Lesley Griffiths AS/MS
Y Gweinidog Materion Gwledig a Gogledd Cymru, a'r Trefnydd
Minister for Rural Affairs and North Wales, and Trefnydd

Llywodraeth Cymru
Welsh Government

Paul Davies MS
Chair
Economy, Trade and Rural Affairs Committee

Paul.Davies@senedd.wales

25 April 2022

Dear Paul,

Thank you for your request for a paper in advance of the session to be held on 11 May, in respect of the Committee's inquiry into The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021.

Please find attached a briefing, which I trust will be of help to members of the Committee. I look forward to attending the session and answering any questions members may have.

Regards,

Lesley Griffiths AS/MS
Y Gweinidog Materion Gwledig a Gogledd Cymru, a'r Trefnydd
Minister for Rural Affairs and North Wales, and Trefnydd

Bae Caerdydd • Cardiff Bay
Caerdydd • Cardiff
CF99 1SN

Canolfan Cyswllt Cyntaf / First Point of Contact Centre:
0300 0604400
Gohebiaeth.Lesley.Griffiths@llyw.cymru
Correspondence.Lesley.Griffiths@gov.wales

The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021

Introduction

1. Agricultural pollution continues to affect the environment across the whole of Wales, which is detrimental to public health and biodiversity. The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021 (the CoAP Regulations)[1], which came into force on 1 April 2021, are based on long-standing good practice recommendations designed to prevent agricultural pollution. The CoAP Regulations include the following measures:
    - Nutrient Management Planning;
    - Sustainable fertiliser applications linked to the requirement of the crop;
    - Protection of water from pollution related to when, where and how fertilisers are spread;
    - Manure storage standards; and
    - A review clause enabling alternative proposals to be made.
    - Transitional periods for most elements to allow farmers time to adapt and ensure compliance.

Purpose of the Regulations

2. The CoAP Regulations are designed to tackle the causes of agricultural pollution in Wales, to contribute to the delivery of a wide range of our international and domestic obligations. They support Wales' continued commitment to the United Nations Framework Convention on Climate Change[2], the Convention on Biological Diversity[3], the UN's Sustainable Development Goals[4] and the Gothenburg Protocol[5]. They will contribute to the delivery of the goals of the Well-being of Future Generations Act (Wales) 2015[6] and the aims of the Environment Act (Wales) 2016[7].

3. The CoAP Regulations recognise the limits of the global environment by promoting resource efficiency and protecting our heath and natural environment through healthy, functioning ecosystems that support ecological resilience. They will help farms to reduce harmful emissions and improve the management of our natural resources. They will support farms to tackle and reverse the damage to our natural resources identified in the State of Our Natural Resources Report

[1] The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021 (legislation.gov.uk)
[2] What is the United Nations Framework Convention on Climate Change? | UNFCCC
[3] Home | Convention on Biological Diversity (cbd.int)
[4] THE 17 GOALS | Sustainable Development (un.org)
[5] Gothenburg Protocol | UNECE
[6] well-being-of-future-generations-wales-act-2015-the-essentials.pdf (gov.wales)
[7] Environment (Wales) Act 2016: overview | GOV.WALES

(SoNaRR) for Wales 2020[8] and reduce the negative impacts of agriculture on biodiversity.

4. While the primary aim of the CoAP Regulations is to reduce water pollution, the measures are designed to avoid pollution swapping and to prevent or minimise increased losses of nutrients to the environment. This includes nitrates, phosphorous, greenhouse gases and ammonia. By taking this approach, the CoAP Regulations deliver against a wide range of Wales' responsibilities and provide a holistic response to environmental challenges related to agricultural production.

5. The risks associated with exiting the European Union were taken into account in the design of the CoAP Regulations. The approach aims to address the risks associated with retrospective infraction proceedings and the level-playing field requirements of the EU-UK Trade and Co-operation Agreement[9]. The CoAP Regulations were designed to secure access to European and global markets by enabling the Welsh agricultural sector to demonstrate food in Wales is produced to recognised baseline standards.

6. The CoAP Regulations are comparable to those in the rest of the UK and most of Europe. The Regulations are proportionate to the risks of pollution from agricultural practices. They are based on good practice recommendations, so some farmers will see minimal impact, particularly those already following good practice, whilst others will need time and support to improve. Many of the requirements replicate, or are closely aligned to standards contained within cross compliance[10], Red Tractor[11], FAWL[12] and the Water Resources (Control of Pollution) (Silage and Slurry) (Wales) Regulations 2010[13].

Agricultural Pollution in Wales

7. There are two major categories of water pollution. Point source pollution refers to pollution coming from a pipe or ditch or other discrete mechanism. In contrast, diffuse pollution does not have a point-source, and can occur, for example, where soluble nutrients are carried through soil to ground and surface waters by rainfall.

8. Agricultural diffuse pollution is one of the main reasons waterbodies in Wales fail to achieve good status in accordance with obligations derived from the Water

[8] Natural Resources Wales / State of Natural Resources Report (SoNaRR) for Wales 2020
[9] The EU-UK Trade and Cooperation Agreement | European Commission (europa.eu)
[10] Cross compliance 2022 | GOV.WALES
[11] Red Tractor Assurance | Assured Food Standards
[12] FAWL
[13] The Water Resources (Control of Pollution) (Silage, Slurry and Agriculture Fuel Oil) (Wales) Regulations 2010 (legislation.gov.uk)

Framework Directive (WFD). During Natural Resources Wales (NRW) river walks in failing WFD catchments (undertaken between 2010-2015), poor agricultural land management practices and infrastructure were found to be contributing 37% of the diffuse pollution issues identified.

9. NRW's 2019 Challenges and Choices consultation[14] identified diffuse pollution from agriculture as the reason for 113 water bodies failing to meet good status (see Figure 1 at Annex 1). NRW is currently reviewing the status of waterbodies in Wales. The latest available data confirms 140 waterbodies in Wales fail to achieve good status due to agriculture, with a further 232 probably related to agriculture and 118 suspected as failing due to agriculture, indicating agriculture is the main cause of failure (see Figure 11 at Annex 1, for further details).

10. The catchments failing standards in respect of the Nitrates Directive covers approximately 8% of Wales (see Figure 2, Annex 1). Private groundwater drinking supplies are particularly vulnerable to pollution, with 8.7% of tests failing to meet the standards in 2014 due to microbiological and chemical parameters.

11. Nitrate pollution affecting biodiversity is not limited to the areas recommended by NRW to be designated as Nitrate Vulnerable Zones. In 2016, NRW recommended a minimum of 8% of Wales should be designated as Nitrate Vulnerable Zones, to meet statutory obligations, in accordance with a very restricted methodology established through Wales' implementation of the Nitrates Directive. This process, and NRW's recommendation, did not consider or take account of the wider impacts of agricultural pollution.

12. Whilst the CoAP Regulations fulfil obligations derived from the Nitrates Directive, they move away from a Nitrates Directive approach and take account of wider obligations and objectives. They are not Nitrate Vulnerable Zone (NVZ) regulations. A discrete Nitrates Directive approach does not protect waterbodies across Wales from failing to meet other safety and ecological standards, reduce atmospheric pollution or tackle and mitigate climate change.

