these initial nutrient budget estimates are shown in Figure 4.

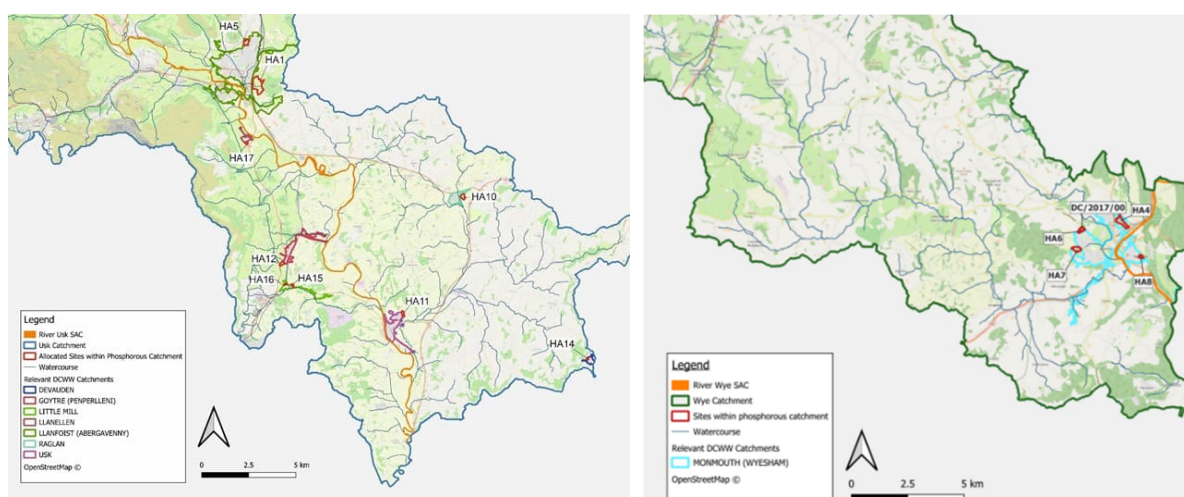


Figure 4 Allocated sites within the Usk SAC catchment (left) and Wye SAC catchment (right)

The final cumulative nutrient budget for the proposed developments in the Monmouthshire rLDP for the River Wye and River Usk catchments are presented in Table 3 for the two following scenarios:

- **Scenario 1 (Worst Case Scenario)** – Includes all housing types with no reduction in occupancy for affordable homes.
- **Scenario 2 (Best Case Scenario)** – Discounts 50% of affordable homes on the basis that half of allocated affordable homes are provided to local people who are likely to already be living within the nutrient neutrality catchment.

For both scenarios and both catchments, the proposed development allocated in the rLDP plus any committed development results in the generation of excess phosphorus (via foul wastewater). Significantly more phosphorus

¹³ Welsh Government (2026) Applying the Tests of Soundness to Local Development Plans (LDPs) where additional nutrients may impact on Special Areas of Conservation (SACs). Available at: [Clarification note: applying the tests of soundness to Local Development Plans \(LDPs\)](#)

¹⁴ Infrastructure Delivery Plan, Background Paper [Online]. Available at: <https://www.monmouthshire.gov.uk/app/uploads/2025/10/SD104-Infrastructure-Delivery-Plan-Background-Paper-Updated-October-2025.pdf>

requires mitigation in the Usk catchment compared with the Wye, reflecting the quantity of proposed development in each catchment (see Table 3).

Table 3 Summary results for the final nutrient budget in each catchment in 2033

Scenario	Usk Nutrient Budget 2033 (kg/yr TP)	Wye Nutrient Budget 2033 (kg/yr TP)
Scenario 1 (Worst-Case Scenario)	265	136
Scenario 2 (Best-Case Scenario)	199	103
<i>Nutrient budget if proposed AMP8 phosphorus removal upgrades to WwTW had not taken place</i>	534	136

3.4 Lower Wye ‘No deterioration’ Investigation

The Lower River Wye is no longer failing for phosphorus, and so MCC have undertaken an investigation for this river to determine whether the development proposed in the rLDP risks causing deterioration of the river to less than good conservation status.

To achieve this, it was necessary to determine the effect on phosphorus concentrations in the Lower Wye from the projected increase in phosphorus load arising from the rLDP proposed developments. Only the additional input via Monmouth WwTW (at SO 51532 11795) was required to be considered, as all the allocated or committed development sites in the Lower Wye catchment fall within this WwTW catchment. The location of data used in the assessment is provided in Figure 5.

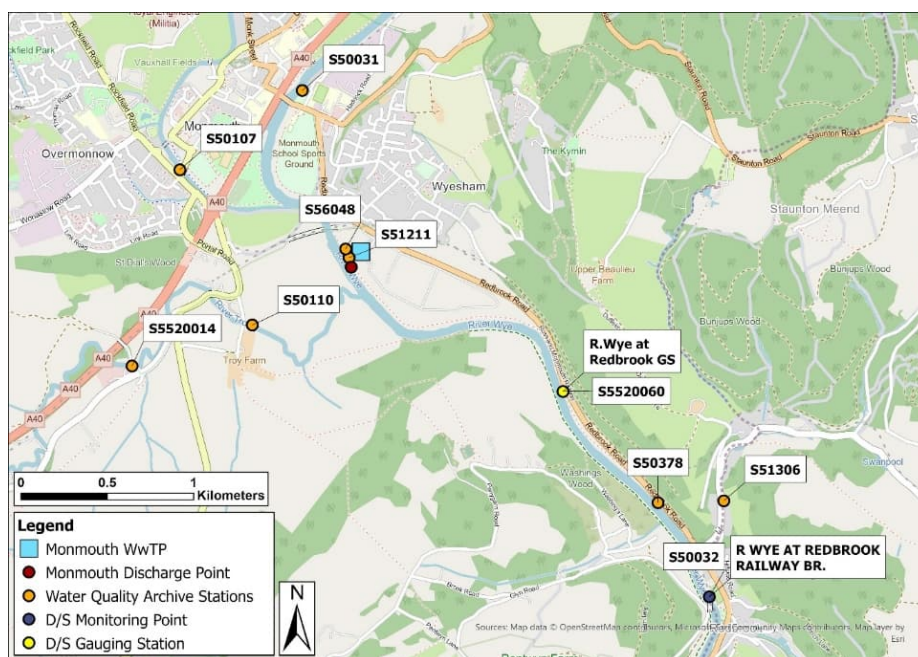


Figure 5 Monmouth WwTW and nearby water quality and flow monitoring stations.

The assessment concluded that when allowing for the maximum planned level of development (by 2033), the additional Total Phosphorus (TP) loading projected (i.e. 135.61 kg/year) would result in an estimated additional 0.13 mg/l TP in the average discharge concentration at Monmouth WwTW. This would increase the average discharge concentration to around 1.3 mg/l, which remains well within the permitted concentration of 2 mg/l.

The SAC Condition Assessment⁶ is based on Monmouth WwTW operating under current permitted conditions for concentration and flow. As development comes forward in the future validation assessments will be required to confirm this initial assessment, reflecting the phosphorus environmental quality standard (EQS) for the Wye at that given point in time.

A precautionary mass balance calculation was also undertaken, which indicated that an exceedance of the phosphorus EQS downstream of Monmouth WwTW would not be predicted based on the rLDP delivery. The receiving water is estimated to maintain good WFD status for soluble reactive phosphorus (SRP) and therefore be at favourable conservation status even if the following worst-case assumptions are applied:

- Effluent flow is modelled as five times the DWF (dry weather flow).
- Effluent concentration is continuously at the permit threshold (i.e. 2 mg/l).
- The predicted dilution in the river is halved.
- All total phosphorus becomes available as SRP.

The report concluded that in principle the quantum of rLDP proposed development in the Lower Wye catchment can be delivered without resulting in a significant increase in phosphorus or a reduction in the conservation status of the SAC. However, it was also stated that these conclusions should be reviewed over time to confirm the receiving water remains at low risk in the context of evolving inputs to the river system as a whole. Therefore, future planning applications for allocated development are still likely to need to be supported by site specific Habitat Regulations Assessments including consideration of water quality risks to the Wye SAC.

4. Mitigation Pathways

The Welsh Government guidance for mitigation of phosphorus in river SACs (2025)¹⁵ and the recent guidance on “Tests of Soundness”¹⁶ (2026) indicate pathways of mitigation that may be applied to LDPs where the impact of additional nutrients on SAC’s has been identified. NRW have also provided guidance regarding mitigation of nutrients within SACs (2026)¹⁰.

It is notable that the current NRW guidance¹⁰ suggests that if the relevant WwTW for proposed developments has an environmental permit that has been reviewed against the nutrient targets set out in the conservation objectives for the river SAC, it may be possible for a planning authority to conclude that there will be no likely significant effect with regard to phosphorus if certain criteria are met. Further mitigation can therefore be ‘screened out’.

Where NRW are not content to screen the phosphorus loading out on the basis of the Review of WwTW permits, then the Welsh Government and NRW guidance outline several hierarchal approaches (or ‘pathways’) to mitigation, through which it would be feasible to mitigate the phosphorus loads associated with the rLDP, thereby providing confidence that no adverse effects on the site integrity of the SACs would occur (see Figure 6). This section introduces the main ‘pathway’ approaches at a high level, including Strategic Scale Mitigation.

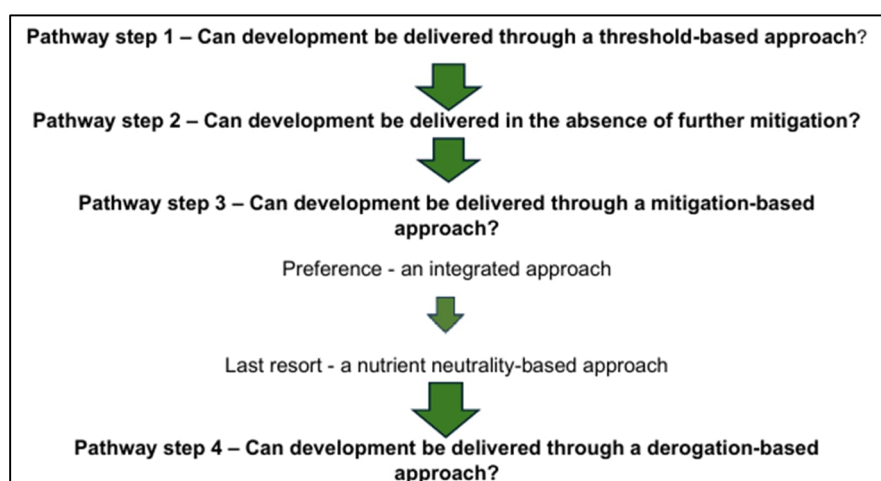


Figure 6 Hierarchal pathways to mitigation

4.1 Threshold Approach / De Minimis

The Welsh Government clarification note¹⁶ suggests that the first consideration with regards to mitigation pathways for nutrients (where significant effects on site integrity cannot be ruled out on the basis of WwTW upgrades) is whether it may be possible in some cases to screen out a certain quantum of development as being *de minimis*, i.e. the nutrient loading from the development falls beneath a defined threshold whereby plan proposals will not have any meaningful influence over the achievement of the conservation objectives for the SAC. Definition of any such threshold must be supported by relevant evidence and assessment¹⁶ and be sufficiently certain.

Welsh Government guidance is clear that a threshold-based approach on a project-by-project basis is not advised. The cumulative effect of policies and proposals must be taken into account, and so consideration of whether development can be regarded as *de minimis* must be undertaken in terms of the scale of implementation across the whole plan period (through to 2033) and necessarily will inform the appropriate assessment.

HRA ‘*de minimis*’ thresholds are therefore anticipated to be derived on the basis of an overall quantum of development over a defined timeframe. A threshold-based approach may be combined with a wider integrated approach (see next sub-section) across an area in the rLDP, reflecting catchment-specific characteristics and circumstances. Case studies are given in the recent Welsh Government clarification note on tests of soundness.

To agree a threshold approach, planning authorities will need to be satisfied that the additional loading from the rLDP will not undermine the achievement of the conservation objectives. In other words, the additional loading

¹⁵ [Planning Guidance - Development in SAC Rivers](#)

¹⁶ [Clarification note: applying the tests of soundness to Local Development Plans \(LDPs\)](#)

will not exert any meaningful influence over the effectiveness of action to be taken to achieve the conservation objectives or otherwise delay the achievement of such objectives.

No thresholds for *de minimis* have been determined for the Usk and Wye catchments at this stage, nor for other catchments affected by nutrient issues in Wales (as of April 2026). It remains uncertain as to how such a threshold can be robustly defined and defended. Nonetheless, MCC are exploring this approach further with NRW to determine whether there is potential for development of a threshold, where it can be sufficiently supported with evidence. Progress in this regard will be included where relevant in the forthcoming Developer Mitigation Handbook.

4.2 Integrated Approach

Where it is not possible to define a *de minimis* threshold and development requires mitigation, the Welsh Government clarification note on applying the Tests of Soundness to LDPs indicates an integrated approach as the preferred solution to ensure no adverse effects to SAC rivers¹⁶.

The overall aim of an integrated approach is to coordinate actions to deliver a long-term improving trend in nutrient levels within SAC catchments, whilst managing growth in accordance with the sustainable development principle. Appropriate steps to avoid deterioration or provide restoration (under Article 6(2) of the Habitats Regulations) in nutrient neutrality affected catchments could include the following:

- Planned upgrades to WwTWs and/or DCWW AMP8 schemes including storm overflow improvements.
- Ongoing work being delivered under the SAC Rivers project which will be implemented within the catchment of concern, including enhanced regulatory compliance and enforcement programmes to address non-compliance within the agricultural sector. This could include works being undertaken by Nutrient Management Boards (NMBs) or environmental improvement schemes under DCWW's AMP8.
- Work underway through the programme of measures under the WFD River Basin Management Plan (RBMP).
- Forthcoming NRW Catchment Nutrient Recovery Plans.

This integrated approach allows mitigation for nutrients by developers to be more closely integrated with the delivery of restoration under Article 6(2) where developer contributions:

- Increase the scale, magnitude, or scope of planned restoration measures (over and above what would otherwise have been delivered); **OR**
- Speed up delivery of planned restoration measures beyond what would normally be delivered, where the current implementation timescales risk meaningful ecological deterioration in the interim.

For the integrated approach to be viable there will need to be close ongoing collaboration between MCC, DCWW, NRW, NMBs, Catchment Partnerships and developers. MCC will explore relevant schemes underway within the affected catchment to which an integrated approach could be applied and will develop a platform for developers to contribute to these schemes where appropriate.

4.3 Strategic Scale Mitigation Solutions

Where it is not possible to apply a threshold or integrated approach, the Welsh Government clarification note on applying the Tests of Soundness to LDPs¹⁶ indicates that a nutrient neutrality-based approach is then required. Strategic scale mitigation solutions such as large wetlands are in place and under development in some nutrient neutrality catchments across England (e.g. by various LPAs and Natural England) thereby reducing phosphorus loading where previous discharges had higher loads, enabling developers to buy nutrient credits to offset development. However, for many LPA areas, including those in Wales, strategic solutions are not yet in place. A Technical Working Group was set up in Wales (in November 2025) to look at developing nutrient trading schemes.

This SMOR focuses on potential strategic scale mitigation solutions within Monmouthshire to determine whether there are any feasible strategic mitigation approaches that might be applicable in the local authority. The strategic mitigation approach could include a wide array of mitigation options developed at scale by MCC, which could then be offered as part of nutrient credit scheme for developers to purchase and offset their nutrient contributions to the riverine SACs.

A long list of proven strategic nutrient mitigation approaches has been developed and are discussed in Section 5, based on precedence for delivery in England. A short-list has then been developed in Section 7 based on constraints within the Monmouthshire setting.

4.1 Developer Led Mitigation

Where a threshold-based approach is not appropriate, there are no suitable integrated solution options, and if strategic scale mitigation approaches for the management of excess nutrients are not possible or are yet to come to fruition, developers can lead on development of their own mitigation for a plan or project. Depending on the scale of mitigation, developer-led measures also have the potential to create headroom for other projects to proceed. To support developer led mitigation, MCC are preparing a Developer Mitigation Handbook for phosphorus in Monmouthshire. This will outline the nutrient neutrality assessment approach for developers and an array of potential mitigation options, including how these should be secured for the lifetime of the development.

5. Review of Potential Strategic Scale Nutrient Mitigation Solutions

This section provides a review of potential strategic scale nutrient mitigation solutions that could be applicable in Monmouthshire. This includes an appraisal of each option using a consistent evaluation framework and an overview of the assumptions and limitations of each option. At present, nutrient credit schemes that may provide a precedent from England have focused primarily on land use change, wastewater upgrades, and constructed wetlands, where nutrient reductions are more easily quantified.

Table 4 highlights the key differences between mitigation measures implemented at the strategic scale and those implemented at the developer scale. This represents a general distinction however, in some instances, landowners and developers in England have invested in large-scale mitigation solutions to generate and sell credits to other developers. While this report focuses on identifying suitable options for MCC, it is acknowledged that some of these approaches may be applicable to other parties who wish to develop a bank of nutrient credits to trade.

Table 4 General distinction between strategic scale mitigation and developer scale mitigation

Aspect	Strategic scale	Developer scale
Spatial extent	Catchment / authority-wide	Single development site
Delivery	Public sector / partnerships	Individual developer
Purpose	Offset multiple developments	Offset one development
Flexibility	High (portfolio approach)	Limited by site constraints
Efficiency	Often more cost-effective	Can be costly per unit
Governance	Requires coordination	Simpler governance

Table 5 outlines the strategic scale mitigation solutions that have been considered. Full details of each approach are given in Volume II Appendix A (available upon request):

Table 5 Summary of strategic scale mitigation solutions considered

Option	Description summary
Land use change	The permanent conversion of land uses with higher phosphorus export (e.g. arable or improved grassland) to land uses with lower phosphorus export (e.g. greenspace, woodland).
Septic tank upgrades	Replacing outdated septic tanks or PTPs with higher-efficiency models. The replacement system(s) must be located upstream of the development it mitigates and must be in the same catchment.
Water efficiency measures	Water efficiency measures rely on increased water usage efficiency in households to reduce the volume of wastewater (containing phosphorus loads). Low-flow fixtures can be installed on numerous household appliances, including toilets, showerheads, and faucets designed to use less water than conventional models while maintaining good performance.
Urban SuDS	SuDS aim to reduce the volume and speed of runoff entering watercourses, thereby lowering flood risk and improving water quality. They achieve this by slowing flows, promoting sedimentation, and encouraging infiltration, allowing rainfall to percolate into the ground close to where it falls. This includes basins and ponds, filter strips and swales, constructed wetlands, soakaways, infiltration basins, gravelled areas, and porous paving.
Rural SuDS	Rural SuDS include features that attempt to mimic natural drainage processes to intercept/divert and/or improve infiltration and percolation of surface water run-off in rural areas. Unlike urban SuDS, rural SuDS

typically operate at a larger scale, integrate with natural landscapes, and might require heavier duty earthworks due to the sheer size of the land available.

General wetlands	Non-treatment or "open source" wetlands are constructed wetland features that improve water quality without controlled or quantified inflows. These wetlands typically intercept diffuse runoff from agricultural land or urban areas and therefore are often integrated into SuDS or habitat restoration schemes.
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Treatment wetlands	Treatment wetlands, also known as constructed wetlands, are engineered systems designed to replicate the physical, chemical, and biological processes that occur in natural wetlands. They are designed and managed in a specific manner to treat water which contains undesirable substances.
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Enhanced drainage ditch management	Enhanced drainage ditch management is a method for managing agricultural drainage ditches and small watercourses in rural areas for nutrient benefits.
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6. Comparative and Constraints Analysis

6.1 Introduction

This section compares the strategic nutrient mitigation measures considered in this review in terms of their relative effectiveness, cost, and potential feasibility of implementation within Monmouthshire. The analysis covers a range of options listed in Section 5 recognising that each option offers different levels of nutrient reduction and presents distinct delivery challenges.

The assessment draws on available evidence to highlight key differences between measures, including their likely nutrient removal performance, indicative costs, and practical considerations such as land availability, regulatory requirements, and long-term management. This comparative approach is intended to support the identification of mitigation measures that might be delivered at scale to achieve nutrient neutrality in Monmouthshire.

6.2 Analysis Criteria and Appraisal

Table 6 includes a Red, Amber, Green (RAG) grading for the current confidence, suitability in the solution, and cost for delivering phosphorus mitigation.

With regard to **confidence**:

- **Red** = Low Confidence = the mitigation approach is complex to deliver and / or difficult to secure in perpetuity. Unlikely that the criteria of sufficient certainty could be met without significant time and expense to develop the solution with multiple partners.
- **Amber** = Medium Confidence = the mitigation approach has precedent and can deliver nutrient benefits but has complexities which make it onerous to demonstrate sufficient certainty (e.g. in terms of required monitoring or securing legally).
- **Green** = High confidence = the mitigation approach is widely accepted in terms of nutrient benefits given appropriate design and implementation and are considered at the less onerous end of the spectrum in terms of securing in perpetuity with sufficient certainty.

With regard to **suitability**:

- **Red** = Low Suitability = the approach is not considered suitable for strategic scale mitigation.
- **Amber** = Medium Suitability = the approach may be suitable but will require substantial investment to prove nutrient reductions and to maintain these in perpetuity.
- **Green** = High Suitability = the approach is considered suitable for strategic scale with good potential to deliver and secure in perpetuity.

With regard to **cost**:

- **Red** = High Cost = the approach is expensive and would unlikely be cost effective.
- **Amber** = Medium Cost = the approach will require substantial investment and further consideration is required to determine whether it is cost effective.
- **Green** = Low Cost = the approach is expected to be cost effective.

Those with Red or Amber ratings for confidence are not necessarily precluded from use in delivering neutrality and so may be suitable, but it is likely that a higher degree of evidence will be required to ensure sufficient certainty (i.e. beyond reasonable scientific doubt) that the stated nutrient reductions would be achieved in perpetuity. Hence, they are generally less favourable options.

Table 6 Analysis of mitigation measures considering effectiveness, cost and feasibility

Mitigation measure	Detail	Confidence	Cost	Suitability within Monmouthshire
Land use change	The approach has high longevity (assuming land use change is secured in perpetuity through S106 agreements) and certainty if it is possible to secure monitoring to confirm that the new land use is maintained, and so confidence is high. However, suitability for a strategic solution is limited given that MCC have insufficient land holdings to generate meaningful phosphorus reduction and it would be prohibitively costly to purchase additional land.			
Septic tank and PTP upgrades	This measure can also be applied to additional existing properties to create a TP surplus. However, it must first be confirmed that connection to the mains sewer is not reasonably practicable, in line with the Welsh Government Non-Mains Drainage Circular (008/2018). Manufacturer's testing data for each product can inform the level of TP reductions that are achievable. Nonetheless, it will be required to demonstrate that the PTP will be subject to legally secured ownership and responsibility, ensuring that operation, maintenance and compliance are defined. This may be secured through planning conditions, legal agreements, or other binding mechanisms as appropriate. Suitability for a strategic solution is limited given that MCC have an insufficient number of council houses in which to undertake septic tank upgrades.			
Water efficiency measures	Manufacturer's product testing data (e.g. on flow control devices) provides a clear idea of water volume reductions that are achievable. For sufficient certainty, the Competent Authority will require evidence that a Maintenance and Monitoring Plan is secured and will remain in place upon sale of any affected property via a legal agreement. Regular data submissions to the LPA may be required to show metered water levels and evidence of appliance checks to demonstrate that the water efficient fittings are performing to the required standard to achieve the stated nutrient reductions. Suitability for a strategic solution is limited given that MCC have an insufficient number of council houses in which to implement water efficiency measures.			
Urban SuDS	There is substantial evidence on TP benefits of certain SuDS approaches, if correctly implemented, and so SuDS are a suitable approach to reduce surface water TP in urban runoff. Suitability for a strategic solution as SuDS can be implemented on MCC owned land (e.g. car parks).			
Rural SuDS	There is substantial evidence on TP benefits of certain SuDS approaches, if correctly implemented, and so SuDS are a suitable approach to reduce surface water TP in rural runoff. Suitability for a strategic solution however may be limited within MCC due to a lack of rural owned land.			
Treatment wetlands	Nutrient removal from constructed wetland can be significant but is dependent on appropriate design. Due to the complexity of characterising flows and loads accurately, post-implementation monitoring is essential. Demonstrating the full nutrient removal potential			

Mitigation measure	Detail	Confidence	Cost	Suitability within Monmouthshire
	of a wetland may take 1 to 3 years or longer, as performance stabilises over time. In general, they are suitable for strategic scale implementation on MCC owned land.			
Other wetlands	Other wetlands are defined here as those not considered constructed or treatment wetlands but rather habitat creation such as in-ditch wetlands, ponds, and floodplain reconnection. While these wetlands can contribute to nutrient retention, their lack of controlled water inflows and uncertainty surrounding nutrient removal processes limits their suitability for formal nutrient neutrality calculations.			
Enhanced drainage ditches	An approach that combines a two-stage channel cross-section with low-grade weirs and vegetation on the inset floodplain benches. The combination of these approaches within a single channel aims to increase hydraulic residence time within the drainage network, promoting a suite of natural processes that reduce onward nutrient transport. Assuming correct design and implementation there is confidence in the TP mitigation related to this approach. However, there are substantial maintenance and monitoring requirements to ensure that the original design is maintained (e.g. periodic sediment removal may be required). Suitability for a strategic solution is limited as delivery of enhanced drainage ditch measures is likely to involve extensive site screening and evaluation, resulting in a relatively labour-intensive process and development of agreements with landowners or land acquisition.			

MCC are not restricted to the list provided in Section 5 and may be able to define alternative or novel approaches to delivering phosphorus mitigation. However, these will also need to provide sufficient certainty in the phosphorus reduction in perpetuity. Within Monmouthshire, approaches such as land-use change which have been implemented elsewhere were not considered suitable due to a shortage of MCC owned agricultural land which enable the approach to be adopted. Similarly, MCC do not have a bank of housing stock to which additional water use efficiency measures could be applied.

Overall, the short-listing approach determined that urban retrofit SuDS and constructed wetlands were possible options within Monmouthshire, and these were taken forward for further consideration of their potential. This included initial environmental and engineering constraints analysis to identify potentially suitable sites that could be taken forward for concept design by MCC. High level estimates of nutrient removal to determine how much benefit they would provide in terms of nutrient mitigation for the rLDP developments, and the details of the mitigation selection, constraints analysis and nutrient reduction potential estimates, are discussed in more detail within Section 7.

7. Development of Strategic Opportunities

7.1 Introduction

The allocated developments in the Usk catchment are projected to generate approximately **265 kg TP/yr** by 2033 under a worst-case scenario, which will require mitigation, and **136 kg TP/yr** by 2033 for the Wye catchment, although this has now moved out of unfavourable status and so there is no immediate need for mitigation. From the long list developed in Section 3, several strategic opportunities have been identified as having the potential to provide a solution or contribute to the solution within the Monmouthshire section of the River Usk catchment. These are developed further in this section. Volume II Appendix B and Volume II Appendix C (available upon request) provide an assessment of the potential viability of constructed wetlands and urban retrofit SuDS as a strategic nutrient mitigation option within the Monmouthshire section of the River Wye and River Usk catchments.

7.2 Constructed Wetlands

Overview of strategic mitigation option

Constructed wetlands are a nature-based nutrient mitigation option capable of providing additional nutrient removal downstream of WwTWs. When suitably designed and maintained, wetlands can provide significant attenuation of nutrient loads through a combination of natural physical, chemical and biological processes. As such, they offer potential as a strategic mitigation measure for the allocated developments in the catchments.

The assessment presented in Volume II Appendix B (available upon request) demonstrates that constructed wetlands may be a technically viable strategic mitigation solution at a subset of WwTWs within the affected catchments. However, their effectiveness as a strategic mitigation solution is highly site-specific and strongly influenced by land availability and type, hydraulic infrastructure, and the scale of treatment required relative to the nutrient load.

Approach

Data Collation

To identify the potential for MCC to use a constructed wetland as strategic mitigation, all relevant DCWW WwTWs in the affected nutrient catchments were identified. Data was requested from DCWW regarding influent flow rates and nutrient concentrations to the works as well as effluent flow rates and nutrient concentrations leaving the works. However, data was not made available in time to support this analysis and so effluent nutrient concentration data was derived from NRW's Water Quality Archive¹⁷, except for Goytre, where the concentrations were set to a constant 1.4 mg/l to reflect the WwTWs 2030 permit. The WwTW discharge rates (m³/day) were estimated from WwTW in Carmarthenshire with comparable sewer catchment areas (hectares), where AECOM has undertaken a similar assessment.

Constraints Analysis

A constraints analysis and mapping exercise was undertaken for each of the identified WwTW sites (9 no. considered in total). The GIS-based constraints review covered land availability, topographic suitability, geology, hydrogeology, flood risk, utilities, habitats, designated sites, land use and heritage factors. Data was derived from freely available online sources through the NRW website and data received directly from MCC. A range of constraints were evaluated using a Red–Amber–Green (RAG) scoring framework. The scoring methodology was derived by reviewing the requirements and considerations for constructed wetlands as nutrient-neutrality mitigation measures, informed by the Natural England nutrient neutrality framework¹⁸ and relevant NRW criteria. The RAG ratings reflect the relative severity and potential implications of each constraint category on feasibility, rather than providing a definitive assessment of deliverability or scheme design.

¹⁷ NRW Water Quality Archive | DataMapWales (no date). Available at: https://datamap.gov.wales/layers/geonode:nrw_water_quality_archive_stations (Accessed: 22 April 2026).

¹⁸ Natural England, 2022. Framework Approach for Responding to Wetland Mitigation Proposals.

Constructability

The next step was to consider constructability, with consideration of site-specific engineering and delivery factors, including topography, flood risk, existing vegetation, land use, access, hydraulic connectivity, and the scale of enabling works required. Constructability was also scored using a RAG system. Green represents a relatively straightforward gravity fed system, amber indicates more complex but not insurmountable engineering requirements with a probable pumping solution, while red indicates that the site is essentially unviable in terms of constructability. At this stage an estimation of wetland size was also made based on engineering constraints for indicative purposes, however, this would be subject to further analysis at outline and detailed design.

Phosphorus Removal Performance

Phosphorus removal performance was estimated using the P-k-C* model described by Kadlec and Wallace (2009¹⁹), which is widely applied in the preliminary design and evaluation of constructed wetlands. The model adopts a first-order areal reaction framework in which pollutant removal is a function of hydraulic loading rate and influent concentration and incorporates a background concentration representing the lower bound of achievable treatment.

The governing equation is:

$$\frac{C_e - C^*}{C_i - C^*} = \left[1 + \frac{K_{TP}}{Pq} \right]^{-P}$$

Where:

C_i = Influent concentration of TP (mg/l)

C_e = Effluent concentration of TP (mg/l)

C^* = Background concentration of TP (mg/l)

K_{TP} = Rate coefficient for reduction of TP (m/yr)

P = Apparent number of tanks in series (PTIS – dimensionless)

q = Hydraulic loading rate (m³/yr)

Rearranged to estimate effluent concentration (C_e):

$$C_e = C^* + (C_i - C^*) \left[1 + \frac{K_{TP}}{Pq} \right]^{-P}$$

A constant areal rate coefficient (K_{TP}) of 10 m/year was adopted, consistent with Kadlec and Wallace (2009). The hydraulic loading rate (q) represents the rate of inflow discharge (Q) (m³/yr) per unit area of wetland (m²), and was calculated as:

$$q = \frac{Q}{A}$$

Model inputs and assumptions adopted for this feasibility-stage assessment are available upon request. These assumptions reflect the limited availability of effluent concentrations, inflow discharge rates, and the early design stage. Input design and parameter data used for each WwTW site in the P-k-C* calculations can also be provided if required.

Using this approach, the P-k-C* model was applied to estimate potential annual TP mass removal for each WwTW, incorporating monthly removal variability. Calculations were undertaken for four wetland footprint scenarios of 100%, 80%, 60%, and 40% of the maximum feasible wetland area as a sensitivity analysis, which reflect likely reductions in effective treatment area arising from dense vegetation, flow paths, and multi-cell layouts as design develops.

Overview

Final recommendations on the optimum sites to take forward were made taking into account the outcomes of the constraints analysis, constructability appraisal, phosphorus removal performance and considering wetland location against rLDP allocated site location, to determine to what extent the wetland could mitigate the nutrients resulting from the plan.

¹⁹ Kadlec, R.H. and Wallace, S. (2008) Treatment Wetlands. 2nd edn. Boca Raton: CRC Press. Available at: <https://doi.org/10.1201/9781420012514>.

Identifying Potential Locations for Wetland Implementation

Potential wetland locations were assessed at relevant WwTWs through a staged assessment comprising GIS-based constraints screening followed by a more detailed engineering-led constructability review. WwTWs considered relevant are those within the catchment of the River Usk and River Wye SACs, where these are located in Monmouthshire. This approach enabled the identification of areas where wetlands could reasonably be delivered, taking into account land availability, topography, flood risk, ecological constraints, hydraulic connectivity and enabling works requirements. A summary of the environmental constraints assessment is presented in Table 7, and a summary of the engineering constraints is provided in Table 8. All wetland sites in relation to rLDP sites are shown in Figure 7.

Table 7 Summary of Environmental Constraints

WwTW name	RAG Score	Rank	Description of key environmental constraints
Goytre	126	=1st	Adjacent area of ancient woodland may constrain some areas of pipeline and what is possible to deliver, in addition to some small areas located within Flood Zone 3. There are also some topographical challenges associated with this area, and the entire area is also located within a surface water Drinking Water Protected Area (DwPA) that is at risk, although design and standard mitigation during construction is likely to provide adequate protection. The site is underlain by Secondary A bedrock and superficial aquifers, with a mix of low to medium groundwater vulnerability associated with both bedrock and superficial deposits.
Devauden	126	=1st	Constraints associated with topography and location of ancient woodland, which may impact effluent pipe connection. Located in close proximity to an AONB and a chapel (terrestrial monument). The site is associated with a Secondary A bedrock aquifer with high groundwater vulnerability and freely draining soils.
Little Mill	126	=1st	Located within Flood Zone 3 and within a Regionally Important Geological site. The site is underlain by a Secondary A superficial aquifer characterised by high groundwater vulnerability and floodplain soils with naturally high groundwater levels.
Raglan	128	4th	Areas of Flood Zone 3 constrain space available for a wetland and Public Right of Way may require fencing with wetland creation. The site is underlain by Secondary A bedrock and superficial aquifers with high groundwater vulnerability and is characterised by floodplain soils with naturally high groundwater levels.
Usk	133	5th	Constraints associated with direct discharge into the River Usk SSSI and SAC and located within a surface water DwPA designated at risk. Underlain by Secondary A bedrock and superficial aquifers with medium groundwater vulnerability associated with freely draining floodplain soils. Extensive Flood Zone 3 and historic landfill constrains the extent of potential wetland.
Llanellen	137	6th	Some constraints associated with direct discharge into the River Usk SSSI and SAC and located within a surface water DwPA designated at risk. It is characterised by Secondary A bedrock and superficial aquifers with high groundwater vulnerability and is associated with freely draining floodplain soils. Located within Flood Zone 3, and Himalayan Balsam is present upstream of the WwTW, with potential for its occurrence on site.
Aberbaiden	138	7th	Some constraints associated with topography, location of the ancient woodland next to the outfall, and direct discharge into the River Usk SSSI and SAC. Located in the Bannau Brycheiniog National Park. The entire area is located within a surface water DwPA designated at risk. The site is also characterised by being underlain by Secondary A bedrock and superficial aquifers with high groundwater vulnerability with a freely draining floodplain. There are also constraints associated with public rights of ways.
Llanfoist	141	8th	Located within Flood Zone 3 and associated with direct discharge into the River Usk SSSI and SAC. The site is also located within two surface water DwPA designated at risk. The site is underlain by Secondary A bedrock and superficial aquifers with high groundwater vulnerability associated with both bedrock and superficial deposits and freely draining soils. There are also areas of artificial ground and a terrestrial monument which may constrain wetland placement and size. Non-

native invasive species Himalayan Balsam and Butterfly Bush have been identified upstream of the WwTW and may pose a risk to the future management of the wetland.

Monmouth	145	9th	Located within Flood Zone 3 and Area of Outstanding Natural Beauty (AONB), directly bordering the River Wye SSSI and SAC and with nearby public rights of way. The entire area is also located within a surface water DwPA which is currently at risk and has a safeguard zone in place, and also within DwPA groundwater body which has Poor overall status. The site is underlain by Secondary A bedrock and superficial aquifer designations with high groundwater vulnerability.
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Table 8 Summary of Engineering Constraints

WwTW name	Constructability review rank	Description of key engineering constraints
Goytre	1	Based on high level review this site has potential for multiple gravity fed constructed wetland sites over the length of the existing outfall that could be investigated further. There is potential to increase the size and number of individual wetland areas from that highlighted if ecology, liaison with landowners, and treatment requirements allow.
Aberbaiden	2	There is potential to consider further a wetland to the east and west of the WwTW. However, there will likely be higher costs associated with pumping, construction of a new outfall, and a minor watercourse crossing.
Monmouth	2	Based on high level review this site has some more limited potential for a constructed wetland but with a more expensive pumped inlet arrangement. This is due to other more suitable areas being ruled out due to environmental and engineering constraints (e.g. within AONB, adjacent to County Showground or being within Flood Zone 3).
Llanellen	2	Site shows potential for a potential constructed wetland given available area of around 1.5 ha that could be investigated further. However, viability is based on the feasibility of pumping arrangements and whether the existing outfall to the river can be used.
Usk	2	A wetland may be technically feasible (subject to more detailed investigations) but is likely to have higher costs due to the need for a river crossing and 10 m pumping head requirement (more favourable land is located with Flood Zones 2/3 and so has been ruled out). However, the existing outfall is pumped and if this infrastructure can be re used, it may mitigate some of the higher cost.
Devauden	3	The combination of a 30m elevation gain to the wetland area, requirement for pumping and a new outfall, and limited treatment volumes associated with a small works results in an unfavourable cost benefit ratio.
Raglan	3	The WwTW is constrained by steep watercourses either side, directly upstream of the confluence. Although two potential wetland sites have been identified outside of environmental constraints (e.g. Flood Zone 3 and mature trees), both options would require pumped inlets, a watercourse crossing and a new outfall. Given the relative size of the WwTW this site looks to provide a poor cost to benefit ratio.
Llanfoist	N/A	Site ruled out as entire area is within Flood Zone 3.
Little Mill	N/A	Site ruled out as no suitable location due to hill topography.

This assessment concluded that viable wetland locations are not available at all the relevant WwTWs. Llanfoist WwTW, was ruled out due to its location in Flood Zone 3, noting that there was a small area outside of the flood zone ruled out for containing a terrestrial monument, while Little Mill WwTW was excluded due to unsuitable hillside topography. At the remaining sites, feasible wetland areas were identified along existing outfalls or within adjacent low-gradient farmland, subject to varying requirements for pumping, earthworks or modifications to existing discharge arrangements. These areas, along with available TP concentration and flow data were input into the P-k-C* model¹⁸ to estimate the potential TP mitigation for each wetland, presented in Table 9. Refer to Volume II Appendix B for further details (available upon request).

Table 9 presents annual TP reduction based on the potential maximum available wetland area based on a desk study and certain assumptions as described later. For Goytre, Llanellen, Usk, Devauden and Raglan, the estimated TP reductions, even when assuming only 80% of the total area operates as active treatment (to act as a buffer), exceed the allocated nutrient budgets. In contrast, at Monmouth and Aberbaiden, TP reduction at 80% of the total available area does not meet the allocated nutrient budgets, suggesting that further refinement of TP removal rates may be required, potentially achievable through careful wetland design.

Table 9 Annual total phosphorus mitigation potential for a wetland utilising the maximum estimated available area at each WwTW.

WwTW name	Environmental Constraints RAG Score	Constructability review rank	Allocated sites served / downstream of WwTW / wetland outfall	Nutrient budget from relevant allocated sites (in 2033)* (TP/yr)	Max estimate available area for wetland (ha)	TP reduction at full area	TP reduction at 80% area	TP reduction at 60% area	TP reduction at 40% area
Goytre^	126 (=1st)	1	HA10, HA11, HA12, HA14, HA15, HA16	70.15 kg TP/yr	3.49	252	224	189	143
Aberbaiden	138 (7th)	2	All allocated sites are downstream	264 kg TP/yr	0.8	260	214	162	110
Monmouth	145 (9th)	2	HA4, HA6, HA7, HA8	103 kg TP/yr	1	106	86	66	44
Llanellen	137 (6th)	2	HA10, HA11, HA12, HA14, HA15, HA16, HA17	85.67 kg TP/yr	1.5	112	106	98	83
Usk	133 (5th)	2	HA11, HA10, HA14	42.24 kg TP/yr	1.25	300	258	209	152
Devauden	126 (=1st)	3	HA14	11.93 kg TP/yr	2	132	126	117	101
Raglan	128 (4th)	3	HA10, HA14	18.37 kg TP/yr	2.45	24	22	19	15
Llanfoist	141 (8th)	Site not assessed as not considered to have sufficient potential for constructed wetland development.							
Little Mill	126 (=1st)	Site not assessed as not considered to have sufficient potential for constructed wetland development.							

*Based on worst case scenario.

^Influent conc. for Goytre wetland were assumed as a constant 1.4 mg/l to reflect the WwTW 2030 permit requirement.

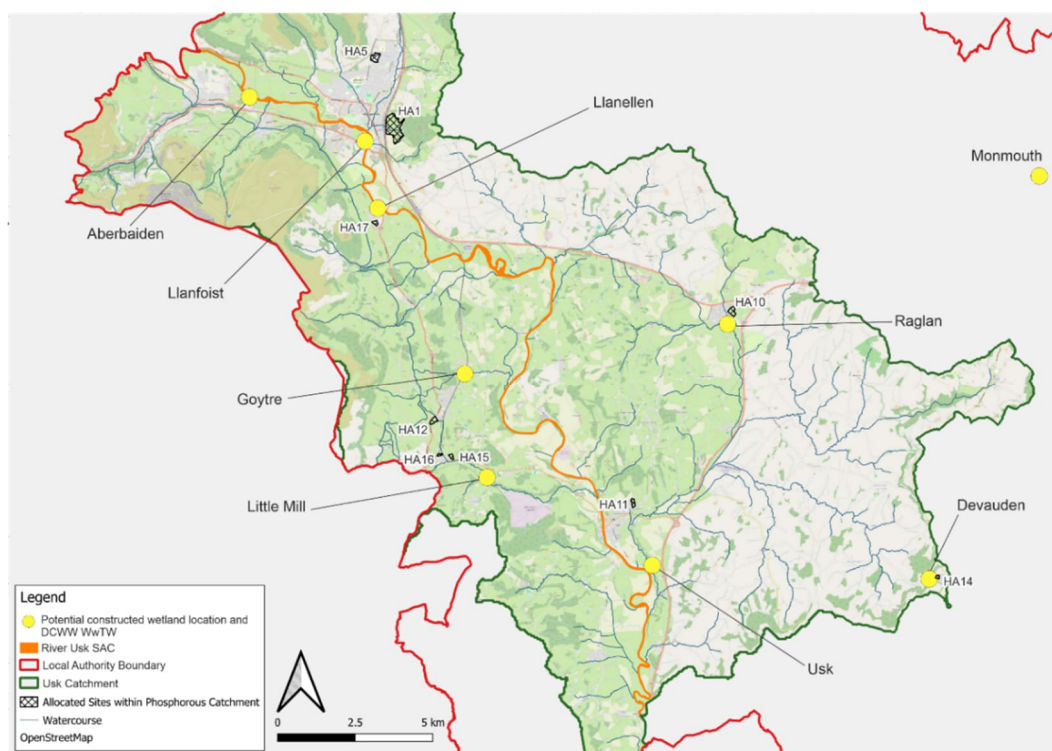
**Figure 7 Location of all considered constructed wetlands and allocated sites**

Table 10 presents an alternative assessment that focuses on optimising wetland size so that TP removal more closely aligns with the maximum nutrient budget that may be generated by allocated development served by the relevant WwTW and any development sites further downstream. The assessment assumes that 80% of the constructed wetland footprint functions as active treatment area, with the remaining 20% as a buffer. However, actual removal rates will be highly dependent on detailed design and long-term maintenance. Under this approach, wetland areas are sized so that the TP reduction achieved by the effective 80% treatment area meets or marginally exceeds the allocated nutrient budget.

Table 10 Constructed wetland areas required to meet site-specific total phosphorus nutrient budgets, assuming 80% of the wetland footprint functions as active treatment area

WwTW name	Environmental Constraints RAG Score	Construct-ability review rank	Nutrient budget from relevant allocated sites (in 2033)* (TP/yr)	Area required to mitigate 2033 nutrient budget* from relevant allocated sites with 20% buffer (ha)	Estimated TP reduction at 80% built wetland area
Goytre	126 (=1st)	1	70.15 kg TP/yr	0.75	72.23 kg TP/yr
Aberbaiden	138 (7th)	2	264 kg TP/yr	0.80	260 kg TP/yr**
Monmouth	145 (9th)	2	103 kg TP/yr	1.0	106 kg TP/yr**
Llanellen	137 (6th)	2	85.67 kg TP/yr	0.8	85.72 kg TP/yr
Usk	133 (5th)	2	42.24 kg TP/yr	0.16	44.56 kg TP/yr
Devauden	126 (=1st)	3	11.93 kg TP/yr	0.06	14.02 kg TP/yr
Raglan	128 (4th)	3	18.37 kg TP/yr	2	19.85 kg TP/yr

*Based on worst case scenario.

**Estimated TP reduction at 100% area.

The combined constraints assessment, constructability review, and P-k-C* estimation identify **Goytre WwTW** as the most feasible site for delivering a constructed wetland as a strategic phosphorus mitigation measure, with a maximum estimation of **252 kg TP/year** when utilising the total available area of 3.45 hectares (Table 9), or the wetland area can be reduced to 0.75 hectares to meet its allocated sites nutrient budget. Key advantages for constructing a wetland to treat Goytre WwTW effluent include:

- Lowest scoring in the environmental constraints screening (i.e. a higher score indicates more issues).
- Scope for the wetland to be gravity fed.
- Available land for multiple wetland cells, improving treatment reliability and hydraulic efficiency.

Despite this potential, a wetland at Goytre would only be applicable to mitigating development at the allocated sites served by it, or downstream of it, namely HA10, HA11, HA12, HA14, HA15, HA16. This does not include the developments HA1 and HA5 at Abergavenny.

As such, it is also recommended that **Aberbaiden WwTW** is investigated further through feasibility studies and design, as this site has the advantage of being upstream of all allocated sites in the Usk catchment. It can therefore be used as mitigation for all the allocated sites in this catchment, whereas the other potential wetland sites can only be used as mitigation for the allocated sites that it serves, or those downstream of it. As such, Aberbaiden WwTW appears to be the only feasible wetland option for mitigating the allocated developments at Abergavenny (i.e. HA1 and HA5). Based on the estimates presented herein, a wetland at Aberbaiden WwTW would have the potential to remove up to 260 kgTP/yr. Pumping would be required and there are other constraints requiring consideration (e.g. location in the Bannau Brycheiniog National Park authority area) but this is considered a key option for strategic mitigation. If an alternative site was required, WwTW further upstream in the SAC catchments within Powys or Herefordshire may be considered through further study. Providing mitigation

is upstream along the SAC it would be suitable to offset any excess phosphorous generated by allocated developments HA1 and HA5.

Finally, it is also recommended that the **Usk WwTW** should also be considered further. This site might have the potential to treat 300 kgTP/yr, although it would only serve allocated sites HA10, HA11, and HA14. While pumping will be required, the presence of existing pumped outfall infrastructure may reduce costs and make this option more cost-effective for delivering mitigation for HA10, HA11, HA14. The three preferred site locations are shown in Figure 8.

Of the remaining amber sites in Table 9, Monmouth WwTW is not considered further at this stage as it is located in the Wye SAC catchment which does not require mitigation (see Section 3.4). Llanellen WwTW is in the Usk catchment but has much lower nutrient removal capabilities than other sites in this catchment and so is not prioritised for further consideration at this stage.

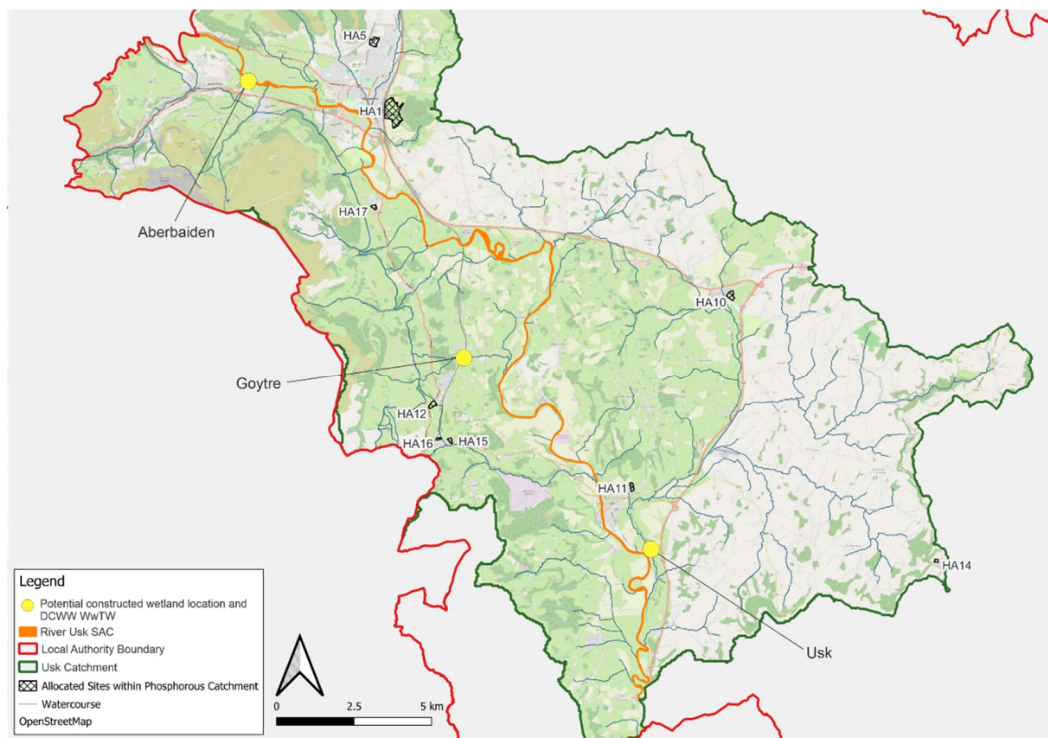


Figure 8 Location of preferred constructed wetlands

Potential Cost of TP Reductions from Constructed Wetlands

Construction costs for a constructed wetlands have been estimated using an AECOM tool that considers the additional costs smaller and standalone projects incur that are not typically reflected in SPONs costings. A high-level cost summary has been included in Table 11 assuming a wetland spanning 4 ha with 6 no. treatment cells.

Table 11 Indicative constructed wetland construction costs

Cost component	Indicative Cost (£)
Preliminary items	100,000
Site clearance	20,250
Plant hire	77,000
Plant fuel	30,000
Labour	92,500
Materials / installed works	1,250,500
Provisional sums	30,000
Subtotal (base)	1,600,250
CPI uplift (Sep 2025 → Dec 2025: +0.07%)	1,900
Risk allowance	18,750
Total Cost	1,620,900

Whilst the material costs which build up the bulk of the works can be scaled, the additional costs consisting of preliminary and other capital costs cannot. The resulting cost of a constructed wetland can therefore be split into material costs and additional fees, of approximately £315,000 per hectare and £365,500, respectively. Furthermore, where solutions are required to be pumped, an additional cost of £350,000 has been allowed for, based on historic projects carried out by AECOM. These costs have been applied to the wetlands below; however, these are indicative and would require the undertaking of a feasibility study prior to accurate costing. Furthermore, the figures below account for construction costs only, and exclude full life and maintenance costs.

Table 12 Indicative constructed wetland construction costs

WwTW name	Wetland area to achieve the nutrient budget target (hectares)	Material cost (£)	Additional fees (£)	Estimated cost (£)	Estimated cost inc. pumping (£)
Goytre	0.75	236,250.00	365,500.00	601,750.00	
Monmouth	1	315,000.00	365,500.00	680,500.00	1,030,500.00
Llanellen	0.8	252,000.00	365,500.00	617,500.00	967,500.00
Usk	0.16	50,400.00	365,500.00	415,900.00	765,900.00
Raglan	2	630,000.00	365,500.00	995,500.00	1,345,500.00
Devauden	0.06	18,900.00	365,500.00	384,400.00	734,400.00
Aberbaiden	0.80	252,000.00	365,500.00	617,500.00	967,500.00
Llanfoist	-	-	-	-	-
Little Mill	-	-	-	-	-

It is good practice when costing at this level of detail to include an optimism bias to cover unknown factors. It is generally recommended to allow for a 60% optimism bias²⁰ for anything up to feasibility design, which has not been quoted in the figures above. As the design progresses, the optimism bias associated with the costing would decrease as the level of confidence in the design increases.

Limitations and Uncertainty

The assessment of constructed wetlands as a strategic phosphorus mitigation option is subject to several limitations arising from data availability, modelling assumptions, and the feasibility-stage nature of the study. These include:

- **Flow data** - WwTW effluent flow discharge rates were not made available from DCWW and were therefore estimated using sewer catchment area as a proxy, scaled against comparable Carmarthenshire WwTWs. While this approach provides a reasonable indication of relative flow magnitude, it introduces uncertainty in the absolute hydraulic loading rates and therefore the TP mitigation potential, as the P-k-C* model is highly dependent on the TP influent loading.
- **TP effluent concentration** – WwTW effluent concentrations were derived from 1 to 3 sampling repeats per month, reducing certainty of monthly averages used to estimate annual TP reduction. For Goytre, the effluent concentration was set as a constant 1.4 mg/l to reflect the WwTW 2030 permit requirement, which will not reflect the actual effluent concentrations.
- **P-k-C* model¹⁸** – TP reduction was estimated using the P-k-C* model, where despite its wide use, the approach simplifies complex biogeochemical and hydraulic behaviour. It also does not account for short-term variability to stressor events (i.e., storms), seasonal dynamics, sediment phosphorus release and long-term performance.
- **P-k-C* model parameter constants** – Constant parameters including the TP rate constant, tanks-in-series and background concentrations, were derived from literature values and standard design assumptions rather than site-specific data that accounts for natural short-term variability. While these assumptions are consistent with accepted guidance for feasibility-level assessment, they may not reflect actual performance under local conditions and would require refinement through detailed design, monitoring data, and site investigations.

