

Tackling Agricultural Pollution

**Progress report by the Wales Land
Management Forum (WLMF) sub-group
on agricultural pollution**

5th April 2018

Foreword

Wales has demonstrated innovation and commitment to the long term through it's well titled "Well-being of Future Generations (Wales) Act 2015". Surely, we all hope to leave the world a better place. Every farmer has a strong desire to hand on a thriving farm to the next generation and most work extremely hard to do this. The communities where they live and work are key to the nature of Wales and to future generations.

However, publications such as The State of our Natural Resources Report (SoNaRR) clearly show that we must do more to meet our commitments to future generations. The pollution of our rivers, groundwater and land, caused by a few point source pollutions and wider diffuse impacts, is unacceptable and not conducive to long term sustainable food production or to the health of our wildlife and people.

The focus of The Wales Land Management Forum (WLMF) sub-group on agricultural pollution is on eradicating agricultural pollution and, more fundamentally, ensuring that agriculture does not prevent the flow of clean water from our mountains and valleys.

We recognise that agriculture is not the only cause of water pollution and that we all need to take responsibility for tackling this problem. Other sectors will be challenged to improve their practices as well, but here we consider how to deal with the pollution caused by agriculture.

Most farmers run their farms in a responsible manner, recognising that looking after the land and using the valuable nutrients from their livestock in a judicious way helps toward delivering a profitable business and a healthy environment. Yet like any business, a combination of development and the need for growth brings fresh challenges and new ways of working. Methods and regulations do not always keep up with changing farming practices - and within the range of expectations placed on agriculture the farmer can face an often bewildering mix of guidelines and regulations.

Despite this, the nature of pollution must be clearly understood. A polluted river may soon run clear again, but the sometimes disastrous effects of pollution may last for years.

The Well-being of Future Generations Act lays out ways of working which are invaluable in guiding the work needed to prevent agricultural pollution. I would pick out four of these:

- Long term - balancing short term needs with those of the long term;
- Involvement - the importance of involving those people with an interest in the achieving the stated goal;
- Collaboration - allowing those with an interest to work together supportively towards the goal;
- Prevention – creating ways of preventing the problem occurring in the first place.

It is my belief that the WLMF sub-group on agricultural pollution is truly pioneering and is working in a new way to address the very real and urgent issue of agricultural pollution. All of its members have come together over the past year, working as a team to start bringing about real change.

As this report shows there is no one simple solution. It is a programme of education, training, voluntary initiatives by farmers, incentives, investment and innovation that is underpinned by smart regulation and additional resources and monitoring. We believe this can make a dramatic change in delivering healthy soils and clean water alongside successful farming in Wales.

Finally, I believe that the current climate of change around Brexit and the focus on sustainable productive farming will give the impetus needed to truly deliver a “Brand Wales” that we can all be proud of.

Zoe Henderson

Chairperson

WLMF sub-group on agricultural pollution

Executive Summary

1.1. The Wales Land Management Forum (WLMF) established a sub-group in January 2017 in order to focus on tackling agricultural pollution. The membership of the group comprises NFU Cymru, Farmers' Union of Wales (FUW), Country Land and Business Association (CLA), Dwr Cymru Welsh Water (DCWW), the Tenant Farmers Association Cymru (TFA), Hybu Cig Cymru (HCC), AHDB Dairy, the Carmarthenshire Fishermen's Federation (CFF), Natural Resources Wales and the Welsh Government. Lying at the heart of the work has been the development of a mutual understanding of the root causes of agricultural pollution problems. This preceded the identification of a range of approaches capable of driving environmental improvements.

1.2. This progress report provides an update on the work of the WLMF sub-group on agricultural pollution over the last fifteen months. It follows on from the written statement on the Nitrate Vulnerable Zone consultation issued by the Cabinet Secretary for Energy, Planning and Rural Affairs in December 2017 – and represents a genuine co-production approach to the sustainable management of natural resources.

The report is presented in nine chapters. These cover the background to the work, the nature of agricultural pollution in Wales and the approach to tackling the problem. A total of forty-five initial recommendations span the five work areas adopted by the group. Each of these work themes has a significant role and needs to be considered as part of an integrated package:

- Ensuring that the formal regulatory regime is sufficiently robust to achieve the outcomes required;
- Developing a voluntary, farmer-led approach to nutrient management;
- Providing better advice and guidance which can then be taken up by farmers;
- Improving the existing range of investment opportunities;
- Identifying and promoting innovation.

The report's recommendations – ranging from the strategic to the practical – will require significant further work, resources and commitment from all of partners involved the process. All of our efforts will need to be aligned if we are to tackle the complex range of issues that result in the current levels of agricultural pollution in Wales.

The WLMF sub-group on agricultural pollution remains committed to taking forward the five work streams we have identified, working with farmers to eradicate pollution and ensuring that Wales is renowned for the continuing professional development of its farmers across all sectors as well as the quality of its agricultural produce.

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Chapter 1 Introduction and background

Introduction

1.3. Following the Cabinet Secretary's written statement in December 2017¹ this report from the Wales Land Management Forum (WLMF) sub-group on agricultural pollution provides an update on the progress made in seeking the right balance of regulatory measures, voluntary initiatives and investment to tackle the issues.

1.4. Based on the work carried out so far, we have provided some initial recommendations across the topics of regulation, voluntary initiatives, advice and guidance to farmers, investment and innovation. None of the approaches we have examined are likely to be sufficient on their own. Although this report is divided into separate chapters it should be viewed as a holistic and integrated framework, one which embodies the spectrum of approaches ranging from formal regulation (as underpinned by legislation) through to advice and guidance, voluntary measures, innovation and targeted investments.

1.5. In the meantime, these initial recommendations focus on those issues which require action now. We are pleased that our work is already providing a clear focus for practical delivery on the ground, for example via the advice and guidance programme.

Background

1.6. This report will be followed by a complete set of recommendations later in the year, although it is important to recognise that much of the follow-up work on each of the core themes is likely to continue well beyond that point. Detailed timelines will be considered and provided to the Cabinet Secretary during the next phase of this work. These timelines will recognise the need for swift action now, and those needing to operate over longer time scales. We will also be reviewing the existing membership of the sub-group, with a view to strengthening our expertise in certain areas where this is felt to be necessary.

1.7. The Water Strategy for Wales was launched by the Minister for Natural Resources on 19th May 2015. The strategy sets out the direction for water policy over the next 20 years and is accompanied by an action plan (with milestones up to 2025 and beyond).

1.8. The vision within the Water Strategy is to ensure that Wales continues to have a thriving water environment which is sustainably managed to support healthy communities, flourishing businesses and the environment. The resulting action plan identifies six policy priorities between 2015 and 2018, including *"to review and where*

¹ Can be accessed from

<http://gov.wales/about/cabinet/cabinetstatements/2017/NVZConsultation/?lang=en>

appropriate change current practices and regulatory approaches to tackle diffuse pollution.”

1.9. Following the publication of the Water Strategy, the Welsh Government undertook to create a specific diffuse pollution programme covering the construction, forestry and agriculture sectors. The objective of the proposed programme was to ensure a joined-up approach to land and water management through reviewing and, where appropriate, changing current practices and regulatory approaches.

1.10. Subsequent discussion between the Welsh Government and Natural Resources Wales (NRW) resulted in the creation of separate work streams for each of the sectors covered by the diffuse pollution programme. The Wales Land Management Forum (a mechanism through which NRW engages at a senior level with the agricultural and forestry sectors) was charged with taking forward the agricultural components of the programme.

1.11. In parallel with developing a new approach to diffuse pollution, the Welsh Government undertook a consultation on Nitrate Vulnerable Zones (NVZ) during the autumn of 2016. This was informed by NRW’s evidence on long term trends within nitrate polluted waters in Wales. Some 2.4% of Welsh agricultural land is currently designated under the Nitrates Directive and the consultation explored two options: increasing the proportion of designated land to approximately 8% or adopting a whole territory approach.

1.12. On 13th December 2017, to ensure water receives greater protection from agricultural pollution, the Cabinet Secretary for Energy, Planning and Rural Affairs stated that she was minded to introduce a whole Wales approach to tackling nitrate pollution from agriculture. She stated that further work with stakeholders would be undertaken to achieve the right balance of regulatory measures, voluntary initiatives and investment. This approach accepted the offers made by the farming unions to explore alternatives to NVZ designation.

1.13. This approach is also in line with NRW’s working definition of regulation² as an intervention that makes a positive difference, one which includes other synergistic mechanisms of bringing about positive change alongside formal regulation underpinned by legislation, such as stimulating voluntary initiatives and targeted investments.

1.14. In considering our preliminary recommendations, the sub-group has also taken into consideration the previous Welsh Government consultations on the Slurry, Silage and Agricultural Fuel Regulations (SSAFO) and on basic measures.

² <http://naturalresources.wales/about-us/what-we-do/how-we-regulate-you/regulatory-principles/?lang=en>

Chapter 2 Methodology, aims and objectives

2.1. The WLMF sub-group on agricultural pollution was established in January 2017. The sub-group has focussed on trying to develop a mutual understanding of the root causes of pollution problems before identifying the spectrum of approaches available for driving improvements. Our ambition has been to develop an enabling framework that can support farmers in taking action, where required, whilst simultaneously advising on improvements to the underpinning regulatory structure. Our initial focus has been on slurry and nutrient management whilst still recognising that soil run-off and agri-chemicals such as crop protection products contribute to water quality issues.

2.2. Each of the WLMF partners has made a significant commitment to the work of the WLMF sub-group on agricultural pollution which now represents a genuine multi-stakeholder co-production approach to the sustainable management of natural resources. Our approach involves using the ways of working enshrined in the new legislative framework in Wales, coupled with applying the principles of good regulation, to deliver the aspirations for the sustainable management of natural resources (SMNR) and to deliver the well-being goals.

2.3. This is a very new way of working which is strongly collaborative, involves taking ownership of a seemingly intractable problem and recognising that significant change will be needed in both attitudes and approaches if we are to succeed.

2.4. The WLMF sub-group on agricultural pollution now includes representation from NFU Cymru, Farmers' Union of Wales (FUW), Country Land and Business Association (CLA), Dwr Cymru Welsh Water (DCWW), the Tenant Farmers Association Cymru (TFA), Hybu Cig Cymru (HCC), AHDB Dairy, the Carmarthenshire Fishermen's Federation (CFF), NRW and the Welsh Government Environment & Rural Affairs Department as well as Water Branch. All meetings are chaired by an NRW Board Member. NRW supplies the secretariat as well as specialist staff with expertise in water quality, agricultural policy and day to day experience of dealing with pollution problems (See Annex 1: Terms of Reference).

2.5. Meetings of the sub-group take place on a monthly basis and include presentations from members and invited experts. The sub-group has also conducted two separate fact-finding visits. These involved a small tenanted dairy farm in Monmouthshire and much larger owner-occupied dairy unit in Pembrokeshire.

2.6. The integrated regulatory framework has been divided into five interlinked core themes. Each of these themes are fundamental to the success of the framework with a major role to play and all of them will need to be progressed to achieve the positive outcomes desired:

- Ensuring better advice and guidance is provided and taken up by farmers;
- Improving the existing range of investment incentives;
- Developing a voluntary, farmer-led approach to nutrient management;
- Ensuring the formal regulatory regime is sufficiently robust to achieve the outcomes required;

- Identifying and promoting innovation.

2.7. Some core themes such as advice and guidance have an emphasis on tackling diffuse pollution from soils and nutrients while others such as regulation are more likely to be important in tackling point source pollution incidents. However, the five core work themes are being developed further to deliver a more comprehensive programme.

2.8. Following the Cabinet Secretary's written statement in December 2017, the remainder of this report aims to provide an update on the progress made so far by the sub-group together with our recommendations around next steps.

2.9. Our overall objective is to eradicate agricultural pollution by:

- Preventing point source pollution incidents;
- Eliminating the sources of diffuse pollution – slurry, agri-chemicals and soils should not enter watercourses or groundwater
- Ensuring that where measures to prevent pollution have failed that the landowner has the knowledge to lessen any damage caused to the environment.

2.10. All of this needs to be done at the same time as improving the management of nutrients, soils and agri-chemicals so that agricultural productivity is enhanced and the environment is protected. This will lead to improved compliance with the standards established under the Water Framework Directive (WFD) and protect water quality by preventing nitrates, phosphates and sediment from agricultural sources polluting ground and surface waters.

2.11. A significant part of the sub-group's work has involved an examination of the root causes of agricultural pollution, including aging infrastructure, lack of properly engineered storage units, tenancy issues, herd expansion without providing equivalent slurry storage and a lack of understanding of the true impacts of agricultural pollution amongst some involved in the sector. The sub-group will be carrying out additional work on these root causes over the coming months.

2.12. It is our belief that the sub-group has developed into a team with a high level of openness and trust. There is strong interest from others in joining the sub-group and we recognise that the benefits that could arise through additional expertise and resources. We will therefore develop guidelines to assist with identifying new membership, the input of short term technical expertise and review the overall membership of the sub-group. We will also decide how information on the work of the sub-group can be shared publicly.

Chapter 3 The nature and scale of existing agricultural pollution

3.1. Water is a vital resource supporting a wide range of natural ecosystems in Wales. Both people and the economy derive clear benefits from our natural water resources. We all rely on clean water to go about our daily life, whether this be for drinking, washing, industry, food production or recreation. Sustainable management is vital if we are to ensure that our rivers, groundwater and water dependent bodies such as lakes as well as coastal waters can continue to provide the benefits required in the future.

3.2. The State of Natural Resources Report (SoNaRR) published in Autumn 2016³ describes how water quality in rivers and bathing waters has generally improved over the last twenty-five years, mainly due to improvements in sewage discharges. Despite this, there are still some significant challenges. For example, 63% of all water bodies defined under the Water Framework Directive (598 out of 942) fail to meet good or better overall status (See Figure 1 for surface waters). In addition, only one out of six freshwater habitat types are in Favourable Conservation Status. Evidence shows that whilst there are a range of factors influencing water quality in Wales, there is continued and damaging nutrient enrichment of surface and groundwater resulting from agricultural practices.

3.3. Approximately 2.4% of agricultural land in Wales (around 750 farm holdings) is designated under the Nitrates Directive, and subject to pollution controls under the Nitrate Action Programme. This compares with over 60% in England, 14% of Scotland and a “whole-territory” approach in Northern Ireland. These levels of designation reflect, in broad terms, the proportion of land used for arable, horticultural and more intensive livestock systems. Evidence submitted by NRW as part of the 2016 Nitrates Directive Review was peer reviewed by external experts and recommended additional designation of discreet areas in Wales, thereby potentially increasing the proportion of designated land in Wales to approximately 8%⁴.

3.4. The main issues impacting the ecological and chemical quality of our waters are set out in Wales’ River Basin Management Plans⁵. NRW investigations to determine why water bodies are failing Water Framework Directive standards have identified impacts from agricultural activities as a suspected, probable or confirmed reason in 162 water body catchments (Figure 2).

3.5. Agricultural pollution can take two forms:

- Point source pollution – from a single identifiable discharging source, such as a pipe or ditch. If pollutants such as slurry, silage, fuel oils, milk, soil or sewage sludge find their way into watercourses in sufficient volume, they increase the demand for oxygen, with fish kills being just

³ <https://naturalresources.wales/evidence-and-data/research-and-reports/the-state-of-natural-resources-report-assessment-of-the-sustainable-management-of-natural-resources/?lang=en>

⁴ See Annex 1 for a summary of the evidence submitted by NRW.

⁵ <https://naturalresources.wales/evidence-and-data/research-and-reports/water-reports/river-basin-management-plans-published/?lang=en>

one of the most distressing and immediately visible impacts. Ecosystem recovery will often take much longer to address.

- Diffuse pollution - caused by a variety of land management activities that have no specific point of discharge. Sources of diffuse pollution are often individually minor, but collectively can result in significant environmental impacts. Examples of diffuse pollution include damage resulting from slurry spreading, over application of fertilisers, or livestock eroding river banks or accessing water courses.

3.6. The frequency of agricultural pollution incidents in Wales is extremely worrying (See Figure 3) with the poultry, pig, arable, sheep, beef and dairy sectors jointly responsible for at least 115 -165 substantiated pollution incidents annually during each of the last eight years (See Figure 4). Over 60% of these incidents took place within South West Wales, peaking in the months of January to May (See Figure 5).

3.7. There have been 498 suspected reports of agri-pollution to water over the 21-month period covering 01/03/16 to 31/12/17. Some 33% of these reports were substantiated either by NRW staff, third parties, or because of self-reporting by farmers themselves.

3.8. Some 50% of substantiated agricultural pollution incidents have been traced back to dairy farming⁶, although it is important to note that only 3.8% of dairy farms in Wales are involved in a substantiated pollution incident each year⁷. Taking all farms into account, the 115-165 substantiated pollution incidents each year involve less than 1% of the farms in Wales.

3.9. In this context, it is significant that the size of the Welsh dairy herd⁸ has increased by 12.5%⁹ over the last five years¹⁰ whilst the number of dairy producers has declined by 9.4% over the same period^{11,12}. Not only has the average herd size increased, but there has been a greater concentration of livestock within those locations which are the most economically, climatically and agronomically attractive for dairying (Figure 6).

3.10. In some instances, concentration of livestock can place increased pressure on the carrying capacity of the land since larger amounts of slurry and manure must now be applied within a smaller area. This often involves using umbilical systems

⁶ Proportion of dairy pollution incidents derived from graph and accompanying table of agricultural incidents to water viz: 50% in 2013; 53% in 2014; 52% in 2015; 49% in 2016 and 50% in 2017

⁷ An average of 66 dairy pollution incidents took place in each of 2016 and 2017 at a time when there were 1724 dairy farms operating in Wales. This equates to 3.8% of dairy farms involved in a substantiated pollution incident each year, although the actual figure could be somewhat lower than this since some farms may have had more than one incident in a year.

⁸ Defined as dairy females over 2 years of age with offspring

⁹ The Welsh dairy herd grew from 223,577 cows in 2012 to 251,176 in 2017

¹⁰ [Survey of agriculture and horticulture](#)

¹¹ <http://dairy.ahdb.org.uk/resources-library/market-information/farming-data/producer-numbers/#.WqEXiK1LFLM>

¹² According to AHDB, the number of dairy holdings in Wales fell from 1904 in May 2012 to 1724 in June 2017:

and tankers to transport slurry to locations at some distance from the main holding, all of which can increase the risk of a pollution incident.

3.11. Recent survey work by the AHDB provides a snapshot of the state of the Welsh dairy industry during the spring of 2017¹³. Some 64% of Welsh dairy farmers responded to the survey at a time when the milk market was emerging from a period of low milk prices. The average dairy farm covered 108 hectares with a herd size of 169 cows, although 44% of respondents were milking 150 cows or more. The most significant finding was that 49% of respondents were planning to increase production at some point over the next 5 years. If all these intentions were acted upon, it was estimated that Welsh milk production could increase by 9% (or 111 million litres) by 2022. It is also notable that the majority of analyses relating to the impact of Brexit on the dairy sector suggest market conditions could be more favourable for this sector once we leave the European Union. This contrasts to the outlook for the red meat sector which looks more challenging. Whilst the dairy situation is potentially very positive for the Welsh agricultural sector and the wider economy, such benefits will only be sustainable in the longer term if they can be achieved without adversely impacting on the environment.

3.12. The environmental impact of some agricultural practices is reducing. For example, the use of nitrogen based manufactured fertilisers fell by 45% between 1990 and 2013 as applications have been targeted on the needs of the growing crop. Similarly, pesticide use is now much more precisely managed with 50% less active ingredient applied since 1990. Many farmers have also sought to enhance water quality through their participation in successive generations of agri-environment schemes. Glastir Advanced now comprises 2,403 contracts, of which 895 are stand-alone contracts, 1,508 contracts are underpinned by Glastir Entry and 79 contracts cover Glastir Commons. Over 1000 nutrient management plans have also been delivered by Farming Connect. However, a combination of farm visits and river walks by NRW have identified evidence of widespread diffuse pollution issues.

3.13. During 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. These findings have been summarised in the Table 1, where poaching from livestock in field and along the river bank were the most frequent issues identified.

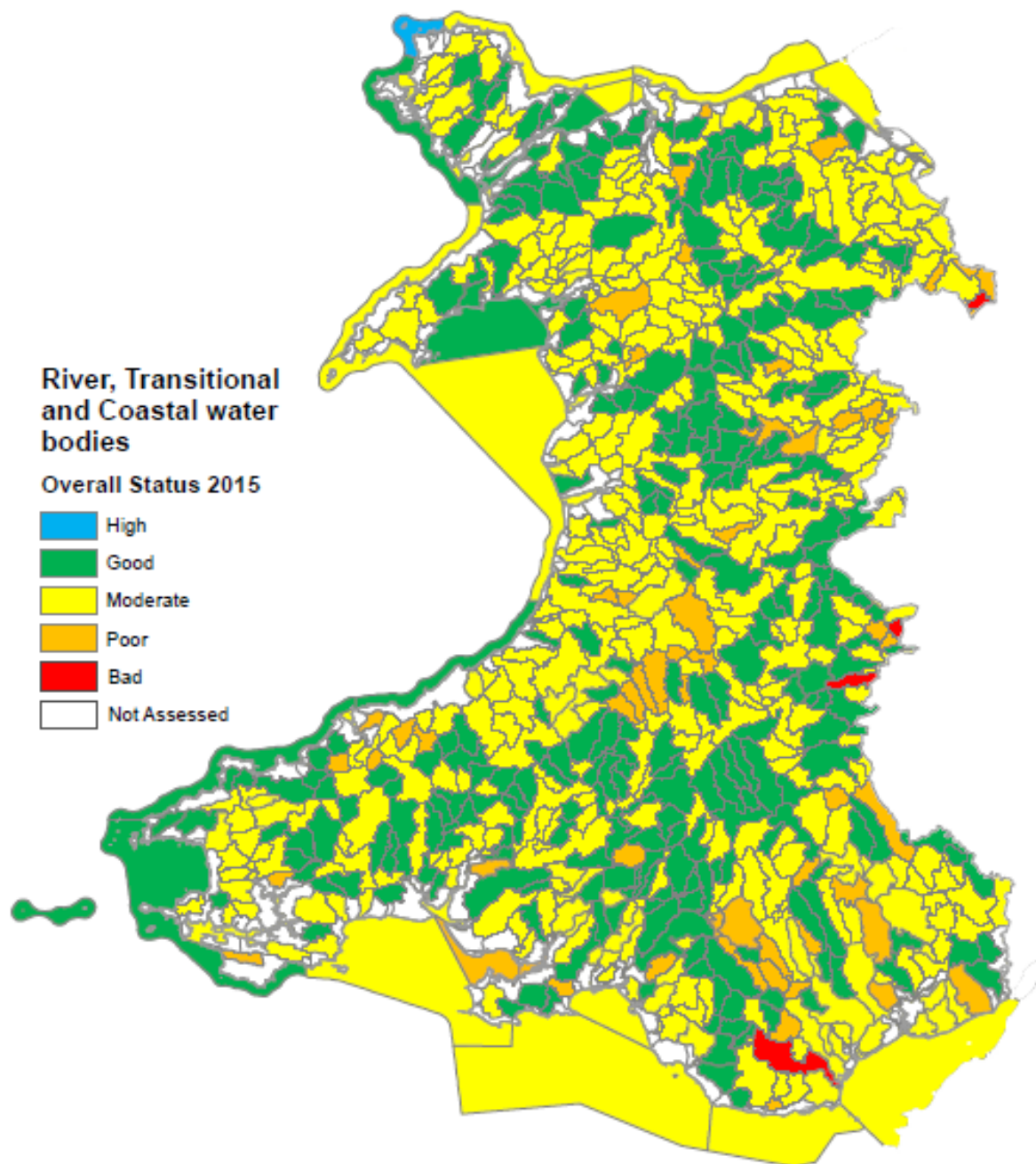
Recommendation 3.1: WLMF to aim to commission further analysis of the root causes of agricultural pollution. This in-depth analysis will benefit the work of group in the longer term by continuing to build a common understanding of the direct and indirect causes of pollution.