13. Ecological change can occur below the thresholds established by the Nitrates Directive, particularly in combination with other agricultural pollutants, including phosphorous. Phosphorous pollution in our rivers is detrimentally affecting housing and economic developments, including agricultural developments, in river Special Areas of Conservation (SAC)[15].

[14] Natural Resources Wales / Challenges and Choices Consultation 2019

[15] Natural Resources Wales / Advice to planning authorities for planning applications affecting phosphorus sensitive river Special Areas of Conservation

14. There are nine river SACs in Wales – Cleddau, Eden, Gwyrfai, Teifi, Tywi, Glaslyn, Dee, Usk and Wye. These rivers support some of Wales' most special wildlife, including Atlantic salmon, freshwater pearl mussel, white-clawed crayfish and floating water-plantain. NRW's assessment of these rivers has identified phosphorus breaches are widespread within Welsh SAC rivers, with over 60% of these waterbodies exceeding phosphorous thresholds[16].

15. Assessments of the River Wye SAC carried out by Dŵr Cymru Welsh Water in co-operation with NRW indicates agriculture contributes approximately 66% of the phosphorous pollution. The data used does not take account of significant recent increases in poultry numbers in the catchment. Figures 8 and 9 at Annex 1 provide further information. Figures 2-4 in Annex 1 and NRW's Compliance Assessment of Welsh River SACs against Phosphorus Targets[17] provide maps of waterbodies in Wales affected by agricultural pollution.

16. As well as providing baseline standards to tackle agricultural pollution affecting waterbodies, it is recognised regulations which apply throughout the whole of Wales will help to meet other key objectives on biodiversity, air quality, related to ammonia and particulate matter, and reducing greenhouse gas emissions.

17. Over 90% of ammonia emissions in Wales are caused by agriculture, which is the cause of over 87% of Wales' sensitive habitats exceeding statutory thresholds for acidification and eutrophication[18]. Fine particulate matter (PM2.5, particles with a mass median aerodynamic diameter of less than 2.5 micrometers) in the atmosphere is associated with severe negative impacts on human health. Ammonia is one of the main PM2.5 precursors and the cause of approximately 60% of the UK's atmospheric PM2.5[19].

18. Reducing ammonia emissions is essential if we are to protect public health and our most important environment features, and achieve statutory emission reduction commitments established by the National Emission Ceilings Regulations 2018[20], in accordance with the Gothenburg Protocol. As well as detrimentally impacting on the health and well-being of Welsh citizens and Wales' environment, ammonia and PM2.5 are transboundary pollutants. Taking action to prevent transboundary pollutants is key to Wales' delivering its obligations as a globally responsible nation.

[16] compliance-assessment-of-welsh-sacs-against-phosphorus-targets-final-v10.pdf (cyfoethnaturiol.cymru)
[17] compliance-assessment-of-welsh-sacs-against-phosphorus-targets-final-v10.pdf (cyfoethnaturiol.cymru)
[18] 2006181057_Trends_Report_2020.pdf (defra.gov.uk)
[19] https://www.science.org/doi/10.1126/science.abf8623

[20] The National Emission Ceilings Regulations 2018 (legislation.gov.uk)

19. The Regulations will contribute to reductions in emissions which cause climate change, in line with recommendations of the UK Committee on Climate Change[21] and the aims of the Environment (Wales) Act 2016. One of the main benefits of the CoAP Regulations will be reduced emissions of nitrous oxide, a greenhouse gas approximately 300 times more potent than carbon dioxide[22].

20. The CoAP Regulations will also help to reduce water pollution from organic chemicals and antimicrobial resistance found in materials spread to land; faecal bacteria and pathogens (all livestock farming and some off-farm wastes are sources); and microplastics (present in sewage sludge, compost and other organic manures).

Agricultural pollution incidents

21. The impact of point source agricultural pollution incidents can be devastating and they are cumulative. It can take many years for the ecosystem to fully recover, if they are able to. If the organic material contained in manure, slurries, silage effluents, waste milk or vegetable washings enters a water course, it is broken down by micro-organisms. This process removes oxygen from the water and in severe cases of contamination, aquatic life can be killed through oxygen starvation rather than direct poisoning. Wastes from agriculture tend to have a high Biological Oxygen Demand (BOD) when compared with domestic sewage:

Pollutant	**BOD (mg O2/litre of pollutant)**
Raw domestic sewage	300
Cattle slurry	20,000
Pig slurry	30,000
Silage effluent	80,000
Milk	140,000

Source: Code of Good Agricultural Practice for Wales[23]

22. NRW records the number of substantiated agricultural pollution incidents occurring in Wales. 154 agricultural pollution incidents were substantiated by NRW in 2021. The average number of annual pollution incidents occurring over the last 10 years is 155.

23. Between 2012 and 2016, the total number of substantiated agricultural pollution incidents was 734. In January 2017, the Wales Land Management Forum established a sub-group to focus on tackling agricultural pollution. The total number of substantiated pollution incidents in the following 5 years, 2017 to 2021,

[21] Land use: Policies for a Net Zero UK - Climate Change Committee (theccc.org.uk)
[22] EM template for sub leg (senedd.wales)
[23] Code of good agricultural practice | GOV.WALES

was 816, representing an 11% increase. This is not a reflection of the work of the group, which has made considerable efforts to help address this issue. However, it demonstrates voluntary approaches alone are not sufficient. Whilst there is some fluctuation in incident numbers, only 1 out of the last 21 years has seen fewer than 100 incidents (Figure 6 at Annex 1 provides further details).

Other water pollution sources

24. Agriculture is not the only source of water pollution, figure 1 of Annex 1 outlines a number of sources. The CoAP Regulations are designed to be part of a suite of measures to reduce the overall impact of pollution to Welsh rivers.

25. Water companies operating in Wales are heavily regulated with strict permit conditions for their assets. Water companies are responsible for the self-reporting of pollution incidents to NRW. The majority of incidents are self-reported by the water industry including any potential pollution incidents which do not have an impact. These are recorded on the NRW database.

26. In comparison, the agriculture sector does not have requirements for self-reporting pollution incidents to water and NRW reports the sector the frequency of self-reporting is substantially less. NRW's pollution incident recording system made a compulsory field on the database to capture self-reporting, however data prior to August 2018 is limited. The total number of pollution incidents caused by agriculture is likely to be greater than recorded.

27. In 2019, 26 pollution incidents resulted from Combined Storm Overflows (CSOs) across Wales, all of which were categorised as Low. CSOs are permitted under the Environmental Permitting Regulations (EPR) to discharge during storm events to prevent flooding of properties with sewage. In 2019, of 166 substantiated pollution incidents attributed to the water industry, 8 were categorised as High, the rest were Low. In comparison, in the same year, 27 out of 163 substantiated agricultural pollution incidents were categorised as High.

28. Investments being made by DCWW (2020 – 2025) include over £100 million in improving CSOs alone, with a total investment of £836 million in its wastewater infrastructure. DCWW also has monitors on 99% of their CSOs and the data is openly reported on the company's website.