²⁰ Scottish Government / Flood protection schemes - assessment of economic, environmental and social impacts: guidance. Available at: [ANNEX C. Optimism Bias Data for Flood Protection Costs - Flood protection schemes - assessment of economic, environmental and social impacts: guidance - gov.scot](#). (Accessed: 29 April 2026).

- **Maximum feasible wetland areas** – The identification and use of maximum wetland areas do not account for detailed layout design and land ownership constraints, which could reduce the effective treatment area. Sensitivity testing using reduced effective areas (80%, 60%, and 40%) was undertaken to partially account for this, but uncertainty remains regarding final deliverable extents until detailed design is developed and subsequent wetland monitoring undertaken.

7.3 SuDS

Overview of strategic mitigation options

SuDS are a nature-based mitigation option capable of providing nutrient removal from surface water runoff from highways. SuDS interventions including bioswales, raingardens, and permeable paving can provide treatment of surface water runoff through specially designed filter layers, particularly when deployed in 'treatment trains'. They can be designed to directly capture surface water runoff from highways through designed inlets, or to capture surface water from existing surface water sewers via a diversion. They can be retrofitted into urban environments with high nutrient loading from vehicles as an effective mitigation solution. The treatment potential of individual SuDS interventions is limited and therefore they must be deployed on a large scale. Furthermore, the viability of SuDS interventions as a treatment solution is highly dependent on the land available that is suitable for SuDS interventions including assessment of topography, available catchment area, and utilities.

Identifying potential locations for SuDS implementation

MCC provided a long list of potential SuDS locations across Monmouthshire. These identified SuDS locations were assessed through a RAG assessment comprising GIS-based constraints screening followed by a more detailed engineering-led constructability review. This approach enabled the identification of areas where SuDS could reasonably be delivered, taking into account topography, flood risk, ecological constraints, available catchment area, and existing street furniture or vegetation. The RAG assessment of the longlist provided by the client is provided in Volume II Appendix C (available upon request).

This assessment concluded that there were several viable locations suitable for SuDS interventions. Some locations were ruled out as they are located in Flood Zone 3 or 2. A selection of others were deemed unlikely to be feasible due to a lack of obvious catchment area available or the catchment area available was likely to have low nutrient loading, or due to the gradient of the land being too steep. The most suitable areas identified include Bailey Park (including the car park), Castle Street Car Park, Lansdown Road green space, Hillcrest Road verges, and Old Barn Way green space.

The sites recommended for further investigation including nutrient removal calculations were Bailey Park, Bailey Park Car Park, and Old Barn Way green space. A detailed assessment of each of these locations is provided in Volume II Appendix C (available upon request).

Additional sites rated as either amber or green are within the long list found in Volume II Appendix C.3 (available upon request). Taken together, the combined use of all three shortlisted options indicates potential nutrient removal of approximately **0.57 kg TP/year**. Whilst only an indicative analysis, this mitigation potential suggests the SuDS Retrofit approach is not feasible as an approach that could be expanded to a strategic level in Monmouthshire. A far greater land area of MCC owned impermeable areas would be required to generate significant nutrient benefits and it would not be cost effective to pursue retrofit upgrades on a sufficient scale for nutrient mitigation for the rLDP. Further details are given in Volume II Appendix C (available upon request), including details of constraints analysis, shortlisted sites potential costs and limitations of SuDS as a strategic mitigation approach.

8. Recommendations

It is notable that the current NRW guidance¹⁰ suggests that if the relevant WwTW for proposed developments has an environmental permit that has been reviewed against the nutrient targets set out in the conservation objectives for the river SAC, it may be possible for a planning authority to conclude that there will be no likely significant effect with regard to phosphorus if certain criteria are met. Further mitigation can therefore be 'screened out'.

Where NRW are not content to screen the phosphorus loading out on the basis of the Review of WwTW permits, then the Welsh Government and NRW guidance outline several hierarchical approaches (or 'pathways') to mitigation, through which it would be feasible to mitigate the phosphorus loads associated with the rLDP, thereby providing confidence that no adverse effects on the site integrity of the SACs would occur. This report has considered 'pathway step 3' which relates to nutrient neutrality, and in particular, strategic mitigation options that could be led by Monmouthshire County Council.

Constructed wetlands have emerged from this exercise as the key strategic option with the potential to deliver the greatest nutrient mitigation benefit for the Usk catchment. Preferred sites have been identified at Goytre WwTW, Aberbaiden WwTW, and Usk WwTW. Aberbaiden WwTW is located upstream of all allocated sites in the Usk catchment of the rLDP and so may be able to provide mitigation across all sites, subject to appropriate design and implementation. It has the potential to deliver 260 kgTP/yr reduction, against the overall budget for the rLDP in the Usk catchment of 264 kgTP/yr. Wetlands at Goytre and Usk would provide mitigation for those allocated sites directly served by them, as well as those down catchment. However, any developments further upstream would not be able to apply for credits. Please note that at this stage only a high-level desk-based feasibility study has been undertaken to consider the initial potential at these sites. Further investigations, scheme development, and consultation with DCWW, landowners and NRW etc. is required if a viable scheme is to be developed, and this is reflected in the actions below.

Retrofit SuDS would provide very limited nutrient mitigation in comparison to wetlands based on available sites and are not considered a cost-effective solution. On this basis they are not recommended to be progressed.

Overall, the following recommended steps to further investigate and deliver a strategic wetland(s) have been included in the Nutrient Mitigation Action Plan:

- **Action 1:** MCC to continue ongoing consultation with DCWW regarding development of the preferred wetland site(s), and if agreement can be reached MCC will undertake concept design to ensure sufficient phosphorus reduction to offset a significant proportion of development proposed in the rLDP.
Outcome: Confirmation of feasibility stage and progression to scheme development.
- **Action 2:** MCC to consider implementation and future operating costs and determine feasibility of nutrient credit scheme.
Outcome: Determination of suitable mechanism for charging developers for nutrient credits and ensuring the option is sufficiently attractive for full implementation.
- **Action 3:** MCC to consult with NRW and DCWW regarding permit requirements.
- **Action 4:** MCC to seek agreement with DCWW over points of compliance for the existing permit and which party has 'ownership' of the water passing through, and discharged from, the wetland.
Outcome: An agreed position documented through a Memorandum of Understanding between MCC and DCWW, or similar document.
- **Action 5:** MCC to undertake detailed design.
- **Action 6:** MCC/DCWW to apply for required Environmental Permits / planning permission.
- **Action 7:** MCC to construct and commission wetland.
- **Action 8:** MCC to prepare and implement Wetland Monitoring and Maintenance Plan (expected to be a condition of planning).
Outcome (Actions 5-8): Design, build and operation of constructed wetland with nutrient credit system for prospective developers.

Appendix 5: Nutrient Mitigation Action Plan (AECOM, April 2026)

rLDP Nutrient Neutrality Support

Task 7 Nutrient Management Action Plan

Monmouthshire County Council

April 2026

Quality information

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1. Introduction

The Inspectors appointed to examine the Monmouthshire County Council (MCC) Replacement Local Development Plan (rLDP) have requested additional information on the Council's approach to addressing the effect of proposed development in the rLDP on riverine Special Areas of Conservation (SACs) in relation to the discharge of phosphorus. The affected riverine SACs are the River Wye and River Usk sites.

In February 2026, MCC commissioned a study to estimate the potential increase in nutrient (phosphorus) loading from implementation of the rLDP. This study has been published within the Monmouthshire Replacement Local Development Plan 2018-2033 – Phosphate Position Paper (February 2026)¹. The determination of phosphorus budgets was undertaken for all allocated and committed development in both the River Usk and River Wye catchments, with results presented on a 'year by year' basis. As this study concluded that there will be an excess of phosphorus from foul wastewater from the proposed developments, mitigation will be required to ensure that the rLDP can be considered nutrient neutral (i.e. the developments do not contribute additional phosphorous loads to the River Wye SAC or River Usk SAC sites). Further details of the SAC sites are provided in Section 2.

This document sets out an initial Action Plan (AP) that MCC will implement and deliver in order to ensure that the rLDP can be enacted alongside the necessary reductions in phosphorous. The AP should be read in conjunction with the Strategic Mitigation Opportunities Report, which seeks to further develop the understanding of feasible, strategic mitigation opportunities and pathways within the affected catchments in Monmouthshire.

1.1 Aims and Objectives

The AP aims to set out the mitigation pathways and associated requirements that ensure that nutrient mitigation can be implemented and secured when needed, demonstrating that the rLDP is deliverable in line with its milestones.

The Welsh Government have recently (March 2026) provided a clarification note on how “*Tests of Soundness*” should be applied to LDPs where the impact of additional nutrients on SAC's has been identified². This guidance indicates that an indicative mitigation action plan should include the following information:

- An estimate of the impacts arising from the plan proposals (see summary in **Section 3**);
- An estimate of the improvements from existing and future measures necessary to avoid further deterioration of the SAC, including from plan proposals (see **Section 3**).
- The securing of the appropriate steps to be taken including appropriate delivery mechanisms (see Section 4 and 6) and agreed milestones (see details of timescales in **Section 5 and 6**).
- Identifying integrated mitigation where this can be secured and appropriate developer contributions identified (which is interdependent with the on-going steps and measures) (see **Section 4 and 6**).
- Clear monitoring framework for implementing policies and proposals relative to the adaptive management framework (see **Section 6**).

In achieving these objectives, the MCC Nutrient Management AP has been developed to:

- Be **Outcome focused**.
- Outline a **phased programme** of necessary steps for each mitigation measure taken forward, with **indicative timing** outlined for each step (e.g. short-, medium-, long-term).
- Set out **details of engagement required with delivery partners** (and at what point in the process).
- Describe likely **funding routes** and **delivery mechanisms**.
- Include information on each strategic measure to be taken forward, including information on **indicative costs for strategic mitigation solutions**, expected phosphorous reduction, and governance responsibilities.

¹ [Phosphate Position Paper February 2026](#)

² [Clarification note: applying the tests of soundness to Local Development Plans \(LDPs\)](#)

- Include a prioritisation framework of actions (using a Red-Amber-Green system).
- Consider what **monitoring and review arrangements** are required.

Figure 1 shows the elements that constitute a robust action plan, which have been incorporated herein:



Figure 1 Elements forming a robust Action Plan

1.2 Approach

The AP is based on the current understanding of the situation within Monmouthshire and current nutrient neutrality legislation and guidance in Wales, most notably the following:

- [Natural Resources Wales / Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation](#)
- Welsh Government / [Clarification note: applying the tests of soundness to Local Development Plans \(LDPs\)](#)
- Welsh Government / [Planning Guidance - Development in SAC Rivers](#)

Nonetheless, the guidance and AP requirements around nutrient neutrality continue to evolve, and as such the AP will be reviewed and updated periodically where necessary. This will be undertaken annually by MCC.

The AP has been developed collaboratively with partners, including MCC, Dwr Cymru Welsh Water (DCWW), and Natural Resources Wales (NRW), supported by a workshop with AECOM consultants on 15th April 2026. MCC intend to continue collaboration with regulators, delivery partners and potentially landowners through delivery of the AP to ensure the efficient implementation of actions to enable development outlined within the rLDP to come forward (see Figure 2).

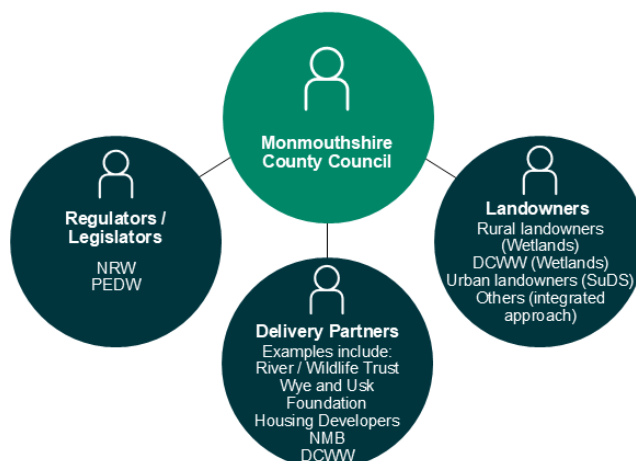


Figure 2 Organisations involved in delivery of the AP

2. Southeast Wales designated sites

2.1 Overview

The affected riverine SACs in Monmouthshire to which the nutrient neutrality principles apply are the River Usk SAC and the River Wye SAC. Figure 3 illustrates the location of the two SACs, along with their phosphorus nutrient neutrality catchment, and the Local Planning and National Park Authority boundaries.

The River Wye SAC is the largest Welsh SAC river, with its catchment divided into 43 Water Framework Directive (WFD) water bodies in Wales, while the River Usk SAC consists of 23 WFD water bodies. Both SACs are designated under the Conservation of Habitats and Species Regulations 2017³ for the protection of Annex I habitats and Annex II species.

In January 2021, NRW published a report that presented the assessment of compliance against recently tightened phosphorus water quality targets for SAC rivers⁴. The report showed that over 60% of SAC water bodies were failing the new targets for phosphorus.

Within the Usk 88% of its water bodies were failing for phosphorous. As a result, new developments leading to an increase in phosphorus discharges to this site may contribute to the unfavourable condition of the designated site or make its restoration to favourable status more difficult to achieve. This is typically undertaken as part of a Habitat Regulations Assessment supported by Nutrient Neutrality and Mitigation Assessments.

Whilst previously failing (2021) the Lower River Wye is now considered by NRW (as of 2026) to no longer be failing for phosphorus. However, it is still important that any new development that may lead to an increase in phosphorous discharged to the SAC considers whether that discharge would risk causing deterioration of the river back to less than good conservation status.

Further details for the two riverine SACs are provided in 2.1.1 (River Usk) and 2.1.2 (River Wye).

³ Participation, E. (no date) The Conservation of Habitats and Species Regulations 2017. Statute Law Database. Available at: <https://www.legislation.gov.uk/uksi/2017/1012/contents> (Accessed: 8 January 2026).

⁴ Natural Resources Wales / Compliance Assessment of Welsh River SACs against Phosphorus Targets (2021). Available at: [compliance-assessment-of-welsh-sacs-against-phosphorus-targets-final-v10.pdf](#) (Accessed: 13 April 2026).

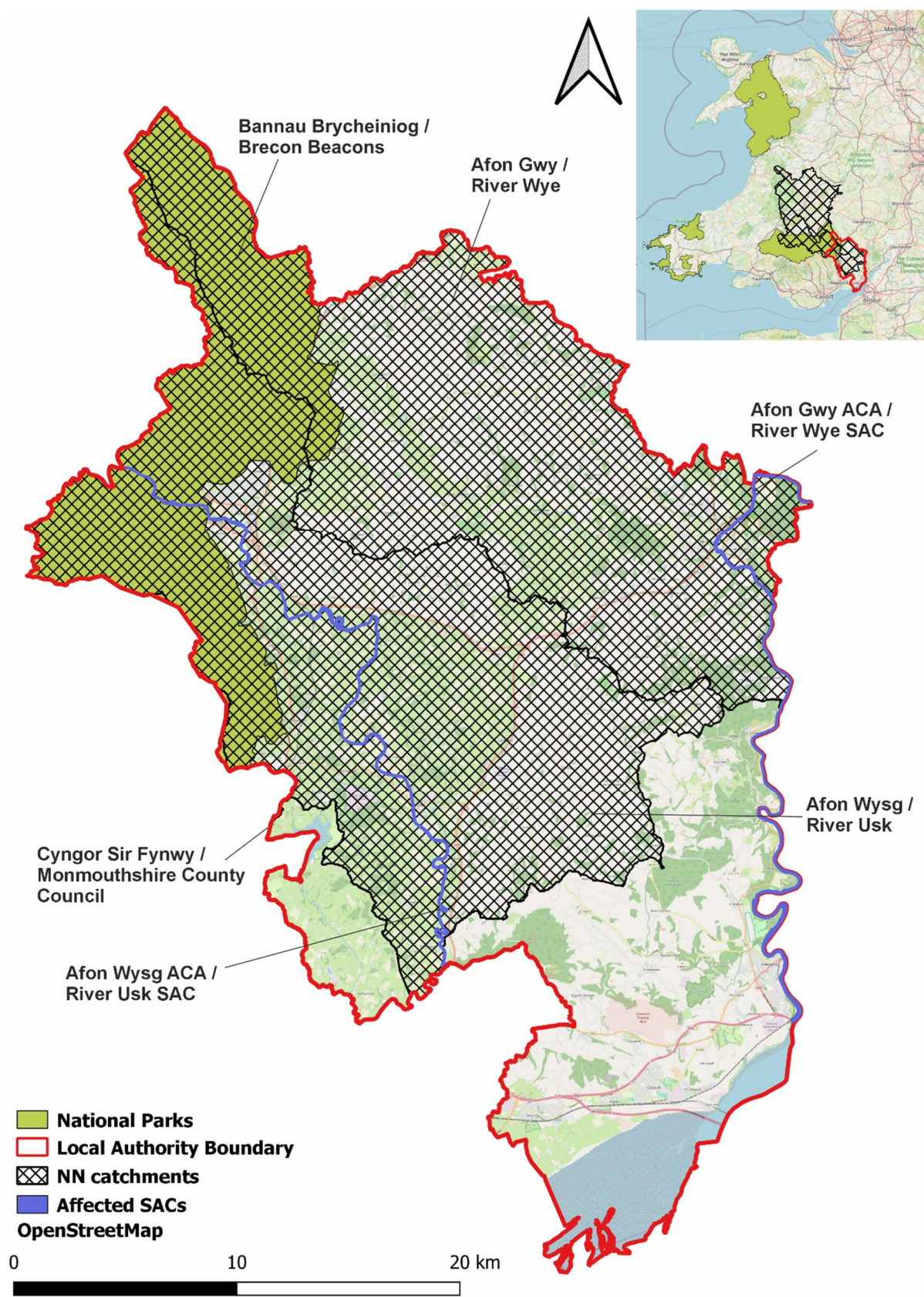


Figure 3 Location of the two riverine SACs in South East Wales (River Usk SAC and River Wye SAC) where phosphorus pressures have contributed to unfavourable site conditions (source: Welsh Government Data Map Wales online data)

2.1.1 River Usk SAC



Figure 4 River Usk at Usk Island⁵

Summary Description	The Usk is a medium sized catchment in southeast Wales with a primarily sandstone geology and frequently carries heavy sediment loads following periods of rainfall ⁶ . The Usk is by some distance the worst performing SAC river in Wales with respect to its phosphorus targets and is the only river where there are extensive failures in the headwaters.
Annex I habitats that are a primary reason for designation⁷:	• Not Applicable
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site⁷:	• Watercourses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation
Annex II species that are primary reason for selection of this site⁷:	• Sea lamprey (<i>Petromyzon marinus</i>) • Brook lamprey (<i>Lampetra planeri</i>) • River lamprey (<i>Lampetra fluviatilis</i>) • Twaite shad (<i>Alosa fallax</i>) • Atlantic salmon (<i>Salmo salar</i>) • Bullhead (<i>Cottus gobio</i>) • Otter (<i>Lutra lutra</i>)
Annex II species present as a qualifying feature, but not primary reason for designation⁷:	• Allis shad (<i>Alosa alosa</i>)

⁵ Monmouthshire County Council (2025). Available at: <https://www.monmouthshire.gov.uk/our-main-parks-and-gardens/#Usk> (Accessed: 14 April 2026).

⁶ Natural Resources Wales (2021). Compliance Assessment of Welsh River SACs against Phosphorus Targets. Available at: <https://cdn.cyfoethnaturiol.cymru/693025/compliance-assessment-of-welsh-sacs-against-phosphorus-targets-final-v10.pdf?mode=pad&rnd=132557227300000000> (Accessed: 14 April 2026).

⁷ River Usk / Afon Wysg - Designated Special Area of Conservation (SAC) (no date). Available at: <https://sac.jncc.gov.uk/site/UK0020020> (Accessed: 14 April 2026).

2.1.2 River Wye SAC



Figure 5 River Wye at Bigsweir⁸

Summary Description	The Wye is the largest SAC river, with a catchment covering much of southern Powys and part of the Bannau Brycheiniog National Park before crossing the border into England. Much of the Upper Wye catchment is rural and until recently has been predominantly farmed for sheep and cattle. More recently there has been a rapid expansion of poultry units, which has been the source of public concern ⁶ .
Annex I habitats that are a primary reason for selection of this site⁹:	– Watercourses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site⁹:	• Transition mires and quaking bogs
Annex II species that are primary reason for selection of this site⁹:	• White-clawed (or Atlantic stream) crayfish (<i>Austropotamobius pallipes</i>) • Sea lamprey (<i>Petromyzon marinus</i>) • Brook lamprey (<i>Lampetra planeri</i>) • River lamprey (<i>Lampetra fluviatilis</i>) • Twaite shad (<i>Alosa fallax</i>) • Atlantic salmon (<i>Salmo salar</i>) • Bullhead (<i>Cottus gobio</i>) • Otter (<i>Lutra lutra</i>)
Annex II species present as a qualifying feature, but not primary reason for site selection⁹:	• Allis shad (<i>Alosa alosa</i>)

⁸ Monmouthshire County Council (2025). Available at: https://www.monmouthshire.gov.uk/2025/03/mcc-welcome-investment-to-transform-the-river-wye/river-wye-at-bigsweir_14589368845_o/ (Accessed: 14 April 2026).

⁹ River Wye / Afon Gwy- Designated Special Area of Conservation (SAC) (no date). Available at: <https://sac.jncc.gov.uk/site/UK0012642> (Accessed: 14 April 2026).

3. Context and Progress to Date

3.1 Potential rLDP Nutrient Load Impact

In February 2026, MCC commissioned a study to estimate the potential increase in phosphorus loading from implementation of MCC rLDP. This phase of work included three tasks:

- **Task 1** – Nutrient budget calculations for committed/allocated developments in the Usk/Wye catchments.
- **Task 2** – High level review of non-residential development and its potential impacts on designated sites.
- **Task 3** – High level review of mitigation options available in the affected catchments.

The allocated and committed development sites within each catchment considered in these initial nutrient budget estimates are shown in Figure 6.

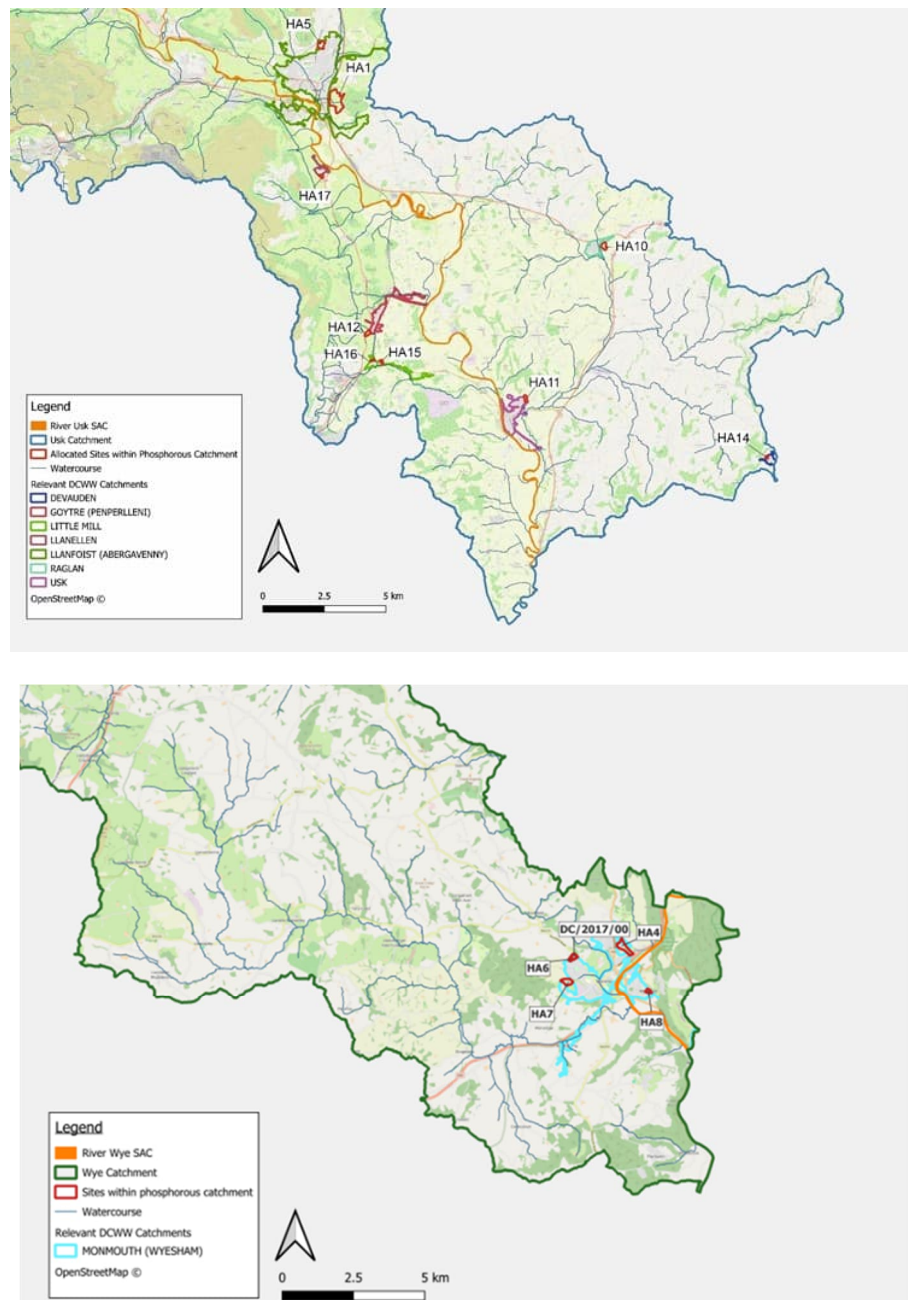


Figure 6 Allocated sites within the Usk SAC catchment (top) and Wye SAC catchment (bottom)

The final cumulative nutrient budget for each catchment under two scenarios is presented in Table 1:

- **Scenario 1 (Worst Case Scenario)** – Includes all housing types with no reduction in occupancy for affordable homes.
- **Scenario 2 (Best Case Scenario)** – Discounts 50% of affordable homes on the basis that half of allocated affordable homes are provided to local people who are likely to already be living within the nutrient neutrality catchment.

For both scenarios and both catchments, the proposed development allocated in the rLDP plus any committed development results in the generation of excess phosphorus (via foul wastewater). Significantly more phosphorus requires mitigation in the Usk catchment compared with the Wye, reflecting the quantum of proposed development in each catchment (see Table 1).

Table 1 Summary results for the final nutrient budget in each catchment in 2033

Scenario	Usk Nutrient Budget 2033 (kg/yr TP)	Wye Nutrient Budget 2033 (kg/yr TP)
Scenario 1 (Worst-Case Scenario)	265	136
Scenario 2 (Best-Case Scenario)	199	103
<i>Nutrient budget if proposed AMP8 phosphorus removal upgrades to WwTW had not taken place</i>	534	136

3.2 Lower Wye ‘No deterioration’ Investigation

As mentioned earlier, the Lower River Wye is no longer failing for phosphorus, and so MCC have undertaken an investigation for this river to determine whether the development proposed in the rLDP risks causing deterioration of the river to less than good conservation status.

To achieve this, it was necessary to determine the effect on phosphorus concentrations in the Lower Wye from the projected increase in phosphorus load arising from the rLDP proposed developments. Only the additional input via Monmouth WwTW (at SO 51532 11795) was required to be considered, as all the allocated or committed development sites in the Lower Wye catchment fall within this WwTW catchment. The location of data used in the assessment is provided in Figure 7.

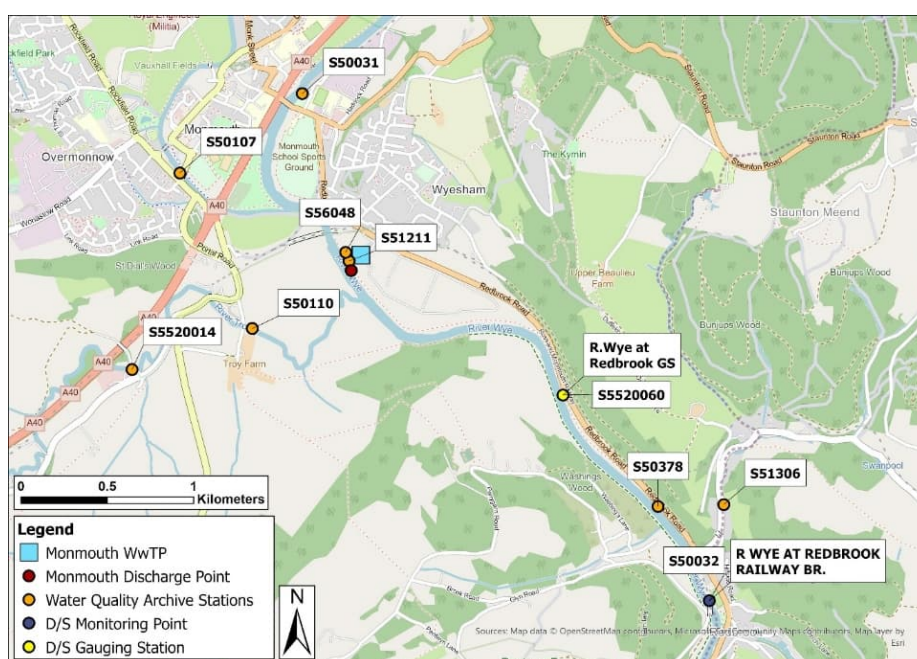


Figure 7 Monmouth WwTW and nearby water quality and flow monitoring stations.

The assessment concluded that when allowing for the maximum planned level of development (by 2033), the additional TP loading projected (i.e. 135.61 kg/year) would result in an estimated additional 0.13 mg/l TP in the average discharge concentration at Monmouth WwTW. This would increase the average discharge concentration to around 1.3 mg/l, which remains well within the permitted concentration of 2 mg/l.

The SAC Condition Assessment⁴ is based on Monmouth WwTW operating under current permitted conditions for concentration and flow. As development comes forward in the future validation assessments will be required to confirm this initial assessment, reflecting on the phosphorus Environmental Quality Standard (EQS) for the Wye at that given point in time.

A precautionary mass balance calculation was also undertaken, which indicated that an exceedance of the phosphorus EQS downstream of Monmouth WwTW would not be predicted based on the rLDP delivery. The receiving water is estimated to maintain good WFD status for Soluble Reactive Phosphorus (SRP) and therefore be at favourable conservation status even if the following worst-case assumptions are applied:

- Effluent flow is modelled as five times the DWF (dry weather flow).
- Effluent concentration is continuously at the permit threshold (i.e. 2 mg/l).
- The predicted dilution in the river is halved.
- All total phosphorus becomes available as SRP.

The report concludes that in principle the quantum of rLDP proposed development in the Lower Wye catchment can be delivered without resulting in a significant increase in phosphorous or a reduction in the conservation status of the SAC. However, it was also stated that these conclusions should be reviewed over time to confirm the receiving water remains at low risk in the context of evolving inputs to the river system as a whole. Therefore, future planning applications for allocated development are still likely to need to be supported by site specific Habitat Regulations Assessments including consideration of water quality risks to the Wye SAC. MCC propose to develop guidance to assist developers with these assessments, and this is a commitment included later in this AP (see also **Section 3.4**).

3.3 Strategic Mitigation Options Report

MCC have produced a Strategic Mitigation Options Report, which can be read in conjunction with the AP. This report considers in further detail the pathways available for delivering nutrient mitigation at a strategic scale for the rLDP developments, taking into account Welsh Government guidance for delivering mitigation in SAC river catchments¹⁰. The report includes consideration of the threshold (*de minimis*) approach, an integrated approach, developer led approach, and development of strategic solutions based on short-listing of potential options that are applicable in Monmouthshire. These approaches are also introduced in Section 3 of this AP. The most viable strategic mitigation option is currently considered to be construction of treatment wetlands. The viability and steps involved in taking strategic approaches forward are included at a high level in the AP but detailed further in the Strategic Mitigation Options Report.

3.4 Developer Mitigation Handbook

MCC are planning to produce a Developer Mitigation Handbook that can be used by developers to better understand the range of mitigation options available for phosphorus and how to implement these. This will be similar to the recently published Handbook prepared for Marine SACs by affected local authorities but led by Carmarthenshire County Council¹¹.

The Developer Mitigation Handbook will be a key document for the AP as it will outline further details that will allow different mitigation approaches to be taken forward, whether it be threshold, integrated catchment improvements, strategic or developer led nutrient neutrality approaches. The aim of the document is to provide:

- A planning guidance document for developers and Council Planning Officers alike on phosphorus mitigation for delivering nutrient neutrality development within the River Usk SAC and River Wye SAC catchments. Guidance will be aligned with Welsh Government's latest guidance and All Wales nutrient budget calculator, and NRW's latest guidance.
- Specific guidance to developers in the Lower Wye catchment as to how to confirm that their proposals align with 'no deterioration' as discussed in Section 3.2.

¹⁰ [Planning Guidance - Development in SAC Rivers](#)

¹¹ [Report Marine and Estuarine DIN Mitigation Strategy 2025-11-20](#)

- Clarity on how the threshold (*de minimis*) approach may be applied to the rLDP as a whole, based on further consultation with NRW.
- An outline of the integrated approach and how it might be applied in Monmouthshire. The initial draft of the Handbook is likely to detail the steps being undertaken to develop a mitigation pathway through the integrated approach. However, the Handbook should be updated regularly as a 'live' document in order to allow further guidance to be applied when available. For example, once established the Handbook could include links to a developer platform hosted on the MCC website through which developers could make positive contributions to restoration/improvement schemes.
- For developer led mitigation, the Handbook will contain a 'step by step' process showing when nutrient neutrality screening and assessment should occur within the planning process, how to identify and develop suitable mitigation measures, how they can be secured, and any subsequent monitoring that might be required.
- Building on NRW's Mitigation Menu, the Developer Mitigation Handbook will include an overview of on-site and off-site mitigation options relevant to proposed development, including for example urban and rural SuDS, constructed and other wetlands, land use change, septic tank/PTP upgrades and water efficiency options. Measures will usually need to qualify as Article 6(3) interventions under the Habitats Regulations¹² rather than Article 6 (2) measures for developer led mitigation, consistent with NRW guidance on additionality and effectiveness at the time of assessment.
- Worked examples to show how to estimate phosphorous reductions from some of these measures alongside outputs from the Welsh Government nutrient neutrality calculator or bespoke calculations.

¹² [The Conservation of Habitats and Species Regulations 2017](#)

4. Mitigation Pathways

The Welsh Government guidance for mitigation of phosphorus in river SACs (2025)¹³ and the recent guidance on “*Tests of Soundness*”² (2026) indicates pathways of mitigation that may be applied to LDPs where the impact of additional nutrients on SACs has been identified. NRW have also provided guidance with regard to mitigating nutrients within SACs (2026)¹⁴. Within these guidance documents are several hierarchal approaches (or ‘pathways’) to mitigation, through which it would be feasible to mitigate the phosphorus loads associated with the rLDP, thereby providing confidence that no adverse effects on the site integrity of the SACs would occur (see Figure 8). This section introduces the main ‘pathway’ approaches at a high level, before outlining the key steps proposed for their implementation in the AP in Section 5.

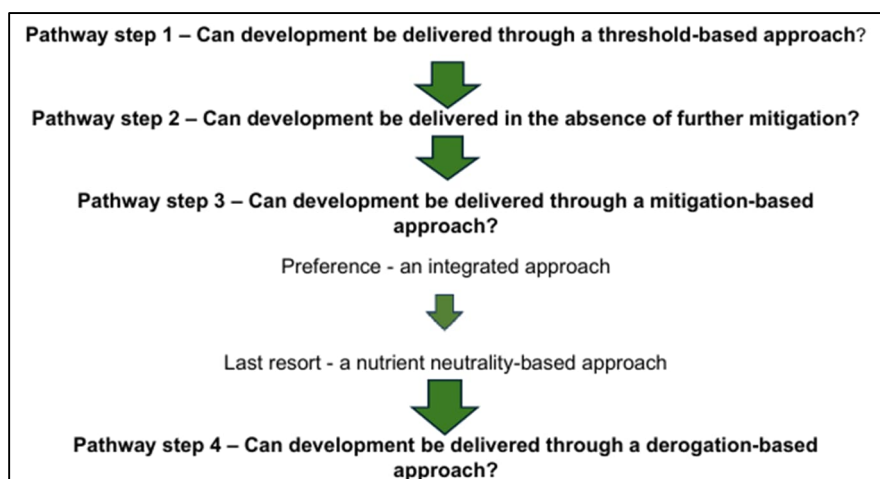


Figure 8 Hierarchal pathways to mitigation²

4.1 NRW Review of Consents and screening against WwTW Upgrades

Prior to considering mitigation pathways, it is notable that the current NRW guidance⁷ suggests that if the relevant WwTW for proposed developments has an environmental permit that has been reviewed against the nutrient targets set out in the conservation objectives for the river SAC, it may be possible for a planning authority to conclude that there will be no likely significant effect with regard to phosphorus. Further mitigation can therefore be ‘screened out’. This may be the case provided that:

- The WwTW is operating in compliance with the permit conditions.
- The WwTW has capacity to receive and treat the additional volume of wastewater within permit limits.

However, it is only possible to make these conclusions where:

- The WwTW is discharging into a water body that is meeting water quality targets for phosphorus and all downstream river water bodies are also meeting their phosphorus targets, **OR**:
- Consultation with NRW and DCWW confirms that:
 - i) the final effluent phosphorus limits for the WwTW have been reduced through recent review.
 - ii) the WwTW was previously operating with phosphorus load higher than can be discharged under revised permit limits.
 - iii) the works will be operating within reduced limits at commencement of occupation¹⁵.

The information currently known about relevant WwTW permit limits in the context of these requirements for the Usk SAC catchment is summarised in Table 2. All of the sites listed are allocated in the rLDP.

¹³ [Planning Guidance - Development in SAC Rivers](#)

¹⁴ [Natural Resources Wales / Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation](#)

¹⁵ NRW (2026) Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation Available at: [Natural Resources Wales / Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation](#).

Table 2 Review of proposed permit limit upgrades at WwTW within the River Usk Catchment

rLDP Policy Rep	Site Name	WwTW	Consultation with NRW & DCWW confirms that the final effluent P limits for the WwTW have been reduced through recent review?	The WwTW was previously operating with P load higher than can be discharged under revised permit limits?	The works will be operating within reduced limits at commencement of occupation?	Permit Upgrade Date
HA1	Land to the East of Abergavenny	Llanfoist	Yes	Yes	Yes	31/12/2025
HA5	Land at Penlanlas Farm	Llanfoist	Yes	Yes	Yes	31/12/2025
HA10	South of Monmouth Rd	Raglan	Yes	Yes	Yes	13/04/2023
HA11	Land East of Burrium Gate	Usk	Yes	Yes	Yes	12/12/2023
HA12	Land West of Trem yr Ysgol	Goytre	Yes	Yes	No	31/03/2030
HA14	Land at Churchfields	Devauden	Yes	Yes	Yes	26/01/2027
HA15	Land East Little Mill	Little Mill	Yes	Yes	Yes	07/02/2024
HA16	Land North of Little Mill	Little Mill	Yes	Yes	Yes	07/02/2024
HA17	Land adjacent Llanellen Court Farm	Llanellen	Yes	Yes	Yes	15/02/2024
N/A	Windfall Allowance	Llanfoist	Yes	Yes	Yes	31/12/2025
N/A	Windfall Allowance	Raglan, Usk, Goytre	Yes	Yes	Yes	15/02/2024

The information currently known about relevant WwTW permit limits in the Wye SAC catchment is summarised in Table 3. All sites are allocated in the rLDP except HA7, HA8, and the committed development West of Rockfield Road, which are rollover allocations already with planning permission.

Table 3 Review of proposed permit limit upgrades at WwTW within the River Wye Catchment

RLDP Policy Ref	Site Name	WwTW	Consultation with NRW & DCWW confirms that the final effluent P limits for the WwTW have been reduced through recent review?	The WwTW was previously operating with phosphorous load higher than can be discharged under revised permit limits?	The works will be operating within reduced limits at commencement of occupation?	Permit Upgrade Date
HA6	Land at Rockfield Road	Monmouth	Yes	Yes	Yes	13/11/2023
HA4	Land at Leasbrook	Monmouth	Yes	Yes	Yes	13/11/2023
HA7	Land at Drewen Farm	Monmouth	Yes	Yes	Yes	13/11/2023
HA8	Tudor Road, Wyesham	Monmouth	Yes	Yes	Yes	13/11/2023
N/A	West of Rockfield Road	Monmouth	Yes	Yes	Yes	13/11/2023
N/A	Windfall Allowances	Monmouth	Yes	Yes	Yes	13/11/2023

DCWW provided data and through further discussion it was determined that all relevant WwTWs for the rLDP have had their final effluent phosphorus limits reviewed against the nutrient reduction targets set out in the conservation objectives for the respective SAC catchments. All will have reduced permit limits in place by 2030, with most already operating under tightened limits. **On this basis, there would appear to be potential to conclude that there will be no likely significant effect on SAC site integrity with regard to phosphorus, subject to reaching such agreement with NRW.**

MCC will continue to engage with NRW to determine which WwTW catchments are considered appropriate to conclude no likely significant effects on SAC site integrity on the basis of the above criteria. Further mitigation would only be necessary where this conclusion cannot be agreed with NRW. The continued work in this regard is incorporated in the AP in Section 5 and it is anticipated that the Developer Mitigation Handbook will include guidance on which WwTW catchments can be screened out of further mitigation.

4.2 Threshold Approach / De Minimis

The Welsh Government clarification note² suggests that the first consideration with regards to mitigation pathways for nutrients (where significant effects on site integrity cannot be ruled out on the basis of WwTW upgrades) is whether it may be possible in some cases to screen out a certain quantum of development as being *de minimis*, i.e. the nutrient loading from the development falls beneath a defined threshold whereby plan proposals will not have any meaningful influence over the achievement of the conservation objectives for the SAC. Definition of any such threshold must be supported by relevant evidence and assessment² and be sufficiently certain.

Welsh Government guidance is clear that a threshold-based approach on a project-by-project basis is not advised. The cumulative effect of policies and proposals must be taken into account, and so consideration of whether development can be regarded as *de minimis* must be undertaken in terms of the scale of implementation across the whole plan period (through to 2033) and necessarily will inform the appropriate assessment.

HRA '*de minimis*' thresholds are therefore anticipated to be derived on the basis of an overall quantum of development over a defined timeframe. A threshold-based approach may be combined with a wider integrated approach (see next sub-section) across an area in the rLDP, reflecting catchment specific characteristics and circumstances. Case studies are given in the recent Welsh Government clarification note on tests of soundness.

To agree a threshold approach planning authorities will need to be satisfied that the additional loading from the rLDP will not undermine the achievement of the conservation objectives. In other words, the additional loading will not exert any meaningful influence over the effectiveness of action to be taken to achieve the conservation objectives or otherwise delay the achievement of such objectives.

No thresholds for *de minimis* have been determined for the Usk and Wye catchments at this stage, nor for other catchments affected by nutrient issues in Wales (at the time of writing). It remains uncertain as to how such a threshold can be robustly defined and defended. Nonetheless, the AP has included an action for MCC to explore this approach further with NRW to determine whether this is potential for development of a threshold, where it can be sufficiently supported with evidence.

4.3 Integrated Approach

Where it is not possible to define a *de minimis* threshold and development requires mitigation, the Welsh Government clarification note on applying the Tests of Soundness to LDPs indicates an integrated approach as the preferred solution to ensure no adverse effects to SAC rivers².

The overall aim of an integrated approach is to coordinate actions to deliver a long-term improving trend in nutrient levels within SAC catchments, whilst managing growth in accordance with the sustainable development principle. Appropriate steps to avoid deterioration or provide restoration (under Article 6(2) of the Habitats Regulations) in nutrient neutrality affected catchments could include the following:

- Planned upgrades to WwTWs and/or DCWW AMP8 schemes including storm overflow improvements.
- Ongoing work being delivered under the SAC Rivers project which will be implemented within the catchment of concern, including enhanced regulatory compliance and enforcement programme to address non-compliance within the agricultural sector. This could include works being undertaken by Nutrient Management Boards (NMBs) or environmental improvement schemes under DCWW's AMP8.
- Work underway through the programme of measures under the River Basin Management Plan (RBMP).

- Forthcoming NRW Catchment Nutrient Recovery Plans.

This integrated approach allows mitigation for nutrients by developers to be more closely integrated with the delivery of restoration under Article 6(2) where developer contributions:

- Increase the scale, magnitude, or scope of planned restoration measures (over and above what would otherwise have been delivered); **OR**
- Speed up delivery of planned restoration measures beyond what would normally be delivered, where the current implementation timescales risk meaningful ecological deterioration in the interim.

For the integrated approach to be viable there will need to be close ongoing collaboration between MCC, DCWW, NRW, NMBs, Catchment Partnerships and developers. Actions for MCC are included in the AP (Section 5) through which it is expected to be demonstrated that there are sufficient schemes underway within the affected catchment to which an integrated approach could be applied. In particular, the AP proposes to:

- Identify existing mitigation/restoration proposals within the affected catchments, whether these are proposed by DCWW, NMBs, NRW/ Catchment Nutrient Recovery Plans or measures underway under the RBMP etc.
- Highlight opportunities for integrated mitigation that developers might contribute too through an appropriate platform, most likely to be hosted on the MCC website.

4.4 Strategic Mitigation

Where it is not possible to apply a threshold or integrated approach, the Welsh Government clarification note on applying the Tests of Soundness to LDPs² indicates that a nutrient neutrality-based approach is then required. As outlined in Section 2, MCC have progressed a Strategic Mitigation Opportunities Report (SMOR) to determine whether there are any feasible strategic mitigation approaches that might be applicable in Monmouthshire. The strategic mitigation approach could include an array of mitigation options developed at scale by MCC, and which could then be offered as part of nutrient credit scheme for developers to purchase and offset their nutrient contributions to the riverine SACs.

A long list of proven strategic nutrient mitigation approaches was considered, based on precedence for delivery in England where such solutions have been considered for longer. A short-list was then developed based on constraints within the Monmouthshire setting. For example, approaches such as land-use change which have been implemented elsewhere were not considered suitable in Monmouthshire due to a shortage of MCC owned agricultural land which enable the approach to be adopted. Similarly, MCC do not have a bank of housing stock to which additional water use efficiency measures could be applied.

Overall, the short-listing approach determined that urban retrofit SuDS and constructed wetlands were possible options, and these were taken forward for further consideration of their potential. This included initial environmental and engineering constraints analysis to identify potentially suitable sites that could be taken forward for concept design by MCC. High level estimates of nutrient removal were undertaken on the preferred sites to determine how much benefit they would provide in terms of nutrient mitigation for the rLDP developments. The details of the mitigation selection, constraints analysis and nutrient reduction potential estimates are discussed in more detail within the SMOR. Wetlands have emerged from this exercise as the key strategic option with the potential to deliver the most nutrient mitigation benefit, and it is recommended that a number of sites are taken forward for further evaluation of potential and delivery (see Table 4). Retrofit SuDS would provide very limited nutrient mitigation based on available sites and are not considered a cost-effective solution, and as such are not recommended to be progressed.

Table 4 Summary of Short Listed Strategic Approaches

Feature	Constructed Wetlands		
Proposed locations	Goytre WwTW	Usk WwTW	Aberbaiden WwTW
Allocated sites that could be mitigated	HA10, HA11, HA12, HA14, HA15, HA16 [total load 70.15 kgTP/yr]	HA10, HA11, HA14 [total load 42.4 kgTP/yr]	Could support all developments in the rLDP and committed [total load 264kgTP/yr]
Minimum area required to achieve predicted excess nutrient load from the above sites	0.75 ha	0.16 ha	0.8 ha
Partners	• Policy: Welsh Government • Regulation: NRW • Operations and drainage: DCWW • Delivery: developers, highways, maintenance bodies		
Potential delivery issues	• Land requirement is high and therefore increases cost. • Designing, constructing and maintain a constructed wetland is complex. • Adjacent water table must not reach surface, increasing the complexity of site selection. • Wetland planting requires time to mature in order to function as per expected nutrient removal rate.		
Funding mechanisms	• Project Delivery Grants, Local Governance Funding etc. • Secure future developer contributions via nutrient credit scheme and legal agreements (e.g. Section 106). • Capital grants from the Council.		
Indicative costs to mitigate predicted excess nutrient load from above named sites	Goytre c. £600k	Usk c. £770k	Aberbaiden c. £970k

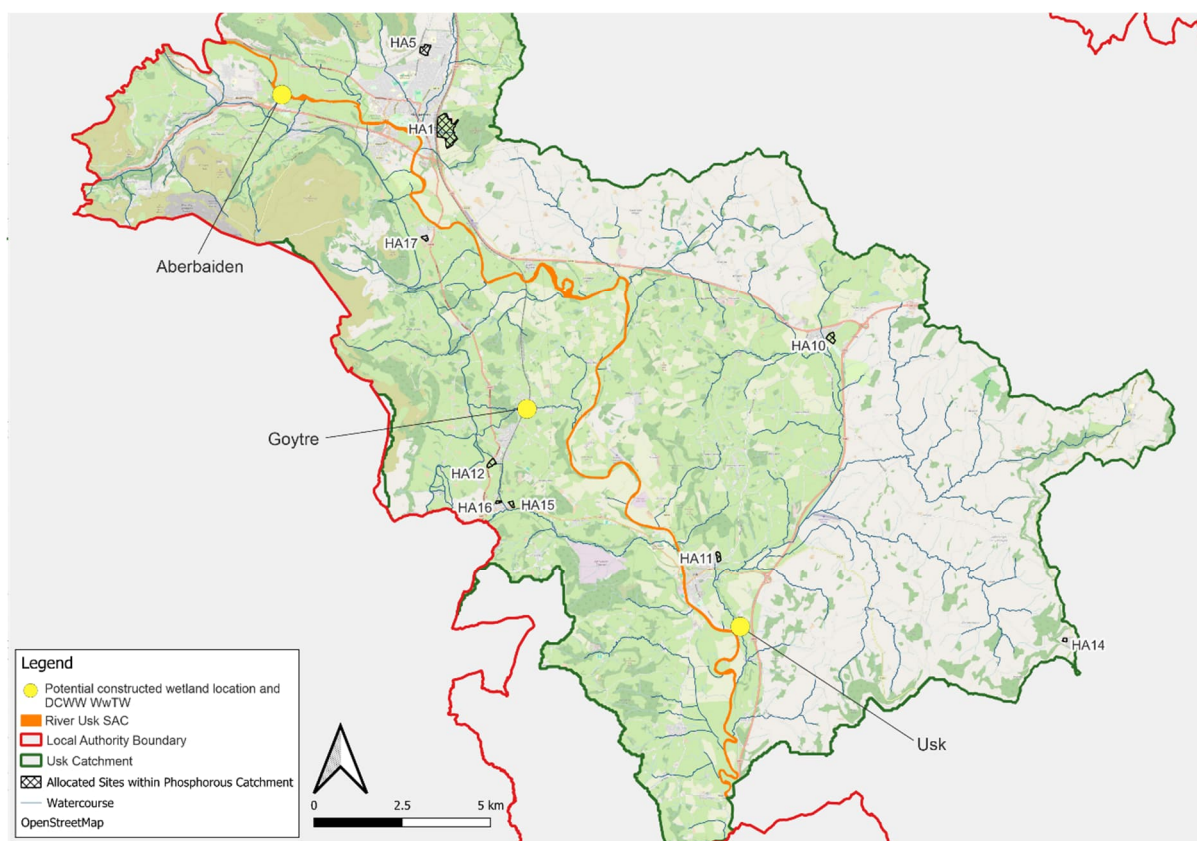


Figure 9 Location of preferred constructed wetlands (based on analysis in the SMOR)

4.5 Developer Led Mitigation

Where a threshold-based approach is not appropriate, there are no suitable integrated solution options, and if strategic scale mitigation approaches for the management of excess nutrients are not possible or have yet to come into fruition, developers can also lead on development of their own mitigation for a plan or project. Depending on the scale of mitigation, developer-led measures also have the potential to create headroom for other projects to proceed. A key action of the AP is therefore the creation of a Developer Mitigation Handbook for phosphorus in Monmouthshire. This will outline the nutrient neutrality assessment approach for developers and an array of potential mitigation options, including how these should be secured for the lifetime of the development. See **Section 3.4** for further details.

5. Timescales, Sequencing and Monitoring

5.1 Timescales

There is no fixed date for when the rLDP will be published as this depends on the completion of the ongoing Examination process. At this stage it is estimated that the rLDP will be published late 2026.

The timeline of the projected cumulative increase in phosphorus loading resulting from the rLDP developments is shown in Figure 10 for the River Usk SAC and Figure 11 for the River Wye SAC. Further details are tabulated in Appendix A which also shows the number of units of housing to be brought forward on a 'year by year' basis in relation to each allocated development.

