Llywodraeth Cymru
Welsh Government

Statutory Review Document

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

A review of the effectiveness of the measures imposed by these Regulations as a means of reducing or preventing water pollution from agricultural sources required by Regulation 44 and chaired by Dr Susannah Bolton

31 March 2025

Mae'r ddogfen hon ar gael yn Gymraeg hefyd / This document is also available in Welsh
Rydym yn croesawu gohebiaeth a galwadau ffôn yn Gymraeg / We welcome correspondence and telephone calls in Welsh

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Contents

Chair’s Foreword

Wales is blessed with some of the most beautiful river catchments in the world, and these provide important freshwater habitats for a great wealth of biodiversity. Wales also has a rich and varied geography with a strong farming heritage and a climate that is good for growing grass to feed livestock. It was clear from my engagement with stakeholders there is a desire for a sustainable agricultural sector in every sense of the word environmental, economic and cultural. I would like to thank all those who engaged with me for their honest and fair conversations, understanding of the challenges and opportunities for a way forward.

Water pollution is a serious threat to future farming sustainability and wider societal well-being. It has negative impacts on public health, cherished natural habitats and economic development. Many different factors risk polluting water, from both point-source incidents and diffuse pollution. Sound regulation is one of many levers that are needed to address the challenge, but it is an important tool for containing those risks within a transparent framework. In Wales, the Control of Agricultural Pollution (CoAP) Regulations are designed to protect Welsh water resources from agricultural pollution, whilst enabling productive and sustainable farming practices to continue. This four-year review set out with the prime purpose of assessing whether those regulations are effective in tackling water pollution and delivering against Welsh Government’s statutory requirements, national and international environmental obligations. As the Welsh Government goes through any process of reform, I am convinced that the existing regulations should be retained until any alternatives are in place.

It can take decades for the outcomes from changing agricultural practice to be observed in nature. The relatively short time since the implementation of the regulations, and the phasing-in of some elements, means that it has been hard to draw any firm conclusions from the environmental monitoring data. Therefore, whilst the review has made best use of all the available environmental evidence, it has also been important to engage widely, to hear the views and learn from the experience of those involved in implementing the regulations, and those impacted as a result.

I wanted to ensure the review took a very open-minded, systems-based approach, recognising that the CoAP regulations interface with much wider regulatory and economic pressures, and that compliance can require significant investment and change to farm practice. I have attempted to draw out any challenges in the implementation of the regulation, including behaviour-change and unintended consequences, and identify opportunities to address these, whilst maintaining a strong principle that the outcome of any recommendations must further reduce the risk of agricultural pollution of water. I recognise that different farm practices represent different levels of risk, and that whilst the regulation is not limited to controlling nitrogen losses, it does not adequately address other pollutants, including phosphorous and soil run-off, which may in some situations represent an even greater risk. Ensuring that any changes focus on addressing the most significant risks will ensure that the regulation is effective and proportionate.

One of the most frustrating aspects of agricultural pollutants is that these same pollutants are also valuable nutrients, important for productive agriculture. However, this provides us with an opportunity for regulation that supports farmers to limit soil and nutrient loss, improve farm efficiency and reduce pollution risk at the same time. Therefore, engaging with farmers to identify the key motivators and barriers to behaviour change, will be important to ensure the success of any reforms, alongside appropriate incentives (which were outside the scope of this review).

Farm businesses face many difficulties and uncertainties, not least, the challenges of extreme weather and the threat of disease. Through our engagement with the farming community, it has been made clear that some of the aspects of the regulation have been particularly challenging to implement. An important consideration for us has been the recognition of the impacts on farmer well-being and the need for regulation that makes compliance and enforcement as easy as possible without losing traction.

I have also been keen to explore the opportunities to improve the regulation using technical solutions that might have been developed or come to light over the past four years. It has been reassuring to see the outputs of recent research that may enable a greater degree of flexibility and precision in nutrient management, as well as the progress towards options for circular systems and improved manure management. New data capture technologies, data science and artificial intelligence will provide further opportunities for innovative tools and the potential to balance regulatory flexibility with known risks. However, any introduction of technical solutions must be well-tested on-farm and options for incorporation must avoid overly complicating the implementation, reporting and enforcement requirements of the regulation.

With all the above in mind, it is important to manage expectations by indicating the timeframe over which recommendations may be incorporated in regulatory reform. Some improvements may be possible to implement within the next eighteen months, whilst others may take more than three years to become incorporated. It will be important that during that time, confidence is built amongst all parties, including farmers and environmental groups, that any changes will further reduce the risks of agricultural pollution in water.

The engagement I have conducted for this review has demonstrated that there are strongly shared aspirations for improving water quality in Wales. I am genuinely optimistic that the recommended changes to the regulation will enable a greater degree of common agency and shared responsibility to address the challenges, so that by the time of the next four-year review, all can be confident that the amended regulation supports farmers to farm sustainably, with benefits for the sector and all citizens of Wales, including future generations.

Dr Susannah Bolton

Independent chair

Section 1 - Introduction and background

Purpose of the review

When the Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021 (CoAP Regulations) were introduced, a requirement to review their effectiveness was included.

The CoAP Regulations via Regulation 44[1] require a

> 'a monitoring programme to assess the effectiveness of the measures imposed by these Regulations as a means of reducing or preventing water pollution from agricultural sources'.

And

> 'When carrying out a review…, the Welsh Ministers must take into account –
>
> (a) available scientific and technical data, particularly with reference to respective nitrogen contributions originating from agricultural and other sources, and
>
> (b) regional environmental conditions.'

The review was to be completed by the end of March 2025 to fulfil the obligation to review the CoAP Regulations within 4 years. To support this process an independent chair was appointed[2] by the Deputy First Minister and Cabinet Secretary for Climate Change and Rural Affairs, Huw Irranca-Davies MS. The chair, Dr Susannah Bolton former Vice Principal, Enterprise and Knowledge Exchange at Scotland's Rural College considered a wide range of evidence sources, which is available in the evidence pack.

While the review has been carried out to a challenging timetable, considerable engagement has occurred with stakeholders, including farming representatives, eNGOs, Natural Resources Wales, the Wales Land Management Forum sub-group on agricultural pollution and farmers. Detail of this engagement is in Annex B.