¹³ https://dairy.ahdb.org.uk/media/1670695/WelshEUConditionalAidScheme_2018-02-23.pdf

Table 1 Summary of Issues Identified on NRW River Walks

Bank erosion /Bank poaching	25%
Farm Pipe	3%
Farm trackway / Farm Gate	11%
Farm yard runoff	2%
General poaching including feeding and watering areas	54%
Land spreading	1%
Manure Heap	1%
No buffer zone	2%
Soil compaction and run off	1%

Figure 1: Water Framework Directive classification, overall status 2015 (surface waters)¹⁴



¹⁴ Figures prepared by Prepared by Welsh Government Agricultural Statistics and GIS teams

Figure 2: Water Framework Directive river water bodies where agricultural activities have been identified as the reason for not achieving good status (2015)

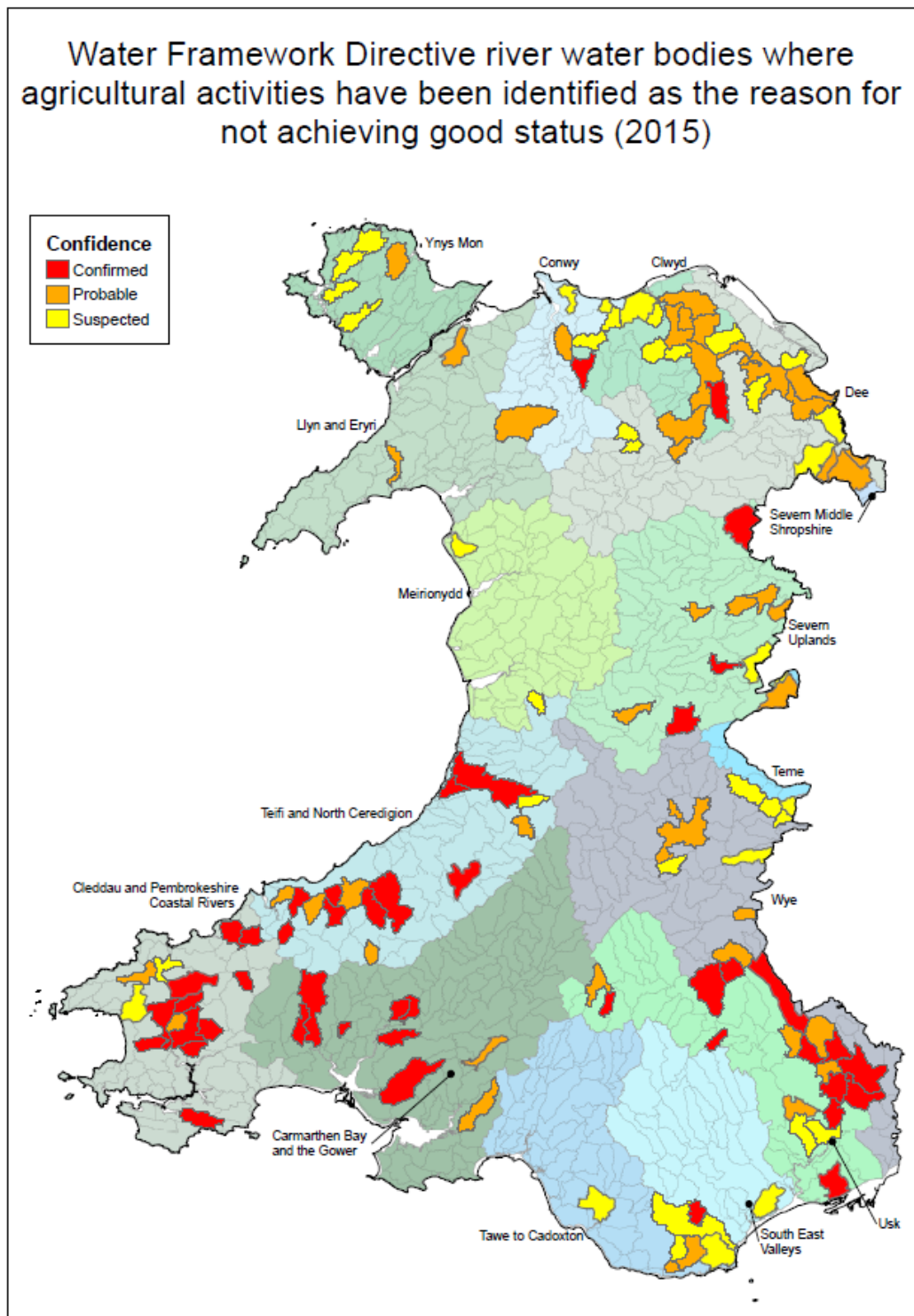


Figure 3: Location of agri-pollution incidents from 2010-2018

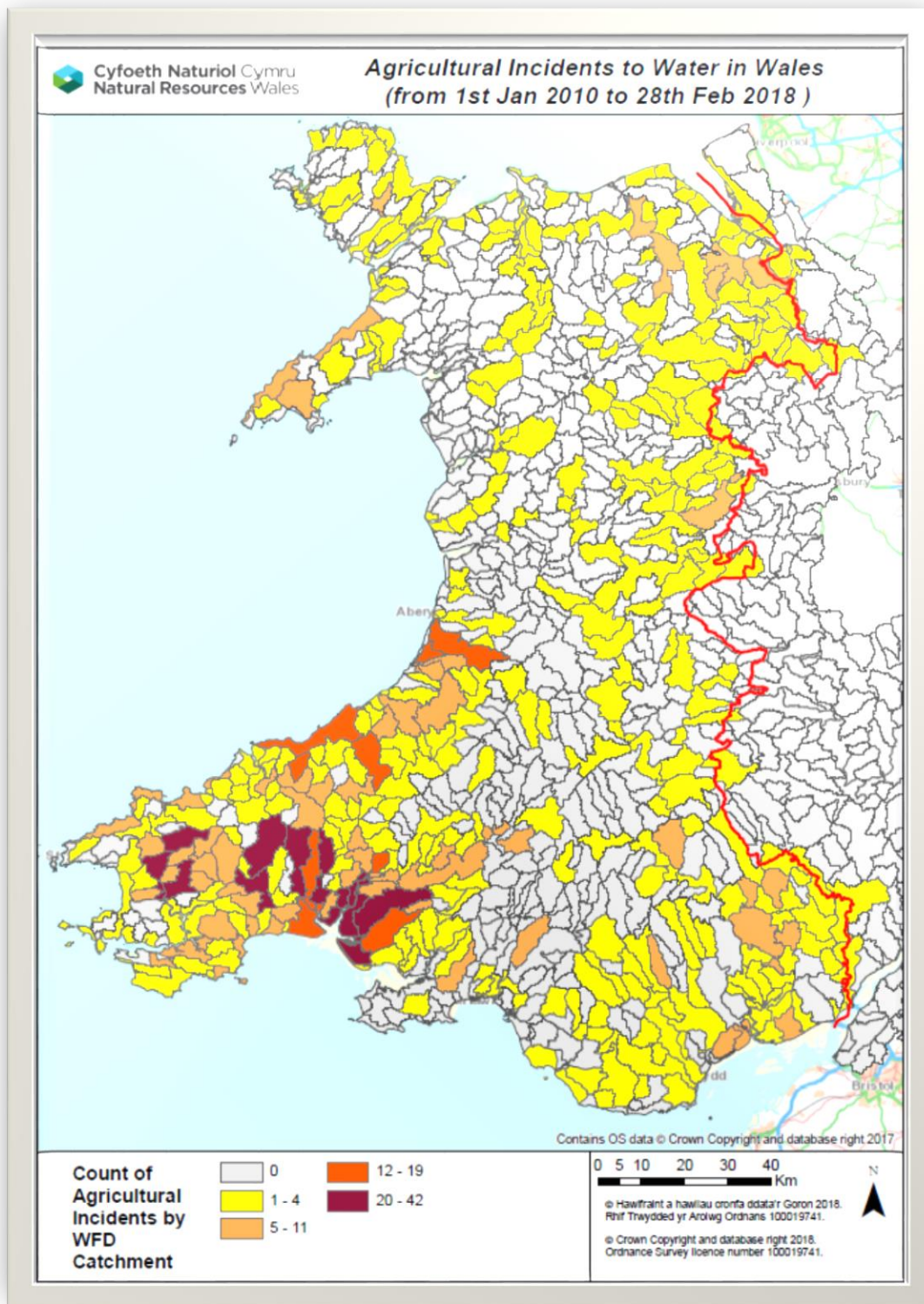


Figure 4: Types of agri-pollution incidents from 2010-2018.
 (Based on reports from NRW)

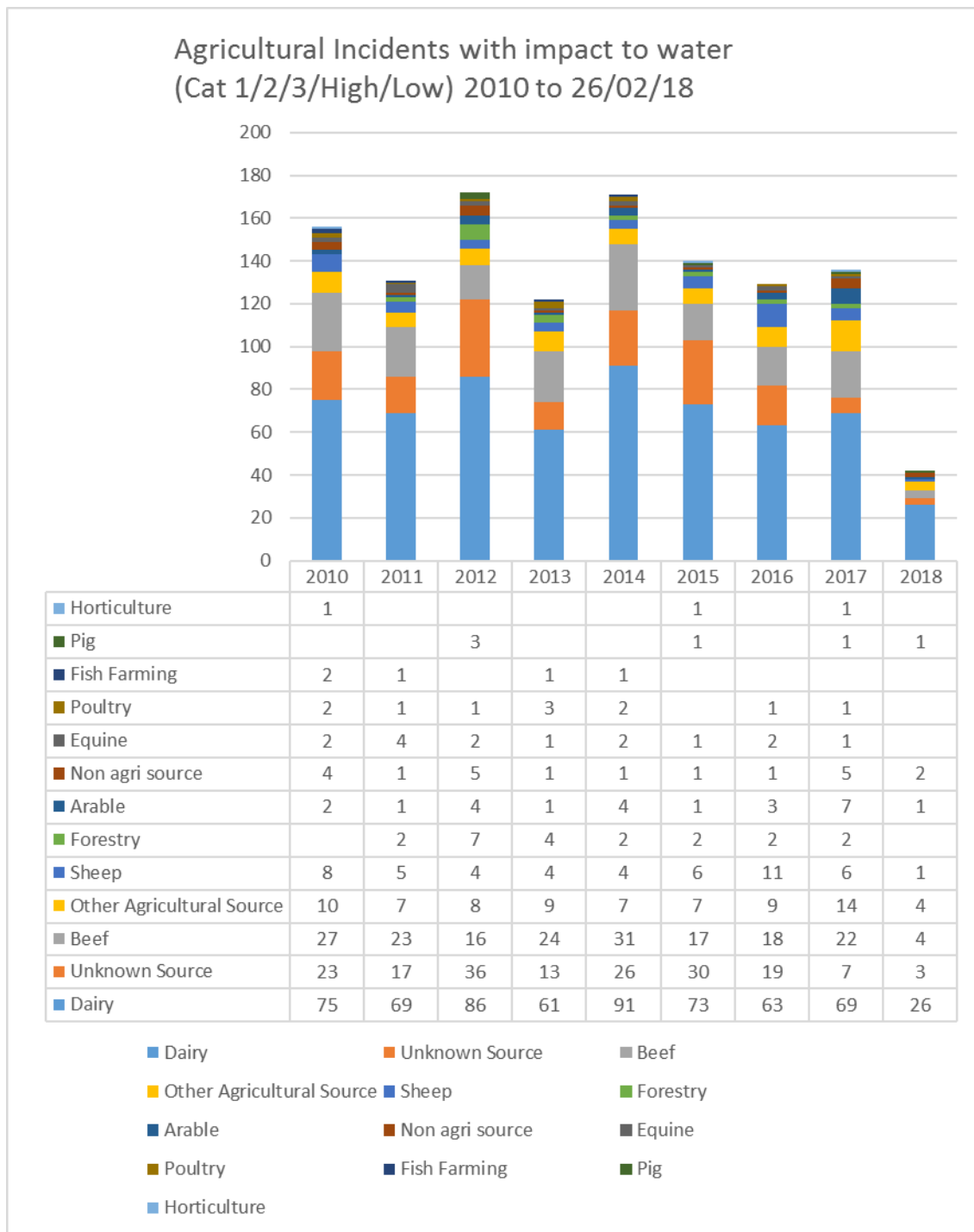


Figure 5: Agri-pollution incidents by month from March 2016 – December 2017
(Based on Reports from NRW)

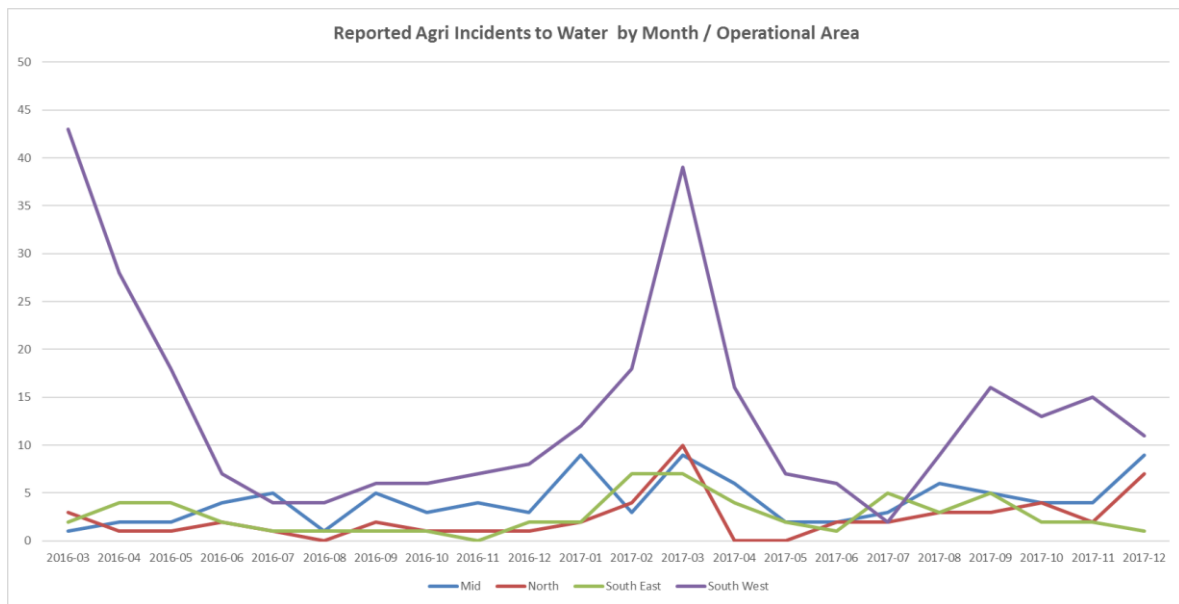
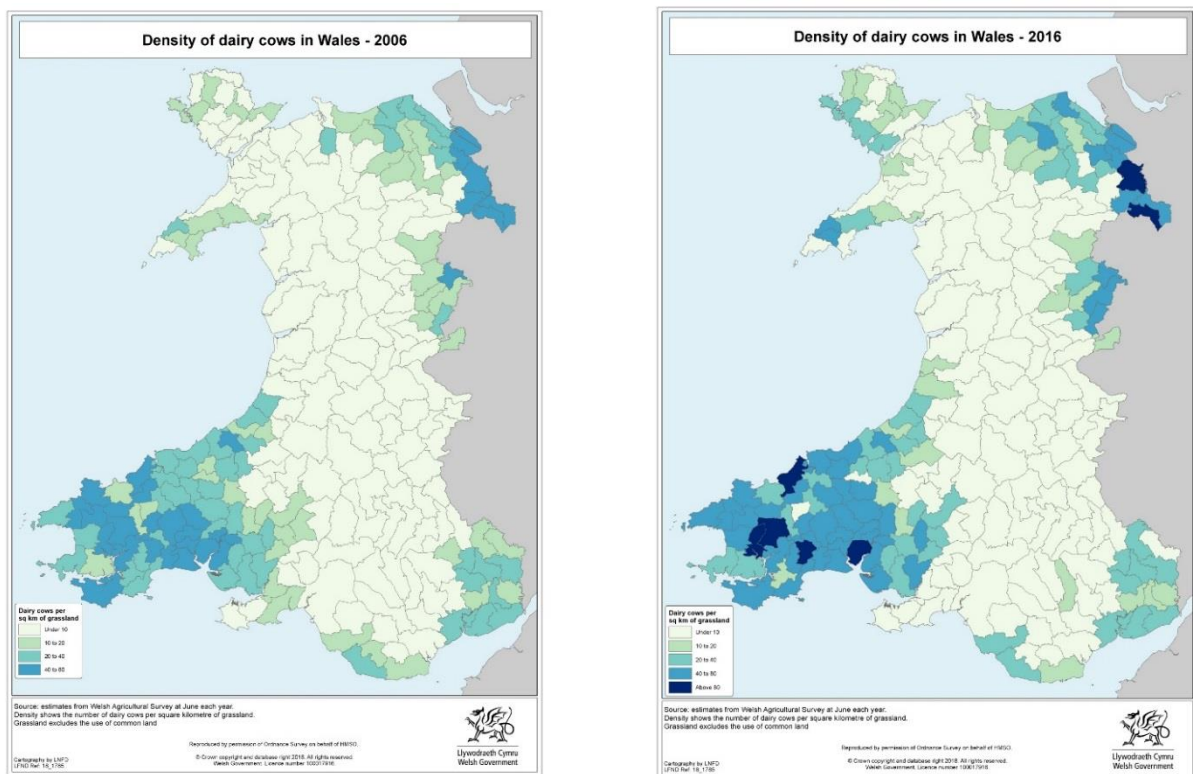


Figure 6: Density of dairy cattle within Wales 2006 and 2016
(Welsh Government Agricultural Statistics and GIS team)



Chapter 4 The regulatory landscape relating to agricultural pollution: Perceptions and practice

Introduction

4.1. The December 2017 Statement by the Cabinet Secretary, addressing the 2016 consultation on Nitrate Vulnerable Zones in Wales outlined the need to seek the correct balance of regulatory measures, voluntary initiatives and investment, combining robustness with flexibility.

4.2. The proposed tripartite approach (aided by innovation) is in line with NRW's working definition of regulation as an intervention that makes a positive difference, which includes other mutually supportive mechanisms to bring about positive change, such as stimulating voluntary initiatives and targeted investments, working alongside formal regulation underpinned by legislation. This chapter is concerned with formal regulation.

The regulatory review process

4.3. Bearing the preceding framing discussion in mind, the present chapter summarises the progress of the sub-group's work to address the formal regulatory dimension of the Cabinet Secretary's statement. In line with this, the purpose of this work has been to review evidence, generate discussion and build useful consensus within the Group around the contribution regulation (present and future) makes to addressing agricultural pollution.

4.4. In particular, the sub-group has sought to agree:

- a) Why a review of regulatory measures is necessary;
- b) Principles guiding the review;
- c) Regulatory regimes to be considered,
- d) Perceptions and experience of the sub-group concerning regulation, and
- e) Conclusions & early recommendations for priority areas of further work.

Work programme.

4.5. The work programme forms the first steps in an approach to this issue that is in line with the principles of sustainable management of natural resources (SMNR): including gathering and understanding stakeholder principles and perceptions, building consensus and developing a range of tentative proposals to address the issue.

4.6. To progress points (a), (b) and (c) a paper was presented to the sub-group outlining the steering principles and the potential scope of the regulatory work of the sub-group. This paper was agreed by the sub-group at the January 2018 meeting.

4.7. Having established consensus on the foundations of this work, to address points (d) and (e), opinions and evidence were sought on the present performance of the regulatory system facing agricultural pollution. A short series of framing questions were shared with sub-group members and written responses were sought. The questions were:

- What specific aspects of the present regulatory arrangements are perceived to be unsatisfactory?
- In what manner are they unsatisfactory (e.g. effectiveness, clarity, practicality of implementation)?
- Where within the regulatory system does the issue lie (e.g. nature of existing regulations themselves; gaps or interactions between them; advice and guidance; compliance monitoring; enforcement)?
- Specifically, the extent to which the present regime may be supportive (or otherwise) to the voluntary farmer-led approach being developed by the sub-group in delivering the all Wales approach the Cabinet Secretary has outlined.

4.8. Written responses were received from sub-group members and these responses were summarised and tabulated in a matrix to better understand where consensus lay.

4.9. This matrix was used as the basis of two face-to-face discussions focused on regulation, held on 9th and 14th March 2018 in Llandrindod Wells, attended by those who had submitted written responses to the framing questions. During these sessions, each issue was debated and at the end of the discussion, consensus (or otherwise) was recorded for each attendee. The updated matrix is presented in Table 2

4.10. The Llandrindod sessions yielded considerable consensus, where all agreed further work was required to provide evidence and develop an approach consistent with the Cabinet Secretary's overarching brief. The sessions emphasised the value of issue-focused discussion between a range of stakeholders in nurturing understanding and building consensus – an approach that should continue. The key elements of consensus and the recommendations that emerged from these sessions form the core of this chapter.

Regulatory review area A - Why a review of regulatory measures is necessary;

4.11. These points were initially presented to the sub-group on 30th January 2018, in an initial framing paper on regulation. The paper was discussed amended and agreed as part of a preliminary session on regulation on 22nd February 2018.

- Previous presentations from several members have described their perceptions of the present regulatory landscape as complex, fragmented and poorly understood
- The UK is still a member of the EU and therefore Welsh Government must demonstrate to the European Commission that a robust approach to

tackling nitrate pollution has been established. Post Brexit, the Nitrates Directive will be brought over into UK law as part of the EU Withdrawal Bill.

- The outcome of the NVZ consultation indicates that a large number of the respondents wish to see a whole territory designation¹⁵.
- In the medium term, Cross Compliance will, at the very least, need a comprehensive overhaul following Brexit.
- In the longer term, maintaining regulatory standards aligned with existing and future EU regulations is likely to be central to ensuring continued access to European markets post-Brexit.
- A consistent and transparent regulatory floor will likely provide similar benefits in accessing other EU and non-EU premium markets.
- With finite resources available for compliance monitoring and enforcement, a seamless and streamlined regulatory landscape that focusses the regulator's effort and enforcement options according to risk will ensure that the greatest positive impact can be achieved in the most effective manner.
- The combination of a simplified, rational regulatory landscape, designed and operating in concert with a farmer-led voluntary approach, targeted investment and the support of on-farm innovative techniques to better manage slurry storage and dispersal, should provide a seamless path to enhanced environmental outcomes, improved business efficiencies and access to existing and new markets. None of these approaches operating on their own is likely to accomplish the desired outcome to the same degree.
- A consistent regulatory floor provides an important environmental safety net should the voluntary scheme not fulfil expectations, ensuring that the condition of the aquatic environment in Wales is enhanced rather than degraded.
- Compliance above an appropriately positioned regulatory floor may also reasonably serve as a gateway to accessing the future incentives and investment measures that the sub-group may wish to recommend to the Cabinet Secretary.

Regulatory review area B - Principles guiding the review:

- The legislative context in Wales provides some helpful overarching principles that are relevant to this review of regulation:
- The Wellbeing of Future Generations Act establishes a series of wellbeing goals for Wales, towards which public bodies are required to make progress. The goals ensure that public bodies, including Welsh

¹⁵ <https://beta.gov.wales/sites/default/files/consultations/2018-02/180223-summary-of-response-nitrate-vulnerable-zones-in-wales-en.pdf>

Government and NRW adopt far sighted, joined up preventative solutions, developed alongside communities and stakeholders.

- The Environment (Wales) Act 2016 establishes the principles of Sustainable management of Natural Resources (SMNR) as the basis of Welsh Government's approach to the environment and enshrines these principles in NRW's purpose. These principles are well aligned to the purpose of this review and the collaborative stakeholder process we are embarking on.
- Natural Resources Wales has developed a set of Regulatory Principles¹⁶ that reflect the broader SMNR context and, through their use will ensure that NRW discharges its principle statutory duties within the wider legislative context of SMNR as well as the well-being outcomes. These principles are:
 - Deliver outcomes
 - Be intelligent
 - Prepare to challenge
 - Use the full range of tools available
 - Be flexible
 - Bring the right skills / expertise together
 - Be efficient and effective
 - Be clear on what we do and why
- At a UK level, the Better Regulation Executive with the Department of Business Energy and Industrial Strategy has issued a code of practice for regulators. The Regulators' Code provides a framework for how regulators should engage with those they regulate. Welsh Government and Natural Resources Wales must have regard to the code when developing policies and operational procedures that guide their regulatory activities. The five principles of good regulation state that any regulation should be: transparent, accountable, proportionate, consistent and targeted. NRW's Regulatory Principles are also designed to deliver NRW's commitment to the Regulators' Code.

