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Revised 2018-2033 Local Development Plan

Topic Paper Phosphorus



October 2023

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Abbreviations

(r)LDP	(revised) Local Development Plan (also referred to as the Plan)
AR	Amendment Reference
BBNP	Brecon Beacon National Park
CBEEMS	Carmarthen Bay and Estuaries European Marine Site
CCC	Carmarthenshire County Council
CJEU	Court of Justice of the European Union
DCWW	Dŵr Cymru Welsh Water
FCERM	Flood and Coastal Erosion Risk Management
HRA	Habitat Regulations Assessment
IAP	Interim Action Plan
ISA	Integrated Sustainability Appraisal
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effect
LPA(s)	Local Planning Authority(s)
NMB(s)	Nutrient Management Board(s)
NN	Nutrient Neutrality
NRW	Natural Resources Wales
P	Phosphorus
PPP	Plans, Programmes & Projects
SAC(s)	Special Area(s) of Conservation
SAGIS	Source Apportionment Geographical Information System
SAM	Site Assessment Methodology
SAR	Substantive Amendment Reference
SOCG	Statement of Common Ground
SNCB	Statutory Nature Conservation Body
SP	Strategic Policy
SPA(s)	Special Protection Area(s)
SPG	Supplementary Planning Guidance
TAN(s)	Technical Advice Note(s)
WFD	Water Framework Directive
WG	Welsh Government
WRMP	Water Resources Management Plan
WwTW	Wastewater Treatment Works

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Executive Summary

Phosphorous is an element critical to all organic life on Earth. However, when found in excess in its multiple chemical forms, particularly orthophosphate, the most bioavailable compound, it can be detrimental to aquatic life¹. It is with this in regard that legislation, guidance, and research has been produced to aid acknowledgement and provide instruction on the best management practices to avoid excess nutrients, in the form of phosphate, entering water courses. This Topic Paper summarises the work undertaken to date by the Local Planning Authority (LPA) and its partners in understanding the issues in relation to excess nutrients within the LPAs freshwater riverine Special Areas of Conservation (SAC) catchments and the tools and evidence developed, particularly where it underpins the development and deliverability of the Revised LDP. It also identifies some of the key next steps whilst recognising that the response is iterative and reflective of the changing and evolving context and evidence base.

Nutrient neutral development is necessary to comply with the Conservation of Habitats and Species Regulations (as amended 2017)², and show that new development will not result in adverse effects on site integrity in the River Cleddau SAC, the River Teifi SAC, the River Usk SAC and the River Wye SAC owing to increases in phosphorus loading through increases in wastewater generated by the new development. The River Tywi is not failing compliance targets. Therefore, within the River Tywi SAC catchment, a headroom approach is being considered, whereby capacity of WWTW governed by permits as issued by environment regulator NRW, will dictate the quantity of development permitted. Nutrient mitigation measures should also seek to provide wider catchment benefits. Further information in relation to the review of permits³ is set out in this report.

Evidencing nutrient neutrality for phosphorous in failing SAC catchments involves calculating a total phosphorous (TP) budget using the West Wales Nutrient Budget Calculator⁴. The budget calculated will need to be mitigated, and guidelines to support this are recorded in the Mitigation Guidelines⁵. The Authority has also recognised the need for decision making on a catchment basis. The Authority is a member of the Cleddau NMB, and the Teifi NMB, and chairs the Tywi NMB. These boards are responsible for producing Nutrient Management Plans on a catchment basis in response to the complex problems of improving water quality and the immediate challenge that the current constraints pose for development, particularly of social housing. The NMBs provide a means for LPAs to

collaborate on a catchment basis, underpinned by the democratic accountability of Local Authorities.

This Topic Paper identifies the requirements of national legislation and policy relating to nutrient mitigation. It also sets out regional evidence, as well as local evidence. The Paper should be read in conjunction with: Welsh Government's Planning Policy Wales Edition 11⁶, the Welsh Government's Rivers Action Plan, organogram (see Appendix A) and The Minister for Climate Change's shared vision for the NMBs, Carmarthenshire County Council Nutrient Mitigation Options Technical Review⁷, Carmarthenshire County Councils Nutrient Budget Calculator Guidance⁸, Carmarthenshire County Councils Nutrient Neutrality Interim Action Plan, Carmarthenshire County Councils Nutrient Neutrality Management Strategy and The Teifi Study. It should also be read with reference to the cross catchment and border work and collaboration being undertaken by the Nutrient Management Board for the Teifi, Tywi and Cleddau as well as the broader work at a national level.

Through collating CCC work to date, this Topic Paper consists of an integrated suite of guidance documents that adhere to policy CCH4 of the 2nd Deposit RLDP. In noting this policy, it is recognised that its content may be subject to further iteration as part of the consideration of phosphates as part of the Examination in Public.

1. Introduction

This Topic Paper summarises the actions taken by Carmarthenshire County Council in response to NRW's publication of phosphorous guidance and is prepared in support of the Revised LDP. Nutrient management is critically interlinked and impacted by the ever-escalating Climate and Nature Emergency, as declared by the Welsh Government (WG) and CCC.⁹

The County of Carmarthenshire benefits from its position in South-West Wales which is home to a number of internationally designated sites¹⁰. The rivers of Carmarthenshire support a wide range of habitats and species¹¹. The quality of the natural landscape and environment is worthy of protection for both its intrinsic beauty and its value in making Carmarthenshire an attractive place to live, work and study. The importance of managing the issue of excess nutrients entering our waterways is pertinent in achieving Wellbeing Objectives¹², placemaking¹³, addressing the section 6 duty, delivering on the Vision for One Carmarthenshire¹⁴ as identified in the Revised LDP and the Plans strategy and strategic objectives as well as reaching good water quality and ecological statuses¹⁵.

Nutrient management has implications beyond the rLDP. As of September 2023, 92 development applications are impacted by phosphates and 73 development applications are affected by phosphates preventing a decision. Within failing SAC catchments development cannot be permitted unless it can prove phosphorous neutrality or betterment. Of the 92 development applications impacted by phosphates, 63 are within the River Tywi SAC, 28 are within the River Teifi SAC and 1 is in the Cleddau SAC. In the context of the Revised LDP number of dwellings are proposed on sites allocated for residential development within the identified river catchments.

1.1. Defining the Communication & Engagement Need

The phosphorous issue is not one that can be managed in isolation. Recent developments in source apportionment science reveal that pollutant loads originate from multiple sources situated in both rural and urban locations¹⁶. Nutrients enter surface and groundwater from Waste Water Treatment Works (WwTWs), Combined Sewer Overflows (CSOs), animal urine and faeces in farm slurries, agricultural fertiliser, sewer misconnections, septic tanks, private discharges, and industrial detergents¹⁷. The solution therefore necessitates the engagement of all stakeholders responsible for such inputs and the wider community as well as multi sector collaboration.

¹⁸. The need for effective communication, collaboration and engagement is fundamental in understanding and addressing the issues associated with and resulting from phosphorous in protected riverine SACs¹⁹.

The success of mitigation strategies is underpinned by the necessity for there to be cross compliance between organisations, where a clear goal is set and can be achieved by all parties involved. This means removing any top-down bureaucratic solutions and allowing for a holistic personalised approach to phosphorous management within Carmarthenshire; a one size fits all approach will not work. The solution requires an input from experts in all fields affected. Together we can compromise and satisfy the needs of stakeholders and the communities of Carmarthenshire affected by the phosphorous issue while preserving our heritage and historic landscape, mental wellbeing of population and addressing climate and natural emergency which has been declared nationally. It is recognised that there is a need for a collective response and recognition of roles together with an integrated response, in this respect reference is made to the work of the NMBs. Further reference is also made to the Statement of Common Ground (SoCG) prepared with partners in relation to the Revised LDP.

1.2 Legislative & Policy Background

As a consequence of the publication of the NRW guidance on phosphate levels in protected riverine SACs Carmarthenshire County Council (CCC) in preparing its Revised LDP has sought to respond positively and proactively in providing evidence and policies to ensure the plan can be considered sound and ensure compliance with statutory duties, part of which includes this topic paper. It is also as a result of this guidance the Authority are facing barriers to consenting planning applications. This is in part due to the implications of the Court of Justice of the European Union (CJEU) ruling known as the 'Dutch Case'²⁰. The (2018) ruling in the European Court of Justice referred to as 'The Dutch Case' or 'The Dutch Nitrogen Cases'²¹ resulted in a change to how the Habitat Regulations (as amended, 2017) are applied to plans or projects in the catchments of European Designated sites (hereafter, European sites/SAC) that are under pressure from pre-existing levels of nutrients. The Dutch Case was concerned with the potential detrimental effects of nutrient loading from agricultural practices in the Netherlands on European Designated sites. However, the legal interpretation of The Dutch Case and JNCC guidance, as announced by environmental regulator NRW, now requires local planning authorities to consider the impacts from new plans and projects that may generate additional nutrient inputs to European sites²².

Five riverine SACs have been identified within West Wales and are under pressure from elevated nutrient concentrations²³. This interim advice has presented a significant barrier to LA being able to determine new planning applications. NRW's Compliance Assessment of Welsh River SACs (2021) found that out of 107 water bodies that were assessed, 39% passed the new targets and 61% failed²⁴. Developments in proximity to these rivers may have limited capacity to connect to the public sewerage system and alternative solutions must be found that will meet the new targets, either by meeting nutrient neutrality or betterment²⁵.

Since the guidance was introduced, CCC has taken a lead role in working proactively and collaboratively with a range of organisations including NRW, Dŵr Cymru Welsh Water (DCWW), Welsh Government, LAs across Wales and England, environmental groups, developers, the rural land use community amongst other stakeholders to try to further our understanding of the issue and to develop and establish, tools, guidance, policies, solutions and strategic approaches that will seek ensure that development proposals do not have an adverse impact on water quality within the SAC riverine catchments, but instead see the health of our rivers safeguarded and restored.

The Afon Teifi, Tywi, Cleddau, Wye and Usk are regulated under the WFD²⁶. All five are required to meet *Good* ecological status under the UK's *Water Environment (Water Framework Directive) (England and Wales) Regulations (2003, 2017)*²⁷. Not all waterbodies are meeting the required WFD ecological status today and particularly in failing catchments, the existing status could deteriorate with the input of additional nutrients.

The Afon Teifi, Tywi, Cleddau, Wye and Usk are riverine sites of Special Area of Conservation (SAC). These catchments also contain Special Protection Area (SPA), Ramsar and European Marine Sites²⁸. Any consent modification which might be identified as necessary to provide capacity for increased development will need to be subject to assessment under the Habitat Regulations.

In February 2023, Dŵr Cymru Welsh Water (DCWW) committed to investing a further £60m across Wales before the end of 2025 to further reduce the phosphorous contribution from Wastewater Treatment Works (WwTW) discharges. This is in addition to an initial investment of £100m in phosphorous reduction within their current Asset Management Plan for 2020-2025 (AMP7).

The revised NRW compliance targets followed evidence from the Joint Nature Conservation Committee that warmer and drier weather, predicted as a result of climate change, could reduce river flows during the summer and, therefore, increase phosphate concentrations²⁹. An increase in the frequency of extreme weather, such as heavy rainfall events, will lead to an increase in runoff and therefore phosphorous in our waters. It is also based on new evidence about the damaging effects of excess nutrients to water ecosystems and species. The importance of this is partially recognised through the declaration of a Nature Emergency by Carmarthenshire County Council in 2022³⁰.