The final review is structured into 4 sections.

- Section 1 provides the background to the introduction of the regulations and the rationale for intervention.
- Section 2 outlines 'the challenge' faced by this review both in relation to water quality and reflects upon stakeholder experiences to date of the implementation.
- Section 3 explores the 'principles, synergies and conflicts' presented by the regulations and examines key areas of the regulations, reviewing the reasons

[1] The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021
[2] Written Statement: Appointment of independent chair – statutory review of the Control of Agricultural Pollution Regulations (30 July 2024) | GOV.WALES

for certain measures and where conflicts relating to these measures have been identified.
- Section 4 outlines the 'way forwards' for the regulations, concluding and summarising the recommendations

Scope of Review

The scope of the review was outlined in the Terms of Reference and published on the Welsh Government website[3] and shared with stakeholders. These Terms of Reference ensured stakeholders understood what was included within the review.

They clarified the role of the review of the regulations in relation to other activity, such as the review of organic materials to land, which is being undertaken separately to the CoAP Review. They also clarified areas which would not be in scope for the review which include areas including non-regulatory intervention such as the development of the Sustainable Farming Scheme.

Next Steps

The recommendations from this review are non-binding. Following this review, the Welsh Ministers will consider what action is to be taken. Where required, any changes to the regulations will be consulted upon and accompanied by the necessary impact assessments.

The regulations remain in force until any decision on future action and subsequent legislative changes are made.

Welsh Government's environmental commitments, obligations and objectives

The Welsh Government works to a number of commitments and duties which are relevant to this review, some of which are legislative requirements and others are policy positions or plans. This review must take these into account and they are explored in further detail in the evidence pack.

Some of these commitments are global as part of our commitment to a globally responsible Wales. International obligations which apply to the Welsh Government include the United Nations Framework Convention on Climate Change[4], the Convention on Biological Diversity[5], the UN's Sustainable Development Goals[6],the Gothenburg Protocol[7] and target 7 of the Kunming - Montreal Global Biodiversity Framework[8], which requires '*reducing excess nutrients lost to the environment by at least half*'.

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[3] Statutory review of the Control of Agricultural Pollution Regulations: terms of reference [HTML] | GOV.WALES
[4] What is the United Nations Framework Convention on Climate Change? | UNFCCC
[5] Home | Convention on Biological Diversity (cbd.int)
[6] THE 17 GOALS | Sustainable Development (un.org)
[7] Gothenburg Protocol | UNECE
[8] Target 7

The Welsh Government introduced the Environment (Wales) Act 2016[9], providing a framework to ensure managing our natural resources sustainably is a core consideration in decision-making, a biodiversity duty to help reverse declines in biodiversity and secure its long-term resilience, and a duty on Welsh Ministers to set targets for reducing greenhouse emissions.

The Well-being of Future Generations (Wales) Act 2015[10] places a responsibility on the Welsh Government and other public bodies to ensure sustainable development is embedded in our policies. In 2023, the Welsh Government introduced the Agriculture (Wales) Act 2023[11], which establishes four Sustainable Land Management (SLM) objectives.

The introduction of the Control of Agricultural Pollution Regulations

In 2016 the Welsh Government consulted upon a review of the Designated Areas and Action Programme to Tackle Nitrate Pollution in Wales[12]. Following the outcome of this consultation, and an extensive period of stakeholder engagement on potential alternative approaches, a decision was made to introduce regulations on an all-Wales basis.

The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021[13] (CoAP Regulations) came into force on 1 April 2021 with a phased approach. The regulations introduced similar measures to those contained within the Code of Good Agricultural Practice (CoGAP) and the nitrates action programme into regulation and incorporated many of the requirements of the Water Resources (Control of Pollution) (Silage and Slurry) (Wales) Regulations 2010[14] on an all-Wales basis, which were originally introduced in 1991.

Whilst the CoAP Regulations fulfilled 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 although they are widely perceived to be and do not establish a whole-Wales NVZ. The Welsh Government determined a discrete Nitrates Directive approach would not be effective in protecting waterbodies across Wales from failing to meet other safety and ecological standards, reducing atmospheric pollution or tackling and mitigating climate change.

Under the Co-operation Agreement 2021[15], the implementation of the limit on the amount of nitrogen from livestock manures which can be applied to the holding each year (an average of 170kg per hectare) was delayed until January 2025. An

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[9] Environment (Wales) Act 2016
[10] Well-being of Future Generations (Wales) Act 2015
[11] Agriculture (Wales) Act 2023
[12] Review of the Designated Areas and Action Programme to Tackle Nitrate Pollution in Wales
[13] The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021
[14] The Water Resources (Control of Pollution) (Silage, Slurry and Agriculture Fuel Oil) (Wales) Regulations 2010 (revoked)
[15] Co-operation Agreement: 2021

Enhanced Nutrient Management (ENM) approach was developed for the calendar year 2024. This approach allowed the application of livestock manures up to 250kg/N/ha in the 2024 calendar year, subject to additional requirements to reduce the risk of pollution, to provide farms with more time to transition to the 170kg limit.

The nutrient management challenge across the UK and Europe

Wales is not alone in limiting applications of nutrients to the land to mitigate the risks of agricultural pollution to waterways. Across the UK there are areas in which similar limitations apply. A comparison of the regulatory regimes across the UK indicates that in some cases measures are more stringent than Wales and the differences across the UK are complex. Annex A provides a summary the different measures implemented across the UK.

However, the challenges of nutrient management and the appropriateness of approaches are not unique to the UK. The European Commission in December 2023[16] launched an evaluation of the Nitrates Directive to assess if the Directive remains 'fit for purpose'.

It is important to also consider the relationship between the CoAP Regulations and the wider regulatory environment. Applying livestock or any organic manure in excess of crop nutrient or soil requirements is considered a waste disposal activity and will be subject to existing waste regulations. In August 2022 Natural Resources Wales published advice on how to use manures and slurries appropriately[17]. A recent study by ADAS for Welsh Government calculated an estimated 10 million tonnes of organic materials (i.e., livestock manure, compost, digestate, biosolids and material applied under permit) were applied to agricultural land in Wales in 2021. Most of the organic materials (88%) were livestock manures including handled manure from housed livestock subsequently spread to land and excreta directly deposited by grazing animals.[18].