Regulatory review area C - Regulatory regimes relevant to land managers

- EU Nitrates Directive
- Water Framework Directive
- Habitats Directive
- CAP cross compliance requirements
- Salmon & Freshwater Fisheries Act
- Water Resources Act

¹⁶ <http://naturalresources.wales/about-us/what-we-do/how-we-regulate-you/regulatory-principles/?lang=en>

- Silage, Slurry and Agricultural Fuel Oil (SSAFO) Regulations (AFO element now repealed in Wales)
- Oil Storage Regulations
- The Sludge Regulations
- Environmental Permitting Regulations
- Groundwater Protection Code for Wales, Environment Agency Groundwater Regulations, 2018
- Environmental Impact Assessment Regulations Schedule 2
- Planning legislation and Planning Policy Wales
- Basic Measures (as consulted on, in Welsh Government's *Taking Forward Wales' Sustainable Management of Natural Resources* consultation, 2017)
- Civil Sanctions
- Code of Good Agricultural Practice (CoGAP)
- Use of NRW's experimental powers

Regulatory review area D - Perceptions and experience of the sub-group concerning regulation

4.12. Written responses to the framing questions were received from representatives of the Farmers Union of Wales, NFU Cymru, Carmarthenshire Fishermen's Federation, Tenant Farmers' Association, CLA Cymru, and Natural Resources Wales.

4.13. Forty three key statements were summarised from the individual responses, each of which was supported by one or more of the written responses and presented to the group as a matrix. These statements provided the basis for the face-to-face discussions.

4.14. Following the discussions around each statement, an updated consensus was produced (Table 2). This matrix clearly shows the establishment of wide support across stakeholders for most statements (green cells), with more exploration / evidence flagged as important to develop thinking around several key statements (amber cells).

4.15. The matrix in Table 2 demonstrates widespread consensus, not only around some of the key issues, but also around a suite of possible solutions. There is also agreement around several areas (amber), that warrant further evidence and analysis. The absence of red (disagreement) is striking, and encouraging, especially bearing in mind the diversity of the stakeholders involved and the range of statements expressed.

4.16. The matrix approach was found to be a useful way to structure the face to face sessions and to cover the ground required in an organised manner. During these sessions a constructive, open and above all, respectful attitude prevailed on all sides, which greatly aided progress. The establishment of this functional dialogue itself is a key result of this process and important foundation on which future more detailed and challenging work of the sub-group can be built.

Table 2: Regulatory perceptions - revised consensus matrix, following face-to-face sessions.

KEY:-

Green = consensus

amber = further evidence and exploration is needed

white = no opinion

Grey = feedback not yet provided

Issue	Date reviewed	Farmers' Union of Wales	CLA Cymru	NFU Cymru	Tenant Farmers' Association Carmarthenshire Fishermans Federation	NRW, Operations	NRW, Operations	NRW, Board	NRW, Policy	Welsh Government, Agriculture
1. Clear statement of the red line: slurry should not enter waterways	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
2. One pollution incident is one too many	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
3. Most farmers / many areas not a problem. Need for earned recognition / risk based approach	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
4. Need to codevelop an enabling framework to assist farmers to make informed choices	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
5. Get the right balance of regulatory measures, voluntary initiatives and investment	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
6. Regulation and voluntary elements both need to work together for either to work!	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
7. Sheer volume / disjointedness of regulation leading to lack of engagement, awareness	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
8. Solution needs to be flexible, proportionate, reduce complexity	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
9. Too much jargon / lack of clearer, accessible advice and guidance, need single point of contact	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
10. Digital exclusion	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
11. Inflexibility of rules to local / weather conditions	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
12. Small businesses, tiny capacity / level of record keeping onerous	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
13. Red tape: regulatory exemptions should be default, not require reapplication	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
14. Trade offs between different regulatory regimes - must to recognised	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
15. Timely WG response and actions following consultations	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
16. Civil sanctions / enforcement undertakings / progressive scale of enforcement favoured	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
17. Proportionate evidence-based rules favoured rather than onerous recording for all	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
18. EIA: WG screening / advice works & well could be emulated elsewhere.	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
19. Slurry application rates sometimes likely excessive	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
20. Lack of cover after maize crop likely leading to soil erosion / sedimentation	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
21. Delay in bringing cases to prosecution	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
22. Planning system provides barrier to achieving compliance	23rd March	Green	Green	Green	Green	Green	Green	Green	Green	Green
23. Retrospective planning on expansion / slurry facilities unacceptable	23rd March	Green	Green	Green	Green	Green	Green	Green	Green	Green
24. Tenants - challenge of investment / uncertainty due to tenancy	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
25. Weakness in compliance monitoring and enforcement	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
26. Frame measures in terms of farm business benefit	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
27. Need for a regulatory backstop. Basic measures?	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
28. EIA Schedule 2 needs to be better implemented, clearer LPA guidance	23rd March	Green	Green	Green	Green	Green	Green	Green	Green	Green
29. Planning systems needs to work better	23rd March	Green	Green	Green	Green	Green	Green	Green	Green	Green
30. Advisory guidances is often ignored, eg CoGAP	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
31. Lack of clarity in CoGAP between law and advice.	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
32. Cross compliance could bolster CoGAP	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
33. Present regulatory landscape too dependent on cross compliance	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
34. Lack of resource for compliance checking / enforcement	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
35. SSAFO pre 1991 ammendment will penalise farmers with no slurry problems	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
36. SSAFO pre 1991 exemption is problematic	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
37. Lack of clear methodology for calculating slurry store requirements	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
38. Two weeks notification of use of new slurry facility inadequate	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
39. Self reporting should be encouraged throughout sector	9th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
40. Need to take steps on trajectory that will lead to post Brexit vision	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
41. Challenging timescale of this exercise	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
42. Soil testing / nutrient management, based on RB209 needs to be a focus	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green
43. Intensive farming approach only presently applies to pig & poultry, expand?	14th March	Green	Green	Green	Green	Green	Green	Green	Green	Green

Preliminary statements that were widely supported (green in the matrix):

Statements relating to shared objectives:

- Clear statement of red line: excess nutrients and other pollutants e.g. slurry, agri-chemicals & soils should not enter watercourses or groundwater.
- One pollution incident is one too many. Aim for best case, plan for worst case.
- There is wide variance in environmental performance, from farm to farm and from catchment to catchment. Targeting and proportionality are axiomatic.

Statements relating to key problems:

- Sheer volume / disjointedness of regulation leading to lack of engagement & awareness.
- Too much jargon / lack of clearer, accessible advice and guidance, via a single point of contact.
- Inflexibility of existing rules to local conditions / weather.
- Trade-offs between different regulatory regimes place operator in conflicting situations.
- Lack of clarity in CoGAP between law and advice.
- Lack of sufficient resource for compliance checking and enforcement.
- Delay in bringing cases to prosecution undesirable / unacceptable.
- Advice and guidance in some cases ignored, e.g. CoGAP.
- Lack of clarity in CoGAP between law and advice.
- Slurry application rates sometimes well in excess of crop nutrient requirements and soil buffering capacity.
- Tenants - challenge of long term investment required vs. uncertainty due to tenancy.
- Digital exclusion of poor broadband and skills when designing solutions.
- Challenging timescale of this exercise.

Statements relating to key solutions:

- Need to develop earned recognition and expand risk based approach.
- Need to co-develop an enabling framework to assist farmers to make informed choices...
- Strike the right balance of regulatory measures, voluntary initiatives, investment and innovation.
- Solutions need to be flexible, proportionate, reduce complexity.
- Timely Welsh Government responses and actions following consultations.
- Civil sanctions / enforcement undertakings / progressive scale of enforcement favoured.
- Use outcome focussed evidence-based rules rather than onerous recording for all.
- Self reporting should be encouraged.

- Soil testing / nutrient management (e.g. RB209) needs to be a focus.
- Intensive farming approach only presently applies to pig & poultry: explore merits or otherwise of this approach for intensive dairy operations, as a potential component of a rational regulatory framework.
- Progress needs to align with trajectory that will lead to long term post-Brexit solutions.

Regulatory review area E - Specific Recommendations arising from discussion so far:

Recommendation 4.1: Building on the constructive stakeholder process established to date, as a matter of urgency, the sub-group, seeks the mandate to continue to develop a consensual understanding of the present issues (gaps, enforcement, effectiveness) within the regulatory landscape.

4.17. This task forms part of the continuing work of this sub-group, contributing to the ambition expressed by the Cabinet Secretary in her statement, and in accordance with the offer from the farming unions to work towards alternative approaches to wider NVZ designation. The present findings mark the beginning of this process, highlighting key areas for further investigation. Other topics are likely to arise in taking this work forward and through relaying these preliminary findings to wider membership groups.

Recommendation 4.2: A key perceived gap for further exploration and urgent attention of the sub-group is the absence of effective regulation around slurry spreading practices, beyond the limited scope and effectiveness of cross-compliance and the best practice encouraged by CoGAP. It is recognised that poor practice in this respect is implicated in many slurry pollution incidents.

Recommendation 4.3: Working closely with Welsh Government & key stakeholders, the WLMF sub-group on agricultural pollution should fully explore the potential of basic measures as a means to address clear and present gaps in the regulatory landscape, to tackle agricultural pollution in the critical zone between good practice and strict liability offences.

4.18. The sub-group clearly recognises that nutrient management planning (NMP) has a pivotal role to play in the responsible production, storage and application of slurry and other fertilisers, as well as other fluxes of nutrients involving soils and the atmosphere. Problems with slurry storage and application lead to many of the incidents that are occurring.

Recommendation 4.4: The sub-group, with assistance from Welsh Government, NRW and stakeholder bodies, should explore the most effective means to deliver nutrient management planning at scale and at pace. Advice and guidance, practical support, voluntary approaches, innovation and regulation may all have a role to play in driving wide-scale adoption of NMP. Assessing the present practice and effectiveness of NMP is an important first step. The use of nutrients needs to be science based on soil and nutrient testing to ensure correct application to match crop needs.

4.19. There are clear linkages between NMP and a revised approach to SSAFO.

Recommendation 4.5: SSAFO review should be revisited by Welsh Government, the sub-group & NRW in the context of the wider integrated review of the regulatory landscape undertaken by the Sub Group, recognising the importance of slurry storage in addressing agricultural pollution. The review needs to remain very clearly focussed on outcome (keeping slurry out of waterways) and the scale of risk to achieving that outcome represented by the presence and absence of different structures on farms. The 1991 issue, the capacity calculations and construction standards / compliance need to be framed in this manner, drawing on evidence of risk and outcome.

4.20. The role of the planning system in addressing agricultural pollution has been raised by several members of the sub-group. Particular concern was expressed around retrospective planning permission and screening for environment impact of new development. These issues have yet to be discussed in the depth afforded to other key issues, despite a short sub-group discussion on 23rd March. As a priority in the forward work programme of the sub-group, a fuller exploration of planning issues is urgently required.

Recommendation 4.6: As a first step in this direction, in order to raise awareness within LPAs or their role in addressing agricultural pollution as well as exploring new approaches and highlighting issues with the existing approach, the Sub-Group should seek to convene a workshop with representatives from LPAs across Wales. This event needs to be timed to coincide with the imminent LDP revision process.

Recommendation 4.7: Based on the prior preparation of a clear risk analysis, the appropriateness of an EPR intensive farming approach, most likely for larger dairy units should be explored by the sub-group, Welsh Government & NRW in the context of a wider integrated review of the regulatory landscape. Elements from the existing regime for pigs and poultry should be considered, with new measures according to need.

Recommendation 4.8: NRW & Welsh Government with close liaison with the sub-group should develop a plan for use of civil sanctions to be explored across appropriate aspects of regulatory landscape.

Recommendation 4.9: Development work is needed by the sub-group, NRW, RIW and the leads on the voluntary proposal to determine what the earned recognition offer could be, particularly in respect of supporting the voluntary farmer led initiative.

Recommendation 4.10: NRW should review its operational approach to prioritising and managing enforcement procedures relating to agricultural pollution and share findings with the sub-group.

Recommendation 4.11: Welsh Government should consider urgent new funding / funding rationalisation as part of the commitment to addressing agricultural pollution. Review needed of present picture of investment with sharper outcome-based focus. Review should explore the case for further funding to i) provide specific incentives targeted at encouraging best practice; ii) support sophisticated advice and guidance; iii) provide trained, skilled liaison officers; iv) ensure adequate compliance and enforcement effort; v) provide the human resources to continue to develop the work of the WLMF sub group on agricultural pollution (secretariat etc.)

Recommendation 4.12: More widely, the sub-group need to assess the contribution of soils to poor water quality and means to address this issue, drawing on the considerable evidence base developed as part of the River Basin Management Plan process.

General Recommendations to be implemented as **crucial context** to the review of regulation

4.21. Work needed by NRW & WG (with input from stakeholders) to develop clearer, coherent, basic information on existing and future regulation relevant to land managers.

4.22. The interaction between different regulatory regimes should be considered from the outset. In addressing agricultural pollution going forward, contradictions in regulations that increase the risk of pollution need to be identified and resolved. This may involve regulatory change and/or improved operational guidance.

4.23. Regulation and associated record keeping should be proportionate to risk. This needs to be balanced with the attractive simplicity and clarity of a one-size-fits-all approach. The present implementation of (off-farm) waste and food hygiene regulations may serve as good examples of striking this balance.

4.24. In proposing regulatory approaches to address agricultural pollution, a fundamental balance needs to be struck between clear and simple advice and guidance around clear and simple regulation; and regulation that is outcome focussed and therefore able to accommodate the diversity of circumstances that exist in the real world.

4.25. There is a need to engage recognised experts in the area of communicating the business significance of regulation to farmers, at an early stage in the design of the package of measures going forward. The best examples of this approach involve a dedicated and properly resourced team. The resource implications of this approach should not be overlooked.

4.26. Any approaches that employ digital technology must also be workable for those who cannot access reliable network connections and recognise varying levels of digital skills. Digital connectivity and skills base cannot be assumed for all.

4.27. NRW to explore possibility of alternative approaches to on-farm agricultural waste exemptions that are more meaningful and resource-efficient for farmers and the regulator.

4.28. More evidence needs to be gathered by NRW to understand the scale of the maize soil erosion problem and the inadequacy of present means to address this / possible solutions.

4.29. It was accepted by the sub-group that the balance between environmental performance and public support could be broadened out of the present cross-compliance context and should form a minimum requirement for future payments currently under development. Such an approach could enhance the credibility of Welsh agricultural sector through a Sustainability Values programme (referred to as 'Brand Wales').

4.30. Clear messaging around the benefits of self-reporting need to be promoted through all available channels. The projects described in chapter 6 represent a good opportunity to initiate this. Case studies will help communicate this message.

4.31. Given the large proportion of tenanted land in Wales (around 27%) measures to address agricultural pollution need to work effectively with the tenanted sector. Seek further input from unions, tenants, public and private sector landlords.

4.32. The principle of environmental conditionality should be retained as part of future payment schemes, recognising its motivating power for farmers and the sense of fairness to the taxpayer.

Conclusions & Next Steps

4.33. The ongoing imperative to work at pace on this issue is clearly recognised by the sub-group, evidenced in part by the considerable time commitment made by members in the preparation of this report and the stakeholder sessions that underpin it.

4.34. The pace and progress of the regulatory review has been promising, courtesy of a constructive, open and mutually respectful attitude taken by all parties. Helpful consensus has been established on the nature of the challenge, the key tools to tackle it and a series of design criteria. But, as the recommendations clearly indicate, there remain many issues that require further, more detailed exploration.

4.35. Key areas for the next stage of the sub-group's work include investigating approaches to wide scale nutrient management planning, the potential of a basic measures approach to support this, integrated outcome-focussed SSAFO revisions, exploring the value of an EPR approach to intensive dairy farming, scoping wider deployment of civil sanctions, a review of enforcement & compliance monitoring, developing the concept of earned recognition alongside the voluntary scheme and clarifying and improving regulatory advice and guidance. There is also a key need to continue to engage widely with our membership / colleague networks to ensure we have fully scoped the key issues and identified the gaps upon which this preliminary analysis is built.

4.36. Subject to approval from the Cabinet Secretary, this sub-group proposes to establish a task & finish forward work programme to explore in detail, each of the key areas highlighted above, steered by this reports recommendations - and to develop a view on the value that each could bring (and importantly in combination) to bear on

the problem of agricultural pollution. These detailed investigations will highlight key implementation considerations and importantly expand upon how each might support and be supported by the voluntary and incentive elements discussed elsewhere in this report.

Making the most of collaboration

4.37. Going forward, very careful attention is needed to the design of individual elements to ensure that they work individually and collectively. Regulation should support the voluntary scheme and the voluntary scheme should support regulation. This synergy might be achieved by the following suggestions:

How an appropriate voluntary scheme can support regulation

- A regulator neither regulates in a vacuum, nor has infinite resources. By harmonising formal regulation with voluntary action and incentives, the attainment of shared outcomes becomes a shared activity, involving many more people and membership bodies, with real agency to deliver, engaged in achieving those shared outcomes.
- Engaging farmers in this manner brings their deep practical understanding of their own environment to bear on the objectives, leading to better delivery of outcomes.
- Innovation is fostered through a reduced emphasis on prescriptions.
- Flexibility of the voluntary approach combined with intelligent core regulation that recognises context can work effectively with the dynamic (and fundamentally weather dependent) nature of farm businesses.
- A voluntary approach supported by public and private sector investments allows the development of a market approach: actions are taken based on a combination of extent of the issue (the demand, identified by regulation) and the relative cost and availability of potential solutions (the supply). The market then stimulates targeted innovation and investment (including so called payments for ecosystem services (PES)) in a way to address the issues, in a resource-efficient manner.

How appropriate regulation can support voluntary action:

- Provide a fair & even playing field where from the outset, all those in the voluntary scheme are building on the same common standards.
- Provide a clear sense of what is being paid for by investors (be they market-led PES investors, Brand Wales consumers or public sector) in the voluntary scheme.
- Good regulation embodies a process that can help the farmer identify issues, and check compliance on progress to resolve them. The voluntary approach can use the issues as a guide to develop and deliver an appropriate plan of action, aligned with suitable incentives.
- A proportionate, risk-based approach to regulation can recognise the reduced risk posed by farmers participating in a well-audited voluntary

scheme and employ earned recognition, which adds an additional non-financial incentive to engage in the voluntary programme.

- Regulation is subject to periodic review against performance. Failure to deliver results in the manner anticipated through voluntary action would increase pressure on a more formal regulatory approach to tackle the issue in the future. This possibility may serve as an additional buy-in to the voluntary approach, as a means to avoid an alternative that places a greater emphasis on formal regulation.

4.38. Figures 7 & 8 places these concepts and some of the tentative recommendations from this review into a wider conceptual framework. The present situation is arguably represented in Figure 7. The fragmented and indistinct regulatory floor (blue line) is supported by incomplete availability of civil sanctions and there is little incentive to operate above the regulatory floor, or incentives for investors to invest. In this context, 'WFD Good' outcome remains challenging.

4.39. Figure 8 outlines the potential synergy in delivering WFD Good status, between a wide range of formal and informal regulatory measures, most importantly a rationalised regulatory floor underpinned, where there is proven need, by basic measures. The regulatory floor operates in concert with a voluntary scheme linked to earned recognition, with additional incentives above the regulatory floor provided by PES and access to premium markets. Below the regulatory floor, civil sanctions help deliver the proportionate and risk based approach to enforcement that is at the heart of NRW's Regulatory Principles.

4.40. While the virtues of a combined approach involving formal regulation and a voluntary element are clear, there are also risks for example: insufficient buy-in to voluntary scheme, leading to underperformance of the system overall. The role of investment here is critical, to provide the financial incentives to encourage engagement with the voluntary element. Earned recognition and development of a suitable operating framework is also a critical factor for the functioning of a combined approach including continuing professional development and the ability and confidence to report on compliance.

4.41. Lastly, reserving the option of further formal regulation based on reviewing progress has also been shown to be a powerful positive incentive for voluntary engagement (for example work in the Catskills catchment, USA).

4.42. Risks are not unique to the design and implementation of the voluntary element: altering the regulatory floor either too high or low with respect to the voluntary scheme will either overlap with and undermine the added value of the voluntary scheme or leave a large gap between where regulation stops and voluntary measures begin, a gap in which farmers may become disengaged with the process. Recognising and mitigating such risks underlines the importance of co-design of the regulatory, voluntary and incentive elements of the approach.

Figure 7 – Agri-pollution regulatory review – current perception

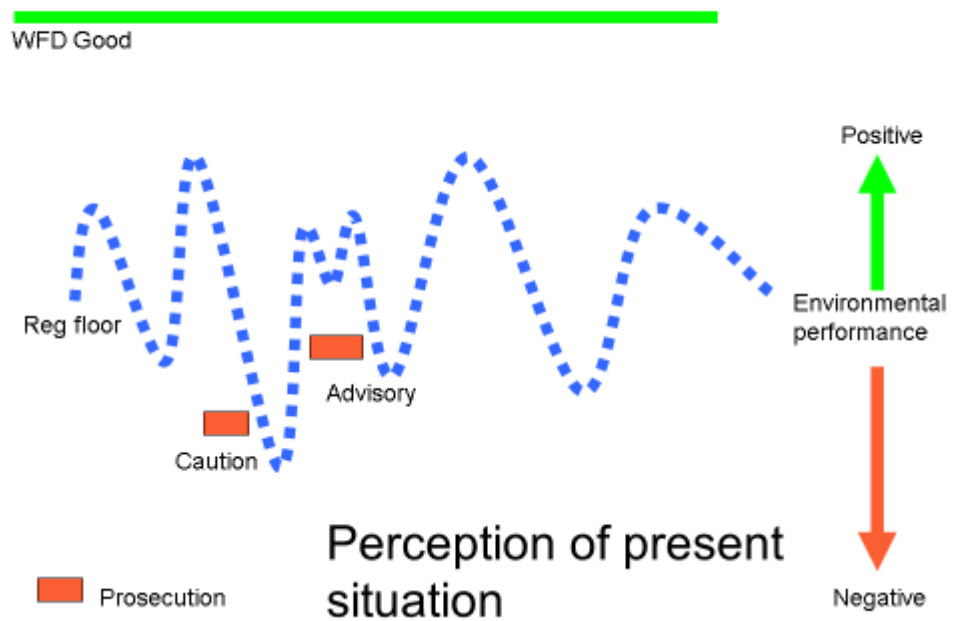
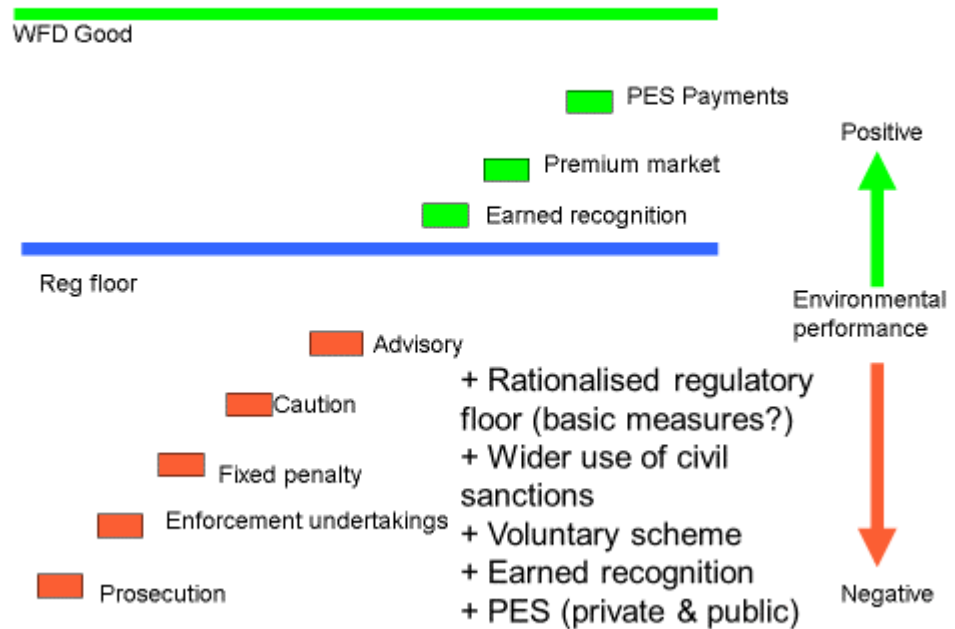


Figure 8 – Agri-pollution regulatory review – potential for synergy



Chapter 5 Developing a voluntary approach to nutrient management

Background

5.1. In line with the Cabinet Secretary written statement on tackling nitrate pollution. This chapter explores the development of a voluntary approach to nutrient management and options to provide land managers with flexibility, where these would achieve the same or better outcomes than a regulatory approach. As part of this approach, further consideration is given to a proposal from the agricultural industry which was inspired by the First Milk nutrient off-set project.