2. Summary of Impacted Catchments

The combination of all three LPAs gives a total of 30 (47% from CCC, 47% from CeCC and 6% from PeCC) site allocations in the Afon Teifi SAC riverine catchment. The cumulative nutrient budget for SAC catchments in CCC, CeCC and PeCC to mitigate, based on the backstop 5 mg/l P limit is 487.51 kg TP/year. This would allow a total of 842 residential units to come forward from the respective LDPs (189 units for Carmarthenshire, 592 units for Ceredigion and 61 units for Pembrokeshire). Housing allocations in the Ceredigion LDP make up the largest portion (64%) of the total nutrient budget in the Teifi SAC, followed by Carmarthenshire (27%) and Pembrokeshire (9%). It should be noted that the above relates to the emerging Carmarthenshire and Pembrokeshire replacement LDPs whilst Ceredigion is an extant Plan adopted in 2013.

Further consideration is given to the Afon Teifi, Tywi and Cleddau in the section below. The Afon Wye is located to the north of the Carmarthenshire border, while the River Usk to the east is within the Bannau Brycheiniog National Park (BBNP) which is the local planning authority for its area, see *figure 7*. The SAC catchments impacted by the CCC rLDP housing trajectory have been mapped in *figure 1* and *figure 4*. The Afon Cleddau, Afon Wye and River Usk are not impacted by the rLDP. *Table 1* presents the percentage of river catchment within the LPA area and whether it is impacted by the rLDP.

River Catchment	% of SAC Catchment within Carmarthenshire LPA area	Impacted by CCC rLDP housing trajectory?
River Tywi	70.4	Yes
River Teifi	24.3	Yes
River Cleddau	0.9	No
River Wye	0.085	No
River Usk	N/A	No

Table 1: Percentage of river catchment within LPA area and impacted by Carmarthenshire rLDP.

2.1. Afonydd Teifi

The Afon Teifi is failing to meet compliance targets (*figure 3*), with 50% of waterbodies in the Afon Teifi catchment passing the WFD targets. The Groes waterbody located in the upper part of the Afon Teifi is passing its phosphorous targets, with the lower waterbodies generally failing as the river flows through Carmarthenshire. Source apportionment data in *figure 4* and *table 2* indicates that WwTW are the largest contributor to orthophosphate within the waterbody.

The position of NRW planning guidance and the work of the NMBs aims to apply a nutrient neutrality/betterment approach in failing watersheds within the Afon Teifi Riverine Catchment. A SoCG outlines the collaborative approach of the West Wales authorities and other partners on how nutrient loading to waterbodies will be managed across county boundaries. This is reinforced through the collaborative work being undertaken by the NMBs.

The programmed phosphorous removal capacity improvements under AMP7 at DCWW WwTW in Lampeter and Llanybydder, will support the delivery of rLDP site allocations within their service area. The completion date for upgrades to WwTW infrastructure is March 2025. As a result of this planned investment the number of housing allocations in each settlement can be secured under Grampian conditions. This equates to 30 dwellings in Cwmann serviced by Lampeter WwTW and 10 dwellings serviced by Llanybydder WwTW.

We will continue to work closely with DCWW and NRW in relation to future infrastructure improvements, any forthcoming review of permits in the Afon Teifi catchment and NRW's guidance to Planning Authorities as it evolves³¹. This along with any further changes in position will form part of future iterations of this paper including any information on the implications of the Review of Permits in relation to WwTW within the Afon Teifi catchment. As the Review of Permits process produces new backstop limits neutrality may not be required in all watersheds and development can therefore be determined.

Source	Phosphorus Load (%)	Phosphorus Concentration (%)
Rural Land Use	30	N/A
Wastewater Treatment Works	66	61
Storm Overflows	3	N/A
Other	1	N/A

Table 2: Source Apportionment data produced by DCWW for the River Teifi.

Figure 1: Afon Teifi Riverine Catchment.

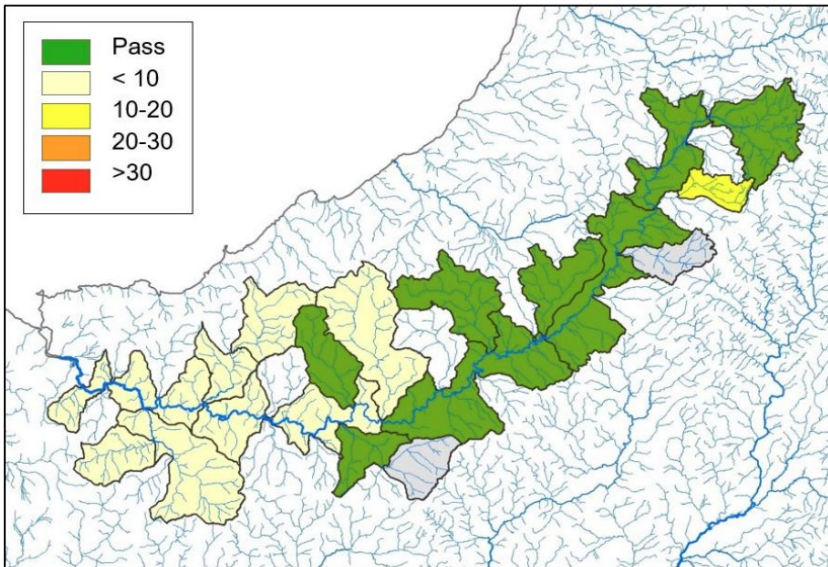
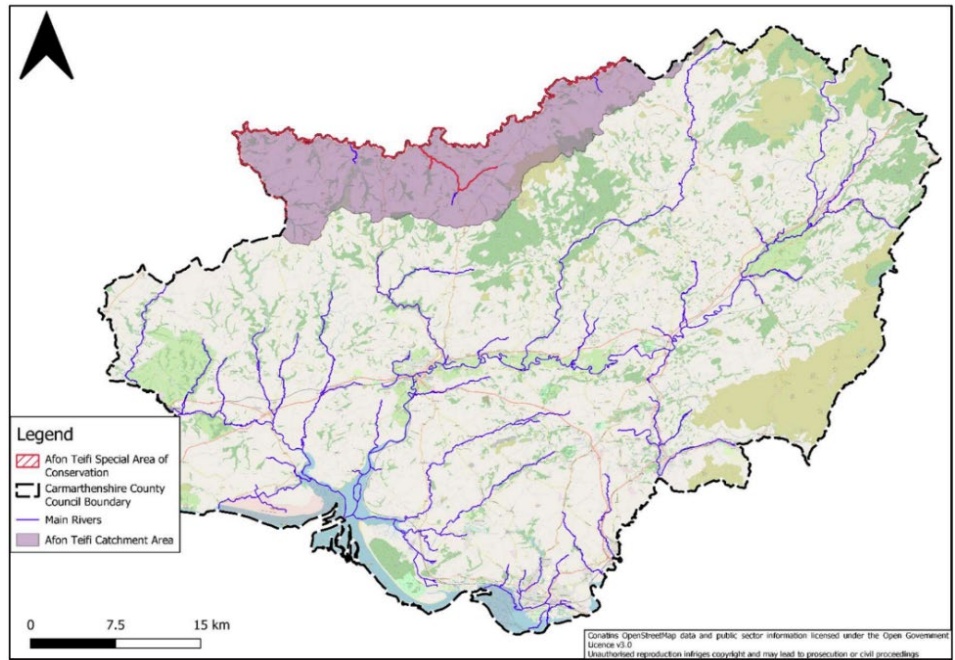
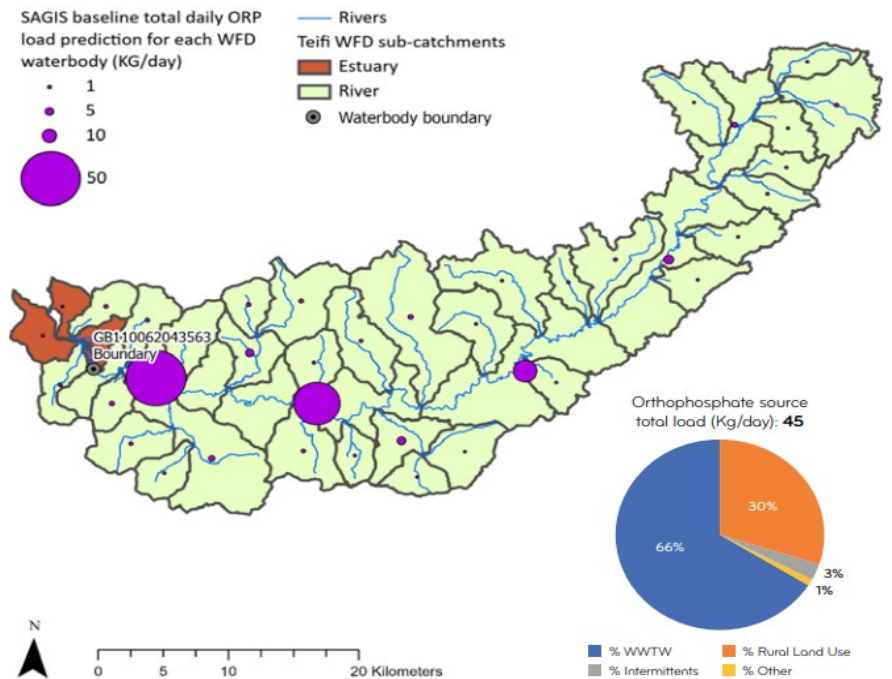


Figure 2: Map of phosphorous compliance for Afon Teifi SAC. Water bodies shaded green pass their target. Other colours fail the target with different colours representing the magnitude of failures in $\mu\text{g l}^{-1}$, expressed as the larger of annual means and growing season means. Greyed out water bodies could not be assessed due to lack of data.

Figure 3: Phosphorous apportionment by source at the furthest downstream point on the Afon Teifi Note that the 'Other' category is comprised of estimated contribution from diffuse sources of urban, industry and septic tanks.



2.2. Afon Tywi

NRW's Compliance Assessment of Welsh River SACs against Phosphorous Targets states that there are no phosphorous failures in the River Tywi SAC Catchment. However, there is limited headroom. Following the issuing of NRW's Review of Permits, WwTWs within the Tywi SAC catchment and those that drain into the SAC catchment have capacity to accommodate limited development. This may allow for and support the delivery of the RLDP allocations, but it will be a matter for the LPA to determine and adopt a policy approach which enables the effective prioritisation of this headroom to support the delivery of the RLDP.

In light of this headroom-based approach, there will not be a requirement for planning applications connecting to a mains sewer to prove nutrient neutrality or betterment. It is emphasised that, there is limited headroom, and the permit limit enacted by environmental regulator NRW on DCWW WwTWs is limited. Once a permit limit is reached for a said WwTW a nutrient neutrality/betterment approach will be employed to any further development. In implementing the headroom-based approach the LPA will closely monitor planning permissions to ensure that the level of headroom is not breached and that there is no further deterioration in an environmental capacity of the River Tywi. It is anticipated that monitoring will take place through an online planning permission tracking system, nutrient budget calculations, DCWW and NRW water quality data and water sampling/water quality monitoring conducted by the LA. This monitoring regime will be subject to ongoing development.

To date 3 WwTW within the Tywi catchment have received revised environment permits. These include Llandovery WwTW (5mg/l), Llangadog WwTW (5mg/l) and Nantgaredig & Pontargothi WwTW (5mg/l). These treatment works are currently operating with the capacity to accommodate additional housing units and therefore an increase in wastewater. It is within this capacity, as dictated by DCWW assessment of headroom as part of the Plan making process, that development will be permitted.

The dominant contributor to excess nutrients within the Tywi SAC can be attributed to the rural land use sector³². Restricting development is not the primary method in tackling excess nutrients entering the Tywi SAC catchment. It is of paramount importance to strive to find a balance between the social and economic needs of the county and the ecological state and water quality, notwithstanding the impact of climate change on the Riverine Tywi Catchment.

Based on the best available evidence, it has been concluded that this is the optimal option for the county and communities of Carmarthenshire.