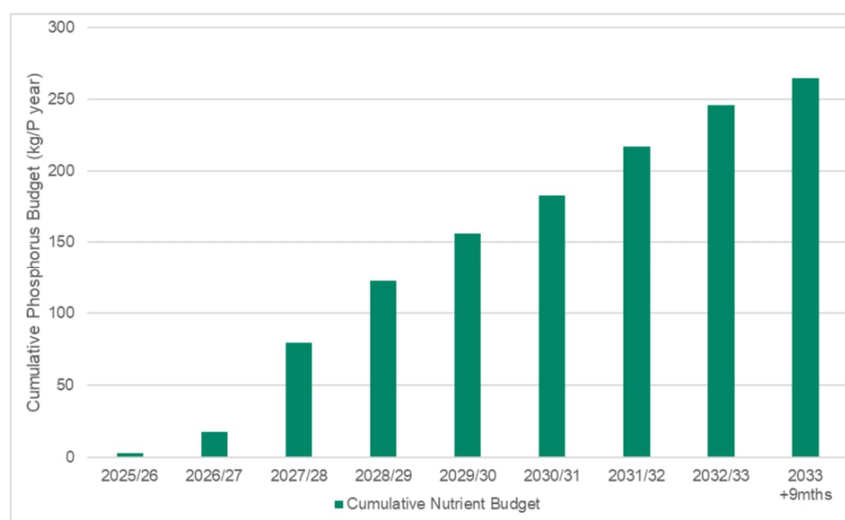


Figure 10 Usk Catchment Cumulative Nutrient Budget Scenario 1 (Worst Case Scenario)

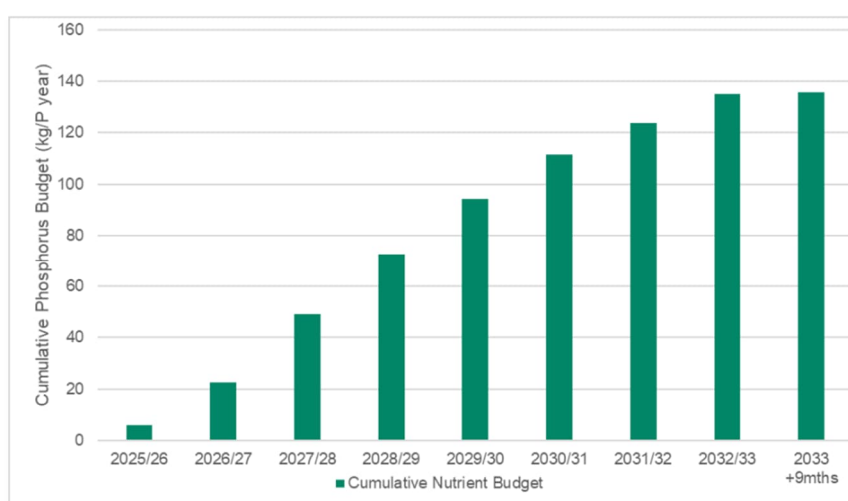


Figure 11 Wye Catchment Cumulative Nutrient Budget Scenario 1 (Worst Case Scenario)

Conditions may be tied to permissions to ensure occupation is concurrent with the delivery of mitigation, so planning conditions will be in place alongside mitigation. The majority of development within both catchments will take place from 2027 onwards.

The phasing of mitigation delivery will need to be aligned with the timing of housing units bought forward. Occupancy dates for new developments will be subject to planning permission and/or Grampian Conditions (restricting other development until the terms of a Section 106, or other specified actions, are met).

5.1 Sequencing

Timescales for the AP tasks will vary from short-term (<6 months) high priority tasks, to medium term tasks (6-12 months), and longer-term tasks (>12 months) that are dependent on preceding tasks (see also Section 6.1 Prioritisation of Actions and Figure 10).

In the short term (<6 months) there will be a focus on further consultation with relevant stakeholders (notably NRW and DCWW) as to the robust application of the latest emerging guidance (e.g. the Tests of Soundness²), followed by publication of the initial Developer Mitigation Handbook. This document will provide greater clarity on application of screening criteria, a threshold-based approach, and the integrated approach. It will also provide detail on how developers may deliver mitigation themselves, while integrated and strategic opportunities are still under development. Detail should be sufficient to support proposed rLDP developments to come forward through to 2027, with these being relatively small in quantum compared to the remainder of the rLDP period through to 2033 (see Figure 8 and 9). In the short term, feasibility and constraints analysis tasks for strategic mitigation options suitable for credit trading will also be undertaken.

Over the medium to longer term, the focus will be on developing and delivering strategic options (notably constructed wetlands), which will involve a number of tasks from stakeholder consultation, through to developing outline and detailed designs, obtaining planning permission and relevant consents, and determining appropriate management and maintenance approaches for securing delivery of nutrient mitigation in the long term.

With regards to the integrated approach, MCC will work with relevant partners delivering improvement and restoration schemes (e.g. DCWW, NRW, NMBs etc) in order to develop a mechanism through which developers can contribute positively. This will also include development of a platform whereby developers have visibility of available schemes and guidance on how to contribute. Further detail with regard to timescales are provided in the AP in Section 6.

5.2 Monitoring

The Welsh Government clarification note on how “Tests of Soundness” requires that mitigation action plans include a clear monitoring framework for implementing policies and proposals relative to the adaptive management framework of nutrient issues. Therefore, monitoring proposals have been set out in Table 5 under each mitigation pathways and action, where relevant to do so.

The nature of the monitoring depends on the type of action, and at this stage there remains some uncertainty regarding the scope of site-specific monitoring or monitoring that may be required to be undertaken by third parties. The framework for monitoring will be kept under review as part of regular reviews of this AP with more detailed proposals to be brought forward at the required stages in the future if and when mitigation pathways are sufficiently progressed.

6. Action Plan

The list of Action Plan measures and outcomes are discussed below within Table 5. This includes identification of stakeholders, timescales to implementation, dependencies, funding considerations and monitoring requirements. Further detail regarding the timeline for strategic wetlands to be developed is provided in Appendix B.

Table 5 Action Plan Measures

Actions/Outcome	Stakeholders	Timescales	Dependencies and Risk Management	Implementation / Funding	Monitoring
Pathway 1: Screening against WwTW Headroom					
1. MCC to consult with DCWW to confirm timing of upgrades to each WwTW relevant to the rLDP. Where tightened permit limits precede occupation of proposed developments further mitigation may not be required. Outcome: To identify the degree of alignment between rLDP phasing and WwTW upgrades and therefore how many homes need mitigating prior to new permit limits being applied. A provisional analysis of this is shown in Section 3.1.	- NRW - DCWW	- Consultation of DCWW upgrades timeframes for WwTW – short term (1-2 months). - Consultation with NRW to agree outcomes - short term (2-3 months). - WwTW upgrades – ongoing – short to long term (0-4 years), with some WwTW having already been upgraded and all those requiring upgrade to be complete by 2030.	Dependencies - DCWW implementation of WwTW upgrades within suggested timescales to meet reduced permit limits for phosphorus. - Agreement from NRW on allocated sites where no significant adverse effects would occur. Risk Management - If consultation determines that there is limited potential to screen out developments, or should timings mean that significant nutrient reductions are still required in the short term or proposed WwTW upgrades are delayed, then it is considered that there are sufficient alternative approaches within the AP to mitigate this risk and enable rLDP development to proceed as per the proposed timescales. - The Developer Mitigation Handbook will be a 'live' document that will be updated to reflect changes in nutrient mitigation requirements as and when required.	- Upgrades funded by DCWW. - MCC to condition timing of development to correspond with delivery of future improvements at WwTW. Grampian conditions may be used but, as development specific mitigation, should be considered on a case-by-case basis as part of an Appropriate Assessment.	DCWW permit compliance monitoring. Regulated by NRW.
2. MCC to consult NRW to seek agreement over which rLDP allocations (or subset of the allocation depending on phasing) MCC consider appropriate to conclude no likely significant effects on SAC site integrity on the basis of planned permit limit tightening. Outcome: Agreement to screen out a certain quantum of development from requiring mitigation. This outcome would be outlined on the MCC webpages and within the forthcoming Developer Mitigation Handbook.					

Actions/Outcome	Stakeholders	Timescales	Dependencies and Risk Management	Implementation / Funding	Monitoring
Pathway 2: Threshold Approach / De Minimis					
3. MCC to investigate suitability of a threshold-based approach across the rLDP period as a whole (for those developments remaining following previous steps relating to WwTW permit tightening). This approach has been advocated by Welsh Government, however, such an approach has yet to be adopted successfully in Wales and requires consultation with NRW to confirm feasibility for Monmouthshire and how aspects such as monitoring would be accounted for. Outcome: Determine whether threshold approach can be used in Monmouthshire.	- MCC - NRW - DCWW	- Consultation with NRW to agree feasibility of a threshold-based approach - short term (2-6 months) - MCC to prepare Developer Mitigation Handbook which is to include outline of how a threshold-based approach will be applied to the rLDP Plan as a whole, if agreed with NRW – short term (2-6 months).	Dependencies - Definition of a threshold will be based on NRW source apportionment data, and consideration of the rLDP nutrient budget within that context. - MCC must demonstrate to NRW's satisfaction that a defined level of growth will not undermine the achievement of the conservation objectives or otherwise delay the achievement of such objectives. - There must be no credible evidence to support a view that the delivery of development provided for within the rLDP will meaningfully undermine or hinder the ability of relevant authorities to adapt or modify current initiatives as part of their duty to take appropriate steps to avoid deterioration which are necessary to achieve the conservation objectives. Risk Management - There is considered a risk of challenge given that a threshold-based approach has no precedent for nutrient neutrality that MCC are aware of, at the time of writing. Nonetheless, Welsh Government are advocating the approach through their guidance and so it should be explored through the AP. This risk is to be mitigated through close consultation with NRW in regard to their expectations and correct definition of a defensible <i>de minimis</i> threshold. - Should a robust <i>de minimis</i> threshold not be obtainable and agreed with NRW for these riverine SACs then it is considered that there are sufficient alternative approaches within the AP to mitigate this	None required once threshold agreed for the rLDP Plan as a whole. The requirement for implementation of further mitigation would be screened out through the <i>de minimis</i> threshold.	NRW to monitor the SAC condition status. Should there be a decline then the <i>de minimis</i> threshold may require re-evaluation.
4. Assuming the threshold approach is confirmed to be appropriate, MCC to determine what the <i>de minimis</i> threshold would be across the rLDP period and agree this with NRW. Outcome: Publication of a <i>de minimis</i> threshold.					
5. MCC to prepare a Developer Mitigation Handbook prior to rLDP finalisation. This will outline how the threshold-based approach will be applied to the rLDP if confirmed to be appropriate by NRW. Outcome: Provide advice to developers where and how the threshold-based approach can be used.					

Actions/Outcome	Stakeholders	Timescales	Dependencies and Risk Management	Implementation / Funding	Monitoring
			risk and enable rLDP development to proceed as per the proposed timescales. The Developer Mitigation Handbook will be a 'live' document that will be updated to reflect changes in nutrient mitigation requirements as and when required.		
Pathway 3: Integrated Approach					
6. MCC to identify proposed enhancement/ improvement schemes proposed or already implemented in Monmouthshire, which may be suitable for support through developer contributions (through expediting or expanding the scale of the scheme). At this stage a number of schemes have been identified at a high level by DCWW through AMP8, including storm overflow improvements. Numerous restoration and enhancement schemes are also proposed within the Usk Catchment Partnership NMP and forthcoming Wye NMP, and are expected through future Catchment Nutrient Management Plans (CNMPs), all of which may have potential to benefit from an integrated approach.	- MCC - NRW - DCWW - NMBs - Wildlife/ Rivers Trusts - Wye and Usk Foundation - Housing developers - Farming Unions - Others as yet not identified	- Potential schemes: AMP8 improvements to WwTW with a final date of 2032 but most sites will be upgraded by 2030 – medium to very long term (0-6 years). - Timelines for current enhancement / restoration activities are set out in CNMPs/NMPs, with timelines being variable due to differing nature of the schemes – medium to very long term (1-10 years). - MCC to prepare Developer Mitigation Handbook which is to include an outline of how the integrated can be applied – short-term (2-6 months). Next steps for practical delivery will be outlined therein. - MCC to update Developer Mitigation Handbook once further clarity on the integrated approach has developed and further potential schemes comes forward – medium to long term (6 months to several years).	Dependencies - The approach relies on appropriate schemes to which developers can positively contribute, primarily DCWW, NMB and NRW schemes. - Align with the test of soundness published by Welsh Government. Notably, delivery of growth contained within the plan will be inherently linked to progress being made on the steps to be taken and measures identified to improve the SAC. Risk Management - An interdependency between the contribution of developers with these steps and measures will need to be demonstrated. The rLDP can account for this by establishing a policy caveat approach towards implementation, which renders the granting of planning permission conditional upon the delivery milestones identified for on-going and future improvement measures. - As with the threshold approach, there is not yet precedent for this approach having been implemented in Wales at the time of writing, and this does raise some risk. Nonetheless, Welsh Government are also advocating the approach through their guidance and so it should be explored through the AP. This risk is to be mitigated through close consultation with NRW in regard to their	- Welsh Government grants to be used to develop further improvement / restoration measures where possible. - Developer payments will be used to increase scale of planned restoration or speed of delivery on a 'case by case' basis. - DCWW, NRW (or others with suitable schemes) will have funded their own projects. Developer contributions would be used to enable faster implementation of these or and expansion in scale of the measures.	- SAC condition assessments will indicate whether there is an improving baseline condition as forecast. - Comparison with improvement targets and trajectories as to be set out in future CNMPs. - Additional water quality monitoring targeted at specific mitigation / restoration approach (case by case basis). These would be anticipated to be undertaken by the organisation delivering the overall scheme (e.g. DCWW, NRW etc).
7. MCC to investigate approaches that will allow developers to gain visibility of integrated approaches so they can consider positive contributions. This is expected to be via a council webpage.					
8. MCC to investigate how positive developer contributions could be reconciled with the quantum of nutrient contributions from their development and secured in perpetuity.					
9. MCC to agree approach with NRW. Outcome (6-9): Production of relevant guidance within the forthcoming Developer Mitigation Handbook. This					

Actions/Outcome	Stakeholders	Timescales	Dependencies and Risk Management	Implementation / Funding	Monitoring
will include further description of available schemes and directions to developers to follow for positively contributing to their delivery and hence securing mitigation in perpetuity.			expectations for delivery and required evidence base. The Developer Mitigation Handbook will be a 'live' document that will be updated to reflect changes in nutrient mitigation requirements as and when required.		
10. MCC to periodically update Developer Mitigation Handbook with any further developments with regard to the integrated approach and schemes coming forward. Outcome: Guidance that maintains relevance across the rLDP period.					
Pathway 4: Strategic Mitigation - Constructed Wetland					
11. MCC have completed a Strategic Mitigation Options Report which includes identification and feasibility appraisal of potential options for development of constructed wetlands close to DCWW WwTW's in the Usk catchment. Outcome: A preferred location has been identified at Goytre WwTW. Additional options may also be viable at Usk WwTW and Aberbaiden WwTW, although these site would likely rely on pumping which will increase costs.	- MCC - NRW - DCWW - Private Landowners	- Pre-Planning (short term – 1-6 months from day 1). - Planning and Design (medium term - c. 1-18 months from day 1) - Identify and secure land. - Baseline monitoring to inform design / quantify nutrient reduction. - Planning / impact assessment. - Regulatory Approval (long term - c. 18-24 months from day 1) - Submit planning application. - Obtain NRW permits. - Construction (long-term - c. 24-30 months from day 1) - Physical basin creation. - Planting of macrophytes. - Flow control structures. - Commissioning / Maturation (long term – 30+ months from day 1) - Establish vegetation in order for effective basin functioning. - Monitoring of performance. - Strategic credit system launch.	Dependencies - DCWW agreement to use WwTW discharge. - Land availability. - Feasibility Assessment and Concept Design. - Constraint analysis and surveys (e.g. heritage, ecology, contaminated land, utilities, water resource zones etc). - Detailed design indicating sufficient removal potential. - Planning permission. - Permits applications. Risk Management - Seek early agreement with DCWW on permitting aspects, as constructed wetlands raise questions over the point of compliance for existing DCWW permits. Involve NRW in permitting discussions at an early stage through pre-application consultation. - Determine any likely upgrades to phosphorus treatment at an early stage	- Project Delivery Grants, Local Governance Funding etc. - Secure future developer contributions via nutrient credit scheme and legal agreements (e.g. Section 106). - Capital grants from the Council.	- Monitoring requirements and responsibilities to be outlined in a Wetland Monitoring and Maintenance Plan. This will include: - Visual inspection by relevant experts and officers to ensure wetland maturing and implemented as per design and planting strategy. - Silt levels / desilting and other ongoing management requirements.
12. MCC to continue ongoing consultation with DCWW regarding development of the preferred wetland site(s), and if agreement can be reached MCC will undertake concept design to ensure sufficient P reduction to offset a significant proportion of development proposed in the rLDP. Outcome: Confirmation of feasibility stage and progression to scheme development.					
13. MCC to consider implementation and future operating costs and determine feasibility of nutrient credit scheme.					

Actions/Outcome	Stakeholders	Timescales	Dependencies and Risk Management	Implementation / Funding	Monitoring
Outcome: Determination of suitable mechanism for charging developers for nutrient credits and ensuring the option is sufficiently attractive for full implementation. 14. MCC to consult with NRW and DCWW regarding permit requirements. 15. MCC to seek agreement with DCWW over points of compliance for the existing permit and which party has 'ownership' of the water passing through, and discharged from, the wetland. Outcome Actions 13 and 14: would be an agreed position documented through a Memorandum of Understanding between MCC and DCWW, or similar document. 16. MCC to undertake detailed design. 17. MCC/DCWW to apply for required Environmental Permits / planning permission. 18. MCC to construct and commission wetland. 19. MCC to prepare and implement Wetland Monitoring and Maintenance Plan (expected to be a condition of planning). Outcome Actions 16 to 19: Design, build and operation of Constructed Wetland with nutrient credit system for prospective developers upstream of the wetland location on the SAC.		– Ongoing asset inspection / reporting). Further details regarding the constructed wetland timeline are given in Appendix B.	through DCWW consultation as this may impact future nutrient reduction potential. • If poorly maintained there are risks around poor performance, and so an appropriate Wetland Monitoring and Maintenance Plan will be developed. • Landowners to be engaged at an early stage to avoid abortive works. • Ecology appraisal to be undertaken at an early stage to identify any prohibitive habitats or species for wetland development. • Wetland design to be precautionary when calculating the rate of nutrient removal and when sizing the wetland. It will be important to demonstrate how the inflow source is linked to the wetland, to calculate nutrient load entering and leaving wetland, to be conservative with assumptions on performance, and to develop an adaptive Monitoring and Maintenance Plan. Areas of uncertainty may influence how wetlands are treated within HRA, reinforcing the need for robust monitoring and review.		
Pathway 5: Developer Led Mitigation					
20. MCC are preparing guidance for developer led mitigation, along with worked examples, for inclusion in a Developer Mitigation Handbook.	• Developers • MCC • NRW • Landowners	• Prepare Developer Mitigation Handbook prior to rLDP finalisation (short term – 2-6 months).	Dependencies • NRW agreement regarding the use of threshold and integrated approaches will be required prior to inclusion in the	• Developer funded. • Implemented through rLDP policy requirements for nutrient mitigation/betterment.	• Mitigation to be maintained and monitored in perpetuity / for the lifetime of a

Actions/Outcome	Stakeholders	Timescales	Dependencies and Risk Management	Implementation / Funding	Monitoring
Outcome: Publication of a Developer Mitigation Handbook.	DCWW	Handbook will need to be updated periodically to reflect latest nutrient mitigation requirements (ongoing).	- Handbook (see above dependencies for these cases). - MCC Strategic Mitigation Options Report. Risk Management - Guidance and advice will change over time. Therefore, the Developer Mitigation Handbook will need to be periodically reviewed and updated to remain current good practice. Developers will be advised to seek pre-planning advice from MCC.	- Developer led mitigation likely to be secured using Section 106 agreements. - Grampian condition can be used to ensure mitigation is operational prior to occupation.	development as required. The Developer Mitigation Handbook will outline at a high level the monitoring requirements of different types of approach.

6.1 Prioritisation of Actions

The high-level list of actions and their priority is displayed in Figure 11. The priority of each action is indicated with a Red, Amber, Green (RAG) colour coding as follows:

- Red indicates a high priority action.
- Amber indicates a medium priority action.
- Green indicates a lower priority action.

There are five key pathways to the AP through which it is possible to screen out or mitigate phosphorus loadings relating to the rLDP. Given the array of pathways and that threshold and integrated approaches are being actively encouraged by Welsh Government as a preference to, but potentially alongside strategic and develop-led mitigation, MCC has set out an AP that provides a suitably robust roadmap for ensuring that appropriate mitigation can be delivered to mitigate any increase in phosphorus loading to the Usk SAC or Wye SAC as a result of the implementation of the rLDP. This will ensure that any adverse significant effects on the site integrity of the riverine SACs can be prevented.

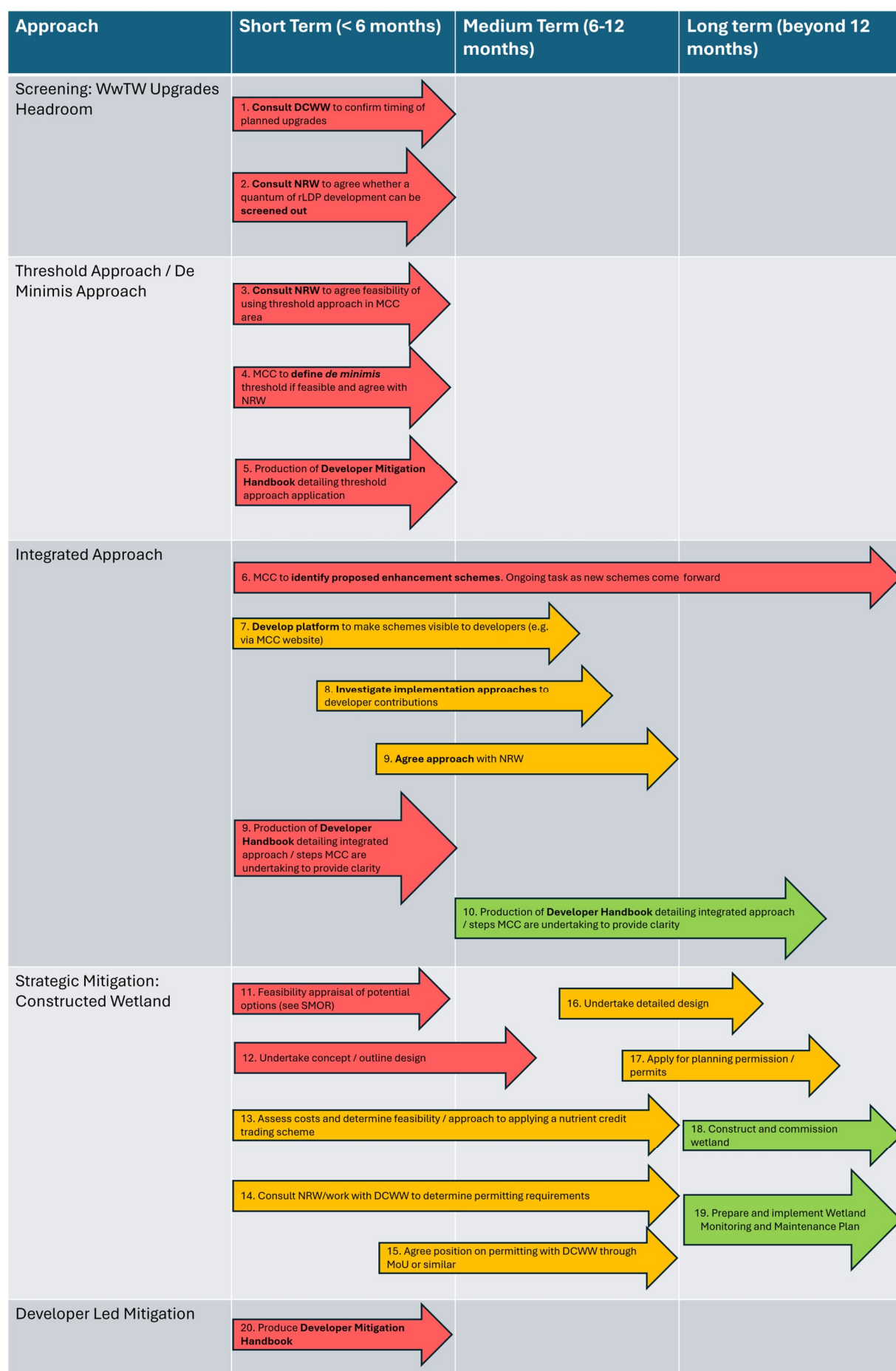


Figure 12 Timescale of proposed actions and RAG prioritisation

Appendix A rLDP Nutrient budget by proposed phasing of the rLDP

Table A1 Timeline of projected housing units from the rLDP to be constructed annually within the River Usk catchment.

RLDP Policy	Site Name	Settlement	Catchment Area	Status	Gross Site Area (ha)	Total Site Capacity	Open Market Homes	Affordable Homes	Phasing of Development (Base Date 1 st April 2025) Estimated Completions								
									2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mnths
HA1	Land to the East of Abergavenny	Abergavenny	Usk	Allocation	35.9	500	250	250	0	0	0	70	90	90	90	90	70
HA5	Land at Penlanlas Farm	Abergavenny	Usk	Allocation	6.17	100	50	50	0	0	50	50	0	0	0	0	0
HA10	South of Monmouth Rd	Raglan	Usk	Allocation	4.5	54	27	27	0	0	40	14	0	0	0	0	0
HA11	Land East of Burrium Gate	Usk	Usk	Allocation	2.6	40	20	20	0	10	30	0	0	0	0	0	0
HA12	Land West of Trem yr Ysgol	Penperlleni	Usk	Allocation	3.4	42	21	21	0	0	30	12	0	0	0	0	0
HA14	Land at Churchfields	Devauden	Usk	Allocation	1	20	10	10	0	0	0	10	10	0	0	0	0
HA15	Land East Little Mill	Little Mill	Usk	Allocation	1.68	20	10	10	0	5	15	0	0	0	0	0	0
HA16	Land North of Little Mill	Little Mill	Usk	Rollover allocation	0.87	15	7	8	5	10	0	0	0	0	0	0	0
HA17	Land adjacent Llanellen Court Farm	Llanellen	Usk	Allocation	1.56	26	13	13	0	0	0	0	10	16	0	0	0
N/A	Windfall Allowance	Abergavenny	Usk	Windfall		100	50	50	0	0	0	0	0	30	30	30	10
N/A	Windfall Allowance	Secondary Settlements of Raglan, Penperlleni, Usk	Usk	Windfall		20	10	10	0	0	0	0	0	10	10	0	0

Table A2 Timeline of projected housing units from the rLDP to be constructed annually within the River Wye catchment.

RLDP Policy Ref	Site Name	Settlement	Catchment Area	Status	Gross Site Area (ha)	Total Site Capacity	Open Market Homes	Affordable Homes	Phasing of Development (Base Date 1 st April 2025) Estimated Completions								
									2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mths
HA6	Land at Rockfield Road	Monmouth	Wye	Allocation	1.5	60	30	30	0	0	0	0	40	20	0	0	0
HA4	Land at Leasbrook	Monmouth	Wye	Allocation	11	270	135	135	0	0	25	50	50	50	50	45	0
HA7	Land at Drewen Farm	Monmouth	Wye	Rollover allocation with planning permission	6.6	110	71	39	0	10	50	50	0	0	0	0	0
HA8	Tudor Road, Wyesham	Monmouth	Wye	Rollover allocation with planning permission	2.1	50	0	50	25	25	0	0	0	0	0	0	0
N/A	West of Rockfield Road	Monmouth	Wye	Commitment	2.86	70	45	25	0	35	35	0	0	0	0	0	0
N/A	Windfall Allowances	Monmouth	Wye	Windfall		10	6	4	0	0	0	0	0	2	2	2	2

Appendix B Indicative Wetland Planning, Design and Construction Timeline

Table B. 1 Indicative timeline for planning, design and construction of wetlands.

Stage	Timescale	Requirements	Timescale reasoning
Pre-planning	1-6 months from Day 1	• Consultation with NRW and DCWW • Early feasibility studies	6 months of pre-planning is a precautionary estimate for early consultation with NRW and DCWW to ensure that proposals can be taken forward and for early feasibility studies. This stage can be completed concurrently with the planning and design stage.
Planning and design	1 – 18 months from Day 1	• Identify and secure land. • Baseline monitoring to inform design / quantify nutrient reduction. • Planning / impact assessment	18 months generally considered a precautionary timescale for the planning and design stage. This is to take into account a full survey window for ecology and mitigation design. Other stages such as identifying and securing land and quantifying nutrient reduction may be completed at an earlier stage.
Regulatory approval	18 – 24 months from Day 1	• Submit planning application. • Obtain NRW permits.	A further 6 months is likely required after planning and design to submit the planning application and obtain NRW permits.
Construction	24 – 30 months from Day 1	• Physical basin creation. • Planting of macrophytes. • Flow control structures.	A further 6 months of construction is likely required before completion of the wetland.
Commissioning / Maturation	30 months from Day 1	• Establish vegetation in order for effective basin functioning. • Monitoring of performance. • Strategic credit system launch. • Ongoing asset inspection / reporting.	Commissioning and maturation will take place over the months and years following completion of construction. Performance monitoring will be used to determine maturation.



Appendix 6: Schedule of Minor Changes to the Deposit RLDP (SD8) - Phosphates Related Matters (April 2026)



Monmouthshire Replacement Local Development Plan

2018-2033

Schedule of Minor Changes to the Deposit RLDP (SD8)
Phosphates Related Matters – April 2026

Contents

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HA5 – Land at Penlanlas Farm, Abergavenny	7
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HA10 – Land South of Monmouth Road, Raglan	9
HA11 – Land East of Burrium Gate, Usk	9
HA12 – Land West of Trem Yr Ysgol, Penperlleni	10
HA14 – Land at Churchfields, Devauden	10
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Page	Paragraph, Table or Policy	Type of Change	Details of Change	Reason
Green Infrastructure, Landscape and Nature Recovery				
86	10.13.5 – 10.13.7	Amendment	Delete sub-heading ‘Phosphate Water Quality in Riverine Special Areas of Conservation (SAC)’ and paragraphs 10.13.5 – 10.13.7 and replace with the following text: Nutrient Impacts on Water Quality in Riverine Special Areas of Conservation (SAC) The impact of excess nutrients, including phosphates, has become a significant environmental challenge in riverine SACs across the country, including Wales. These rivers are designated for their high ecological value; however, many are failing to meet strict phosphorus targets designed to protect sensitive habitats and species. The Rivers Usk and Wye in Monmouthshire are designated as SACs and are, therefore, subject to strict protection under the Conservation of Habitats and Species Regulations 2017 which require any plan or project likely to have a significant effect on a European site to be subject to Habitats Regulations Assessment (HRA). The extent of the Usk and Wye River SAC catchments in Monmouthshire are illustrated in Map XX and the Constraints Map accompanying the RLDP. In January 2021, NRW published a report that presented the assessment of compliance against recently tightened phosphorus water quality targets for SAC rivers. The report indicated that over 60% of SAC water bodies were failing the new targets for phosphorus. More recent data does, however, indicate that water quality across the rivers in Monmouthshire has improved since 2021. The latest monitoring data for the River Usk catchment demonstrates that 54% of waterbodies in the catchment are meeting their phosphorus targets which is an improvement from 2021¹. Notwithstanding this, as of 2026 nutrient neutrality remains a requirement across the whole Usk catchment. As a result, new developments leading to an increase in phosphorus discharges to this site may contribute to the unfavourable condition of the designated site or make its restoration to favourable status more difficult to achieve. Ongoing actions to address phosphorus levels in the Usk catchment are expected to continually improve water quality in this waterbody throughout the RLDP period. The position will be kept under review. Whilst previously failing the Lower River Wye is now considered by NRW (as of 2026) to no longer be failing for phosphorus. However, it is still important that any new development that may lead to an	As a result of additional phosphates related work.

¹ River Usk Nutrient Management Plan (April 2025)

Page	Paragraph, Table or Policy	Type of Change	Details of Change	Reason
			increase in phosphorous discharged to the SAC considers whether that discharge would risk causing deterioration of the river back to less than good conservation status. The Council is required to ensure, through the RLDP and development management process, that development within the relevant catchments is nutrient neutral and will not result in adverse effects on the integrity of the European sites, either alone or in combination with other plans and projects. Development proposals within catchments must, therefore, demonstrate nutrient neutrality to ensure that there is no net increase in nutrient loading to the affected sites. Reflecting the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales², Policy NR3 makes clear that development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures. As such, planning permission may only be granted where the competent authority is able to conclude that there will be no likely adverse effect on the integrity of a European site, either alone or in combination with other plans and projects. The policy provides a clear framework to ensure that development proposals with the potential to affect the integrity of European sites are assessed appropriately and consistently, in accordance with national legislation and guidance. It allows proposals to proceed where impacts can be avoided or adequately mitigated. Prior to considering mitigation pathways, current NRW guidance suggests that if the relevant Wastewater Treatment Works (WwTW) for proposed developments has an environmental permit that has been reviewed against the nutrient targets set out in the conservation objectives for the river SAC, it may be possible for a planning authority to conclude that there will be no likely significant effect with regard to phosphorus. Further mitigation can therefore be 'screened out'. Further detail on this approach will be set out in SPG. Mitigation measures may be secured where necessary to ensure there is no adverse impact on the integrity of European sites. In accordance with Welsh Government and NRW guidance, mitigation	

² Including NRW advice [Natural Resources Wales / Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation](#) and WG planning guidance [Clarification note: applying the tests of soundness to Local Development Plans \(LDPs\)](#) and [Planning Guidance - Development in SAC Rivers](#)

Page	Paragraph, Table or Policy	Type of Change	Details of Change	Reason
			may take a variety of forms, including on-site and off-site measures, contributions to strategic mitigation schemes or developer-led/project specific mitigation, provided that such measures are demonstrated to be effective and deliverable. Supplementary Planning Guidance (SPG) will be prepared to provide further clarification on the implementation of this policy. This will reflect the nutrient neutrality evidence base that has been prepared to inform the RLDP, including a Strategic Mitigation Options Report, Nutrient Mitigation Action Plan and Developer Mitigation Handbook. These documents identify and provide detail on the range of mitigation options available and their implementation, including consideration of threshold, integrated catchment improvements, strategic or developer-led nutrient neutrality approaches. As national guidance and requirements in relation to nutrient neutrality continue to evolve, the Developer Mitigation Handbook will be reviewed and updated periodically to reflect changes in nutrient mitigation requirements as and when required.	
87	NR3	Amendment	Add additional text to the end of Policy NR3 – Protection of Water Sources and the Water Environment (shown in <i>italics</i>). Policy NR3 will read: Policy NR3 – Protection of Water Sources and the Water Environment Development, which may impact upon the water environment and associated land, will only be permitted where it: a) Would not harm or pose an unacceptable risk to the capacity or flow of ground water, surface water or coastal water systems; b) Would not harm or pose an unacceptable risk to the quality and quantity of ground waters, surface waters, wetlands or coastal water systems including, where appropriate, their ecological and amenity value; and c) Where practicable and reasonable, improves water quality. <i>Development likely to result in a significant effect on a European site will only be permitted where the competent authority is satisfied, through a Habitats Regulations Assessment, that there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation.</i>	As a result of additional phosphates related work.

Page	Paragraph, Table or Policy	Type of Change	Details of Change	Reason
HA1 – Land to the East of Abergavenny				
115	14.3.5	Amendment	Delete the following text from paragraph 14.3.5 <i>'The site is also within the River Usk phosphorus sensitive catchment area.'</i> and replace with the following: <i>The site is within the River Usk Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.</i>	As a result of additional phosphates related work.
118	HA1	Amendment	Add sub-heading and criterion r) to policy HA1 – Land to the East of Abergavenny, to read as follows: <i>Protection of Water Quality</i> <i>r) The site is within the River Usk Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>	As a result of additional phosphates related work.
HA4 – Land at Leasbrook, Monmouth				
129	14.6.3	Amendment	Add the following text to paragraph 14.6.3: <i>The site is within the River Wye Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.</i>	As a result of additional phosphates related work.
131	HA4	Amendment	Add sub-heading and criterion k) to policy HA4 – Land at Leasbrook, Monmouth, to read as follows: <i>Protection of Water Quality</i> <i>k) The site is within the River Wye Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>	As a result of additional phosphates related work.

Page	Paragraph, Table or Policy	Type of Change	Details of Change	Reason
HA5 – Land at Penlanlas Farm, Abergavenny				
133	14.7.2	Amendment	Delete the following text from paragraph 14.7.2 <i>'The site is also within the River Usk phosphorus sensitive catchment area.'</i> and replace with the following: <i>The site is within the River Usk Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.</i>	As a result of additional phosphates related work.
133	HA5	Amendment	Add sub-heading and criterion i) to policy HA5 – Land at Penlanlas Farm, Abergavenny to read as follows: <i>Protection of Water Quality</i> <i>i) The site is within the River Usk Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>	As a result of additional phosphates related work.
HA6 – Land at Rockfield Road, Monmouth				
134	14.8.2	Amendment	After paragraph 14.8.2 add the following text: <i>The site is within the River Wye Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.</i>	As a result of additional phosphates related work.
135	HA6	Amendment	Add sub-heading and criterion f) to policy HA6 – Land at Rockfield Road, Monmouth, to read as follows: <i>Protection of Water Quality</i> <i>f) The site is within the River Wye Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>	As a result of additional phosphates related work.

Page	Paragraph, Table or Policy	Type of Change	Details of Change	Reason
HA7 – Land at Drewen Farm, Monmouth				
136	14.9.2	Amendment	After paragraph 14.9.2 add the following text: <i>The site is within the River Wye Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.</i>	As a result of additional phosphates related work.
136	HA7	Amendment	Add sub-heading and criterion g) to policy HA7 – Land at Drewen Farm, Monmouth, to read as follows: <i>Protection of Water Quality</i> <i>g) The site is within the River Wye Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>	As a result of additional phosphates related work.
HA8 – Land at Tudor Road, Monmouth				
137	14.10.2	Amendment	After paragraph 14.10.2 add the following text: <i>The site is within the River Wye Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.</i>	As a result of additional phosphates related work.
138	HA8	Amendment	Add sub-heading and criterion k) to policy HA8 – Land at Tudor Road, Monmouth, to read as follows: <i>Protection of Water Quality</i> <i>k) The site is within the River Wye Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>	As a result of additional phosphates related work.

Page	Paragraph, Table or Policy	Type of Change	Details of Change	Reason
HA10 – Land South of Monmouth Road, Raglan				
140	14.12.1	Amendment	After paragraph 14.12.1 add the following text: <i>The site is within the River Usk Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.</i>	As a result of additional phosphates related work.
141	HA10	Amendment	Add sub-heading and criterion h) to policy HA10 – Land South of Monmouth Road, Raglan, to read as follows: <i>Protection of Water Quality</i> <i>h) The site is within the River Usk Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>	As a result of additional phosphates related work.
HA11 – Land East of Burrium Gate, Usk				
142	14.13.3	Amendment	Delete the following text from paragraph 14.13.3 <i>'The site is also within the River Usk phosphorus sensitive catchment area.'</i> and replace with the following: <i>The site is within the River Usk Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.</i>	As a result of additional phosphates related work.
143	HA11	Amendment	Add sub-heading and criterion g) to policy HA11 – Land East of Burrium Gate, Usk to read as follows: <i>Protection of Water Quality</i> <i>g) The site is within the River Usk Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>	As a result of additional phosphates related work.

Page	Paragraph, Table or Policy	Type of Change	Details of Change	Reason
HA12 – Land West of Trem Yr Ysgol, Penperlleni				
143	14.14.4	Amendment	After paragraph 14.14.4 add the following text: <i>The site is within the River Usk Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.</i>	As a result of additional phosphates related work.
144	HA12	Amendment	Add sub-heading and criterion e) to policy HA12 – Land West of Trem Yr Ysgol, Penperlleni, to read as follows: <i>Protection of Water Quality</i> <i>e) The site is within the River Usk Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>	As a result of additional phosphates related work.
HA14 – Land at Churchfields, Devauden				
145	14.16.2	Amendment	After paragraph 14.16.2 add the following text: <i>The site is within the River Usk Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.</i>	As a result of additional phosphates related work.
146	HA14	Amendment	Add sub-heading and criterion f) to policy HA14 – Land at Churchfields, Devauden, to read as follows: <i>Protection of Water Quality</i> <i>f) The site is within the River Usk Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>	As a result of additional phosphates related work.

Page	Paragraph, Table or Policy	Type of Change	Details of Change	Reason
HA15 – Land East of Little Mill				
147	14.17.2	Amendment	After paragraph 14.17.2 add the following text: <i>The site is within the River Usk Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.</i>	As a result of additional phosphates related work.
147	HA15	Amendment	Add sub-heading and criterion d) to policy HA15 – Land East of Little Mill, to read as follows: <i>Protection of Water Quality</i> <i>d) The site is within the River Usk Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>	As a result of additional phosphates related work.
HA16 – Land North of Little Mill				
147	14.18.1	Amendment	After paragraph 14.18.1 add the following text: <i>The site is within the River Usk Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.</i>	As a result of additional phosphates related work.
148	HA16	Amendment	Add sub-heading and criterion g) to policy HA16 – Land North of Little Mill, to read as follows: <i>Protection of Water Quality</i> <i>g) The site is within the River Usk Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>	As a result of additional phosphates related work.
HA17 – Land adjacent to Llanellen Court, Llanellen				
148	14.19.1	Amendment	After paragraph 14.19.1 add the following text:	As a result of additional phosphates related work.

Page	Paragraph, Table or Policy	Type of Change	Details of Change	Reason
			<i>The site is within the River Usk Special Area of Conservation (SAC) catchment and therefore as set out in Policy NR3 - Protection of Water Sources and the Water Environment, the proposal will need to meet the requirements of the Habitats Regulations and nutrient neutrality guidance in Wales. Development proposals that are likely to result in a significant effect on a European site will be subject to an HRA to demonstrate there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation measures.</i>	
149	HA17	Amendment	Add sub-heading and criterion c) to policy HA17 – Land adjacent to Llanellen Court Farm, Llanellen, to read as follows: <i>Protection of Water Quality</i> <i>c) The site is within the River Usk Special Area of Conservation catchment and will be required to meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>	As a result of additional phosphates related work.
Appendix 8: Infrastructure Delivery Plan				
277-371	Appendix 8: IDP	Amendment	Amend the Infrastructure Delivery Plan table in relation to the following allocations to note the changes set out below: • HA1 – Land to the East of Abergavenny • HA4 – Land at Leasbrook, Monmouth • HA5 – Land at Penlanlas Farm, Abergavenny • HA6 – Land at Rockfield Road • HA7 – Land at Drewen Farm, Monmouth • HA8 – Land at Tudor Road, Monmouth • HA10 – Land South of Monmouth Road, Raglan • HA11 – Land East of Burrium Gate, Usk • HA12 – Land West of Trem Yr Ysgol, Penperlleni • HA14 – Land at Churchfields, Devauden • HA15 – Land East of Little Mill • HA16 – Land North of Little Mill • HA17 – Land adjacent to Llanellen Court Farm, Llanellen Key Policy Requirements: add the following bullet point '<i>Meet the requirements of Policy NR3 - Protection of Water Sources and the Water Environment.</i>' Sewerage Supply / Sewerage: In relation to phosphate mitigation add the following text to the relevant columns:	As a result of additional phosphates related work.

Page	Paragraph, Table or Policy	Type of Change	Details of Change	Reason
			Costs: <i>TBC in Supplementary Planning Guidance</i> Funding Sources: <i>Developer; grant funding</i> Delivery Body: <i>MCC</i> Phasing: <i>TBC</i> Notes: <i>The consideration of whether mitigation is necessary for the proposed development will be determined at the planning application stage and may include a financial contribution towards strategic mitigation measures such as constructed wetlands. Approximate costs, where required, will be set out in SPG and supporting Nutrient Mitigation Action Plan.</i>	
Appendix 11: Supplementary Planning Guidance				
379	Appendix 11	Amendment	Add 'Protection of Water Quality in Riverine Special Areas of Conservation (SAC)' to the list of Supplementary Planning Guidance noted in Appendix 11, with a timescale of ' <i>within 12 months of adoption</i> '.	As a result of additional phosphates related work.
Infrastructure Delivery Plan Background Paper (SD104)				
	As relevant	Amendment	Update the Infrastructure Delivery Plan Background Paper (SD104) to reflect the changes noted in the RLDP.	As a result of additional phosphates related work.

Appendix 7: RLDP Habitats Regulations Assessment – Nutrient Neutrality Addendum (AECOM, April 2026)

Addendum to Habitats Regulations Assessment of the Monmouthshire Replacement Local Development Plan Nutrient Neutrality Addendum

Monmouthshire Council

Project number: 60609986

April 2026

Quality information

Prepared by	Checked by	Verified by	Approved by
Dr Damiano Weitowitz Principal Ecologist ACIEEM	Milly Kent Principal Ecologist ACIEEM	Dr James Riley Technical Director MCIEEM	Dr James Riley Technical Director MCIEEM

Revision History

Revision	Revision date	Details	Authorized	Name	Position
1	April 2026	Draft	JR	Dr James Riley	Technical Director
2	April 2026	Update following further work on the Strategic Mitigation Opportunities Report and Nutrient Mitigation Action Plan	JR	Dr James Riley	Technical Director

Distribution List

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1. Background

Introduction

AECOM was appointed by Monmouthshire County Council (MCC) to undertake a Habitats Regulations Assessment (HRA) of its Replacement Local Development Plan (RLDP). The objective of this assessment was to identify any aspects of the RLDP that may cause an adverse effect on the integrity of Habitats Sites, including Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and, as a matter of Government policy, Ramsar sites, either alone or in-combination with other plans and projects, and to advise on appropriate policy mechanisms for delivering mitigation where such effects are identified.

One of the main impact pathways identified in the RLDP HRA was a deterioration in water quality, primarily as a result of nutrient enrichment through the release of treated effluent from Wastewater Treatment Works (WWTWs). While limits on the discharge of effluent volumes / pollutant concentrations are assigned to each WWTW (typically determined accounting for the Conservation Objectives of Habitats Sites), in many designated estuarine and freshwater habitats across the UK, poor water quality due to excessive nutrient concentrations is one of the main reasons for Habitats Sites to be in unfavourable condition. Nutrient enrichment can lead to the excessive growth of algal species through a process known as eutrophication. This in turn is associated with various knock-on impacts, such as reduced dissolved oxygen (DO) concentration, increased turbidity and reduced overall biodiversity. To reduce environmental nutrient loadings and in line with rulings from the European Court of Justice in combined cases C-923/17 and C294-17 (the Dutch Nitrogen case), new developments in the hydrological catchments of relevant Habitats Sites must demonstrate that they are 'nutrient neutral' prior to obtaining planning consent. In their role as a Competent Authority, MCC cannot legally approve plans or projects that will result in adverse effects on the integrity of Habitats Sites, including from adverse water quality impacts.

Nutrient neutrality requirements are in place for various Habitats Sites across the UK, but the two sites that are relevant to development proposed in the RLDP are the River Wye SAC and River Usk SAC. Both are riverine SACs that permeate Monmouthshire on a north-south axis, ultimately having their confluence with the Severn Estuary. Potential nutrient impacts of developments are typically determined using nutrient neutrality calculations to determine an overall nutrient budget. The Welsh Government has developed calculation methodologies for both Total Nitrogen (TN) and Total Phosphorus (TP) budgets, which have both been adopted by MCC.

While the issue of nutrient neutrality and relevant policy mitigation was discussed in the original Monmouthshire RLDP HRA, Inspectors examining the Plan and associated submission documents have requested further evidence to investigate the potential nutrient impacts of RLDP allocations on the two riverine SACs. MCC in turn have requested this additional evidence to be set out in an Addendum to the HRA, which is the purpose of this document. The Inspectors have raised the following points to be included / expanded upon:

- Further information on the potential increase in nutrient loading resulting from the RLDP;
- Additional evidence on the mitigation approach on a 'year by year' and catchment basis;
- Detail on the steps taken to implement and secure mitigation measures;
- Considering the recent judgement of *CG Fry & Sons Ltd v SSHCLG* [2025] UKSC 35 in relation to committed developments and windfall associated with the RLDP; and
- Appraising whether nutrient contributions from non-residential developments require consideration.

AECOM have produced a detailed technical note addressing the Inspectors' comments, which will be referred to throughout this HRA Addendum where relevant and forms Appendix A of the document. Furthermore, given that the RLDP HRA was prepared in 2024, the HRA Addendum highlights any changes in background evidence and guidance notes that have taken place since the work was undertaken originally. This includes the following:

- Latest Natural Resources Wales (NRW) guidance on the nutrient neutrality issue (version 5.1)¹;
- Latest status of NRW's review process of discharge consents at relevant WwTWs;
- Current position of Dwr Cymru Welsh Water (DCWW) infrastructure upgrades at relevant WwTWs;
- MCC's Phosphates Position Paper, which details the Council's latest position on the topic²; and
- Consideration of the updated caveat and wording of Policy NR3 of the RLDP (Protection of Water Sources and the Water Environment).

¹ Natural Resources Wales. February 2026. Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation. Version 5.1. Available at: [Natural Resources Wales / Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation](#) [Accessed on 19/03/2026]

² Monmouthshire County Council. February 2026. Monmouthshire Replacement Local Development Plan 2018-2033 – Phosphate Position Paper. 60pp. Available at: [Phosphate Position Paper February 2026](#) [Accessed on 19/03/2026]

2. Relevant Habitats Sites

River Usk SAC

Introduction

The River Usk SAC originates in the west of the Bannau Brycheiniog National Park and flows south-east, joining the Severn Estuary at Newport. The overall form of the catchment is long and narrow, with steep tributaries inflowing along the way to the Severn Estuary. The underlying geology is primarily Devonian Old Red Sandstone resulting in well buffered low-acidity waters. This geology also drives the low-moderate nutrient that characterises the SAC. However, along its course the nutrient status of the SAC is significantly modified by land use within the catchment, which is mainly pastoral and occasional woodland forestry.

The ecological structure and function of the site is highly dependent on hydrological and geomorphological processes, as well as the quality and connectivity of riparian habitats. This is especially the case for mobile animals, such as migratory fish and otters that move throughout the site. For example, the maintenance of a good hydrological regime (i.e. water quality and flows) and a consequent maintenance of current velocity, water depth, dissolved oxygen levels and nutrient status are integral for fish to move around the river.

Examples of the species that the SAC is designated for include the sea lamprey *Petromyzon marinus*, Atlantic salmon *Salmo salar* and bullhead *Cottus gobio*. Especially the Atlantic salmon requires unmodified river channels and an obstruction-free migratory route to its spawning gravels. The River Usk SAC is also an important site for otters, acting as a refuge for the species in the 1950s and subsequently as a source population for the re-colonisation of south-east Wales. This SAC river flows through Monmouthshire.

Qualifying Features³

The site has been designated as a SAC for the following features:

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation

Annex II species that are a primary reason for selection of this site:

- Sea lamprey *Petromyzon marinus*
- Brook lamprey *Lampetra planeri*
- River lamprey *Lampetra fluviatilis*
- Twaite shad *Alosa fallax*
- Atlantic salmon *Salmo salar*
- Bullhead *Cottus gobio*
- Otter *Lutra lutra*

Annex II species present as a qualifying feature, but not a primary reason for site selection:

- Allis shad *Alosa alosa*

³ Available at: <https://sac.jncc.gov.uk/site/UK0013007> [Accessed on 18/03/2026]

Conservation Objectives⁴

The overarching conservation objectives are outlined in the Core Management Plan for the River Usk SAC published by Natural Resources Wales. While this document provides conservation vision statements for all Annex II species, only the conservation objectives for the water course are presented here, as this is essential to maintain the species in favourable conservation status.

- The capacity of the habitats in the SAC to support each feature at near-natural population levels, as determined by predominantly unmodified ecological and hydromorphological processes and characteristics, should be maintained as far as possible, or restored where necessary;
- The ecological status of the water environment should be sufficient to maintain a stable or increasing population of each feature. This will include elements of water quantity and quality, physical habitat and community composition and structure. It is anticipated that these limits will concur with the relevant standards used by the Review of Consents process given in Annexes 1-3;
- Flow regime, water quality and physical habitat should be maintained in, or restored as far as possible to, a near-natural state, in order to support the coherence of ecosystem structure and function across the whole area of the SAC;
- All known breeding, spawning and nursery sites of species features should be maintained as suitable habitat as far as possible, except where natural processes cause them to change;
- Flows, water quality, substrate quality and quantity at fish spawning sites and nursery areas will not be depleted by abstraction, discharges, engineering or gravel extraction activities or other impacts to the extent that these sites are damaged or destroyed;
- The river planform and profile should be predominantly unmodified. Physical modifications having an adverse effect on the integrity of the SAC, including, but not limited to, revetments on active alluvial river banks using stone, concrete or waste materials, unsustainable extraction of gravel, addition or release of excessive quantities of fine sediment, will be avoided;
- River habitat SSSI features should be in favourable condition. In the case of the Usk Tributaries SSSI, the SAC habitat is not underpinned by a river habitat SSSI feature. In this case, the target is to maintain the characteristic physical features of the river channel, banks and riparian zone;
- Artificial factors impacting on the capability of each species feature to occupy the full extent of its natural range should be modified where necessary to allow passage, eg. weirs, bridge sills, acoustic barriers;
- Natural factors such as waterfalls, which may limit the natural range of a species feature or dispersal between naturally isolated populations, should not be modified;
- Flows during the normal migration periods of each migratory fish species feature will not be depleted by abstraction to the extent that passage upstream to spawning sites is hindered;
- Flow objectives for assessment points in the Usk Catchment Abstraction Management Strategy will be agreed between EA and Natural Resources Wales as necessary. It is anticipated that these limits will concur with the standards used by the Review of Consents process given in Annex 1 of this document;
- Levels of nutrients, in particular phosphate, will be agreed between EA and Natural Resources Wales for each Water Framework Directive water body in the Usk SAC, and measures taken to maintain nutrients below these levels. It is anticipated that these limits

⁴ Available at: https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf [Accessed on 18/03/2026]

will concur with the standards used by the Review of Consents process given in Annex 2 of this document;

- Levels of water quality parameters that are known to affect the distribution and abundance of SAC features will be agreed between EA and Natural Resources Wales for each Water Framework Directive water body in the Usk SAC, and measures taken to maintain pollution below these levels. It is anticipated that these limits will concur with the 16 standards used by the Review of Consents process given in Annex 3 of this document;
- Potential sources of pollution not addressed in the Review of Consents, such as contaminated land, will be considered in assessing plans and projects; and
- Levels of suspended solids will be agreed between EA and Natural Resources Wales for each Water Framework Directive water body in the Usk SAC. Measures including, but not limited to, the control of suspended sediment generated by agriculture, forestry and engineering works, will be taken to maintain suspended solids below these levels.