All-Wales approach

29. On the basis of the evidence available, a geographically targeted approach would not be effective in tackling the range of agricultural pollution issues caused by poor agricultural practices in Wales. Waterbodies failing to achieve WFD good status and those exceeding phosphorous limits would not be protected by

discrete NVZs. Designating discrete NVZs would do little to tackle ammonia and nitrous oxide emissions or PM2.5 caused by agriculture and Waterbodies and biodiversity would not be protected from the impacts of pollution incidents.

30. It can take decades for improvements in some waterbodies to be observed because of the complexities of catchment functioning. For example, one study indicated nitrate concentrations at monitoring points associated with carboniferous limestone in North Wales (in the areas of the Anglesey and Flintshire NVZs) will continue to increase until 2051 due to nutrient loadings occurring over many years[24]. This effect is often referred to as the Nitrate Time Bomb[25].

31. A lag between applications of manures to land and the observation of the pollutant in waterbodies also occurs in relation to phosphorous. The RePhoKUs[26] (The Role of Phosphorus in the Resilience and Sustainability of the UK Food System) project has identified a substantial phosphorous surplus accumulating in agricultural soils in the River Wye catchment (Wales and England). The study indicates bringing the catchment into a net-zero phosphorous balance will require significant change in phosphorous use practice, roughly equivalent to not applying any phosphorous fertiliser, 80% of the poultry manure, and 50% of cattle manure[27].

32. The RePhoKUs team, presenting to the Wales Land Management Forum sub-group in March 2022, reported intensive dairy farms in the River Wye catchment could farm with zero phosphorus inputs (which would include livestock manures) for an average of 8 years before the level of phosphorous in the soil would become deficient for agronomic purposes. This soil phosphorous legacy presents a significant, long-term risk of pollution.

33. Waiting for pollution to be detected at monitoring sites is not an effective mechanism for preventing agricultural pollution. It can take decades before a problem is identified and then decades to rectify the issue. This approach would not be compatible with protecting the well-being of future generations.

34. Geographical targeting of regulations would not prevent pollution occurring in areas where regulations do not apply, including through unsustainable intensification, and would do little to address atmospheric emissions. Areas which have lower environmental standards are at a greater risk from unsustainable practices. These areas are also more likely to been seen as areas for

[24] (PDF) The changing trend in nitrate concentrations in major aquifers due to historical nitrate loading from agricultural land across England and Wales from 1925 to 2150 (researchgate.net)
[25] Nitrate time bomb - British Geological Survey (bgs.ac.uk)
[26] Resilience Phosphorus UK – Re-focusing phosphorus use in the UK food system (lancs.ac.uk)
[27] Water Quality in Rivers (parliament.uk)

development, due to lower regulatory requirements. A geographically targeted approach would not protect the well-being of future generations. This is why an approach which prevents pollution occurring, as opposed to reacting once significant damage has been caused, has been taken.

35. Pollution is not restricted to any one sector, farm type or size. Figure 6 in Annex 1 provides information on pollution incidents caused by different farm types. The Wales Land Management Forum sub-group report[28] refers to poor slurry management and lack of sufficient slurry storage as a cause of inappropriate spreading of slurry to land during unfavourable weather and soil conditions, which leads to pollution. Insufficient slurry storage capacity in the dairy sector is an issue affecting all farm sizes (See figures 5 and 9 at Annex 1). The cumulative impact of pollution from many small farms can be just a significant as pollution caused by a large farm.

36. The approach taken means the regulatory baseline will be the same for all farmers in Wales, providing a level playing field, greater certainty for farmers on which regulations apply to them and making the rules easier to understand, comply with and enforce. However, as the regulations target the causes of pollution, individual farms will be proportionately affected, according to the type of activities being carried out and the risks they present to human health and the environment.

Welsh Government, April 2022

[28] interim-report-from-wlmf-subgroup-on-agricultural-pollution-final.pdf (cyfoethnaturiol.cymru)

Annex 1

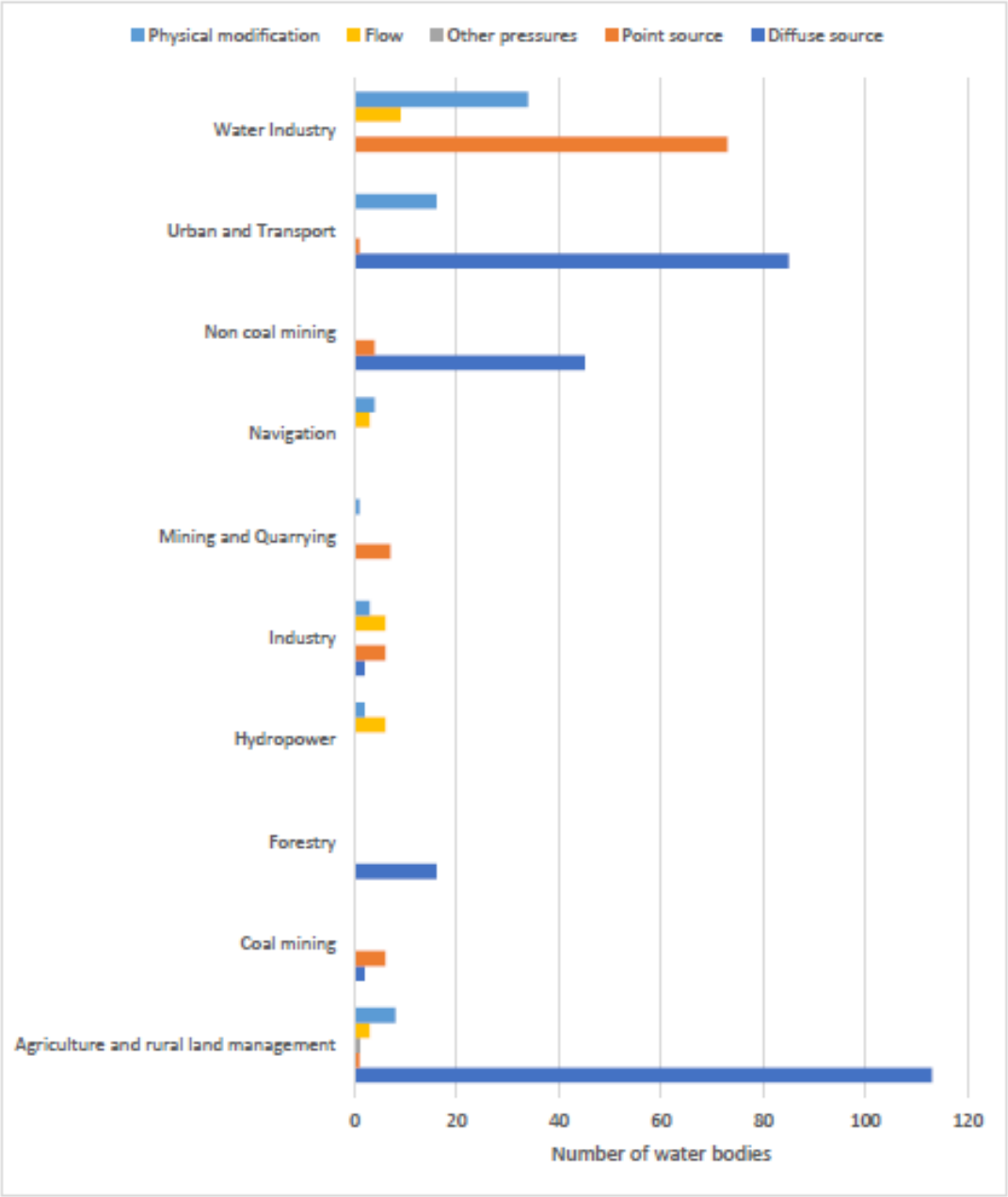


Figure 1: Number of waterbodies in Wales failing to achieve WFD good status by sector