Under section 6 of the Environment (Wales) Act 2016, all public authorities within Wales are obligated to maintain and enhance biodiversity and promote the resilience of ecosystems³³. A headroom approach within the Riverine Tywi SAC does not disregard any opportunity for the implementation of Nature Based Solutions (NbS) which assist in the safeguarding of water quality and inhabiting aquatic ecosystems and supporting the delivery of appropriate growth identified within the RLDP. It is in the best interest of the local environment and county of Carmarthenshire that the LA continues to pursue Wetland and Riparian Buffer Options within the catchment. The LA continues to engage constructively with the National Farmers Union (NFU), Farmers Union Wales (FUW) including through the Tywi, Teifi and Cleddau NMBs, and other stakeholders from the rural land use sector. The Welsh Government have published the Co-Design for a Sustainable Farming Scheme for Wales which contains outline proposals for 2025³⁴. The Control of Agricultural Pollution Regulations (2021)³⁵ were announced to address agricultural pollution across Wales, this includes excess nutrients. It is recognised that there is opportunity for better management of nutrients within the rural land use sector. With this in mind, we (including through the work of the NMB) are engaging with the rural land use sector to better understand barriers to improved nutrient management and exploring potential solutions³⁶.

We will continue to work closely with DCWW and NRW in relation to future infrastructure improvements and any forthcoming Review of Permits in the Afon Tywi catchment. This along with any further changes in position will form part of future iterations of this paper.

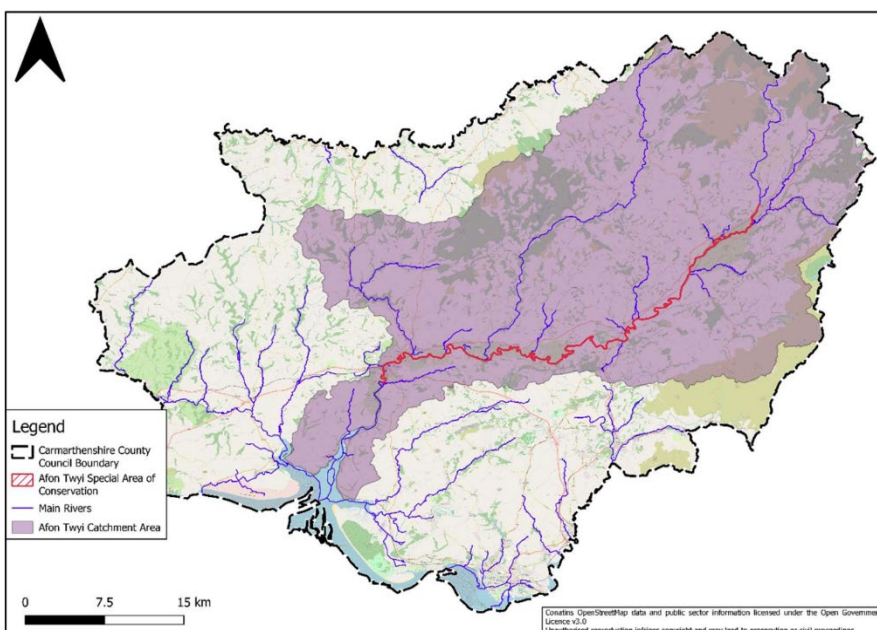


Figure 4: Afon Tywi Riverine Catchment.

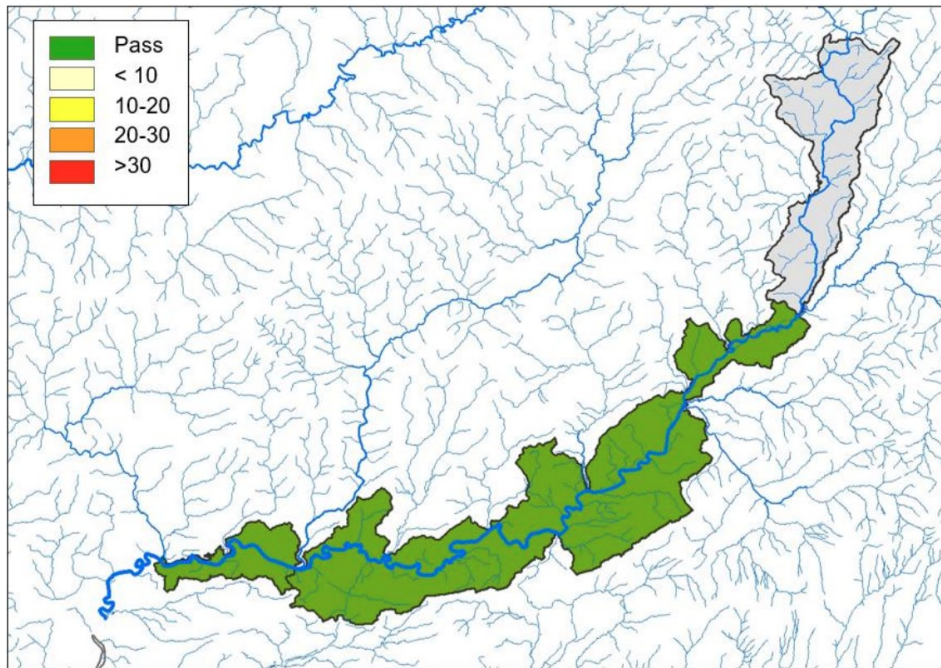


Figure 5: Map of phosphorous compliance for Afon Tywi SAC. Water bodies shaded green pass their target. Other colours fail the target with different colours representing the magnitude of failures in $\mu\text{g l}^{-1}$, expressed as the larger of annual means and growing season means. Greyed out water bodies could not be assessed due to lack of data.

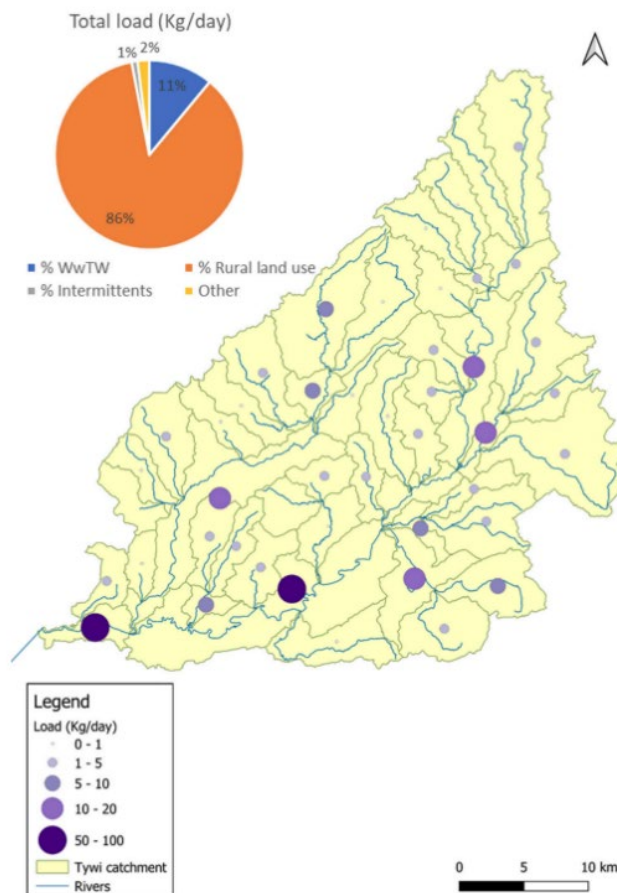


Figure 6: Phosphorous apportionment by source at the furthest downstream point on the River Tywi. Note that the 'Other' category is comprised of estimated contribution from diffuse sources of urban, industry and septic tanks.

Source	Phosphorous Load (%)	Phosphorous Concentration (%)
Rural Land Use	86	73
Wastewater Treatment Works	11	22
Storm Overflows	1	N/A
Other	2	N/A

Table 3: Source Apportionment data produced by DCWW for the River Tywi.

2.3. Afonydd Cleddau

Although no proposals within the RLDP will impact the River Cleddau SAC, nutrient mitigation and management opportunities are being explored by the LA to minimise any further adverse impacts to the SAC. This is being achieved through the NMB and the West Wales River Stakeholder Group as well as meaningful cross border engagement.

Source	Phosphorus Load (%)	Phosphorus Concentration (%)
Rural Land Use	84	N/A
Wastewater Treatment Works	11	8
Storm Overflows	2	N/A
Other	3	N/A

Table 4: Source Apportionment data produced by DCWW for the Eastern portion of the River Cleddau.

Source	Phosphorous Load (%)	Phosphorous Concentration (%)
Rural Land Use	65	N/A
Wastewater Treatment Works	22	19
Storm Overflows	5	N/A
Other	8	N/A

Table 5: Source Apportionment data produced by DCWW for the Western portion of the River Cleddau.

3. Implications for the rLDP

Following the publication of the NRW guidance on phosphate levels in protected riverine SACs it was determined necessary to pause on the preparation of the Revised LDP to understand the implications of the soundness of the Plan and the work necessary in order to progress its preparation. A report was presented to the meeting of County Council on the 9th March 2022. This report sought to outline the next steps in progressing the plan including the preparation of a second Deposit Revised LDP³⁷³⁸. This report provided a position statement on the impact of phosphates on LDP preparation and an options appraisal on the next steps, as well as the approaches identified in addressing the impacts arising from the NRW guidance.

NRW issued ‘interim planning advice’ to avoid further deterioration in an environmental capacity of SAC riverine catchments that are failing compliance targets³⁹. This advice and subsequent iterations relate to all Riverine SACs whose catchments extend into Carmarthenshire. As the LPA, CCC is required to use this advice when making planning decisions, for both individual developments and the RLDP. Consequently, any proposed development within the Teifi and Cleddau SAC river catchment will need to clearly evidence that the development will not contribute any additional nutrients to the water body by achieving phosphate neutrality or betterment in its design. Where there is limited capacity to connect to the public sewerage system, an alternative solution will have to be found e.g., septic tank, package treatment plant. The requirement applies to any development that increases the volume of wastewater and therefore the loading of nutrients. A map to show the SAC catchment area of the rivers within Carmarthenshire is set out in Figure 1.

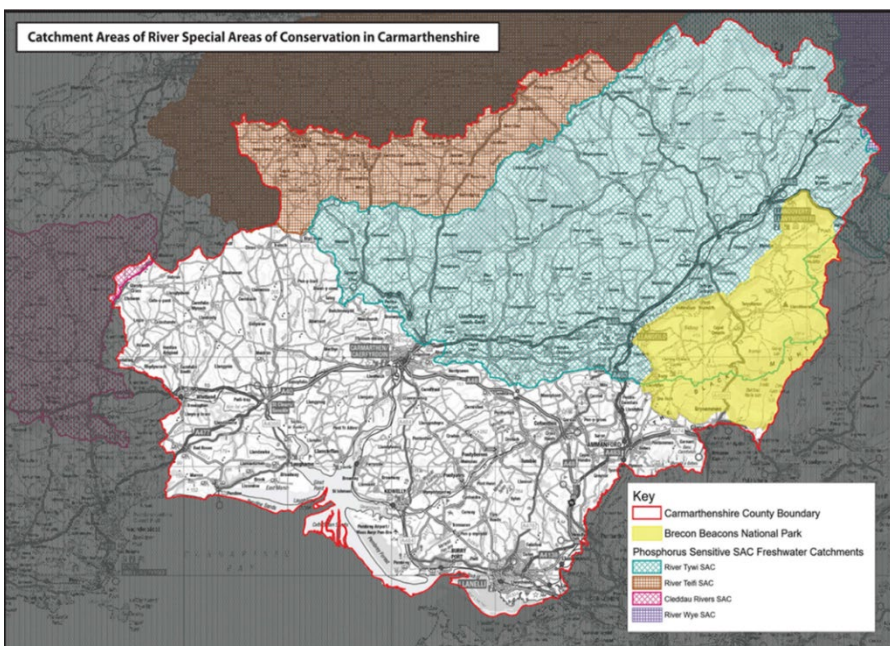


Figure 7. Map of Carmarthenshire. The boundary for CCC Local Planning Authority excludes the area highlighted in yellow which represents the Bannau Brycheiniog National Park Authority.