5.2. The role of a voluntary approach and earned recognition has been identified by the WLMF sub-group on agricultural pollution as a key mechanism in the spectrum of approaches available to support the delivery of positive outcomes for water quality, and following a presentation by farmers Mike Smith and Will Prichard and a farm visit in October 2017, the sub-group has actively pursued the voluntary standard approach as one of the five major core themes.

5.3. The ambition is to scale up a nutrient off-set scheme, based on the learning of the First Milk nutrient off-set project, and develop a farmer led process of earned recognition to create a pan-Wales nutrient management approach that is accessible to all farmers across Wales and includes all farming sectors.

5.4. A voluntary approach aligns with the new legislative framework for the sustainable management of natural resources (SMNR) via the Environment (Wales) Act 2016 which puts in place the legislation needed to plan and manage Wales' natural resources in a more proactive, sustainable and joined up way. It embeds SMNR principles reflecting a truly collaborative partnership and can be adaptive and progressive to the management of our natural resources providing farmers with the opportunity to innovate to deliver multiple benefits.

5.5. The multiple benefits include improved surface water, groundwater and soil quality; improved habitat quality and fish populations; improved farm business resilience and viability through resource efficiencies and marketing opportunities as well as the ability to deliver 'more with less' in synergy with regulatory models.

5.6. We recognise that any voluntary approach must be evidenced based and monitored in a way to demonstrate that measurable improvement in water quality is being achieved. Its role in demonstrating equivalency to European legislation post Brexit so that market access for agricultural products can be maintained into the future is also an important consideration.

First Milk nutrient off-set scheme

5.7. The First Milk project, now entering its fourth year, was developed as part of the operational permit issued to the creamery at Haverfordwest. This scheme meets the specific permitting conditions issued under the wider Environmental Permitting (EPR) approach implemented by Natural Resources Wales (NRW). Modelled Nutrient emission savings delivered by each participating farm are recorded and independently audited annually by ADAS as part of the permit specifications.

5.8. The chosen approach requires farmers to select nutrient mitigation measures appropriate to their farming systems. The impact of each measure in terms of reduced emissions of nitrate, phosphorus and soil particulates has been modelled using the ADAS Farmscoper decision support tool¹⁷.

5.9. Farmers participating in the nutrient off-set scheme select the mitigation measures most appropriate and achievable for their own enterprises. This allows the creamery to fulfil the quota of the required reduction in nutrient emissions so that it can achieve compliance with its operating permit.

5.10. There are currently 22 farms participating in the scheme, 12 of which drain into the Cleddau catchment. Each of the farmers are, on average, achieving modelled savings of a tonne of nitrate annually. The output data from the Farmscoper model quantifies the reduction in pollutant losses and allows comparisons between farms and location. The economic benefit is easily quantifiable and participation in the scheme has been important in driving behaviour change within the cohort of participating farmers.

5.11. In the context of the Welsh Government Nitrates Review, opportunities to build on the foundation of the First Milk Nutrient off-set scheme emerged as a potential outcome-focussed solution delivering measurable reductions in nitrates in agriculture in line with the ambition of the EU Nitrates Directive.

Blue Flag Farming (BFF)

5.12. BFF is a farmer led, partnership approach to delivering positive environmental outcomes for water through a process of earned recognition. It seeks to build on and learn from the experiences of the First Milk Nutrient off-set scheme and includes active involvement of a number of key farmer owned co-operatives in Wales.

5.13. The proposal is underpinned by the Farmscoper methodology, with the ambition being to expand farmer participation from the number currently required for the First Milk Nutrient off-set scheme. The development of a pan-Wales approach would be achieved through a process of progressive farmer engagement:

Tier 1 Collect baseline data using Farmscoper;
Identify and commit to undertaking nutrient mitigating measures as identified and documented in Mitigation Plan and developed via a mobile App;
Develop risk assessments for range of farming activities including slurry storage and spreading;
Commit to employing trained and approved contractors for on-farm activities.

Ambition – widespread uptake and engagement

¹⁷ This is an Excel-based system which was originally developed for policy analysis, as part of a Defra funded project. The model comprises a 'library' of approximately 100 mitigation methods which can be used to address diffuse water pollution, greenhouse gas emissions and ammonia emissions from agriculture.

Tier 2 Undertake audit of Mitigation Plan;
Advisory engagement with Natural Resources Wales, Farming Connect and other bodies;
Identify and commit to undertaking more environmentally beneficial mitigating measures (as documented in the Mitigation Plan).

Ambition to achieve 15% decrease in Nitrate emissions

Tier 3 Undertake audit of Mitigation Plan;
Identify and commit to further mitigating measures (as documented in the Mitigation Plan);
Engage and evidence relevant Continuing Professional Development (CPD).

Ambition to achieve 25% decrease in Nitrate emissions

5.14. The mitigation model works for all sectors and the aim is to show a measured percentage improvement from baseline.

5.15. The use of flags on the farm gates of all participants (with differentiation for each tier of progress) would be highly visible and ensure both public and industry recognition. A system of annual audit would establish the concept of 'earned recognition' which could be recognised by the regulator. This would result in fewer regulatory inspections on participating farms, subject to these farms being demonstrably lower risk via the scheme audit. This approach could also enable reallocation of compliance / enforcement resources to focus on higher risk farmers / those who choose not to enter the programme.

5.16. The role of agricultural contractors has been identified as being of critical importance, especially in relation to slurry spreading. For this reason, the development of a Code of Practice for Agricultural Contractors is seen as central to the BFF approach. This would include training and CPD, minimum maintenance standards, the deployment of the latest technologies including GPS and flow meters to monitor slurry applications, precision farming techniques as well as digital record keeping. Incorporating all of these as requirements of BFF ensures that markets develop for 'best practice' operators.

Taking forward the BFF concept

5.17. The Cabinet Secretary's written statement has provided further impetus to take forward the development of the BFF concept. So far, this has included consideration of the Farmscoper-farmer interface. The Farmscoper tool was originally designed for policy analysis and building on the experience of the First Milk off-set scheme which deploys a 'consultant led' approach to support farmer interaction with the Farmscoper model, as a result of which there has been recognition of the need to develop an improved interface between Farmscoper and farmers. This will be critical if farmers in sufficient numbers are to engage with this modelling tool.

5.18. BFF are currently actively pursuing the development of a mobile App with a leading software company. This tool will provide farmers with a simple, easy to use

tool to capture all key farm data and will work on or offline. The tool will include a schedule of data requirements with an in-built programme of alerts for farmers so data can be added in a phased way. The tool will utilise a cloud based solution with data submitted to a reporting suite. A comprehensive suite of reporting tools designed for the target audience will be available online and with automated notifications.

5.19. Sample screenshots of the data capture tool are available. BFF are now keen to progress the development of the App which includes software development and user testing.

5.20. Work is also underway to take forward the development of a comprehensive package of training and CPD for on-farm contractors. This includes dialogue with the skills organisation for the land-based industries (Lantra) on the development of a specific accredited training course on the environmental risks associated with slurry spreading. This has been identified as a gap in that it does not exist within the Farming Connect framework currently, although it is anticipated that it could be included in the Farming Connect 'offer' once the development work has been completed.

5.21. Farmer buy-in is critical to success and promotion work has included farmer meetings across Wales via the farming unions as well as wider stakeholder engagement. This includes ongoing discussions with a number of Wales's leading co-operatives including First Milk, Puffin Produce, Clunderwen & Cardiganshire Farmers and the Pembrokeshire Machinery Ring who have potential to lever support from the membership of their respective organisations. Further meetings with co-operatives across Wales are planned. Support for BFF has been very encouraging.

5.22. In moving to the next phase of BFF development, the WLMF sub-group on agricultural pollution identify progress is required in a number of key areas (in addition to those areas described above) relating to the overall operational framework of a voluntary approach, including:

- Advice, guidance, skills and training – in addition to the contractor work stream identified above, an appraisal of the support farmers will require to assist both with using the BFF App as well as the deployment of the mitigation measures identified;
- Central data capture mechanism – consideration of where and by whom data collected via the BFF App will be held, data sharing requirements to demonstrate earned recognition etc;
- Modelling tool – consideration of Farmscoper and whether this has vigour and acceptability of the wider stakeholders to underpin BFF; this includes understanding if, as a modelling mechanism, it can robustly evidence measurable improvements in water quality at farm, catchment and all Wales level;
- System of a verifiability/auditability – to ensure that commitment to mitigation measures via the BFF App at farm level are delivered and can be verified in line with earned recognition approach;

- Governance of the farmer led BFF – the development of an overall governance and accountability framework that also has the confidence of Welsh Government and NRW;
- Communication and engagement plan – moving towards the user testing and implementation phases, a comprehensive strategy to raise awareness, provide information and pro-actively engage farm businesses with the BFF approach;
- Resources – an appraisal of the resources required to take forward the development of BFF concept to implementation stage together with the preparation of a detailed project plan together with exploration of funding avenues;
- Integration with wider policy agenda – in line with SMNR principles understanding how and where BFF aligns with the overall policy agenda including post CAP agricultural policy and developing a sustainability brand values programme.

5.23. The sub-group identified that some of the areas can be progressed by BFF themselves and other aspects will rely on a high level of co-operation and direction from the WLMF sub-group on agricultural pollution as well as broader policy areas.

5.24. Areas requiring consideration by the WLMF sub-group on agricultural pollution to provide direction to BFF will also provide useful guidance to other parties interested in developing voluntary approaches.

Recommendation 5.1: In the coming months the WLMF sub-group on agricultural pollution will consider and provide direction in the areas of systems of a verifiability/auditability and integration with wider policy agenda, guidance and governance to support the next phase of BFF development and the development of other potential earned recognition voluntary approaches. It is suggested this work is undertaken by means of a Task & Finish Group approach.

Recommendation 5.2: As part of the Task and Finish Group, Welsh Government and NRW will be required to develop guidance for approved assurance schemes which need to include:

- **How assurance schemes become approved assurance schemes for water quality**
- **How approved assurance schemes operate post approval by the WG and NRW**
- **How the WG and NRW manages earned recognition through approved assurance schemes; and**
- **How enforcement authorities remove earned recognition.**

NRW Partnership Application

5.25. To support the resourcing of the next phase of development, the WLMF sub-group on agricultural pollution led by NFU Cymru has made an application for NRW Partnership Funding. This project aims to explore options to develop farmer-led approaches to delivering water quality improvements.

5.26. If successful, funding will facilitate the appointment of one full-time project manager/technical lead to take forward development a farmer-led approach.

5.27. This application has progressed successfully through the Expression of Interest phase and is currently at the full application stage. If the funding application is successful, it is anticipated to commence at the earliest possible opportunity and will run until 31 December 2019.

Recommendation 5.3: NFU Cymru to take forward the full application for NRW Partnership Funding to provide resources for project development. The aim is to enter this phase of work by July 2018 (subject to successful application)

Farmer engagement

5.28. In addition to the work described we recognise that farmer engagement and raising awareness will be key if we are to make progress.

5.29. As a partnership of organisations we have been extremely active in this area working within our respective membership networks and putting in place mechanisms to raise awareness of the role of farmers in improving water quality in Wales as well as engagement in the development of a voluntary approach.

Recommendation 5.4: WLMF sub-group on agricultural pollution membership to continue to raise awareness and secure 'buy-in' for a voluntary approach within their respective organisations and explore opportunities for a farmer engagement event (summer 2018)

Wider stakeholder engagement and engagement with farm assurance bodies

5.30. The WLMF sub-group on agricultural pollution and representative organisations have also undertaken significant engagement with a range of organisations and related projects with an emphasis on promoting an understanding of the work that is being undertaken by the sub-group as well as learning from others, within and beyond Wales' borders.

Wider context

5.31. Parallel to taking forward the development of the BFF concept, the sub-group is aware that research work has been undertaken by Welsh Government and partners to understand the potential of developing a Sustainability Brand Values programme for the agri-food sector. Substantiated through farming practice, the 'Brand Wales' concept would build on Wales's reputation as food producers to world leading environmental and animal health and welfare standards and be driven by a vision of high environmental and broader sustainability standards.

5.32. Evidence to date shows that building a Sustainability Brand Values programme for Wales needs to be focussed on delivering a sustainable farming and food supply chain for Wales to achieve multiple objectives and deliver against the three pillars of sustainability. It requires a national approach to setting standards/criteria, national monitoring and auditing to ensure it delivers against the Well-Being of Future Generations and Environment Acts.

5.33. To ensure integrity and for it to have acceptance against a number of significant policy agendas it is vital that whatever criteria/standards are included in the scheme, these (i) stand up to the most robust scientific interrogation, (ii) can be measured by the correct process to avoid the variability that currently occurs with carbon/sustainability accounting tools in the market place and (iii) have the ability for farm data to be aggregated and analysed at a national level so trends can be determined for a range of reporting and promotional requirements.

5.34. Whilst the Sustainability Brand Values Programme seeks to understand the focus areas that would be required to underpin such a programme, work undertaken via the RDP funded Climate Smart Agriculture programme over the last two year period has taken forward the development of the carbon theme. The aim of this project is to inform and support the Welsh Government Decarbonisation Programme for the sector by exploring GHG mitigation and adaptation options for Welsh livestock as well as specifying a monitoring tool for farmers in Wales. This tool is currently at the beta testing stage across 250 farms in Wales (reporting May 2018).

5.35. Clearly, there are parallels and opportunities for shared learning in taking forward the development and roll-out of standards for carbon and water. Ensuring coherence across a number of key areas or sustainability standards (including water quality) will bring synergistic benefits.

5.36. For this reason collaborative work has taken place to explore opportunities to develop a unified sustainability framework which not only will provide a unique selling point for Wales but also provide the evidence required by Welsh Government to prove regulation equivalency in a post Brexit timeframe.

5.37. The WLMF sub-group on agricultural pollution recommendation is to bring all of this work together. In terms of moving forward, the sub-group would make the following recommendations to advance this core theme:

Recommendation 5.5: WLMF sub-group on agricultural pollution to be tasked with defining 'what good looks like' for water in terms of regulation, voluntary approaches and payment for ecosystem services to be able to support and influence the Sustainability Brand Values Programme for Wales (Brand Wales) and wider context of the development of a future agricultural policy.

Recommendation 5.6: WLMF sub-group on agricultural pollution will continue to work closely with the group developing Brand Wales so that work streams become integrated when appropriate. Our recommendation is that water quality must be one of the underpinning values within a sustainability brand.

Chapter 6 Better advice and guidance

6.1. Ensuring better advice and guidance is taken up by farmers is one of the five core themes. It is an area where the WLMF sub-group on agricultural pollution has been active in delivering. This is not only in terms of members organisational remit but also through working in partnership with Farming Connect to develop and deliver a national and targeted bespoke work programme in relation to improving water quality.

6.2. The WLMF sub-group on agricultural pollution has also developed an integrated communications plan to provide strong consistent messages to farmers on nutrient management and pollution reduction. This on-going knowledge transfer and training of farmers on their responsibilities will be crucial to success. (Annex 3).

6.3. The role of advice, guidance and training is fundamental in any industry. The agricultural sectors are not an exception. There are currently many methods of engaging with Continuous Professional Development (CPD) and the segmentation analysis undertaken by Welsh Government illustrates that one method of engagement does not suit all. Although Farming Connect is a strategic framework to encourage farmers to engage with advice, guidance and CPD, this sits outside of other mechanisms such as earned recognition or conditional access except where attendance at national events is required to be able to access Farm Business Grants.

Recommendation 6.1: In the longer term, develop possible mechanisms which encourages engagement with advisory services and CPD potentially aligned with opportunities such as the development of Brand Wales or earned recognition.

Recommendation 6.2: in the longer term, evaluate the possibility of linking future CPD, advice and guidance to strategic initiatives to support delivering outcomes through all mechanisms such as 'Brand Wales', Natural Resource Management Framework including area statements, and future funding for delivering public goods.

Provided by Regulators

6.4. Understanding 'what good looks like' in terms of standards to be reached for regulation, voluntary approaches, best practice and payments for ecosystem services is difficult to determine from resources that are currently available. Written information is provided by the regulators (Welsh Government and Natural Resources Wales) in relation to their respective functions. This is sometimes difficult to find on their websites (Welsh Government, Health and Safety Executive and Natural Resources Wales) and to get in-depth information in relation to requirements may require several websites to be visited although these are not always well-connected. For example, the Best Practice Code for sheep dipping resides on the WG website, the application and information needed to apply for a permit to be able to dispose of sheep dip resides on the NRW website, the legal requirements on chemical use reside on the HSE website. The further development of .GOV.WALES may provide an opportunity to address these kinds of issues. The issue of digital exclusion not

only in terms of the skills required, but also in terms of infrastructure to support adequate broadband in Rural Areas is a significant issue.

6.5. The Code of Good Agricultural Practice provides most of the information but is being updated by WG. It currently does not include all regulatory requirements in relation to solving agricultural pollution. In addition, the Code of Good Practice does not meet the standards required by the Better Regulation Executive in that regulations should be clear and simple, and guidance, in plain language, with law and best practice clearly distinguished.

Recommendation 6.3: There is an urgent need to complete the update of the Code of Good Agricultural Practice in line with the recommendations of the Better Regulation Executive which will provide an opportunity for wider engagement with the Farming Sector in relation to Water Quality

Recommendation 6.4: A one stop shop for information provision in relation to regulation for agriculture should be considered and how this fits with GOV.WALES principles and development needs to be evaluated.

6.6. Farm Liaison Officers are an established and respected point of contact for some sectors of the agricultural industry. The Welsh Government's publication "When the inspector calls" was developed as part of the "Working Smarter" initiative. The publication has been well received by Welsh farmers in the main, and could be updated to reflect current regulations in relation to water quality and be promoted as a one-point reference for farmers.

Recommendation 6.5: The WLMF on agricultural pollution will work with WG to bring wider regulation associated with water quality improvements into the 'When an Inspector Calls' booklet.

Recommendation 6.6: The WLMF on agricultural pollution will translate what 'good looks like in terms' of standards to be reached for regulation and good practice into readily available guidance which is easily accessible suitable for the different ways the agricultural sector like to engage with information.

Provided by the Sector

6.7. Information is also provided by Assurance Bodies (Farm Assured Welsh Livestock, Red Tractor) and other industry representatives (HCC, AHDB and Farming Unions). Information from the Assurance Bodies outlines what is required in relation to the outcomes to meet the standards for each individual certification. Although this is a source of information which is informative and very useful in helping to drive change in the industry, it may not directly reflect legal obligations and does not differentiate between legal and good practice requirements. Information provided may not reflect the legislative framework in Wales especially where there is differentiation from England. However the WLMF sub-group on agricultural pollution will continue to work with these bodies and in the context of the Sustainability Brand Values Programme.

Other advice and guidance providers

6.8. We further identify that there are a range of other projects funded via RDP or other sources that seek to work with farmers to improve water quality. Farmers in Wales have a good track record of engaging with such approaches, however, project based approaches can add complexity with farmers uncertain as to where they should go for advice and guidance, and on occasions with differing projects competing for farmers attention. The ‘stop-start’ project approach can also run counter to the long-term thinking required to deliver meaningful outcomes, not least because experience shows that farmers develop long lasting trusted relationships with their key advisers. In addition, the sub-group is also keen to ensure that where public funds are deployed, that advisers are suitably qualified and that adequate quality assurance mechanisms are in place.

Recommendation 6.7: There should be enhanced strategic oversight of projects funded via the RDP and other public funding sources by, for example, the WLMF sub-group on agricultural pollution. A quality assurance mechanism should be developed to ensure projects aimed at working with farmers on the issue of water quality are appropriate and employ suitably qualified individuals.

Recommendation 6.8: Natural Resources Wales should consider appointing a pan-Wales Farm Liaison Team, along similar lines to that established within Welsh Government, to ensure there is a network of staff on the ground with appropriate skills to provide advice and guidance to the sector on regulation and good practice.

Farm Advisory and Consultant Organisations

6.9. Engagement with advisory and consultant organisations is on a voluntary basis and may not necessarily include advice in relation to delivering water quality. Uptake of current advice packages may not coincide with areas where water quality is challenged. We are fortunate in Wales to have this national advisory service through Farming Connect which goes beyond the cross-compliance requirements for the Common Agricultural Policy. Since October 2015, over 1000 farmers have applied for funding for a Nutrient Management Plan (NMP) prepared through Farming Connect’s Advisory Service. These plans provide farmers with bespoke advice tailored to their individual farms which will benefit the environment, improve farm soils and reduce expenditure on inputs.

6.10. A Farming Connect registered business can access advice, visit focus sites and demonstration farms, get involved with discussion groups, knowledge hubs and learning opportunities. Some aspects are fully funded whereas others are only part funded. Each Business can access advice on a range of specific issues up to a maximum of four times, depending on eligibility, throughout the duration of the Welsh Government Rural Communities – Rural Development Programme 2014 – 2020. As of 26th March 2018, 1772 businesses have accessed instances of advice (between once and four instances) with 1% of business have already accessed the programme a maximum number of times and 3% having already accessed the programme three times. There is a risk that some businesses will reach the

maximum number of instances before 2023, which will result in limiting the advice on issues relating to reducing agricultural pollution.

A national and targeted campaign to improve understanding and deliver advice and guidance to improve land management practices with the aim of reducing agricultural pollution.

6.11. WLMF sub-group on agricultural pollution are working with Farming Connect and have commissioned through the *concept to delivery* process a national and targeted campaign to improve understanding and deliver advice and guidance to improve land management practices with the aim of reducing agricultural pollution (Annex 4).

6.12. Initial training of Farming Connect staff in relation to the campaign to improve understanding with the aim of reducing agricultural pollution, was undertaken in January 2018 and involved staff from NRW and the Farm Liaison Service. Further CPD opportunities have been planned for Farming Connect field force.

6.13. The targeted campaign across 28 water bodies has commenced and Farming Connect will be arranging 15 events to provide specific advice and guidance to farmers within these targeted areas. The campaign will focus on maximising uptake and enabling translation to subsequent action on the ground. All members of the WLMF sub-group on agricultural pollution are encouraging their members who farm within the waterbodies to attend the meetings. Detail in relation to progress is outlined in Annex 5.

6.14. The increase in demand for support and training from farmers in relation to agricultural pollution in the whole of Wales has meant that there are some capacity issues with regards to the availability of qualified consultants who can deliver and provide storage and nutrient management plans. This has resulted in the targeted campaign having to be staggered to manage expectations and deliver timely advice.

Recommendation 6.9: Farming Connect to urgently build further capacity in its network of advisors to ensure that there are sufficient consultants available to provide advice and guidance on water quality issues including farm infrastructure and nutrient management plans in Wales, bilingually when requested

Recommendation 6.10: Review success of the targeted and national Farming Connect programme and develop a long-term programme to address issues in priority catchments not yet targeted. This will include monitoring its implementation and impact and against improvements within the current catchments identified so that it can be adapt in-line with SMNR principle monitoring

Continuous Professional Development

6.15. CPD opportunities in relation to agricultural pollution are already being progressed by the Farming Connect programme. Modules in relation to contractors are being developed as part of the delivery support by the WLMF sub-group on agricultural pollution.

Recommendation 6:11: There is a need to build capacity of ‘change agents not only Farming Connect Development Officers’ for the agricultural sector; but also local contacts who are able to effectively engage and build trusting relations with farmers and initiate positive change.

Chapter 7 Improving the range of investment opportunities

7.1. While there are a range of actions farmers can take to help reduce pollution, or the likelihood of pollution incidences, those which are most effective often require significant investments on infrastructure, of the order of scores of thousands of pounds or more. As such, and in a climate of low average Welsh farm incomes and recovering dairy farm incomes, the cost of such infrastructure remains a significant barrier for many - particularly where profit is low, borrowings are already high, or where farmers are tenants.