Impacts on trade

Consumers both domestically and across Wales' valuable export markets value Welsh produce for it's high standards for both environmental and animal welfare. This has been supported by voluntary standards such as Red Tractor[19] and FAWL[20] as well as the requirements contained with Cross Compliance[21] for eligible farms. However, for international trade there is a requirement for regulatory standards.

Continuity with the requirements of the European Union were taken into account in the design of the CoAP Regulations and this requirement remains. The approach addressed the risks associated with retrospective infraction proceedings at the time of making and the level-playing field requirements of the EU-UK Trade and Co-

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[16] Commission consults citizens and stakeholders on evaluation of the Nitrates Directive - European Commission
[17] Natural Resources Wales / How to use manures and slurries appropriately
[18] An assessment of the current landbank in Wales | GOV.WALES
[19] Red Tractor Assurance | Assured Food Standards
[20] FAWL
[21] Cross compliance 2024 | GOV.WALES

operation Agreement[22]. 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.

Section 2 - The Challenge

This section outlines the challenge facing Wales in relation to pressures on the environment. It should be clearly noted agriculture is not the only source of pollution, but it is one of the main contributors, and the regulations' purpose is to address this challenge. Therefore, when considering the effectiveness of the regulations, we must take into account the status of the environment.

It is also difficult to differentiate the impacts of point source pollution, which can occur from direct pollution to the environment e.g. a release of slurry to a watercourse to diffuse agricultural pollution which can occur through over application of nutrients to land.

A point for consideration is the regulations were introduced in April 2021 and had a phased introduction, with significant measures not applicable to most farms until the end of 2024. Furthermore, there is often a time-lag between the application of nutrients to land and nutrient losses being detected in surface waters, which can span decades following changes in farming practice[23] [24] [25].

Water Quality

Water quality is an important indicator as to the effectiveness of the regulations and is relevant for all water types, including surface waters, such as rivers and lakes, groundwater and also areas which are dependent, such as nitrogen sensitive water dependent habitats. However, it should be stated there are several sources for water quality information, utilised for different assessment purposes with differing reporting requirements or criteria and taken at various points in time. For this reason all information should be considered holistically and with a focus on trends.

Previously under the EU Nitrates Directive[26] there was a requirement to, as a minimum, identify areas to consider for designation as a Nitrate Vulnerable Zone, with additional requirements related to the Water Framework Directive objectives[27]. There is no longer such a Nitrates Directive requirement, but a broader range of evidence must be considered in relation to wider obligations when considering water quality.

The evidence pack which accompanies this review outlines in more detail the key water quality considerations and individual data sources. It also provides links to

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[22] The EU-UK Trade and Cooperation Agreement | European Commission (europa.eu)
[23] 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
[24] Phosphorus Legacy
[25] Nitrate time bomb - British Geological Survey
[26] Nitrates Directive
[27] Water Framework Directive - European Commission

wider sources on water quality, including Geographic Information System (GIS) portals which allow stakeholders to access a wide range of water quality information.

Nutrient Review evidence

The nutrient review was published in 2024 and undertaken by NRW appointed consultants Arup to review nutrients in water bodies across Wales to develop a national scale understanding of the current baseline nutrient water quality and assess potential nutrient risks. The nutrient review covers both nitrate and phosphate, which are considered to be the key nutrients contributing to poor water quality. The methodology used in the review broadly followed the previous method used for the 2017 NVZ review but has been adapted to incorporate the assessment of phosphate, providing a consistent and practical methodology.

The outputs from the nutrient review principally comprise a series of spatial datasets, culminating in a map indicating potential nutrient risk at a national scale for nitrate and phosphate and are available to all via the nutrient review dashboard hosted on NRW's Wales Environmental Information portal[28].

These risk maps available in the evidence pack showed areas of potential high risk indicated on the nitrate map typically coincide with areas where Nitrate Vulnerable Zones were previously designated. However, additional risks of phosphorus were identified in a wider geography of catchments.

Wider water quality evidence

Wider water quality evidence is available within the supporting evidence pack. The key considerations being, there are a number of areas in Wales where water quality is a concern.

This includes evidence from the Water Framework Directive (WFD) assessments which are produced every 3 years and available via in map form on the Water Watch Wales[29] website. The classification includes status for nutrients in rivers, lakes, estuarine and coastal waters and groundwater. If a waterbody is not meeting the objective of good or better status, then an investigation is carried out that aims to establish the reasons for not achieving good status (RNAG). A high number of water bodies fail to meet good status due to pollution from agriculture.

There are also nine river Special Areas of Conservation (SACs) in Wales – the Cleddau, Eden, Gwyrfai, Teifi, Tywi, Glaslyn, Dee, Usk and Wye. Each of these rivers are designated for a number of species and habitats protected under the Habitats Regulations. Of the nine SAC Rivers in Wales, five (Usk, Wye, Dee, Cleddau & Teifi) fail to meet the phosphorus targets from the 2021 compliance assessment.

NRW aims to publish an updated SAC rivers water quality compliance assessment alongside the WFD Regulations interim classification in early 2025. In addition to riverine SACs Wales also has a number of marine SACs and Special Protection Areas (SPAs) along the coast. The combination of riverine and marine conservation

[28] https://smnr-nrw.hub.arcgis.com/apps/b3ae0327ed614fdda8745cab7870d0c9/explore
[29] waterwatchwales.naturalresourceswales.gov.uk

areas highlights the interconnected nature of the water ecosystem with land management practices.

Substantiated pollution incidents with impact to water

Natural Resources Wales collate data on the number of substantiated pollution incidents which impact water from agricultural sources. For an incident to be substantiated there must be evidence of the incident occurring and for it to confirmed as an agricultural source. The number of substantiated pollution incidents has not shown an improvement since the start of the time series in 2001 with an average of 150 incidents per year. It is difficult to draw any firm conclusions from incident reporting alone as to the effectiveness of the regulations due to the wide variability of conditions such as weather, rate of reporting and the ability to substantiate incidents could all impact on the trend.