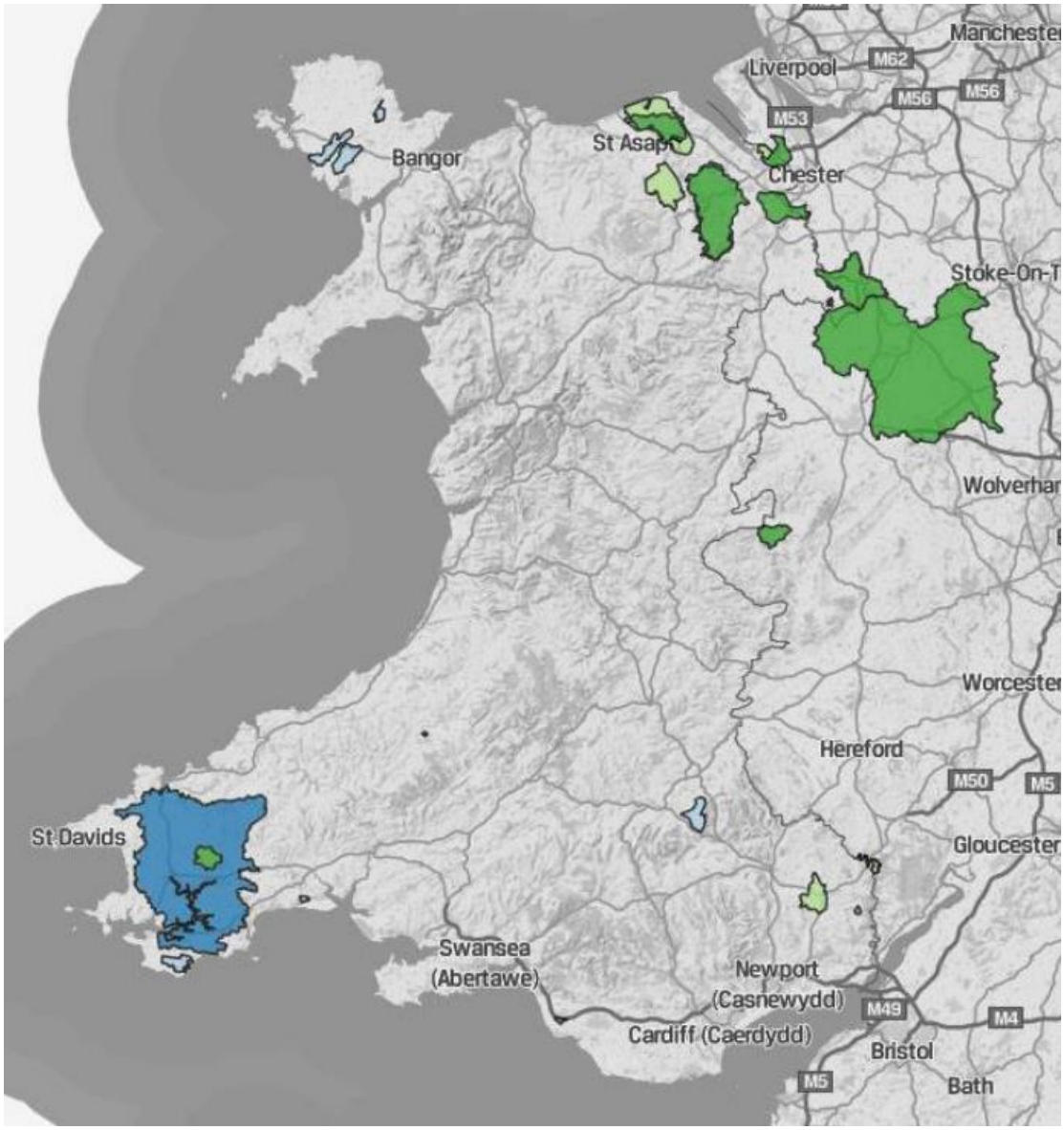


Figure 2: Map of the areas recommended by NRW to be designated as Nitrate Vulnerable Zones in 2016 (approximately 8% of Wales).