7.2. Alongside the use of regulation and advisory services, the provision of investment funding supports farmers in taking action to reduce the risks of agricultural pollution.

7.3. The Wales Rural Development Programme (RDP) 2014-2020 contains a range of investment measures well suited to addressing water quality and agricultural pollution. These represent the immediate opportunities to support on-farm investment and include the Farm Business Grant (FBG), Sustainable Production Grant (SPG), Glastir Small Grant (GSG), Glastir Advanced and the Sustainable Management Scheme (SMS) – further information on each of the measures is described in Annex 6.

7.4. As part of the work undertaken by the WLMF sub-group on agricultural pollution, we have already met with the relevant Welsh Government officials to discuss both the FBG and the SPG. Following the sub-group's reviews of these schemes, we have provided written feedback on a number of additional items which would assist in driving improvements in water quality. Feedback has also been provided on the operational and eligibility aspects of the schemes.

Recommendation 7.1: Explore whether agricultural contractors can be enabled to access funding under both the FBG and the SPG.

Recommendation 7.2: Explore the benefits of removing the £1m turnover limitation currently applied to both the FBG .

7.5. Whilst a suite of incentive mechanisms has been developed as part of the current RDP, these are intended to address a wide range of natural resource management, economic and social issues across Wales. Approaching the RDP from the direction of a single issue, such as reducing agricultural pollution, helps to provide an alternative perspective.

7.6. In terms of reducing the risks of agricultural pollution, the question of how the various measures are now being deployed – and whether they are being used to full advantage – requires further detailed consideration. Good evidence is available from previous RDP evaluations to support continued investment in capital items. The purpose of this is twofold. Firstly to identify where the implementation of the existing suite of measures can be improved and secondly to inform the development of post Brexit policy.

7.7. The Catchment Sensitive Farming scheme and the Glastir Efficiency Grant scheme resulted in improved manure and nutrient management and increased

manure storage capacity¹⁸. Modelling work undertaken on 12 farms which had received support under the former scheme showed that nutrient losses from yards and hardstanding were negligible following the mitigation work carried out; monitoring of run-off also showed improvements. Additional benefits came from the fencing off water courses from livestock, the separation of clean and dirty runoff from impermeable surfaces, and from the improvement of manure spreading equipment.

7.8. Whilst addressing the scale of the budget now required will be a challenging exercise, there appears to be a clear opportunity to increase the existing allocation for the RDP investment measures, not least now that both the SPG and FBG have been refocussed on resource management efficiency. An increased level of engagement with both farmers and contractors over the whole issue of agricultural pollution is now starting to result from work of the WLMF's partnership as well as the specific Farming Connect programme. In particular, the targeted and the national campaigns on agricultural pollution being delivered as part of the commissioned Farming Connect work are likely to result in an increased number of applications under both the FBG and the SPG.

7.9. The timeframe available for the deployment of investment support is also highly relevant. In the context of Brexit, we understand all existing RDP investment schemes will continue to operate until such time as the requirements of the CAP no longer apply. The UK Government has previously confirmed that it will guarantee EU funding for structural and investment fund projects (including agri-environment schemes) signed up until March 2019. It is unclear whether this commitment will be revised in view of the ongoing EU/UK negotiations over transitional arrangements.

7.10. If all the current RDP investment measures continue to operate along the same timelines (for Expression of Interest and full application) as currently, we have significant concerns that there will be insufficient time available for all applications to complete the process ahead of the March 2019 deadline. In such a scenario, we believe that an inability to provide investment support alongside advice and guidance, coupled with an improved approach to regulation, will seriously limit Wales' ability to make progress on tackling agricultural pollution.

7.11. With respect to the agri-environment measures, opportunities for measurable improvements at the scale required are diminishing. Applications for Glastir Advanced 2019 have greatly exceeded the funding available and extensions to Glastir Advanced will currently expire at the end of December 2019. The nature of the support which will be available to land managers post Brexit remains under discussion and the impact of the proposed transition period remains unclear.

¹⁸ <http://gov.wales/docs/wefo/publications/evaluation/171205-rdp-2007-2013-ex-post-accompanying-note-and-response-en.pdf>

Recommendation 7.3: The Welsh Government to consider increasing the budget allocation to investment measures and bringing forward application windows at the earliest opportunity.

Recommendation 7.4: The Welsh Government to provide further guidance to farmers on the timeframe under which the existing RDP investment measures will remain available to allow for focussed business planning.

Recommendation 7.5: Measures to support on-farm investment to be included in any new system of support post CAP.

7.12. As far as individual applicants are concerned, there remains significant complexity within the current funding system. This includes a lack of understanding about the range of schemes available and what they can fund. The use of application windows provides more certainty when managing budgets, but some farmers have been unable to make progress due to the lack of available application windows.

Recommendation 7.6: Explore opportunities to do more to co-ordinate the provision of investment funding through linking this to a strategic programme of awareness raising, including advice and guidance on water quality issues as well as more information on the 'offer' in the round i.e. the full range of funding mechanisms available, what can be funded through each mechanism as well as the application process for particular schemes.

7.13. The complexity of the current investment measures challenges our ability to develop a single coherent response which will lead to the right investments being taken forward in the right places to achieve the desired outcome. The advisory system plainly has a key role. During our fact-finding visit to Monmouthshire, the sub-group were impressed by the role that Farming Connect advisors can play in developing well designed and cost effective solutions to the management of slurry storage. This WLMF sub-group on agricultural pollution welcomes the Farming Connect intervention for facilitators to work with farmers and develop farmer led Expression of Interest for the next window of the Sustainable Management Scheme and hope that this facilitation will be available for other RDP schemes.

Recommendation 7.7: Explore the potential for deploying additional Farming Connect funded advisors with specialist skills in the design of integrated approaches to rainwater and slurry management in the farmyard and across the farm and other farm scale interventions which tackle diffuse and point source pollution.

7.14. All the RDP investment measures have different points of entry and require their own Expressions of Interest (EOI) and subsequent submission of a full application. Brigading all portfolios under a strategic plan designed to deliver the Natural Resource Policy priorities would enable limited resources to be deployed in the most efficient manner. Although a simplified approach in terms of application and delivery will be required from the perspective of the individual farmer, the framework behind the development and deployment measures must include multiple benefits in line with the delivery of SMNR. One example of where this is already taking place is the multiple benefit analysis now being undertaken to select measures for the

Climate Smart Initiative undertaken as part of the development of Sustainability Brand Values programme. The work currently will be useful in understanding how this can be taken forward. Further exploration will be needed to ensure that future policy measures can be fully oriented and integrated to deliver on that ambition.

Recommendation 7.8: Consider developing a single integrated programme of investment measures (supported by advice) that is specifically designed to address water quality and agricultural pollution.

7.15. Finally, with around 27% of land in Wales farmed by someone other than the landowner, we believe it is important to recognise challenges within the tenant farming sector and the need to improve the capacity of tenants to access funding so that they can overcome point source pollution issues related to infrastructure as well as reducing the risk of diffuse pollution. For example, we are aware that some landlords may not be willing, or are unable, to provide the finance needed to support construction of new slurry storage facilities even where tenancy agreements require that it is the landlord's responsibility (landlord improvements).

7.16. Tenants occupying under tenancy agreements regulated by the Agricultural Holdings Act 1986 may have access to the enforcement provisions under Section 11 of the legislation. However, these provisions are complex to use, take a very long time and are by no means a guaranteed route to success.

7.17. Tenant farmers themselves may be unable to leverage funds for what are very significant and costly investments. Tenants occupying under tenancy agreements regulated by the Agricultural Tenancies Act 1995 are particularly vulnerable. They lack any practical mechanism to require the landlord to provide new or updated slurry storage and may have lengths of term which are too short to justify the investment necessary to establish a new slurry store using their own resources or by borrowing money. Such problems can impact on the ability of tenants to continue in farming, with some potentially needing to reduce livestock numbers or stop livestock production altogether in order to meet regulatory requirements.

7.18. In addition, even where landlords are prepared to pay for new slurry storage capacity this may lead to an increase in the rent for the holding. However, grant aided investments can be excluded from rental calculations. Tenants who do not have the necessary security and access to funding may also face difficulties if they require their landlords' consent before investing in new fixed equipment on the holding. Sometimes this will require the tenant having to ask for the consent of the Agricultural Land Tribunal which again is a costly and lengthy process. Landlords may also object to tenants erecting new facilities as improvements to the holding which will have long term benefits, but will require the landlord to provide compensation to the tenant at the end of the lease. Some landlords are only willing to grant consent on the basis of fixed equipment being treated as tenant's fixtures where the tenants are not entitled to any compensation at the end of the lease. This also makes the investment decision much more complicated for the tenanted sector. However, the need to improve water quality still exists and should be considered as a priority for both tenant and landlord.

Recommendation 7.9: The timetable for enforcement proceedings to be taken in respect of tenant farms must allow for the time it will take to resolve any landlord/tenant disputes.

Recommendation 7.10: Public investment to promote new fixed equipment should be targeted at the active farmer and the farm business.

Recommendation 7.11: Facilitation services to aid tenant farmers to work with their landlords may assist in overcoming some of the challenges identified.

Recommendation 7.12: Changes to tenancy legislation in Wales might be needed if it becomes a barrier to progress.

Chapter 8 Identifying and Promoting Innovation

8.1. Investment in new techniques, and innovative approaches to ensure the sustainable management of the bi-products and polluting substances generated by modern farming practices has, perhaps, not progressed as quickly as it has in other sectors. This may stem from a range of factors. These include a lack of recognition or knowledge of the true value of the materials being lost from farm land as well as the impact that poor management of such substances can have. It may also stem from a lack of investment in research, management of assets, and techniques. Deterrents to pollute may be ineffective, or existing powers and regulation, including new experimental powers, may be applied in an inconsistent way or not to the fullest available extent.

8.2. Whatever the reason, the application of any bi-product to land, water or air can only be regarded as sustainable if the receptor, such as the soil, has the capacity to buffer this application through chemical or biological reactions or through adequate dilution. In the case of slurry (and other bi-products for agricultural benefit which are spread on land) the soil condition, level of crop uptake and time of year all have a part to play in determining how much nutrient can be added before the buffering capacity of the land is exceeded and nutrients leak into water. Additionally, if conditions are unfavourable, the slurry may be washed or blown away before it can deliver its nutrients to the soil.

8.3. Similarly the protection of soils from erosion and the pollution of air and water from agricultural chemicals represent major risks to both farming and the environment.

8.4. It is widely recognised that the application of bi-products to land involve valuable nutrients which can be potentially polluting if not applied appropriately; in fact they are vital and aligned with the circular economy approach embedded in the Natural Resources Policy.

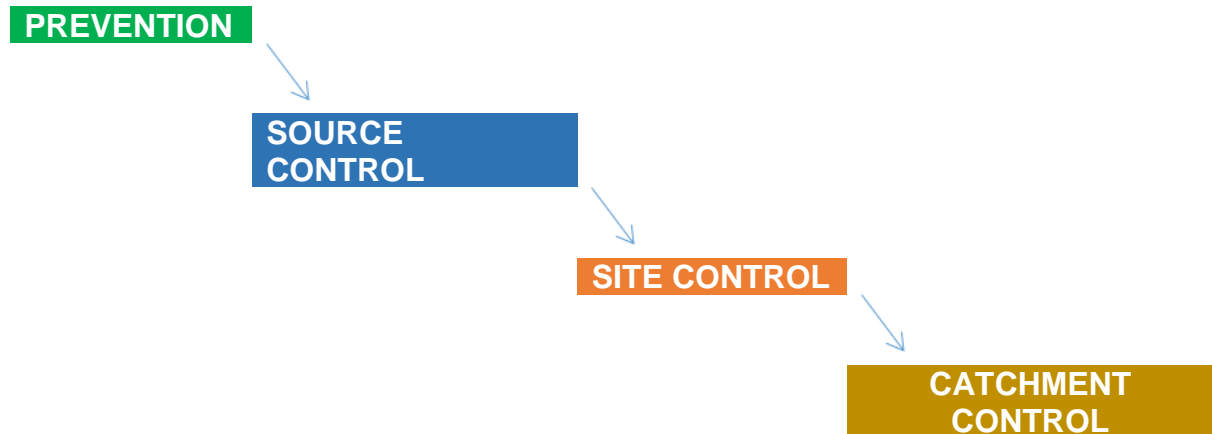
8.5. Through recognising the true impact of applying agricultural bi-products to land, along with accepting that, when appropriately managed, such bi-products have a value, there is the possibility of establishing a new market opportunities for Welsh agriculture as well as creating new businesses that can capitalise on this potential. The loss of soil is equally an issue which the farming community can ill afford to let happen. Such opportunities need to be recognised and exploited, both within Wales and further afield.

Principal of the Bi-product Processing Train

8.6. A major failing within resource management is trying to tackle problems at the point where the impact is felt. This is simply too late; we really need to look for the origins of a problem and develop approaches which can tackle it at source. The “processing train” approach can be used to consider additional or complementary solutions in a sequential manner as shown in the diagram below. In the case of diffuse pollution and erosion, for example, it is very difficult to tackle polluted surface run-off across a catchment. But it is possible, through legislation or other motivations, to tackle the sources of the pollution. For example, modified vehicle

emission standards improve air quality and with cleaner air there is less pollution deposited over the countryside. This in turn reduces the amount of polluted run-off.

8.7. The following four-step approach provides a framework for solving problems as close to their source as possible.



8.8. When seeking to address diffuse and point source pollution and erosion from agriculture, we need to look at the nature of the existing challenges. Initially we should consider how best to prevent the problem from occurring in the first place. Once the acceptable possibilities have been explored, but the problem still has not been fully eradicated we then move to consider the ways of tackling the issue at source. As these opportunities are exhausted (or found to be too costly or impractical) we move sequentially “downstream”. All too often we ignore prevention, or dealing with the source of the issue, and apply our solutions to the very last stage, the one where the impact is most heavily felt. Such late stage solutions are important, but ignoring the “upstream” solutions can end up being more costly and inflexible in the end.

Creating innovation and avoiding the jump to solutions

8.9. In the case of nutrient, soil and agro-chemical management we have an opportunity in Wales to engage with the Land Management Sector, SME’s and academia to explore not only existing ways of solving the challenges, but to also uncover new and innovative approaches which we are probably unsighted on. In the first instance we need a clear definition of what the problems are. Only once these challenges have been carefully described can we then explore what solutions may exist or are on the drawing board.

8.10. From the work undertaken by the WLMF sub-group on agricultural pollution, it is clear that current farming practices are often producing bi-products at a rate which exceeds the ability of local farm land to store and process nutrients effectively, or there are operational reasons which constrain the areas where material such as slurry can be applied; for example grazing regime, cuts of silage, storage capacity, equipment, or infrastructure. Once the nutrient level exceeds the buffering capacity of the land, the resulting excess either pollutes the soil itself or is washed off or blown away to pollute the environment.

8.11. Following the “Challenge” Processing Train approach ensures a logical sequence of questions are asked, and all potential solutions are considered. It is important that none of these potential solutions are discounted unless they are inappropriate, likely to be ineffective because of particular local conditions, or are too costly.

Table 3 – Four step approach to tackling agricultural pollution

PREVENTION	1. Prevent or reduce the nutrient concentration and volume of the bi-products, reduce risk of erosion, limit need for agro-chemicals
SOURCE CONTROL	2. The management of the nutrients, soil and agro-chemicals should be reviewed at source.
SITE CONTROL	3. Management methods should be considered at a farm level, or within small group of farms, to ensure it does not exceed the ability of the local environment to adequately remediate the impact and ensure sustainable management i.e. there should be no detrimental impact on the environment.
CATCHMENT CONTROL	4. Management methods should be considered at a sub-catchment or catchment level. Once again, the proposed approach should aim to ensure it does not exceed the ability of the catchment environment to adequately remediate the impact and ensure sustainable management.

Specific approaches.

8.12. The sub-group are already aware of a number of techniques, products and approaches that could deliver against many of the goals described above. Whilst considering these potential solutions; we also need to explore radically new approaches. In order to innovate, we must avoid falling straight into “solution mode”. Instead we must expose the challenges, such as the need to move slurry from being seen as simply a waste and convert it into a valuable product at a farm scale. We then need to invite as wide as possible an audience to understand our challenges and see if they have novel solutions. In similar cases we have found that parallel challenges exist in other sectors and solutions are already in place which could, with some investment, provide new approaches. In other cases, new thinking from another sector may help to deliver potential solutions.

8.13. The key to unlocking this approach is sufficient investment to enable existing and new approaches to be funded and trialled. Wales is uniquely placed to do this, having, as it does, a broad range of land and farm types, and world leading academic research facilities and innovative companies specialising in subjects of direct relevance to agriculture. The principal of kick-starting innovation is recognised within Government and numerous schemes at a European, Westminster and the Wales level exist in order to support innovation.

8.14. However, despite the encouraging opportunities afforded by initiatives like those driven through Innovate UK and the SBRI programme there are still obstacles to driving research, innovation and technology transfer. Examples include the time

taken in getting innovative ideas to the trial stage – as demonstrated by the slow start up of Prosiect Slyri at Gelli Aur.

8.15. Conversely an appropriate policy and regulatory framework can create the framework needed to encourage uptake and provide confidence to the innovator and the market alike. Once the concept is proven the market itself can then often support the wider uptake required. The following table includes challenges that have been defined as part of the work undertaken by the WLMF sub-group on agricultural pollution. It also suggests some examples of approaches that could be employed. On both counts there are further challenges and approaches that could be defined.

8.16. The approach outlined above is not novel; it has successfully been used to kick start the Prosiect Slyri scheme at Coleg Sir Gar's Gelli Aur agricultural campus and led to the development of the DCWW/NRW Pestsmart programme for the recovery of unwanted agro-chemicals. NRW also has projects underway covering challenges to tackle metal mine pollution, remediate soil damaged by non-native invasive plants and widescale data gathering which pin-points environmental change in real time. Support is available from Government, academia and the sector to both define the challenges and to support innovative steps which not only solve the problem, but have the potential to establish new "sector" industries/products in Wales. There are also existing tried and tested approaches which may be ready to be commissioned. For these we need to ensure easier routes to market and incentivise uptake.

8.17. Through adopting the "Challenge" Processing Train approach the sector should be able to find the right solutions at the right scale for the diffuse and point source pollution challenges we face.

8.18. The role of farmers in developing innovative approaches or technologies is also key. As practical people who know their land they have an important role in identifying solutions, the BFF represents an example of farmers exploring how they can work together to deliver a positive environmental outcome. The development of a framework that positively empowers farmers to become innovators has to be prioritised. The European Innovation Partnership (EIP) aims to solve common agricultural and forestry problems by bringing people from practical and scientific backgrounds together. In relation to water quality we are aware that the EIP is currently considering an application for reed bed construction and a blueprint for design that could achieve compliance with regulation in Wales. Reed beds could be used for treating dirty water and reducing the burden of slurry storage, therefore, reducing pollution risks. This particular EIP application has not yet received approval and is an example, of where administrative processes need to be accelerated.

Table 4 – Four step approach to tackling agricultural pollution – challenges and innovation

	Examples of Challenges	Examples of Innovation
PREVENTION	Reduce the amount of nutrients produced by dairy cattle/beef cattle/poultry	<ul style="list-style-type: none"> • Precision Feed Management • Scrubbers • Innovation
	Reduce the need for Agro-Chemical and vet medicines use	<ul style="list-style-type: none"> • Stock husbandry • Innovation
SOURCE CONTROL	Reduce the quantity of slurries and manures in sheds and parlours	<ul style="list-style-type: none"> • Smart rinsing systems • Absorption systems – bedding • Slurry separators • Innovation
	Reduce the quantity of slurries and manures on tracks, pathways, uncovered yards and applied direct to land	<ul style="list-style-type: none"> • Cleaning systems • Surface design and structure • In field drinking troughs & riparian fencing • Innovation
SITE CONTROL	Develop a unique and saleable product from slurry	<ul style="list-style-type: none"> • Energy production • Soil Improvers • Innovation
	Manage slurry to enable integration into modern farming systems	<ul style="list-style-type: none"> • modelling to match nutrient production to land handling capacity • “Slurry wise” app • Reed Bed treatments • Innovation
	Reducing soil erosion	<ul style="list-style-type: none"> • Riparian fencing & buffer strips • Under-sowing maize crops • Innovation
CATCHMENT CONTROL	Managing slurry to enable export at low risk from particular catchment	<ul style="list-style-type: none"> • Hub slurry collection and treatment (eg AD) • Development of nutrient markets • Knowledge gathering • Innovation
	Reducing Chemical pollution	<ul style="list-style-type: none"> • Water Treatment enhancement • Weed-wiper equipment • Innovation

Recommendation 8.1: The WLMF sub-group on agricultural pollution will aim to better define the challenges as we progress our work during 2018 and expand these to include challenges associated with soil run off and agri-chemicals. We will then work with Innovation Groups, including those in Government, to find the opportunities to allow innovation to happen.

Recommendation 8.2: The WLMF sub-group on agricultural pollution will work with the sector to identify the range of existing products that may also assist in delivery of pollution reduction. We will explore how these can be better accessed by those who will benefit. A good existing example is the service provided by Dwr Cymru Welsh Water in making Weed Wipers available for hire. A key part of the work of the WLMF sub-group on agricultural pollution will be to ensure how equipment, funds and knowledge are all made readily accessible through the various delivery methods of the sector. This work will include influencing future funding schemes and helping develop future PES approaches.

Recommendation 8.3: The WLMF sub-group on agricultural pollution also recognises the importance that regulation can play in enabling the development and uptake of innovative approaches. The sub-group will consider how to create the right regulatory environment to encourage innovation.

Chapter 9 Summary of recommendations

Recommendation 3.1: WLMF to aim to commission further analysis of the root causes of agricultural pollution. This in-depth analysis will benefit the work of group in the longer term by continuing to build a common understanding of the direct and indirect causes of pollution.

Recommendation 4.1: Building on the constructive stakeholder process established to date, as a matter of urgency, the sub-group, seeks the mandate to continue to develop a consensual understanding of the present issues (gaps, enforcement, effectiveness) within the regulatory landscape.

Recommendation 4.2: A key perceived gap for further exploration and urgent attention of the sub-group is the absence of effective regulation around slurry spreading practices, beyond the limited scope and effectiveness of cross-compliance and the best practice encouraged by CoGAP. It is recognised that poor practice in this respect is implicated in many slurry pollution incidents.

Recommendation 4.3: Working closely with Welsh Government & key stakeholders, the WLMF sub-group on agricultural pollution should fully explore the potential of basic measures as a means to address clear and present gaps in the regulatory landscape, to tackle agricultural pollution in the critical zone between good practice and strict liability offences.

Recommendation 4.4: The sub-group, with assistance from Welsh Government, NRW and stakeholder bodies, should explore the most effective means to deliver nutrient management planning at scale and at pace. Advice and guidance, practical support, voluntary approaches, innovation and regulation may all have a role to play in driving wide-scale adoption of NMP. Assessing the present practice and effectiveness of NMP is an important first step. The use of nutrients needs to be science based on soil and nutrient testing to ensure correct application to match crop needs.

Recommendation 4.5: SSAFO review should be revisited by Welsh Government, the sub-group & NRW in the context of the wider integrated review of the regulatory landscape undertaken by the Sub Group, recognising the importance of slurry storage in addressing agricultural pollution. The review needs to remain very clearly focussed on outcome (keeping slurry out of waterways) and the scale of risk to achieving that outcome represented by the presence and absence of different structures on farms. The 1991 issue, the capacity calculations and construction standards / compliance need to be framed in this manner, drawing on evidence of risk and outcome.

Recommendation 4.6: As a first step in this direction, in order to raise awareness within LPAs or their role in addressing agricultural pollution as well as exploring new approaches and highlighting issues with the existing approach, the Sub-Group should seek to convene a workshop with representatives from LPAs across Wales. This event needs to be timed to coincide with the imminent LDP revision process.

Recommendation 4.7: Based on the prior preparation of a clear risk analysis, the appropriateness of an EPR intensive farming approach, most likely for larger dairy units should be explored by the sub-group, Welsh Government & NRW in the context of a wider integrated review of the regulatory landscape. Elements from the existing regime for pigs and poultry should be considered, with new measures according to need.