Summary of Water Quality evidence

There is significant variability across Wales in regards to water quality, with areas of pressure clearly identified and with agriculture as a significant contributor to that pressure. Given the limitations outlined above and in the absence of a single methodology it is difficult at this point to draw any conclusion on the direct impact of the regulations on water quality to date.

As such, any review of the effectiveness of the CoAP Regulations in preventing or reducing agricultural pollution must focus on the effectiveness of the measures currently in place, whether those measures remain relevant, could be improved in design and structure or if they should be enhanced to provide a greater level of protection. The review must also consider the ability of farmers, to adopt and implement the measures, as the desired outcome is highly dependent on this.

The evidence does demonstrate, given the wide ranging geographic variation, there is a need to follow a proactive risk-based approach and move away from a retrospective ‘designation’ orientated response to ‘failures’ in accordance with wide ranging and sometimes conflicting methodologies. This is consistent with the preventative action principle of the sustainable management of natural resources[30].

Air quality co-benefits

The regulations target agricultural activities which present a risk of pollution to reduce the level of environmental pollution caused by poor practice. While the primary intention of the regulations is to reduce water pollution from agriculture the approach is advantageous to other policy aims such as reduced atmospheric emissions. These should be considered as co-benefits of the regulations.

Ammonia (NH3) is a major atmospheric pollutant which is harmful to human health and causes acidification and eutrophication of soils, habitats and fresh waters. In low concentrations on its own, ammonia has no direct impact to human health but combined with other industry pollutants e.g. carbon dioxide and sulphur dioxide, the particulate matter created can cause cardiovascular and respiratory diseases. This

[30] Introducing Sustainable Management of Natural Resources

particulate matter can travel afar, contributing to air pollution background levels in urban areas. The Clean Air Plan for Wales, Healthy Air, Healthy Wales[31] highlights the importance of clean air for public health.

When deposited on land, ammonia can acidify soils and freshwaters, 'over-fertilising' natural plant communities. The extra nitrogen can increase the growth of some species such as rough grasses and nettles, which out-compete other species such as herb species which have lower nitrogen requirements.

Wales is bound by international and national law to reduce its ammonia emissions. The National Emission Ceilings Regulations 2018[32] sets a target for a reduction of ammonia emissions of 16% by 2030 from the 2005 emissions levels.

Most agricultural soils in the UK contain little plant-available nitrogen, hence the need for supplementary nitrogen fertilisers and organic manures. Not all the nitrogen is taken up by plants; large amounts (about 50%) are lost to the environment as a pollutant through evaporation (or volatilisation), bacterial chemical conversion processes in the soil (known as nitrification and denitrification) or through run-off or leaching. This impacts air quality, water quality and contributes to climate change and biodiversity decline.

In Wales, the area of land adversely impacted by ammonia in Wales has increased by approximately 18% between 2010 and 2021. Defra UK Air Pollution Trends report, 2023[33] confirms ammonia pollution continues to be a significant issue.

Unfortunately, ammonia emissions in Wales have increased by 8% since 2005, with agricultural practices being the largest source of these emissions. 93% of ammonia emissions in Wales come from agriculture. The largest contributing sector in Wales is cattle: cattle manure management (livestock housing, manure storage and outdoor yards) and its land application make 70% of all NH3 emissions.

Emissions from all organic manures as defined by the regulations can occur at each stage of the manure management process, i.e. at source, storage and application. On farm practice can contribute to reducing ammonia losses to the environment at all stages, including:

- Livestock housing
- Storage
- Land application
- Inorganic fertilisers

The implementation of ammonia mitigation is most successful when it is targeted at each management stage. Agricultural activities which impact upon air quality have impacts upon water quality and vice versa, with ammonia being a significant pollutant. Therefore, there is a need to consider which measures deliver a significant

[31] Clean Air Plan for Wales: Healthy Air, Healthy Wales | GOV.WALES
[32] The National Emission Ceilings Regulations 2018
[33] Report: Air Pollution Trends Report 2023: Critical load and critical level exceedances in the UK - Defra, UK

co-benefit of providing protection for water quality while providing the mitigation of ammonia emissions while addressing pollution swapping concerns.

Stakeholder experience

To complement the statistical evidence the review chair engaged with a wide range of stakeholders on the implementation, the impact of the regulations and those impacted by pollution. This included utilising existing stakeholder networks including the Wales Land Management Forum Sub Group on Agricultural Pollution, engaging directly with relevant organisations, including eNGOs, and engaging directly with farmers at the Royal Welsh Agricultural Society Winter Fair. A full list of engagements held between the chair and relevant stakeholders is available in Annex B.

These ‘on the ground’ and honest conversations allowed for a deeper understanding of the ‘effectiveness of the measures’ contained within the regulations towards the overall objective of reducing pollution from agricultural sources.

The feedback is explored in greater detail in the evidence pack and also used to provide further discussion within the principles, synergies and conflicts section. It should also be noted for many stakeholders a strong need was identified for the regulations to work alongside other interventions, such as the sustainable farming scheme and other Welsh Government funding support as the best means of delivering water quality improvements. Whilst this has been recognised, it falls outside of the scope of the review.

Inspection outcomes

In 2023 the Welsh Government and Natural Resources Wales agreed a new Service Level Agreement (SLA) for inspections of farms relating to compliance with the CoAP Regulations. Initial inspections focused on farms undertaking ‘high risk’ activities which included farms handling slurry or poultry manures. The outcomes of these initial inspections are explored in further detail in the evidence pack.

In total 596 farms had been inspected under the SLA by the end of October. Of this number, 243 (40.8%) were compliant with all required measures at the time of inspection and 353 (59.2%) were not. Common areas of non-compliance included

- Silage clamp construction requirements
- Nitrogen management plans
- Slurry storage – both capacity and construction requirements
- Risk Maps
- Nitrogen limits

The construction standards for silage clamps and slurry stores remained consistent with the pre-existing Slurry, Silage and Agricultural Fuel Oil Regulations (SAFFO) requirements. Many of the inspected stores were technically non-compliant but otherwise well-constructed and did not pose a pollution risk. However, the requirements of the regulations do not provide a provision for any store which does not meet the requirements of schedules 5 and 6 of the regulations.