Threats / Pressures to Site Integrity⁵

While there is no Site Improvement Plan for the SAC, the main pressures and threats to site integrity can be inferred from the site's Core Management Plan, which outlines the management techniques that are required to achieve the conservation objectives for the SAC.

The main threats and pressures to the site integrity of the SAC are the following:

- Inappropriate habitat management (e.g. barriers to migration)
- Water quality
- Water flow / level
- Noise / acoustic disturbance
- Non-marine fisheries: recreational and commercial
- Increased sedimentation / siltation

River Wye SAC

Introduction

The River Wye SAC is 25km in length and represents one of the longest near natural rivers in England and Wales, which drains a catchment of 4,136km². It is situated within the Forest of Dean and Lower Wye National Character Area, rising at 680m at Plynlimon in mountainous Wales before reaching the English border. The Wye flows through Hay-on-Wye, Hereford and Ross-on-Wye, then past Monmouth and eventually meeting the Severn Estuary below Chepstow. The SAC shows a transition from bryophyte dominated upland areas to crowfoot dominated lower stretches. Notably, in contrast to many other river systems, the Wye has not been significantly straightened or modified by human activity. It is predominantly low-lying, meandering and only falling by 72m between Hay-on-Wye and the sea.

The SAC comprises a variety of substrate types ranging from silt to boulders, which form diverse habitats for a range of species. This substrate diversity has enabled a varied morphology with more active sections of river (with associated back channels and oxbow lakes) and gravel substrate, where pools and riffles are found. The SAC harbours a diverse submerged aquatic and riparian flora. Furthermore, the transitional zone in the lower reaches between freshwater and brackish water supports its own characteristic flora, particularly saltmarsh species. There is also a diverse invertebrate community with nationally rare river flies and dragonflies. All 6 species of unionid mussels are found here, which is unique in the UK.

⁵ Available at: https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf [Accessed on 18/03/2026]

A wide range of migratory and non-migratory fish is found in the Wye, including salmonids, such as Atlantic salmon, brown trout, sea trout and grayling, all of which are commercially exploited. All three species of lamprey are found as well as migratory eel. Also, allis shad and twaite shad enter the River Wye from the Severn Estuary to spawn further upstream. The riverine ecosystem is home to several other uncommon species, including otter, water vole and several bird species, such as dipper, grey wagtail and kingfisher. The SAC forms the eastern boundary of Monmouthshire.

Qualifying Features⁶

Annex I habitats that are a primary reason for selection of this site:

- Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- Transition mires and quaking bogs

Annex II species that are a primary reason for selection of this site:

- White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*
- Sea lamprey *Petromyzon marinus*
- Brook lamprey *Lampetra planeri*
- River lamprey *Lampetra fluviatilis*
- Twaite shad *Alosa fallax*
- Atlantic salmon *Salmo salar*
- Bullhead *Cottus gobio*
- Otter *Lutra lutra*

Annex II species present as a qualifying feature, but not a primary reason for site selection:

- Allis shad *Alosa alosa*

Conservation Objectives⁷

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species
- The supporting processes on which qualifying natural habitats and habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

⁶ Available at: <https://sac.jncc.gov.uk/site/UK0012642> [Accessed on 18/03/2026]

⁷ Available at: <http://publications.naturalengland.org.uk/publication/6096799802589184> [Accessed on 18/03/2026]

Threats / Pressures to Site Integrity⁸

The following threats and pressures to the site integrity of the River Wye SAC have been identified in Natural England's Site Improvement Plan:

- Water pollution
- Physical modification
- Invasive species
- Hydrological changes
- Forestry and woodland management
- Fisheries: Freshwater
- Fisheries: Fish stocking
- Water abstraction
- Public access / disturbance
- Air pollution: Impact of atmospheric nitrogen deposition
- Inappropriate scrub control
- Undergrazing
- Transportation and service corridors

⁸ Available at: <http://publications.naturalengland.org.uk/publication/5178575871279104> [Accessed on 18/03/2026]

3. Evolving Evidence Base

NRW Guidance

In light of evidence demonstrating the continued environmental impacts of excess nutrients in rivers, NRW published their first planning guidance on this topic in 2021. The principal driver behind this guidance was to ensure that the environmental quality of affected rivers (including the River Usk and R. Wye) does not deteriorate further. It stipulates that developments in identified hydrological catchments can only be granted planning permission where they demonstrate nutrient neutrality (or an improvement to riverine nutrient loadings). It is to be noted that the NRW guidance notes has undergone periodic revisions, with the most recent guidance note having been published in February 2026. One of the more recent notable changes is that a bespoke Nutrient Budget Calculator for Wales has been developed, which has been used to calculate the TP budget for the Monmouthshire RLDP (see following chapter). As part of the RLDP preparation process, MCC is under the obligation to demonstrate that proposed site allocations can demonstrate a deliverable pathway to nutrient neutrality. However, it should also be noted that there is flexibility to deferring some elements of the assessment (e.g. the detailed delivery of mitigation) to project-level HRAs, which will deliver the final consentability verdict on allocations. The principal requirement at the RLDP level is to ensure that an adequate policy mechanism to protect the integrity of Habitats Sites exists.

DCWW Infrastructure Upgrades

In collaboration with local authorities, NRW, Welsh Government, nutrient management boards and environmental groups, DCWW has committed to significant infrastructure improvements to reduce phosphorus discharges from their WwTWs. Financial allowances for relevant improvements have been made in the company's asset management plans (AMPs). An initial £100 million investment was made in AMP7 (2020-2025), with further £60 million spent across wider Wales by the end of 2025. Further significant infrastructure investments to reduce phosphorus loadings in the R. Usk and R. Wye catchments are planned for AMP8 (2025-2030). The R. Usk catchment will see a £11 million investment in phosphorus reduction measures at Llanarth, Goytre and Aberbaiden WwTWs, equating a TP removal of 36.3kg/d by 2032. An investment of £50 million in phosphorus reduction measures is anticipated for the R. Wye catchment, including Monmouth, Grosmont, Pandy and Dingestow WwTWs. It is anticipated that the AMP8 investments by DCWW will help improve the water quality in the River Usk SAC and River Wye SAC over the RLDP period and will be considered in NRW's ongoing Review of Consents (RoCs) process.

MCC have worked with DCWW and NRW to direct a portion of the AMP7 investments to phosphorus stripping capability at two key WwTWs serving development in the county, including Monmouth WwTW (discharging into the R. Wye catchment) and Llanfoist WwTW (discharging into the upper R. Usk catchment). These improvements have and will continue to reduce the TP discharged into the two SACs from existing urban development, resulting in environmental improvements and potentially creating headroom for various new types of development (e.g. housing, commercial and retail proposals).

NRW Environmental Permit Review

The significant nutrient enrichment issues meant that many development proposals in the SAC catchments were stalled. In December 2023, NRW commenced their targeted review of environmental permits of WwTWs and water quality evidence for the affected catchment. This was to determine the extent to which any headroom for additional development is available at relevant WwTWs, without compromising the need for phosphorus neutrality. The Environmental Permit Review has confirmed that there is potential for using residual capacity at existing WwTWs in Monmouthshire to enable sustainable growth in various settlements to come forward. One important consideration in relation to phosphorus discharges is the 'fair-share' approach, which recognises that treated sewage effluent is only one contributor to environmental nutrient loadings (agricultural sources, depending on setting, typically being by far the most important one). Proposed developments within the catchments of the River Usk SAC and River Wye SAC are considered by MCC on a case-by-case basis, must be

supported by detailed Appropriate Assessments and provided adequate mitigation measures (where a residual phosphorus impact is identified). While AMP7 and AMP8 DCWW infrastructure improvements reduce the current and future TP discharge from existing and planned housing, these will not entirely eliminate TP from any allocated sites. Therefore, it is considered that mitigation measures would need to accompany individual planning proposals.

The NRW Environmental Permit Review had a significant implication on the RLDP's spatial strategy, which originally allocated no growth in the Primary Settlement of Monmouth or the upper R. Wye catchment north of Bigsweir Bridge. However, based on NRW's review and DCWW's AMP8 financial commitments, the Welsh Government advised that new site allocations in Monmouth should be considered. With this spatial constraint being removed, the Monmouthshire RLDP was able to allocate new affordable housing-led sites within Monmouth, an essential step towards meeting some of its key objectives.

4. RLDP Nutrient Loading

Residential Development

To calculate the TP budget associated with the Monmouthshire RLDP, a review of all site allocations and residential housing commitments was undertaken. This was to identify all sites that fall within the respective catchments of the River Usk SAC and River Wye SAC, and the treated effluent discharge of which will contribute to the TP loading in these riverine sites. Table 1 below lists all sites (allocations, rollovers and commitments) within the hydrological catchment of the two SACs, as well as other key attributes for the assessment including settlement, number of residential units and relevant WwTWs. The table also includes AECOM's calculated TP budget for each site, along with the total cumulative nutrient budget for each of the SACs.

AECOM's approach to identifying sites requiring assessment is in line with the recent case law *CG Fry & Sons Ltd v SSHCLG* [2025] UKSC 35, which makes it mandatory for Appropriate Assessment (i.e. nutrient calculations) to be undertaken at the reserved matters or discharge of condition stages. This would be relevant for development proposals that obtained outline planning permission prior to nutrient neutrality issues becoming a material consideration. This court ruling has been abided by and is reflected in the Rockfield Road commitment being included in the calculations.

Importantly, AECOM considered two modelling scenarios, Scenario 1 (Worst Case Scenario) and Scenario 2 (Best Case Scenario), that differ in housing occupancy and the associated TP budgets. Basically, Scenario 1 includes all housing types without occupancy reductions for affordable homes. Scenario 2 discounts 50% of affordable homes on the assumption that half of these homes would cater for local people that already live in (and contribute phosphorus to) the relevant nutrient catchments. In line with a precautionary approach, only the Scenario 1 calculations are reported in Table 1 to account for a worst-case mitigation need.

It should also be noted that the calculations in AECOM's technical note are cumulative and provided in yearly increments. Basically, individual sites will only contribute phosphorus to the river catchments once the first dwellings are completed and inhabited. The TP contribution per site will therefore increase over the RLDP period as additional dwellings are completed. Table 1 only summarises the 'final' TP budget for each site that will be reached at the end of the RLDP period, but the year-on-year breakdown of these calculations are available in the accompanying Technical Note.

Table 1: Residential and mixed-use sites (allocations and commitments) included in the Monmouthshire RLDP. Other parameters of importance in relation to nutrient neutrality assessment are also shown, such as the associated TP budget.

SAC Catchment	RLDP Policy Reference	Site Name	Settlement	Status	Proposed Use	No. of Units	WwTWs	TP Budget 2033 (kg/year)
River Usk SAC	HA1	Land to the East of Abergavenny	Abergavenny	Allocation	Mixed-use	500	Llanfoist	119.4
	HA5	Land at Penlanlas Farm	Abergavenny	Allocation	Residential	100	Llanfoist	23.88
	HA10	South of Monmouth Road	Raglan	Allocation	Residential	54	Raglan	6.44
	HA11	Land East of Burrium Gate	Usk	Allocation	Residential	40	Usk	23.87

SAC Catchment	RLDP Policy Reference	Site Name	Settlement	Status	Proposed Use	No. of Units	WwTWs	TP Budget 2033 (kg/year)
	HA12	Land West of Trem Yr Ysgol	Penperlleni	Allocation	Residential	42	Goytre	7.02
	HA14	Land at Churchfields	Devauden	Allocation	Residential	20	Devauden	11.93
	HA15	Land East of Liffle Mill	Little Mill	Allocation	Residential	20	Little Mill	11.94
	HA16	Land North of Liffle Mill	Little Mill	Allocation ⁹	Residential	15	Little Mill	8.95
	HA17	Land Adjacent Llanellen Court Farm	Llanellen	Allocation	Residential	26	Llanellen	15.52
	Windfall 1 (Abergavenny)				Residential	100	Abergavenny	23.84
	Windfall 2 (Rural Secondary Settlement)				Residential	20	Raglan, Penperlleni and Usk	11.93
	Total Cumulative							264.72
	Total Cumulative without DCWW AMP8 improvements							534
River Wye SAC	HA4	Land at Leasebrook	Monmouth	Allocation	Residential	270	Monmouth	14.33
	HA6	Land at Rockfield Road	Monmouth	Allocation	Residential	60	Monmouth	64.46
	HA7	Drewen Farm	Monmouth	Allocation	Residential	110	Monmouth	26.27
	HA8	Tudor Road	Monmouth	Allocation	Residential	50	Monmouth	11.93
	N/A	Rockfield Road	Monmouth	Commitment	Residential	70	Monmouth	16.7
	Windfall				Residential	10	Monmouth	1.92
	Total Cumulative							135.61
	Total Cumulative							136

⁹ Rollover with extant planning permission.

SAC Catchment	RLDP Policy Reference	Site Name	Settlement	Status	Proposed Use	No. of Units	WwTWs	TP Budget 2033 (kg/year)
	without DCWW AMP8 improvements							

The TP budgets highlight that mitigation to address the phosphorus surplus will be needed in both SAC catchments, with more significant measures needed to allow residential development in the River Usk SAC catchment to come forward (TP budget of 264.7 kg/yr compared with a TP budget of 135.6 kg/yr in the River Wye SAC catchment). The largest contribution to the Usk nutrient budget is the HA1 development in Abergavenny. The largest contribution to the Wye nutrient budget is the HA4 development in Monmouth. It should be noted that Natural Resources Wales have confirmed that as of March 2025 the Lower Wye through Monmouthshire is no longer failing for phosphate, so these calculations are precautionary.

When considering the TP budget on a year-on-year basis, i.e. taking account of the anticipated timeline of individual dwellings being delivered within sites, it is noted that relatively little additional phosphorus will be released in the River Usk catchment in the years of 2025/26 and 2026/27. Many of the dwellings are delivered from 2027/28 onwards, which would also represent a focal time point for the delivery of mitigation solutions. The year-on-year pattern for the River Wye catchment is similar (albeit at a smaller scale), with most dwellings being delivered (and requiring mitigation) from 2027/28 onwards.

Importantly, the data in the table also highlight that DCWW's planned WwTW infrastructure upgrades in the River Usk SAC catchment reduce the anticipated mitigation burden considerably (from 534 kg/yr to 264.7 kg/yr).

Other Development Types

NRW requirement for nutrient neutrality applies to all types of developments that have the potential to increase SAC phosphorus levels. Regarding non-residential developments the advice note specifically identifies developments that are expected to serve a population (i.e. employees) living outside the nutrient neutrality zones. The phosphorus generated by developments serving residents living within the nutrient catchment would already be captured by the nutrient neutrality requirements for residential dwellings.

Overall, there are five proposed employment allocations and one solar allocation within the River Usk SAC and River Wye SAC hydrological catchments. The solar allocation has not been considered in the TP budget because, according to NRW guidance, this type of development is not associated with the release of phosphorus. In line with national planning policy, the RLDP seeks to deliver a balance of housing and employment growth. The employment allocations seek to deliver employment opportunities for local residents that do not rely on commuting over significant distances. The employment allocations are scaled locally, ranging in size between 0.59ha and 4.5ha. All larger employment allocations that would be considered to serve residents from further afield fall outside the SAC catchment areas, such as in Magor. Overall, the employment sites allocated in the RLDP are assumed to be providing opportunities for residents that are already captured in the TP budget for residential allocations/commitments. Therefore, these allocations are not included in the TP budgets for the two SAC catchments.

Notwithstanding the above, employment allocations will nonetheless be assessed on a case-by-case basis before being granted planning consent. Where relevant, any such allocations will need to undertake full HRA to demonstrate that they will not result in adverse effects on the two riverine SACs.

5. Strategic Mitigation Solutions

As highlighted by the TP budgets for the River Usk SAC, and unless WwTW upgrades and/or the permit review approach can be relied upon to screen out nutrient impacts, strategic mitigation solutions will be needed to achieve phosphorus neutrality. Various effective mitigation solutions to reduce nutrient input are available, including nature-based solutions (e.g. wetlands), fallowing agricultural land and general water efficiency measures. All these approaches are united by the fact that they increase water storage and/or reduce its flow rates, allowing physical and biogeochemical processes to attenuate nutrients. The following potentially viable mitigation options have been considered by MCC:

- Conversion of arable land – nutrient intensive agricultural land could be converted to less nutrient intensive uses, such as woodland, grassland and natural wetlands. However, based on the prevailing rainfall and soil type in the respective catchments, and the assumed conversion of grazed pasture to greenspace/woodland, extensive areas of farmland would need to be converted to offset the RLDP's TP budget. For example, up to 650ha of land would need to be converted in the River Usk SAC catchment to address the entire nutrient burden. Therefore, this may only be a viable option for large development sites or areas in which the strategic purchase of off-site farmland is financially or technically feasible.
- Domestic Package Treatment Plants (PTPs) upgrades – nutrient credits could be generated by upgrading existing PTPs and septic tanks in neighbouring properties or elsewhere within the same catchment. This approach would likely be coordination intensive and difficult to deliver at the scale needed for having a material offset impact. Comparing to the performance of a default septic tank in the nutrient budget calculator (11.2 mg P/l), a high-performing PTP can achieve concentrations of 0.4 mg P/l. Overall, it is estimated that up to 240 septic tanks would need to be upgraded to address the phosphorus surplus in the River Usk SAC.
- Treatment wetlands – appropriately designed treatment wetlands can be situated to receive WwTW effluent and are associated with some of the best nutrient removal capacities per hectare per land. Generally, the potential for nutrient removal capacity increases with higher nutrient loading inputs. AECOM are currently working on a wetland concept design where a treatment area of approximately 1ha removes up to 250 kg TP/yr, with effluent concentrations of 5 mg P/l and average flow volumes of 250 m³/d. If delivered according to these standards, complete mitigation of the TP loading in the River Usk SAC would require up to two 1ha wetlands.
- Retrofitting Sustainable Drainage Systems (SuDS) – delivering SuDS in existing urban land could be used to claim nutrient credits to free up development elsewhere in the catchment area. For example, retrofitted SuDS could be targeted to capture runoff from existing impermeable surfaces that drain towards WwTWs in combined sewers. CIRIA have provided guidance on how to design SuDS to achieve nutrient removal, such as their guidance regarding phosphorous removal (C808F)¹⁰. AECOM have appraised various types of SuDS (swales, detention basins, retention basins and ponds), determining that the average TP removal efficiency of a 'typical' SuDS feature is 29%. Overall, retrofitting of up to 450ha of urban residential land with SuDS would be needed to address the TP surplus calculated for the River Usk SAC catchment.
- Water efficiency measures – reducing the per capita water demand in new residential developments by deploying higher efficiency fittings. This could also be applied to existing housing stock in the same catchment managed or owned by MCC. However, this would only be an option where the serving WwTW has a phosphorus permit and is operating at 90%, as it requires a linear relationship between water use and WwTW phosphorus loading to be established. For example, assuming a reduced water usage of 100 l/p/d and 80 l/p/d, would see the TP budget associated with allocation HA1 drop to 99.49 kg TP/yr and 79.6 kg TP/yr respectively (compared to the unmitigated scenario of 119.4 kg TP/yr). This represents a maximum TP reduction of 33% for the 80 l/p/d scenario. These measures are unlikely to

¹⁰ [Using SuDS to reduce phosphorus in surface water runoff C808F](#)

address the TP budget entirely, but could provide an important contribution to any package of interventions taken forward.

Following on from this initial appraisal of strategic mitigation options, MCC commissioned AECOM to complete a Strategic Mitigation Opportunities Report (see Appendix B). The following text summarises the key points from the report that are relevant to this HRA Addendum. Given that robust de minimis (effectively enabling a certain quantum of growth to be screened out from potential nutrient impacts) and integrated approaches for addressing the nutrient issues have not been fully developed, a further review of strategic scale nutrient mitigation approaches has been undertaken. This has encompassed a comparative and constraints analysis involving a Red, Amber and Green (RAG) grading based on various factors, including nutrient removal performance, indicative costs and practical considerations (e.g. land availability, regulatory requirement and long-term management).

Based on the various RAG ratings across the different themes, several strategic mitigation measures have not been taken forward at this stage. These include conversion of arable land, septic tank upgrades and water efficiency measures. It is to be noted that these are not necessarily precluded from further consideration but have been excluded at this stage due to uncertainties surrounding their effectiveness in perpetuity, cost or suitability within Monmouthshire. For example, land use change is likely to constitute a long-lasting approach with demonstrable scientific efficacy. However, MCC have insufficient land holdings to generate meaningful phosphorus reductions and purchasing additional arable land would be prohibitively costly. Constructed wetlands and SuDS were taken forward for further analysis.

To explore the potential for MCC to use a constructed wetland as a strategic mitigation option, all relevant DCWW WwTWs in the affected nutrient catchments were identified. The prevailing environmental and engineering constraints were then assessed, and the total annual phosphorus mitigation potential estimated. Table 2 provides an overview of the WwTWs at which constructed wetlands would be preferential due to lower environmental and engineering constraints, as well as their highest overall phosphorus mitigation potential.

Table 2: Summary of WwTWs identified for the delivery of strategic constructed wetlands, including their environmental constraints, engineering constraints and phosphorus mitigation potential.

Goytre	One of the lowest overall environmental constraints RAG score. Main issues arising from an adjacent area of ancient woodland and small areas falling within Flood Zone 3.	Highest ranking for constructability. Site has potential for multiple gravity-fed constructed wetland sites. Potential for increasing size/number of constructed wetland sites if required.	701 kg TP/yr (compared to the 70.15 kg TP/yr required by the allocated sites contributing nutrients downstream)
Aberbaidan	7 th highest environmental constraints RAG score. Constraints primarily associated with topography, adjoining ancient woodland, direct discharge into the River Usk SAC, groundwater vulnerability and public rights of way.	Second highest ranking for constructability. Potential for constructed wetland to the east or west of the WwTW, but high costs associated with pumping, construction of a new outfall and a minor watercourse crossing.	260 kg TP/yr (compared to the 264 kg TP/yr required by the allocated sites contributing nutrients downstream)
Usk	5 th highest environmental	Second highest ranking for constructability.	300 kg TP/yr

constraints RAG score. Main issues associated with direct discharge to the River Usk SAC, some groundwater vulnerability, Flood Zone 3 and historic landfill.	Wetland is technically feasible, but likely to be associated with high costs due to the need for a river crossing and 10m pumping head requirement. Some existing WwTW infrastructure could be used to reduce cost.	(compared to the 42.24 kg TP/yr required by the allocated sites contributing nutrients downstream)
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Potential SuDS locations across Monmouthshire were examined regarding their feasibility in relation to topography, flood risk, ecological constraints, available catchment area and existing street furniture of vegetation. However, for the three short-listed locations a potential phosphorus mitigation of only 0.57 kg/yr was calculated. It is concluded that retrofitted SuDS only have very limited nutrient mitigation potential and are not recommended to be progressed.

Overall, constructed wetlands have emerged as the key strategic option for delivering nutrient mitigation in the catchment of the River Usk SAC. The potential wetlands at the Goytre, Aberbaidan and Usk WwTWs have different strengths and weaknesses. Notably, a wetland at Aberbaidan WwTW, which serves/lies upstream of all allocated sites in the River Usk catchment, would have the potential to deliver mitigation across all sites. While the wetlands at other WwTWs may have greater overall mitigation capacity, residential sites upstream from their discharge locations to the River Usk SAC would not be able to apply for nutrient credits. AECOM have recommended further steps to MCC regarding the delivery of a strategic wetland, which have been included in the Nutrient Mitigation Action Plan (NMAP; see next section).

6. Nutrient Mitigation Action Plan (NMAP)

To complement the various workstreams that have been progressed to mitigate phosphorus impacts on riverine SACs, MCC have also developed a NMAP (see Appendix C). This is to clearly set out the various mitigation pathways, associated requirements and deliverable timescales to ensure that there are no adverse effects on the River Usk SAC and River Wye SAC. According to the NMAP the mitigation pathways available in support of the RLDP delivery are as follows:

- NRW Review of Consents and screening against WwTW upgrades – where relevant WwTWs are operating under an environmental permit limit that has been reviewed against nutrient targets set out in the conservation objectives of river SACs, likely significant effects in relation to new developments may be excluded. While data provided by DCWW indicate that all relevant WwTWs will have reduced phosphorus permits in place by 2030, it is unclear whether these have been reviewed against applicable nutrient targets. **The NMAP envisages that continued engagement with NRW and DCWW will provide clarity over which WwTWs (and associated allocations) can be screened out of mitigation requirements in relation to phosphorus discharges.**
- Threshold approach / De Minimis – in some cases, certain quanta of developments may be deemed ‘de minimis’ where they fall beneath a defined threshold of impacts to SAC conservation objectives (i.e. they do not have a measurable ecological impact on SAC habitats and species). However, at the time of writing, no de minimis thresholds for the River Usk and River Wye catchments have been determined, and it remains uncertain whether this can be robustly defined or defended. **However, the NMAP recommends MCC to explore this approach further with NRW to determine whether there is potential for developing a threshold going forward.**
- Integrated approach – according to Welsh Government advice, this is the preferred approach where development requires mitigation to avoid adverse effects on SAC rivers. The aim is to deliver a series of measures that ensure an improving nutrient trend in SAC catchments, which may involve technological upgrades at WwTWs, work undertaken by Nutrient Management Boards, measures delivered under the River Basin Management Plans and forthcoming NRW Catchment Nutrient Recovery Plans. Financial developer contributions can be deployed in a targeted manner to support these deliverables. **The NMAP advises MCC to continue to review ongoing mitigation/restoration proposals, as well as highlighting integrated mitigation solutions developers may contribute to on their website.**
- Strategic mitigation – where an integrated approach is not deemed sufficient, a nutrient neutral approach is required. This has been progressed in MCC’s Strategic Mitigation Opportunities Report, which identifies constructed wetlands as the preferential strategic approach to nutrient mitigation (discussed in the previous section). This is envisaged to be delivered by MCC at scale and nutrient credits could then be purchased by developments in the relevant SAC catchments. **Various actions for MCC to take forward are included in the NMAP, such as a detailed feasibility appraisal, undertaking concept/outline design and the eventual construction/commissioning of the wetland(s).**
- Developer-led mitigation – if any of the above strategies are not feasible, or until such a time that a strategic mitigation solution is in place, developers can also deliver their own mitigation solutions for a project. **A key action identified in the NMAP is the production of a Developer Mitigation Handbook to address phosphorus impacts in Monmouthshire, which could provide detail on the various options available to developers.**

In summary, the NMAP comprises a substantive and all-encompassing strategy on how MCC proposes to ensure that nutrient impacts can be mitigated sufficiently to ensure no adverse effects on the integrity of Monmouthshire’s riverine SACs. Importantly, it also prioritises and highlights the delivery timelines of the identified actions in line with the worst-case growth scenario encompassed by

the Monmouthshire RLDP. This will ensure that phosphorus mitigation measures will be delivered in a timely manner to address impacts arising from housing developments as they come forward. By extension this would imply that no additional phosphorus would be discharged into the SAC catchments at any point over the RLDP period.

7. In-Combination Assessment

The HRA process requires potential impacts of a plan to be assessed 'alone', as well as in-combination with other plans and projects. Generally, the water quality impact assessment of Local Plans is inherently in-combination. For example, NRW set thresholds for aquatic parameters (e.g. dissolved oxygen, phosphorus, nitrogen) and discharge volumes for WwTWs in the catchment of Habitats Sites. The application of these thresholds is based on existing WwTWs effluent patterns, as well as the condition and Conservation Objectives of Habitats Sites.

An inherent in-combination approach is also built into nutrient neutrality assessment. Its catchment-based approach captures all proposed growth with the potential for phosphorus release, requiring all developments (however small) to be nutrient neutral. This inherently captures and addresses any in-combination impacts, since most developments across local authorities would be far too small to result in material nutrient enrichment alone.

Effectively, each local authority in the River Usk SAC and River Wye SAC catchments will need to develop their own strategic mitigation solution for achieving phosphorus neutrality. As is the case for the Monmouthshire RLDP, similar protective policy wording in relation to the two SACs will need to be provided and planning applications will only be granted planning consent where phosphorus neutrality is achieved.

Overall, by identifying feasible mitigation solutions and ensuring an adequate policy framework exists, the RLDP addresses its own contribution to any in-combination effects. Therefore, there will be no adverse effects of the Monmouthshire RLDP on the River Usk SAC and River Wye SAC regarding water quality in-combination with other plans and projects.

8. Monmouthshire RLDP Policy Mitigation & Conclusion

The nutrient issues in the River Usk SAC and River Wye SAC catchments represent an evolving scenario in the context of a changing evidence base and input from various stakeholders, including NRW, MCC, DCWW and Nutrient Management Boards. Unless the Review of Consents process against WwTWs upgrades confirms that developments can be screened out in relation to nutrient impacts, mitigation measures will be required for all sites to achieve phosphorus neutrality. The strategic mitigation measures discussed in Chapter 5 propose feasible in principle pathways to nutrient neutrality, and further work has been undertaken to test their feasibility and likely phosphorus mitigation potential. For example, MCC have commissioned a Strategic Mitigation Opportunities Report, which identified the delivery of constructed wetlands as the preferential approach to mitigation. Some mitigation solutions will need to be progressed by MCC at the strategic scale, while others (e.g. potential developer-led mitigation) are, by necessity, deferred to individual planning applications.

The principal responsibility of the Monmouthshire RLDP HRA is to show that nutrient neutrality is realistically achievable and various potential mitigation options to attain this are set out above. Furthermore, the RLDP must encompass an adequate framework within which the integrity of the River Usk SAC and River Wye SAC is safeguarded legally. As well as various policy elements protecting the integrity of Habitats Sites more generally, Policy NR3 (Protection of Water Sources and the Water Environment) of the submitted Monmouthshire RLDP contains policy text which stipulates that development will only be permitted where it *'b) Would not harm or pose an unacceptable risk to the quality... of ground waters, surface waters, wetlands or coastal water systems including, where appropriate, their ecological and amenity value...'*

Recognising the importance of the nutrient enrichment issues in the River Usk SAC and River Wye SAC and in response to the issues raised by the Inspectors, MCC have made amendments to the RLDP policy framework to further protect the two SACs. An additional paragraph to Policy NR3 has been added which ensures that development will only be permitted where *'the competent authority is satisfied, through Habitats Regulations Assessment, that there will be no adverse effect on site integrity, including where necessary through the provision of appropriate mitigation.'* It is considered that this represents an important and adequate high-level strengthening of the policy framework, which specifically refers to the issue and secures nutrient neutrality. It is important to note that the policy text itself does not provide a solution for individual developments (which is not its legally required role), but that workable mitigation will need to be delivered.

The MCC Phosphate Position Paper provides further important detail on relevant changes to the RLDP. For example, the supporting text of Policy NR3 and relevant site allocation policies will be updated with important context on the nutrient neutrality issue (i.e. a clarification that water quality will need to be considered, and potential mitigation will be required). A handbook in the form of Supplementary Planning Guidance (SPG) on revised Policy NR3 and developers options for implementing mitigation will also be developed to inform applicants.

Regarding the nutrient neutrality issue, MCC will exercise its duty under the Conservation of Habitats and Species Regulations 2017 (as amended) and in line with evolving NRW guidance, to ensure that individual planning applications are subject to adequate Screening and Appropriate Assessments. For the sites in the River Usk SAC catchment which are associated with additional phosphorus loadings (see previous chapters), unless WwTWs upgrades and a permit review approach can be relied upon to screen out negative nutrient impacts, further evidence will be consulted to ensure that nutrient neutrality (or a water quality betterment) is achieved. Satisfactory mitigation measures are likely to encompass catchment-level interventions (i.e. constructed wetland approaches; see Section 5) progressed by MCC and/or developer-led interventions that offset phosphorus release in a quantifiable manner, particularly until a time when a strategic solution is operational.

It should be noted that Natural Resources Wales have confirmed that as of March 2025 the Lower Wye through Monmouthshire is no longer failing for phosphate, so the calculations on which this HRA Addendum relies are precautionary. It should therefore be noted that while all development in the Usk

catchment would require mitigation, in the Lower Wye SAC mitigation would only be needed should it be concluded that the RLDP (i.e. allocations and commitments) would return it to failing status. Inevitably water quality in these rivers is a dynamic situation; however, if a riverine SAC is failing its phosphorus targets the Monmouthshire RLDP policy framework would lead to the application of nutrient neutrality.

Given this, is concluded that a sufficient policy framework exists to ensure that the Monmouthshire RLDP will not result in adverse effects on the integrity of the River Usk SAC and River Wye SAC regarding water quality. This conclusion is reached for the following reasons:

- Nutrient budgets for sites in the SAC catchments (including new allocations and commitments) show that these are associated with residual phosphorus impacts. However, this HRA Addendum shows that various mitigation options to address this are available and nutrient neutrality is achievable in principle;
- MCC have developed a NMAP which sets out various achievable pathways to mitigation and commits the local planning authority to actions that further progress each of the identified mitigation strands. The NMAP also prioritises and provides timelines for the delivery of each of the actions, such that adequate progress is made in line with individual planning applications coming forward; and
- With the proposed additional strengthening of Policy NR3 (Protection of Water Sources and the Water Environment), which specifically mentions water quality issues and requires nutrient neutrality in relevant developments, the Monmouthshire RLDP contains a sufficiently protective policy framework to prevent adverse effects on site integrity.

Appendix A Nutrient Neutrality Technical Note

To: Rachel Lewis, Monmouthshire County Council

CC: n/a

By e-mail

**Project name: Monmouthshire rLDP
Nutrient Budget Calculations for the
Usk and Wye Catchments**

Project ref: FINAL

From: AECOM

Date:
February 13th 2026

Monmouthshire rLDP 2018-2033 – Nutrient Budget Calculations for the Usk and Wye Catchments

Introduction

Monmouthshire County Council (MCC) received correspondence from the Inspectors examining the Replacement Local Development Plan (rLDP) requesting further information to address the issue of the effect of proposed development on riverine SACs in respect to the discharge of phosphorus. A copy of this letter is provided in Appendix A but in summary it requires:

- a. Further information on the potential increase in nutrient loading from implementation of the rLDP.
- b. Further information on the approach to mitigation on a 'year by year' and catchment basis.
- c. Details of the steps being taken to implement mitigation measures and how they will be secured.
- d. Consideration of the recent judgement of *CG Fry & Sons Ltd v SSHCLG* [2025] UKSC 35, which relates to committed developments and identify any assumptions made in relation to windfall allowances.
- e. Consideration of whether nutrient contributions from non-residential development need to be considered.

This interim technical note details how the potential increase in nutrient loading from implementation of the rLDP 'year by year' was determined (points (a) and (b) above) for the Usk and Wye catchments only. The technical note also provides a high-level review of mitigation options (point (c) above), the approach to non-residential development (point (e) above) and consideration of the Fry judgment (point (d) above).

Background to Nutrient Neutrality

In many designated estuarine and freshwater habitats sites across the UK, poor water quality due to nutrient enrichment is one of the main reasons for sites being in an unfavourable condition. Excessive levels of nutrients can cause the rapid growth of certain plants through the process of eutrophication. This in turn can lead to reduced biodiversity, and the condition of a site being considered 'unfavourable'. To improve the water quality in these sites, reductions in nutrients are required. As such, and in line with rulings from the European Court of Justice in combined cases C-923/17 and C294-17 (the Dutch Nitrogen case), any new development within affected habitats site catchments that could increase nitrogen and phosphate deposition into the protected sites above consented levels must show that they are 'nutrient neutral'. Under Regulation 63 of the Conservation of Habitats and Species Regulations 2017¹ an LPA (competent authority) cannot legally consent a plan or project that will have an adverse effect on the integrity of any European protected nature conservation site.

These nutrient neutrality requirements for new development now apply in many areas of the country, including the catchments of the River Wye Special Area of Conservation (SAC) and the River Usk SAC. AECOM has experience providing technical support to Local Planning Authorities (e.g. Carmarthenshire County Council, Dorset County Council)

¹ The Conservation of Habitats and Species Regulations 2017 [Online]. Available at:
<https://www.legislation.gov.uk/uksi/2017/1012/contents>

and undertaking nutrient neutrality assessments (NNA) in a number of affected catchment across Wales and England, including the Carmarthen Bay and Estuaries SAC, Somerset Levels and Moors Ramsar site, River Camel SAC, Stodmarsh SAC/Ramsar, Chesil and the Fleet SAC/Special Protection Area (SPA), River Axe SAC, Teesmouth and Cleveland Coast SPA/Ramsar, Poole Harbour SPA/Ramsar, River Avon SAC, River Wensum SAC, the Broads SAC, River Derwent and Bassenthwaite Lake SAC and River Eden SAC.

One way that the potential impact of new development can be determined is by using nutrient neutrality calculations to create a nutrient budget. A calculation methodology covering both nitrogen and phosphorus has been developed by the Welsh Government. Individual county councils have in some cases also produced calculators for calculating total phosphorous (TP) nutrient budgets. For Monmouthshire, the standard Nutrient Budget Calculator for Wales is adopted.

Monmouthshire Replacement Local Development Plan 2018-2033

In the Infrastructure Delivery Plan, Background Paper (Updated October 2025)² the Council sets out how in brief how they are planning to deal with an increase in phosphorus emissions from new development. The Council has been working collaboratively with Natural Resources Wales (NRW), Dŵr Cymru Welsh Water (DCWW), Welsh Government, the development industry and our biodiversity officers to find solutions to enable growth and allocate sites through the RLDP process that do not harm the environmental capacity of our watercourses. Dŵr Cymru Welsh Water (DCWW) has recently upgraded in 2023 the phosphorus stripping capacity of Monmouth WwTW reducing contributions in the River Wye catchment and has committed to prioritising improvement works at the Llanfoist WwTW serving Abergavenny (benefitting the River Usk catchment) by the end of 2025. This is in addition to an initial investment of £100m in phosphorous reduction within their previous AMP7 (2020-2025). This investment will significantly reduce the amount of phosphates entering the water environment from the treatment works, providing environmental improvement and reducing the impact from new development. However, it will not eliminate all increases in phosphorous from future development and thus additional mitigation will be required to ensure that development proposed in the rLDP is nutrient neutral in terms of phosphorous.

Budget Calculations

The nutrient budget for all allocated and committed developments in the Usk and Wye SACs was undertaken using the Wales Nutrient Budget Calculator³. This calculator is used to determine phosphorous and nitrogen mitigation requirements for development within the catchments of affected SAC rivers and marine water bodies. It covers the River Wye and River Usk catchments which are within Monmouthshire. Developments in both the River Wye and Usk are only required to mitigate for phosphorous.

There are a total of nine allocated or committed developments in the Usk SAC catchment (HA1, HA5, HA10, HA11, HA12, HA14, HA15, HA16, and HA17) and four allocated or committed developments in the Wye SAC catchment (HA4, HA6, HA7, HA8) and the committed development West of Rockfield Road (DC/2017/00539). MCC provided the following data for these developments:

- SAC nutrient neutrality catchment area (shapefile).
- Proposed allocated site locations (shapefile), total site areas (hectares), current land use and number of dwellings per development including occupancy.
- The number of dwellings to be completed in each year of the rLDP (2025-2033).
- The proportion of open market dwellings and affordable homes per development.
- The proportion of each development expected to be Green Infrastructure and / or SuDS.
- The relevant WwTW that will serve the development and WwTW catchment areas (shapefile).
- Current and future permit limits of the relevant WwTW.

The initial data provided for allocated and committed sites by MCC is detailed in Appendix B, and Figure 1 and Figure 2 show the location of each allocated site in relation to the Usk and Wye SAC nutrient neutrality catchments and DCWW WwTW areas, respectively.

² Infrastructure Delivery Plan, Background Paper [Online]. Available at: <https://www.monmouthshire.gov.uk/app/uploads/2025/10/SD104-Infrastructure-Delivery-Plan-Background-Paper-Updated-October-2025.pdf>

³ [Nutrient budget calculator | GOV.WALES](#)

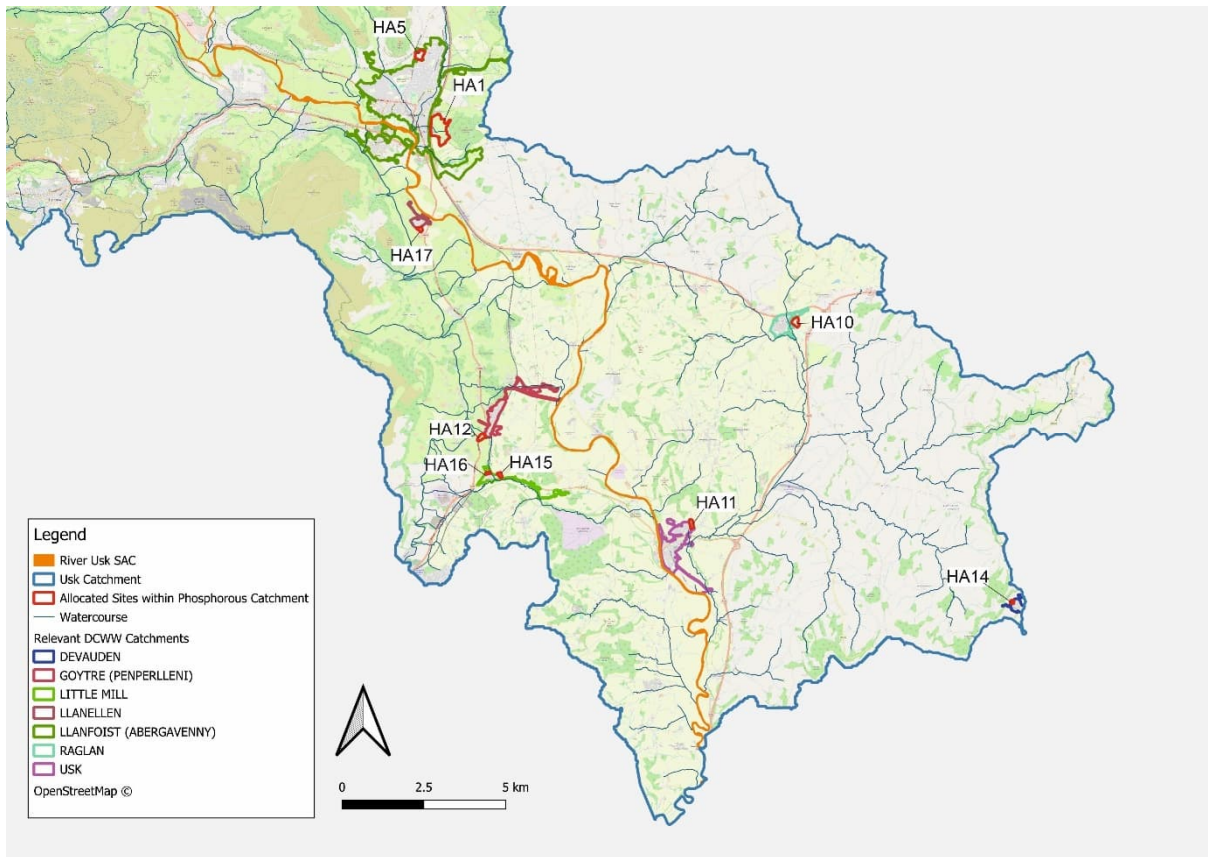


Figure 1 Usk SAC and Nutrient Neutrality Catchment Area

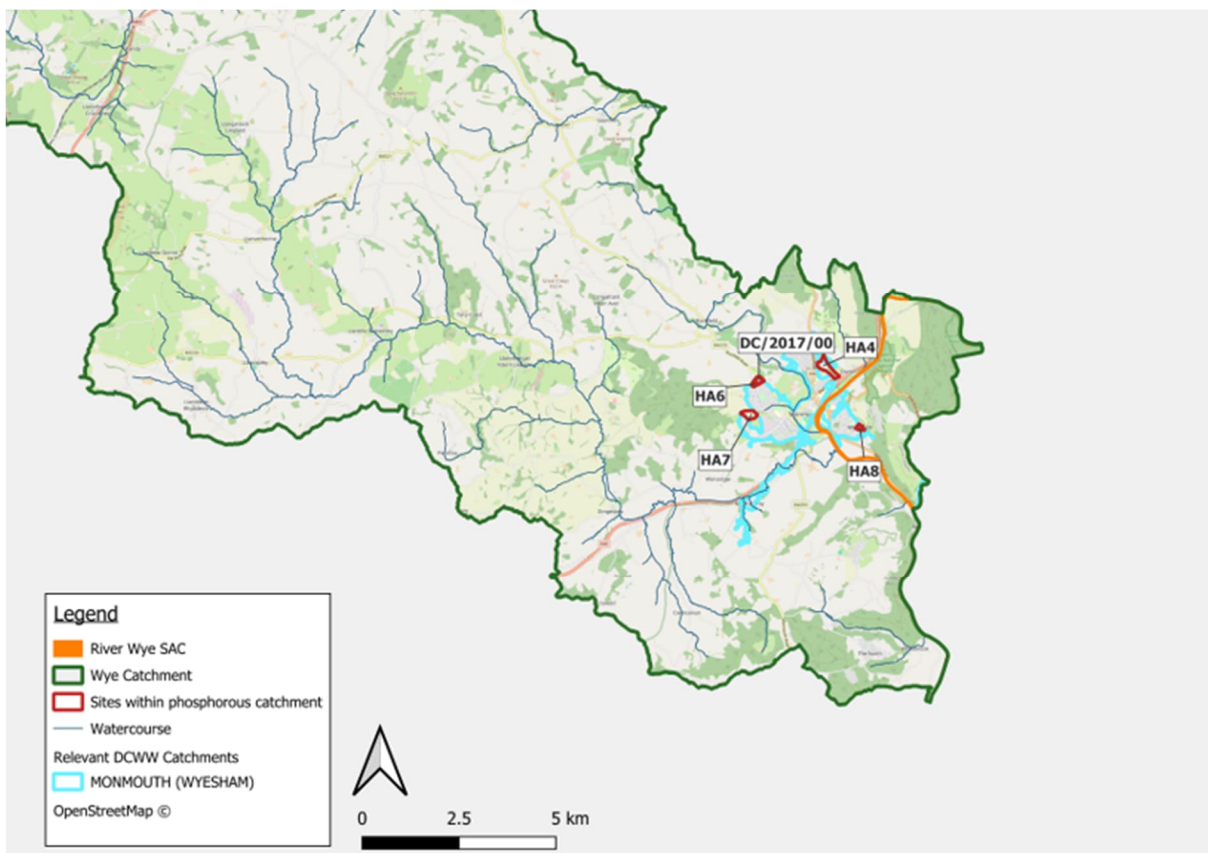


Figure 2 Wye SAC and Nutrient Neutrality Catchment Area

This data was used to calculate the nutrient budget for each development in each year of the rLDP as required by the Inspectors. This was then used to create a cumulative budget taking into account WwTW upgrades and phosphorous

stripping. The final nutrient budget will require mitigation throughout the course of the rLDP, which will inform future delivery of any strategic mitigation solutions should MCC consider that approach.

Affordable Homes

There was some uncertainty regarding how occupation of affordable homes should be included in the budget. Welsh Government guidance indicates that on a precautionary basis it is acceptable to estimate the maximum % of occupants which might represent new residents to the catchment⁴. It is accepted that those moving into affordable homes are likely to already be local residents and thus probably reside within the borough and the nutrient neutrality catchment area. Thus, they are already present in the baseline and do not need to be included in the nutrient budget estimation. As there is a requirement for 50% of development to be for affordable homes, this is potentially an important consideration when estimating the overall nutrient budget for each allocated site.

MCC undertook a review of Homesearch data for new build affordable homes in Monmouth and Abergavenny over the last two years and concluded that approximately 50% of these homes were allocated to people already living in the local area.

This value is an informed assumption, but adopting a precautionary principle, two different housing scenarios have been assessed. The worst-case scenario in terms of excess TP generated by each allocated site does not include any reduction in occupancy for affordable homes. The best-case scenario includes all open market homes and 50% of the affordable homes (i.e. it ignores wastewater from 50% of the affordable homes on the basis that those occupying them already reside in the nutrient neutrality catchment).

Additional Phosphorous from Wastewater

In order to calculate the additional phosphorous generated by wastewater from the allocated site developments the following data is required for the Wales Nutrient Neutrality Calculator:

- **SAC Catchment** – Provided by MCC.
- **Postcode** – Inferred using the relevant Candidate Sites Assessment Proforma⁵ for the development and identifying the closest postcode to the site. The postcode is used to automatically update the site characteristics including average annual rainfall.
- **Number of dwellings** – Data provided by MCC. The number of dwellings was phased over the period of the rLDP, so the number of dwellings completed in each year was input into the calculator.
- **Occupancy** – The Welsh Calculator automatically uses an LPA specific occupancy rate based on the postcode for the development. This value is 2.27 for Monmouthshire. An alternative option was considered where it is assumed that each bedroom within the development will be occupied by one person, but this results in a higher occupancy value than the default and would not be representative of average occupancy rates throughout the region.
- **Water usage** - This is set to a default of 120 litres/person/day which is 10 litres higher than the Building Regulations standard set by the Welsh Ministers of 110 litres/person/day of wholesome water where a dwelling/unit is erected. The standard is based on a 'fittings approach' where water efficiency compliance is achieved through water efficient fittings. The extra 10 litres/person/day is a precautionary approach to account for water usage variations and account for any potential future changes to the water fittings in perpetuity.
- **Waste Water Treatment Works** – Identification of the wastewater treatment works the development would be served by is required. This was provided by MCC along with details of any upgrades that will take place during the rLDP period.

The wastewater nutrient loading of each allocated site development is then calculated based on these inputs. This process was then repeated for each year of the rLDP.

Surface water discharges from development

NRW's advice to planning authorities for planning applications affecting nutrient sensitive SAC's states that for the purpose of nutrient balance calculations, surface water discharges do not need to be considered as a source of nutrients. This is based on the presumption that for all developments, rainwater is kept separate from foul wastewater and discharged in line with planning guidance on rainfall disposal. This means that water discharges should not be contaminated with foul water or pollutants (i.e. the assumption is the SuDS will remove 100% of the phosphorous in the runoff)⁶. Based on this guidance the surface water loads generated by developments due to change in land use have not been included in the calculations and final nutrient budget, despite this option being available in the calculator.

⁴ [Planning Guidance - Development in SAC Rivers](#)

⁵ [RLDP Submission - Monmouthshire](#)

⁶ [Natural Resources Wales / Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation](#)

WwTW Upgrades

Several WwTW within the affected catchments, most notably Llanfoist (Abergavenny) and Goytre within the Usk Catchment, have proposed permit limit upgrades which will reduce the wastewater loading within the catchment. This reduction in the permit limit at key WwTW will reduce the existing wastewater loads entering the catchment. However, nutrient neutrality restrictions require that all developments in the affected catchments must demonstrate nutrient neutrality and any headroom created by improvements at WwTW cannot be utilised to free development. It should also be noted that several WwTW in the catchments do not have proposed upgrades including the Usk, Little Mill and Llanellen WwTW's

CG Fry & Sons Ltd v SSHCLG [2025] UKSC 35

The judgment of this case means that appropriate assessment may be required at reserved matters or discharge of condition stage for any development that was granted outline permission before decision makers were aware of the nutrient impacts to the SAC. The nutrient budget estimates presented here are based on development information provided to us by Monmouthshire County Council and include several developments which already have outline planning permission, thus being in accordance with this recent caselaw.

Assessment Scenarios

Reflecting assumptions that need to be made at this stage, two scenarios have been assessed to provide a range of potential outcomes to support decisions regarding future mitigation approaches. It is recommended that the assumptions used and the scenarios tested are kept under review and are revisited if more data becomes available. The current scenarios evaluated as part of this assessment are as follows:

- **Scenario 1 (Worst Case Scenario)** – Includes all housing types with no reduction in occupancy for affordable homes.
- **Scenario 2 (Best Case Scenario)** – Discounts 50% of affordable homes on the basis that half of allocated affordable homes are provided to local people who are likely to already be living within the nutrient neutrality catchment.

Final Nutrient Budget and Results

The TP budget is calculated automatically once all required inputs have been entered into Stage 1, Stage 2, Stage 3, of the calculator.

- **Stage 1** – Calculates the nutrient wastewater loading of a development based on the number of properties, occupancy rate, water usage and WwTW permit.
- **Stage 2** – Calculates the baseline surface water nutrient loading from the development due to its current land use.
- **Stage 3** – Calculates the future wastewater nutrient loading based on the proposed future land use of the developed site.
- **Stage 4** – Calculates the overall nutrient budget plus an additional 20% buffer.

The calculation involves adding the values from Stage 1 and Stage 3 and then subtracting the values from Stage 2. A 20% precautionary buffer is then added to the result. This calculation is completed automatically in the Stage 4 worksheet. This can be summarised as:

$$(\text{Stage 1} - \text{Stage 2} + (\text{Stage 3})) * 1.2 = \text{Stage 4}$$

Based on NRW guidance the final nutrient budget only includes the Stage 1 wastewater loading and a 20% buffer. This value is the residual TP taking account of upgrades at WwTW. Results are presented for each year of the rLDP.

Usk Catchment Results

Scenario 1 (Worst-Case Scenario)

The results for the worst-case scenario for the Usk catchment are displayed in Table 1.