Recommendation 4.8: NRW & Welsh Government with close liaison with the sub-group should develop a plan for use of civil sanctions to be explored across appropriate aspects of regulatory landscape.

Recommendation 4.9: Development work is needed by the sub-group, NRW, RIW and the leads on the voluntary proposal to determine what the earned recognition offer could be, particularly in respect of supporting the voluntary farmer led initiative.

Recommendation 4.10: NRW should review its operational approach to prioritising and managing enforcement procedures relating to agricultural pollution and share findings with the sub-group.

Recommendation 4.11: Welsh Government should consider urgent new funding / funding rationalisation as part of the commitment to addressing agricultural pollution. Review needed of present picture of investment with sharper outcome-based focus. Review should explore the case for further funding to i) provide specific incentives targeted at encouraging best practice; ii) support sophisticated advice and guidance; iii) provide trained, skilled liaison officers; iv) ensure adequate compliance and enforcement effort; v) provide the human resources to continue to develop the work of the WLMF sub group on agricultural pollution (secretariat etc.)

Recommendation 4.12: More widely, the sub-group need to assess the contribution of soils to poor water quality and means to address this issue, drawing on the considerable evidence base developed as part of the River Basin Management Plan process.

Recommendation 5.1: In the coming months the WLMF sub-group on agricultural pollution will consider and provide direction in the areas of systems of a verifiability/auditability and integration with wider policy agenda, guidance and governance to support the next phase of BFF development and the development of other potential earned recognition voluntary approaches. It is suggested this work is undertaken by means of a Task & Finish Group approach.

Recommendation 5.2: As part of the Task and Finish Group, Welsh Government and NRW will be required to develop guidance for approved assurance schemes which need to include:

Recommendation 5.3: NFU Cymru to take forward the full application for NRW Partnership Funding to provide resources for project development. The aim is to enter this phase of work by July 2018 (subject to successful application)

Recommendation 5.4: WLMF sub-group on agricultural pollution membership to continue to raise awareness and secure 'buy-in' for a voluntary approach within their respective organisations and explore opportunities for a farmer engagement event (summer 2018)

Recommendation 5.5: WLMF sub-group on agricultural pollution to be tasked with defining 'what good looks like' for water in terms of regulation, voluntary approaches and payment for ecosystem services to be able to support and influence the Sustainability Brand Values Programme for Wales (Brand Wales) and wider context of the development of a future agricultural policy.

Recommendation 5.6: WLMF sub-group on agricultural pollution will continue to work closely with the group developing Brand Wales so that work streams become integrated when appropriate. Our recommendation is that water quality must be one of the underpinning values within a sustainability brand.

Recommendation 6.1: In the longer term, develop possible mechanisms which encourages engagement with advisory services and CPD potentially aligned with opportunities such as the development of Brand Wales or earned recognition.

Recommendation 6.2: in the longer term, evaluate the possibility of linking future CPD, advice and guidance to strategic initiatives to support delivering outcomes through all mechanisms such as 'Brand Wales', Natural Resource Management Framework including area statements, and future funding for delivering public goods.

Recommendation 6.3: There is an urgent need to complete the update of the Code of Good Agricultural Practice in line with the recommendations of the Better Regulation Executive which will provide an opportunity for wider engagement with the Farming Sector in relation to Water Quality

Recommendation 6.4: A one stop shop for information provision in relation to regulation for agriculture should be considered and how this fits with GOV.WALES principles and development needs to be evaluated.

Recommendation 6.5: The WLMF on agricultural pollution will work with WG to bring wider regulation associated with water quality improvements into the 'When an Inspector Calls' booklet.

Recommendation 6.6: The WLMF on agricultural pollution will translate what 'good looks like in terms' of standards to be reached for regulation and good practice into readily available guidance which is easily accessible suitable for the different ways the agricultural sector like to engage with information.

Recommendation 6.7: There should be enhanced strategic oversight of projects funded via the RDP and other public funding sources by, for example, the WLMF sub-group on agricultural pollution. A quality assurance mechanism should be developed to ensure projects aimed at working with farmers on the issue of water quality are appropriate and employ suitably qualified individuals.

Recommendation 6.8: Natural Resources Wales should consider appointing a pan-Wales Farm Liaison Team, along similar lines to that established within Welsh Government, to ensure there is a network of staff on the ground with appropriate skills to provide advice and guidance to the sector on regulation and good practice.

Recommendation 6.9: Farming Connect to urgently build further capacity in its network of advisors to ensure that there are sufficient consultants available to provide advice and guidance on water quality issues including farm infrastructure and nutrient management plans in Wales, bilingually when requested

Recommendation 6.10: Review success of the targeted and national Farming Connect programme and develop a long-term programme to address issues in priority catchments not yet targeted. This will include monitoring its implementation and impact and against improvements within the current catchments identified so that it can be adapt in-line with SMNR principle monitoring

Recommendation 6.11: There is a need to build capacity of 'change agents not only Farming Connect Development Officers' for the agricultural sector; but also local contacts who are able to effectively engage and build trusting relations with farmers and initiate positive change.

Recommendation 7.1: Explore whether agricultural contractors can be enabled to access funding under both the FBG and the SPG.

Recommendation 7.2: Explore the benefits of removing the £1m turnover limitation currently applied to both the FBG .

Recommendation 7.3: The Welsh Government to consider increasing the budget allocation to investment measures and bringing forward application windows at the earliest opportunity.

Recommendation 7.4: The Welsh Government to provide further guidance to farmers on the timeframe under which the existing RDP investment measures will remain available to allow for focussed business planning.

Recommendation 7.5: Measures to support on-farm investment to be included in any new system of support post CAP.

Recommendation 7.6: Explore opportunities to do more to co-ordinate the provision of investment funding through linking this to a strategic programme of awareness raising, including advice and guidance on water quality issues as well as more information on the 'offer' in the round i.e. the full range of funding mechanisms available, what can be funded through each mechanism as well as the application process for particular schemes.

Recommendation 7.7: Explore the potential for deploying additional Farming Connect funded advisors with specialist skills in the design of integrated approaches to rainwater and slurry management in the farmyard and across the farm and other farm scale interventions which tackle diffuse and point source pollution.

Recommendation 7.8: Consider developing a single integrated programme of investment measures (supported by advice) that is specifically designed to address water quality and agricultural pollution.

Recommendation 7.9: The timetable for enforcement proceedings to be taken in respect of tenant farms must allow for the time it will take to resolve any landlord/tenant disputes.

Recommendation 7.10: Public investment to promote new fixed equipment should be targeted at the active farmer and the farm business.

Recommendation 7.11: Facilitation services to aid tenant farmers to work with their landlords may assist in overcoming some of the challenges identified.

Recommendation 7.12: Changes to tenancy legislation in Wales might be needed if it becomes a barrier to progress.

Recommendation 8.1: The WLMF sub-group on agricultural pollution will aim to better define the challenges as we progress our work during 2018 and expand these to include challenges associated with soil run off and agri-chemicals. We will then work with Innovation Groups, including those in Government, to find the opportunities to allow innovation to happen.

Recommendation 8.2: The WLMF sub-group on agricultural pollution will work with the sector to identify the range of existing products that may also assist in delivery of pollution reduction. We will explore how these can be better accessed by those who will benefit. A good existing example is the service provided by Dwr Cymru Welsh Water in making Weed Wipers available for hire. A key part of the work of the WLMF sub-group on agricultural pollution will be to ensure how equipment, funds and knowledge are all made readily accessible through the various delivery methods of the sector. This work will include influencing future funding schemes and helping develop future PES approaches.

Recommendation 8.3: The WLMF sub-group on agricultural pollution also recognises the importance that regulation can play in enabling the development and uptake of innovative approaches. The sub-group will consider how to create the right regulatory environment to encourage innovation.

The views, opinions and statements included in this report are those developed and agreed by the members of the Wales Land Management (WLMF) sub-group on agricultural pollution. As such, they may not necessarily mirror those of the partner organisations that each of the members represent. The information contained in this report is provided purely to inform, advise and generate debate on the possible ways of tackling agricultural pollution in Wales. Members of the sub-group have made every effort to produce a common, joined-up view and to ensure the accuracy and reliability of the information provided. Each member organisation reserves the right to continue to provide individual advice or different perspectives as new evidence emerges or in response to requests from their Governing bodies or members.

Annex 1 Wales Land Management Forum (WLMF) agricultural pollution sub-group - Terms of Reference

1. Background

1.1. Analysis of the Water Framework Directive (WFD) investigations programme for 2015 shows that agricultural practices are contributing to the failure of 110 water bodies.

1.2. Whilst uncertainty surrounds the future of the regulatory framework and the level of available resources following UK's decision to leave the EU, it is clear that diffuse and point source pollution both need to be addressed within Wales as soon as possible. More information is available within the recently published State of Natural Resources report (SoNaRR)¹⁹.

1.3. The Water Strategy for Wales sets out Welsh Government's priorities for water management up to 2020. The accompanying action plan makes a commitment to review the regulatory framework for diffuse pollution by 2018.

2. A strategic approach to tackling point source and diffuse pollution

2.1. This document establishes the terms of reference for the Wales Land Management Forum (WLMF) sub-group on Tackling Diffuse & Point Source Agricultural Pollution ('the Group').

2.2. The Group provides an opportunity for WG, NRW and stakeholders to explore and develop means for tackling diffuse and point source agricultural water pollution in Wales, in line with Welsh Government's commitment set out in the Water Strategy for Wales.

2.3 The Group will develop an approach in line with the principles of sustainable management of natural resources (as set out in the Environment Act (Wales), 2016); and existing statutory requirements, such as the Water Framework Directive, including Article 7 which aims to safeguard the quality of water abstracted for drinking.

2.4 The membership of the Group includes the Welsh Government (WG), the National Farmers Union Cymru (NFU Cymru), the Farmers Union of Wales (FUW), the Country Landowners Association (CLA), Tenant Farmers Association Cymru (TFA), Dwr Cymru Welsh Water (DWCC), Hybu Cig Cymru (HCC), AHDB Dairy and Natural Resources Wales (NRW). Other organisations may be invited to attend meetings and/or join the Group at the discretion of the Chair.

¹⁹ <https://naturalresources.wales/our-evidence-and-reports/the-state-of-natural-resources-report-assessment-of-the-sustainable-management-of-natural-resources/?lang=en>

2.5 The Group aims to take a Wales-wide approach to understanding and resolving the issue of agricultural pollution. It will engage with the River Basin Management Liaison Panels (Western Wales and the Dee) on progress in order that a coordinated approach is taken.

2.6 The primary purpose of the Group is to investigate, agree, report and deliver on potential solutions for tackling both diffuse and point source agricultural pollution in Wales. The group will also aim to achieve a more integrated approach to tackling agri-pollution issues on the part of all participating organisations whilst building links with related forums such as the River Basin Management Liaison Panels. Celebrating and communicating success will be a key part of this process.

2.7 The objectives of the Group are to:

- Undertake root cause analysis in order to achieve common understanding of the causes of agricultural pollution and the ways in which these are currently addressed;
- Identify potential options for legislative and non-legislative measures designed to address agricultural pollution;
- Estimate the resources required to deliver the changes required and appraise each option in terms of a cost benefit analysis as far as possible;
- Select a smaller number of priority options for further development, taking into account those likely to be the most beneficial in the context of other sources of diffuse and point source pollution;
- Adopt a partnership approach to identifying and bidding for the resources required to develop specific initiatives, and when appropriate act as the Steering Group during the implementation phase.
- Address the requirement to establish measurable targets for reducing the number of point source agricultural pollution incidents, tackling the extent of diffuse pollution and improving water quality over a specific timeframe;
- Raise awareness and commitment of key stakeholders within the WLMF, the Agricultural Strategy Partnership Group (Amaeth Cymru), relevant sector bodies such as AHDB Dairy and Hybu Cig Cymru (HCC), agricultural advisors within the banking sector and the River Basin Management Liaison Panels.

2.8 The above tasks will be undertaken in the context of other ongoing work which involves looking at diffuse pollution from the perspective of forestry, metal mines, septic tanks and other rural and urban land uses²⁰.

²⁰ <https://cdn.naturalresources.wales/media/4059/diffuse-water-pollution-in-wales.pdf?mode=pad&rnd=131596369370000000>

2.9 Group members will support the Chair, who will report back to Welsh Government (WG) and Natural Resources Wales (NRW) on the recommendations.

3. Approach to the work

3.1 As part of delivering the above objectives, the Group will:

- Review existing evidence and develop a robust base to underpin those immediate and longer term recommendations deemed necessary for tackling diffuse & point source agricultural pollution.
- Examine the agricultural components of the existing Natural Resources Wales - Diffuse Pollution Plan for Wales²¹ and assist with its ongoing review.
- Consider proposals identified as part of the recent 'NRW Scoping Exercise – Identifying Opportunities for Tackling Agricultural Pollution Issues and Promoting the Better On-farm Management of Nutrients'²².
- Ensure that the relevant Welsh Government work streams on Payments for Ecosystem Services (PES) are linked into the work of the sub-group.
- Take account of other Welsh Government and external groupings dealing with agricultural pollution so as to avoid duplication of effort and ensure that recommendations are developed in a co-ordinated way.
- Ensure that members of both the Welsh Government Water Forum and the River Basin Management Liaison Panels are kept informed of the work of the Group. Bearing in mind that there is a significant cross-over in membership between the WLMF and other groups working on water quality issues, it is anticipated that this will be done via short verbal updates rather than sharing of minutes.

4. Membership

4.1. Membership of the Group is based on the current structure of the Wales Land Management Forum (WLMF) which comprises membership-based land management organisations where the individual members have a direct role in managing land. Other organisations are represented on the Group where they have a major policy, implementation, funding or advisory role.

²¹ <https://www.naturalresources.wales/media/4059/diffuse-water-pollution-in-wales.pdf>

²² Available on request from Brian Pawson, NRW Agriculture Advisor

Role	Assigned Person
Chair	<i>Zoe Henderson (NRW Board Member)</i>
Members	<p><i>James Dowling (Welsh Govt Water Branch)</i></p> <p><i>Andrew Chambers (Welsh Govt Environment & Rural Affairs)</i></p> <p><i>Ryan Davies (Welsh Govt Environment & Rural Affairs)</i></p> <p><i>Betsan John (Welsh Govt Environment & Rural Affairs)</i></p>
Members	<p><i>Robert Vaughan (Head of NRW Sustainable Land Management Group)</i></p> <p><i>Sarah Hetherington (NRW Agricultural Advisor)</i></p> <p><i>Matt Lowe (NRW Senior Environment Officer, South Wales) OR Nichola Taylor (NRW Senior Environment Officer, North Wales)</i></p> <p><i>Geraint Weber (NRW Water Strategy Advisor)</i></p> <p><i>Rob McCall (NRW Innovation Team Leader)</i></p> <p><i>Meinir Wigley (NRW External Relations & Communications Team)</i></p>
Members	<p><i>Rhianne Jones (Country Land & Business Association) was succeed by Branwen Miles</i></p> <p><i>Bernard Griffiths (Farmers Union of Wales)</i></p> <p><i>Rachel Lewis-Davies (National Farmers Union Cymru)</i></p> <p><i>Dennis Matheson (Tenant Farmers Association)</i></p> <p><i>Phillippa Pearson & Steven Bradley (Dwr Cymru Welsh Water)</i></p> <p><i>Julie Finch (Corporate Strategy and Policy Manager, Hybu Cig Cymru (HCC)/ Meat Promotion Wales) was succeed by Kirsten Hughes</i></p>

	<p><i>Jamie McCoy (AHDB Dairy)</i></p> <p><i>David Saywell (Carmarthenshire Fishermen's Federation) was succeeded by Creighton Harvey</i></p> <p><i>Eirwen Williams (Menter-a-Busnes – in attendance for discussion of Farming Connect Delivery Plan)</i></p> <p><i>Sara Jenkins (Menter-a-Busnes – in attendance for discussion of Farming Connect Delivery Plan)</i></p>
Secretariat	<p><i>Jill Brown (NRW Communications Officer – WFD Team)</i></p> <p><i>Brian Pawson (Senior NRW Agricultural Advisor)</i></p>

4.2. Members of the Group are expected to:

- Contribute their views, and those of their representative organisations, on all issues surrounding diffuse and point source pollution arising from agriculture;
- Contribute to the preparation of a short report on the best ways of tackling agricultural pollution issues;
- Consider whether it will be possible to make recommendations to their respective organisations and Welsh Government – both in the short term (early 2017) and the longer term;
- Make available the necessary resources from within their organisation to support the work of the Group.
- Adhere to a 'no surprises' policy' as part of a collaborative approach to the work of the Group.

4.3. Depending on the agenda, the Group can co-opt additional representatives to provide additional evidence and advice where necessary. Such input will be arranged via the secretariat.

5. Frequency and nature of meetings

5.1. As required in order to fulfil the requirements of (3) above, but it is likely that meetings will take place on a monthly basis over the period January – December 2017.

5.2. Meetings will be arranged via skype/audio-conference where this is thought to be the most effective means of ensuring progress, but the preference will be to meet on a face-to-face basis so as to maximise the opportunities for collaborative working.

5.3. Where meetings have been arranged on a face-to-face basis, efforts will be made to ensure that members who are unable to travel are provided with audio-conference facilities wherever possible.

6. Secretariat

6.1. NRW will organise all meetings and produce a list of Action Points as soon as possible after each meeting has concluded.

6.2. NRW will also prepare all draft reports/recommendations from the Group for further consideration and comment.

***Natural Resources Wales
March 2018***

Annex 2 Summary of evidence submitted by NRW as part of the 2016 review under the Nitrates Directive

Eutrophic Freshwater Recommendations

Water quality data was collated from 88 lakes and ecological data from 101 lakes throughout Wales using data from NRW and where available from third parties. Existing datasets were used, especially monitoring carried out for the Water Framework Directive and the Habitats Directive.

The NVZ lakes eutrophication assessment provided a robust, evidence-based approach to the identification of lakes where eutrophication is considered a significant problem:

- Twenty-five water bodies were identified as being potentially at risk of eutrophication based on either chemical or ecological data.
- Eight water bodies showed evidence of eutrophication with high confidence, which included all of the existing NVZs (Llyn Coron, Llangorse Lake, Hanmer Mere and Bosherton Lakes), plus five additional water bodies (Llyn Maelog, Llyn yr Wyth Eidion, Valley Lakes, Llyn Traffwll and Llyn Pencarreg).
- All four existing NVZs designated due to eutrophication (Bosherton Lakes, Hanmer Mere, Llangorse Lake and Llyn Coron) still meet the eutrophic lakes criteria and NRW recommended that they continue to be designated.
- Three water bodies exhibited some evidence of eutrophication. These were Llyn Tegid, Plas Uchaf & Dolwen Reservoirs, and Witchett Pool
- Following the independent review two of the lakes (Valley Lakes and Llyn Traffwll) were rejected as recommendations for designation. It was recommended that a case for designation under the provisions of the Nitrates Directive should be made for Llyn Maelog, Anglesey, Llyn yr Wyth Eidion, Anglesey, Llyn Pencarreg, Carmarthenshire due to the high confidence of eutrophication.

Eutrophic Marine Recommendations

The Milford Haven waterway was first reviewed as a candidate Polluted Water in 2009. The review concluded that there was insufficient evidence to support a proposal for designation but it was recommended that monitoring should continue and its candidacy reviewed again when further evidence was available, which has been carried out as part of the most recent NVZ review.

Under the most recent review a recommended for designation under the provisions of the Nitrates Directive was made for the catchment area for the Milford Haven Inner water body. This was supported by evidence in all three of the categories that the assessment was based upon. For the outer waterbody there was also evidence to suggest the waters are hypereutrophic (it is failing for Dissolved Inorganic Nitrogen) however the Category II evidence does not support a case for designation as

macroalgal growth is more localised in the Outer water body and it is not failing for opportunistic macroalgae or phytoplankton.

The eutrophication assessment carried out for Milford Haven provided a robust, evidence-based approach to the identification of marine waterbodies where eutrophication was identified and is considered a significant problem.

It was recommended that monitoring for the Outer water body is continued and the outputs are reviewed at the next 4-yearly review.

The review of surface and groundwater in Wales identified that existing designations showed no improvement of nitrates in the water quality, and will remain designated. One new surface water and one new groundwater designation were recommended due to the upward Nitrate trends in those localised areas.

Annex 3: Summary of WLMF sub-group agricultural pollution campaign plan

Campaign objectives

- To reduce the number of point source agricultural pollution incidents as well as the extent of diffuse pollution;
- To signpost farmers and contractors to those who can provide practical advice on reducing the risks of pollution (including the availability of sources of finance or grants). Sources of advice include Farming Connect, farmer's own advisors, NRW staff and both the NRW and Welsh Government websites.
- To encourage farmers in Wales to comply with existing regulation including The Code of Good Agricultural Practice (CoGAP), the Slurry, Silage and Agricultural Fuel Oil Regulations (SSAFO), and the NVZ Action Programme (where applicable);
- To encourage any farmer involved in an agricultural pollution incident to report it as soon as possible, so that action to minimise risks to water quality, wildlife and the economy can undertaken as a priority;.
- To celebrate and promote examples of good practise in reducing the risk of agricultural pollution
- To raise awareness of the WLMF agri pollution sub-group, the ways in which all of the organisations involved are collaborating in trying to solve a jointly owned problem and to ensure greater awareness of the papers / recommendations produced by the group.

Audience requirements

This audience is looking for:

- Good clear information about nutrient management
- Practicable tips about what they can do
- Working in partnership rather than 'preaching'
- Recognition when things are done well
- Cost effective suggestions and financial help

Influence and engage them by...

- Sector groups, e.g. Farming Connect, Farming Unions, HCC, AHDB-Dairy
- Plain English/Welsh – friendly but to the point
- Events by others – e.g. Farming Connect, Farming Unions, YFC, AHDB, HCC, DCWW,
- Other networks, e.g. YFC Cymru
- Building on existing relationships with staff from all The Wales Land Management Forum (WLMF) sub-group on agricultural pollution representatives

In addition to farmers and contractors, we need to demonstrate to policy makers, Assembly Members, the general public and the media that by adopting the principles underpinning the sustainable management of natural resources (SMNR) it is

possible for broadly based stakeholder groups such as the WLMF to develop creative and long lasting solutions to complex and deep rooted issues such as agricultural pollution.

Key messages

Wider task group messages

- By working together – as regulators, farming unions, end users and fishermen – we better understand the needs and constraints of each other which means that we can find ideas and solutions that will help address the agricultural pollution issues in the long term.
- The group is working on a number of initiatives to inform agricultural policy. These include looking at the current regulatory framework, voluntary approaches, advice to farmers, investments, innovation

Messages around Slurry Savvy

The WLMF sub- group has agreed a narrative that would be used as a basis for our communications work. The full narrative is in Annex 1 but the key points are:

- Too many slurry pollution incidents from farms are affecting the Welsh environment, especially rivers. Everyone involved – farmers’ representatives, industry bodies, regulators, government, Welsh Water and anglers – is working together to change our approach to the issue.
- Free practical advice is available from Farming Connect and NRW - this can provide guidance on storage, advice on when to spread, availability of grants and creating contingency plans if something goes wrong.
- If something does go wrong and slurry has entered, or is at risk of entering a stream or river, report it straight away to NRW on 03000 65 3000 on their 24 hour pollution hotline where duty officers will always be on hand to give advice. The sooner the better!

Messages around nutrient management

- Good nutrient management is **key to** farm profitability.
- Knowing the nutrient and pH status of soils is not just about working out how much fertiliser to apply, but is about planning ahead and ensuring that soil fertility is balanced

Some key seasonal sub-messages – what to do in each month – are set out below, but this is living document and will be added to on a regular basis.