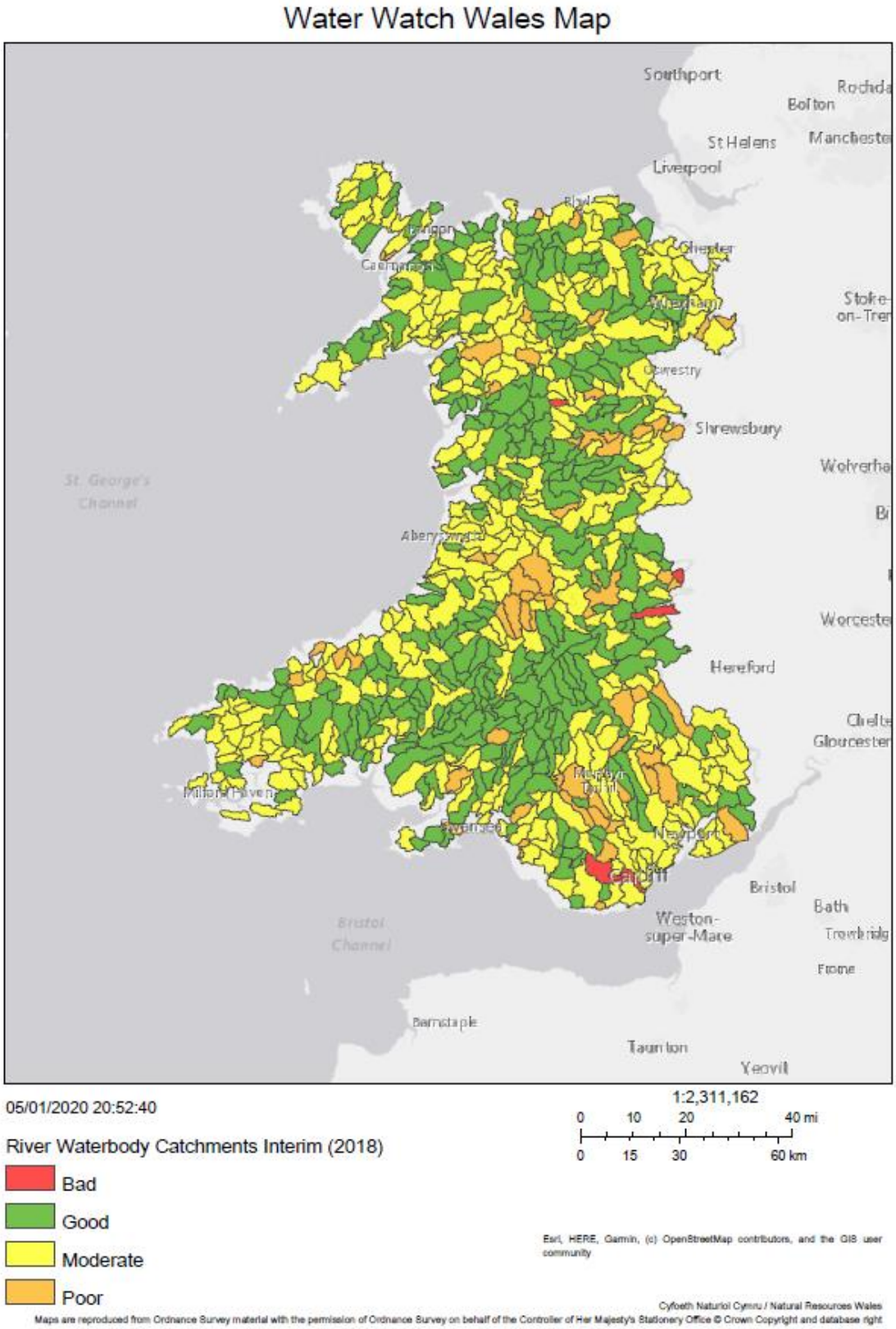


Figure 3: WFD River waterbody catchment status. Any catchment not coloured green fails to achieve the required WFD standard.

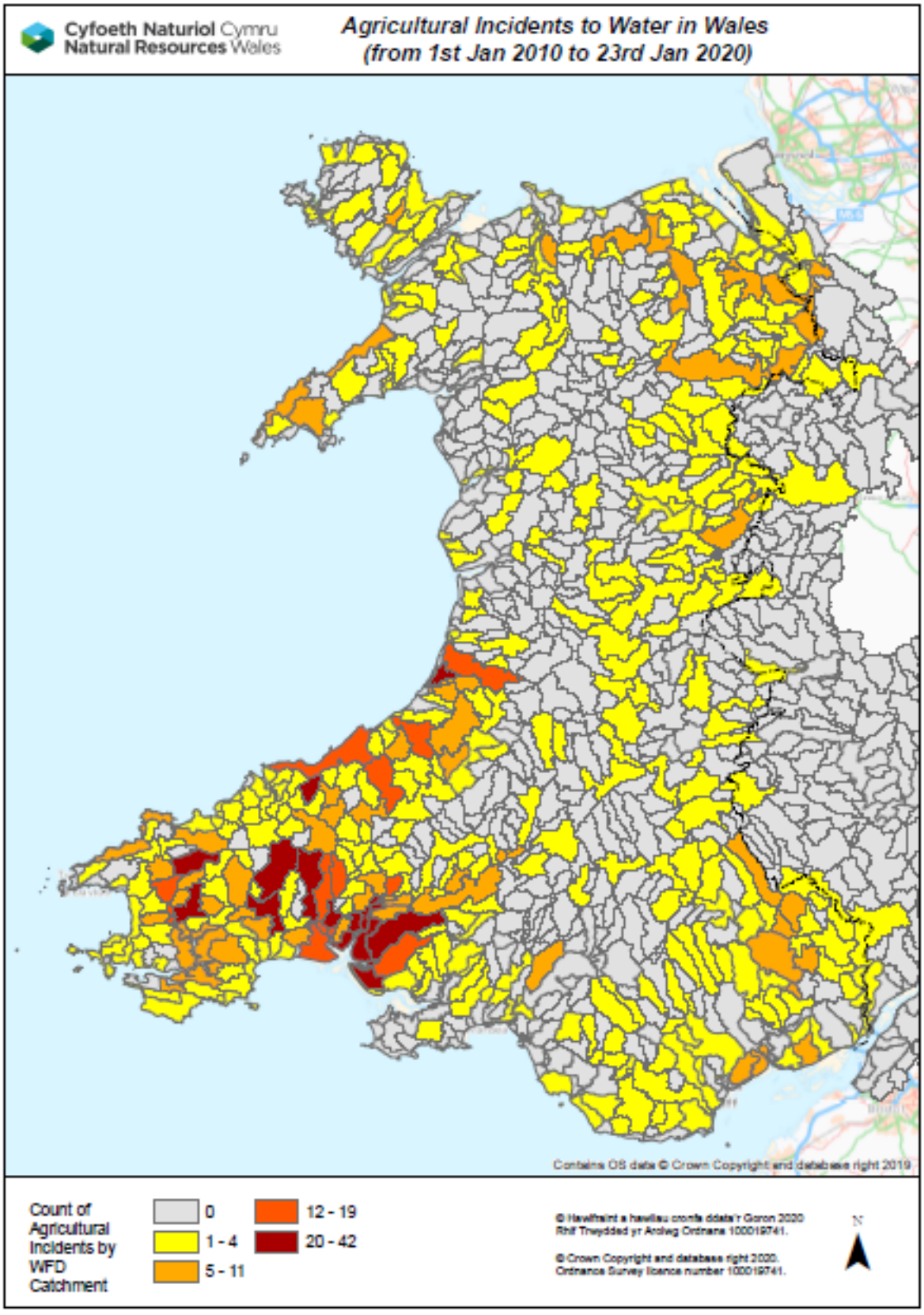


Figure 4: Catchments which have been affected by agricultural pollution incidents.