Stakeholders were critical of the complexity of the inspections, as a result of the design of the regulations, particularly in relation to the nitrogen management plans and record keeping requirements. This presented a challenge for both farmers and, from the farmer's perspective, the regulator in determining if a holding was compliant with all of the requirements of the regulations.

As a result of the initial phase of inspections the Deputy First Minister issued a Written Statement[34] on 15 October 2024 outlining some amendments 'to place a greater regulatory emphasis by strengthening penalties on the activities known to cause pollution, whilst introducing more proportionate penalties where full assessments of records can be made and where technical non-compliances do not present a pollution risk'.

Alternative measures (Regulation 45)

The regulations contained a provision under regulation 45 for alternative measures to be proposed where they could 'deliver the outcomes more effectively than the measures contained in these regulations'. In total 5 submissions were received containing a range of alternative measures proposals which were assessed.

The then Minister for Rural Affairs and North Wales, and Trefnydd, Lesley Griffiths MS, wrote to the chair of the Senedd's Economy Trade and Rural Committee on 25 May 2023[35]. The letter outlined that the minister was 'unable to determine with sufficient certainty whether the proposals received would be more effective in delivering the outcomes'. The letter also stated the intention for proposals which may have the potential to be more effective to be 'further assessed and consulted upon as part of the 4-year review of the regulations'. Individual proposers were notified simultaneously of the minister's decision.

As part of the 4-year review process the chair has reviewed the original submissions in view of the Minister's determinations and further details are contained within the evidence pack. The contents of the submissions were considered in the engagement with stakeholders and are further incorporated and explored within sections 3 and 4.

Section 3 - Principles, synergies and conflicts

As outlined above, pollution from agricultural sources is a challenge facing Wales and the regulations are an important means to address the challenge. However, when considering the 'effectiveness of the measures' there is a need to revisit some of the principles which underpin the regulations. This is to confirm if the individual measures are the most effective in delivering the objective of reducing agricultural pollution, including where challenges relate to implementation and understanding the measures. Consideration of any alternatives needs to consider if they deliver an equal or better evidencable outcome compared to the current measures. Equally if

[34] Written Statement: The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021 Closed Periods and changes to the Cross Compliance Verifiable Standards SMR1: Water Protection (15 October 2024) | GOV.WALES
[35] Letter to ETRA Committee on Alternative Measures

barriers are identified which prevent the regulations achieving the overall objective of reducing pollution there is a need to consider if regulatory change is required.

Nutrient and soil management

Nutrient management is the foundation of farming, the principles of good land management remain as important in 2025 as at any time. However, farms and the environment are under pressure, with land management changes driven by economic pressures placing greater emphasis on outputs.

The sustainable management of organic manures and manufactured fertilisers is essential for preventing the losses which may occur as a result of poor management. This is particularly important as an estimated 10 million tonnes of organic materials were applied to agricultural land in Wales in 2021[36].

It also makes economic sense, nutrient imbalances can result in financial implications e.g. lost yield or increased requirement of pesticides or specific nutrients. Appropriate nutrient management is important for the efficiency of the farming business and to reducing environmental impacts.

The fundamentals remain the same, for a system to be in balance inputs need to match outputs over time and the soil and the microbiology which it supports must be in a good condition to facilitate the chemical interactions required for optimum crop growth. For example, evidence from Farming Connect's soil results report[37] highlighted many of Wales' soils may be in a sub optimal condition for production.

Nitrogen limits and the role of phosphorus

The CoAP Regulations restrict the use of nitrogen from livestock manures, including processed livestock manures, up to a maximum of 170 kg of nitrogen per hectare per year. This maximum limit is based on the environmental risks associated with livestock manure applications. Nitrates may be released from organic sources at a time when there is little crop uptake and consequently gives rise to increased opportunities for nitrate leaching.

The 170kg limit is consistent, in respect of grass and other crops with a high nitrogen requirement (circa 340kg/N/ha), with the nutrient management guide RB209[38] recommending organic material application should supply no more than 50–60% of the total nitrogen requirement of the crop. Manufactured fertiliser should be used to make up the difference, with applications of organic manure being made in late winter to summer (which may also be beneficial in reducing phosphorus losses).

In addition, application of nutrients to land in excess of crop need is considered a waste disposal activity and would be required to meet existing waste legislation. RB209 recommends applications of manure take account of the phosphorus (P) content of organic material to avoid excessive enrichment of soil phosphorus levels.

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[36] An assessment of the current landbank in Wales | GOV.WALES
[37] 0245_SoilReport.pdf
[38] Nutrient Management Guide (RB209) | AHDB

Where soils are at optimal P index, application rates for each field should be limited to a maintenance-level of application.

The 170kg limit, therefore, provides a blunt approach to limiting phosphorus applications from manures. However, this approach may in some cases incentivise farms to operate above the crop need for phosphorus. In others it may prevent sufficient phosphorus inputs from manures and further prohibit the circular use of nutrients, by preventing the use of processed organic manures as an alternative to manufactured fertilisers.

In the EU, technical proposals have been made for the safe use of processed manure above the 170kg limit that applies in Nitrate Vulnerable Zones, in recognition that the properties of these materials provide an opportunity for use as an alternative to manufactured fertiliser. While derogations from the limit were previously a common feature of the Nitrates Directive approach, just 4 countries in the EU operate a derogation, because of the pollution risks associated with higher manure applications.

The Enhanced Nutrient Management (ENM) approach in Wales, similar to the derogations operating in the EU, enabled higher manure applications subject to additional controls to prevent increased phosphorus losses. However, just 9 farms engaged with the approach. Feedback from stakeholders indicates the complexity of the reporting was the main barrier to farms taking advantage. However, any alternative to the 170kg limit would likely need to include an enhanced level of nutrient management planning, potentially beyond that required within the ENM approach, to ensure efficient crop utilisation of the nutrients being applied to ensure the approach would not lead to increased pollution.

The economic impact assessment carried out by ADAS on the 170kg limit (Annex C) indicates a potential, significant cost attributed to this measure when compared to pre-CoAP Regulation practice. However, the lack of data available to assess compliance with the pre-existing regulatory baseline is of such significance it is not possible to adequately assess the impact attributed to the CoAP Regulations. While the provision of data can be a significant burden, there is the potential for improved regulatory interventions to be developed, appropriate to risks, where enhanced data is available.