MONTH	Key Messages
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January – February	Nutrient value of slurry & application methods
March-April	Review Slurry storage capacity for coming winter. Clean & dirty water separation.
July	Water efficiency – link to FC on any new technology – pasture pumps, solar pumps etc.
September	Soil sampling for nutrients – how & the benefits
November	Slurry spreading over winter – risks to water, soil etc

Implementation

Activity type	Channel	Mechanism
Media	Farming press (for example Farmers Weekly, Farmers Guardian)	Regular seasonal press releases Case studies of farming good practices Placed features/interviews
	Farming & Country columns and supplements in Welsh press	Press releases and regular contact with journalists
	Local newspapers in rural areas for example Anglesey Mail and Cambrian News	Localised press release with information relevant to that area
	Broadcast media - BBC Radio Wales Country focus and S4C Ffermio	Proactively sell in pieces and build relationship for future farming stories – offer joint interviews
Digital	Website	Update all websites to include agreed narrative and signpost to advice
	Twitter Facebook	Regular messages on twitter driving traffic to appropriate websites – using hash tag #farmingandcleanwater #ffermioadwrglân
	Video blogs	Use case studies to produce vlogs. This will mainly be of farmers and so celebrating good practice. Ideally we would identify a farmer who could blog themselves. A vlog will also be made about the group itself.
Marketing	Creative visual tools	Design and produce infographic for use during campaign
Stakeholder engagement	Focus on Welsh Government, Farming Connect, Business Wales and agricultural suppliers and businesses	All partners to use own stakeholder engagement channels eg newsletters, mailings etc. Ask other associated stakeholders to sign post farmers to websites. Use of Gwlad
Farmer engagement	Direct	Via Farming Connect
Internal communications	Internal channels	All partner organisations to use own internal channels to keep staff / officers informed.

Timeline of activity

Timing	General activity and key milestones
August – December 2017	<ul style="list-style-type: none"> - Planning and preparation - Design creatives for campaign including infographic - Create website content – with many links to other partner organisations - Note to potential partners and AM's about the work of the group and our future activity – seeking endorsement and amplification of our social media activity in particular - RWAS Muck and slurry event
February 2018	<ul style="list-style-type: none"> - Press release about slurry spreading following wet weather with particular targeting of specialised dairy farming publications and websites. - Vlog on rationale and activity of the working group - Create website content – will many links to other partner organisations - Highlighting water quality issues and alternatives to NVZs with membership organisations
March 2018	<ul style="list-style-type: none"> - Promote spring messages via social media – including case studies - Use of narrative and spring messages in stakeholder communications - Appointment of agri pollution officer in NRW - Letter to all farmers in priority 26 catchments from NRW highlighting Farming Connect meetings - Technical article on slurry stores by Farming Connect in their magazine sent to all farmers
April 2018	<ul style="list-style-type: none"> - Use of report to Cab Sec about alternatives to NVZs - Farming Connect project launch and promotion of FC resources

Timing	General activity and key milestones
	<ul style="list-style-type: none"> - Placed piece by Zoe Henderson about the group, its work and farming connect launch – farmers weekly / Farmers guardian and then used as a piece for all group members to use in their publications. - Farming Connect press notice on 1000 nutrient management plans - Farming Connect farmer meetings - Article in partner organisations publications – printed and online
May 2018	<ul style="list-style-type: none"> - Basic Payment communications – can we add any relevant messaging – planning next winters' slurry requirements? - Farming Connect meetings and advice - Potential grant from NRW to NFU on behalf of group to tackle issues - Farming Connect farmer meetings
June 2018	<ul style="list-style-type: none"> - SPG grant available from WG - Farming Connect meetings and advice - Case study – what happened when I reported an issue to NRW...
July 2018	<ul style="list-style-type: none"> - Possible event with partners at RWS and other agricultural show – progress from 2017. Coordination of messages across the sub group members. - Use of narrative and key summer messages in stakeholder communications - Farming Connect meetings and advice
August 2018	<ul style="list-style-type: none"> - Farming Connect meetings and advice - Need and benefit of soil sampling article
September 2018	<ul style="list-style-type: none"> - Wales Dairy event - Farming Connect meetings and advice
	-
October 2018	<ul style="list-style-type: none"> - Farming Connect meetings and advice including a series on 'outwinter stock'
November 2018	<ul style="list-style-type: none"> - Presence of WLMF organisations at Winter Fair and an opportunity to coordinate messages - Press release targeted at south west area - followed up by social media reminding farmers of winter slurry actions. - Farming Connect meetings and advice - Update web content of winter actions and associated social media - Use of narrative and key winter messages in stakeholder communications

Timing	General activity and key milestones
December 2018	- Farming Connect meetings and advice

Annex 4 Wales Land Management Forum Agri-pollution CONCEPT – Improve understanding and deliver advice and guidance to improve land management practices with the aim of reducing Agricultural Pollution.

<p>Concept title</p>	<p>Improve understanding and deliver advice and guidance to improve land management practices with the aim of reducing Agricultural Pollution.</p>																										
<p>Lead person (name, organisation and contact details)</p>	<p>Dr Sarah Hetherington Agriculture Advisor Natural Resources Wales Tel: 0300 065 3642 Mobile: 07580 973917 sarah.hetherington@cyfoethnaturiolcymru.gov.uk</p>																										
<p>Collaboration (please give details of all individuals involved with the development of the concept including any policy input)</p>	<p>This concept delivery note has been formulated by the Wales Land Management Forum Agricultural Pollution Sub Group. This group is a major collaboration of all key parties aiming to significantly reduce point source agricultural pollution incidents and diffuse pollution to achieve sustained improvement in water quality. Membership includes:-</p> <table data-bbox="724 1205 1422 1787"> <tr> <td>Zoe Henderson, Chair</td> <td>NRW Board Member</td> </tr> <tr> <td>Andrew Chambers /</td> <td>Welsh Government</td> </tr> <tr> <td>Ryan Davies</td> <td>Welsh Government</td> </tr> <tr> <td>Richard Davies</td> <td>AHDB Dairy</td> </tr> <tr> <td>Rachel Lewis-Davies</td> <td>NFU Cymru</td> </tr> <tr> <td>James Dowling</td> <td>Welsh Government</td> </tr> <tr> <td>Julie Finch</td> <td>Hybu Cig Cymru</td> </tr> <tr> <td>Bernard Griffiths</td> <td>FUW</td> </tr> <tr> <td>Phillippa.Pearson /</td> <td>DCWW</td> </tr> <tr> <td>Sarah Jones</td> <td>DCWW</td> </tr> <tr> <td>Rhianne Jones</td> <td>CLA</td> </tr> <tr> <td>Dennis Matheson</td> <td>Tenant Farmers Association Cymru</td> </tr> <tr> <td>David Saywell</td> <td>Carmarthenshire Fishermen's Federation</td> </tr> </table> <p>The sub group provides an opportunity for NRW, Welsh Government and industry stakeholders to explore and develop means for tackling agricultural pollution. This is in line with Welsh Government's commitment for water</p>	Zoe Henderson, Chair	NRW Board Member	Andrew Chambers /	Welsh Government	Ryan Davies	Welsh Government	Richard Davies	AHDB Dairy	Rachel Lewis-Davies	NFU Cymru	James Dowling	Welsh Government	Julie Finch	Hybu Cig Cymru	Bernard Griffiths	FUW	Phillippa.Pearson /	DCWW	Sarah Jones	DCWW	Rhianne Jones	CLA	Dennis Matheson	Tenant Farmers Association Cymru	David Saywell	Carmarthenshire Fishermen's Federation
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Ryan Davies	Welsh Government																										
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Sarah Jones	DCWW																										
Rhianne Jones	CLA																										
Dennis Matheson	Tenant Farmers Association Cymru																										
David Saywell	Carmarthenshire Fishermen's Federation																										

	<p>management up to 2020 set out in the Water Strategy for Wales.</p> <p>The sub group will also liaise with the River Basin District Liaison Panels to ensure that all sectors are involved in this work.</p>
<p>Concept description</p> <p>(describe the concept and any circumstances / influences to support the development of the concept. Show clear role for FC and role for others)</p>	<p>Water quality and resources in Wales is fundamental to our well-being, important for peoples' health, the economy and wildlife. Our streams and rivers are often affected by pollution and reduced water quality. The total figures for all agri-pollution incidents (category 1-3 or equivalent) since 1/1/2010 are 1113 incidents or between 120-170 per annum. In the past seven-and-a-half years NRW have dealt with 679 (70-120 a year) reported slurry pollution incidents from agriculture, more specifically by dairy and to a lesser extent by beef farms.</p> <p>In line with the Environment Act (Wales), preventing pollution from agriculture will have significant benefits for farm businesses and the wider community and economy who are reliant on a healthy water environment. Farming Connect has a significant role to play in terms of:</p> <p>1) Development of a national campaign to:</p> <ul style="list-style-type: none"> • Increase awareness amongst farmers of pollution that can/does occur and the impacts on water quality, the environment, drinking water abstractions, bathing waters, fisheries etc; • Signpost farmers and contractors towards information, advice and support services that are available to help avoid pollution; • Increase awareness of enforcement issues; including land owner, farmer and contractor liabilities; and to raise awareness amongst farmers of NRW's proportionate approach to enforcement, ranging from advice to prosecution; • Reduce the risk of pollution events; • What to do if a pollution event is imminent, how to reduce the impact of pollution incidents, by better preparing farmers to respond, and by increasing

self-reporting of pollution incidents so that NRW can respond.

- Increase farmers' awareness of the advantages from all perspectives: financial, resources and environmental.
- Develop and embed key messages into all Farming Connect activities (Annex C);
- Signpost how to access potential grants that will allow for more investment in reducing the risk of agricultural pollution.
- Develop case studies that can be used to demonstrate good practice;
- Develop a learning programme to support these activities including online e-modules.

This national campaign and associated Knowledge Transfer events across Wales should enable more widespread dissemination to get farmers thinking about how they plan, and invest in fit-for-purpose resources to avoid incidents and diffuse pollution from happening.

This campaign should focus on pollution prevention and improving the management of:

- manures and slurries (from creation to use in the field including storage and application to land);
- soil and reduce loss (not only via cultivation but also by livestock management);
- chemicals (such as pesticides).

This will need to incorporate initiatives on

- Manure management planning
- Nutrient Management planning and application;
- Clean-dirty water separation;
- Farm infrastructure including silage, slurry and oil storage requirements;
- Importance of good soil husbandry;
- Code of Good Agricultural Practice
- Importance of riparian habitats and buffer zones, swales and sediment traps;
- Advantages and best practice for lower risk methodologies for slurry applications;

- Storage and handling of oil;
- Identification of risk areas for the farm in terms of nutrient application; and cultivation, and how to minimise risks from these areas by changing farming activities.

2) Development of a **targeted programme** focussing on 25 catchments, where issues with water quality have been identified (Annex B) as having agricultural origin, the development of a bespoke targeted framework is required.

- Work with NRW/DCWW to identify and share existing knowledge of local catchment initiatives, evidence of poor practices and pollution, to ensure a coordinated and targeted approach
- Through farmer engagement undertake root cause analysis to identify the underlying factors causing poor practice e.g. supplier contracts;
- Use the evidence gathered to develop and deliver a bespoke framework of information provision and support for farmers to improve agricultural practices to reduce pollution. This may need to include workshops, farm visits, one-to-one advice clinics and co-ordinating and signposting to facilitate uptake of relevant investment measures such as Sustainable Production Grant, Farm Business Grant and Glastir;
- Embed appropriate learning from the programme across FC activities;
- Report key findings to the WLMF sub-group, including summary of engagement, root cause analysis, and delivery. Where appropriate, identify required follow-up actions.

Key principles for consideration in relation to the national and bespoke targeted campaigns include:

- Where initiatives are already underway and involve NRW working with Farming Connect. The activities and local delivery

	<p>need to continue to inform any future advice requirements in these programmes;</p> <ul style="list-style-type: none"> • Outside the 25 targeted catchments if farmer-led initiatives develop to tackle agricultural pollution, Farming Connect should apply the bespoke targeted catchment framework that is developed as part of this concept to support them; • Where possible the ability to participate in activities to address these issues should not be delayed due to the lack of farm business plans on individual holdings; • Consideration needs to be given to increasing engagement from different segments in the agricultural sectors. • Consideration needs to include whether earned recognition or approaches such as that undertaken in the Olway catchment need to be deployed.
<p>Outcomes / KPI's</p> <p>(describe the desired outcome from the proposed delivery)</p>	<ul style="list-style-type: none"> • To significantly reduce the number of instances in which agriculture is listed as one of the reasons for not achieving good status in relation to the Water Framework Directive. • Increased number of farmers undertaking sustainable farm management practices in relation to nutrients and soils. • Increased number of farmers seeking support from Farming Connect, Farming Unions or NRW in relation to reducing agricultural pollution. • Increased numbers of farms with appropriate storage facilities to enable the most appropriate use of nutrients from slurries and manures. • Increased proportion of farmers self reporting pollution incidents (with a potential increase in the number of reported incidents in the short term). • Significantly reduce the number of point source pollution incidents from an average of 120-170 per annum, to less than 20 over a 7-year period (Annex D) with the aim to reduce to zero major incidents (beyond any short-term increases which may result from national and targeted approaches).

	<ul style="list-style-type: none"> To reduce agricultural pollution issues in the 25 targeted catchments identified and a measurable improvement in water quality and ecology.
<p>Identify 3 key aims / objectives</p> <p>(Consider at least 3 objectives which will support delivery of the overall outcome)</p>	<ol style="list-style-type: none"> 1) Generate an industry commitment to eliminate pollution to demonstrate the high standards and reputation of Welsh farming. 2) Ensure a coordinated and consistent campaign supported by all group stakeholders which supports farmers to take immediate actions to prevent pollution as well as understand and plan for future innovation to improve their businesses whilst eliminating pollution. 3) Engage with all farmers in the targeted catchments through a variety of coordinated communications including training, meetings, social media, publications, websites, on-farm visits etc and encourage action from all farmers (including those that are hard to reach) through a support package (e.g. free one-to-one advice, soil sampling, bespoke solution recommendations.)
<p>Strategic context</p> <p>(demonstrate relevance to WG priorities, Strategic Priorities and SIs)</p>	<p>Policy and legislation which specifically relates to the issue of point source and diffuse water pollution are as follows:-</p> <ul style="list-style-type: none"> • EU Water Framework Directive (WFD) 2000 including protected area designations (e.g. drinking water, shellfish, Natura 2000, bathing waters, nutrient sensitive areas); • Nitrate Pollution Prevention Regulations (transpose the requirements of the European Commission Nitrates Directive 1991); • Water Resources Act 1991; • Environmental Permitting Regulations (England and Wales) 2010; • Water Resources (control of pollution) (silage, slurry and agricultural fuel oil) (Wales) 2013 (SSAFO); • The Water Resources (Control of Pollution) (Oil Storage) (Wales) Regulations 2016; • Salmon and Freshwater Fisheries Act 1975. <p>Under the WFD, Wales has 3 River Basin Management Plans. These plans now sit within a wider context under the Environment (Wales) Act 2016 and the Well-being of Future Generations</p>

(Wales) Act 2015. The overarching aims of the Environment Act is to enable Wales' resources to be managed in a more proactive, sustainable and joined-up way.

Reducing impacts from agricultural pollution will help to achieve the principles of the sustainable management of natural resources and the wellbeing goals and has been identified as an Issue of Concern in the State of Natural Resources Report (SoNaRR) 2016 and is reflected in the Welsh Government's Natural Resource Policy. It will also help Wales to reduce nitrate pollution from agriculture and meet requirements of the Nitrates Directive.

There is also a broad framework of policy and legislation at the international, UK and Welsh level which drives and supports the management of Natura 2000. The primary European legislation is the Habitats Directive and the Birds Directive which promote the conservation and management of natural habitats and wild species. Key UK legislation includes the Habitats Regulations, Wildlife and Countryside Act, and the Countryside and Rights of Way Act.

One of the 2 key priorities for the Welsh red meat industry as outlined in "2020 vision – Strategic Action plan for the Welsh Red Meat industry" is of a red meat sector that can improve production efficiency whilst maintaining the environment and landscape of Wales. The ability to manage nutrients effectively on beef and sheep farms not only affects production efficiency but has a profound effect on the ability to mitigate risks to the environment, including water courses.

3 key priorities for the Dairy Industry in Wales outlined in the Dairy Roadmap for Wales (Oct 2010) directly relate to this initiative:

- 50% dairy farmers are actively nutrient planning;
- 95% of produces have a manure management plan;
- A declining trend in the water pollution incidents on dairy farms

	<p>This initiative will also help to assist food businesses to reduce their ecological footprint which is a key objective in Towards Sustainable Growth: An Action Plan for the Food and Drink Industry 2014-2020.</p>
<p>Existing evidence available to support the proposal if applicable. (Not applicable if the concept is for evidence gathering)</p>	<p>The total figures for all agri-pollution incidents (category 1-3 or equivalent) since 1/1/2010 are 1113 incidents or between 120-170 per annum. In the past seven-and-a-half years NRW have dealt with 679 reported slurry pollution incidents from farms. This works out at 70-120 every year and is clearly unacceptable (Annex D).</p> <p>Such incidents cause a lot of damage to the environment, mainly streams and rivers, and affects drinking water supplies, wildlife and fish and the economy, particularly tourism, with associated issues such as loss of Bathing Water Blue Flags. Such incidents not only have a negative impact on fish populations, but polluted waterways also have a negative effect on the reputation of the agricultural industry.</p> <p>The highest number of incidents are predominantly, but not exclusively, in areas with a concentration of dairy farms. Localised catchments have specific problems hence the need to target activity at dairy, beef and sheep farms in these catchments whilst also developing materials and disseminating information that can be adopted by the wider industry.</p> <p>There are a range of issues influencing water quality in Wales. Some poor agricultural practices are contributing to Water Framework Directive (WFD) failures to meet good or better water quality status. WFD sets a target for all waters; good overall status (e.g. insect, plant, fish life and water chemistry).</p> <p>The data was obtained from the 'Reasons for Not Achieving Good' (RNAG) data (see Annex A) that was gathered from EAW/NRW investigation work carried out during the first cycle of the River Basin Management Plans. RNAGs are categorised as suspected, probable or confirmed, depending on the level of confidence</p>

	<p>in NRW investigation and categorisation into five known sectors including agriculture.</p> <p>The LIFE Natura 2000 Programme data shows that diffuse water pollution is having (or likely to have) an adverse impact on 61 out of 123 different Natura 2000 habitat or species features (49%), on 39 out of 112 Natura 2000 sites across Wales (35%). Table 1 provides a list of features most frequently affected. For a full list of sites and features affected see Appendices A and B respectively.</p> <p>A total of 110 instances of issues and risks related to diffuse water pollution were recorded across the Natura 2000 series (on individual units or on whole sites), out of a total of 3,090 records for all types of issue and risk (3%). However, many actions were identified at a site level (which indicates that the issue is affecting all or most of the units on the site).</p> <p>The Natura 2000 sites predominantly affected by water pollution are freshwater sites (29 SAC/SPAs), and marine and estuary sites (10 SAC/SPAs). SACs most frequently listed as being impacted are those with fen and bog features (and associated species) such as Corsydd Llyn and Corsydd Môn and Fenn`s, Whixall, Bettisfield, Wem and Cadney Mosses SAC. Due to the rural location of many of these sites the majority of the issues and risk identified relate to land management practices.</p>
<p>Timescale</p>	<p>As soon as possible within Farming Connect constraints acknowledging the farming calendar.</p>
<p>Audience / Scale (who, what sector(s), numbers etc.)</p>	<p>National Campaign targeted at farmers, landowners and contractors reaching all registered with Farming Connect particularly Dairy and Beef sectors.</p> <p>All Farmers and other land managers and contractors working in targeted catchments whether or not they are already engaging with Farming Connect and any farmer group that has identified that pollution from agriculture is an issue for them.</p>

Connections to other activity being delivered which could enhance or be enhanced by the concept

NRW are already successfully working with farmers to deliver key messages and technical advice to farmers in some catchments. The Wales Land Management Forum (WLMF) Agricultural Pollution Sub Group would like to continue to build and develop these relationships to deliver a consistent approach with FC Development Officers, Technical Sector Leads and local key NRW staff.

For example, in South East Area, staff started working with the local Farming Connect Development Officer started in the previous RDP round (2007-2014) following a pollution incident in the Olway catchment.

FC arranged for EAW staff to speak at a farmer event held in Raglan where the issues/ reasons for WFD failure were highlighted. This was followed up by an on-farm infrastructure event (ADAS) in the catchment. This was not attended by EAW staff to encourage more farmers to attend. The farmers who attended then were offered a subsidised (by FC) personal visit by ADAS (Keith Owen) either an hour visit with no written report, essentially a quick health check of yards and slurry/manure handling or a mornings visit with written report usually where one or more issues were found. One farmer is thought to have saved £20,000 by carrying out clean and dirty separation, re-profiling yards etc rather than building a new earth-banked slurry lagoon.

In the current RDP round, engagement with local FC Development officers continues with FC delivering the following subsidised activities;

- NVZ clinics in the Raglan/Trellech and Llangors NVZ;
- Targeted soils and nutrient management advice in the Trothy, Olway, Llynfi catchments;
- Infrastructure technical advice in the Trothy, Llangors and Gwent Levels;
- Nutrient (poultry litter) and ranging area management advice to farmer discussion

groups in Radnorshire and Montgomeryshire;

- Meetings held with new Agrisop lead to look at opportunities for new discussion groups in the Trothy – soil management and Radnorshire - poultry ranging areas and litter management.

NRW staff now receive invitations and attend FC Mid and SE Hub meetings where the Menter a Busnes officers (Development, Technical, Knowledge Transfer and Agrisop leads) and Welsh Government Farm Liaison Officers discuss work plans and challenges. This allows NRW staff to put forward ideas and requests for help.

Farming Connect have already developed an E-learning module on Farm Nutrient Management and have technical advice in relation to nutrient management, buildings and slurry stores. However, an integrated package would add value to activities already being undertaken.

FC have also been a partner on the Weed Wiper Trial since 2014 and latterly on the Wales Pesticide Group/ PestSmart including supplying publications for Weed Wiper Trial Information Packs.

Since 2015 Welsh Water have teamed up to run joint events in the Spring on rush management control including a weed wiper demonstration. During 2017 events were held in the Wye, Teifi and Towy catchments.

In 2015 and 2017 Farming Connect also helped Welsh Water to do mail outs to farmers in certain geographic areas to promote our work, not necessarily Farming Connect events.

In the Dee catchment, United Utilities have a programme of work as part of drinking water protected area safeguard zones. United Utilities funded catchment officers (employed by the Welsh Dee Trust) are working to target measures, advice and incentive schemes for

land owners and managers to help improve water quality.

BRICs is an ambitious landscape scale collaborative action, bringing together partners from across the supply chain, with land managers, industry, conservation managers and communities within Pembrokeshire.

Working in 3 diverse sub-catchments (circa 100 farms) to develop Climate Change mitigation plans and actions to improve soil management, water management and related habitat measures. Sub-catchments chosen to protect drinking water intake and commercial development are proposed at Llys Y Fran reservoir (Dairy/Mixed), Pelcomb Bridge (Dairy/Mixed) and Winterton Marsh (Arable).

Targeted measures such as nutrient soil mapping, precision farming and constructed wetlands will benefit farms economically as well as environmentally, creating a business leader culture with earned regulatory recognition. Improvements will be measured financially and environmentally through modelling and analysis.

Nitrogen reduction will be assigned its economic value. An important legacy is the creation of an enterprise (the 'Ecobank') capable of running a nutrient offsetting scheme taking forward the outcomes of the Ecosystem Enterprise Partnership outcomes (Nature Funded). Work packages include:

- Determination of optimum suite of measures through on-farm assessment, the creation of Climate Change Plans, implementation and evaluation to include a framework for modelling / monitoring of outputs;
- Determine enterprise that will deliver the 'Ecobank' with wider research from global initiatives and UK based PES schemes to derive valuation of credits;
- FC have supplied publications for Weed Wiper Trial Information Packs;

- Since 2015 DCWW and FC have teamed up to run joint events in the Spring on rush management control including a weed wiper demonstration. 2017 - ones were last week in the Wye and this week in Teifi and Towy. Usually run morning and afternoon sessions – see template attached.
- In 2015 and 2017 FC helped DCWW to complete mail outs to farmers in certain geographic areas to promote our work, not necessarily through farming connect events.
- Signposted farmers and land managers to the weed wiper trial & disposal scheme, and vice versa to FC's training and support.

DCWW are also been working in the Pendine Groundwater Catchment with NRW. The project involves ADAS visiting farms to identify all potential contributing on farm "issues" affecting water quality. This Farming Connect initiative would provide helpful support with the next steps – there have been a number of slurry pollutions in this catchment in recent years.