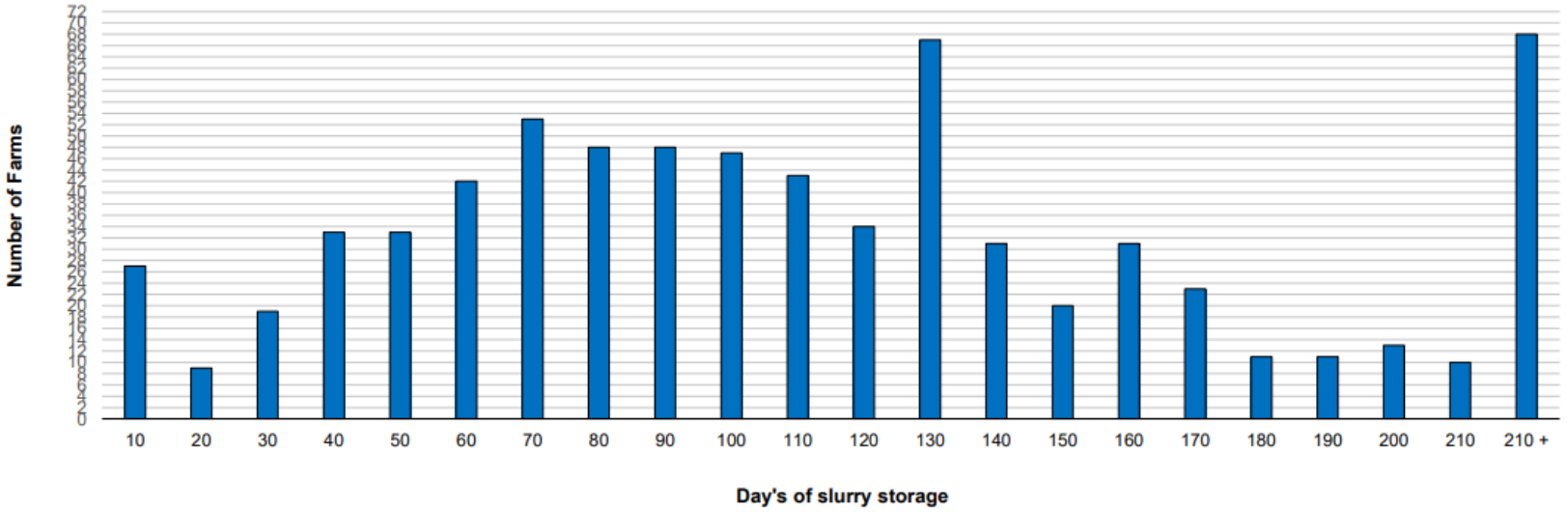


Figure 5: Storage capacity on 721 farms.

The latest information reported by NRW from the Dairy Project on the slurry storage capacity of dairy farms is from 31 October 2021. NRW had visited 824 dairy farms, with a further 700 farms remaining.

Figure 1 provides the storage capacity of 721 farms. The minimum storage capacity requirement of the Water Resources (Control of Pollution) (Silage and Slurry) (Wales) Regulations 2010 is 4 months (120 days). The data indicates 56% (402) of the farms assessed did not meet the storage capacity requirement of the existing 2010 Regulations.

The slurry storage requirements and exemptions which apply to the construction requirements of slurry storage systems of the 2010 Regulations are identical to those of the preceding Water Resources (Control of Pollution) (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991. The exemptions ensured stores constructed or in the process of being constructed at the time the 1991 Regulations were introduced can continue to be used. However, the requirement to provide a minimum of 4 months slurry storage, contained within the 1991 Regulations and carried forward into the 2010 Regulations, applies to the person with custody or control of slurry and is not covered by the exemptions.

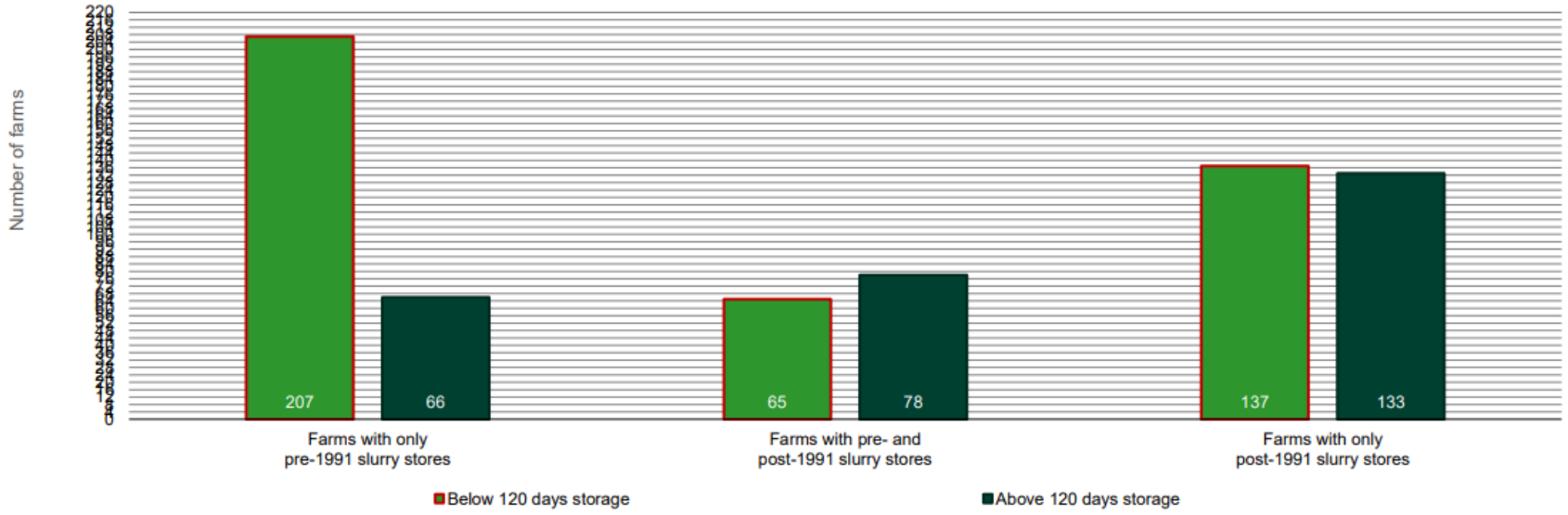
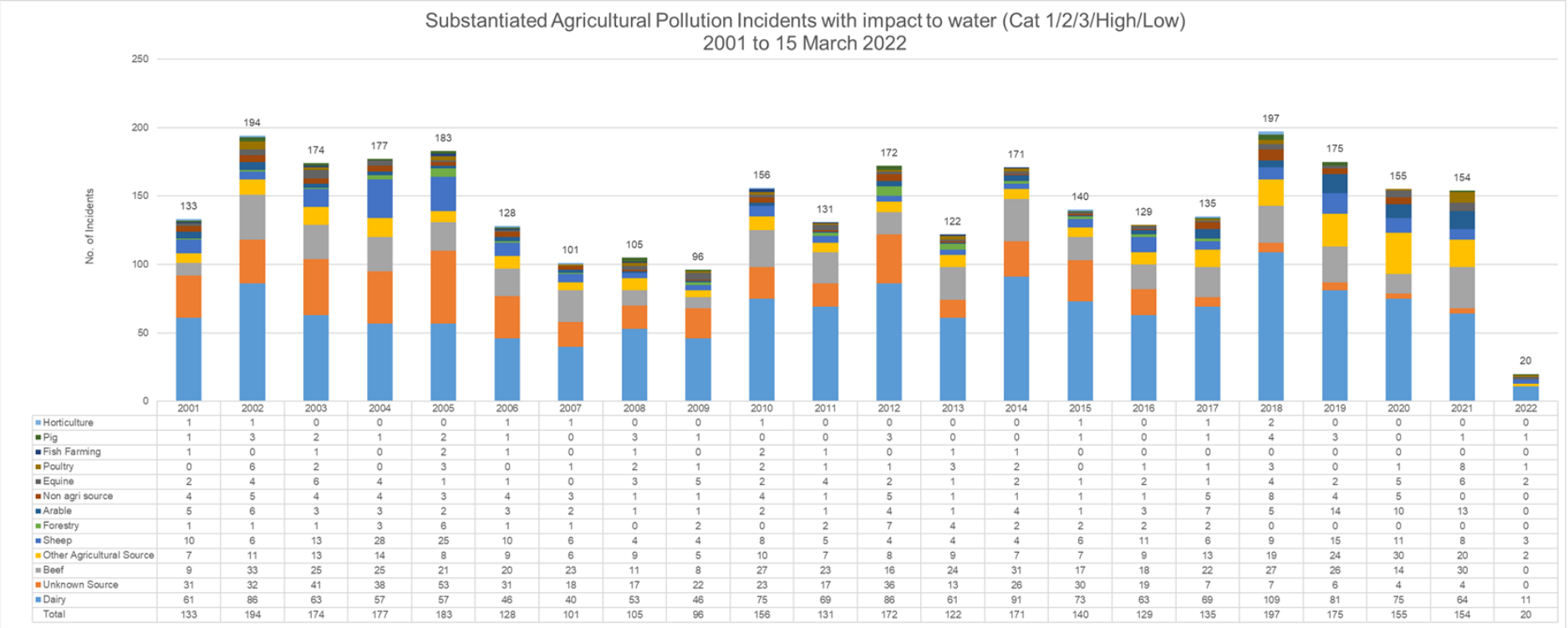


Figure 6: Information on storage capacity and the age of the store for 686 farms from the NRW Dairy Project.