Soil management and protection

As identified above the management of nutrients within soils is essential to reducing the impact diffuse agricultural pollution. It is also critical to ensure the soils to which nutrients are added remain on farm themselves.

Soil loss through run-off is a significant pathway for nutrient pollution to water, it also causes sedimentation of rivers, impacting gravel beds and important spawning habitats and impacting water quality through increasing turbidity.

Currently the primary mechanism for protection of soil loss is undertaken via cross compliance[39] for claimants of the Basic Payments Scheme or other Welsh Government support and remains a feature of the code of good agricultural practice. However, as identified in annex A additional measures to ensure soil protection are included within regulation elsewhere in the UK.

Closed periods

The closed periods for the application of some fertilising materials with high readily available nitrogen to land are designed in accordance with the evidence on significant nutrient losses to the environment. These arise when fertilising materials are applied when crop growth is limited and when the pollution risks are elevated. This includes pollution caused by nitrogen and phosphorus. The closed periods balance the losses which occur to surface and groundwater and the atmosphere. Whilst longer closed periods would be beneficial for water quality, it could also lead to increased ammonia emissions from stored manures and applications at times when ammonia volatilisation is increased.

Stakeholder feedback is that the fixed calendar dates prohibit the application of slurry when the weather and soil conditions are appropriate for spreading, which creates challenges in respect of slurry management, where stores need to be emptied prior to the closed period which then causes pollution. However, insufficient evidence is available which demonstrates crop need for additional nutrients in relation to pollution risks, and on the impact a more flexible approach would have on nutrient losses.

Stakeholders have also highlighted that the fixed closed periods are relatively easy to enforce, and an alternative approach may lead to a lack of clarity over the requirements. Any alternative would need to address the enforcement challenge, for example, through a transparent and publicly available register of farms spreading during the closed period, which demonstrates the need for the nutrients being applied and would enable compliance to be more effectively monitored.

Furthermore, farms must ensure they have sufficient storage to comply with the closed periods and to avoid causing pollution, including taking into account factors which may prevent slurry applications prior to the closed period. It should be noted that applications of slurry during unsuitable soil and weather conditions and, where it results in pollution, is an offence, as provided by the CoAP Regulations and Environmental Permitting Regulations respectively.

Soil and weather conditions are not the only relevant factors which should be taken into account when determining if it is appropriate to apply fertilising materials. The crop need for those nutrients and the pollution risks must also be considered. As with any alternative to the 170kg limit, a regulatory alternative to the closed periods is likely to require additional complexity, to determine the crop need for nutrients and assess any risks of pollution from the application. Due to restricted crop growth, which is significantly impacted by daylight hours, there may be limited opportunity for

[39] Cross compliance 2025 | GOV.WALES

spreading, with short weather windows and where the need for additional nutrients may be marginal, due to nutrients released from organic manures over the growing season.

The work which has been undertaken at Gelli Aur College Farm shows promise. The use of weather stations to determine the appropriateness of soil and weather conditions for spreading demonstrate there may be potential, subject to other factors, for an alternative approach.

The potential for an alternative to the closed periods has also been raised as an opportunity to enable farms to provide less slurry storage. However, as weather patterns are variable and it is expected climate change will lead to wetter winters, it would not be appropriate to risk lower levels of storage with the expectation the conditions will allow slurry to be spread, as there is no certainty on conditions being appropriate for spreading. Storage should always be sufficient to provide the farm with redundancy and to prevent pollution.

Storage requirements

The Welsh Government has long recognised that the exemptions to the construction standards of the pre-1991 silage and slurry stores, carried forward into the CoAP Regulations, represent an increasing risk of pollution as stores age. It previously consulted[40] on changes related to the exemption, amongst other matters, in which it also recognised that the replacement of older stores would be an unnecessary burden in some circumstances, with its own environmental consequences. In addition, feedback from NRW has highlighted that in some cases, the only way to rectify a technical non-compliance would be through a complete rebuild of the store, even where there is no visual identifiable risk of causing pollution at the time of inspection. The farm is then at risk of cross compliance penalties until the error is rectified, at significant cost with no environmental benefit.

The introduction of the CoAP Regulations addressed one of the matters consulted upon, including the adoption of a common method for calculating slurry storage needs, to address confusion and facilitate greater understanding of the slurry storage requirements. However, whilst the CoAP Regulations mandate a minimum level of storage, in many cases, this level of storage may not provide sufficient capacity where the store cannot be emptied prior to the closed period. Even if future regulatory change were to provide the option to apply slurry during the closed periods, sufficient storage would still be needed to ensure farms can store slurry until it is appropriate to apply it to the land in accordance with soil and weather conditions and crop need. While the guidance explains this, it is noted that many farms have opted to provide the statutory minimum which represents a risk, that many farms will not have sufficient storage to comply with the closed periods or the requirements of any alternative, or the other elements of the regulations which prohibit manure applications where there is a significant risk of pollution.

[40] Review of the Water Resources (Control of Pollution) (Silage, Slurry and Agricultural Fuel Oil) (Wales) Regulations 2010

Issues were also raised where the responsibility of the on-farm infrastructure is the responsibility of a third party, particularly for tenant farms e.g. failure to provide sufficient storage capacity or non-compliant structures. In some cases this impacted the ability for the holding to comply with other requirements of the regulations e.g. the closed period.

The geographic or risk-based approaches

The available evidence demonstrates significant variability over time and geography of agricultural pollution and how it is impacting on the environment across Wales. While some areas are impacted more than others, it must be recognised that the data is not comprehensive. For example, self-reporting of pollution incidents by the agricultural sector is not a statutory requirement and the scale of point source pollution incidents is, therefore, likely to be much greater than can be substantiated. It can take decades for waterbodies to fully recover from significant pollution incidents and diffuse pollution if they can. Risk management and preventative measures are key to protecting the environment, irrespective of current water quality status.

A geographically targeted approach would be highly complex for farmers and regulators, with a patchwork of areas across Wales where different regulations do or don't apply. However, the areas in which regulations would not apply would be minimal and, to a significant extent, cover areas of very extensive farming or areas which are not farmed.