A non-exhaustive summary of the key implications in relation to the development of the 2nd Deposit rLDP include:

- Approximately half of the LPA area is affecting phosphorous sensitive SAC river catchments (48%, split between four SAC River Catchment totals ~102074 hectares);
- Out of the 887 potential sites submitted during the call for candidate sites, 20.3% are within this area (a total number of 180);
- Covers 28% of Service Centres (Tier 2) and 46% of Sustainable Villages (Tier3) proposed under *SP3: Settlement Framework*;
- Principally impacts 30 housing developments proposed under HOM1 (18 in the Teifi and 12 in the Tywi catchment). This equates to 446 residential units and over 80 of these are expected to be affordable homes.
- Impacts 3 out of 6 Lower Order Town Centres proposed under *SP2: Retail and Town Centres* (i.e., Llandeilo, Llandovery, and Newcastle Emlyn).
- Significant updates to the accompanying HRA and ISA were needed to consider the social, economic, and environmental implications of additional phosphate input. In light of NRW's Guidance for Planning Authorities the rLDP has been screened to determine whether any policies are likely to have a significant effect on the river SACs.

3.1. Site Allocations

Within the drainage catchments of the Afon Teifi and Afon Tywi, 30 sites were identified as having a potential effect on these SACs:

- 18 in the Afon Teifi; and
- 12 in the Afon Tywi

No sites have been identified as affecting the Afon Cleddau, River Usk and River Wye SACs.

Within the Teifi SAC Catchment there are 218 residential units, 172 of which are allocations and 46 are commitments (Table 6):

Status	Reference	Site Name	Residential Units	Servicing WwTW
Allocation	SuV38/h1	Maes y Bryn	6	Capel Iwan
	SuV37/h3	Land adjacent to Lleinau	10	Lampeter
	SuV37/h2	Land south of Cae Coedmor	20	Lampeter
	SuV39/h1	Adjacent Yr Hendre	7	Llanfihangel-ararth
	SuV33/h1	Land opposite Brogeler	5	Drefach/Felindre
	SuV36/h2	Land at Bryndulais	16	(no mains sewer)
	SuV36/h1	Cae Pensarn Helen	6	(no mains sewer)
	SeC13/h1	Adjacent Y Neuadd	10	Llanybydder
	SuV43/h1*	Blossom Inn*	5	Llandysul
	SeC12/h1	Trem Y Ddol	17	Adpar
	SeC12/h3	Land rear of Dolcoed	20	Adpar
	SeC14/h2	Land adjacent Maescader	24	Pencader
	SeC14/h1	Blossom Garage	20	Pencader
SuV35/h1	Land adjacent Arwynfa	6	Drefach/Felindre	
Commitment	SeC13/h4	Bro Einon	9	Llanydydder
	SuV43/h1*	Blossom Inn*	3	Llandysul
	SeC12/h2	Heol Dewi	14	Newcastle Emlyn
	SuV41/h2	Cilgwyn Bach	14	Llandysul
	SuV32/h1	Opposite Springfield	6	N/A

Table 6: rLDP sites and servicing WwTW within the Teifi Riverine Catchment.

Within the Tywi SAC Catchment there are 228 residential units of which 104 are allocations and 124 are commitments (Table 7).

Status	Reference	Site Name	Residential Units	Servicing WwTW
Allocation	SuV16/h1*	Llwynddewi Road	2	N/A
	SuV51/h1	Land opposite Village Hall	8	Cwm Ifor
	SeC16/h1	Llandeilo Northern Quarter	27	Ffairfach
	SeC15/h2	Land adjacent to Bryndeilog, Tywi Avenue	8	Llandovery
	SeC17/h1	Land opposite Llangadog C.P School	16	Llangadog
	SeC17/h2	Land off Heol Pendref	8	Llangadog
	SuV17/h1	Rear of former joinery, Station Road	35	Nantgaredig
Commitment	SuV16/h1*	Llwynddewi Road	6	N/A
	SuV15/h1	Llanarthne School	8	Llanarthne
	SeC15/h1	Land to north of Dan Y Crug	61	Llandovery
	SuV49/h1	Awel Y Mynydd	13	N/A
	SeC17/h3	Ger yr Ysgol	21	Llangadog
	SuV18/h1	Land off A40, Pontargothen	15	Pontargothen

Table 7: rLDP sites and servicing WwTW within the Tywi Riverine Catchment.

3.2. Nutrient Budget Estimation

Status	Reference	Site Name	Stage 1 (Kg TP/Year)	Stage 2 (Kg TP/Year)	Stage 3 (Kg TP/Year)	Stage 4 (Kg TP/Year)
Allocation	SuV16/h1*	Llwynddewi Road	1.96	1.18	1.63	2.89
	SuV51/h1	Land opposite Village Hall	4.03	0.12	1.29	6.24
	SeC16/h1	Llandeilo Northern Quarter	13.61	2.99	4.37	17.99
	SeC15/h2	Land adjacent to Bryndeilog, Tywi Avenue	4.03	1.62	3.09	6.60
	SeC17/h1	Land opposite Llangadog C.P School	8.06	0.26	1.55	11.23
	SeC17/h2	Land off Heol Pendref	4.03	0.71	1.05	5.24
	SuV17/h1	Rear of former joinery, Station Road	17.64	0.37	3.75	25.23

Table 8: Nutrient Budget Calculation for each site allocation in the Tywi Catchment.

Status	Reference	Site Name	Stage 1 (Kg TP/Load)	Stage 2 (Kg TP/Load)	Stage 3 (KgTP/Load)	Stage 4 (KgTP/Load)
Allocation	SuV38/h1	Maes y Bryn	3.02	0.42	1.94	5.46
	SuV37/h3	Land adjacent to Lleinau	0.50	0.93	1.30	1.05
	SuV37/h2	Land south of Cae Coedmor	1.01	1.32	2.34	2.44
	SuV39/h1	Adjacent Yr Hendre	3.53	0.90	1.52	4.98
	SuV33/h1	Land opposite Brogeler	4.03	0.07	0.72	5.62
	SuV36/h2	Land at Bryndulais	8.06	0.18	1.84	11.67
	SuV36/h1	Cae Pensarn Helen	3.02	0.09	1.05	4.78
	SeC13/h1	Adjacent Y Neuadd	2.52	0.01	1.31	4.58
	SuV43/h1*	Blossom Inn*	2.42	0.18	1.78	4.83
	SeC12/h1	Trem Y Ddol	8.57	0.16	2.07	12.57
	SeC12/h3	Land rear of Dolcoed	10.08	0.28	2.82	15.15
	SeC14/h2	Land adjacent Maescader	12.10	0.19	2.28	17.02
	SeC14/h1	Blossom Garage	10.08	0.50	1.82	13.68
	SuV35/h1	Land adjacent Arwynfa	3.02	0.45	6.50	10.88

Table 9: Nutrient Budget Calculation for each site allocation within the Teifi Catchment.

A review was undertaken of neighbouring Councils LDPs for the potential for their Site Allocations to affect the Teifi and Tywi SACs. The only LDPs with the potential to affect any of these SAC catchments were those in Ceredigion and Pembrokeshire and with respect to the Teifi SAC. The western reaches of the BBNP are located within Carmarthenshire's borders, although the assessed RLDP is not applicable to this area (~230 km²) as it is under the responsibility of another LPA. While preparation works were started in 2017, the BBNP Authority had to pause the production of its RLDP. At the time of publication, no updated Delivery Agreement is available and the current adopted LDP remains in force. From the information available online, there are no proposed allocations which would be within the boundary of the County nor within the shared Tywi P sensitive SAC catchment and, therefore, an in-combination assessment is not required.

Catchment	Total Nutrient Budget (KgTP/Year)	Total Nutrient Budget (KgTP/Year) +20% precautionary buffer
Tywi	63.09	75.7
Teifi	105.38	126.4
rLDP Total	168.47	202.1

Table 10: Total Nutrient Budget Calculation produced by delivery of the rLDP.

The nutrient budget produced by the rLDP is 202.1Kg of Total Phosphorus per annum (*table 10*) this budget includes a 20% precautionary buffer. The nutrient budget has been recalculated since the release of the IAP and section 3.6 of the HRA addendum C to reflect updates to site details.

Table 7 refers to the WwTWs servicing the site allocations in the RLDP in the Tywi Riverine catchment. Table 9 contains the current P performance of such WwTW, and their environment permits. Within the Tywi Catchment, Llandovery, Llangadog, Nantgaredig & Pontargothi have received their updated environment permits, with a backstop limit of 5mg/l. Considering the current performance of said treatment works there is capacity to accommodate the development proposed in the RLDP. There is sufficient headroom at these WwTW to process the nutrient budgets of allocations SeC15/h2, SeC17/h1, SeC17/h2 and SuV17/h1. Provided that DCWW WwTWs stay within their permitted discharge permit limit, the risk of compliance failure of the Tywi SAC due to the delivery of Carmarthenshire's RLDP is low.

Site SeC16/h1 is serviced by Ffairfach WwTW and site SuV51/h1 by Cwmifor WwTW. Currently there is no updated environment permit for Ffairfach and Cwmifor treatment works. The review of Permits process is ongoing with periodic updates and release of permit – it will be complete by the summer of 2024. In the case of the Cwmifor WwTW there is currently no phosphate headroom to accommodate additional development. The following points should be noted:

- Ffairfach and Cwmifor WwTW have been listed by DCWW as Category B1. This means that collaboration is possible for further P removal based on current WwTW performance and DCWWs future investment need.

- NRW's compliance report indicates that the Tywi SAC catchment is not failing targets, the SAC is passing compliance indicators and targets. There is limited headroom for additional nutrient loading.
- DCWW source apportionment report on the Tywi SAC catchment indicates that the largest contributor of phosphorus is rural land use; 86% of the total phosphorus load within the Tywi catchment can be attributed to rural land use. The report and model assessing the sources of phosphorus within the catchment has been approved by environmental regulator NRW.
- Taking into account NRW's 'fair share' approach, it is in the interest of the SAC and the residents of Carmarthenshire that the Local Authority focuses on maximising nutrient mitigation on rural and agricultural land and not preventing essential housing development, particularly when the contribution of nutrients from wastewater constitutes a minority of the total phosphorus fraction in catchment.
- The Local Authority works closely with the Tywi NMB which aims to provide wider environmental improvement of the river Tywi, its tributaries and the land draining the catchment.

Table 6 refers to the WwTWs servicing rLDP site allocations in the Teifi Riverine catchment. Table 9 contains the current P performance of such WwTW and their environment permits. The scheduled AMP7 infrastructure upgrade has determined that Lampeter and Llanybydder WwTW will operate at a TP discharge limit of 2.5 and 0.5 mg/l respectively. All other WwTW have not been issued any updated environment permits. As DCWW AMP investment programme and NRW review of permits become available, this will likely play a significant part in reducing the overall nutrient budget needing to be mitigated to deliver the LDPs. A backstop limit of 5 mg/l has been placed on WwTW environment permits where there have been none in the past. This applies to WwTW with a dry weather flow (DWF) of >20m³ per day. Due to the infrastructure upgrade of the sites within the Teifi catchment, planning may be secured under Grampian conditions.