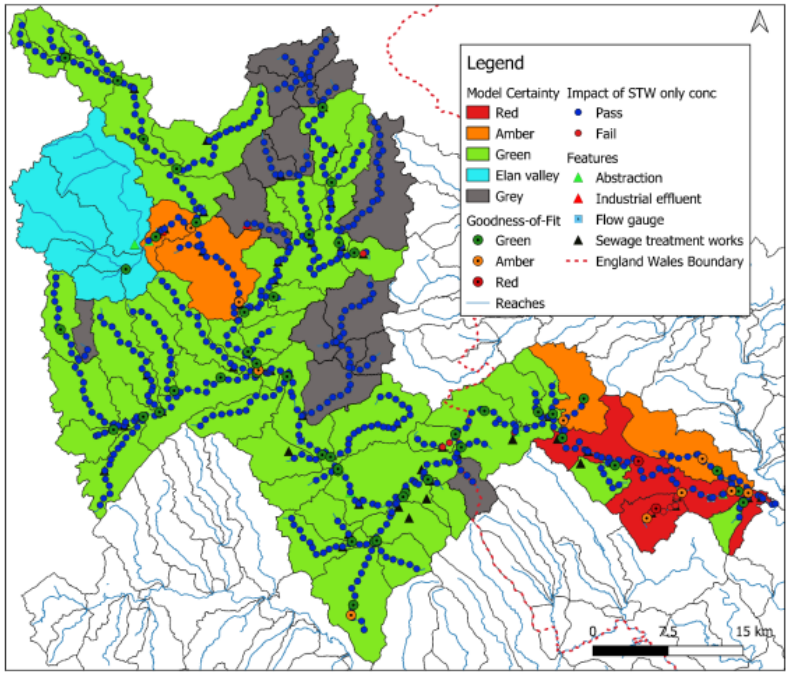
The data indicates 60% (409) of the farms assessed do not meet the storage capacity requirements of the Water Resources (Control of Pollution) (Silage and Slurry) (Wales) Regulations 2010.



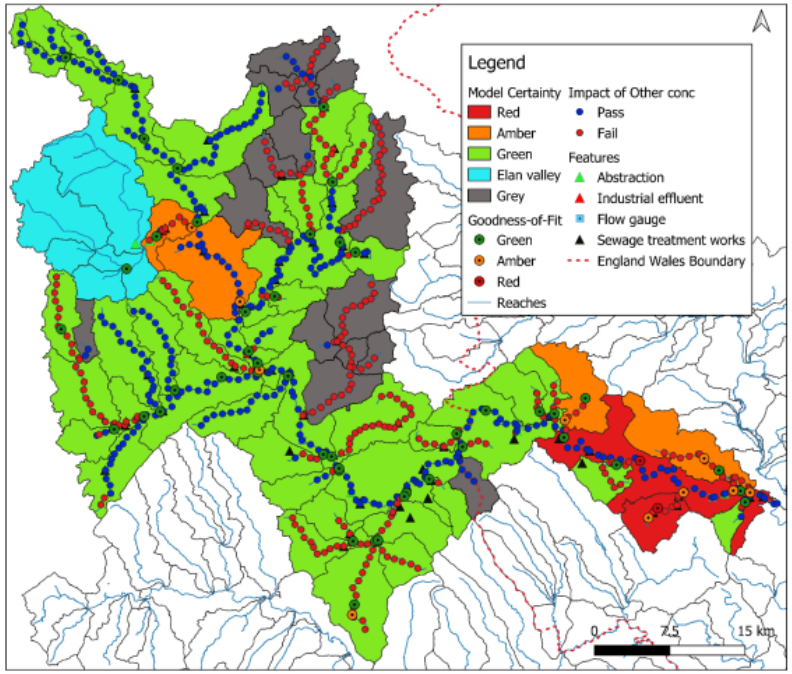
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Horticulture	1	1	0	0	0	1	1	0	0	1	0	0	0	0	1	0	1	2	0	0	0	0
Pig	1	3	2	1	2	1	0	3	1	0	0	3	0	0	1	0	1	4	3	0	1	1
Fish Farming	1	0	1	0	2	1	0	1	0	2	1	0	1	1	0	0	0	0	0	0	0	0
Poultry	0	6	2	0	3	0	1	2	1	2	1	1	3	2	0	1	1	3	0	1	8	1
Equine	2	4	6	4	1	1	0	3	5	2	4	2	1	2	1	2	1	4	2	5	6	2
Non agri source	4	5	4	4	3	4	3	1	1	4	1	5	1	1	1	1	5	8	4	5	0	0
Arable	5	6	3	3	2	3	2	1	1	2	1	4	1	4	1	3	7	5	14	10	13	0
Forestry	1	1	1	3	6	1	1	0	2	0	2	7	4	2	2	2	2	0	0	0	0	0
Sheep	10	6	13	28	25	10	6	4	4	8	5	4	4	4	6	11	6	9	15	11	8	3
Other Agricultural Source	7	11	13	14	8	9	6	9	5	10	7	8	9	7	7	9	13	19	24	30	20	2
Beef	9	33	25	25	21	20	23	11	8	27	23	16	24	31	17	18	22	27	26	14	30	0
Unknown Source	31	32	41	38	53	31	18	17	22	23	17	36	13	26	30	19	7	7	6	4	4	0
Dairy	61	86	63	57	57	46	40	53	46	75	69	86	61	91	73	63	69	109	81	75	64	11
Total	133	194	174	177	183	128	101	105	96	156	131	172	122	171	140	129	135	197	175	155	154	20

Figure 7: Substantiated Agricultural Pollution Incidents recorded by NRW.

STW only vs no STW



Compliance within the upper Wye for STW inputs only.



Compliance within the upper Wye for non-STW inputs only.

Key message - compliance with the JNCC WQ targets cannot be met by improvements to DCWW assets only.