The approach to target the activities which risk causing pollution, is considered most appropriate, taking into account the Welsh Government's legal obligations and the nature and biodiversity crisis. It has been recognised by all stakeholders that some agricultural activities by their nature have a higher environmental risk than others and that the focus of regulation should be on the activity which presents the greatest risk and that risk should be considered on a whole farm basis.

A more proportionate approach would be to ensure the burden of regulation is lower for farms which present the lowest risk of pollution, whilst ensuring protections are greatest where the risk is highest, acknowledging low risk activities may still be a problem in highly sensitive areas.

Accessibility, Flexibility and Enforceability

Clarity and accessibility of law is an import principle, supported by 'The future of Welsh law: revised accessibility programme 2021 to 2026[41]. The intentions are best summarised in a consultation response from the Welsh Government to the law commission.

> *'For Welsh laws to be accessible it is essential that they are intelligible, clear and predictable in their effect'*[42]

[41] The future of Welsh law: revised accessibility programme 2021 to 2026 [HTML] | GOV.WALES
[42] Law Commission 366 Vol.1 English

A key criticism of the regulations from farming stakeholder engagement was the complexity of some aspects of the regulations, in particular requirements around the nutrient management and the prescriptive nature of those requirements. We acknowledge the burden of regulations can have a detrimental impact on farmer wellbeing. Additionally, there was criticism the legislation and the resulting guidance used terms and values not universally recognised within the industry, making the requirements difficult to understand and therefore implement and regulate effectively.

Equally stakeholders from the environmental sector recognised clear requirements are needed to identify where poor practice is being undertaken, particularly in relation to the closed period requirements, to strengthen the position of the regulator to be able to take action where necessary.

Concerns were also raised about the transition between the Basic Payment Scheme and the Sustainable Farming Scheme and the impacts and changes which this would make to cross compliance penalty structure. For those farms who may choose not to receive support the enforcement options available to NRW were seen as significantly limited and a form of civil sanctions may be more appropriate than court actions.

Section 4 - The Way Forward

Throughout the review a consistent theme has been for a need for a clearer way forward for addressing water quality concerns in Wales and the role of agricultural pollution. The recommendations contained within this section are intended as a basis for this way forward.

The regulations must remain in force whilst these recommendations are addressed and any regulatory changes are enacted. Enforcement of the regulations will continue to be undertaken by Natural Resources Wales.

Structure of Recommendations

The recommendations from this review have been considered on a time related basis. This is not a basis for priority but reflects the reality of the challenges involved in delivering change and the need for clear and continued stakeholder engagement throughout any change. The timescales for each recommendation have been split into 3 categories short, medium and long term with the timescales outlined below.

- Short term – Within 18 months
- Medium term – Within 18 months - 3 years
- Long term – 3+ years

Each recommendation will also briefly explore the rationale as outlined in the principles, synergies and conflicts section as to why change is required.

Ways of working

A key theme identified through stakeholder engagement was a need to renew the relationship between Welsh Government and wider stakeholders on agricultural

pollution. Although it was recognised forums did exist, such as the Wales Land Management Forum Sub Group on Agricultural Pollution, it was reported the manner in which the regulations were introduced negatively impacted existing relationships. Whilst taking forward many of the recommendations may require a focus on scientific and agronomic advice, consultation with impacted stakeholders must also play a key role.

Recommendation 1 (short term): As appropriate, establish time limited and focused technical task and finish groups or seek scientific and agronomic advice to develop and ultimately deliver evidencable, implementable and sustainable changes to the regulations where identified they are required.

Risk focused

There is a need to ensure the regulations are proportionate to the risks to the environment from agricultural practices and the burden of regulation falls upon the activities with the highest risks whilst maintaining an all-Wales approach.

Recommendation 2 (medium term): Further consideration should be given to minimise any regulatory burden placed on identified lower-risk activities ensuring the regulatory burden is proportionate to the risk of the activity undertaken, material being managed and overall risk of pollution.

Recommendation 3 (medium term): Consider working with a technical task and finish group to determine a separate definition within the regulations and guidance of ‘higher risk’ for activities and manure types to clarify when requirements are needed and assist with why they are required. This is important when considering the role of diffuse agricultural pollution as well as minimising point source pollution, whilst maintaining an all-Wales geographic approach.

Nitrogen limits and the role of phosphorus

Whilst any changes to the regulations in this regard must minimise the regulatory burden as far as practicable, there should be no false expectation that a simple alternative to the 170kg limit is possible. Nutrient management is a necessary component of environmentally responsible farming, to avoid causing pollution. It is also recognised that those farms with a livestock density such that they produce more than 170kg of nitrogen per hectare from livestock manures are mainly intensive dairy, beef and poultry farms which would be more likely to see productivity benefits from enhanced nutrient management.

Recommendation 4 (short term)**:** Data collection appropriate to improved decision making on agricultural pollution regulations should be considered as part of any future changes to the regulatory baseline but any increased regulatory burden should be minimised.

Recommendation 5 (medium term)**:** The inclusion of an alternative to the 170kg limit within the regulations should be considered which includes all organic manures. Such an approach would need to include an enhanced nutrient management planning regime, to incorporate as a minimum, nitrogen, phosphorus, potassium and

pH, including soil testing as appropriate and additional controls related to the risks of material being applied (in particular processed manures). Where such an approach is taken, the 170kg threshold may need to be reconsidered, to ensure it does not incentivise non-compliance with Environmental Permitting Regulations.

Soil management and protection

As identified in the principles, synergies and conflicts section the importance of soil management to preventing nutrient losses to the environment is significant. For this reason when considering the effectiveness of measures contained within the regulations the failure to provision for the protection of soil loss is an important gap. This is also important when considering the future of cross compliance which was previously the primary mechanism for prevention of soil losses.

Recommendation 6 (short term): Include requirements within the Control of Agricultural Pollution regulations to protect against soil loss to the environment, potentially replicating the Good Agricultural and Environmental Condition (GAEC) requirements of Cross Compliance.

Recommendation 7 (medium term): Consider the role of higher risk cropping on potential losses of soil to the environment and effective mitigation techniques such as buffer strips.