In terms of rLDP delivery, at Llanybydder and Lampeter WwTW, Grampian conditions could be secured as per NRW's advice, in line with DCWW AMP7 investment into the works. According to DCWW WwTW performance data those within the Tywi and Teifi catchments are currently operating below the 5mg/l backstop limit, and if awarded a 5mg/l permit could accommodate the wastewater generated by sites in the rLDP. If the permits are tighter than the current operational capacity, then a nutrient mitigation approach will be applied.

The sampling programme at Llandysul and Adpar WwTW concludes in January 2024. If water quality is found to be compliant with the backstop permit of the WwTW, then planned development can connect. If water quality is found to be non-compliant then DCWW will schedule an upgrade into an AMP programme. There is also potential for developer funded contribution to speed up development if this is found to be a feasible option. A feasibility study for a third-party nutrient mitigation strategy such as a constructed wetland could be assessed to address the phosphorus loading from additional wastewater from new development.

The Teifi Nutrient Management Budget and Wetland Feasibility Study identifies 12 potential wetland locations in the Afon Teifi catchment within the administrative boundaries of CeCC and PCC with a total combined area of 35.7ha. Consultation would be required with the relevant landowners before these options can be taken. A key driver for locating potential constructed wetlands sites is the ability to easily receive discharges from the existing WwTW plants, including the proximity to both WwTWs and receiving watercourses. This has refined the total number of potential constructed wetland sites taken forward for further appraisal. For each site the area (ha), landowner type, flood zone, soil type, Indicative P removal capacity (TP Kg/yr) and indicative capital costs has been identified. The Technical Note provides an overall summary of the nutrient budget and wetland requirements based on the current information available. This information would mean that new development could be phased appropriately to ensure that investment and delivery of enhanced WwTWs were in-sync with development delivered / occupied as part of the rLDP.

The PraM Project, led by Ceredigion County Council has brought forward plans for 2 wetlands identified in this study and provides a more detailed analysis including landowner negotiations, ground truthing and sampling and plans up to planning application submission. Also, as highlighted in Section 7 of the IAP, there are some alternative, potentially smaller scale and less costly solutions, such as targeted SuDS, tree planting and integrated buffer zones, which the LPAs could invest in across the Teifi catchment to reduce the requirements on the larger and more costly mitigation solutions, like constructed wetlands and WwTW improvements.

The Teifi Nutrient Management Budget and Wetland Feasibility Study demonstrates that between the CCC, CeCC and PCC that there is sufficient wetland opportunities across the Teifi catchment to support the delivery and implementation of the respective LDPs. As the three councils are at the same stage of the initial feasibility design, it is recommended that

these additional 12 wetland sites, alongside the 7 wetland sites along the Teifi in the IAP, are investigated further as part of the detailed Action Plan. When assuming that a 5 mg/l P backstop limit is in place at WwTWs, the area of potential wetland sites identified to mitigate the reduced TP budget is sufficient.

The IAP aims to demonstrate that the potential measures to avoid adverse effects to the integrity of the SAC because of planned growth are 'achievable in practice'. Together, the IAP and the Teifi Nutrient Management Budget and Wetland Feasibility Study indicates that the HRA requirements can be satisfied through nutrient mitigation, and it is demonstrated that the rLDP is nutrient neutral against the cumulative development impacts in the Afon Teifi Catchment:

- Based on the CeCC adopted LDP and PCC LDP2, an additional 592 dwellings will be constructed in Ceredigion and 61 dwellings in Pembrokeshire which results in an additional 190,808 litres of wastewater per day to the Afon Teifi.
- The main cause for the TP budget is generated from additional nutrient loading from wastewater rather than land use changes.
- A sum of the nutrient budget is from CeCC (64%) with CCC making up 27% and PCC the remaining 9%.
- As an illustrative mitigation option, this budget could be offset with around 50.78ha of wetland when using the backstop of 5 mg/l P permit, split between Ceredigion (32.9 ha), Carmarthenshire (13.54ha) and Pembrokeshire (4.34 ha).
- The current IAP has identified 36.5ha (27.4ha of effective treatment area) along the Afon Teifi within CCC administrative boundary. This technical note has identified an additional 35.7ha (26.78ha of effective treatment area) in CeCC and PCC, totalling 72.2 ha (54.18 ha of effective treatment area). The area of potential wetland sites identified to mitigate the reduced TP budget is sufficient.
- Alternative, potentially smaller scale and cheaper solutions, such as targeted SuDS, tree planting and integrated buffer zones could be implemented across the Teifi catchment to reduce the requirements on the larger and costly mitigation solutions, like constructed wetlands and WwTW improvements.

The Local Authority have identified a way of mitigating the nutrient produced by rLDP and high-level assessments show that these mitigations are feasible. The NRW wetland policy and mitigation table link directly to and align with the mitigation options identified⁴⁰.

WwTW	Current P performance 2022 (mg/l)	NRW Environment Permit (mg/l)
Nantgaredig	1.3	5
Adpar	1.7	5
Llanybydder	2.2	0.5
Pencader	1.5	5
Drefach/Felindre	1.4	5
Pentrecwrt	3.1	Pending
Lampeter	1.5	2.5
Capel Iwan	2.1	5
Llandysul	2.7	5
Llandovery	3.2	5
Ffairfach	3	Pending
Llangadog	2.4	5

Table 9: WwTW current performance vs NRW Environment Permits

4. Immediate Actions Undertaken

Carmarthenshire County Council have adopted a leading positive and proactive role in seeking to respond to the publication of the NRW guidance on phosphates in protected riverine SACs. We have worked collaboratively with a range of partners and will continue to do so as an Authority and as a regional and national player in relation to the nutrient issue.

Thus far, we have taken the following proactive steps:

- Carmarthenshire was the first county in Wales to design and implement a Nutrient Budget Calculator and in conjunction with neighbouring authorities further developed this to form the West Wales Nutrient Budget Calculator⁴¹. These tools are being used by the Welsh Government to create an 'All Wales Nutrient Budget Calculator'. The authority has also produced Calculator Guidance⁴² and a Technical Review⁴³ to assist developers.
- CCC is part of the West Wales NMBs and assisted in establishing the West Wales River Stakeholder Group⁴⁴. CCC also works closely with the Technical Advisory Group (TAG) for the NMBs.
- CCC was the first authority to produce a Technical Mitigation Guidance document to assist developers in achieving nutrient neutrality or betterment⁴⁵. This has been used by NRW to produce Mitigation Guidelines for Wales.

- CCC has produced an Interim Action Plan which outlines the potential routes available to the LA to mitigate any negative impacts on the conservation of species objectives of the relevant SACs, resulting from its rLDP. Therefore, demonstrating how compliance with Habitats Regulations can be achieved.
- CCC established the Nutrient Management Board (NMB) for the River Tywi. This board is responsible for producing a Nutrient Management Plan to improve water quality so we can restore and conserve favourable condition status on our SAC rivers, whilst also allowing development to continue within these catchments without increasing the phosphorus loading. CCC is also members of the Teifi and Cleddau NMBs and works proactively and collaboratively across the sub region and Wales.
- CCC has actively engaged with a range of stakeholders and WG, persistently and firmly pushing for clarity and progress. In recognition of the leadership demonstrated by CCC, we were invited to the Phosphate Solutions Summit held in July 2022⁴⁶ by the First Minister at the Royal Welsh Show. In March 2023, the second Phosphate Solutions Summit⁴⁷, was attended by representatives from the LA, where the authority further highlighted the need for a River Pollution Action Plan⁴⁸ and to develop solutions with haste.
- CCC approached DTA Ecology to produce a report on the application of nutrient neutrality within a headroom catchment - the River Tywi SAC catchment. The advice and interpretation provided by DTA Ecology has provided a firm basis on how the Council can navigate planning permissions and nutrient management within a headroom catchment.

4.1. West Wales Nutrient Budget Calculator

Carmarthenshire County Council was the first Council in Wales to develop a Nutrient Budget Calculator. This has now been developed to form the West Wales Nutrient Budget Calculator⁴⁹. It has been designed to help facilitate developers with calculating their total phosphorus budget with supporting document Calculator Guidance⁵⁰.

The report produced by Ricardo for CCC comprises a technical review of a nutrient budget calculation methodology⁵¹ for use across three LPAs that comprises West Wales. It aims to provide a robust framework and a set of inputs that can be used to determine a nutrient budget for any residential development draining to a European Designated Site that is in unfavourable condition or close to unfavourable condition due to phosphorus loading.

The first step in an appropriate assessment applying nutrient neutrality is to understand whether a development will cause additional nutrient inputs to a European Site. This requires a calculation of the amount of nutrients a new development will create, otherwise known as a nutrient budget.

4.2 Technical Nutrient Mitigation Guidelines

We have produced comprehensive Mitigation Guidance that explains the most effective types of developer led and strategic mitigation that could be utilised in Carmarthenshire⁵². Any mitigation measures intended to avoid or mitigate potential phosphorus impacts must demonstrate that they are based on the 'best available evidence', will be effective 'beyond reasonable doubt', are based on estimates that are 'precautionary', and can be secured 'in perpetuity' (80-125 years)⁵³. The aim is to ensure any developer or land management practitioner has a streamline way to mitigate nutrient pollution.

A review of these mitigation options was completed in order to assist key stakeholders and decision makers in selecting appropriate mitigation solutions. This review provides details on the processes and factors that affect P removal in each of the solutions. For each solution, a set of practical considerations was provided. These practicalities will impact how the solution is deployed and how effective it might be. All the solutions will require some long-term maintenance and monitoring to remain effective over their lifetime. Key considerations on maintenance and monitoring have been elaborated for each solution.

4.3 Interim Action Plan & Action Plan

Carmarthenshire County Council have commissioned a high-level strategic mitigation options study by consultancy Arcadis. The principal aim of the Nutrient Neutrality Interim Action Plan is to set out a realistic and adaptable Action Plan for catchment scale management of phosphorus within the Afon Teifi and Afon Tywi such that the Carmarthenshire rLDP can demonstrate compliance with relevant NRW guidance on phosphorus sensitive SACs. This is an evolving document and will be updated as baseline conditions are reassessed. A Final Action Plan: *Afon Tywi and Afon Teifi Phosphorus Reduction Strategy*, will solidify and streamline the approach taken by the LA.

The key objectives this report addresses includes:

- Avoid new development in the impacted SACs in the first place where this is the most appropriate action;
- Produce an estimated TP budget for the rLDP (using best available data);
- Identify the key uncertainties that could impact the final TP budget;
- Outline the potential mitigation solutions available to CCC to offset the TP budget;
- Indicate the scale of mitigation required for the solutions deemed most practical / effective while recognising the key uncertainties; and
- Outline next steps to deliver these solutions and requirements for further work, promoting a phased approach for delivery.

This document has identified sites for wetland and riparian buffer zone opportunities on Council Land Holdings (CLH), in addition to DCWW B1 category sites. It also includes the approximate nutrient budget produced by the rLDP, the number of hectares of wetland required to mitigate that nutrient budget and the cost of implementing such NbS.

Table 10 exhibits the recommended hierarchy of mitigation solutions which could be used to mitigate the additional nutrient loading generated by new developments in Carmarthenshire within the Afon Tywi and Afon Teifi SAC drainage catchments.

Designing, constructing and maintaining constructed wetlands is a complex process. In addition to characterising the source, volume, quality and variability of the inflow to a wetland, there are a myriad of other considerations to be taken into account including soil, topography, flood risk, archaeology, seasonal and long-term maintenance requirements⁵⁴. A high-level feasibility study has been carried out within the IAP report across the Afon Tywi

and Afon Teifi catchments to identify the most suitable locations for constructed wetlands. Figure 14 and 15 exhibit the wetland and other nature based mitigation options that have been determined as feasible on CLH. The phasing of mitigation measures will operate in line with the housing trajectory.