Table 1 Cumulative Nutrient Budgets within the Usk SAC Catchment (kg TP/year) – Scenario 1 (Worst-Case Scenario)

Site ID	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mths
HA1	0.00	0.00	0.00	16.72	38.21	59.70	81.19	102.68	119.40
HA5	0.00	0.00	11.94	23.88	23.88	23.88	23.88	23.88	23.88
HA10	0.00	0.00	4.78	6.44	6.44	6.44	6.44	6.44	6.44
HA11	0.00	5.96	23.87	23.87	23.87	23.87	23.87	23.87	23.87
HA12	0.00	0.00	17.90	25.07	25.07	7.02*	7.02*	7.02*	7.02*
HA14	0.00	0.00	0.00	5.96	11.93	11.93	11.93	11.93	11.93
HA15	0.00	2.99	11.94	11.94	11.94	11.94	11.94	11.94	11.94
HA16	2.99	8.95	8.95	8.95	8.95	8.95	8.95	8.95	8.95
HA17	0.00	0.00	0.00	0.00	5.96	15.52	15.52	15.52	15.52
Windfall 1 (Abergavenny)	0.00	0.00	0.00	0.00	0.00	7.15	14.30	21.46	23.84
Windfall 2 (Rural Secondary Settlement)	0.00	0.00	0.00	0.00	0.00	5.96	11.93	11.93	11.93
Total Cumulative	2.99	17.90	79.38	122.83	156.25	182.36	216.97	245.62	264.72

*new WwTW permits apply from 2030/31 onwards hence the reduction in TP load.

These results are a cumulative nutrient budget which reflect the current proposed phasing of the proposed developments across the rLDP. As more houses are completed, the phosphorous budget requiring mitigation in that year also increases. In some cases, the permit limit of the relevant WwTW will be reduced during the rLDP period, which will reduce the nutrient budget of the development as more of the P load in the wastewater will be removed. However, this was only the case for one development in the Usk catchment (HA12). The results are displayed in Figure 3.

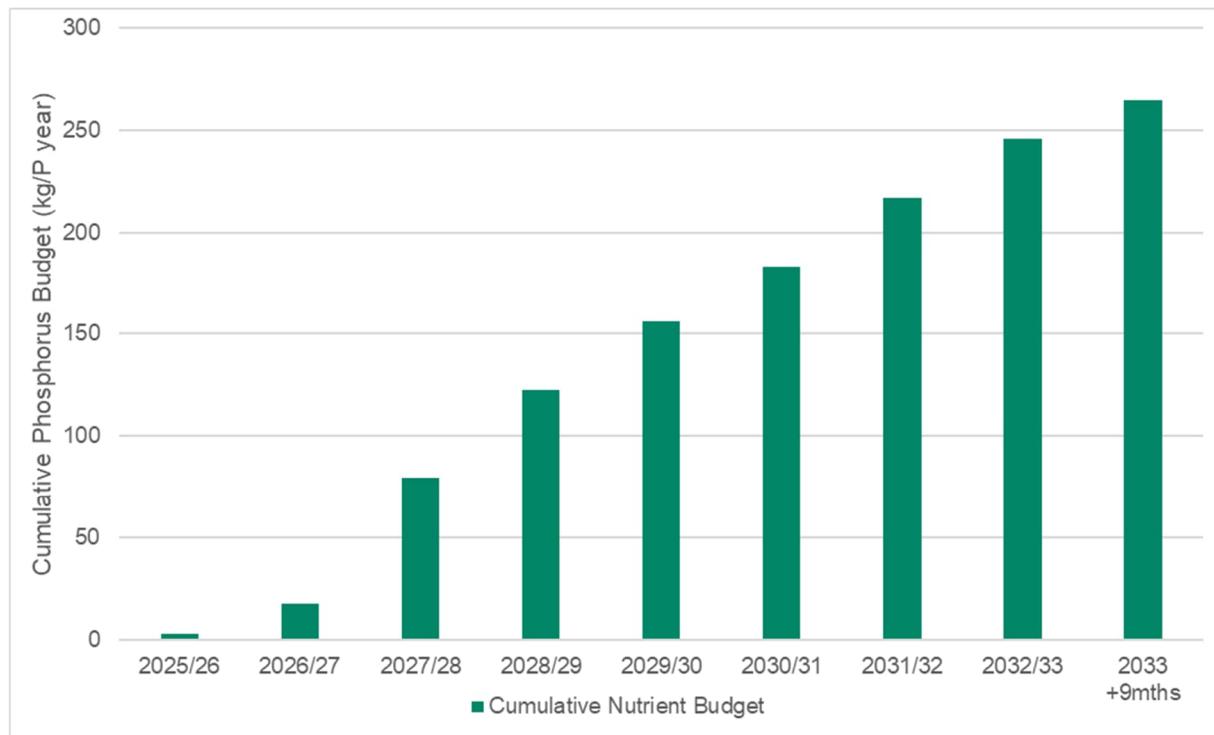


Figure 3 Usk Catchment Cumulative Nutrient Budget Scenario 1 (Worst Case Scenario)

The total nutrient budget for phosphorous in the Usk catchment increases year on year throughout the LDP period and is a maximum value of 265 kg TP/year in 2033. The largest contribution to this nutrient budget is the HA1 development in Abergavenny.

Scenario 2 (Best-Case Scenario)

The results for the best-case Usk catchment scenario which includes all the open market homes but only 50% of affordable homes for the reasons described earlier are shown in Table 2.

Table 2 Cumulative Nutrient Budgets within the Usk SAC Catchment (kg TP/year) – Scenario 2 (Best-Case Scenario)

Site ID	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mths
HA1	0.00	0.00	0.00	12.42	28.66	44.89	61.13	77.12	89.54
HA5	0.00	0.00	9.07	17.90	17.90	17.90	17.90	17.90	17.90
HA10	0.00	0.00	3.58	4.88	4.88	4.88	4.88	4.88	4.88
HA11	0.00	4.18	17.90	17.90	17.90	17.90	17.90	17.90	17.90
HA12	0.00	0.00	13.73	19.10	19.10	19.10	19.10	19.10	19.10
HA14	0.00	0.00	0.00	4.18	8.95	8.95	8.95	8.95	8.95
HA15	0.00	2.39	8.95	8.95	8.95	8.95	8.95	8.95	8.95
HA16	2.39	6.56	6.56	6.56	6.56	6.56	6.56	6.56	6.56
HA17	0.00	0.00	0.00	0.00	4.78	11.94	11.94	11.94	11.94
Windfall 1	0.00	0.00	0.00	0.00	0.00	5.50	10.99	16.49	18.16
Windfall 2	0.00	0.00	0.00	0.00	0.00	4.78	8.95	8.95	8.95
Total Cumulative	2.39	13.13	59.80	91.91	117.70	151.37	177.28	198.77	212.86

In this scenario, the total cumulative budgets year-on-year are lower with a final nutrient budget for the whole catchment of 213 kg TP/year. The largest contribution still arises from the HA1 development. Figure 4 presents the cumulative nutrient budgets for all Usk catchment developments across each year of the rLDP, for the best-case scenario.

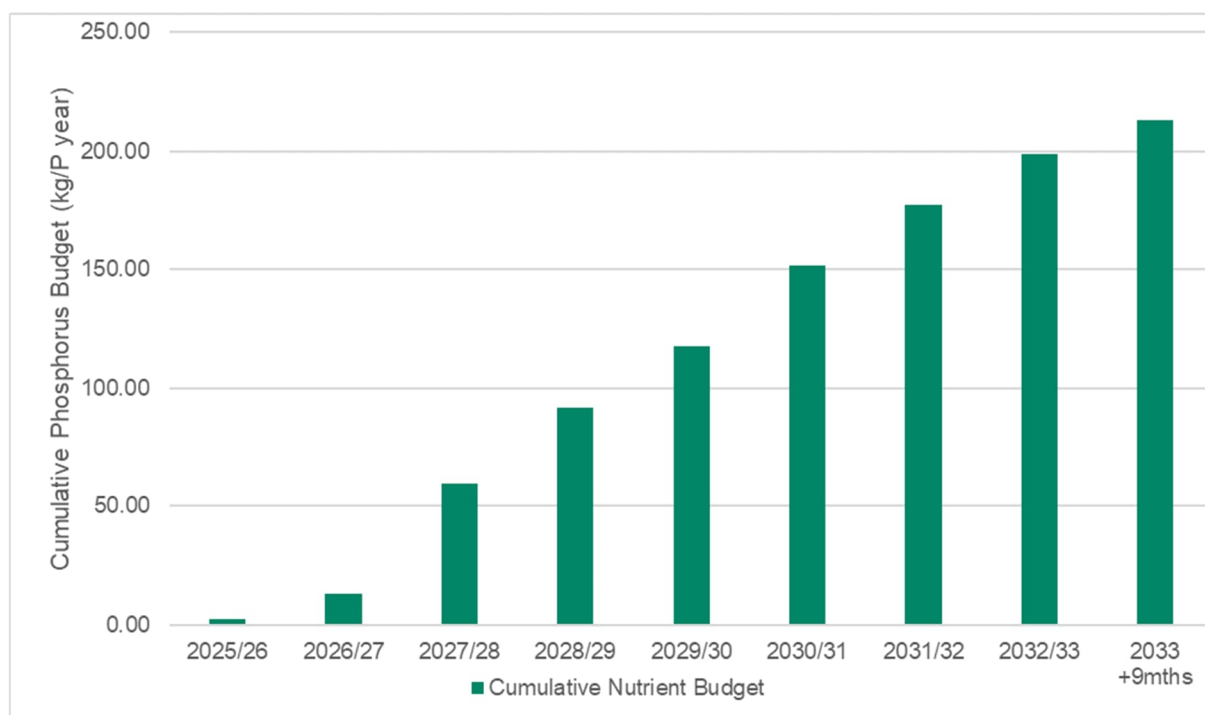


Figure 4 Usk Catchment Cumulative Nutrient Budgets for all Developments by Year of the rLDP Scenario 2 (Best-Case scenario)

Wye Catchment Results

Scenario 1 (Worst-Case Scenario)

The results for the worst-case scenario for the Wye catchment are displayed in Table 3.

Table 3 Cumulative Nutrient Budgets within the Wye SAC Catchment (kg TP/year) – Scenario 1 (Worst-Case Scenario)

Site ID	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mths
HA4	0.00	0.00	0.00	0.00	9.55	14.33	14.33	14.33	14.33
HA6	0.00	0.00	5.96	17.90	29.84	41.78	53.72	64.46	64.46
HA7	0.00	2.39	14.33	26.27	26.27	26.27	26.27	26.27	26.27
HA8	5.96	11.93	11.93	11.93	11.93	11.93	11.93	11.93	11.93
West of Rockfield Rd	0.00	8.35	16.70	16.70	16.70	16.70	16.70	16.70	16.70
Windfall	0.00	0.00	0.00	0.00	0.00	0.48	0.96	1.44	1.92
Total Cumulative	5.96	22.67	48.92	72.80	94.30	111.49	123.91	135.13	135.61

The total nutrient budget for phosphorous in the Wye catchment increases year on year throughout the LDP period and is a maximum value of 136 kg TP/year in 2033. The largest contribution to this nutrient budget is the HA4 development in Monmouth.

Figure 5 presents the cumulative nutrient budgets for all Wye catchment developments across each year of the rLDP, under the worst-case scenario.

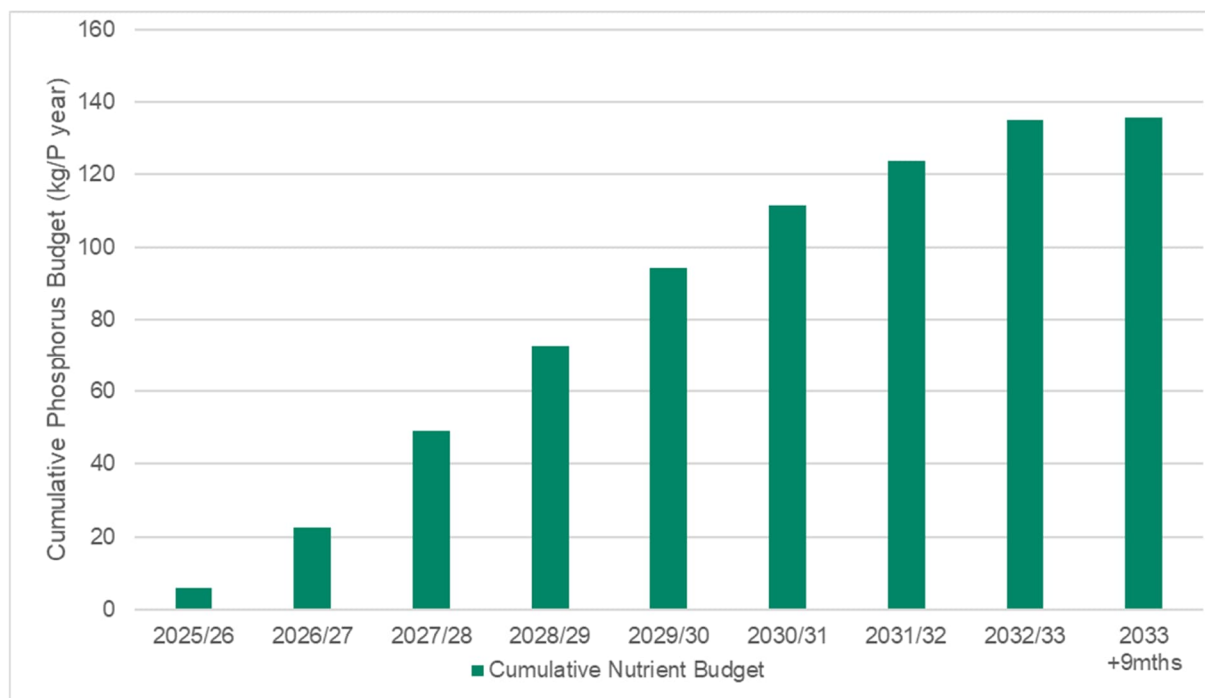


Figure 5 Wye Catchment Cumulative Nutrient Budgets for all Developments by Year of the rLDP Scenario 1 (Worst-case scenario)

Scenario 2 (Best-Case Scenario)

The results for the best-case Wye catchment scenario which includes all the open market homes but only 50% of affordable homes based on the reasons described earlier are shown in Table 4.

Table 4 Cumulative Nutrient Budgets within the Wye SAC Catchment (kg TP/year) – Scenario 2 (Best Case Scenario)

Site ID	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mths
HA4	0	0	0	0	7.164	10.74	10.74	10.74	10.74
HA6	0	0	4.536	13.608	22.68	31.512	40.344	48.468	48.468
HA7	0	2.148	11.94	21.732	21.732	21.732	21.732	21.732	21.732
HA8	3.108	5.976	5.976	5.976	5.976	5.976	5.976	5.976	5.976
West of Rockfield Rd	0	6.924	13.848	13.848	13.848	13.848	13.848	13.848	13.848
Windfall	0	0	0	0	0	0.48	0.96	1.44	1.92
Total Cumulative	3.108	15.048	36.3	55.164	71.4	84.288	93.6	102.204	102.684

In this scenario, the total cumulative budgets year-on-year are lower with a final nutrient budget for the whole Wye catchment of 103 kg TP/year. The largest contribution still arises from the HA4 development. The final cumulative values for each year of the LDP are displayed in Figure 6.

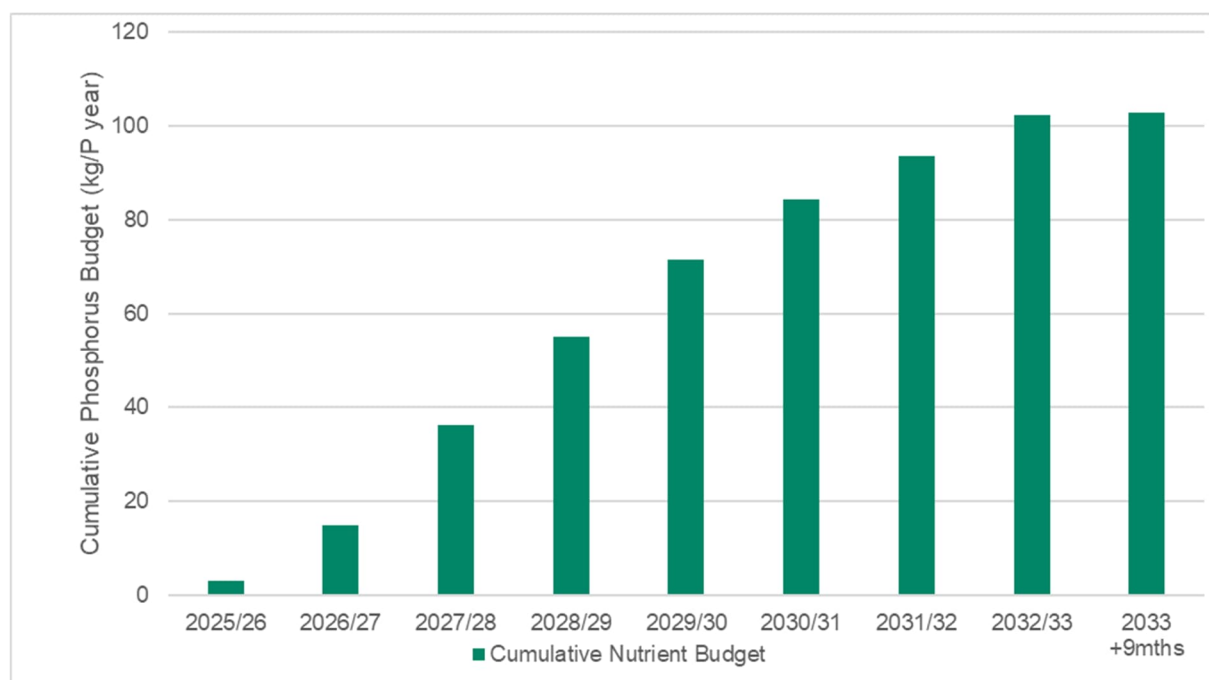


Figure 6 Wye Catchment Cumulative Nutrient Budgets for all Developments by Year of the rLDP Scenario 2 (Best Case Scenarios)

Non-residential Development

New development, including housing or agricultural enterprises, can lead to increased loads of nutrients entering the catchments of the Usk and Wye (and hence their respective affected SACs) from additional wastewater or land management⁷. NRW advice regarding nutrient neutrality applies to any development within nutrient neutrality catchments that increases nutrient levels.

It is a matter for the Planning Authority to determine whether a plan or project is likely to have a significant effect on an SAC. In general, key affected developments within a nutrient neutrality catchment include, and are not restricted, to the following⁷.

Residential development: New homes or houses which may lead to an increase in occupancy within the nutrient neutrality catchment.

⁷ Habitats regulations assessment (HRA) guidance | GOV.WALES (2025). Available at: <https://www.gov.wales/habitats-regulations-assessment-hra-guidance> (Accessed: 8 January 2026).

Domestic extension with increased occupancy / change in use: Domestic extension that will lead to the creation of independent living accommodation as a separate planning unit may lead to an increase in occupancy by residents from outside a nutrient neutrality catchment.

Non-residential development: Developments expected to serve a population from outside of a nutrient neutrality catchment who are not already served by residential connections to existing public or private sewers discharging within the nutrient neutrality catchment. For example, this can include self-service and serviced tourist accommodation such as hotels, guest houses, bed and breakfasts, self-catering holiday facilities, camping and caravan sites. New commercial or industrial developments, such as conference facilities, large retail sites or major tourist attractions may also result in the release of additional nutrients to the system.

Temporary events: Sites with planning consent to hold frequent seasonal events or activities on a long-term basis should be considered permanent development. These include, but are not restricted to, seasonal wedding venues, touring caravan parks and outdoor activity venues.

Developments involving wastewater connections: Any proposal that connects to public WwTW or uses Package Treatment Plants (PTPs) within a nutrient neutrality catchment.

Agricultural: New agricultural developments involving the production, storage, management and spreading of organic manures and slurries, which have the potential to contribute towards the amount of nutrients entering a designated site. Agricultural development that are not considered to have a likely significant effect on SAC features in relation to water quality impacts include covering an existing yard and roofing for manure / slurry or silage storage that does not impact the existing store structure.

Exemptions and exceptions cited by NRW:

Any development that improves existing water quality discharges by reducing the nutrient concentration of wastewater without increasing volume, or by decreasing the volume of wastewater produced without increasing the concentration of nutrients.

- Domestic extensions are considered by NRW to provide increased living space within existing properties that may not result in a change in the number of occupants. This is the case provided that the extension will not result in the creation of independent living accommodation, a separate planning unit and/or a change in use.
- Developments using PTPs: Where PTPs can be justified (i.e. it can be shown to the satisfaction of the LPA that connection to a public sewer is not feasible), small discharges to ground (<2 m³/day) via a suitable drainage field are considered unlikely to have a significant effect on a SAC. For this to be the case the PTP should be built to the relevant British Standard (BS 6297:2007+A1:2008), the drainage field must be located more than 40 m from any surface water feature such as a river, stream, ditch or drain, located more than 50 m from a SAC boundary, and at least 50 m from any other known discharge to ground⁷.
- Developments intended to provide services, facilities, commercial sites, or places of employment (e.g., community buildings, schools etc.) for a local population already served by residential connections to existing public or private sewers discharging within the nutrient neutrality catchment.
- Community or employment facilities serving an existing local population.
- Certain agricultural improvements with no livestock increase.

High Level Review of Mitigation Options

There are several typical nutrient neutrality mitigation options which could be implemented for developments. These may include Nature Based Solutions such as the creation of wetlands, water efficiency measures and fallowing agricultural land, all of which slow the movement of, and store water, on site allowing physical and biogeochemical processes to permanently remove nutrients. Some of the more common and relevant mitigation options are described below and further examples of treatment efficiencies provided within Table 5. As part of the high-level review of mitigation options, estimates have been made to give an indication of the scale of each mitigation that would be required to fully mitigate the nutrient budgets calculated for the rLDP. These are only examples based on assumptions. However, they are useful to put the scale of mitigation needed into context.

Arable land conversion to less nutrient intensive land use: This could include converting nutrient intensive agricultural land to woodland, grassland or natural wetlands. However, this method of mitigation would require a significant area of land to offset the estimated phosphorous loads for development in the Usk and Wye catchments. Therefore, this option may only be applicable for developments with a large amount of land availability or in areas where purchasing additional off-site land for conversion is a financially or technically viable option. It could, however, be used in conjunction with other options to provide partial mitigation through the allocation of some of the site to greenspace,

woodland or other natural habitats. To estimate the mitigation provided by arable land conversion several assumptions were required. For this high-level review of mitigation options, it has been assumed that the site would have slightly impeded drainage, which was the case for most sites assessed and would receive between 1400-1600 mm⁸ of rain annually for the Usk and 1100-1200 mm of rain annually for the Wye⁹ as per catchment statistics. The current land use has also been assumed to be lowland grazing given that much of the catchment appears to be used for this purpose. Land used for arable farming would likely result in more phosphorus saving.

Domestic Package Treatment Plants (PTP) upgrades: Nutrient credits could also be generated by upgrading existing PTP and septic tank units. For example, an applicant proposing new houses could replace septic tanks at existing neighbouring properties, or elsewhere in the catchment. This would require contacting third party properties and coordinating replacements throughout the catchment and may not be viable strategically given the practical difficulties delivering this at a strategic scale. To calculate the potential mitigation provided it has been assumed that existing septic tanks would discharge waste at the concentration levels specified in the nutrient budget calculator for the default septic tank (i.e. 11.2 mgP/l). The upgraded septic tank has been assumed to be a Graf OneAdvanced system with phosphate reduction package. This is a high performing PTP with regards to phosphorus treatment which can achieve effluent concentrations of 0.4 mg/l¹⁰. This is not an endorsement of the PTP model but gives an indication of the potential treatment efficiencies that could be achieved using a PTP as opposed to a septic tank. If other models are used it may not be possible to achieve the same reductions in phosphorus. It is also important to confirm that any discharge from a PTP to a watercourse or to ground is in fact a discharge to the SAC before an upgrade can be accepted as mitigation.

Treatment wetlands: Wetlands can be implemented to capture runoff from agricultural land, receive loads from diverted rivers or treat WwTW effluents. If designed and sited appropriately treatment wetlands can offer some of the best nutrient outcomes per hectare of land. Generally, the greater the nutrient load input into the wetland the greater potential for reduction in nutrients. Wetland design is site specific and dependant on the incoming concentrations and flows from a wastewater treatment plant. However, initial feasibility calculations for potential constructed wetlands elsewhere in South Wales provide an indication of the phosphorous removal that could be achieved, these are discussed in Table 5. It should be noted that phosphorus permits are tighter in the Wye catchment and so the potential for wetlands is less but may still be a suitable option.

SuDS: Retrofitting SuDS to existing urban land to claim additional mitigation credits, which could be used to free up development elsewhere in the catchment, is an option that may be considered. Retrofitting SuDS could be implemented to capture and treat surface runoff, some of which may also be draining existing urban land to combined sewers and subsequently WwTW. Reducing spills from combined sewers is another similar option, although there are significant issues with evidencing the benefit and this is not recommended.

Most SuDS features can provide an opportunity to remove nutrients from surface water drainage if they are suitably designed and maintained. CIRIA have provided guidance as to how SuDS should be designed to achieve nutrient removal, this information is available in the CIRIA SuDS Manual (C753F)¹¹, the CIRIA guidance regarding phosphorous removal (C808F)¹², and guidance on nitrogen removal using SuDS (C815)¹³. Sustainable Drainage Approving Body (SAB) can ensure that good practice is followed.

To estimate a percentage removal efficiency for the retrofitting SuDS mitigation option several assumptions have been applied to calculate a precautionary value for SuDS phosphorus reductions, and these are listed below:

- Runoff will be discharged to surface watercourses. If surface water is infiltrating there are circumstances where it may not be considered a source to the designated site, in which case the location would not be appropriate for retrofitting SuDS mitigation.
- It has been assumed that there would be one SuDS management train component and that the SuDS systems predominantly used will be swales, detention basins, retention basins and ponds, which are most appropriate for regional site control and discharges to watercourses.
- As stated within the CIRIA C808 (2022) "Using SuDS to reduce phosphorous in surface water¹⁴" guidance, 55% of phosphorus (P) in surface runoff is typically bound to sediment, and 45% is dissolved P, respectively.
- Based on CIRIA C808 (2022) guidance:
 - Swales have 28% P removal from sediment and 0% dissolved P removal.

⁸ [NRFA station catchment information for 56001 - Usk at Chainbridge](#)

⁹ [NRFA station catchment information for 55023 - Wye at Redbrook](#)

¹⁰ [pia_oneadvanced_10 - 50_pe_.pdf](#)

¹¹ [CIRIA SuDS Manual \(C753F\)](#)

¹² [Using SuDS to reduce phosphorus in surface water runoff C808F](#)

¹³ [Using SuDS to reduce nitrogen in surface water runoff\(C815\)](#)

¹⁴ [Using SuDS to reduce phosphorus in surface water runoff C808F](#)

- Detention basins have a 28% P removal from sediment and 12% dissolved P removal.
- Retention basins have a 28% P removal from sediment and 50% dissolved P removal.
- Ponds have a 38% P removal from sediment and a 50% dissolved P removal.
- This gives an overall removal for each SuDS system of 15.4% for swales, 20.8% for detention basins, 37.9% for retention basins and 43.4% for ponds, respectively.

For the high-level appraisal of this mitigation option, we have taken a mean TP removal of the above listed SuDS treatment options. Therefore, the average TP removal applied for SuDS drainage for the developments is 29%. However, we note NRW may hold the view that SuDS are more effective and further consultation with them is recommended to define the most appropriate removal percentage that should be applied.

Water usage: This relies on the increased efficiency of water in new developments by using higher efficiency fittings and appliances to reduce the average water consumption per capita. If scaled up across all new development this option has the capacity to reduce wastewater loads generated by new development but alone will not fully mitigate the calculated nutrient budgets. Similarly, if water efficiency measures were retrofitted to existing housing stock and properties owned and managed by MCC or suitable third parties, a similar nutrient saving can be achieved. However, this option is only possible where the WwTW has a permit for phosphorus and is operating at 90% of this, as it requires a linear relation between water use and phosphorus load from the WwTW to be established. Securing this mitigation will require these solutions to be maintained in perpetuity.

Examples and estimations of the potential treatment for TP for each mitigation option is provided below in Table 5.

Table 5 Mitigation- High level mitigation option appraisal and potential nutrient reduction estimates

Arable land conversion to less nutrient intensive land use ¹⁵	PTP upgrades	Treatment Wetlands SuDS	SuDS Retrofit	Water Usage
				
Usk Catchment				
Converting lowland grazing land to woodland or greenspace creates a nutrient offset by reducing the nutrient loads in surface water runoff. For the assumed rainfall and soil type in the Usk catchment 1 ha of lowland grazing has a nutrient load of 0.43 kg TP/year and 1 ha of greenspace/woodland has a nutrient load of 0.02 kg TP/year, creating an offset of 0.41 kg TP/year. To mitigate against the calculated nutrient budgets, it is estimated that between 520-650 hectares of land would need to be converted depending on the scenario.	Upgrading one dwelling from the default septic tank to an improved PTP (Graf OneAdvanced system with phosphate reduction package, discussed above) can reduce phosphorous discharges to the environment by around 1.11 kg TP/year. Therefore, to mitigate the calculated nutrient budget it is estimated that between 190 - 240 septic tanks in the catchment would need to be upgraded depending on the scenario.	AECOM is currently working on a wetland concept design project where a treatment area of around 1 ha could potentially remove in the region of 250 kg TP/year with effluent concentrations of 5 mg P/l and average flows of 250 m³/day. Therefore, to mitigate against the range of scenarios calculated for the Usk catchment may require between one or two wetlands of this size treating effluents of similar concentrations ¹⁶ .	Retrofitting SuDS to existing urban areas can provide a mitigation benefit by treating surface water flows prior to final discharge. Retrofitting between 350 to 450 ha of urban residential land could provide mitigation for development in the Usk catchment assuming TP removal via SuDS of around 29% can be achieved. However, we note NRW may hold the view that SuDS are more effective and further consultation with them is require, to understand the removal percentage that should be applied.	Taking the largest allocated development in the Usk (HA1) as an example, if a reduced water usage of 100 l/p/d was applied the final nutrient budget in 2033 would reduce to 99.49 kg TP/year and if water usage is reduced further to 80 l/p/d the final nutrient budget would be 79.6 kg TP/year. Compared with the unmitigated and worst-case scenario budget of 119.4 kg TP/year, this represents total reductions of 17% and 33% respectively. There is also potential to retrofit water efficiency measures to existing housing stocks which has the potential to provide mitigation.
Wye Catchment				
Converting lowland grazing land to woodland or greenspace creates a nutrient offset by reducing the nutrient loads in surface water runoff. For the assumed rainfall and soil type in the Wye catchment 1 ha of lowland grazing has a nutrient load of 0.27 kg TP/year and 1 ha of greenspace/woodland has a nutrient load of 0.02 kg TP/year, creating an offset of 0.25 kg TP/year. To mitigate against the calculated nutrient budgets, it is estimated that between 410-550 hectares of land would need to be converted depending on the scenario.	Upgrading one dwelling from the default septic tank to an improved PTP can reduce phosphorous discharges to the environment by around 1.11 kg TP/year. Therefore, to mitigate calculated nutrient budget it is estimated that between 90 - 125 septic tanks in the catchment would need to be upgraded depending on the scenario.	AECOM is currently working on a wetland design project where a treatment area of around 1 ha could potentially remove in the region of 250 kg TP/year with effluent concentrations of 5 mg P/l and average flows of 250 m³/day. Therefore, for the Wye catchment a wetland of wetland of similar this size could have the capacity to mitigate the nutrient budget.	Retrofitting SuDS to existing urban areas can provide a mitigation benefit by treating surface water flows prior to final discharge. Retrofitting between 210 - 275 ha of urban residential land could provide mitigation for development in the Wye catchment assuming P removal via SuDS of around 29% can be achieved. However, we note NRW may hold the view that SuDS are more effective and further consultation with them is require, to understand the removal percentage that should be applied.	Taking the largest allocated development in the Wye (HA4) as an example, if a reduced water usage of 100 l/p/d was applied the final nutrient budget in 2033 would reduce to 53.72 kg TP/year and if water usage is reduced further to 80 l/p/d the final nutrient budget would reduce to 42.98 kg TP/year. Compared with the unmitigated and worst-case scenario budget of 64.5 kg TP/year, this represents total reductions of 17% and 33% respectively. There is also potential to retrofit water efficiency measures to existing housing stocks which has the potential to provide mitigation.

¹⁵ Lowland grazing is the predominant agricultural land use type within both catchments and has therefore been used to evaluate nutrient reductions from a change in land use.

¹⁶ Wetland design is site specific and dependant on the incoming concentrations and flows from a wastewater treatment plant. These values represent an estimate of achievable phosphorous reductions based on a feasibility study AECOM has recently undertaken. Further design and site-specific assessment would be required to determine whether wetlands could be provided to WwTW in the Usk and Wye catchments, and what benefit they might achieve. In this case, 5 mg/l was chosen as the effluent P concentration as there were several WwTW plants in the Usk catchment with this permit limit including the Usk, Little Mill and Llanellen WwTW's. However, if a wetland were to treat effluents from a WwTW with a lower permit limit the treatment benefit would be reduced.

Summary

The final cumulative nutrient budget for each catchment under both scenarios is presented in Table 6. For both scenarios and both catchment's the proposed development allocated in the rLDP results in the generation of excess phosphorus. Significantly more phosphorous requires mitigation in the Usk catchment compared with the Wye, reflecting the quantum of proposed development in each catchment.

The calculated nutrient budgets for the proposed rLDP have also been compared with what the final nutrient budgets would have been in the absence of AMP8 phosphorus removal upgrades, which are being rolled out to WwTW in the two catchments by DCWW. This shows that for the Usk catchment the WwTW permit upgrades will have a large impact on the final nutrient budget, mostly due to upgrades at Llanfoist WwTW. All developments in the Wye catchment are served by Monmouth WwTW, which was upgraded in 2023 to improve treatment of TP, and thus there are no additional relevant improvements in AMP8.

Table 6 Summary results for the final nutrient budget in each catchment in 2033

Scenario	Usk Nutrient Budget 2033 (kg/yr TP)	Wye Nutrient Budget 2033 (kg/yr TP)
Scenario 1 (Worst-Case Scenario)	265	136
Scenario 2 (Best-Case Scenario)	213	103
<i>Nutrient budget if proposed AMP8 phosphorus removal upgrades to WwTW had not taken place</i>	534	136

A number of strategic mitigation options have been considered that can address the forecast excess phosphorus emissions to the Usk and Wye catchments, alone or in combination. There may also be other options that can be considered. Monmouthshire County Council are planning to explore these mitigation options further to determine those that are most suitable and additional information will be made available to Planning and Environment Decisions Wales (PEDW) at a later stage.

It should be noted that NRW have confirmed that as of March 2025 the Lower Wye through Monmouthshire is no longer failing for phosphate¹⁷. The 2024 interim WFD classifications record a result of 33.9 µg/l of phosphate¹⁸ which is below the target of 39 µg/l. It has been suggested by NRW that Monmouthshire County Council may no longer need to enforce nutrient neutrality restrictions but should still consider whether the proposed future development in the Wye catchment can be delivered without causing deterioration of phosphate concentrations back above the 39 µg/l target standard. NRW will be consulted further on this to agree a suitable method for the additional investigation. Ensuring that future development is compliant with the objectives of the Water Environment (WFD) (England and Wales) Regulations 2017 (WER) is also important. A similar situation may occur in the Usk catchment following the proposed phosphorus removal upgrades, although this is not yet evident in current monitoring data.

¹⁷ [Natural Resources Wales / New water quality data sheds light on health of Wales's waters](#)

¹⁸ [Water Watch Wales](#)

Appendix A Inspectors Correspondence

Archwiliad Cynllun Datblygu Lleol Newydd Sir Fynwy 2018-2033 Monmouthshire Replacement Local Development Plan 2018-2033 Examination

Arolygwyr/Inspectors: J de-Courcey BSc LLB MTPI MRTPI
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Andrew Jones
Head of Planning
Monmouthshire County Council

18 December 2025

Dear Mr Jones

Replacement Monmouthshire Local Development Plan (LDP)

Thank you for your letter dated 15 December 2025 responding to our request for further information regarding effects on riverine Special Areas of Conservation (SACs). We recognise the work carried out by the Council so far in progressing this matter and wish to acknowledge your ongoing efforts towards addressing our concerns.

PEDW is committed to ensuring the efficient and effective management of the examination process and, having considered your request, we agree to proceed with the examination following the end of the current suspension period (i.e. 23 February 2026). This is, however, dependent upon the Council's adherence to the timescales it has set in Appendix 1 to your letter, which envisages the submission of all remaining information and documentation by 30 April 2026 at the latest.

With regard to the scope of the work identified in Appendix 1, we consider this appears to address our key concerns. We would, however, draw your attention to our request, which refers to consideration of 'non-residential' development, rather than 'employment' allocations (as referenced in Task 3 of Appendix 1), and information relating to dwelling numbers and site densities, which has not been explicitly identified in the task list.

We trust the content of this letter is clear but if you have any queries, please contact the Programme Officer as soon as possible.

This letter will be published on the examination website. We are not inviting any comments or responses from interested parties.

Yours sincerely,

J de-Courcey and C MacFarlane

INSPECTORS

Archwiliad Cynllun Datblygu Lleol Newydd Sir Fynwy 2018-2033 Monmouthshire Replacement Local Development Plan 2018-2033 Examination

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Andrew Jones
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01 December 2025

Dear Mr Jones

Replacement Monmouthshire Local Development Plan (LDP) – Initial questions

Having reviewed the Deposit LDP and submission documents, we consider further information to address the issue of the effect of proposed development on riverine Special Areas of Conservation (SACs) is required before the examination can proceed any further.

It may be that some of the information we seek is contained within the submission documents. If so, this information should be signposted rather than duplicated.

The LDP identifies several allocations as connecting to a wastewater treatment works (WwTW) ultimately discharging to a riverine SAC which is presently failing to meet water quality targets in relation to phosphorus. The Habitat Regulations Assessment (HRA) notes that allocations have been made having regard to WwTW permit limits and phosphates solutions proposed as part of a wider approach to the issue with Natural Resources Wales and Dŵr Cymru Welsh Water. The Infrastructure Delivery Plan Background Paper (updated October 2025) also refers to collaborative working to find solutions to enable growth through the LDP process that do not harm the environmental capacity of watercourses.

Whilst the Infrastructure Delivery Plan Background Paper provides some information on WwTW permit capacity, based on the Deposit consultation response from Dŵr Cymru Welsh Water, this is limited. We also consider the information provided in respect of other measures to be insufficient to meet the requirements of Welsh Government's 'Interim Planning Policy Statement on Development in SAC Rivers' (5 August 2025), particularly the need to demonstrate that appropriate steps to avoid deterioration have been secured.

We also consider that the viability and deliverability implications of securing any potential mitigation has not been made clear.

You are also asked to address:

- The implications of the recent judgement of *CG Fry & Son Ltd v SSHCLG [2025] UKSC 35*, which confirms that the requirement for HRA applies to the discharge of planning conditions, for the delivery of housing commitments i.e. those sites not yet complete and subject to the discharge of conditions;
- Your approach to non-residential allocations, particularly given the findings of Annex B to the HRA that policies in relation to Gypsy and Traveller sites, and employment sites, should be screened in for Appropriate Assessment; and
- Additional points set out in the annex to this letter.

Given the potential importance of this matter to ensuring delivery of the LDP strategy, we request the information contained within the attached annex be provided before the examination can proceed further. In recognition of this, we are suspending the examination for a period of **12 weeks** to enable you to complete the additional work and engage with relevant stakeholders.

The Council should prepare a **work programme** for undertaking all additional work, identifying key tasks, and target dates for completion and submission of new/updated documents. The work programme should be submitted to us via the Programme Officer no later than **15 December 2025**. The Council should provide an update to the Programme Officer every **4 weeks**.

The Council must submit the required information and documents by **23 February 2026**, after which we will inform you of the next steps in the examination process. Upon reflection, if the Council consider this period to be insufficient to enable submission of the further evidence that is required to progress with the examination, please advise the Programme Officer of a likely timescale and keep her apprised of any updates.

If any of the matters we have set out above are unclear, please contact the Programme Officer as soon as possible.

This letter will be published on the examination website. We are not inviting any comments or responses from interested parties.

Yours sincerely,

J de-Courcey and C MacFarlane

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Annex:

The matters contained within the body of the letter should be addressed, including the information below, with an updated HRA, Infrastructure Delivery Plan, mitigation action plan, explanatory/background paper, and schedule of proposed changes to the LDP.

- Clear information on current and future strategies and actions of the Council/Nutrient Management Board; potential timescales and delivery mechanisms; and possible mitigation solutions and their likely effectiveness in reducing nutrient loads.
- For affected sites (allocations and commitments), confirm:
 - Forecast increases in volumes of phosphorus in each year of the LDP (making reasonable assumptions for units/floorspace, phasing, build out and occupancy).
 - Overall total loads for each catchment.
 - The name of the relevant WwTW, permit limits and how any identified capacity relates to the objective of nutrient neutrality.
 - Updated information on planned/recent improvements for phosphorus stripping (including the percentage efficiency of such stripping) at any relevant WwTW.
 - Where additional phosphorus loadings would arise from the site (i.e. less than 100% stripping), signpost potential suitable on-site or off-site mitigation measures to avoid or reduce adverse effects on the SACs, including the predicted duration of any effects and potential load reductions.
- Ensure that the approach to identifying affected sites is undertaken on a consistent basis, providing a justification for that taken to non-residential development.
- Clarify the potential effect of the *CG Fry* judgement (in relation to the requirement for HRA on the discharge of planning conditions) on the delivery of committed sites and identify any assumptions made in relation to windfall allowances.
- Clarify how dwelling numbers and densities for each allocated site have been arrived at and the implications for on-site mitigation measures.
- Clarify whether the Preliminary Viability Report and Addendum Update include a sufficient allowance for any potential mitigation measures.
- A review of the relevant Deposit LDP policies, and identify any amendments required, in light of the matters raised and information requested.
- Consultation with NRW on the updated HRA and their response.

Appendix B Allocated Site Data

Table B1 Housing Development Data provided by MCC for the Usk Catchment

RLDP Policy Rep	Site Name	Settlement	Catchment Area	Status	Gross Site Area (ha)	Total Site Capacity	Open Market Homes	Affordable Homes	Phasing of Development (Base Date 1 st April 2025) Estimated Completions								
									2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mnths
HA1	Land to the East of Abergavenny	Abergavenny	Usk	Allocation	35.9	500	250	250	0	0	0	70	90	90	90	90	70
HA5	Land at Penlanlas Farm	Abergavenny	Usk	Allocation	6.17	100	50	50	0	0	50	50	0	0	0	0	0
HA10	South of Monmouth Rd	Raglan	Usk	Allocation	4.5	54	27	27	0	0	40	14	0	0	0	0	0
HA11	Land East of Burrium Gate	Usk	Usk	Allocation	2.6	40	20	20	0	10	30	0	0	0	0	0	0
HA12	Land West of Trem yr Ysgol	Penperlleni	Usk	Allocation	3.4	42	21	21	0	0	30	12	0	0	0	0	0
HA14	Land at Churchfields	Devauden	Usk	Allocation	1	20	10	10	0	0	0	10	10	0	0	0	0
HA15	Land East Little Mill	Little Mill	Usk	Allocation	1.68	20	10	10	0	5	15	0	0	0	0	0	0
HA16	Land North of Little Mill	Little Mill	Usk	Rollover allocation	0.87	15	7	8	5	10	0	0	0	0	0	0	0
HA17	Land adjacent Llanellen Court Farm	Llanellen	Usk	Allocation	1.56	26	13	13	0	0	0	0	10	16	0	0	0
N/A	Windfall Allowance	Abergavenny	Usk	Windfall		100	50	50	0	0	0	0	0	30	30	30	10
N/A	Windfall Allowance	Secondary Settlements of Raglan, Penperlleni, Usk	Usk	Windfall		20	10	10	0	0	0	0	0	10	10	0	0

Table B2 Housing Development Data provided by MCC for the Wye Catchment

RLDP Policy Ref	Site Name	Settlement	Catchment Area	Status	Gross Site Area (ha)	Total Site Capacity	Open Market Homes	Affordable Homes	Phasing of Development (Base Date 1 st April 2025) Estimated Completions								
									2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mths
HA6	Land at Rockfield Road	Monmouth	Wye	Allocation	1.5	60	30	30	0	0	0	0	40	20	0	0	0
HA4	Land at Leasbrook	Monmouth	Wye	Allocation	11	270	135	135	0	0	25	50	50	50	50	45	0
HA7	Land at Drewen Farm	Monmouth	Wye	Rollover allocation with planning permission	6.6	110	71	39	0	10	50	50	0	0	0	0	0
HA8	Tudor Road, Wyesham	Monmouth	Wye	Rollover allocation with planning permission	2.1	50	0	50	25	25	0	0	0	0	0	0	0
N/A	West of Rockfield Road	Monmouth	Wye	Commitment	2.86	70	45	25	0	35	35	0	0	0	0	0	0
N/A	Windfall Allowances	Monmouth	Wye	Windfall		10	6	4	0	0	0	0	0	2	2	2	2

Appendix B Strategic Mitigation Opportunities Report

rLDP Nutrient Neutrality Support

Task 5 Strategic Mitigation Opportunities
Volume I Main Report

Monmouthshire County Council

April 2026

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Abbreviations

Table 1. List of abbreviations

Abbreviation	Description
AMP	Asset Management Plan
AONB	Area of Outstanding Natural Beauty
ANCB	Appropriate Nature Conservation Body
DCWW	Dŵr Cymru Welsh Water
DwPA	Drinking Water Protected Area
DWF	Dry Weather Flow
ECJ	European Court of Justice
EQS	Environmental Quality Standard
HRA	Habitats Regulations Assessment
LPA	Local Planning Authority
rLDP	Replacement Local Development Plan
MCC	Monmouthshire County Council
NMB	Nutrient Management Board
NRW	Natural Resources Wales
PTP	Package Treatment Plant
RAG	Red-Amber-Green traffic light grading system
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SMOR	Strategic Mitigation Opportunities Report
SPA	Special Protection Area
SPG	Supplementary Planning Guidance
SRP	Soluble Reactive Phosphorus
SSSI	Site of Special Scientific Interest
SuDS	Sustainable [urban] drainage systems
TP	Total Phosphorus
WFD	Water Framework Directive
WwTW	Waste Water Treatment Works

Glossary

Table 2. Glossary of terms

Term	Description
Appropriate Assessment	An assessment to evaluate the significance of the impacts of a proposed plan or project (either individually or in combination with other proposals) on sites of EU importance (Natura 2000 sites), to inform the decision-making process.
Diffuse	The movement of ions or molecules from an area of higher concentration to an area of lower concentration
Diffuse Pollution	Pollution arising from multiple, widespread sources (e.g. agriculture, surface water runoff), rather than a single discharge point.
Eutrophication	The enrichment of water by nutrients leading to excessive algal growth, reduced oxygen levels, and harm to aquatic ecosystems.
Habitats Regulations Assessment	A competent authority must carry out an assessment under the Habitats Regulations, known as a habitats regulations assessment (HRA), to test if a plan or project proposal could significantly harm the designated features of a European site.
Nutrient Budget	An assessment quantifying nutrient inputs and outputs associated with a development.
Nutrient Loading	The amount of nutrients entering a waterbody over a given period, often measured in kilograms per year.
Nutrient Neutrality	A principle whereby a development must not increase nutrient loading (e.g. nitrogen or phosphorus) to sensitive water bodies.
Section 106 Agreement (Planning Obligation)	A legally binding agreement used to secure mitigation measures related to a development.
SPON costing	Refers to using Spon's price books and estimating guides to accurately calculate construction costs, including labour, materials, overheads, and profit.
Strategic scale mitigation	Refers to nutrient reduction measures that are planned, delivered, and managed at a catchment, sub-catchment or authority-wide level, rather than being tied to a single development site. The focus is on longer-term, coordinated interventions that can offset nutrient inputs from multiple developments or sources.

1. Introduction

The Inspectors appointed to examine the Monmouthshire County Council (MCC) Replacement Local Development Plan (rLDP) have requested additional information on the Council's approach to addressing the effect of proposed development in the rLDP on riverine Special Areas of Conservation (SACs) in relation to the discharge of phosphorus. The affected riverine SACs are the River Wye and River Usk sites.

In February 2026, MCC commissioned a study to estimate the potential increase in nutrient (phosphorus) loading from implementation of the rLDP. This study has been published within the Monmouthshire Replacement Local Development Plan 2018-2033 – Phosphate Position Paper (February 2026)¹. The determination of phosphorus budgets was undertaken for all allocated and committed development in both the River Usk and River Wye catchments, with results presented on a 'year by year' basis. This study concluded that there will be an excess of phosphorus from foul wastewater from the proposed developments.

Since the completion of the first phase of this project, NRW have confirmed that the Lower River Wye through Monmouthshire, part of the River Wye SAC, is no longer failing for phosphorus, and as a result the nutrient neutrality regulations may no longer apply. However, developments proposed in the rLDP must not cause deterioration to less than good conservation status.

New developments that lead to an increase in phosphorus discharging directly to these SAC sites, or to catchments draining to these sites may contribute to unfavourable condition of, or undermine measures to restore, these features. **As such, proposed developments that drain to the SAC catchments and introduce new or increased nutrient loads need to demonstrate that they would not harm the integrity of SAC, and it may be that secured strategic or developer-led mitigation is required in order for projects to be consented, in the of absence of other wider initiatives (e.g. Review of WwTW Permits) or mitigation pathways.**

1.1 Purpose and Objectives of this Report

This Strategic Mitigation Opportunities Report (SMOR) provides a review of opportunities for strategic scale phosphorus reduction in Monmouthshire. Specifically, this refers to nutrient reduction measures that are planned, delivered, and managed at a catchment, sub-catchment, or authority-wide level, rather than being tied to a single development site. The focus is on longer-term, coordinated interventions that can offset nutrient inputs from multiple developments or sources, as opposed to an integrated approach or developer-led mitigation, which is not the subject of this report.

The SMOR provides a comprehensive, qualitative review of all potential strategic scale nutrient mitigation solutions that are currently known, including the approaches currently operational across England and Wales. This SMOR provides information and advice to adequately consider phosphorus neutrality in planning submissions within the River Usk SAC and the River Wye SAC water body catchment. Overall, this SMOR provides the following:

- An overview of how each strategic mitigation option functions.
- The mechanisms by which nutrient reductions may be achieved.
- The key considerations affecting their effectiveness and deliverability at scale.

The objectives of this SMOR are:

1. To provide an overview of mitigation options that may be suitable at a strategic scale, building on the existing NRW Mitigation Menu² (see **Section 5**).
2. To screen a long list of possible strategic solutions based on defined criteria, including two preferred options outlined by MCC (see **Section 6**).
3. To explore a short-list of options through engagement with the relevant Council Officers and Departments, desk studies and consideration of constraints and limitations, consultation with relevant

¹ Phosphate Position Paper February 2026

² NRW Mitigation Measures Menu (2025) Available at: [mitigation-measures-menu.xlsx](#)

partners where appropriate (e.g. Dŵr Cymru Welsh Water (DCWW) etc.) and through further scenario testing to assess likely phosphorus removal potential (see **Section 7**).

4. To provide worked examples of the preferred option(s) to estimate phosphorus load reduction for these measures, alongside outputs from the Welsh Government nutrient budget calculator or bespoke calculations. These include retrofitting SuDS to treat surface water runoff and treatment wetlands receiving flows from WwTWs. A viability and constraints assessment of the options with the greatest potential will be undertaken. High-level cost estimates will be provided where possible and where there is sufficient data available (see **Section 7**).
5. To provide recommendations as to the next steps (see **Section 8**).

1.2 Approach

This SMOR is primarily illustrated using residential development examples requiring nutrient mitigation as these are of most relevance to the rLDP. Nonetheless, nutrient mitigation requirements apply to most forms of development within the phosphorus nutrient neutrality catchment that have the potential to contribute new phosphorus loads through domestic wastewater or surface water runoff, including tourism, medical facilities/care institutions, education, mixed use and commercial schemes. Developments with effluent discharge permits must also ensure that no increase in phosphorus to habitats sites, but permitting process is outside the scope of this report.

The development of strategic options also draws on NRW's Mitigation Menu² as well as readily available literature and other evidence sources. This review provides an overview of the various successful approaches adopted to date at a strategic scale, before considering which of these may have applicability to Monmouthshire.

This SMOR has been prepared in April 2026 and is based on the current understanding and guidance of the nutrient neutrality issues affecting sensitive SACs and relevant mitigation approaches at that point in time.

1.3 Structure of this Report

The SMOR has been presented in the following sections:

- **Section 2:** Overview of the Southeast Wales designated sites.
- **Section 3:** Background to the phosphorus issue and nutrient neutrality in Wales.
- **Section 4:** Summary of potential mitigation pathways, including strategic solutions for nutrient neutrality.
- **Section 5:** Review of potential strategic scale nutrient mitigation solutions.
- **Section 6:** Comparative analysis of strategic options (including for example, effectiveness, cost and feasibility of implementation).
- **Section 7:** Development of short-listed strategic opportunities including practical case studies demonstrating the application of the Welsh Government (WG) All Wales Nutrient Budget Calculator and mitigation measures, illustrating the feasibility of strategic mitigation options.
- **Section 8:** Recommendations for further steps.

This report is supported by the following technical appendices included in a separate Volume II that can be made available upon request:

- **Appendix A:** Review of a long list of potential strategic scale nutrient mitigation solutions.
- **Appendix B:** Treatment wetlands viability and constraints assessment.
- **Appendix C:** Treatment SuDS viability and constraints assessment.

2. Southeast Wales Designated Sites

This SMOR focuses on the River Usk SAC and the River Wye SAC where phosphorus pressures have contributed to unfavourable site conditions. Figure 1 illustrates the location of the two SACs, along with their phosphorus nutrient neutrality catchment, and the Local Planning and National Park Authority boundaries.

The River Wye SAC is the largest Welsh SAC river, with its catchment divided into 43 Water Framework Directive (WFD) water bodies in Wales, while the River Usk SAC consists of 23 water bodies. Both SACs are designated under the Conservation of Habitats and Species Regulations 2017³ for the protection of Annex I habitats and Annex II species.

In January 2021, NRW published a report⁴ that presented the assessment of compliance against recently tightened phosphorus water quality targets for SAC rivers. The report showed that over 60% of SAC water bodies were failing the new targets for phosphorus.