Closed periods

The closed periods are an area of the regulations which has caused significant concern for many agricultural stakeholders. The principles of good nutrient management requires there to be demand from the crop for the nutrient applied however there is reduced crop need during the late autumn early winter. Additionally, there needs to be clearer distinction between the requirements of the closed periods and that of the storage period. If a technical innovation is possible as an alternative to the closed period the storage period should remain because there can be no guarantee to suitable conditions.

On balance the closed period being a rigidly fixed period may not be entirely compatible with the principles of the right nutrient applications at the right time and alternatives should be explored.

Recommendation 8 (medium term)**:** The possibility of an alternative to the closed period should be assessed in more detail and an appropriate regime considered which may enable farms to apply slurry and other organic manures with a high readily available nitrogen content during the closed period, where the farm is able to demonstrate there is a crop need for the nutrients being applied and the risk of nutrient losses to water is minimal.

Recommendation 9 (medium term): Consider if provision for statutory guidance or a similar legal mechanism could be utilised to allow for variation in the closed period where unfavourable weather has impacted spreading of manures or whether appropriate temporary storage would be more effective in helping farms to prevent pollution.

Storage requirements

On farm infrastructure is one of the most significant investments a farm can make and is essential for the appropriate management of high risk materials such as slurries and silage. It was also identified by stakeholders as one of the most important as having a well constructed store which has sufficient capacity to store the amount of slurry required by all of the requirements of the regulations allows for optimising applications based upon the crop requirement, rather than decisions being on the basis of the capacity of a store. Although funding support is outside the scope of the review consideration needs to be given to ensuring farms have the mechanisms available to have sufficient capacity to manage manures in an optimal way.

Additionally, evidence from both initial inspections undertaken and stakeholder feedback showed a high rate of non-compliance with the post 1991 construction standards for silage stores, particularly in relation to external drainage channels. Although it was recognised many of these stores were well constructed and did not pose immediate risks to the environment they would otherwise remain non-compliant.

Recommendation 10 (short term): Review the requirement for external drainage channels on silage stores and take into account a wider range of store designs to be compliant.

Recommendation 11 (medium term): Consideration should be given to requiring pre-1991 stores (slurry and silage) to be inspected by a structural engineer or other suitable person to ensure that if the store presents a significant pollution risk, then action is taken, whilst enabling structurally sound stores to continue to be used. A similar process should also be considered, to confirm whether a technically non-compliant store (in relation the construction standards) does not risk causing pollution, where it may be appropriate for the store to then become an exempt structure.

Recommendation 12 (medium term): Consideration should be given to adopting a regulatory provision to clarify that, in relation to slurry storage, farms should take into account factors which may impact on compliance with requirements, to not apply nutrients unless it is appropriate to do so, according to soil, weather conditions, crop need and pollution risks. Any such approach would need to carefully consider the availability of grant support and timings needed for any additional infrastructure needed as a result.

Recommendation 13 (long term): Consider a requirement for newly constructed slurry stores and manure not stored in temporary field heaps to require covers.

Integrated Air Quality Cross Benefits

Changes to the management of manures can also provide significant air quality benefit at the same time as providing increased protection to the water environment. Many of the other recommendations above may also achieve this aim. However, the following recommendations may be especially beneficial in this regard.

Recommendation 14 (medium term): Consider the requirement for all slurry and liquid organic manure applications to be undertaken using Low Emission Slurry Spreading Equipment (LESSE) where practicable and significantly restrict the use of splash plates. Where relevant consider the incorporation time for manures to minimise atmospheric losses.

Recommendation 15 (medium term): Consider limiting the use of urea fertiliser and require the use of a urease inhibitor with urea fertiliser.

Accessibility, Flexibility and Enforceability

For regulations to be most effective there is a need for them to be clear and understandable by all stakeholders, this includes being clear in the responsibilities of different parties, this also aids the enforceability. There may be circumstances where flexibility is required, but any additional flexibility may add a further element of complexity.

Recommendation 16 (short term): Review definitions and recording processes, including the Welsh Government workbook used within the regulations to ensure improved usability, clarity of requirements and relevance to farming practices.

Recommendation 17 (short term): Consider the suitability for formal exemptions for holdings under animal disease restrictions, such as bTB, where the restrictions impact upon the normal management of the holding.

Recommendation 18 (short term): Review if provisions made under relevant tenancy legislations to ensure third party requirements provide sufficient protection and if responsibilities could be clarified in the CoAP regulations by improved definitions.

Recommendation 19 (medium term): Review values within schedules and record keeping processes to ensure greater ease of use, ongoing relevance to modern farming practices and latest scientific understanding, and support improved on-farm decision making.

Recommendation 20 (long term): Consider the suitability of a streamlined civil sanctions mechanism to improve enforceability and efficiency of sanctions when required.

Scope and mechanisms for innovation

Innovation across all sectors of the economy is an important means of addressing the challenge of sustainability. However, there are several barriers to the adaptation of new technologies and processes being developed, including regulatory.

The regulations do not contain their own provision for the use of alternative technologies, additionally some activity such as the treatment of organic manures may be subject to other requirements and permissions under other legislation e.g. a permit and requirements are in place to prevent accidental pollution swapping. However these additional requirements may provide a potential disincentive for the use of innovative technologies which may provide a better environmental outcome.

Provision for the use of experimental or innovative technologies is currently contained within the Environment (Wales) Act 2016[43], which grants the ability for NRW allow for the suspension of statutory requirements for experimental schemes. This provision is very limited and would not be suitable when considering 'scaling up' the use of innovative solutions to assess viability and impact.

Recommendation 21 (medium term): Consider provision within the regulations to allow for the use of innovative or novel technologies on-farm, subject to a proportionate assessment of risk and an appropriate approval process.

Recommendation 22 (medium term): Consider provision for alternative slurry, organic manure and silage store designs, including temporary structures not currently within the schedules where they can deliver combined water quality and air quality benefits.

Recommendation 23 (long term): Review the scope of the regulations to consider the management of manure from housed animals from the point of production to application to land to ensure an approach to best available techniques (BAT) can be applied.

[43] Environment (Wales) Act 2016