Mitigation Option	P Removal	Costs	Scale	Feasibility
Enhanced WwTW	High	High	Medium	Medium
Constructed Wetlands	Medium – High	Medium – High	Medium	Medium
Land Management	Low	Low	Low	Low
SuDS	Medium - Low	Low	Low	Medium
Tree Planting	Low	Low	Medium	Medium
Integrated Buffer Zones	Medium	Low	Medium	Medium

Table 10: Hierarchy of Nutrient Mitigation Solutions

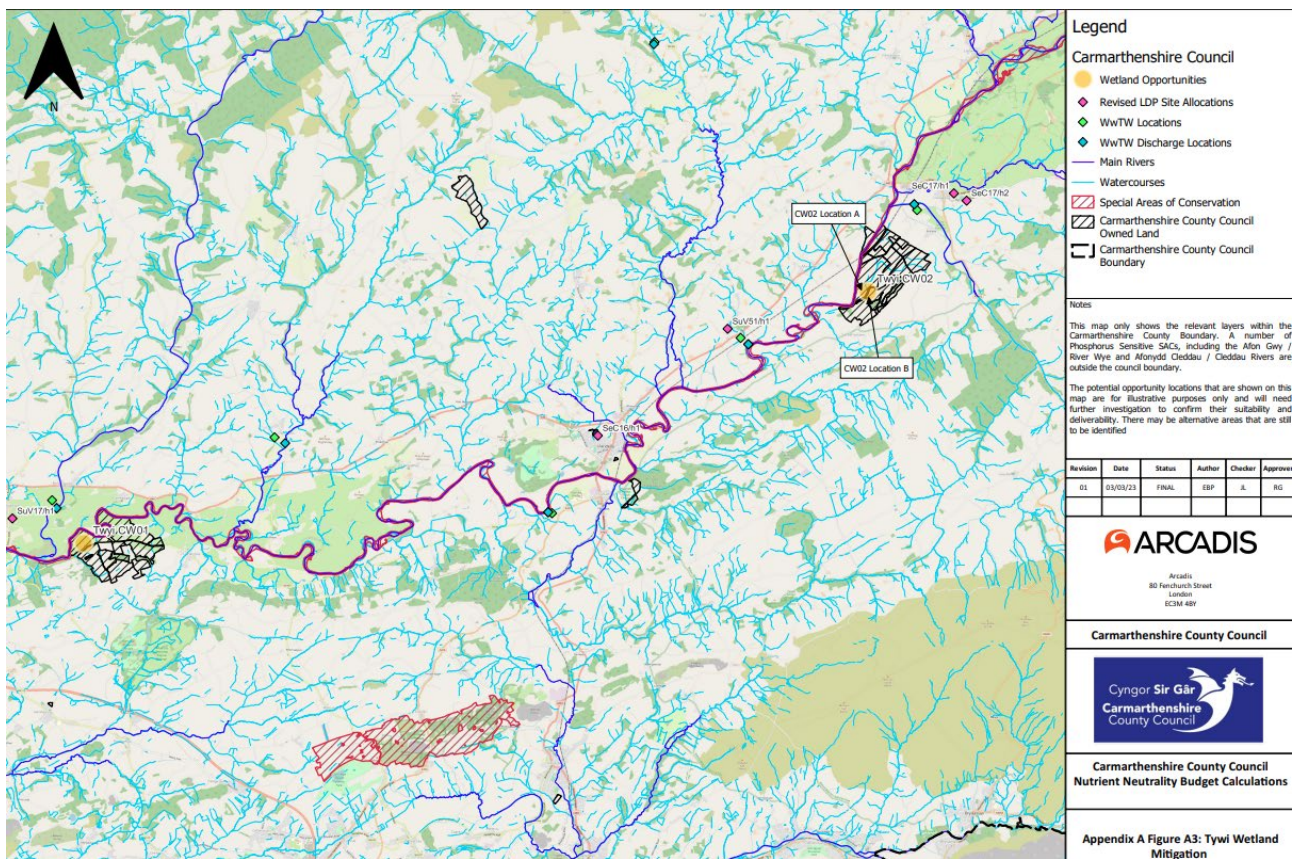


Figure 8: Map showing constructed wetland opportunities on Council Land Holdings.

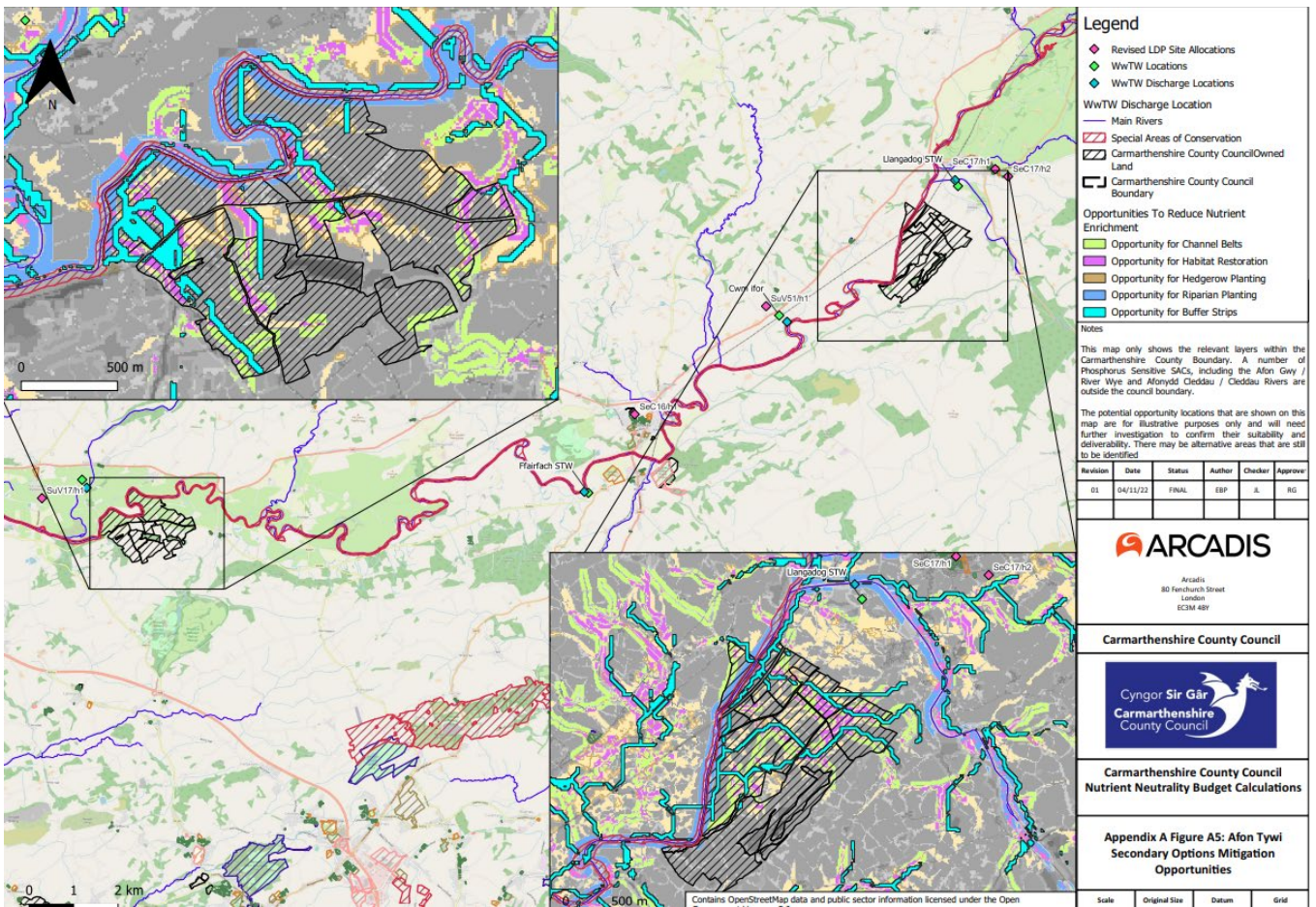


Figure 9: Nutrient Mitigation options on Council Land Holdings

4.4 Statement of Common Ground

The implications of NRW phosphate guidance extend beyond the confines of the planning remit. Under the current interpretation of the guidelines, there are implications for economic growth, social and cultural cohesion. The impacted SAC catchments are also strongholds of the Welsh language. It is noted that the phosphate guidelines place a permanent environmental constraint on the County, and will be a consideration in any future plans or projects.

CCC have produced a Statement of Common Ground (SoCG) to address the need for collaboration beyond the boundaries of LA catchments. The cross-county nature of riverine Special Areas of Conservation (SAC) catchments necessitates collaboration between Local Authorities, NRW, DCWW and BBNP to address the legislative need for nutrient neutrality or betterment for CCC's rLDP. The SoCG informs the inspectors of the agreed position of LPAs, NRW, and DCWW, relating to the requirement that any development within the Afon Teifi and Afonydd Cleddau SAC must not contribute to further nutrient input; and that any development within the Afon Tywi SAC must be appropriately monitored to ensure that environment permits at servicing WwTWs are not breached.

4.5 Nutrient Loss Risk Layer

In March 2022, Environment Systems Ltd produced an assessment of nutrient loss risk across Carmarthenshire, Pembrokeshire, and Ceredigion. This involved mapping and modelling the risk of nutrient runoff/loss from land across West Wales. This spatial information was produced in support of preventative and mitigative action on nutrient loss and nutrient enrichment throughout the counties and therefore the SAC river catchments contained within them. Modelling is produced based on calculations according to soil and slope factors in addition to land use and land cover characteristics. The combination of these characteristics provides an indication of what category produces the greatest risk for nutrient runoff/loss for a particular land parcel. The following spatial outputs have been produced:

- One overall nutrient loss risk raster at 10m resolution.
- One raster dataset showing the dominant risk factor(s) at each 10 m pixel location, derived from the overall nutrient loss risk raster dataset.
- A change analysis raster showing areas of potential change in nutrient loss risk (based on habitat only) between the time of capture of the Phase 1 habitat data, and 2020.

- Opportunities for creating buffer strips to mitigate nutrient loss.

The datasets are intended to be used as a starting point to identify risk areas and field visits to identify on-farm conditions, and effectively target preventative and mitigative action on nutrient pathways. For example, in *figures 10* and *11* the nutrient loss risk layer has been used to assess the greatest risk to loss of nutrients surrounding the rLDP sites in Llangadog and Nantgaredig.

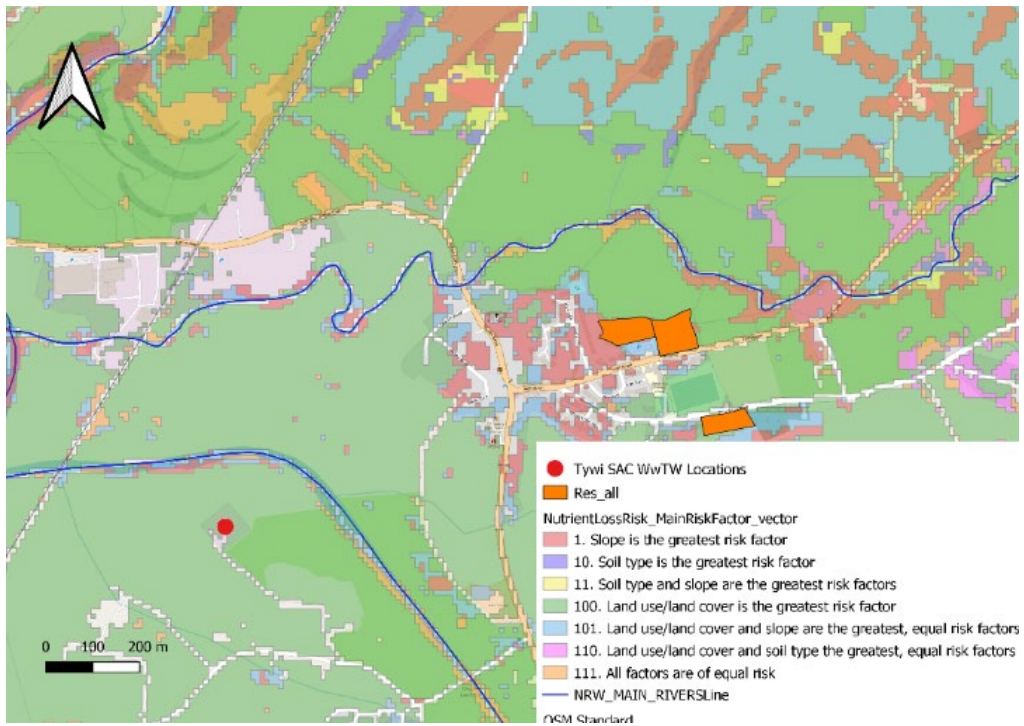


Figure 10: Nutrient Loss Risk Layer Llangadog.