Within the Usk, 88% of its water bodies were failing for phosphorus. As a result, new developments leading to an increase in phosphorus discharges to this site may contribute to the unfavourable condition of the designated site or make its restoration to favourable status more difficult to achieve. This is typically undertaken as part of a Habitat Regulations Assessment supported by Nutrient Neutrality and Mitigation Assessments.

Whilst previously failing (2021) the Lower River Wye is now considered by NRW (as of 2026) to no longer be failing for phosphorus. However, it is still important that any new development that may lead to an increase in phosphorus discharged to the SAC considers whether that discharge would risk causing deterioration of the river back to less than good conservation status.

Further details for the two riverine SACs are provided below.

³ Participation, E. (no date) The Conservation of Habitats and Species Regulations 2017. Statute Law Database. Available at: <https://www.legislation.gov.uk/uksi/2017/1012/contents> (Accessed: 8 January 2026).

⁴ Natural Resources Wales / Compliance Assessment of Welsh River SACs against Phosphorus Targets (2021). Available at: [compliance-assessment-of-welsh-sacs-against-phosphorus-targets-final-v10.pdf](#) (Accessed: 13 April 2026).

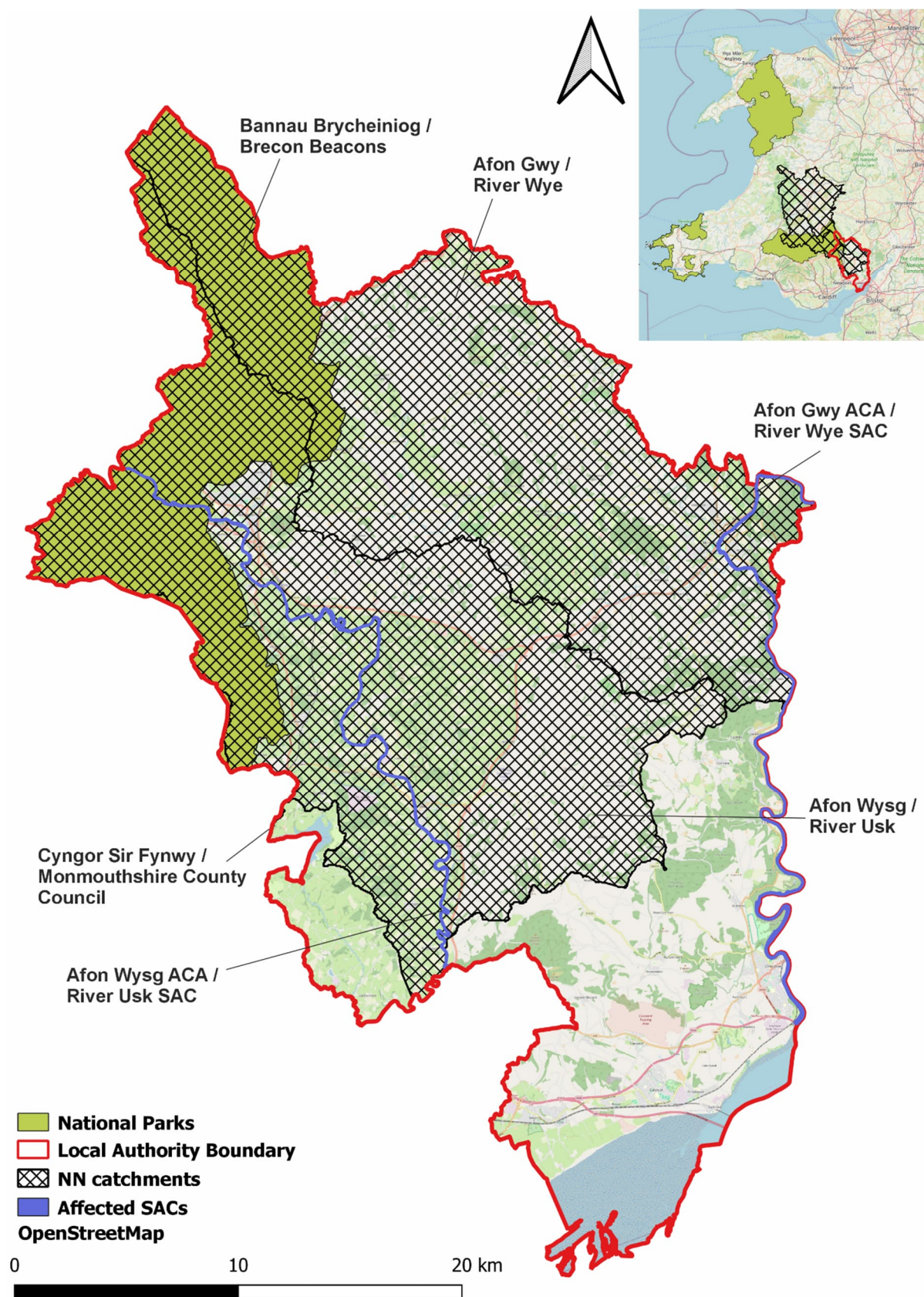


Figure 1 Location of the two SACs in South East Wales (River Usk SAC and River Wye SAC) where phosphorus pressures have contributed to unfavourable site conditions (source: Welsh Government Data Map Wales online data)

2.1 River Usk SAC



Figure 2 River Usk at Usk Island⁵

Summary Description

The Usk is a medium sized catchment in southeast Wales with a primarily sandstone geology and frequently carries heavy sediment loads following periods of rainfall⁶. The Usk is by some distance the worst performing SAC river in Wales with respect to its phosphorus targets and is the only river where there are extensive failures in the headwaters.

Annex I habitats that are a primary reason for designation⁷:

- Not Applicable

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site⁷

- Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitriche-Batrachion* vegetation

Annex II species that are primary reason for selection of this site⁷:

- Sea lamprey (*Petromyzon marinus*)
- Brook lamprey (*Lampetra planeri*)
- River lamprey (*Lampetra fluviatilis*)
- Twait shad (*Alosa fallax*)
- Atlantic salmon (*Salmo salar*)
- Bullhead (*Cottus gobio*)
- Otter (*Lutra lutra*)

Annex II species present as a qualifying feature, but not primary reason for designation⁷:

- Allis shad (*Alosa alosa*)

⁵ Monmouthshire County Council (2025). Available at: <https://www.monmouthshire.gov.uk/our-main-parks-and-gardens/#Usk> (Accessed: 14 April 2026).

⁶ Natural Resources Wales (2021). Compliance Assessment of Welsh River SACs against Phosphorus Targets. Available at: <https://cdn.cyfoethnaturiol.cymru/693025/compliance-assessment-of-welsh-sacs-against-phosphorus-targets-final-v10.pdf?mode=pad&rnd=132557227300000000> (Accessed: 14 April 2026).

⁷ River Usk / Afon Wysg - Designated Special Area of Conservation (SAC) (no date). Available at: <https://sac.jncc.gov.uk/site/UK0020020> (Accessed: 14 April 2026).

2.2 River Wye SAC



Figure 3 River Wye at Bigsweir⁸

Summary Description	The Wye is the largest SAC river, with a catchment covering much of southern Powys and part of the Bannau Brycheiniog National Park before crossing the border into England. Much of the Upper Wye catchment is rural and until recently has been predominantly farmed for sheep and cattle. More recently there has been a rapid expansion of poultry units, which has been the source of public concern ⁹ .
Annex I habitats that are a primary reason for selection of this site⁹:	Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site⁹:	Transition mires and quaking bogs
Annex II species that are primary reason for selection of this site⁹:	- White-clawed (or Atlantic stream) crayfish (<i>Austropotamobius pallipes</i>) - Sea lamprey (<i>Petromyzon marinus</i>) - Brook lamprey (<i>Lampetra planeri</i>) - River lamprey (<i>Lampetra fluviatilis</i>) - Twaite shad (<i>Alosa fallax</i>) - Atlantic salmon (<i>Salmo salar</i>) - Bullhead (<i>Cottus gobio</i>) - Otter (<i>Lutra lutra</i>)
Annex II species present as a qualifying feature, but not primary reason for site selection⁹:	Allis shad (<i>Alosa alosa</i>)

⁸ Monmouthshire County Council (2025). Available at: https://www.monmouthshire.gov.uk/2025/03/mcc-welcome-investment-to-transform-the-river-wye/river-wye-at-bigsweir_14589368845_of (Accessed: 14 April 2026).

⁹ River Wye / Afon Gwy- Designated Special Area of Conservation (SAC) (no date). Available at: <https://sac.jncc.gov.uk/site/UK0012642> (Accessed: 14 April 2026).

3. Background

3.1 Phosphorus as an Issue in SACs

Phosphorus pollution is a significant environmental pressure on riverine SACs in Wales. Although phosphorus is naturally occurring, released slowly at low levels from natural sources such as natural bankside erosion, anthropogenic factors are also responsible for phosphorus being released into the environment. Key factors include land management and wastewater and sewerage discharge¹⁰.

Elevated concentrations of phosphorus can lead to the process of eutrophication and can cause significant ecological damage to rivers including altering the balance of plant species. Excessive nutrient enrichment stimulates algal and plant growth which can lead to reduced dissolved oxygen concentrations, degradation of habitat quality, and loss of biodiversity. This can threaten the ecological integrity of SAC-designated rivers and the species they support, such as salmonids and freshwater invertebrates¹⁰.

Assessments by NRW have shown that the majority of SAC river water bodies in Wales have failed to meet revised phosphorus targets, with over 60% of water bodies failing the new targets for phosphorus⁴.

3.2 Nutrient Neutrality in Wales

Poor water quality caused by nutrient enrichment is one of the main reasons many designated marine, estuarine and freshwater habitats in Wales are in an unfavourable condition. Excessive nutrients drive eutrophication leading to deterioration of site integrity. To restore water quality, reductions in nutrient inputs are essential, as well as controlling future increases in nutrient loads (including from new development).

Nutrient neutrality has therefore become a critical requirement for development in parts of Wales. Initially focused on phosphorus in riverine SACs such as the River Wye, River Usk, River Tywi, River Teifi, River Dee, River Eden, River Glaslyn, River Gwyrfai and River Cleddau¹¹, nutrient neutrality now also concerns total nitrogen (recorded as DIN) pressures following the publication of additional studies into the current conservation status of coastal, marine or estuarine SACs¹². However, the focus of this report is on the River Wye and River Usk SAC catchments.

Rather than a single policy announcement or legislative change, the Welsh approach to nutrient neutrality has evolved incrementally as NRW and LPAs responded to deteriorating water quality conditions at designated sites and the need to ensure compliance with the Habitats Regulations 2017. This Wales-specific approach is aligned with the broader UK concept but has been shaped by local policy drivers and the regulatory roles of NRW and the Welsh Government. It ultimately stems from the ruling of the European Court of Justice (ECJ) in combined cases C-293/17 and C-294/17 (a Dutch Nitrogen case).

In addition, the ruling reaffirmed that if a designated nature conservation site is in a deteriorating condition (such as due to excess nutrient levels that may also be forecast to increase) there are very limited circumstances under which further discharges of nutrients to a site can legally be permitted. As a result, in the absence of any empirically derived threshold by which additional aquatic inputs of nitrogen and phosphorus can be deemed nugatory or *de minimis*, it must be concluded that new development within the affected habitats site catchment could increase nutrient deposition into the protected sites above already harmful levels and thus interfere with the ability of the site to achieve its conservation objectives and the integrity of the European protected nature conservation site. This is relevant because under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 an LPA (i.e. the Competent Authority) cannot legally consent a plan or project that will have an adverse effect on the integrity of any European protected nature conservation site.

¹⁰ Natural Resources Wales / Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation (2026). Available at: <https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/advice-for-planning-authorities/advice-to-planning-authorities-for-planning-applications-affecting-phosphorus-sensitive-special-areas-of-conservation> (Accessed: 14 April 2026).

¹¹ Natural Resources Wales (2025). *Principles of nutrient neutrality in relation to development or water discharge permit proposals*. [Online] Available at: [Natural Resources Wales / Principles of nutrient neutrality in relation to development or water discharge permit proposals](#) (Accessed: 02 January 2026).

¹² Natural Resources Wales (2025). *Further action needed to protect Wales's marine protected areas*. [Online] Available at: [Natural Resources Wales / Further action needed to protect Wales's marine protected areas](#) (Accessed: 14 January 2026).

Welsh Government guidance has been released which suggests that in certain circumstances it may be possible to define a *de minimis* threshold applicable to Local Development Plans¹³. This is being explored by MCC in a forthcoming Developer Mitigation Handbook, but at the time of writing (April 2026) MCC is not aware of this having yet been successfully implemented elsewhere in Wales. Further information on all mitigation pathways in Wales is discussed in more detail in Section 3.4.

3.3 Monmouthshire rLDP 2018-2033

In the Infrastructure Delivery Plan: Background Paper (Updated October 2025)¹⁴ MCC set out how they plan to deal with an increase in phosphorus emissions from new development. The Council has been working collaboratively with NRW, DCWW, Welsh Government, the development industry and biodiversity officers to find solutions to enable growth and allocate sites through the rLDP process that do not harm the environmental capacity of watercourses. DCWW has recently upgraded (in 2023) the phosphorus stripping capacity of Monmouth WwTW reducing contributions in the River Wye catchment and has committed to prioritising improvement works at the Llanfoist WwTW serving Abergavenny (benefitting the River Usk catchment) by the end of 2025. This is in addition to an initial investment of £100m in phosphorus reduction within their previous AMP7 (2020-2025). This investment will significantly reduce the amount of phosphates entering the water environment from the treatment works, providing environmental improvement and reducing the impact from new development. However, it will not eliminate all increases in phosphorus from future development and thus additional mitigation will be required to ensure that development proposed in the rLDP does not adversely affect SAC site integrity, particularly for the River Usk.

The allocated and committed development sites within each catchment considered in these initial nutrient budget estimates are shown in Figure 4.

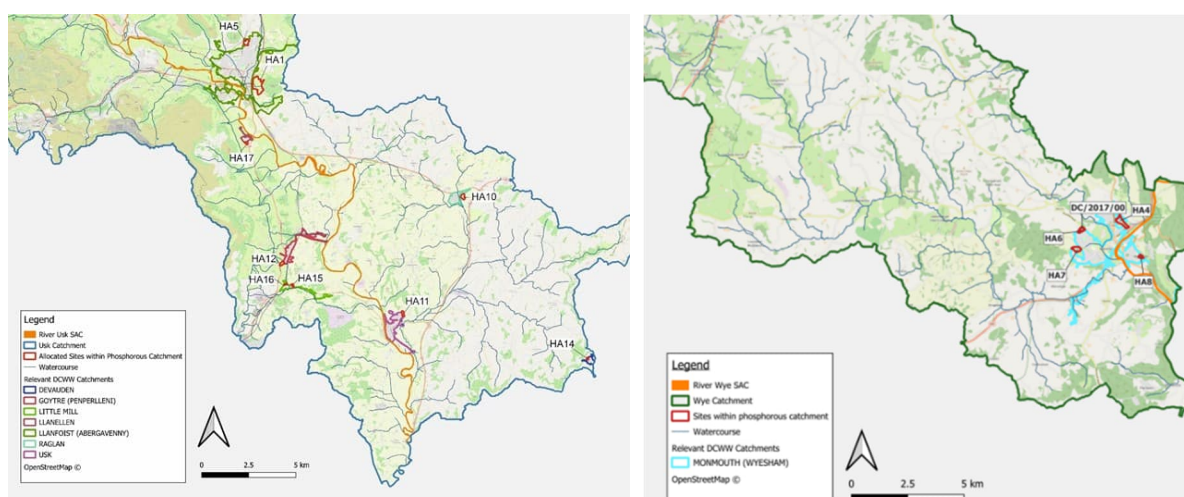


Figure 4 Allocated sites within the Usk SAC catchment (left) and Wye SAC catchment (right)

The final cumulative nutrient budget for the proposed developments in the Monmouthshire rLDP for the River Wye and River Usk catchments are presented in Table 3 for the two following scenarios:

- **Scenario 1 (Worst Case Scenario)** – Includes all housing types with no reduction in occupancy for affordable homes.
- **Scenario 2 (Best Case Scenario)** – Discounts 50% of affordable homes on the basis that half of allocated affordable homes are provided to local people who are likely to already be living within the nutrient neutrality catchment.

For both scenarios and both catchments, the proposed development allocated in the rLDP plus any committed development results in the generation of excess phosphorus (via foul wastewater). Significantly more phosphorus

¹³ Welsh Government (2026) Applying the Tests of Soundness to Local Development Plans (LDPs) where additional nutrients may impact on Special Areas of Conservation (SACs). Available at: [Clarification note: applying the tests of soundness to Local Development Plans \(LDPs\)](#)

¹⁴ Infrastructure Delivery Plan, Background Paper [Online]. Available at: <https://www.monmouthshire.gov.uk/app/uploads/2025/10/SD104-Infrastructure-Delivery-Plan-Background-Paper-Updated-October-2025.pdf>

requires mitigation in the Usk catchment compared with the Wye, reflecting the quantity of proposed development in each catchment (see Table 3).

Table 3 Summary results for the final nutrient budget in each catchment in 2033

Scenario	Usk Nutrient Budget 2033 (kg/yr TP)	Wye Nutrient Budget 2033 (kg/yr TP)
Scenario 1 (Worst-Case Scenario)	265	136
Scenario 2 (Best-Case Scenario)	199	103
<i>Nutrient budget if proposed AMP8 phosphorus removal upgrades to WwTW had not taken place</i>	534	136

3.4 Lower Wye ‘No deterioration’ Investigation

The Lower River Wye is no longer failing for phosphorus, and so MCC have undertaken an investigation for this river to determine whether the development proposed in the rLDP risks causing deterioration of the river to less than good conservation status.

To achieve this, it was necessary to determine the effect on phosphorus concentrations in the Lower Wye from the projected increase in phosphorus load arising from the rLDP proposed developments. Only the additional input via Monmouth WwTW (at SO 51532 11795) was required to be considered, as all the allocated or committed development sites in the Lower Wye catchment fall within this WwTW catchment. The location of data used in the assessment is provided in Figure 5.

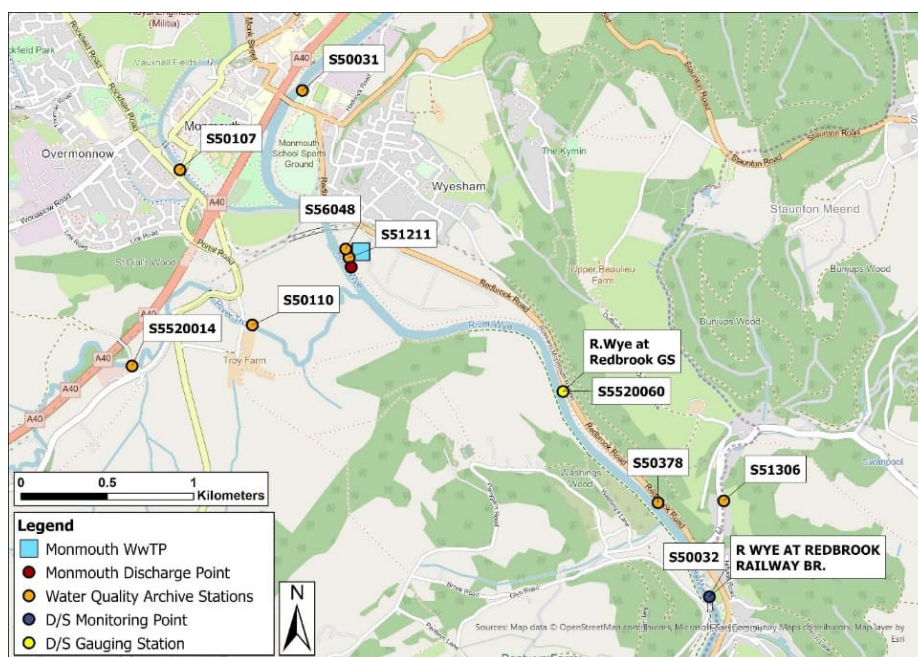


Figure 5 Monmouth WwTW and nearby water quality and flow monitoring stations.

The assessment concluded that when allowing for the maximum planned level of development (by 2033), the additional Total Phosphorus (TP) loading projected (i.e. 135.61 kg/year) would result in an estimated additional 0.13 mg/l TP in the average discharge concentration at Monmouth WwTW. This would increase the average discharge concentration to around 1.3 mg/l, which remains well within the permitted concentration of 2 mg/l.

The SAC Condition Assessment⁶ is based on Monmouth WwTW operating under current permitted conditions for concentration and flow. As development comes forward in the future validation assessments will be required to confirm this initial assessment, reflecting the phosphorus environmental quality standard (EQS) for the Wye at that given point in time.

A precautionary mass balance calculation was also undertaken, which indicated that an exceedance of the phosphorus EQS downstream of Monmouth WwTW would not be predicted based on the rLDP delivery. The receiving water is estimated to maintain good WFD status for soluble reactive phosphorus (SRP) and therefore be at favourable conservation status even if the following worst-case assumptions are applied:

- Effluent flow is modelled as five times the DWF (dry weather flow).
- Effluent concentration is continuously at the permit threshold (i.e. 2 mg/l).
- The predicted dilution in the river is halved.
- All total phosphorus becomes available as SRP.

The report concluded that in principle the quantum of rLDP proposed development in the Lower Wye catchment can be delivered without resulting in a significant increase in phosphorus or a reduction in the conservation status of the SAC. However, it was also stated that these conclusions should be reviewed over time to confirm the receiving water remains at low risk in the context of evolving inputs to the river system as a whole. Therefore, future planning applications for allocated development are still likely to need to be supported by site specific Habitat Regulations Assessments including consideration of water quality risks to the Wye SAC.

4. Mitigation Pathways

The Welsh Government guidance for mitigation of phosphorus in river SACs (2025)¹⁵ and the recent guidance on “Tests of Soundness”¹⁶ (2026) indicate pathways of mitigation that may be applied to LDPs where the impact of additional nutrients on SAC’s has been identified. NRW have also provided guidance regarding mitigation of nutrients within SACs (2026)¹⁰.

It is notable that the current NRW guidance¹⁰ suggests that if the relevant WwTW for proposed developments has an environmental permit that has been reviewed against the nutrient targets set out in the conservation objectives for the river SAC, it may be possible for a planning authority to conclude that there will be no likely significant effect with regard to phosphorus if certain criteria are met. Further mitigation can therefore be ‘screened out’.

Where NRW are not content to screen the phosphorus loading out on the basis of the Review of WwTW permits, then the Welsh Government and NRW guidance outline several hierarchal approaches (or ‘pathways’) to mitigation, through which it would be feasible to mitigate the phosphorus loads associated with the rLDP, thereby providing confidence that no adverse effects on the site integrity of the SACs would occur (see Figure 6). This section introduces the main ‘pathway’ approaches at a high level, including Strategic Scale Mitigation.

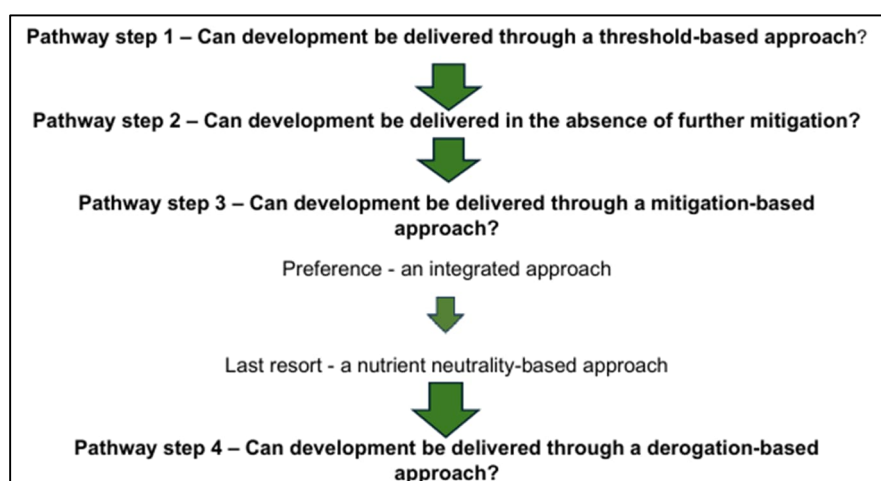


Figure 6 Hierarchal pathways to mitigation

4.1 Threshold Approach / De Minimis

The Welsh Government clarification note¹⁶ suggests that the first consideration with regards to mitigation pathways for nutrients (where significant effects on site integrity cannot be ruled out on the basis of WwTW upgrades) is whether it may be possible in some cases to screen out a certain quantum of development as being *de minimis*, i.e. the nutrient loading from the development falls beneath a defined threshold whereby plan proposals will not have any meaningful influence over the achievement of the conservation objectives for the SAC. Definition of any such threshold must be supported by relevant evidence and assessment¹⁶ and be sufficiently certain.

Welsh Government guidance is clear that a threshold-based approach on a project-by-project basis is not advised. The cumulative effect of policies and proposals must be taken into account, and so consideration of whether development can be regarded as *de minimis* must be undertaken in terms of the scale of implementation across the whole plan period (through to 2033) and necessarily will inform the appropriate assessment.

HRA ‘*de minimis*’ thresholds are therefore anticipated to be derived on the basis of an overall quantum of development over a defined timeframe. A threshold-based approach may be combined with a wider integrated approach (see next sub-section) across an area in the rLDP, reflecting catchment-specific characteristics and circumstances. Case studies are given in the recent Welsh Government clarification note on tests of soundness.

To agree a threshold approach, planning authorities will need to be satisfied that the additional loading from the rLDP will not undermine the achievement of the conservation objectives. In other words, the additional loading

¹⁵ [Planning Guidance - Development in SAC Rivers](#)

¹⁶ [Clarification note: applying the tests of soundness to Local Development Plans \(LDPs\)](#)

will not exert any meaningful influence over the effectiveness of action to be taken to achieve the conservation objectives or otherwise delay the achievement of such objectives.

No thresholds for *de minimis* have been determined for the Usk and Wye catchments at this stage, nor for other catchments affected by nutrient issues in Wales (as of April 2026). It remains uncertain as to how such a threshold can be robustly defined and defended. Nonetheless, MCC are exploring this approach further with NRW to determine whether there is potential for development of a threshold, where it can be sufficiently supported with evidence. Progress in this regard will be included where relevant in the forthcoming Developer Mitigation Handbook.

4.2 Integrated Approach

Where it is not possible to define a *de minimis* threshold and development requires mitigation, the Welsh Government clarification note on applying the Tests of Soundness to LDPs indicates an integrated approach as the preferred solution to ensure no adverse effects to SAC rivers¹⁶.

The overall aim of an integrated approach is to coordinate actions to deliver a long-term improving trend in nutrient levels within SAC catchments, whilst managing growth in accordance with the sustainable development principle. Appropriate steps to avoid deterioration or provide restoration (under Article 6(2) of the Habitats Regulations) in nutrient neutrality affected catchments could include the following:

- Planned upgrades to WwTWs and/or DCWW AMP8 schemes including storm overflow improvements.
- Ongoing work being delivered under the SAC Rivers project which will be implemented within the catchment of concern, including enhanced regulatory compliance and enforcement programmes to address non-compliance within the agricultural sector. This could include works being undertaken by Nutrient Management Boards (NMBs) or environmental improvement schemes under DCWW's AMP8.
- Work underway through the programme of measures under the WFD River Basin Management Plan (RBMP).
- Forthcoming NRW Catchment Nutrient Recovery Plans.

This integrated approach allows mitigation for nutrients by developers to be more closely integrated with the delivery of restoration under Article 6(2) where developer contributions:

- Increase the scale, magnitude, or scope of planned restoration measures (over and above what would otherwise have been delivered); **OR**
- Speed up delivery of planned restoration measures beyond what would normally be delivered, where the current implementation timescales risk meaningful ecological deterioration in the interim.

For the integrated approach to be viable there will need to be close ongoing collaboration between MCC, DCWW, NRW, NMBs, Catchment Partnerships and developers. MCC will explore relevant schemes underway within the affected catchment to which an integrated approach could be applied and will develop a platform for developers to contribute to these schemes where appropriate.

4.3 Strategic Scale Mitigation Solutions

Where it is not possible to apply a threshold or integrated approach, the Welsh Government clarification note on applying the Tests of Soundness to LDPs¹⁶ indicates that a nutrient neutrality-based approach is then required. Strategic scale mitigation solutions such as large wetlands are in place and under development in some nutrient neutrality catchments across England (e.g. by various LPAs and Natural England) thereby reducing phosphorus loading where previous discharges had higher loads, enabling developers to buy nutrient credits to offset development. However, for many LPA areas, including those in Wales, strategic solutions are not yet in place. A Technical Working Group was set up in Wales (in November 2025) to look at developing nutrient trading schemes.

This SMOR focuses on potential strategic scale mitigation solutions within Monmouthshire to determine whether there are any feasible strategic mitigation approaches that might be applicable in the local authority. The strategic mitigation approach could include a wide array of mitigation options developed at scale by MCC, which could then be offered as part of nutrient credit scheme for developers to purchase and offset their nutrient contributions to the riverine SACs.

A long list of proven strategic nutrient mitigation approaches has been developed and are discussed in Section 5, based on precedence for delivery in England. A short-list has then been developed in Section 7 based on constraints within the Monmouthshire setting.

4.1 Developer Led Mitigation

Where a threshold-based approach is not appropriate, there are no suitable integrated solution options, and if strategic scale mitigation approaches for the management of excess nutrients are not possible or are yet to come to fruition, developers can lead on development of their own mitigation for a plan or project. Depending on the scale of mitigation, developer-led measures also have the potential to create headroom for other projects to proceed. To support developer led mitigation, MCC are preparing a Developer Mitigation Handbook for phosphorus in Monmouthshire. This will outline the nutrient neutrality assessment approach for developers and an array of potential mitigation options, including how these should be secured for the lifetime of the development.

5. Review of Potential Strategic Scale Nutrient Mitigation Solutions

This section provides a review of potential strategic scale nutrient mitigation solutions that could be applicable in Monmouthshire. This includes an appraisal of each option using a consistent evaluation framework and an overview of the assumptions and limitations of each option. At present, nutrient credit schemes that may provide a precedent from England have focused primarily on land use change, wastewater upgrades, and constructed wetlands, where nutrient reductions are more easily quantified.

Table 4 highlights the key differences between mitigation measures implemented at the strategic scale and those implemented at the developer scale. This represents a general distinction however, in some instances, landowners and developers in England have invested in large-scale mitigation solutions to generate and sell credits to other developers. While this report focuses on identifying suitable options for MCC, it is acknowledged that some of these approaches may be applicable to other parties who wish to develop a bank of nutrient credits to trade.

Table 4 General distinction between strategic scale mitigation and developer scale mitigation

Aspect	Strategic scale	Developer scale
Spatial extent	Catchment / authority-wide	Single development site
Delivery	Public sector / partnerships	Individual developer
Purpose	Offset multiple developments	Offset one development
Flexibility	High (portfolio approach)	Limited by site constraints
Efficiency	Often more cost-effective	Can be costly per unit
Governance	Requires coordination	Simpler governance

Table 5 outlines the strategic scale mitigation solutions that have been considered. Full details of each approach are given in Volume II Appendix A (available upon request):

Table 5 Summary of strategic scale mitigation solutions considered

Option	Description summary
Land use change	The permanent conversion of land uses with higher phosphorus export (e.g. arable or improved grassland) to land uses with lower phosphorus export (e.g. greenspace, woodland).
Septic tank upgrades	Replacing outdated septic tanks or PTPs with higher-efficiency models. The replacement system(s) must be located upstream of the development it mitigates and must be in the same catchment.
Water efficiency measures	Water efficiency measures rely on increased water usage efficiency in households to reduce the volume of wastewater (containing phosphorus loads). Low-flow fixtures can be installed on numerous household appliances, including toilets, showerheads, and faucets designed to use less water than conventional models while maintaining good performance.
Urban SuDS	SuDS aim to reduce the volume and speed of runoff entering watercourses, thereby lowering flood risk and improving water quality. They achieve this by slowing flows, promoting sedimentation, and encouraging infiltration, allowing rainfall to percolate into the ground close to where it falls. This includes basins and ponds, filter strips and swales, constructed wetlands, soakaways, infiltration basins, gravelled areas, and porous paving.
Rural SuDS	Rural SuDS include features that attempt to mimic natural drainage processes to intercept/divert and/or improve infiltration and percolation of surface water run-off in rural areas. Unlike urban SuDS, rural SuDS

typically operate at a larger scale, integrate with natural landscapes, and might require heavier duty earthworks due to the sheer size of the land available.

General wetlands	Non-treatment or "open source" wetlands are constructed wetland features that improve water quality without controlled or quantified inflows. These wetlands typically intercept diffuse runoff from agricultural land or urban areas and therefore are often integrated into SuDS or habitat restoration schemes.
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Treatment wetlands	Treatment wetlands, also known as constructed wetlands, are engineered systems designed to replicate the physical, chemical, and biological processes that occur in natural wetlands. They are designed and managed in a specific manner to treat water which contains undesirable substances.
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Enhanced drainage ditch management	Enhanced drainage ditch management is a method for managing agricultural drainage ditches and small watercourses in rural areas for nutrient benefits.
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6. Comparative and Constraints Analysis

6.1 Introduction

This section compares the strategic nutrient mitigation measures considered in this review in terms of their relative effectiveness, cost, and potential feasibility of implementation within Monmouthshire. The analysis covers a range of options listed in Section 5 recognising that each option offers different levels of nutrient reduction and presents distinct delivery challenges.

The assessment draws on available evidence to highlight key differences between measures, including their likely nutrient removal performance, indicative costs, and practical considerations such as land availability, regulatory requirements, and long-term management. This comparative approach is intended to support the identification of mitigation measures that might be delivered at scale to achieve nutrient neutrality in Monmouthshire.

6.2 Analysis Criteria and Appraisal

Table 6 includes a Red, Amber, Green (RAG) grading for the current confidence, suitability in the solution, and cost for delivering phosphorus mitigation.

With regard to **confidence**:

- **Red** = Low Confidence = the mitigation approach is complex to deliver and / or difficult to secure in perpetuity. Unlikely that the criteria of sufficient certainty could be met without significant time and expense to develop the solution with multiple partners.
- **Amber** = Medium Confidence = the mitigation approach has precedent and can deliver nutrient benefits but has complexities which make it onerous to demonstrate sufficient certainty (e.g. in terms of required monitoring or securing legally).
- **Green** = High confidence = the mitigation approach is widely accepted in terms of nutrient benefits given appropriate design and implementation and are considered at the less onerous end of the spectrum in terms of securing in perpetuity with sufficient certainty.

With regard to **suitability**:

- **Red** = Low Suitability = the approach is not considered suitable for strategic scale mitigation.
- **Amber** = Medium Suitability = the approach may be suitable but will require substantial investment to prove nutrient reductions and to maintain these in perpetuity.
- **Green** = High Suitability = the approach is considered suitable for strategic scale with good potential to deliver and secure in perpetuity.

With regard to **cost**:

- **Red** = High Cost = the approach is expensive and would unlikely be cost effective.
- **Amber** = Medium Cost = the approach will require substantial investment and further consideration is required to determine whether it is cost effective.
- **Green** = Low Cost = the approach is expected to be cost effective.

Those with Red or Amber ratings for confidence are not necessarily precluded from use in delivering neutrality and so may be suitable, but it is likely that a higher degree of evidence will be required to ensure sufficient certainty (i.e. beyond reasonable scientific doubt) that the stated nutrient reductions would be achieved in perpetuity. Hence, they are generally less favourable options.

Table 6 Analysis of mitigation measures considering effectiveness, cost and feasibility

Mitigation measure	Detail	Confidence	Cost	Suitability within Monmouthshire
Land use change	The approach has high longevity (assuming land use change is secured in perpetuity through S106 agreements) and certainty if it is possible to secure monitoring to confirm that the new land use is maintained, and so confidence is high. However, suitability for a strategic solution is limited given that MCC have insufficient land holdings to generate meaningful phosphorus reduction and it would be prohibitively costly to purchase additional land.			
Septic tank and PTP upgrades	This measure can also be applied to additional existing properties to create a TP surplus. However, it must first be confirmed that connection to the mains sewer is not reasonably practicable, in line with the Welsh Government Non-Mains Drainage Circular (008/2018). Manufacturer's testing data for each product can inform the level of TP reductions that are achievable. Nonetheless, it will be required to demonstrate that the PTP will be subject to legally secured ownership and responsibility, ensuring that operation, maintenance and compliance are defined. This may be secured through planning conditions, legal agreements, or other binding mechanisms as appropriate. Suitability for a strategic solution is limited given that MCC have an insufficient number of council houses in which to undertake septic tank upgrades.			
Water efficiency measures	Manufacturer's product testing data (e.g. on flow control devices) provides a clear idea of water volume reductions that are achievable. For sufficient certainty, the Competent Authority will require evidence that a Maintenance and Monitoring Plan is secured and will remain in place upon sale of any affected property via a legal agreement. Regular data submissions to the LPA may be required to show metered water levels and evidence of appliance checks to demonstrate that the water efficient fittings are performing to the required standard to achieve the stated nutrient reductions. Suitability for a strategic solution is limited given that MCC have an insufficient number of council houses in which to implement water efficiency measures.			
Urban SuDS	There is substantial evidence on TP benefits of certain SuDS approaches, if correctly implemented, and so SuDS are a suitable approach to reduce surface water TP in urban runoff. Suitability for a strategic solution as SuDS can be implemented on MCC owned land (e.g. car parks).			
Rural SuDS	There is substantial evidence on TP benefits of certain SuDS approaches, if correctly implemented, and so SuDS are a suitable approach to reduce surface water TP in rural runoff. Suitability for a strategic solution however may be limited within MCC due to a lack of rural owned land.			
Treatment wetlands	Nutrient removal from constructed wetland can be significant but is dependent on appropriate design. Due to the complexity of characterising flows and loads accurately, post-implementation monitoring is essential. Demonstrating the full nutrient removal potential			

Mitigation measure	Detail	Confidence	Cost	Suitability within Monmouthshire
	of a wetland may take 1 to 3 years or longer, as performance stabilises over time. In general, they are suitable for strategic scale implementation on MCC owned land.			
Other wetlands	Other wetlands are defined here as those not considered constructed or treatment wetlands but rather habitat creation such as in-ditch wetlands, ponds, and floodplain reconnection. While these wetlands can contribute to nutrient retention, their lack of controlled water inflows and uncertainty surrounding nutrient removal processes limits their suitability for formal nutrient neutrality calculations.			
Enhanced drainage ditches	An approach that combines a two-stage channel cross-section with low-grade weirs and vegetation on the inset floodplain benches. The combination of these approaches within a single channel aims to increase hydraulic residence time within the drainage network, promoting a suite of natural processes that reduce onward nutrient transport. Assuming correct design and implementation there is confidence in the TP mitigation related to this approach. However, there are substantial maintenance and monitoring requirements to ensure that the original design is maintained (e.g. periodic sediment removal may be required). Suitability for a strategic solution is limited as delivery of enhanced drainage ditch measures is likely to involve extensive site screening and evaluation, resulting in a relatively labour-intensive process and development of agreements with landowners or land acquisition.			

MCC are not restricted to the list provided in Section 5 and may be able to define alternative or novel approaches to delivering phosphorus mitigation. However, these will also need to provide sufficient certainty in the phosphorus reduction in perpetuity. Within Monmouthshire, approaches such as land-use change which have been implemented elsewhere were not considered suitable due to a shortage of MCC owned agricultural land which enable the approach to be adopted. Similarly, MCC do not have a bank of housing stock to which additional water use efficiency measures could be applied.

Overall, the short-listing approach determined that urban retrofit SuDS and constructed wetlands were possible options within Monmouthshire, and these were taken forward for further consideration of their potential. This included initial environmental and engineering constraints analysis to identify potentially suitable sites that could be taken forward for concept design by MCC. High level estimates of nutrient removal to determine how much benefit they would provide in terms of nutrient mitigation for the rLDP developments, and the details of the mitigation selection, constraints analysis and nutrient reduction potential estimates, are discussed in more detail within Section 7.

7. Development of Strategic Opportunities

7.1 Introduction

The allocated developments in the Usk catchment are projected to generate approximately **265 kg TP/yr** by 2033 under a worst-case scenario, which will require mitigation, and **136 kg TP/yr** by 2033 for the Wye catchment, although this has now moved out of unfavourable status and so there is no immediate need for mitigation. From the long list developed in Section 3, several strategic opportunities have been identified as having the potential to provide a solution or contribute to the solution within the Monmouthshire section of the River Usk catchment. These are developed further in this section. Volume II Appendix B and Volume II Appendix C (available upon request) provide an assessment of the potential viability of constructed wetlands and urban retrofit SuDS as a strategic nutrient mitigation option within the Monmouthshire section of the River Wye and River Usk catchments.

7.2 Constructed Wetlands

Overview of strategic mitigation option

Constructed wetlands are a nature-based nutrient mitigation option capable of providing additional nutrient removal downstream of WwTWs. When suitably designed and maintained, wetlands can provide significant attenuation of nutrient loads through a combination of natural physical, chemical and biological processes. As such, they offer potential as a strategic mitigation measure for the allocated developments in the catchments.

The assessment presented in Volume II Appendix B (available upon request) demonstrates that constructed wetlands may be a technically viable strategic mitigation solution at a subset of WwTWs within the affected catchments. However, their effectiveness as a strategic mitigation solution is highly site-specific and strongly influenced by land availability and type, hydraulic infrastructure, and the scale of treatment required relative to the nutrient load.

Approach

Data Collation

To identify the potential for MCC to use a constructed wetland as strategic mitigation, all relevant DCWW WwTWs in the affected nutrient catchments were identified. Data was requested from DCWW regarding influent flow rates and nutrient concentrations to the works as well as effluent flow rates and nutrient concentrations leaving the works. However, data was not made available in time to support this analysis and so effluent nutrient concentration data was derived from NRW's Water Quality Archive¹⁷, except for Goytre, where the concentrations were set to a constant 1.4 mg/l to reflect the WwTWs 2030 permit. The WwTW discharge rates (m³/day) were estimated from WwTW in Carmarthenshire with comparable sewer catchment areas (hectares), where AECOM has undertaken a similar assessment.

Constraints Analysis

A constraints analysis and mapping exercise was undertaken for each of the identified WwTW sites (9 no. considered in total). The GIS-based constraints review covered land availability, topographic suitability, geology, hydrogeology, flood risk, utilities, habitats, designated sites, land use and heritage factors. Data was derived from freely available online sources through the NRW website and data received directly from MCC. A range of constraints were evaluated using a Red–Amber–Green (RAG) scoring framework. The scoring methodology was derived by reviewing the requirements and considerations for constructed wetlands as nutrient-neutrality mitigation measures, informed by the Natural England nutrient neutrality framework¹⁸ and relevant NRW criteria. The RAG ratings reflect the relative severity and potential implications of each constraint category on feasibility, rather than providing a definitive assessment of deliverability or scheme design.

¹⁷ NRW Water Quality Archive | DataMapWales (no date). Available at: https://datamap.gov.wales/layers/geonode:nrw_water_quality_archive_stations (Accessed: 22 April 2026).

¹⁸ Natural England, 2022. Framework Approach for Responding to Wetland Mitigation Proposals.

Constructability

The next step was to consider constructability, with consideration of site-specific engineering and delivery factors, including topography, flood risk, existing vegetation, land use, access, hydraulic connectivity, and the scale of enabling works required. Constructability was also scored using a RAG system. Green represents a relatively straightforward gravity fed system, amber indicates more complex but not insurmountable engineering requirements with a probable pumping solution, while red indicates that the site is essentially unviable in terms of constructability. At this stage an estimation of wetland size was also made based on engineering constraints for indicative purposes, however, this would be subject to further analysis at outline and detailed design.

Phosphorus Removal Performance

Phosphorus removal performance was estimated using the P-k-C* model described by Kadlec and Wallace (2009¹⁹), which is widely applied in the preliminary design and evaluation of constructed wetlands. The model adopts a first-order areal reaction framework in which pollutant removal is a function of hydraulic loading rate and influent concentration and incorporates a background concentration representing the lower bound of achievable treatment.

The governing equation is:

$$\frac{C_e - C^*}{C_i - C^*} = \left[1 + \frac{K_{TP}}{Pq} \right]^{-P}$$

Where:

C_i = Influent concentration of TP (mg/l)

C_e = Effluent concentration of TP (mg/l)

C^* = Background concentration of TP (mg/l)

K_{TP} = Rate coefficient for reduction of TP (m/yr)

P = Apparent number of tanks in series (PTIS – dimensionless)

q = Hydraulic loading rate (m³/yr)

Rearranged to estimate effluent concentration (C_e):

$$C_e = C^* + (C_i - C^*) \left[1 + \frac{K_{TP}}{Pq} \right]^{-P}$$

A constant areal rate coefficient (K_{TP}) of 10 m/year was adopted, consistent with Kadlec and Wallace (2009). The hydraulic loading rate (q) represents the rate of inflow discharge (Q) (m³/yr) per unit area of wetland (m²), and was calculated as:

$$q = \frac{Q}{A}$$

Model inputs and assumptions adopted for this feasibility-stage assessment are available upon request. These assumptions reflect the limited availability of effluent concentrations, inflow discharge rates, and the early design stage. Input design and parameter data used for each WwTW site in the P-k-C* calculations can also be provided if required.

Using this approach, the P-k-C* model was applied to estimate potential annual TP mass removal for each WwTW, incorporating monthly removal variability. Calculations were undertaken for four wetland footprint scenarios of 100%, 80%, 60%, and 40% of the maximum feasible wetland area as a sensitivity analysis, which reflect likely reductions in effective treatment area arising from dense vegetation, flow paths, and multi-cell layouts as design develops.

Overview

Final recommendations on the optimum sites to take forward were made taking into account the outcomes of the constraints analysis, constructability appraisal, phosphorus removal performance and considering wetland location against rLDP allocated site location, to determine to what extent the wetland could mitigate the nutrients resulting from the plan.

¹⁹ Kadlec, R.H. and Wallace, S. (2008) Treatment Wetlands. 2nd edn. Boca Raton: CRC Press. Available at: <https://doi.org/10.1201/9781420012514>.

Identifying Potential Locations for Wetland Implementation

Potential wetland locations were assessed at relevant WwTWs through a staged assessment comprising GIS-based constraints screening followed by a more detailed engineering-led constructability review. WwTWs considered relevant are those within the catchment of the River Usk and River Wye SACs, where these are located in Monmouthshire. This approach enabled the identification of areas where wetlands could reasonably be delivered, taking into account land availability, topography, flood risk, ecological constraints, hydraulic connectivity and enabling works requirements. A summary of the environmental constraints assessment is presented in Table 7, and a summary of the engineering constraints is provided in Table 8. All wetland sites in relation to rLDP sites are shown in Figure 7.

Table 7 Summary of Environmental Constraints

WwTW name	RAG Score	Rank	Description of key environmental constraints
Goytre	126	=1st	Adjacent area of ancient woodland may constrain some areas of pipeline and what is possible to deliver, in addition to some small areas located within Flood Zone 3. There are also some topographical challenges associated with this area, and the entire area is also located within a surface water Drinking Water Protected Area (DwPA) that is at risk, although design and standard mitigation during construction is likely to provide adequate protection. The site is underlain by Secondary A bedrock and superficial aquifers, with a mix of low to medium groundwater vulnerability associated with both bedrock and superficial deposits.
Devauden	126	=1st	Constraints associated with topography and location of ancient woodland, which may impact effluent pipe connection. Located in close proximity to an AONB and a chapel (terrestrial monument). The site is associated with a Secondary A bedrock aquifer with high groundwater vulnerability and freely draining soils.
Little Mill	126	=1st	Located within Flood Zone 3 and within a Regionally Important Geological site. The site is underlain by a Secondary A superficial aquifer characterised by high groundwater vulnerability and floodplain soils with naturally high groundwater levels.
Raglan	128	4th	Areas of Flood Zone 3 constrain space available for a wetland and Public Right of Way may require fencing with wetland creation. The site is underlain by Secondary A bedrock and superficial aquifers with high groundwater vulnerability and is characterised by floodplain soils with naturally high groundwater levels.
Usk	133	5th	Constraints associated with direct discharge into the River Usk SSSI and SAC and located within a surface water DwPA designated at risk. Underlain by Secondary A bedrock and superficial aquifers with medium groundwater vulnerability associated with freely draining floodplain soils. Extensive Flood Zone 3 and historic landfill constrains the extent of potential wetland.
Llanellen	137	6th	Some constraints associated with direct discharge into the River Usk SSSI and SAC and located within a surface water DwPA designated at risk. It is characterised by Secondary A bedrock and superficial aquifers with high groundwater vulnerability and is associated with freely draining floodplain soils. Located within Flood Zone 3, and Himalayan Balsam is present upstream of the WwTW, with potential for its occurrence on site.
Aberbaiden	138	7th	Some constraints associated with topography, location of the ancient woodland next to the outfall, and direct discharge into the River Usk SSSI and SAC. Located in the Bannau Brycheiniog National Park. The entire area is located within a surface water DwPA designated at risk. The site is also characterised by being underlain by Secondary A bedrock and superficial aquifers with high groundwater vulnerability with a freely draining floodplain. There are also constraints associated with public rights of ways.
Llanfoist	141	8th	Located within Flood Zone 3 and associated with direct discharge into the River Usk SSSI and SAC. The site is also located within two surface water DwPA designated at risk. The site is underlain by Secondary A bedrock and superficial aquifers with high groundwater vulnerability associated with both bedrock and superficial deposits and freely draining soils. There are also areas of artificial ground and a terrestrial monument which may constrain wetland placement and size. Non-

native invasive species Himalayan Balsam and Butterfly Bush have been identified upstream of the WwTW and may pose a risk to the future management of the wetland.

Monmouth	145	9th	Located within Flood Zone 3 and Area of Outstanding Natural Beauty (AONB), directly bordering the River Wye SSSI and SAC and with nearby public rights of way. The entire area is also located within a surface water DwPA which is currently at risk and has a safeguard zone in place, and also within DwPA groundwater body which has Poor overall status. The site is underlain by Secondary A bedrock and superficial aquifer designations with high groundwater vulnerability.
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Table 8 Summary of Engineering Constraints

WwTW name	Constructability review rank	Description of key engineering constraints
Goytre	1	Based on high level review this site has potential for multiple gravity fed constructed wetland sites over the length of the existing outfall that could be investigated further. There is potential to increase the size and number of individual wetland areas from that highlighted if ecology, liaison with landowners, and treatment requirements allow.
Aberbaiden	2	There is potential to consider further a wetland to the east and west of the WwTW. However, there will likely be higher costs associated with pumping, construction of a new outfall, and a minor watercourse crossing.
Monmouth	2	Based on high level review this site has some more limited potential for a constructed wetland but with a more expensive pumped inlet arrangement. This is due to other more suitable areas being ruled out due to environmental and engineering constraints (e.g. within AONB, adjacent to County Showground or being within Flood Zone 3).
Llanellen	2	Site shows potential for a potential constructed wetland given available area of around 1.5 ha that could be investigated further. However, viability is based on the feasibility of pumping arrangements and whether the existing outfall to the river can be used.
Usk	2	A wetland may be technically feasible (subject to more detailed investigations) but is likely to have higher costs due to the need for a river crossing and 10 m pumping head requirement (more favourable land is located with Flood Zones 2/3 and so has been ruled out). However, the existing outfall is pumped and if this infrastructure can be re used, it may mitigate some of the higher cost.
Devauden	3	The combination of a 30m elevation gain to the wetland area, requirement for pumping and a new outfall, and limited treatment volumes associated with a small works results in an unfavourable cost benefit ratio.
Raglan	3	The WwTW is constrained by steep watercourses either side, directly upstream of the confluence. Although two potential wetland sites have been identified outside of environmental constraints (e.g. Flood Zone 3 and mature trees), both options would require pumped inlets, a watercourse crossing and a new outfall. Given the relative size of the WwTW this site looks to provide a poor cost to benefit ratio.
Llanfoist	N/A	Site ruled out as entire area is within Flood Zone 3.
Little Mill	N/A	Site ruled out as no suitable location due to hill topography.

This assessment concluded that viable wetland locations are not available at all the relevant WwTWs. Llanfoist WwTW, was ruled out due to its location in Flood Zone 3, noting that there was a small area outside of the flood zone ruled out for containing a terrestrial monument, while Little Mill WwTW was excluded due to unsuitable hillside topography. At the remaining sites, feasible wetland areas were identified along existing outfalls or within adjacent low-gradient farmland, subject to varying requirements for pumping, earthworks or modifications to existing discharge arrangements. These areas, along with available TP concentration and flow data were input into the P-k-C* model¹⁸ to estimate the potential TP mitigation for each wetland, presented in Table 9. Refer to Volume II Appendix B for further details (available upon request).

Table 9 presents annual TP reduction based on the potential maximum available wetland area based on a desk study and certain assumptions as described later. For Goytre, Llanellen, Usk, Devauden and Raglan, the estimated TP reductions, even when assuming only 80% of the total area operates as active treatment (to act as a buffer), exceed the allocated nutrient budgets. In contrast, at Monmouth and Aberbaiden, TP reduction at 80% of the total available area does not meet the allocated nutrient budgets, suggesting that further refinement of TP removal rates may be required, potentially achievable through careful wetland design.

Table 9 Annual total phosphorus mitigation potential for a wetland utilising the maximum estimated available area at each WwTW.