Figure 8: River Wye SAC River Modelling Update from DCWW and NRW

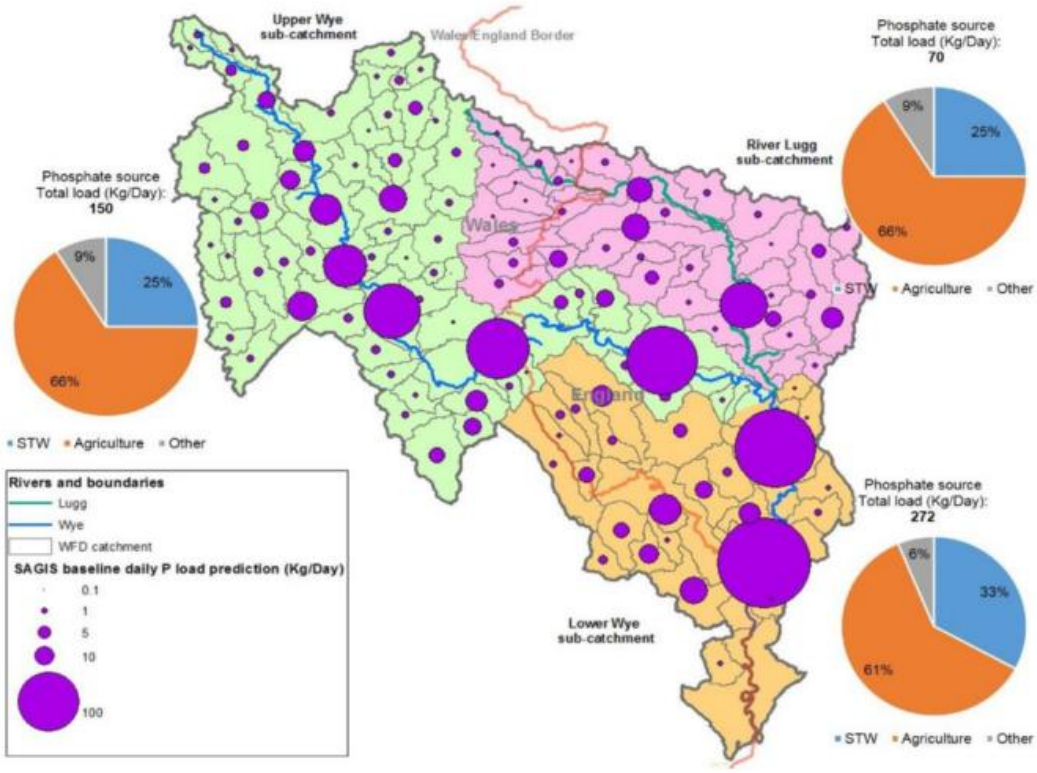


Figure 9: Sectoral contribution to phosphorous in the River Wye catchment from DCWW and NRW.

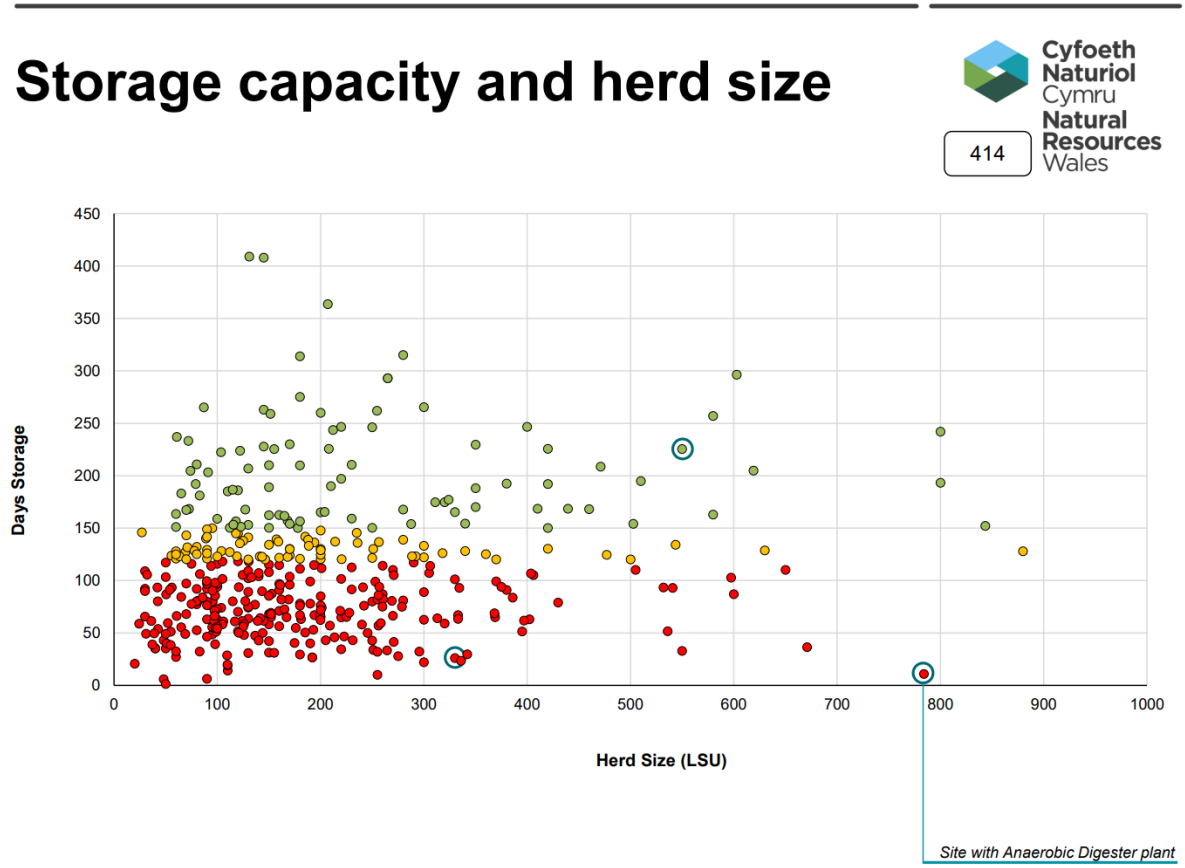


Figure 10: Storage capacity of dairy farms from the NRW Dairy Project.

Sector (Business Category)	Confirmed	Natural	Not applicable	Probable	Suspected	(blank)	Grand Total
Agriculture and rural land management	140		4	232	118	3	497
Angling					1		1
Angling and Conservation	1						1
Central Government				12	1		13
Domestic/General public	2			14	43		59
Forestry	1			2	1		4
Hydropower	9			1			10
Industry, Manufacturing and other Business	17			28	14	1	60
Local Government				1	3		4
Mining and Quarrying	105			164	14		283
Navigation	8			2	1		11
NGO	1						1
Non Coal Mining	3			2	3		8
Not applicable	44		108	8	6	6	172
NRW	2		1	3	2		8
Other (not in list)	6		6	19	6		37
Unknown (pending investigation)	15	9	438	53	5	1	521
Urban and Transport	100			148	41		289
Water Industry	85			141	136	3	365
Grand Total	**539**	**9**	**557**	**830**	**395**	**14**	**2344**

Figure 11: The most recent data available, from 2021, on waterbodies failing to achieve good status in Wales and the cause. Four water bodies have been confirmed as not achieving good status due to CSOs, with 27 probable and 4 suspected. CSO discharges are attributed to the Water Industry. However, in rural areas, CSO discharges can be caused by overland flows associated with land management practices and can contain agricultural pollutants.