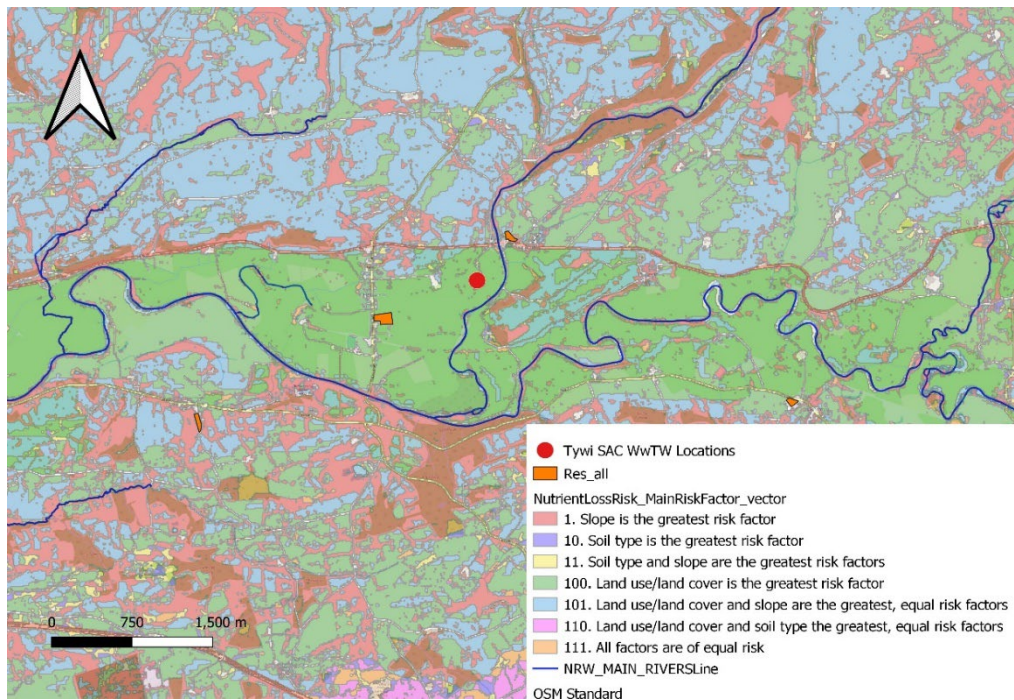


Figure 11: Nutrient Loss Risk Layer Nantgaredig

4.5 Using GIS to Identify Sites for Mitigation Strategies

Under Welsh Government Licensing, CCC has access to Planet data where high-resolution spatial data can be downloaded and imported into GIS software. DataMaps Wales provides map layers that have been used to assess opportunities for nutrient mitigation measures. Combining these layers and datasets will provide the LA with a more thorough understanding of where to best target mitigation measures.

Working with Natural Processes (WWNP) Riparian Woodland Potential is NRW's best estimate of locations where tree planting may be possible on smaller floodplains close to flow pathways, and effective to attenuate flooding (*figure 12*)⁵⁵. Working with Natural Processes (WWNP) Floodplain Woodland Planting Potential is NRW's best estimate of locations where tree planting on the floodplain may be possible, and effective to attenuate flooding (*figure 13*)⁵⁶. The dataset is designed to support signposting of riparian areas not already wooded. Although designed for flood mitigation, this will by its nature, provide nutrient mitigation. The information provided is largely based on modelled data and open constraints data and is therefore indicative rather than specific. Ground truthing will provide further clarity on the efficacy of such mitigation methods once mapping has identified potential sites of opportunity.

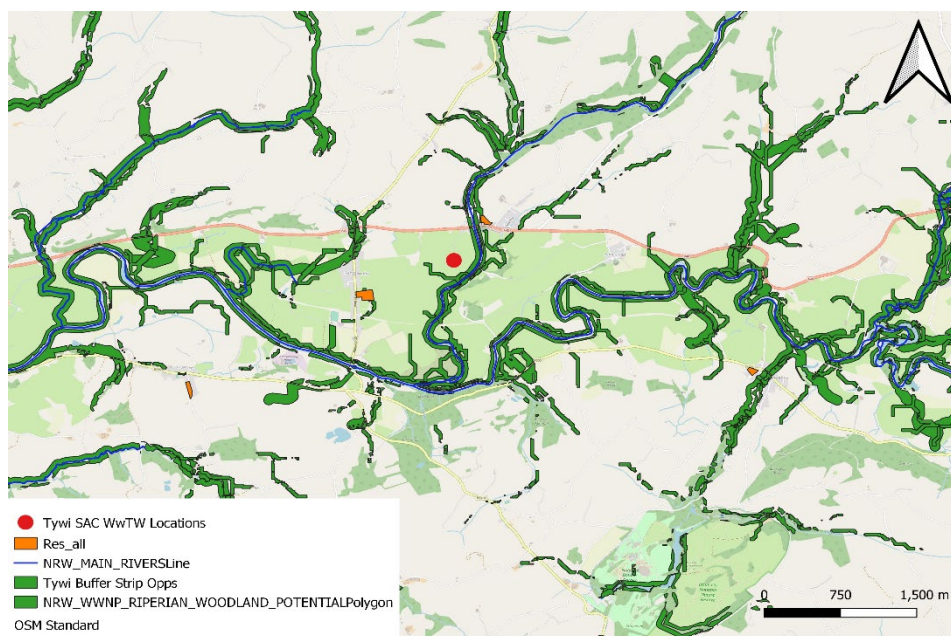


Figure 12: NRW Riparian woodland planting opportunities and Arcadis Riparian buffer zone opportunities (Location Llanarthne).

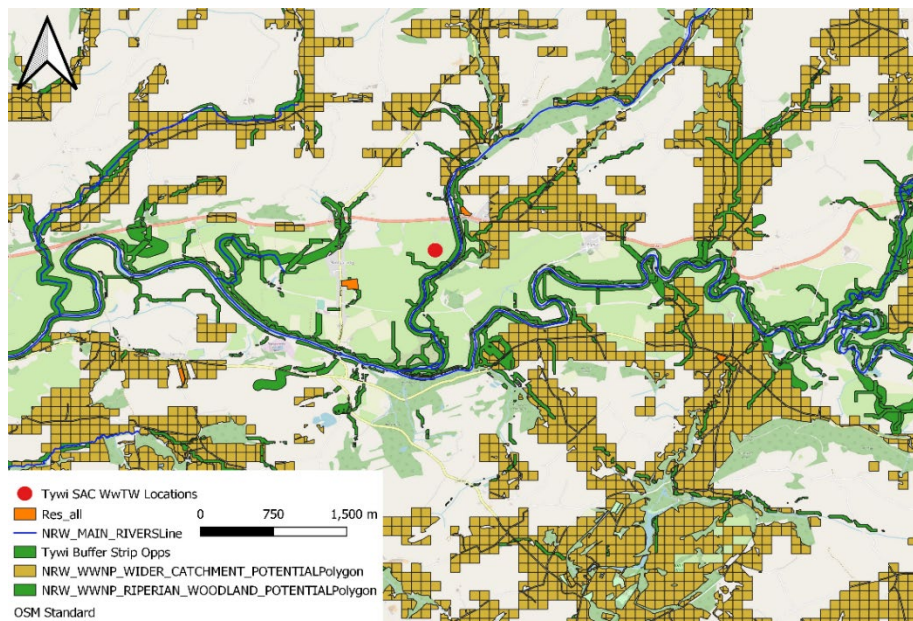


Figure 13: Additional layer see yellow boxes for NRW wider catchment potential for woodland planting (Llanarthne).

5 Wider Nutrient Management Solutions

5.4 Nutrient Management Strategy

CCC recognises the need for and importance of developing a strategy to deliver Nutrient Neutrality in the Afon Teifi catchment that facilitates the rLDP and sets out a holistic approach to introducing broader benefits, with a particular focus on NbS and wider environmental improvement within the River Tywi SAC. The strategy would be used to engage with residents and businesses to explain the importance of managing nutrients and outline the ways in which CCC collaborate to achieve this.

In addition, the Strategy will be a useful resource to help outline potential investment opportunities from third parties seeking to invest in NbS. A key aspect will link other functioning strategies CCC is undertaking to allow for a cohesive, multifunctional approach to planning and development within the county. The document will examine best practices, technologies and innovative approaches to nutrient management and highlight effective and efficient initiatives. It will consider high level cost elements for nutrient mitigation strategies, the potential for developer contributions and stacking of benefits and blended funding. The implementation and delivery of this will be documented through the allocation of roles and responsibilities, a set timeline, monitoring and evaluating progress and managing risk and change.

The strategy will consolidate current consultations with DCWW and NRW to confirm the type of NbS measures supported.

5.5 Nutrient Management Boards

The Cleddau, Tywi and Teifi Nutrient Management Boards (NMBs) have been established to develop and implement Nutrient Management Plans for the 3 rivers, by appraising the options proposed by a TAG (Technical Advisory Group) and a Stakeholder Group, both operating across the 3 catchments' sub-region. The NMBs were established in 2022, the TAG and River Stakeholder Group is newly formed.

The NMB is responsible for identifying and delivering actions that achieve the phosphorus favourable conservation target of a river that is deemed a SAC, whilst also meeting socio-economic needs of its surrounding communities. Three NMBs have been formed in West Wales; the Afon Tywi NMB, the Afon Cleddau NMB and the Afon Teifi NMB.

The objectives of the NMBs will be to independently review and analyse existing policy, alongside up-to-date technical and scientific evidence on fertilisers and nutrient management. In addition, they will consider the multiple challenges surrounding nutrient management, and develop recommendations on the optimal policy approaches to minimise nutrient pollution.

The NMBs aim to improve land management and improve water quality, therefore protecting natural biodiversity and managing resources sustainably. The NMBs will consider various forms of government intervention, including information, advice and guidance, financial support, fiscal instruments, legislation, and enforcement once provided by the Welsh Government. The terms of this are yet to be agreed and established. The NMBs will engage with sector sounding boards, including industry representatives and other key stakeholders, to ensure that recommendations have practical merit.

5.6 Technical Advisory Group

The role of the sub-regional Technical Advisory Group (TAG) is to support The Tywi NMB, Teifi NMB and Cleddau NMBs. The TAG will be responsible for collecting, collating, and analysing data that will be used to present options for approval by the Boards. The TAG group will work collectively to produce a Nutrient Management Plan for each catchment.

The TAG will provide an evidence base for the NMBs, drawn from a wide range of experts in relevant fields of research and work. Each member has a strong background in one or more of the following subjects: soil science, agriculture science, nutrient modelling, resource-use efficiency metrics, animal science, hydrology, ecology, nutrient footprinting, impact assessment methods on eutrophication, acidification, water quality and air quality.