WwTW name	Environmental Constraints RAG Score	Constructability review rank	Allocated sites served / downstream of WwTW / wetland outfall	Nutrient budget from relevant allocated sites (in 2033)* (TP/yr)	Max estimate available area for wetland (ha)	TP reduction at full area	TP reduction at 80% area	TP reduction at 60% area	TP reduction at 40% area
Goytre^	126 (=1st)	1	HA10, HA11, HA12, HA14, HA15, HA16	70.15 kg TP/yr	3.49	252	224	189	143
Aberbaiden	138 (7th)	2	All allocated sites are downstream	264 kg TP/yr	0.8	260	214	162	110
Monmouth	145 (9th)	2	HA4, HA6, HA7, HA8	103 kg TP/yr	1	106	86	66	44
Llanellen	137 (6th)	2	HA10, HA11, HA12, HA14, HA15, HA16, HA17	85.67 kg TP/yr	1.5	112	106	98	83
Usk	133 (5th)	2	HA11, HA10, HA14	42.24 kg TP/yr	1.25	300	258	209	152
Devauden	126 (=1st)	3	HA14	11.93 kg TP/yr	2	132	126	117	101
Raglan	128 (4th)	3	HA10, HA14	18.37 kg TP/yr	2.45	24	22	19	15
Llanfoist	141 (8th)	Site not assessed as not considered to have sufficient potential for constructed wetland development.							
Little Mill	126 (=1st)	Site not assessed as not considered to have sufficient potential for constructed wetland development.							

*Based on worst case scenario.

^Influent conc. for Goytre wetland were assumed as a constant 1.4 mg/l to reflect the WwTW 2030 permit requirement.

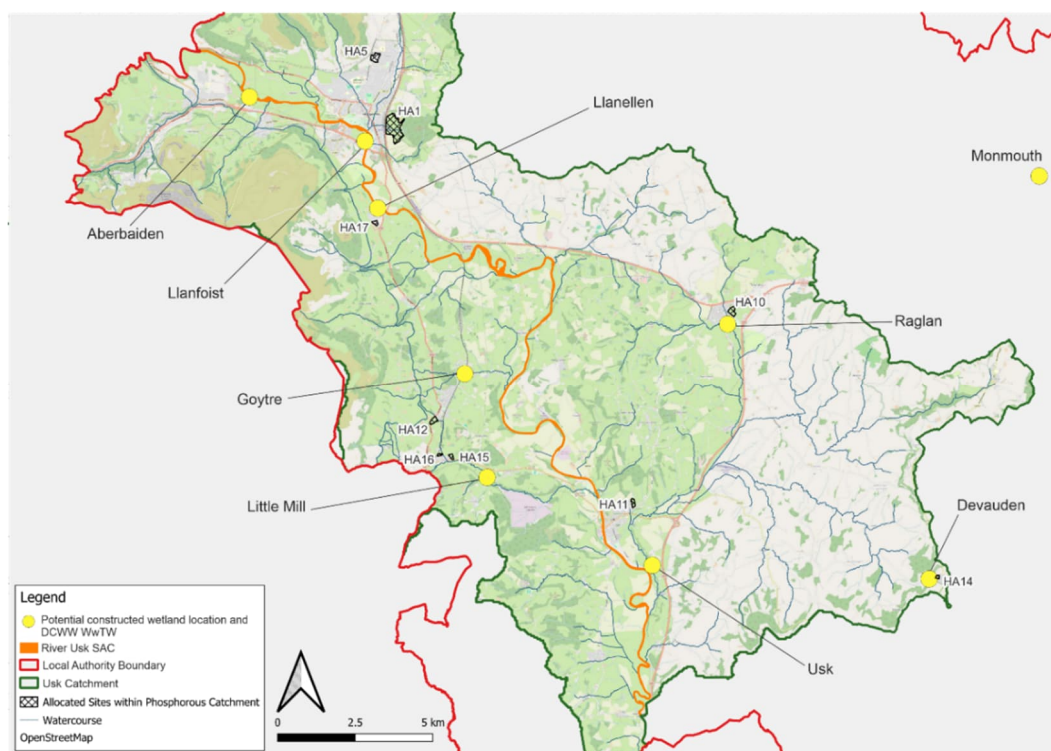
**Figure 7 Location of all considered constructed wetlands and allocated sites**

Table 10 presents an alternative assessment that focuses on optimising wetland size so that TP removal more closely aligns with the maximum nutrient budget that may be generated by allocated development served by the relevant WwTW and any development sites further downstream. The assessment assumes that 80% of the constructed wetland footprint functions as active treatment area, with the remaining 20% as a buffer. However, actual removal rates will be highly dependent on detailed design and long-term maintenance. Under this approach, wetland areas are sized so that the TP reduction achieved by the effective 80% treatment area meets or marginally exceeds the allocated nutrient budget.

Table 10 Constructed wetland areas required to meet site-specific total phosphorus nutrient budgets, assuming 80% of the wetland footprint functions as active treatment area

WwTW name	Environmental Constraints RAG Score	Construct-ability review rank	Nutrient budget from relevant allocated sites (in 2033)* (TP/yr)	Area required to mitigate 2033 nutrient budget* from relevant allocated sites with 20% buffer (ha)	Estimated TP reduction at 80% built wetland area
Goytre	126 (=1st)	1	70.15 kg TP/yr	0.75	72.23 kg TP/yr
Aberbaiden	138 (7th)	2	264 kg TP/yr	0.80	260 kg TP/yr**
Monmouth	145 (9th)	2	103 kg TP/yr	1.0	106 kg TP/yr**
Llanellen	137 (6th)	2	85.67 kg TP/yr	0.8	85.72 kg TP/yr
Usk	133 (5th)	2	42.24 kg TP/yr	0.16	44.56 kg TP/yr
Devauden	126 (=1st)	3	11.93 kg TP/yr	0.06	14.02 kg TP/yr
Raglan	128 (4th)	3	18.37 kg TP/yr	2	19.85 kg TP/yr

*Based on worst case scenario.

**Estimated TP reduction at 100% area.

The combined constraints assessment, constructability review, and P-k-C* estimation identify **Goytre WwTW** as the most feasible site for delivering a constructed wetland as a strategic phosphorus mitigation measure, with a maximum estimation of **252 kg TP/year** when utilising the total available area of 3.45 hectares (Table 9), or the wetland area can be reduced to 0.75 hectares to meet its allocated sites nutrient budget. Key advantages for constructing a wetland to treat Goytre WwTW effluent include:

- Lowest scoring in the environmental constraints screening (i.e. a higher score indicates more issues).
- Scope for the wetland to be gravity fed.
- Available land for multiple wetland cells, improving treatment reliability and hydraulic efficiency.

Despite this potential, a wetland at Goytre would only be applicable to mitigating development at the allocated sites served by it, or downstream of it, namely HA10, HA11, HA12, HA14, HA15, HA16. This does not include the developments HA1 and HA5 at Abergavenny.

As such, it is also recommended that **Aberbaiden WwTW** is investigated further through feasibility studies and design, as this site has the advantage of being upstream of all allocated sites in the Usk catchment. It can therefore be used as mitigation for all the allocated sites in this catchment, whereas the other potential wetland sites can only be used as mitigation for the allocated sites that it serves, or those downstream of it. As such, Aberbaiden WwTW appears to be the only feasible wetland option for mitigating the allocated developments at Abergavenny (i.e. HA1 and HA5). Based on the estimates presented herein, a wetland at Aberbaiden WwTW would have the potential to remove up to 260 kgTP/yr. Pumping would be required and there are other constraints requiring consideration (e.g. location in the Bannau Brycheiniog National Park authority area) but this is considered a key option for strategic mitigation. If an alternative site was required, WwTW further upstream in the SAC catchments within Powys or Herefordshire may be considered through further study. Providing mitigation

is upstream along the SAC it would be suitable to offset any excess phosphorous generated by allocated developments HA1 and HA5.

Finally, it is also recommended that the **Usk WwTW** should also be considered further. This site might have the potential to treat 300 kgTP/yr, although it would only serve allocated sites HA10, HA11, and HA14. While pumping will be required, the presence of existing pumped outfall infrastructure may reduce costs and make this option more cost-effective for delivering mitigation for HA10, HA11, HA14. The three preferred site locations are shown in Figure 8.

Of the remaining amber sites in Table 9, Monmouth WwTW is not considered further at this stage as it is located in the Wye SAC catchment which does not require mitigation (see Section 3.4). Llanellen WwTW is in the Usk catchment but has much lower nutrient removal capabilities than other sites in this catchment and so is not prioritised for further consideration at this stage.

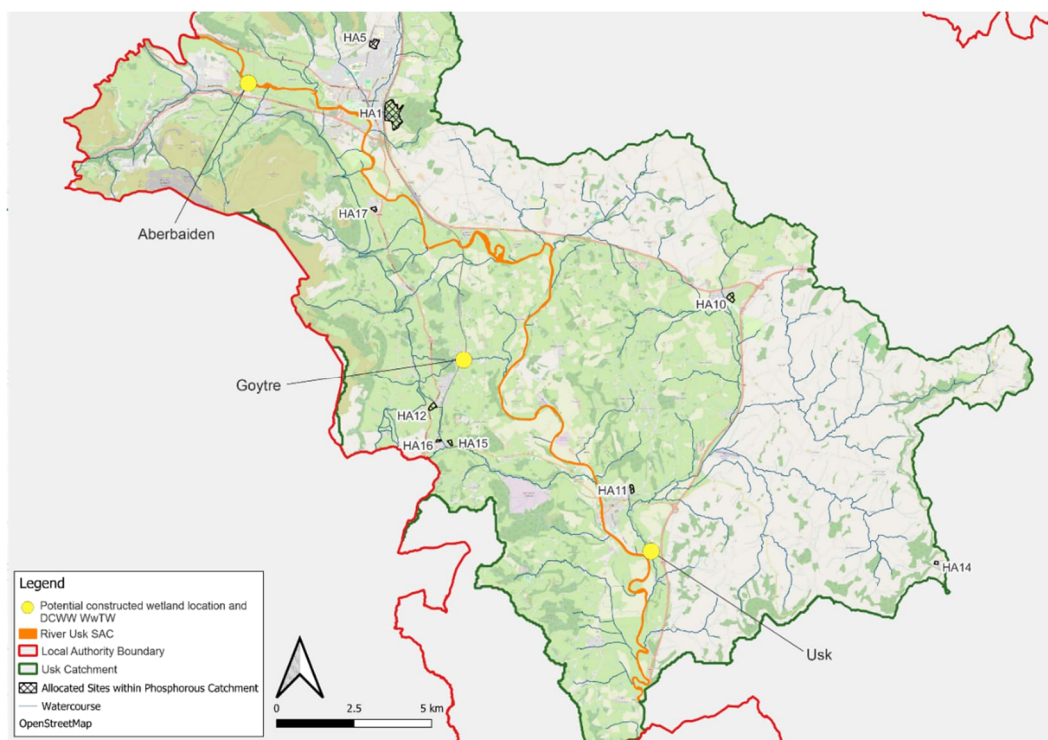


Figure 8 Location of preferred constructed wetlands

Potential Cost of TP Reductions from Constructed Wetlands

Construction costs for a constructed wetlands have been estimated using an AECOM tool that considers the additional costs smaller and standalone projects incur that are not typically reflected in SPONs costings. A high-level cost summary has been included in Table 11 assuming a wetland spanning 4 ha with 6 no. treatment cells.

Table 11 Indicative constructed wetland construction costs

Cost component	Indicative Cost (£)
Preliminary items	100,000
Site clearance	20,250
Plant hire	77,000
Plant fuel	30,000
Labour	92,500
Materials / installed works	1,250,500
Provisional sums	30,000
Subtotal (base)	1,600,250
CPI uplift (Sep 2025 → Dec 2025: +0.07%)	1,900
Risk allowance	18,750
Total Cost	1,620,900

Whilst the material costs which build up the bulk of the works can be scaled, the additional costs consisting of preliminary and other capital costs cannot. The resulting cost of a constructed wetland can therefore be split into material costs and additional fees, of approximately £315,000 per hectare and £365,500, respectively. Furthermore, where solutions are required to be pumped, an additional cost of £350,000 has been allowed for, based on historic projects carried out by AECOM. These costs have been applied to the wetlands below; however, these are indicative and would require the undertaking of a feasibility study prior to accurate costing. Furthermore, the figures below account for construction costs only, and exclude full life and maintenance costs.

Table 12 Indicative constructed wetland construction costs

WwTW name	Wetland area to achieve the nutrient budget target (hectares)	Material cost (£)	Additional fees (£)	Estimated cost (£)	Estimated cost inc. pumping (£)
Goytre	0.75	236,250.00	365,500.00	601,750.00	
Monmouth	1	315,000.00	365,500.00	680,500.00	1,030,500.00
Llanellen	0.8	252,000.00	365,500.00	617,500.00	967,500.00
Usk	0.16	50,400.00	365,500.00	415,900.00	765,900.00
Raglan	2	630,000.00	365,500.00	995,500.00	1,345,500.00
Devauden	0.06	18,900.00	365,500.00	384,400.00	734,400.00
Aberbaiden	0.80	252,000.00	365,500.00	617,500.00	967,500.00
Llanfoist	-	-	-	-	-
Little Mill	-	-	-	-	-

It is good practice when costing at this level of detail to include an optimism bias to cover unknown factors. It is generally recommended to allow for a 60% optimism bias²⁰ for anything up to feasibility design, which has not been quoted in the figures above. As the design progresses, the optimism bias associated with the costing would decrease as the level of confidence in the design increases.

Limitations and Uncertainty

The assessment of constructed wetlands as a strategic phosphorus mitigation option is subject to several limitations arising from data availability, modelling assumptions, and the feasibility-stage nature of the study. These include:

- **Flow data** - WwTW effluent flow discharge rates were not made available from DCWW and were therefore estimated using sewer catchment area as a proxy, scaled against comparable Carmarthenshire WwTWs. While this approach provides a reasonable indication of relative flow magnitude, it introduces uncertainty in the absolute hydraulic loading rates and therefore the TP mitigation potential, as the P-k-C* model is highly dependent on the TP influent loading.
- **TP effluent concentration** – WwTW effluent concentrations were derived from 1 to 3 sampling repeats per month, reducing certainty of monthly averages used to estimate annual TP reduction. For Goytre, the effluent concentration was set as a constant 1.4 mg/l to reflect the WwTW 2030 permit requirement, which will not reflect the actual effluent concentrations.
- **P-k-C* model¹⁸** – TP reduction was estimated using the P-k-C* model, where despite its wide use, the approach simplifies complex biogeochemical and hydraulic behaviour. It also does not account for short-term variability to stressor events (i.e., storms), seasonal dynamics, sediment phosphorus release and long-term performance.
- **P-k-C* model parameter constants** – Constant parameters including the TP rate constant, tanks-in-series and background concentrations, were derived from literature values and standard design assumptions rather than site-specific data that accounts for natural short-term variability. While these assumptions are consistent with accepted guidance for feasibility-level assessment, they may not reflect actual performance under local conditions and would require refinement through detailed design, monitoring data, and site investigations.

²⁰ Scottish Government / Flood protection schemes - assessment of economic, environmental and social impacts: guidance. Available at: [ANNEX C. Optimism Bias Data for Flood Protection Costs - Flood protection schemes - assessment of economic, environmental and social impacts: guidance - gov.scot](#). (Accessed: 29 April 2026).

- **Maximum feasible wetland areas** – The identification and use of maximum wetland areas do not account for detailed layout design and land ownership constraints, which could reduce the effective treatment area. Sensitivity testing using reduced effective areas (80%, 60%, and 40%) was undertaken to partially account for this, but uncertainty remains regarding final deliverable extents until detailed design is developed and subsequent wetland monitoring undertaken.

7.3 SuDS

Overview of strategic mitigation options

SuDS are a nature-based mitigation option capable of providing nutrient removal from surface water runoff from highways. SuDS interventions including bioswales, raingardens, and permeable paving can provide treatment of surface water runoff through specially designed filter layers, particularly when deployed in 'treatment trains'. They can be designed to directly capture surface water runoff from highways through designed inlets, or to capture surface water from existing surface water sewers via a diversion. They can be retrofitted into urban environments with high nutrient loading from vehicles as an effective mitigation solution. The treatment potential of individual SuDS interventions is limited and therefore they must be deployed on a large scale. Furthermore, the viability of SuDS interventions as a treatment solution is highly dependent on the land available that is suitable for SuDS interventions including assessment of topography, available catchment area, and utilities.

Identifying potential locations for SuDS implementation

MCC provided a long list of potential SuDS locations across Monmouthshire. These identified SuDS locations were assessed through a RAG assessment comprising GIS-based constraints screening followed by a more detailed engineering-led constructability review. This approach enabled the identification of areas where SuDS could reasonably be delivered, taking into account topography, flood risk, ecological constraints, available catchment area, and existing street furniture or vegetation. The RAG assessment of the longlist provided by the client is provided in Volume II Appendix C (available upon request).

This assessment concluded that there were several viable locations suitable for SuDS interventions. Some locations were ruled out as they are located in Flood Zone 3 or 2. A selection of others were deemed unlikely to be feasible due to a lack of obvious catchment area available or the catchment area available was likely to have low nutrient loading, or due to the gradient of the land being too steep. The most suitable areas identified include Bailey Park (including the car park), Castle Street Car Park, Lansdown Road green space, Hillcrest Road verges, and Old Barn Way green space.

The sites recommended for further investigation including nutrient removal calculations were Bailey Park, Bailey Park Car Park, and Old Barn Way green space. A detailed assessment of each of these locations is provided in Volume II Appendix C (available upon request).

Additional sites rated as either amber or green are within the long list found in Volume II Appendix C.3 (available upon request). Taken together, the combined use of all three shortlisted options indicates potential nutrient removal of approximately **0.57 kg TP/year**. Whilst only an indicative analysis, this mitigation potential suggests the SuDS Retrofit approach is not feasible as an approach that could be expanded to a strategic level in Monmouthshire. A far greater land area of MCC owned impermeable areas would be required to generate significant nutrient benefits and it would not be cost effective to pursue retrofit upgrades on a sufficient scale for nutrient mitigation for the rLDP. Further details are given in Volume II Appendix C (available upon request), including details of constraints analysis, shortlisted sites potential costs and limitations of SuDS as a strategic mitigation approach.

8. Recommendations

It is notable that the current NRW guidance¹⁰ suggests that if the relevant WwTW for proposed developments has an environmental permit that has been reviewed against the nutrient targets set out in the conservation objectives for the river SAC, it may be possible for a planning authority to conclude that there will be no likely significant effect with regard to phosphorus if certain criteria are met. Further mitigation can therefore be 'screened out'.

Where NRW are not content to screen the phosphorus loading out on the basis of the Review of WwTW permits, then the Welsh Government and NRW guidance outline several hierarchical approaches (or 'pathways') to mitigation, through which it would be feasible to mitigate the phosphorus loads associated with the rLDP, thereby providing confidence that no adverse effects on the site integrity of the SACs would occur. This report has considered 'pathway step 3' which relates to nutrient neutrality, and in particular, strategic mitigation options that could be led by Monmouthshire County Council.

Constructed wetlands have emerged from this exercise as the key strategic option with the potential to deliver the greatest nutrient mitigation benefit for the Usk catchment. Preferred sites have been identified at Goytre WwTW, Aberbaiden WwTW, and Usk WwTW. Aberbaiden WwTW is located upstream of all allocated sites in the Usk catchment of the rLDP and so may be able to provide mitigation across all sites, subject to appropriate design and implementation. It has the potential to deliver 260 kgTP/yr reduction, against the overall budget for the rLDP in the Usk catchment of 264 kgTP/yr. Wetlands at Goytre and Usk would provide mitigation for those allocated sites directly served by them, as well as those down catchment. However, any developments further upstream would not be able to apply for credits. Please note that at this stage only a high-level desk-based feasibility study has been undertaken to consider the initial potential at these sites. Further investigations, scheme development, and consultation with DCWW, landowners and NRW etc. is required if a viable scheme is to be developed, and this is reflected in the actions below.

Retrofit SuDS would provide very limited nutrient mitigation in comparison to wetlands based on available sites and are not considered a cost-effective solution. On this basis they are not recommended to be progressed.

Overall, the following recommended steps to further investigate and deliver a strategic wetland(s) have been included in the Nutrient Mitigation Action Plan:

- **Action 1:** MCC to continue ongoing consultation with DCWW regarding development of the preferred wetland site(s), and if agreement can be reached MCC will undertake concept design to ensure sufficient phosphorus reduction to offset a significant proportion of development proposed in the rLDP.
Outcome: Confirmation of feasibility stage and progression to scheme development.
- **Action 2:** MCC to consider implementation and future operating costs and determine feasibility of nutrient credit scheme.
Outcome: Determination of suitable mechanism for charging developers for nutrient credits and ensuring the option is sufficiently attractive for full implementation.
- **Action 3:** MCC to consult with NRW and DCWW regarding permit requirements.
- **Action 4:** MCC to seek agreement with DCWW over points of compliance for the existing permit and which party has 'ownership' of the water passing through, and discharged from, the wetland.
Outcome: An agreed position documented through a Memorandum of Understanding between MCC and DCWW, or similar document.
- **Action 5:** MCC to undertake detailed design.
- **Action 6:** MCC/DCWW to apply for required Environmental Permits / planning permission.
- **Action 7:** MCC to construct and commission wetland.
- **Action 8:** MCC to prepare and implement Wetland Monitoring and Maintenance Plan (expected to be a condition of planning).
Outcome (Actions 5-8): Design, build and operation of constructed wetland with nutrient credit system for prospective developers.

Appendix C Nutrient Mitigation Action Plan

rLDP Nutrient Neutrality Support

Task 7 Nutrient Management Action Plan

Monmouthshire County Council

April 2026

Quality information

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1. Introduction

The Inspectors appointed to examine the Monmouthshire County Council (MCC) Replacement Local Development Plan (rLDP) have requested additional information on the Council's approach to addressing the effect of proposed development in the rLDP on riverine Special Areas of Conservation (SACs) in relation to the discharge of phosphorus. The affected riverine SACs are the River Wye and River Usk sites.

In February 2026, MCC commissioned a study to estimate the potential increase in nutrient (phosphorus) loading from implementation of the rLDP. This study has been published within the Monmouthshire Replacement Local Development Plan 2018-2033 – Phosphate Position Paper (February 2026)¹. The determination of phosphorus budgets was undertaken for all allocated and committed development in both the River Usk and River Wye catchments, with results presented on a 'year by year' basis. As this study concluded that there will be an excess of phosphorus from foul wastewater from the proposed developments, mitigation will be required to ensure that the rLDP can be considered nutrient neutral (i.e. the developments do not contribute additional phosphorous loads to the River Wye SAC or River Usk SAC sites). Further details of the SAC sites are provided in Section 2.

This document sets out an initial Action Plan (AP) that MCC will implement and deliver in order to ensure that the rLDP can be enacted alongside the necessary reductions in phosphorous. The AP should be read in conjunction with the Strategic Mitigation Opportunities Report, which seeks to further develop the understanding of feasible, strategic mitigation opportunities and pathways within the affected catchments in Monmouthshire.

1.1 Aims and Objectives

The AP aims to set out the mitigation pathways and associated requirements that ensure that nutrient mitigation can be implemented and secured when needed, demonstrating that the rLDP is deliverable in line with its milestones.

The Welsh Government have recently (March 2026) provided a clarification note on how “*Tests of Soundness*” should be applied to LDPs where the impact of additional nutrients on SAC's has been identified². This guidance indicates that an indicative mitigation action plan should include the following information:

- An estimate of the impacts arising from the plan proposals (see summary in **Section 3**);
- An estimate of the improvements from existing and future measures necessary to avoid further deterioration of the SAC, including from plan proposals (see **Section 3**).
- The securing of the appropriate steps to be taken including appropriate delivery mechanisms (see Section 4 and 6) and agreed milestones (see details of timescales in **Section 5 and 6**).
- Identifying integrated mitigation where this can be secured and appropriate developer contributions identified (which is interdependent with the on-going steps and measures) (see **Section 4 and 6**).
- Clear monitoring framework for implementing policies and proposals relative to the adaptive management framework (see **Section 6**).

In achieving these objectives, the MCC Nutrient Management AP has been developed to:

- Be **Outcome focused**.
- Outline a **phased programme** of necessary steps for each mitigation measure taken forward, with **indicative timing** outlined for each step (e.g. short-, medium-, long-term).
- Set out **details of engagement required with delivery partners** (and at what point in the process).
- Describe likely **funding routes** and **delivery mechanisms**.
- Include information on each strategic measure to be taken forward, including information on **indicative costs for strategic mitigation solutions**, expected phosphorous reduction, and governance responsibilities.

¹ [Phosphate Position Paper February 2026](#)

² [Clarification note: applying the tests of soundness to Local Development Plans \(LDPs\)](#)

- Include a prioritisation framework of actions (using a Red-Amber-Green system).
- Consider what **monitoring and review arrangements** are required.

Figure 1 shows the elements that constitute a robust action plan, which have been incorporated herein:



Figure 1 Elements forming a robust Action Plan

1.2 Approach

The AP is based on the current understanding of the situation within Monmouthshire and current nutrient neutrality legislation and guidance in Wales, most notably the following:

- [Natural Resources Wales / Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation](#)
- Welsh Government / [Clarification note: applying the tests of soundness to Local Development Plans \(LDPs\)](#)
- Welsh Government / [Planning Guidance - Development in SAC Rivers](#)

Nonetheless, the guidance and AP requirements around nutrient neutrality continue to evolve, and as such the AP will be reviewed and updated periodically where necessary. This will be undertaken annually by MCC.

The AP has been developed collaboratively with partners, including MCC, Dwr Cymru Welsh Water (DCWW), and Natural Resources Wales (NRW), supported by a workshop with AECOM consultants on 15th April 2026. MCC intend to continue collaboration with regulators, delivery partners and potentially landowners through delivery of the AP to ensure the efficient implementation of actions to enable development outlined within the rLDP to come forward (see Figure 2).

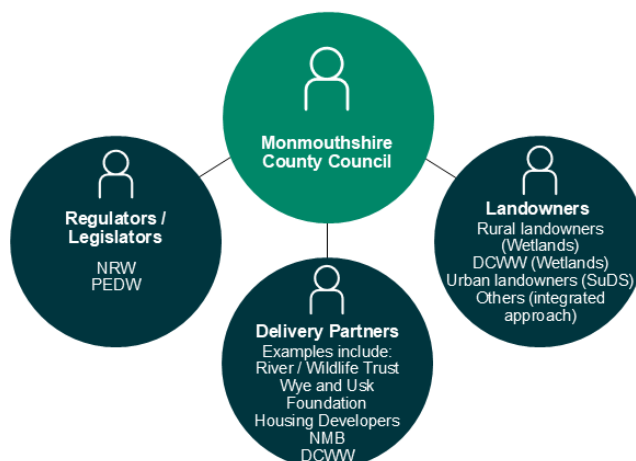


Figure 2 Organisations involved in delivery of the AP

2. Southeast Wales designated sites

2.1 Overview

The affected riverine SACs in Monmouthshire to which the nutrient neutrality principles apply are the River Usk SAC and the River Wye SAC. Figure 3 illustrates the location of the two SACs, along with their phosphorus nutrient neutrality catchment, and the Local Planning and National Park Authority boundaries.

The River Wye SAC is the largest Welsh SAC river, with its catchment divided into 43 Water Framework Directive (WFD) water bodies in Wales, while the River Usk SAC consists of 23 WFD water bodies. Both SACs are designated under the Conservation of Habitats and Species Regulations 2017³ for the protection of Annex I habitats and Annex II species.

In January 2021, NRW published a report that presented the assessment of compliance against recently tightened phosphorus water quality targets for SAC rivers⁴. The report showed that over 60% of SAC water bodies were failing the new targets for phosphorus.

Within the Usk 88% of its water bodies were failing for phosphorous. As a result, new developments leading to an increase in phosphorus discharges to this site may contribute to the unfavourable condition of the designated site or make its restoration to favourable status more difficult to achieve. This is typically undertaken as part of a Habitat Regulations Assessment supported by Nutrient Neutrality and Mitigation Assessments.

Whilst previously failing (2021) the Lower River Wye is now considered by NRW (as of 2026) to no longer be failing for phosphorus. However, it is still important that any new development that may lead to an increase in phosphorous discharged to the SAC considers whether that discharge would risk causing deterioration of the river back to less than good conservation status.

Further details for the two riverine SACs are provided in 2.1.1 (River Usk) and 2.1.2 (River Wye).

³ Participation, E. (no date) The Conservation of Habitats and Species Regulations 2017. Statute Law Database. Available at: <https://www.legislation.gov.uk/uksi/2017/1012/contents> (Accessed: 8 January 2026).

⁴ Natural Resources Wales / Compliance Assessment of Welsh River SACs against Phosphorus Targets (2021). Available at: [compliance-assessment-of-welsh-sacs-against-phosphorus-targets-final-v10.pdf](#) (Accessed: 13 April 2026).

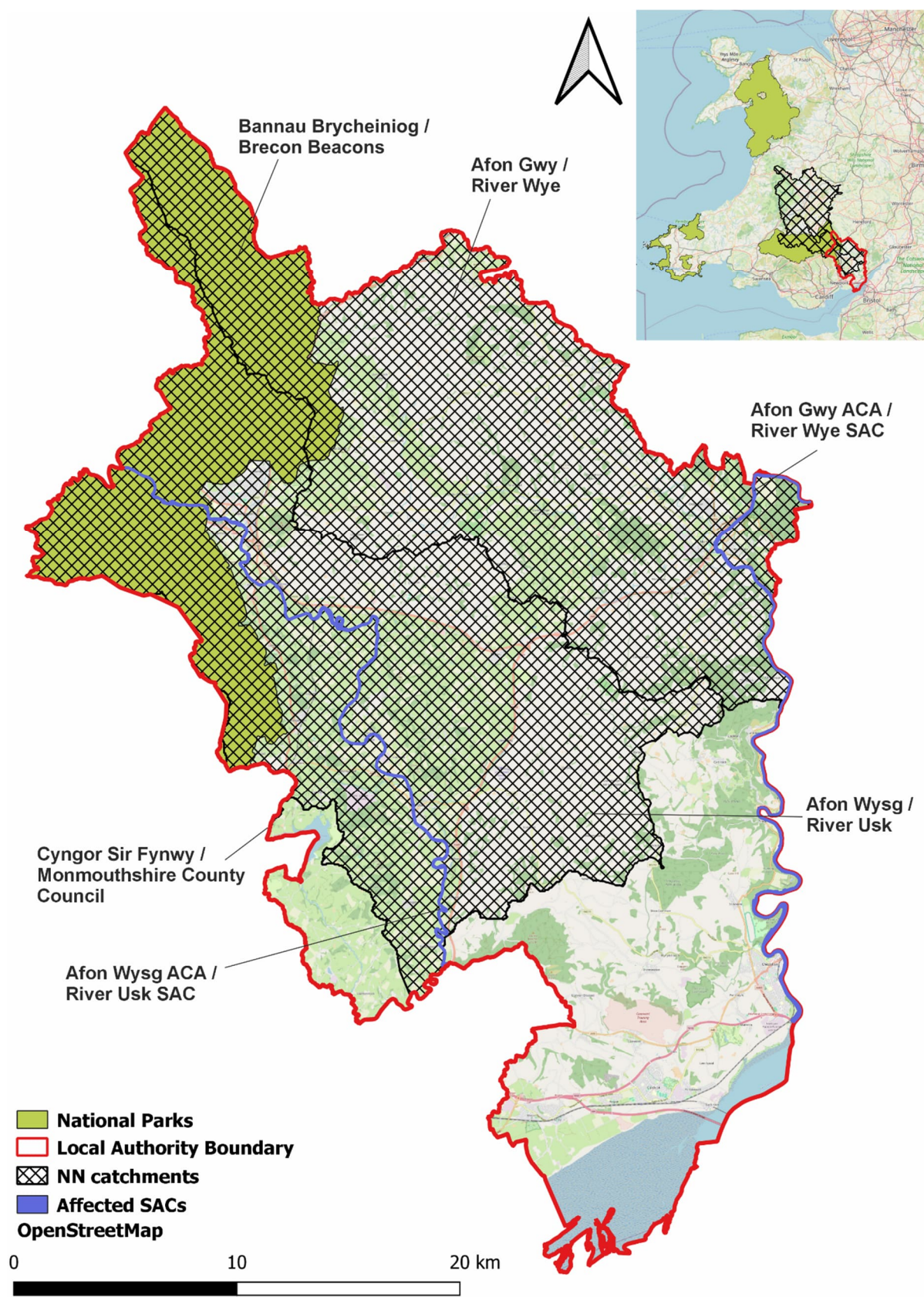


Figure 3 Location of the two riverine SACs in South East Wales (River Usk SAC and River Wye SAC) where phosphorus pressures have contributed to unfavourable site conditions (source: Welsh Government Data Map Wales online data)

2.1.1 River Usk SAC



Figure 4 River Usk at Usk Island⁵

Summary Description	The Usk is a medium sized catchment in southeast Wales with a primarily sandstone geology and frequently carries heavy sediment loads following periods of rainfall ⁶ . The Usk is by some distance the worst performing SAC river in Wales with respect to its phosphorus targets and is the only river where there are extensive failures in the headwaters.
Annex I habitats that are a primary reason for designation⁷:	• Not Applicable
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site⁷:	• Watercourses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation
Annex II species that are primary reason for selection of this site⁷:	• Sea lamprey (<i>Petromyzon marinus</i>) • Brook lamprey (<i>Lampetra planeri</i>) • River lamprey (<i>Lampetra fluviatilis</i>) • Twaite shad (<i>Alosa fallax</i>) • Atlantic salmon (<i>Salmo salar</i>) • Bullhead (<i>Cottus gobio</i>) • Otter (<i>Lutra lutra</i>)
Annex II species present as a qualifying feature, but not primary reason for designation⁷:	• Allis shad (<i>Alosa alosa</i>)

⁵ Monmouthshire County Council (2025). Available at: <https://www.monmouthshire.gov.uk/our-main-parks-and-gardens/#Usk> (Accessed: 14 April 2026).

⁶ Natural Resources Wales (2021). Compliance Assessment of Welsh River SACs against Phosphorus Targets. Available at: <https://cdn.cyfoethnaturiol.cymru/693025/compliance-assessment-of-welsh-sacs-against-phosphorus-targets-final-v10.pdf?mode=pad&rnd=132557227300000000> (Accessed: 14 April 2026).

⁷ River Usk / Afon Wysg - Designated Special Area of Conservation (SAC) (no date). Available at: <https://sac.jncc.gov.uk/site/UK0020020> (Accessed: 14 April 2026).

2.1.2 River Wye SAC



Figure 5 River Wye at Bigsweir⁸

Summary Description	The Wye is the largest SAC river, with a catchment covering much of southern Powys and part of the Bannau Brycheiniog National Park before crossing the border into England. Much of the Upper Wye catchment is rural and until recently has been predominantly farmed for sheep and cattle. More recently there has been a rapid expansion of poultry units, which has been the source of public concern ⁶ .
Annex I habitats that are a primary reason for selection of this site⁹:	– Watercourses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site⁹:	• Transition mires and quaking bogs
Annex II species that are primary reason for selection of this site⁹:	• White-clawed (or Atlantic stream) crayfish (<i>Austropotamobius pallipes</i>) • Sea lamprey (<i>Petromyzon marinus</i>) • Brook lamprey (<i>Lampetra planeri</i>) • River lamprey (<i>Lampetra fluviatilis</i>) • Twaite shad (<i>Alosa fallax</i>) • Atlantic salmon (<i>Salmo salar</i>) • Bullhead (<i>Cottus gobio</i>) • Otter (<i>Lutra lutra</i>)
Annex II species present as a qualifying feature, but not primary reason for site selection⁹:	• Allis shad (<i>Alosa alosa</i>)

⁸ Monmouthshire County Council (2025). Available at: https://www.monmouthshire.gov.uk/2025/03/mcc-welcome-investment-to-transform-the-river-wye/river-wye-at-bigsweir_14589368845_o/ (Accessed: 14 April 2026).

⁹ River Wye / Afon Gwy- Designated Special Area of Conservation (SAC) (no date). Available at: <https://sac.jncc.gov.uk/site/UK0012642> (Accessed: 14 April 2026).

3. Context and Progress to Date

3.1 Potential rLDP Nutrient Load Impact

In February 2026, MCC commissioned a study to estimate the potential increase in phosphorus loading from implementation of MCC rLDP. This phase of work included three tasks:

- **Task 1** – Nutrient budget calculations for committed/allocated developments in the Usk/Wye catchments.
- **Task 2** – High level review of non-residential development and its potential impacts on designated sites.
- **Task 3** – High level review of mitigation options available in the affected catchments.

The allocated and committed development sites within each catchment considered in these initial nutrient budget estimates are shown in Figure 6.

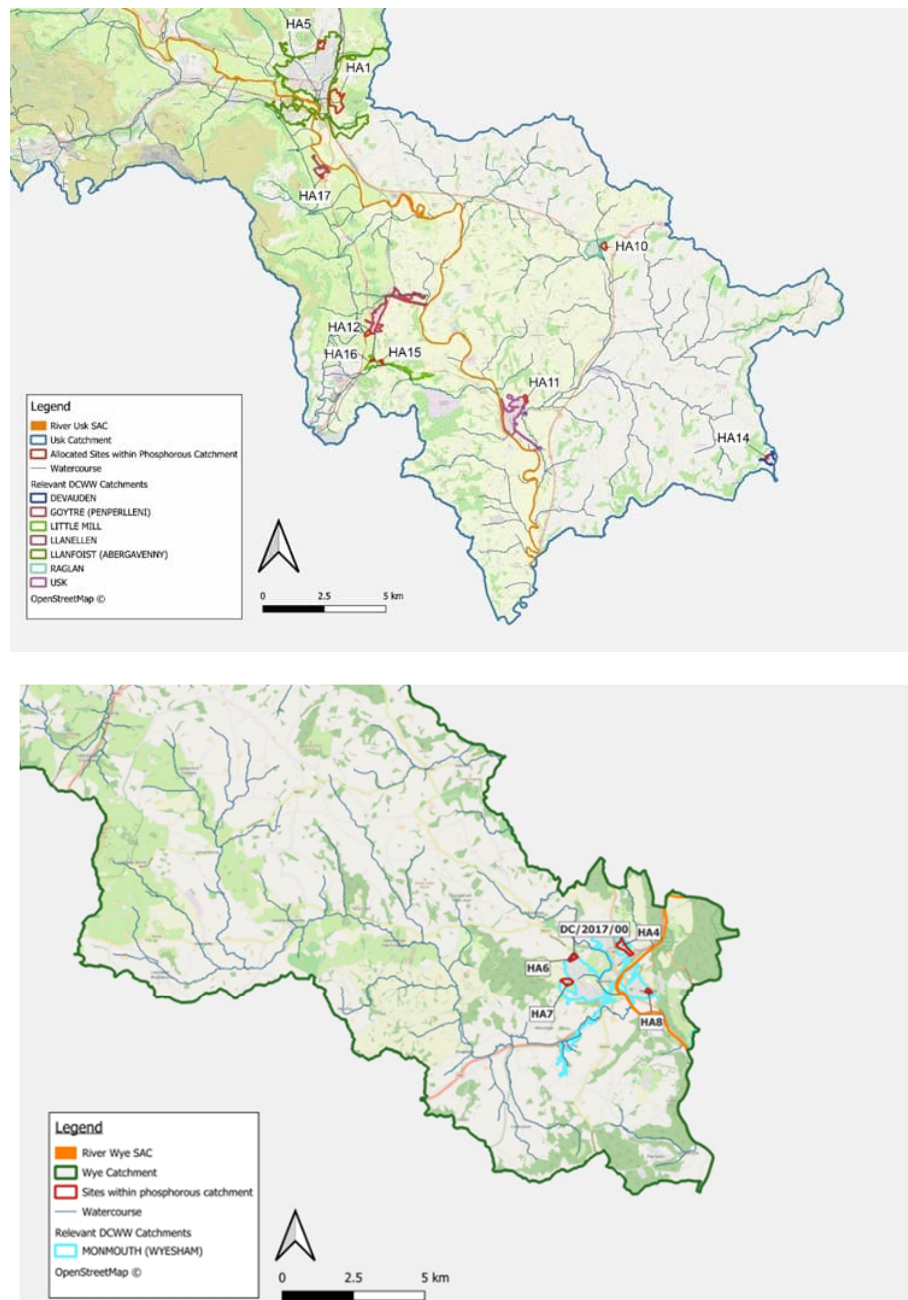


Figure 6 Allocated sites within the Usk SAC catchment (top) and Wye SAC catchment (bottom)

The final cumulative nutrient budget for each catchment under two scenarios is presented in Table 1:

- **Scenario 1 (Worst Case Scenario)** – Includes all housing types with no reduction in occupancy for affordable homes.
- **Scenario 2 (Best Case Scenario)** – Discounts 50% of affordable homes on the basis that half of allocated affordable homes are provided to local people who are likely to already be living within the nutrient neutrality catchment.

For both scenarios and both catchments, the proposed development allocated in the rLDP plus any committed development results in the generation of excess phosphorus (via foul wastewater). Significantly more phosphorus requires mitigation in the Usk catchment compared with the Wye, reflecting the quantum of proposed development in each catchment (see Table 1).

Table 1 Summary results for the final nutrient budget in each catchment in 2033

Scenario	Usk Nutrient Budget 2033 (kg/yr TP)	Wye Nutrient Budget 2033 (kg/yr TP)
Scenario 1 (Worst-Case Scenario)	265	136
Scenario 2 (Best-Case Scenario)	199	103
<i>Nutrient budget if proposed AMP8 phosphorus removal upgrades to WwTW had not taken place</i>	534	136

3.2 Lower Wye ‘No deterioration’ Investigation

As mentioned earlier, the Lower River Wye is no longer failing for phosphorus, and so MCC have undertaken an investigation for this river to determine whether the development proposed in the rLDP risks causing deterioration of the river to less than good conservation status.

To achieve this, it was necessary to determine the effect on phosphorus concentrations in the Lower Wye from the projected increase in phosphorus load arising from the rLDP proposed developments. Only the additional input via Monmouth WwTW (at SO 51532 11795) was required to be considered, as all the allocated or committed development sites in the Lower Wye catchment fall within this WwTW catchment. The location of data used in the assessment is provided in Figure 7.

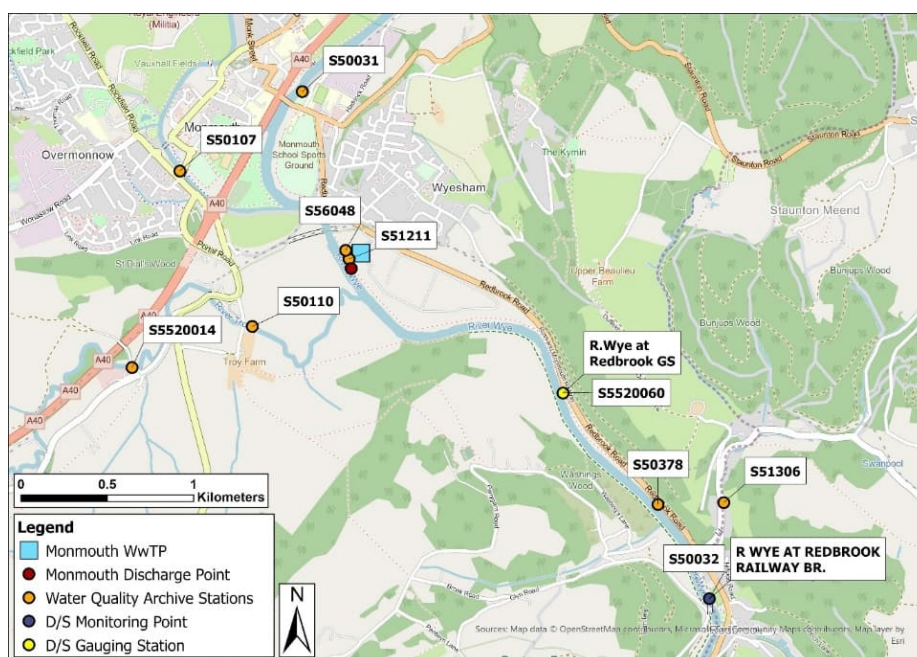


Figure 7 Monmouth WwTW and nearby water quality and flow monitoring stations.

The assessment concluded that when allowing for the maximum planned level of development (by 2033), the additional TP loading projected (i.e. 135.61 kg/year) would result in an estimated additional 0.13 mg/l TP in the average discharge concentration at Monmouth WwTW. This would increase the average discharge concentration to around 1.3 mg/l, which remains well within the permitted concentration of 2 mg/l.

The SAC Condition Assessment⁴ is based on Monmouth WwTW operating under current permitted conditions for concentration and flow. As development comes forward in the future validation assessments will be required to confirm this initial assessment, reflecting on the phosphorus Environmental Quality Standard (EQS) for the Wye at that given point in time.

A precautionary mass balance calculation was also undertaken, which indicated that an exceedance of the phosphorus EQS downstream of Monmouth WwTW would not be predicted based on the rLDP delivery. The receiving water is estimated to maintain good WFD status for Soluble Reactive Phosphorus (SRP) and therefore be at favourable conservation status even if the following worst-case assumptions are applied:

- Effluent flow is modelled as five times the DWF (dry weather flow).
- Effluent concentration is continuously at the permit threshold (i.e. 2 mg/l).
- The predicted dilution in the river is halved.
- All total phosphorus becomes available as SRP.

The report concludes that in principle the quantum of rLDP proposed development in the Lower Wye catchment can be delivered without resulting in a significant increase in phosphorous or a reduction in the conservation status of the SAC. However, it was also stated that these conclusions should be reviewed over time to confirm the receiving water remains at low risk in the context of evolving inputs to the river system as a whole. Therefore, future planning applications for allocated development are still likely to need to be supported by site specific Habitat Regulations Assessments including consideration of water quality risks to the Wye SAC. MCC propose to develop guidance to assist developers with these assessments, and this is a commitment included later in this AP (see also **Section 3.4**).

3.3 Strategic Mitigation Options Report

MCC have produced a Strategic Mitigation Options Report, which can be read in conjunction with the AP. This report considers in further detail the pathways available for delivering nutrient mitigation at a strategic scale for the rLDP developments, taking into account Welsh Government guidance for delivering mitigation in SAC river catchments¹⁰. The report includes consideration of the threshold (*de minimis*) approach, an integrated approach, developer led approach, and development of strategic solutions based on short-listing of potential options that are applicable in Monmouthshire. These approaches are also introduced in Section 3 of this AP. The most viable strategic mitigation option is currently considered to be construction of treatment wetlands. The viability and steps involved in taking strategic approaches forward are included at a high level in the AP but detailed further in the Strategic Mitigation Options Report.

3.4 Developer Mitigation Handbook

MCC are planning to produce a Developer Mitigation Handbook that can be used by developers to better understand the range of mitigation options available for phosphorus and how to implement these. This will be similar to the recently published Handbook prepared for Marine SACs by affected local authorities but led by Carmarthenshire County Council¹¹.

The Developer Mitigation Handbook will be a key document for the AP as it will outline further details that will allow different mitigation approaches to be taken forward, whether it be threshold, integrated catchment improvements, strategic or developer led nutrient neutrality approaches. The aim of the document is to provide:

- A planning guidance document for developers and Council Planning Officers alike on phosphorus mitigation for delivering nutrient neutrality development within the River Usk SAC and River Wye SAC catchments. Guidance will be aligned with Welsh Government's latest guidance and All Wales nutrient budget calculator, and NRW's latest guidance.
- Specific guidance to developers in the Lower Wye catchment as to how to confirm that their proposals align with 'no deterioration' as discussed in Section 3.2.

¹⁰ [Planning Guidance - Development in SAC Rivers](#)

¹¹ [Report Marine and Estuarine DIN Mitigation Strategy 2025-11-20](#)

- Clarity on how the threshold (*de minimis*) approach may be applied to the rLDP as a whole, based on further consultation with NRW.
- An outline of the integrated approach and how it might be applied in Monmouthshire. The initial draft of the Handbook is likely to detail the steps being undertaken to develop a mitigation pathway through the integrated approach. However, the Handbook should be updated regularly as a 'live' document in order to allow further guidance to be applied when available. For example, once established the Handbook could include links to a developer platform hosted on the MCC website through which developers could make positive contributions to restoration/improvement schemes.
- For developer led mitigation, the Handbook will contain a 'step by step' process showing when nutrient neutrality screening and assessment should occur within the planning process, how to identify and develop suitable mitigation measures, how they can be secured, and any subsequent monitoring that might be required.
- Building on NRW's Mitigation Menu, the Developer Mitigation Handbook will include an overview of on-site and off-site mitigation options relevant to proposed development, including for example urban and rural SuDS, constructed and other wetlands, land use change, septic tank/PTP upgrades and water efficiency options. Measures will usually need to qualify as Article 6(3) interventions under the Habitats Regulations¹² rather than Article 6 (2) measures for developer led mitigation, consistent with NRW guidance on additionality and effectiveness at the time of assessment.
- Worked examples to show how to estimate phosphorous reductions from some of these measures alongside outputs from the Welsh Government nutrient neutrality calculator or bespoke calculations.

¹² [The Conservation of Habitats and Species Regulations 2017](#)

4. Mitigation Pathways

The Welsh Government guidance for mitigation of phosphorus in river SACs (2025)¹³ and the recent guidance on “*Tests of Soundness*”² (2026) indicates pathways of mitigation that may be applied to LDPs where the impact of additional nutrients on SACs has been identified. NRW have also provided guidance with regard to mitigating nutrients within SACs (2026)¹⁴. Within these guidance documents are several hierarchal approaches (or ‘pathways’) to mitigation, through which it would be feasible to mitigate the phosphorus loads associated with the rLDP, thereby providing confidence that no adverse effects on the site integrity of the SACs would occur (see Figure 8). This section introduces the main ‘pathway’ approaches at a high level, before outlining the key steps proposed for their implementation in the AP in Section 5.

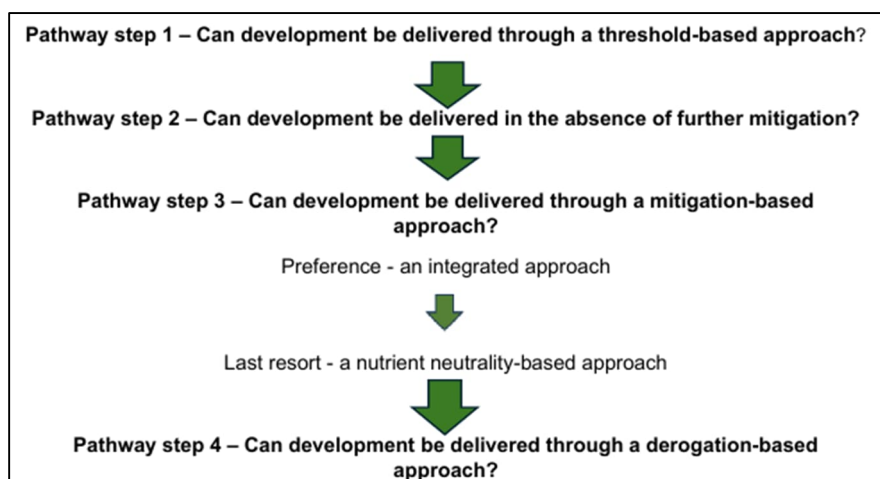


Figure 8 Hierarchal pathways to mitigation²

4.1 NRW Review of Consents and screening against WwTW Upgrades

Prior to considering mitigation pathways, it is notable that the current NRW guidance⁷ suggests that if the relevant WwTW for proposed developments has an environmental permit that has been reviewed against the nutrient targets set out in the conservation objectives for the river SAC, it may be possible for a planning authority to conclude that there will be no likely significant effect with regard to phosphorus. Further mitigation can therefore be ‘screened out’. This may be the case provided that:

- The WwTW is operating in compliance with the permit conditions.
- The WwTW has capacity to receive and treat the additional volume of wastewater within permit limits.

However, it is only possible to make these conclusions where:

- The WwTW is discharging into a water body that is meeting water quality targets for phosphorus and all downstream river water bodies are also meeting their phosphorus targets, **OR**:
- Consultation with NRW and DCWW confirms that:
 - i) the final effluent phosphorus limits for the WwTW have been reduced through recent review.
 - ii) the WwTW was previously operating with phosphorus load higher than can be discharged under revised permit limits.
 - iii) the works will be operating within reduced limits at commencement of occupation¹⁵.

The information currently known about relevant WwTW permit limits in the context of these requirements for the Usk SAC catchment is summarised in Table 2. All of the sites listed are allocated in the rLDP.

¹³ [Planning Guidance - Development in SAC Rivers](#)

¹⁴ [Natural Resources Wales / Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation](#)

¹⁵ NRW (2026) Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation Available at: [Natural Resources Wales / Advice to planning authorities for planning applications affecting nutrient sensitive Special Areas of Conservation](#).

Table 2 Review of proposed permit limit upgrades at WwTW within the River Usk Catchment

rLDP Policy Rep	Site Name	WwTW	Consultation with NRW & DCWW confirms that the final effluent P limits for the WwTW have been reduced through recent review?	The WwTW was previously operating with P load higher than can be discharged under revised permit limits?	The works will be operating within reduced limits at commencement of occupation?	Permit Upgrade Date
HA1	Land to the East of Abergavenny	Llanfoist	Yes	Yes	Yes	31/12/2025
HA5	Land at Penlanlas Farm	Llanfoist	Yes	Yes	Yes	31/12/2025
HA10	South of Monmouth Rd	Raglan	Yes	Yes	Yes	13/04/2023
HA11	Land East of Burrium Gate	Usk	Yes	Yes	Yes	12/12/2023
HA12	Land West of Trem yr Ysgol	Goytre	Yes	Yes	No	31/03/2030
HA14	Land at Churchfields	Devauden	Yes	Yes	Yes	26/01/2027
HA15	Land East Little Mill	Little Mill	Yes	Yes	Yes	07/02/2024
HA16	Land North of Little Mill	Little Mill	Yes	Yes	Yes	07/02/2024
HA17	Land adjacent Llanellen Court Farm	Llanellen	Yes	Yes	Yes	15/02/2024
N/A	Windfall Allowance	Llanfoist	Yes	Yes	Yes	31/12/2025
N/A	Windfall Allowance	Raglan, Usk, Goytre	Yes	Yes	Yes	15/02/2024

The information currently known about relevant WwTW permit limits in the Wye SAC catchment is summarised in Table 3. All sites are allocated in the rLDP except HA7, HA8, and the committed development West of Rockfield Road, which are rollover allocations already with planning permission.

Table 3 Review of proposed permit limit upgrades at WwTW within the River Wye Catchment

RLDP Policy Ref	Site Name	WwTW	Consultation with NRW & DCWW confirms that the final effluent P limits for the WwTW have been reduced through recent review?	The WwTW was previously operating with phosphorous load higher than can be discharged under revised permit limits?	The works will be operating within reduced limits at commencement of occupation?	Permit Upgrade Date
HA6	Land at Rockfield Road	Monmouth	Yes	Yes	Yes	13/11/2023
HA4	Land at Leasbrook	Monmouth	Yes	Yes	Yes	13/11/2023
HA7	Land at Drewen Farm	Monmouth	Yes	Yes	Yes	13/11/2023
HA8	Tudor Road, Wyesham	Monmouth	Yes	Yes	Yes	13/11/2023
N/A	West of Rockfield Road	Monmouth	Yes	Yes	Yes	13/11/2023
N/A	Windfall Allowances	Monmouth	Yes	Yes	Yes	13/11/2023

DCWW provided data and through further discussion it was determined that all relevant WwTWs for the rLDP have had their final effluent phosphorus limits reviewed against the nutrient reduction targets set out in the conservation objectives for the respective SAC catchments. All will have reduced permit limits in place by 2030, with most already operating under tightened limits. **On this basis, there would appear to be potential to conclude that there will be no likely significant effect on SAC site integrity with regard to phosphorus, subject to reaching such agreement with NRW.**

MCC will continue to engage with NRW to determine which WwTW catchments are considered appropriate to conclude no likely significant effects on SAC site integrity on the basis of the above criteria. Further mitigation would only be necessary where this conclusion cannot be agreed with NRW. The continued work in this regard is incorporated in the AP in Section 5 and it is anticipated that the Developer Mitigation Handbook will include guidance on which WwTW catchments can be screened out of further mitigation.

4.2 Threshold Approach / De Minimis

The Welsh Government clarification note² suggests that the first consideration with regards to mitigation pathways for nutrients (where significant effects on site integrity cannot be ruled out on the basis of WwTW upgrades) is whether it may be possible in some cases to screen out a certain quantum of development as being *de minimis*, i.e. the nutrient loading from the development falls beneath a defined threshold whereby plan proposals will not have any meaningful influence over the achievement of the conservation objectives for the SAC. Definition of any such threshold must be supported by relevant evidence and assessment² and be sufficiently certain.

Welsh Government guidance is clear that a threshold-based approach on a project-by-project basis is not advised. The cumulative effect of policies and proposals must be taken into account, and so consideration of whether development can be regarded as *de minimis* must be undertaken in terms of the scale of implementation across the whole plan period (through to 2033) and necessarily will inform the appropriate assessment.

HRA '*de minimis*' thresholds are therefore anticipated to be derived on the basis of an overall quantum of development over a defined timeframe. A threshold-based approach may be combined with a wider integrated approach (see next sub-section) across an area in the rLDP, reflecting catchment specific characteristics and circumstances. Case studies are given in the recent Welsh Government clarification note on tests of soundness.

To agree a threshold approach planning authorities will need to be satisfied that the additional loading from the rLDP will not undermine the achievement of the conservation objectives. In other words, the additional loading will not exert any meaningful influence over the effectiveness of action to be taken to achieve the conservation objectives or otherwise delay the achievement of such objectives.

No thresholds for *de minimis* have been determined for the Usk and Wye catchments at this stage, nor for other catchments affected by nutrient issues in Wales (at the time of writing). It remains uncertain as to how such a threshold can be robustly defined and defended. Nonetheless, the AP has included an action for MCC to explore this approach further with NRW to determine whether this is potential for development of a threshold, where it can be sufficiently supported with evidence.

4.3 Integrated Approach

Where it is not possible to define a *de minimis* threshold and development requires mitigation, the Welsh Government clarification note on applying the Tests of Soundness to LDPs indicates an integrated approach as the preferred solution to ensure no adverse effects to SAC rivers².

The overall aim of an integrated approach is to coordinate actions to deliver a long-term improving trend in nutrient levels within SAC catchments, whilst managing growth in accordance with the sustainable development principle. Appropriate steps to avoid deterioration or provide restoration (under Article 6(2) of the Habitats Regulations) in nutrient neutrality affected catchments could include the following:

- Planned upgrades to WwTWs and/or DCWW AMP8 schemes including storm overflow improvements.
- Ongoing work being delivered under the SAC Rivers project which will be implemented within the catchment of concern, including enhanced regulatory compliance and enforcement programme to address non-compliance within the agricultural sector. This could include works being undertaken by Nutrient Management Boards (NMBs) or environmental improvement schemes under DCWW's AMP8.
- Work underway through the programme of measures under the River Basin Management Plan (RBMP).

- Forthcoming NRW Catchment Nutrient Recovery Plans.

This integrated approach allows mitigation for nutrients by developers to be more closely integrated with the delivery of restoration under Article 6(2) where developer contributions:

- Increase the scale, magnitude, or scope of planned restoration measures (over and above what would otherwise have been delivered); **OR**
- Speed up delivery of planned restoration measures beyond what would normally be delivered, where the current implementation timescales risk meaningful ecological deterioration in the interim.

For the integrated approach to be viable there will need to be close ongoing collaboration between MCC, DCWW, NRW, NMBs, Catchment Partnerships and developers. Actions for MCC are included in the AP (Section 5) through which it is expected to be demonstrated that there are sufficient schemes underway within the affected catchment to which an integrated approach could be applied. In particular, the AP proposes to:

- Identify existing mitigation/restoration proposals within the affected catchments, whether these are proposed by DCWW, NMBs, NRW/ Catchment Nutrient Recovery Plans or measures underway under the RBMP etc.
- Highlight opportunities for integrated mitigation that developers might contribute too through an appropriate platform, most likely to be hosted on the MCC website.

4.4 Strategic Mitigation

Where it is not possible to apply a threshold or integrated approach, the Welsh Government clarification note on applying the Tests of Soundness to LDPs² indicates that a nutrient neutrality-based approach is then required. As outlined in Section 2, MCC have progressed a Strategic Mitigation Opportunities Report (SMOR) to determine whether there are any feasible strategic mitigation approaches that might be applicable in Monmouthshire. The strategic mitigation approach could include an array of mitigation options developed at scale by MCC, and which could then be offered as part of nutrient credit scheme for developers to purchase and offset their nutrient contributions to the riverine SACs.

A long list of proven strategic nutrient mitigation approaches was considered, based on precedence for delivery in England where such solutions have been considered for longer. A short-list was then developed based on constraints within the Monmouthshire setting. For example, approaches such as land-use change which have been implemented elsewhere were not considered suitable in Monmouthshire due to a shortage of MCC owned agricultural land which enable the approach to be adopted. Similarly, MCC do not have a bank of housing stock to which additional water use efficiency measures could be applied.

Overall, the short-listing approach determined that urban retrofit SuDS and constructed wetlands were possible options, and these were taken forward for further consideration of their potential. This included initial environmental and engineering constraints analysis to identify potentially suitable sites that could be taken forward for concept design by MCC. High level estimates of nutrient removal were undertaken on the preferred sites to determine how much benefit they would provide in terms of nutrient mitigation for the rLDP developments. The details of the mitigation selection, constraints analysis and nutrient reduction potential estimates are discussed in more detail within the SMOR. Wetlands have emerged from this exercise as the key strategic option with the potential to deliver the most nutrient mitigation benefit, and it is recommended that a number of sites are taken forward for further evaluation of potential and delivery (see Table 4). Retrofit SuDS would provide very limited nutrient mitigation based on available sites and are not considered a cost-effective solution, and as such are not recommended to be progressed.

Table 4 Summary of Short Listed Strategic Approaches

Feature	Constructed Wetlands		
Proposed locations	Goytre WwTW	Usk WwTW	Aberbaiden WwTW
Allocated sites that could be mitigated	HA10, HA11, HA12, HA14, HA15, HA16 [total load 70.15 kgTP/yr]	HA10, HA11, HA14 [total load 42.4 kgTP/yr]	Could support all developments in the rLDP and committed [total load 264kgTP/yr]
Minimum area required to achieve predicted excess nutrient load from the above sites	0.75 ha	0.16 ha	0.8 ha
Partners	- Policy: Welsh Government - Regulation: NRW - Operations and drainage: DCWW - Delivery: developers, highways, maintenance bodies		
Potential delivery issues	- Land requirement is high and therefore increases cost. - Designing, constructing and maintain a constructed wetland is complex. - Adjacent water table must not reach surface, increasing the complexity of site selection. - Wetland planting requires time to mature in order to function as per expected nutrient removal rate.		
Funding mechanisms	- Project Delivery Grants, Local Governance Funding etc. - Secure future developer contributions via nutrient credit scheme and legal agreements (e.g. Section 106). - Capital grants from the Council.		
Indicative costs to mitigate predicted excess nutrient load from above named sites	Goytre c. £600k	Usk c. £770k	Aberbaiden c. £970k

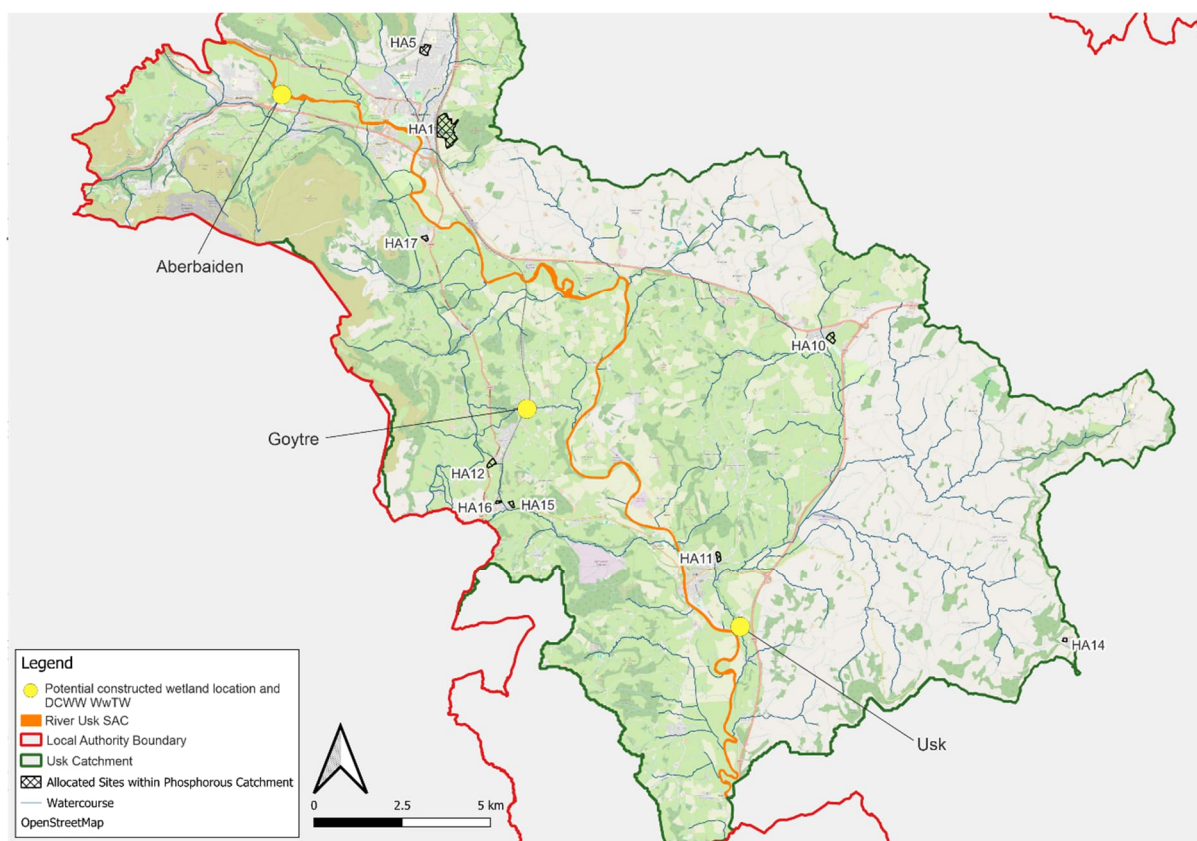


Figure 9 Location of preferred constructed wetlands (based on analysis in the SMOR)

4.5 Developer Led Mitigation

Where a threshold-based approach is not appropriate, there are no suitable integrated solution options, and if strategic scale mitigation approaches for the management of excess nutrients are not possible or have yet to come into fruition, developers can also lead on development of their own mitigation for a plan or project. Depending on the scale of mitigation, developer-led measures also have the potential to create headroom for other projects to proceed. A key action of the AP is therefore the creation of a Developer Mitigation Handbook for phosphorus in Monmouthshire. This will outline the nutrient neutrality assessment approach for developers and an array of potential mitigation options, including how these should be secured for the lifetime of the development. See **Section 3.4** for further details.

5. Timescales, Sequencing and Monitoring

5.1 Timescales

There is no fixed date for when the rLDP will be published as this depends on the completion of the ongoing Examination process. At this stage it is estimated that the rLDP will be published late 2026.

The timeline of the projected cumulative increase in phosphorus loading resulting from the rLDP developments is shown in Figure 10 for the River Usk SAC and Figure 11 for the River Wye SAC. Further details are tabulated in Appendix A which also shows the number of units of housing to be brought forward on a 'year by year' basis in relation to each allocated development.

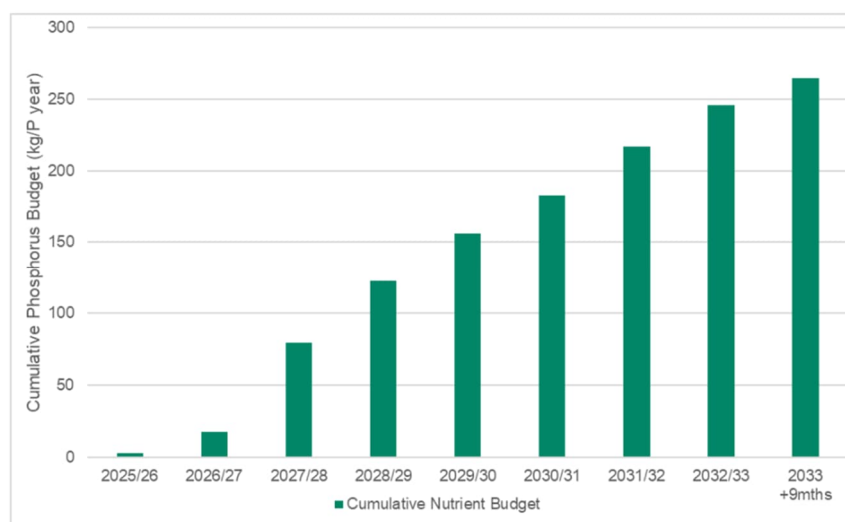


Figure 10 Usk Catchment Cumulative Nutrient Budget Scenario 1 (Worst Case Scenario)

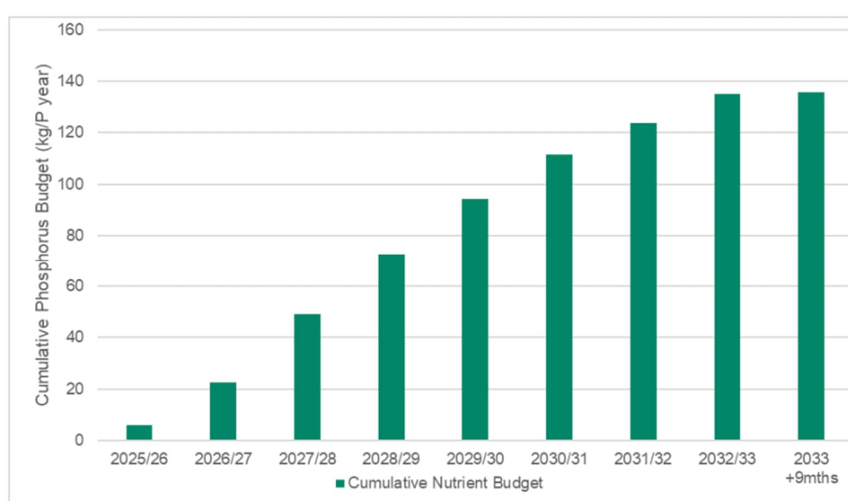


Figure 11 Wye Catchment Cumulative Nutrient Budget Scenario 1 (Worst Case Scenario)

Conditions may be tied to permissions to ensure occupation is concurrent with the delivery of mitigation, so planning conditions will be in place alongside mitigation. The majority of development within both catchments will take place from 2027 onwards.

The phasing of mitigation delivery will need to be aligned with the timing of housing units bought forward. Occupancy dates for new developments will be subject to planning permission and/or Grampian Conditions (restricting other development until the terms of a Section 106, or other specified actions, are met).

5.1 Sequencing

Timescales for the AP tasks will vary from short-term (<6 months) high priority tasks, to medium term tasks (6-12 months), and longer-term tasks (>12 months) that are dependent on preceding tasks (see also Section 6.1 Prioritisation of Actions and Figure 10).

In the short term (<6 months) there will be a focus on further consultation with relevant stakeholders (notably NRW and DCWW) as to the robust application of the latest emerging guidance (e.g. the Tests of Soundness²), followed by publication of the initial Developer Mitigation Handbook. This document will provide greater clarity on application of screening criteria, a threshold-based approach, and the integrated approach. It will also provide detail on how developers may deliver mitigation themselves, while integrated and strategic opportunities are still under development. Detail should be sufficient to support proposed rLDP developments to come forward through to 2027, with these being relatively small in quantum compared to the remainder of the rLDP period through to 2033 (see Figure 8 and 9). In the short term, feasibility and constraints analysis tasks for strategic mitigation options suitable for credit trading will also be undertaken.

Over the medium to longer term, the focus will be on developing and delivering strategic options (notably constructed wetlands), which will involve a number of tasks from stakeholder consultation, through to developing outline and detailed designs, obtaining planning permission and relevant consents, and determining appropriate management and maintenance approaches for securing delivery of nutrient mitigation in the long term.

With regards to the integrated approach, MCC will work with relevant partners delivering improvement and restoration schemes (e.g. DCWW, NRW, NMBs etc) in order to develop a mechanism through which developers can contribute positively. This will also include development of a platform whereby developers have visibility of available schemes and guidance on how to contribute. Further detail with regard to timescales are provided in the AP in Section 6.

5.2 Monitoring

The Welsh Government clarification note on how “Tests of Soundness” requires that mitigation action plans include a clear monitoring framework for implementing policies and proposals relative to the adaptive management framework of nutrient issues. Therefore, monitoring proposals have been set out in Table 5 under each mitigation pathways and action, where relevant to do so.

The nature of the monitoring depends on the type of action, and at this stage there remains some uncertainty regarding the scope of site-specific monitoring or monitoring that may be required to be undertaken by third parties. The framework for monitoring will be kept under review as part of regular reviews of this AP with more detailed proposals to be brought forward at the required stages in the future if and when mitigation pathways are sufficiently progressed.

6. Action Plan

The list of Action Plan measures and outcomes are discussed below within Table 5. This includes identification of stakeholders, timescales to implementation, dependencies, funding considerations and monitoring requirements. Further detail regarding the timeline for strategic wetlands to be developed is provided in Appendix B.

Table 5 Action Plan Measures

Actions/Outcome	Stakeholders	Timescales	Dependencies and Risk Management	Implementation / Funding	Monitoring
Pathway 1: Screening against WwTW Headroom					
1. MCC to consult with DCWW to confirm timing of upgrades to each WwTW relevant to the rLDP. Where tightened permit limits precede occupation of proposed developments further mitigation may not be required. Outcome: To identify the degree of alignment between rLDP phasing and WwTW upgrades and therefore how many homes need mitigating prior to new permit limits being applied. A provisional analysis of this is shown in Section 3.1.	- NRW - DCWW	- Consultation of DCWW upgrades timeframes for WwTW – short term (1-2 months). - Consultation with NRW to agree outcomes - short term (2-3 months). - WwTW upgrades – ongoing – short to long term (0-4 years), with some WwTW having already been upgraded and all those requiring upgrade to be complete by 2030.	Dependencies - DCWW implementation of WwTW upgrades within suggested timescales to meet reduced permit limits for phosphorus. - Agreement from NRW on allocated sites where no significant adverse effects would occur. Risk Management - If consultation determines that there is limited potential to screen out developments, or should timings mean that significant nutrient reductions are still required in the short term or proposed WwTW upgrades are delayed, then it is considered that there are sufficient alternative approaches within the AP to mitigate this risk and enable rLDP development to proceed as per the proposed timescales. - The Developer Mitigation Handbook will be a 'live' document that will be updated to reflect changes in nutrient mitigation requirements as and when required.	- Upgrades funded by DCWW. - MCC to condition timing of development to correspond with delivery of future improvements at WwTW. Grampian conditions may be used but, as development specific mitigation, should be considered on a case-by-case basis as part of an Appropriate Assessment.	DCWW permit compliance monitoring. Regulated by NRW.
2. MCC to consult NRW to seek agreement over which rLDP allocations (or subset of the allocation depending on phasing) MCC consider appropriate to conclude no likely significant effects on SAC site integrity on the basis of planned permit limit tightening. Outcome: Agreement to screen out a certain quantum of development from requiring mitigation. This outcome would be outlined on the MCC webpages and within the forthcoming Developer Mitigation Handbook.					

Actions/Outcome	Stakeholders	Timescales	Dependencies and Risk Management	Implementation / Funding	Monitoring
Pathway 2: Threshold Approach / De Minimis					
3. MCC to investigate suitability of a threshold-based approach across the rLDP period as a whole (for those developments remaining following previous steps relating to WwTW permit tightening). This approach has been advocated by Welsh Government, however, such an approach has yet to be adopted successfully in Wales and requires consultation with NRW to confirm feasibility for Monmouthshire and how aspects such as monitoring would be accounted for. Outcome: Determine whether threshold approach can be used in Monmouthshire.	- MCC - NRW - DCWW	- Consultation with NRW to agree feasibility of a threshold-based approach - short term (2-6 months) - MCC to prepare Developer Mitigation Handbook which is to include outline of how a threshold-based approach will be applied to the rLDP Plan as a whole, if agreed with NRW – short term (2-6 months).	Dependencies - Definition of a threshold will be based on NRW source apportionment data, and consideration of the rLDP nutrient budget within that context. - MCC must demonstrate to NRW's satisfaction that a defined level of growth will not undermine the achievement of the conservation objectives or otherwise delay the achievement of such objectives. - There must be no credible evidence to support a view that the delivery of development provided for within the rLDP will meaningfully undermine or hinder the ability of relevant authorities to adapt or modify current initiatives as part of their duty to take appropriate steps to avoid deterioration which are necessary to achieve the conservation objectives. Risk Management - There is considered a risk of challenge given that a threshold-based approach has no precedent for nutrient neutrality that MCC are aware of, at the time of writing. Nonetheless, Welsh Government are advocating the approach through their guidance and so it should be explored through the AP. This risk is to be mitigated through close consultation with NRW in regard to their expectations and correct definition of a defensible <i>de minimis</i> threshold. - Should a robust <i>de minimis</i> threshold not be obtainable and agreed with NRW for these riverine SACs then it is considered that there are sufficient alternative approaches within the AP to mitigate this	None required once threshold agreed for the rLDP Plan as a whole. The requirement for implementation of further mitigation would be screened out through the <i>de minimis</i> threshold.	NRW to monitor the SAC condition status. Should there be a decline then the <i>de minimis</i> threshold may require re-evaluation.
4. Assuming the threshold approach is confirmed to be appropriate, MCC to determine what the <i>de minimis</i> threshold would be across the rLDP period and agree this with NRW. Outcome: Publication of a <i>de minimis</i> threshold.					
5. MCC to prepare a Developer Mitigation Handbook prior to rLDP finalisation. This will outline how the threshold-based approach will be applied to the rLDP if confirmed to be appropriate by NRW. Outcome: Provide advice to developers where and how the threshold-based approach can be used.					

Actions/Outcome	Stakeholders	Timescales	Dependencies and Risk Management	Implementation / Funding	Monitoring
			risk and enable rLDP development to proceed as per the proposed timescales. The Developer Mitigation Handbook will be a 'live' document that will be updated to reflect changes in nutrient mitigation requirements as and when required.		
Pathway 3: Integrated Approach					
6. MCC to identify proposed enhancement/ improvement schemes proposed or already implemented in Monmouthshire, which may be suitable for support through developer contributions (through expediting or expanding the scale of the scheme). At this stage a number of schemes have been identified at a high level by DCWW through AMP8, including storm overflow improvements. Numerous restoration and enhancement schemes are also proposed within the Usk Catchment Partnership NMP and forthcoming Wye NMP, and are expected through future Catchment Nutrient Management Plans (CNMPs), all of which may have potential to benefit from an integrated approach.	- MCC - NRW - DCWW - NMBs - Wildlife/ Rivers Trusts - Wye and Usk Foundation - Housing developers - Farming Unions - Others as yet not identified	- Potential schemes: AMP8 improvements to WwTW with a final date of 2032 but most sites will be upgraded by 2030 – medium to very long term (0-6 years). - Timelines for current enhancement / restoration activities are set out in CNMPs/NMPs, with timelines being variable due to differing nature of the schemes – medium to very long term (1-10 years). - MCC to prepare Developer Mitigation Handbook which is to include an outline of how the integrated can be applied – short-term (2-6 months). Next steps for practical delivery will be outlined therein. - MCC to update Developer Mitigation Handbook once further clarity on the integrated approach has developed and further potential schemes comes forward – medium to long term (6 months to several years).	Dependencies - The approach relies on appropriate schemes to which developers can positively contribute, primarily DCWW, NMB and NRW schemes. - Align with the test of soundness published by Welsh Government. Notably, delivery of growth contained within the plan will be inherently linked to progress being made on the steps to be taken and measures identified to improve the SAC. Risk Management - An interdependency between the contribution of developers with these steps and measures will need to be demonstrated. The rLDP can account for this by establishing a policy caveat approach towards implementation, which renders the granting of planning permission conditional upon the delivery milestones identified for on-going and future improvement measures. - As with the threshold approach, there is not yet precedent for this approach having been implemented in Wales at the time of writing, and this does raise some risk. Nonetheless, Welsh Government are also advocating the approach through their guidance and so it should be explored through the AP. This risk is to be mitigated through close consultation with NRW in regard to their	- Welsh Government grants to be used to develop further improvement / restoration measures where possible. - Developer payments will be used to increase scale of planned restoration or speed of delivery on a 'case by case' basis. - DCWW, NRW (or others with suitable schemes) will have funded their own projects. Developer contributions would be used to enable faster implementation of these or and expansion in scale of the measures.	- SAC condition assessments will indicate whether there is an improving baseline condition as forecast. - Comparison with improvement targets and trajectories as to be set out in future CNMPs. - Additional water quality monitoring targeted at specific mitigation / restoration approach (case by case basis). These would be anticipated to be undertaken by the organisation delivering the overall scheme (e.g. DCWW, NRW etc).
7. MCC to investigate approaches that will allow developers to gain visibility of integrated approaches so they can consider positive contributions. This is expected to be via a council webpage.					
8. MCC to investigate how positive developer contributions could be reconciled with the quantum of nutrient contributions from their development and secured in perpetuity.					
9. MCC to agree approach with NRW. Outcome (6-9): Production of relevant guidance within the forthcoming Developer Mitigation Handbook. This					

Actions/Outcome	Stakeholders	Timescales	Dependencies and Risk Management	Implementation / Funding	Monitoring
will include further description of available schemes and directions to developers to follow for positively contributing to their delivery and hence securing mitigation in perpetuity.			expectations for delivery and required evidence base. The Developer Mitigation Handbook will be a 'live' document that will be updated to reflect changes in nutrient mitigation requirements as and when required.		
10. MCC to periodically update Developer Mitigation Handbook with any further developments with regard to the integrated approach and schemes coming forward. Outcome: Guidance that maintains relevance across the rLDP period.					
Pathway 4: Strategic Mitigation - Constructed Wetland					
11. MCC have completed a Strategic Mitigation Options Report which includes identification and feasibility appraisal of potential options for development of constructed wetlands close to DCWW WwTW's in the Usk catchment. Outcome: A preferred location has been identified at Goytre WwTW. Additional options may also be viable at Usk WwTW and Aberbaiden WwTW, although these site would likely rely on pumping which will increase costs.	- MCC - NRW - DCWW - Private Landowners	- Pre-Planning (short term – 1-6 months from day 1). - Planning and Design (medium term - c. 1-18 months from day 1) - Identify and secure land. - Baseline monitoring to inform design / quantify nutrient reduction. - Planning / impact assessment. - Regulatory Approval (long term - c. 18-24 months from day 1) - Submit planning application. - Obtain NRW permits. - Construction (long-term - c. 24-30 months from day 1) - Physical basin creation. - Planting of macrophytes. - Flow control structures. - Commissioning / Maturation (long term – 30+ months from day 1) - Establish vegetation in order for effective basin functioning. - Monitoring of performance. - Strategic credit system launch.	Dependencies - DCWW agreement to use WwTW discharge. - Land availability. - Feasibility Assessment and Concept Design. - Constraint analysis and surveys (e.g. heritage, ecology, contaminated land, utilities, water resource zones etc). - Detailed design indicating sufficient removal potential. - Planning permission. - Permits applications. Risk Management - Seek early agreement with DCWW on permitting aspects, as constructed wetlands raise questions over the point of compliance for existing DCWW permits. Involve NRW in permitting discussions at an early stage through pre-application consultation. - Determine any likely upgrades to phosphorus treatment at an early stage	- Project Delivery Grants, Local Governance Funding etc. - Secure future developer contributions via nutrient credit scheme and legal agreements (e.g. Section 106). - Capital grants from the Council.	- Monitoring requirements and responsibilities to be outlined in a Wetland Monitoring and Maintenance Plan. This will include: - Visual inspection by relevant experts and officers to ensure wetland maturing and implemented as per design and planting strategy. - Silt levels / desilting and other ongoing management requirements.
12. MCC to continue ongoing consultation with DCWW regarding development of the preferred wetland site(s), and if agreement can be reached MCC will undertake concept design to ensure sufficient P reduction to offset a significant proportion of development proposed in the rLDP. Outcome: Confirmation of feasibility stage and progression to scheme development.					
13. MCC to consider implementation and future operating costs and determine feasibility of nutrient credit scheme.					

Actions/Outcome	Stakeholders	Timescales	Dependencies and Risk Management	Implementation / Funding	Monitoring
Outcome: Determination of suitable mechanism for charging developers for nutrient credits and ensuring the option is sufficiently attractive for full implementation. 14. MCC to consult with NRW and DCWW regarding permit requirements. 15. MCC to seek agreement with DCWW over points of compliance for the existing permit and which party has 'ownership' of the water passing through, and discharged from, the wetland. Outcome Actions 13 and 14: would be an agreed position documented through a Memorandum of Understanding between MCC and DCWW, or similar document. 16. MCC to undertake detailed design. 17. MCC/DCWW to apply for required Environmental Permits / planning permission. 18. MCC to construct and commission wetland. 19. MCC to prepare and implement Wetland Monitoring and Maintenance Plan (expected to be a condition of planning). Outcome Actions 16 to 19: Design, build and operation of Constructed Wetland with nutrient credit system for prospective developers upstream of the wetland location on the SAC.		– Ongoing asset inspection / reporting). Further details regarding the constructed wetland timeline are given in Appendix B.	through DCWW consultation as this may impact future nutrient reduction potential. • If poorly maintained there are risks around poor performance, and so an appropriate Wetland Monitoring and Maintenance Plan will be developed. • Landowners to be engaged at an early stage to avoid abortive works. • Ecology appraisal to be undertaken at an early stage to identify any prohibitive habitats or species for wetland development. • Wetland design to be precautionary when calculating the rate of nutrient removal and when sizing the wetland. It will be important to demonstrate how the inflow source is linked to the wetland, to calculate nutrient load entering and leaving wetland, to be conservative with assumptions on performance, and to develop an adaptive Monitoring and Maintenance Plan. Areas of uncertainty may influence how wetlands are treated within HRA, reinforcing the need for robust monitoring and review.		
Pathway 5: Developer Led Mitigation					
20. MCC are preparing guidance for developer led mitigation, along with worked examples, for inclusion in a Developer Mitigation Handbook.	• Developers • MCC • NRW • Landowners	• Prepare Developer Mitigation Handbook prior to rLDP finalisation (short term – 2-6 months).	Dependencies • NRW agreement regarding the use of threshold and integrated approaches will be required prior to inclusion in the	• Developer funded. • Implemented through rLDP policy requirements for nutrient mitigation/betterment.	• Mitigation to be maintained and monitored in perpetuity / for the lifetime of a

Actions/Outcome	Stakeholders	Timescales	Dependencies and Risk Management	Implementation / Funding	Monitoring
Outcome: Publication of a Developer Mitigation Handbook.	DCWW	Handbook will need to be updated periodically to reflect latest nutrient mitigation requirements (ongoing).	- Handbook (see above dependencies for these cases). - MCC Strategic Mitigation Options Report. Risk Management - Guidance and advice will change over time. Therefore, the Developer Mitigation Handbook will need to be periodically reviewed and updated to remain current good practice. Developers will be advised to seek pre-planning advice from MCC.	- Developer led mitigation likely to be secured using Section 106 agreements. - Grampian condition can be used to ensure mitigation is operational prior to occupation.	development as required. The Developer Mitigation Handbook will outline at a high level the monitoring requirements of different types of approach.

6.1 Prioritisation of Actions

The high-level list of actions and their priority is displayed in Figure 11. The priority of each action is indicated with a Red, Amber, Green (RAG) colour coding as follows:

- Red indicates a high priority action.
- Amber indicates a medium priority action.
- Green indicates a lower priority action.

There are five key pathways to the AP through which it is possible to screen out or mitigate phosphorus loadings relating to the rLDP. Given the array of pathways and that threshold and integrated approaches are being actively encouraged by Welsh Government as a preference to, but potentially alongside strategic and develop-led mitigation, MCC has set out an AP that provides a suitably robust roadmap for ensuring that appropriate mitigation can be delivered to mitigate any increase in phosphorus loading to the Usk SAC or Wye SAC as a result of the implementation of the rLDP. This will ensure that any adverse significant effects on the site integrity of the riverine SACs can be prevented.

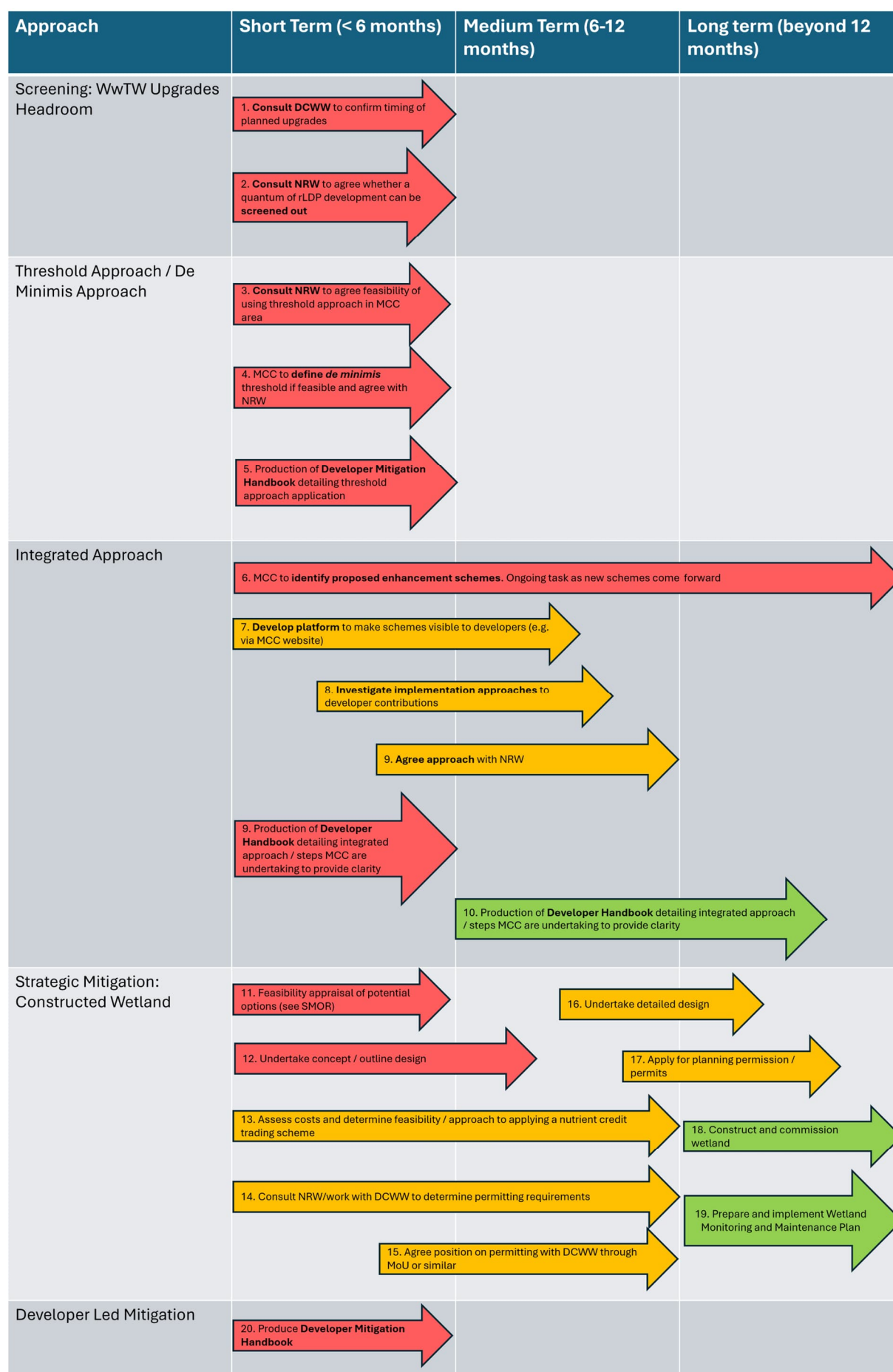


Figure 12 Timescale of proposed actions and RAG prioritisation

Appendix A rLDP Nutrient budget by proposed phasing of the rLDP

Table A1 Timeline of projected housing units from the rLDP to be constructed annually within the River Usk catchment.

RLDP Policy	Site Name	Settlement	Catchment Area	Status	Gross Site Area (ha)	Total Site Capacity	Open Market Homes	Affordable Homes	Phasing of Development (Base Date 1 st April 2025) Estimated Completions								
									2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mnths
HA1	Land to the East of Abergavenny	Abergavenny	Usk	Allocation	35.9	500	250	250	0	0	0	70	90	90	90	90	70
HA5	Land at Penlanlas Farm	Abergavenny	Usk	Allocation	6.17	100	50	50	0	0	50	50	0	0	0	0	0
HA10	South of Monmouth Rd	Raglan	Usk	Allocation	4.5	54	27	27	0	0	40	14	0	0	0	0	0
HA11	Land East of Burrium Gate	Usk	Usk	Allocation	2.6	40	20	20	0	10	30	0	0	0	0	0	0
HA12	Land West of Trem yr Ysgol	Penperlleni	Usk	Allocation	3.4	42	21	21	0	0	30	12	0	0	0	0	0
HA14	Land at Churchfields	Devauden	Usk	Allocation	1	20	10	10	0	0	0	10	10	0	0	0	0
HA15	Land East Little Mill	Little Mill	Usk	Allocation	1.68	20	10	10	0	5	15	0	0	0	0	0	0
HA16	Land North of Little Mill	Little Mill	Usk	Rollover allocation	0.87	15	7	8	5	10	0	0	0	0	0	0	0
HA17	Land adjacent Llanellen Court Farm	Llanellen	Usk	Allocation	1.56	26	13	13	0	0	0	0	10	16	0	0	0
N/A	Windfall Allowance	Abergavenny	Usk	Windfall		100	50	50	0	0	0	0	0	30	30	30	10
N/A	Windfall Allowance	Secondary Settlements of Raglan, Penperlleni, Usk	Usk	Windfall		20	10	10	0	0	0	0	0	10	10	0	0

Table A2 Timeline of projected housing units from the rLDP to be constructed annually within the River Wye catchment.

RLDP Policy Ref	Site Name	Settlement	Catchment Area	Status	Gross Site Area (ha)	Total Site Capacity	Open Market Homes	Affordable Homes	Phasing of Development (Base Date 1 st April 2025) Estimated Completions								
									2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033 +9mths
HA6	Land at Rockfield Road	Monmouth	Wye	Allocation	1.5	60	30	30	0	0	0	0	40	20	0	0	0
HA4	Land at Leasbrook	Monmouth	Wye	Allocation	11	270	135	135	0	0	25	50	50	50	50	45	0
HA7	Land at Drewen Farm	Monmouth	Wye	Rollover allocation with planning permission	6.6	110	71	39	0	10	50	50	0	0	0	0	0
HA8	Tudor Road, Wyesham	Monmouth	Wye	Rollover allocation with planning permission	2.1	50	0	50	25	25	0	0	0	0	0	0	0
N/A	West of Rockfield Road	Monmouth	Wye	Commitment	2.86	70	45	25	0	35	35	0	0	0	0	0	0
N/A	Windfall Allowances	Monmouth	Wye	Windfall		10	6	4	0	0	0	0	0	2	2	2	2

Appendix B Indicative Wetland Planning, Design and Construction Timeline

Table B. 1 Indicative timeline for planning, design and construction of wetlands.

Stage	Timescale	Requirements	Timescale reasoning
Pre-planning	1-6 months from Day 1	• Consultation with NRW and DCWW • Early feasibility studies	6 months of pre-planning is a precautionary estimate for early consultation with NRW and DCWW to ensure that proposals can be taken forward and for early feasibility studies. This stage can be completed concurrently with the planning and design stage.
Planning and design	1 – 18 months from Day 1	• Identify and secure land. • Baseline monitoring to inform design / quantify nutrient reduction. • Planning / impact assessment	18 months generally considered a precautionary timescale for the planning and design stage. This is to take into account a full survey window for ecology and mitigation design. Other stages such as identifying and securing land and quantifying nutrient reduction may be completed at an earlier stage.
Regulatory approval	18 – 24 months from Day 1	• Submit planning application. • Obtain NRW permits.	A further 6 months is likely required after planning and design to submit the planning application and obtain NRW permits.
Construction	24 – 30 months from Day 1	• Physical basin creation. • Planting of macrophytes. • Flow control structures.	A further 6 months of construction is likely required before completion of the wetland.
Commissioning / Maturation	30 months from Day 1	• Establish vegetation in order for effective basin functioning. • Monitoring of performance. • Strategic credit system launch. • Ongoing asset inspection / reporting.	Commissioning and maturation will take place over the months and years following completion of construction. Performance monitoring will be used to determine maturation.



Appendix 8: RLDP Residential / Mixed Use Allocations and Commitments

RLDP Residential Commitments

The table below provides a list of the residential sites that have contributed to completions during the Plan period to date (2018 – 2025) or have an extant planning permission and, therefore, contribute to the existing commitments component of the RLDP's housing supply. Only those sites shaded green are located within the affected riverine SACs and have, therefore, been factored into the P load calculations.

Settlement Tier	Planning Application Ref:	Site Name	Total Capacity	Completions	Units Remaining	Phosphorus Sensitive Catchment	Screened In / Out of P Load Calculations	No. of Units Screened in	Notes
Abergavenny (Tier 1)	DC/2014/01360	Deri Farm	250	250	0	Usk	Out	0	Site complete
Abergavenny (Tier 1)		Coed Glas	51	51	0	Usk	Out	0	Site complete
Abergavenny (Tier 1)	DC/2014/01015	Mulberry House	27	7	20	Usk	Out	0	Units not included in housing figures as part of NDA.
Abergavenny (Tier 1)		The Hill	44	44	0	Usk	Out	0	Site complete
Abergavenny (Tier 1)		Magistrates Court	47	47	0	Usk	Out	0	Site complete
Abergavenny (Tier 1)		Brecon Road	24	24	0	Usk	Out	0	Site complete
Llanfoist (Tier 1)	DM/2019/00346	Grove Farm	106	89	17	Usk	Out	0	Site under construction
Chepstow (Tier 1)	DM/2019/00001	Fairfield Mabey	373	373	0	Outside Riverine SAC Catchment	Out	0	Site complete
Chepstow (Tier 1)	DM/2024/00422	Fairfield Mabey (Commercial Land)	46	0	46	Outside Riverine SAC Catchment	Out	0	

Settlement Tier	Planning Application Ref:	Site Name	Total Capacity	Completions	Units Remaining	Phosphorus Sensitive Catchment	Screened In / Out of P Load Calculations	No. of Units Screened in	Notes
Chepstow (Tier 1)	DC/2009/0910	Osborn International	161	69	92	Outside Riverine SAC Catchment	Out	0	Units not included in housing figures as part of NDA.
Chepstow (Tier 1)	DM/2022/00848	Boverton House Day Centre	15	0	15	Outside Riverine SAC Catchment	Out	0	
Monmouth (Tier 1)	DM/2019/02054	Hillcrest Road, Wyesham	11	11	0	Wye	Out	0	Site complete
Monmouth (Tier 1)		Wonastow Road (TW)	166	166	0	Wye	Out	0	Site complete
Monmouth (Tier 1)		Wonastow Road (Barratt/DW)	174	174	0	Wye	Out	0	Site complete
Monmouth (Tier 1)	DC/2017/0539	West of Rockfield Road	70	0	70	Wye	In	70	Screened in
Severnside (Tier 1)		Brookside, Caldicot	25	25	0	Outside Riverine SAC Catchment	Out	0	Site complete
Severnside (Tier 1)		Former White Hart Inn, Caldicot	16	16	0	Outside Riverine SAC Catchment	Out	0	Site complete
Severnside (Tier 1)	DM/2023/01030	Land North of Caldicot School	46	0	46	Outside Riverine SAC Catchment	Out	0	
Severnside (Tier 1)		Church Road, Caldicot	130	130	0	Outside Riverine SAC Catchment	Out	0	Site complete
Severnside (Tier 1)		Ifton Manor, Rogiet	14	14	0	Outside Riverine SAC Catchment	Out	0	Site complete
Severnside (Tier 1)		Old Shipyard, Sudbrook	46	46	0	Outside Riverine SAC Catchment	Out	0	Site complete

Settlement Tier	Planning Application Ref:	Site Name	Total Capacity	Completions	Units Remaining	Phosphorus Sensitive Catchment	Screened In / Out of P Load Calculations	No. of Units Screened in	Notes
Severnside (Tier 1)		Sudbrook Paper Mill	210	210	0	Outside Riverine SAC Catchment	Out	0	Site complete
Severnside (Tier 1)	DM/2018/01606	Rockfield Farm (Phase 1), Undy	144	144	0	Outside Riverine SAC Catchment	Out	0	Site complete
Severnside (Tier 1)	DM/2021/00357	Rockfield Farm (Remainder), Undy	120	0	120	Outside Riverine SAC Catchment	Out	0	
Severnside (Tier 1)	DM/2019/01041	Crick Road, Portskewett	269	87	182	Outside Riverine SAC Catchment	Out	0	
Severnside (Tier 1)	DM/2022/01042	Land at Vinegar Hill, Undy	142	89	53	Outside Riverine SAC Catchment	Out	0	
Penperlleni (Tier 2)		South of Usk Road	25	25	0	Usk	Out	0	Site complete
Penperlleni (Tier 2)		South of Usk Road	40	40	0	Usk	Out	0	Site complete
Raglan (Tier 2)	DM/2021/02070	Land at Chepstow Rd, Raglan	38	0	38	Usk	Out	0	Site under construction
Usk (Tier 2)		Cwrt Burrium, Usk	7	7	0	Usk	Out	0	Site complete
Shirenewton (Tier 3)		(North of Minor Rd) Shirenewton	5	5	0	Outside Riverine SAC Catchment	Out	0	Site complete
Shirenewton (Tier 3)	DM/2018/02066	(South of Minor Rd) Shirenewton	11	0	11	Outside Riverine SAC Catchment	Out	0	
Cross Ash (Tier 4)	DC/2017/01335	Land adj Cross Ash Garage	6	3	3	Usk	Out	0	Site under construction

Settlement Tier	Planning Application Ref:	Site Name	Total Capacity	Completions	Units Remaining	Phosphorus Sensitive Catchment	Screened In / Out of P Load Calculations	No. of Units Screened in	Notes
Devauden (Tier 3)	DM/2018/01741	Land at Well Lane, Devauden	15	15	0	Usk	Out	0	Site complete
Dingestow (Tier 3)		Land south-east Dingestow	15	15	0	Wye	Out	0	Site complete
Llanishen (Tier 4)	DM/2019/02053	R/O Carpenters Arms, Llanishen	8	8	0	Outside Riverine SAC Catchment	Out	0	Site complete

RLDP Residential and Mixed-use Allocations

The table below sets out the proposed RLDP residential and mixed-use allocations. Sites shaded green are located within the affected riverine SACs and have, therefore, been factored into the P load calculations.

Settlement Tier	Policy Ref:	Site Name	Total Capacity in Plan Period	Planning Application Details where applicable	Phosphorus Sensitive SAC Catchment	Screened In / Out of the P Load Calculations	No. of Units Screened in
Abergavenny (Tier 1)	HA1	Land to the East of Abergavenny	500		Usk	In	500
Abergavenny (Tier 1)	HA5	Land at Penlanlas Farm	100		Usk	In	100
Chepstow (Tier 1)	HA3	Land at Mounton Road	146		Outside Riverine SAC Catchment	Out	0
Monmouth (Tier 1)	HA6	Land at Rockfield Road	60		Wye	In	60
Monmouth (Tier 1)	HA4	Land at Leasbrook	270		Wye	In	270
Monmouth (Tier 1)	HA7	Land at Drewen Farm	110	DM/2024/01295 resolution to approve at 9 th September 2025 Planning Committee subject to the signing of a S106 Agreement.	Wye	In	110

Settlement Tier	Policy Ref:	Site Name	Total Capacity in Plan Period	Planning Application Details where applicable	Phosphorus Sensitive SAC Catchment	Screened In / Out of the P Load Calculations	No. of Units Screened in
Monmouth (Tier 1)	HA8	Tudor Road, Wyesham	50	DM/2024/00557- 50 affordable dwellings approved 26/03/25.	Wye	In	50
Severnside (Tier 1)	HA2	Land to the East of Caldicot / North of Portskewett	770		Outside Riverine SAC Catchment	Out	0
Severnside (Tier 1)	HA9	Land at Former MOD, Caerwent	40		Outside Riverine SAC Catchment	Out	0
Raglan (Tier 2)	HA10	South of Monmouth Road	54		Usk	In	54
Usk (Tier 2)	HA11	Land East of Burrium Gate	40		Usk	In	40
Penperlleni (Tier 2)	HA12	Land West of Trem yr Ysgol	42		Usk	In	42
St Arvans (Tier 3)	HA13	Land adj, Piercefield Pub	16		Outside Riverine SAC Catchment	Out	0
Devauden (Tier 3)	HA14	Land at Churchfields	20		Usk	In	20
Little Mill (Tier 3)	HA15	Land East Little Mill	20		Usk	In	20
Little Mill (Tier 3)	HA16	Land North of Little Mill	15	DM/2020/01438- 15 units approved 17/09/2024.	Usk	In	15

Settlement Tier	Policy Ref:	Site Name	Total Capacity in Plan Period	Planning Application Details where applicable	Phosphorus Sensitive SAC Catchment	Screened In / Out of the P Load Calculations	No. of Units Screened in
Llanellen (Tier 3)	HA17	Land adjacent Llanellen Court Farm	26		Usk	In	26
Shirenewton (Tier 3)	HA18	Land west of Redd Landes	26		Outside Riverine SAC Catchment	Out	0

Appendix 9: RLDP Residential Allocations – Average Densities

Site Name	Site Area (ha)	No. of Homes	Gross Housing Density (homes per ha)	GI / SuDS Area on Site (approx. ha)	Non-residential uses on Site (approx. ha)	Net Developable Area for Homes (approx. ha)	Net Housing Density (homes per ha)
HA1 Land to the East of Abergavenny	35.9	500	13.93	16.2	3	16.7	29.94
HA2 Land to the East of Caldicot / North of Portskewett	64	770	12.03	32	4.5	27.5	28.00
HA3 Land at Moun-ton Road, Chepstow	12.8	146	11.41	5.9	1.5	5.4	27.04
HA4 Land at Leasbrook, Monmouth	11	270	24.55	3.2	0	7.8	34.62
HA5 Land at Penlanlas Farm, Abergavenny	6.17	100	16.21	2.4	0	3.77	26.53
HA6 Land at Rockfield Road, Monmouth (allocated part only)	1.5	60	40.00	0.1	0	1.4	42.86
HA7 Land at Drewen Farm, Monmouth (DM/2024/01295)	6.6	110	16.67	2.1	0	4.5	24.44
HA8 Land at Tudor Road, Monmouth (DM/2024/00557)	2.1	50	23.81	1.05	0	1.05	47.62
HA9 Land at Former MOD, Caerwent	4.2	40	9.52	1.1	1.5	1.6	25.00
HA10 Land South of Monmouth Road, Raglan	4.5	54	12.00	2.8	0	1.7	31.76
HA11 Land East of Burrium Gate, Usk	2.6	40	15.38	1.03	0	1.57	25.48
HA12 Land West of Trem-yr-Ysgol, Penperlleni	3.4	42	12.35	1.59	0	1.81	23.20
HA13 Land Adjacent to Piercefield Public House, St Arvans	1.1	16	14.55	0.52	0	0.58	27.59
HA14 Land at Churchfields, Devauden	1	20	20.00	0.4	0	0.6	33.33
HA15 Land East of Little Mill	1.68	20	11.90	0.87	0	0.81	24.69
HA16 Land North of Little Mill (DM/2020/01438)	0.87	15	17.24	0.34	0	0.53	28.30
HA17 Land Adjacent to Llanellen Court Farm, Llanellen	1.56	26	16.67	0.4	0	1.16	22.41
HA18 Land West of Redd Landes, Shirenewton	1.76	26	14.77	0.46	0	1.3	20.00
Average	9.04	128.06	16.83	4.03	2.63	4.43	29.05