TAG interaction with the NMB

The TAG is accountable to the NMBs who should ensure that the identified actions are carried out. The NMBs should define the TAG’s objectives, set the timescale to deliver these and should hold to account the TAG for delivery. NMBs can change TAG Chairs or close TAGs entirely if they do not consider necessary actions are being undertaken or if their purpose has been fulfilled.

TAG interaction with the Stakeholder Group

A sub regional Stakeholder Group (SG) will feed into the NMBs via the SG chair. This will be made up of organisations and individuals with an interest in the outcomes of the Nutrient Management Plans. The SG chair will be invited to attend the TAG group meetings where appropriate. The TAG chair will attend the Stakeholder Group meetings. In this way priority actions, information sharing, support and learning can be advanced. Chair of SG (to be elected by the Stakeholder group on a rotational basis) will report on concerns, progress, and aspirations at quarterly NMB meetings.

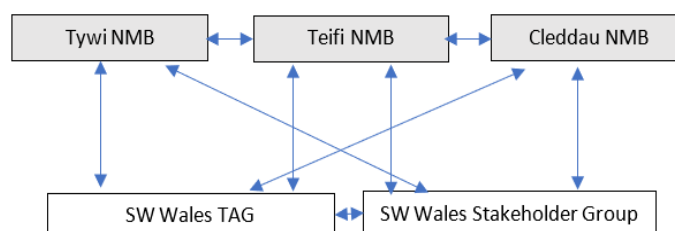


Figure 14: How the NMBs interlink with the TAG and Stakeholder Group

5.7 West Wales River Stakeholder Group

The West Wales River Stakeholder Group will provide this influence and support and will act as the central nucleus pulling together lines of communication on the nutrient issue. On 31st May 2023, CCC hosted the first West Wales River Stakeholder Group meeting. Follow up sessions have been held online via Zoom, facilitated by the Co-production Network for Wales. The hopes, wants, needs, lines of communication, mission statement have been discussed and established by attendees.



Figure 15: First ever West Wales River Stakeholder Event, 21st May 2023, Halliwell Centre, Carmarthen.

5.8 Nutrient Credit Trading Study

One approach to incentivise nutrient mitigation in the form of NbS is to establish new markets that quantify the value. The LA have explored the potential for a nutrient credit trading market that would incentivise landowners to implement measures designed to mitigate P. Through nutrient credit trading, landowners could generate nutrient reduction credits which could then be bought by developers to facilitate nutrient neutral development within failing SAC catchments.

Carmarthenshire County Council on behalf of the other EARTH programme partners, funded through WEFO European Social Fund have explored the feasibility of a Nutrient Credit Trading System (NCTS) for South-West Wales. In January 2023, Arup and its consortium partners were commissioned to complete a project with the local authorities of Carmarthenshire, Neath Port Talbot, Pembrokeshire, and Swansea to:

- Assess the feasibility of a Nutrient Credit Trading System to supply nutrient mitigation in the South-West Wales region;

- develop a toolkit that sets out best practice in the market design, governance, and operation of a NCTS; and
- identify the next steps required to implement a NCTS in the Region.
- A NCTS has been identified as being broadly feasible in line with the framework for high integrity environmental markets developed by the Financing Nature Recovery UK Initiative.

6 Concluding Statement

This Topic Paper sets out an integrated approach in seeking to assist with and respond to issues affecting the riverine SACs. It reflects the evidence and supporting documents prepared in relation the RLDP and to the provisions of policy CCH4: Water Quality and Protection of Water Resources as set out in the 2nd Deposit Revised LDP. It seeks to support the progress of the Plan to adoption as part of the RLDPs evidence base. It seeks to support the evidence and the Plans supporting documents in demonstrating that the Plan will not result in an adverse effect on the integrity of phosphorus sensitive riverine SACs. In the hydrological catchment area designated for riverine SACs, development creating wastewater discharges will be required to demonstrate there is no increase in phosphorus levels in the SAC. This can be achieved through implementation of mitigation measures and associated supplementary planning guidance. Where evidence demonstrates that adverse effects on the integrity of river SAC can be avoided mitigated, these must be agreed with the LA and NRW on a case-by-case basis.

This paper summarises the immediate actions undertaken by the LA and how they directly facilitate the implementation of the rLDP. The Nutrient Budget Calculator has been used to calculate the TP loading of the rLDP. The IAP and AP assesses and advises measures based on environmental and financial feasibility and viability. Although the WwTW servicing the sites within rLDP have capacity to do so, the council have and continue to pursue the option of NbS on CLH and have investigated where collaboration opportunities exist in conjunction with DCWW.

Full reference is made to Appendix C of the HRA Addendum which details the specific mitigation measures for Site Allocations. Signposting also is given to the IAP and Guidance on P mitigation options. The IAP demonstrates compliance with the Regulations by outlining mitigation measures (primarily Nature Based Solutions) which will uphold Nutrient Neutrality (NN) and prevent any adverse effects on the conservation objectives of the riverine SACs.

7 Next Steps

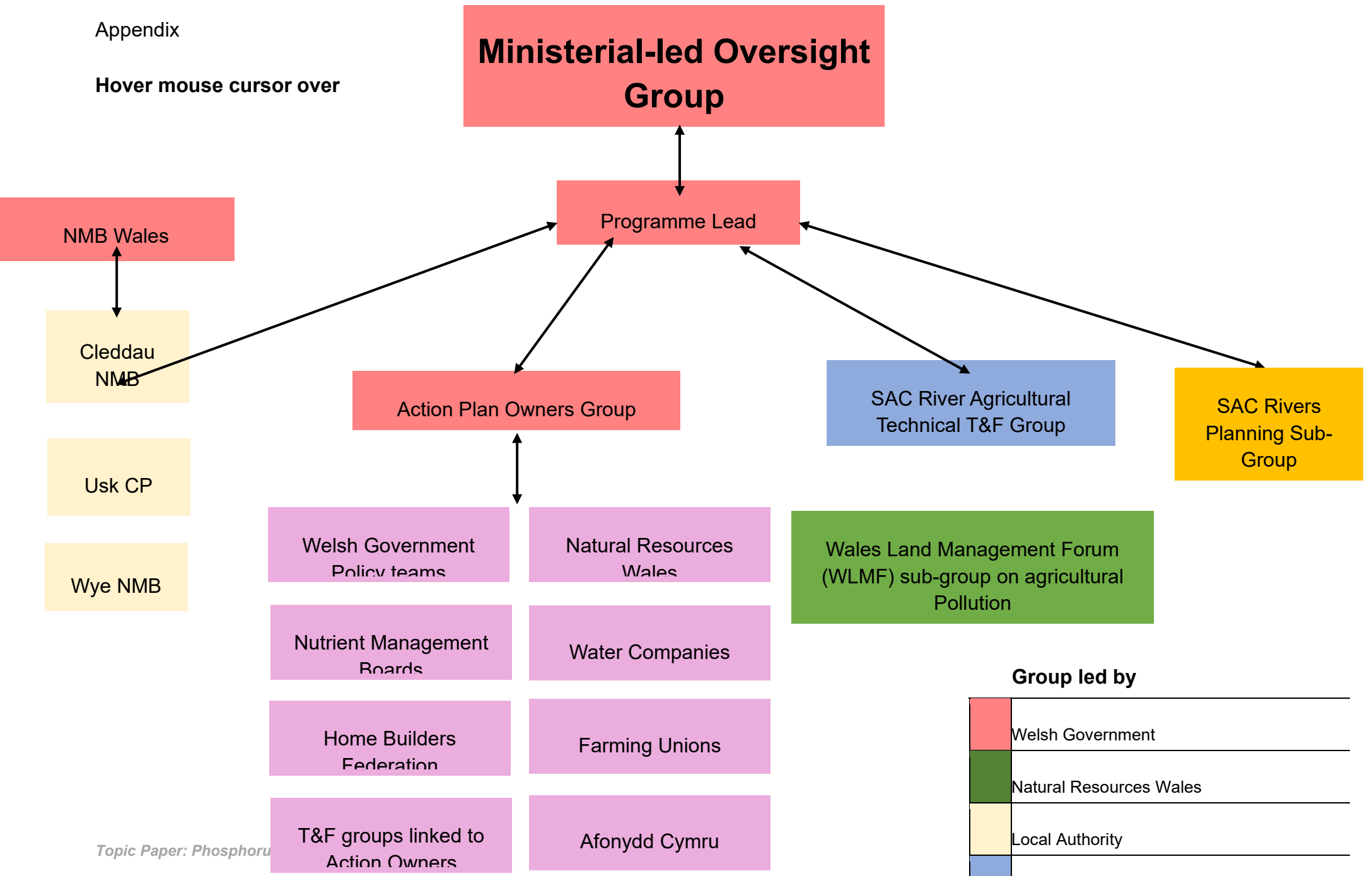
- Quantify the headroom for the Tywi SAC, pending WwTW review of permits. This will enable the authority to balance the needs of affordable housing requirements, social, economic and environmental needs of the county and river catchment.
- Continue to work constructively with the rural land use sector and its representatives to understand challenges and barriers to nutrient mitigation.
- Utilise and support the West Wales Rivers Stakeholder Group in citizen science projects which provide benefit to the water ways within Carmarthenshire and the catchments of its neighbouring counties.
- Pursue funding opportunities for the installation of nutrient mitigation measures. Utilise WG grant awarded regionally to the Tywi, Teifi and Cleddau Boards.
- As members of the Tywi NMB, Cleddau NMB and Teifi NMB, work closely with the TAG in producing nutrient management plans (NMP) for each of the river catchments. Terms of Reference (ToR) for the Boards are to be agreed on 16th November. The NMP template may involve a separation of category 1 (nutrient neutral) measures and category 2, (measures to address SAC compliance). Assist the NMB in the creation of an interactive website for access to a 'Live Nutrient Management Plan', real time monitoring and stakeholder group information in addition to graphics, including informative animations.
- Establish an Agricultural Working Group, Monitoring Working Group and a Citizen Science Working Group.
- Continue to collate and interrogate the evidence base to ensure all decisions are based on the best available evidence. Review the current NRW SAC Action Plans (CMPs, PIPs, Safle) for the 3 catchments as part of the evidence base. NRW are producing a database of baseline environmental data and NRW activity log;
- Utilise developed resources which are available on the CCC website. This includes all technical guides and the nutrient budget calculator to assist developers in bringing forward solutions to the issue of nutrient neutral development.
- Participate in working groups of the sub-regional TAG. For example, a Tywi, GIS and Agricultural Innovation working group.
- Produce an Action Plan on Mitigation site identification, nutrient budget calculations for the rLDP, hectarage of NbS required and cost of installation and maintenance of such mitigations.

- Produce a Nutrient Management Strategy to collate all strategies being achieved within the LA, tying together shared vision and interest to create cross strategy benefits.
- Set up a GIS workstream within the NMBs where the entirety of West Wales will be mapped to best target mitigation in the most vulnerable areas to facilitate wider environmental improvement and facilitate the bringing forward of development and essential house building.
- Assist the NMBs in setting up high frequency in river multi parameter monitoring.

7.4 Future Considerations

NRW have conducted a review of water quality in the Marine SAC areas. Carmarthen Bay and Estuaries is designated a SAC and is a large estuarine site, encompassing the estuaries of the Rivers Loughor, Tâf and Tywi (coastal plain estuaries) and the Gwendraeth (a bar-built estuary). These four estuaries form a single functional unit around the Burry Inlet. The environmental constraints placed on any development within these most populous areas of the County would have a significant effect that exceeds the current challenge faced by the river SAC constraints. The publication date of the Marine SAC guidelines has not been disclosed by NRW; however, the Council will continue to monitor the situation and engage with partners.

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