DCWW are also delivering water quality improvements in some catchments and are planning a Brecon Beacons mega catchment trial in a working partnership with landowners.

Other initiatives within the Wales RDP include a focus on improving the water environment e.g. Glastir Advanced, Glastir Small Grants, Sustainable Production Grants and Farm Business Grants.

Farming Connect activity that addresses water quality and diffuse pollution. (October 2015 - present).

ADVISORY SERVICE

Total Number of Advisory Service Applications Approved: One to One (80% funded)
 Technical Grassland & Crop Management – 88 applications (majority if not all are Nutrient Management Plans)

- Technical Livestock Management & Performance – 44 (some of these applications cover Infrastructure & Slurry Pit Advice)

Total Number of Advisory Service Group Applications Approved (100% funded)

Technical Grassland & Crop Management – 121 Groups – 460 individuals

- Technical Livestock Management & Performance – 9 Groups - 42 individuals (some of these applications cover Infrastructure & Slurry Pit Advice)

CLINICS

NVZ Clinics

9 x NVZ Clinics held (Monmouthshire x 2, Denbighshire x 2, Flintshire x 2, Anglesey x 1, Powys x 2) with 38 beneficiaries.

Advisers: Tony Lathwood, Nichola Salter, Charlie Morgan.

Soils Clinics

73 x Soils Clinics/Workshops held with 350 beneficiaries (usually involves sampling between 3 and 5 fields)

Advisers: Mainly Charlie Morgan & Chris Duller. Also - Geraint Jones (Kite), Marc Jones (ADAS).

Poultry Manure Clinics

2 x Clinics with 14 beneficiaries.

Adviser = Helen Barnes, FWAG

Infrastructure Clinics

16 clinics held with 52 beneficiaries

Advisers: Jamie Robertson (Livestock Management Systems) and Keith Owen (ADAS)

Grassland/Problem Fields/Rotational Grazing Clinics

19 clinics held with 51 beneficiaries.

Advisers: Mainly Chris Duller & Charlie Morgan.

Also: Rhys Owen, Merfyn Parry and Gareth Davies.

STRATEGIC AWARENESS EVENTS

Water Quality

3 workshops held throughout Wales with 39 attendees.

Adviser: John Williams, ADAS

Poultry manure - its nutrient value and how to manage it properly

1 event held in Powys with 4 beneficiaries

Adviser: Chris Duller

NVZ Workshops

3 open events held with 40 attendees.

Advisers: Tony Lathwood, Nichola Salter.

Soil Health & Grassland Management

2 events held in Powys with 42 attendees.

Advisers: Chris Duller

Glastir

6 events held with 224 attendees.

Advisers: Martyn Evans (NRW), David Ashford (WG).

DEMONSTRATION NETWORK EVENTS

Rush Control & Weed Wiper Trial Demo

6 events held in Powys and Ceredigion with 188 attendees.

Adviser = Ian Cairns, SRUC.

Towy Valley water catchment information

1 event held at Gelli Aur with 15 attendees.

Adviser = Sarah Jones, Welsh Water.

Slurry solutions fit for the future

1 event held in Haverfordwest with 20 attendees.

Advisers = Keith Owen & Aled Roberts, ADAS.

Chicken litter – a valuable commodity

3 events held (Corwen, Newtown, Llandrindod Wells) with 35 attendees.

Adviser = Chris Duller

Recovering from Winter 2015

18 events held across Wales with 403 attendees.

Advisers = Charlie Morgan & Chris Duller

GLASTIR SMALL GRANT SCHEME

3 x 'Glastir new planting advice' events held (Caernarfon, Brecon, Newtown) with 58 attendees.

Speakers: Martyn Evans NRW, Gareth Davies Coed Cymru and Richard Griffiths WG.

3 x Glastir small grants scheme awareness event held (St Asaph, Newcastle Emlyn, Builth Wells) with 166 attendees.

Speaker: David Ashford WG.

FARM BUSINESS GRANT

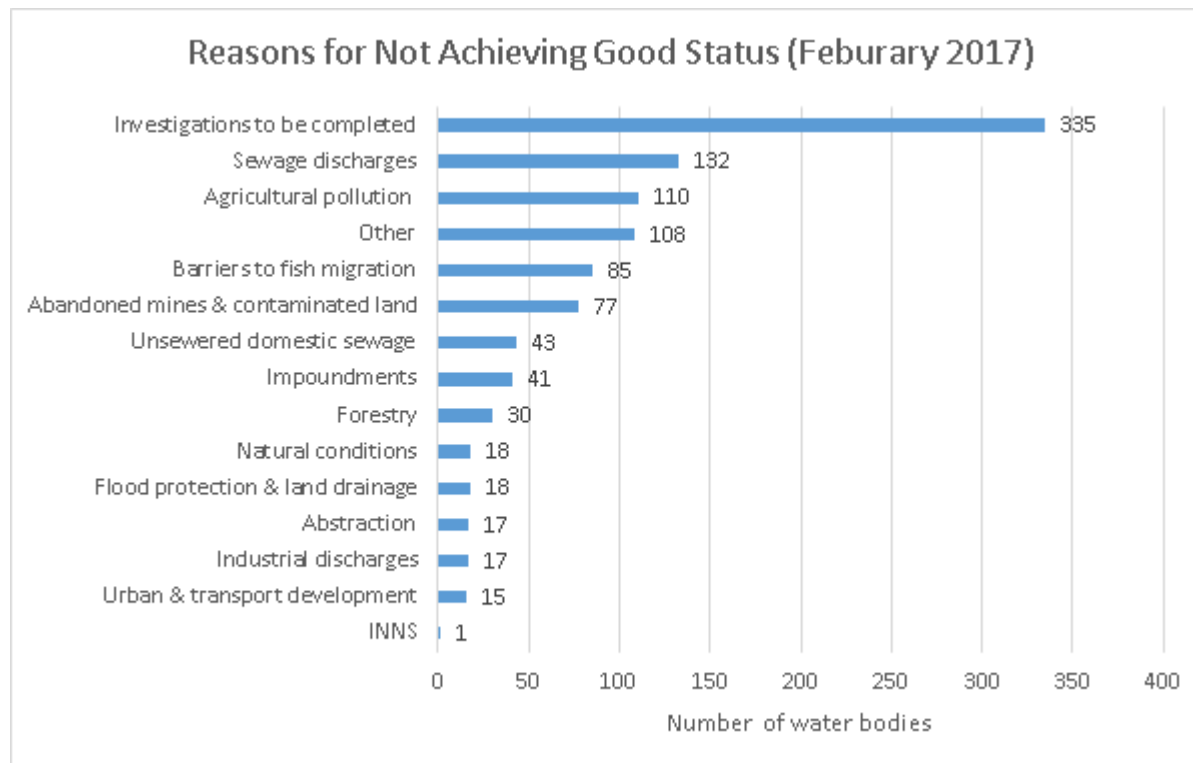
15 Farming for the Future events held with 4485 attendees. These events included an introduction to the Farm Business Grant application process by Gareth Wilson WG.

A further 9 Farming for the Future events have been organised for September 2017.

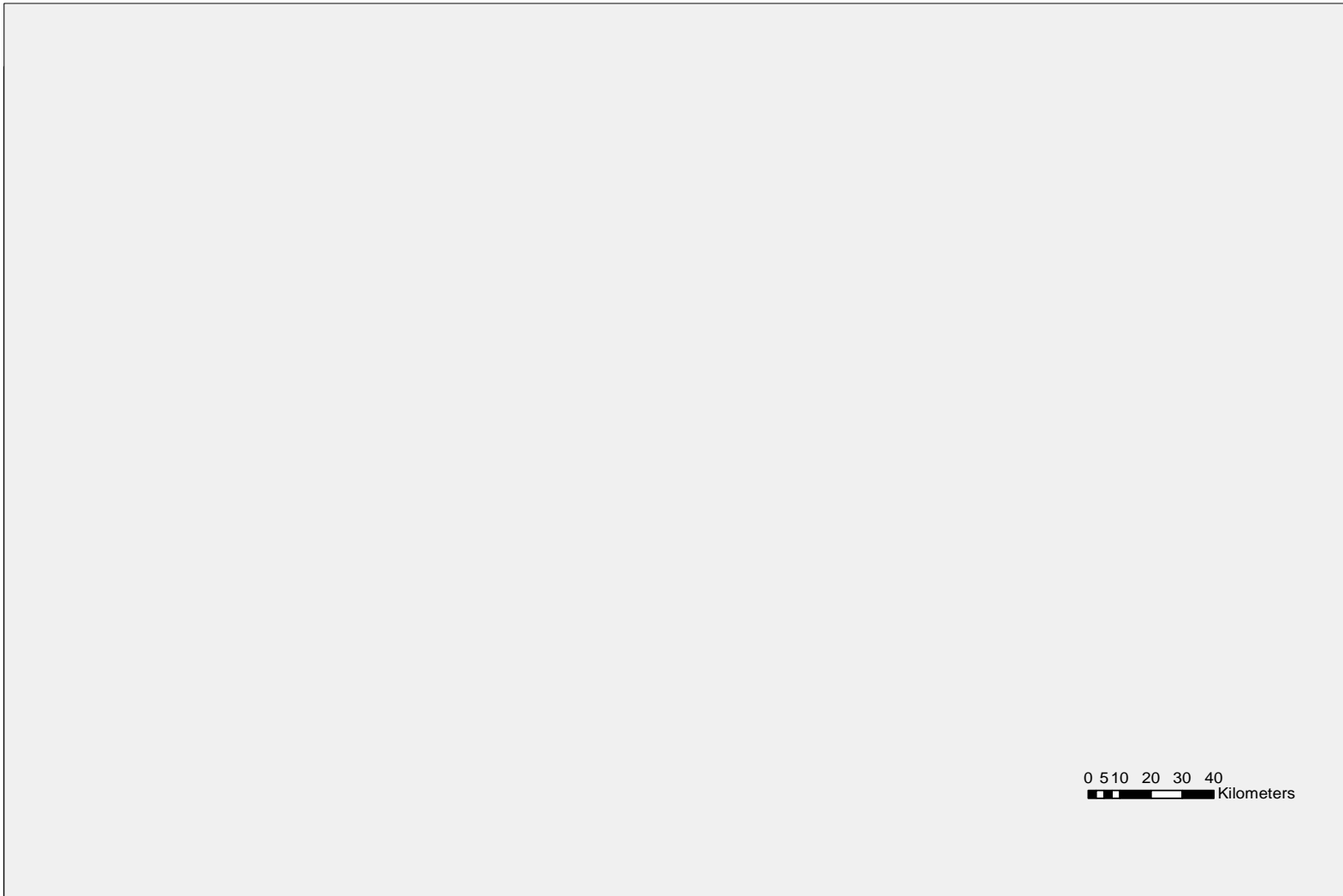
Annex A: Reasons for Not Achieving Good (RNAG)

The diagram below illustrates the scale and the reasons for not achieving good status across Wales. The data was obtained from the 'Reasons for Not Achieving Good' (RNAG) data that was gathered from the investigation work carried out during the first cycle of the River Basin Management Plans. RNAGs are categorised as suspected, probable or confirmed, depending on the level of confidence in our investigation. This is available on

[Water Watch Wales](#)



Annex B: Targeted Catchments For Farming Connect Advisory Programme



Water Bodies identified with impacts from agriculture

No.	Water Body ID & Status	Name & Location	Details of Agri Impacts	Planned Actions	NRW Lead
	SOUTH WEST				
1	GB110060029070 MODERATE	Crychiau - headwaters to confluence with Gwili	<p>Poor slurry management and potential lack of slurry storage causing poor application of slurry to land during unfavourable weather and soil conditions. Over application of slurry and fertilisers causing excess nutrients and associated run-off and leaching.</p> <p>Maize growing has also increased in this catchment which would also contribute to soil erosion and nutrient losses during the winter.</p> <p>Soil bank erosion causing silt and sedimentation due to lack of buffer strips.</p>	<p>Taclo'r Tywi including Giving free pollution prevention advice that can help make financial savings at the farm. An example being reducing the volume of slurry being produced and subsequently cutting the costs associated with spreading and inorganic fertiliser use.</p> <p>Helping inform and facilitate discussion groups within the Tywi Valley where members can share good practice and advice. A similar project several years ago with maize growers in the Afon Teifi river catchment resulted in better crop yield and reduced soil erosion. Discussion groups could range from soil and crop management to dealing with invasive plant species (such as Himalayan Balsam which has taken hold in the lower reaches of the river).</p> <p>Promoting innovative new ways of doing things that will specifically benefit farming within the Tywi river catchment. Current ideas include using new technology to treat agricultural slurry to reduce the risk</p>	Phil Morgan

				of pollution occurring and lower operating costs.	
2	GB110060036260 MODERATE	Ddu headwaters to confluence with Dulais	Poor slurry management and potential lack of slurry storage causing poor application of slurry to land during unfavourable weather and soil conditions.	Tadlo'r Tywi including Giving free pollution prevention advice that can help make financial savings at the farm. An example being reducing the volume of slurry being produced and subsequently cutting the costs associated with spreading and inorganic fertiliser use. Helping inform and facilitate discussion groups within the Tywi Valley where members can share good practice and advice. A similar project several years ago with maize growers in the Afon Teifi river catchment resulted in better crop yield and reduced soil erosion. Discussion groups could range from soil and crop management to dealing with invasive plant species (such as Himalayan Balsam which has taken hold in the lower reaches of the river). Promoting innovative new ways of doing things that will specifically benefit farming within the Tywi river catchment. Current ideas include using new technology to treat agricultural slurry to reduce the risk of pollution occurring and lower operating costs.	Phil Morgan
3	GB110060036210 MODERATE	Dulais confluence with Ddu to confluence with Tywi	Over application of slurry and fertilisers causing excess nutrients and associated run-off and leaching.		
4	GB110060036230 GOOD (These three waterbodies form one catchment)	Dulais headwaters to confluence with Ddu	Over application of slurry and fertilisers causing excess nutrient run-off. Some maize grown on lower catchment which would also contribute to soil erosion and nutrient losses during the winter. Soil bank erosion causing silt and sedimentation due to lack of buffer strips.		
5	GB110061030680 MODERATE	Longford Brook - headwaters to	Diffuse pollution – soil and effluent run off – point sources		

		confluence with Eastern Cleddau	identified from poor land spreading management		
6	NA	Pendine Safe Guard Zone	<ul style="list-style-type: none"> • Lack of adequate slurry storage capacity- consequently slurry being spread during unsuitable soil and weather conditions, • Old and obsolete slurry and silage stores which are exempt from regulations, • Poor on-yard dirty water containment, • Lack of Manure Management Plans, • Lack of Nutrient Management Plans and associated soil sampling, • Soil compaction causing run-off, • Cattle poaching along watercourses. 	<p>DCWW have already done a lot of engagement with the farmers within the catchment.</p> <p>In recent years the water quality in the catchment has deteriorated, particularly increasing detections of nutrients (e.g. nitrates), bacteria and turbidity.</p> <p>During 2016/17 DCWW commissioned consultants to engage with farmers in the catchment to provide free pollution prevention reports. DCWW is currently working with farmers in the catchment, facilitated by Agrisŏp to co-create an approach to address the pollution risks and encourage efficient use of farm resources, boosting productivity and farm businesses.</p>	Phil Morgan
	NORTH				
7	GB110102059170 Moderate	Wygyr	Phosphate failure and bathing water failure Poaching & cattle accessing river	<p>NRW Farm visits (ongoing)</p> <p>NRW Biological Surveys.</p> <p>NRW WQ Monitoring (ongoing).</p> <p>Habitats Surveys (possibly Rivers Trust).</p> <p>NRW Septic tank & STWs Campaign. DCWW/LA Misconnections work.</p> <p>NRW Working with landowners to reduce poaching (using possible WFD funds)</p> <p>Farms signposted to Farming Connect already undertaken.</p>	Helen Haider

8	GB41001G204200 Moderate	Ynys Mon Central Carboniferous Limestone	Protected area - Anglesey Fens. Groundwater body failure, unfavourable conditions status. Storage issue	NRW review of groundwater monitoring data to determine future actions. Nutrient Management Advice. NRW Farm Visits. Some Farms already received Farming Connect advice.	Helen Haider
9	GB110102059100 Moderate	Tan R'Allt	Phosphate failure	NRW Farm Visits. NRW River walk to identify issues. NRW STW Work (ongoing) Farms signposted to Farming Connect already undertaken.	Helen Haider
10	GB111067052130	Pulford Brook	Phosphate failure	Farms to be signposted to Farming Connect advice and guidance. NRW NVZ Farm Visits (18/19).	Chiara Casserotti/Bethan Beech
11	GB110066059980	River Gele	Phosphate failure Overall WFD class – MODERATE	Suspected issues related to sewage discharges, septic tanks and dairy/beef farming. NRW currently undertaking investigations to confirm issues. Potential Operational work to be confirmed following start up meeting with Farming Connect: NRW Farm Visits. NRW River walk to identify issues. NRW STW Work (ongoing) Farms signposted to Farming Connect.	Nick Vaughan
	MID				
12	GB110062039130 POOR	Hirwaun - headwaters to confluence with Teifi	Dairy herds so large volumes of slurry being spread on not enough land. The field indices are high so phosphate and nitrogen leach out and the river		Kim Jones

			fails for diatoms and macrophytes and phosphate.		
13	GB110063041520 MODERATE	Wyre Fach - headwaters to confluence with Wyre	Same as above.		Kim Jones
14	GB110063041530 MODERATE	Wyre - headwaters to tidal limit	Same as above + uncontrolled access by livestock to rivers.		Kim Jones
15	GB110063041450 MODERATE	Aeron - confluence with Gwili to tidal limit	Same as above + possibly spreading too close to rivers		Kim Jones
16	GB109055042110 GOOD	R Aran - source to confluence with River Ithon	High density of free range poultry units		Nik Salter
17	GB109055042270 MODERATE	R Ithon - confluence Camddwr Bk to confluence with R Wye	High density of free range poultry units with concerns with respect to the management of the volume poultry litter produced		Nik Salter
	SOUTH EAST				
18	GB109055029630 MODERATE	Llanymynech Bk - source to conf R Trothy	High P levels - possible diffuse yard and or field run off		Nik Salter
19	GB109055029660	Trothy - source to conf Llanymynech Bk	Moderate for Phosphate yard and field run off issues		Nik Salter
20	GB109055029650	Llymon Bk - source to conf R Trothy	yard and field run off issues		Nik Salter
21	GB109055029640 GOOD	R Trothy - confluence Llanymynach Bk to conf Llymon Brook	Same as above		Nik Salter
22	GB109055029680 MODERATE	R Trothy - confluence Llymon Bk to conf R Wye	Same as above		Nik Salter
23	GB109055036900 (Protected areas driver SAC)	Afon Llynfi - source to confluence Dulas Brook	High Phosphate levels – possible diffuse yard and or field run off		Nik Salter
24	GB109055036950 GOOD	Afon Llynfi - confluence Dulas Bk to confluence R Wye	Same as above		Nik Salter

25	GB109055036910 Moderate	Ennig - source to conf Afon Llynfi	Elevated Phosphate Levels.		Nik Salter
26	GB109056026940 Moderate	Olway Brook - confluence Nant y Wilcae to confluence R Usk	Would support DCWW potential STW improvements in water body upstream. Previous NRM agri work here.		Nik Salter
27	GB109056032920 POOR	Olway Brook - source to confluence Nant y Wilcae	Previous Farming Connect work here. Previous NRM agri work here.		Nik Salter
28	GB109056032930 MODERATE	Nant y Wilcae - source to confluence Olway Brook	Would support DCWW potential STW improvements. NRM agri actions required		Nik Salter

Annex C Examples of Generic Water Quality Improvement Messages that need to be developed further with Farming Connect:

Key Messages for Farming Connect in Relation to Agricultural Pollution:

We all need to play our part in ensuring that we have a healthy environment in Wales.

- All human activity has the potential to impact on our environment and this includes agriculture. Diffuse and point source pollution from agriculture must be addressed in parallel with the efforts being made by other sectors
- Protecting good water quality through sound agricultural practices will help to underpin 'Brand Wales'. The development of this brand is key to promoting Welsh quality products at both home and abroad.
- The consumers of farm produce are willing to support government policy to support the agricultural community but in return they expect farmers to be the stewards of the countryside.

Running a farm and producing high quality produce involves managing energy and resources. These are the building blocks of good agricultural practice.

- The responsible storage, use and disposal of chemicals, (e.g. pesticides, sheep dips, fertilisers and oils) is a key component of good farming practice.
- Good soil management reduces sediment run off, promotes healthy plant growth and develops soil structure and fertility.
- The protection of river banks will prevent erosion as well as helping to protect the health and welfare of your livestock.

Manures and slurry are an important financial resource on farms, providing valuable free nutrients

- • Make efficient use of nutrients by applying manures and slurries at times and at rates to match crop requirements. Using your nutrient assets wisely can help reduce costs and improve farm business profitability as well as significantly reducing reliance on inorganic fertilisers.
- • Slurry has an average value of £78 per cow produced per year which is why we're asking farmers and contractors to be "slurry savvy".

Progressive agricultural businesses are those that address the causes of agricultural pollution.

- • Pollution prevention starts at the planning stage. All proposals to increase production should involve planning ahead and thinking about how to deal with increased quantities of animal manures.
- • Slurry stores must be fit for purpose in terms of both their capacity and condition. Without this, the safe storage and application of nutrients will be compromised.

If something does go wrong and slurry, chemicals or soil have either entered, or are at risk of entering a stream or river, report this straightaway to NRW on 03000 65 3000. Duty officers will always be on hand via this 24-hour pollution hotline to provide advice. The sooner a problem is reported, the easier it will be to contain it - and the less damage it will do!

Annex 5 Wales Land Management Forum Agri-pollution– Improve understanding and deliver advice and guidance to improve land management practices with the aim of reducing Agricultural Pollution. Progress report from Farming Connect 22 March 2018

Short Film	<p>A meeting was held at NRW offices in Cross Hands on the 14th of March between the contributors for this short film. In attendance Nic Salter NRW, Phil Morgan NRW, Keith Owen ADAS, Chris Duller, Rhodri Jones Farming Connect, Sgript film production company. Dŵr Cymru were not able to attend on the 14th but are keen to contribute. Further discussion will take place shortly.</p> <p>It was agreed during the meeting that one film could capture the relevant information from each sector. This will work better logistically and also avoid repeating any information during the open events. To expand on the key messages further KT videos could be produced to provide more detail as the main video should be concise to keep the viewer’s attention.</p> <p>Filming will take place on the 17th/ 18th of April at Upper Pendre, Llangors following recommendation from Nic Salter and Keith Owen.</p>
PowerPoint Presentation	<p>Keith Owen will be preparing a PowerPoint presentation based on the content of the short film. Training will be provided to key Farming Connect staff on the 10th of April.</p> <p>The presentation will be delivered at the first Master Grass event on the 16th of April and will be delivered at other Knowledge Transfer events, where appropriate going forward.</p>
Exhibition Props	<p>Following feedback from Technical Officers and farmers we have decided to scale down the ‘Rain Stimulator’ option. The general consensus was that there may be a negative perception from farmers that Farming Connect have purchased an expensive rain stimulator.</p> <p>Therefore, a much cheaper option will be used made of plastic bottles, to view a demonstration using this method please see: https://www.youtube.com/watch?v=tiRWpuUsHNw</p>
Directly Targeting	<p>As agreed at the last Wales Land Management Forum, the following will be carried out:</p> <ul style="list-style-type: none"> • 6 SPG events where all contacts in the priority waterbodies will be invited to attend • Additional events for some specific waterbodies, ahead of the SPG events, where NRW have identified that there is a risk of the nearby beaches losing their blue flag status.

NRW will write to all businesses identified in the water bodies.

Farming Connect will follow up with a letter inviting all businesses to one of 6 Sustainable Farming Events. All businesses identified within the 28 priority waterbodies will be personally invited to attend these events. There were previously 26 waterbodies, there are now 28.

The events will be open to all farming businesses in Wales and a general marketing campaign will be launched to promote the events.

The events will address the specific agri impact for the area in addition to wider agri pollution impacts, and information will be available on the Welsh Government's Sustainable Production Grants.

The proposed locations for the events are as follows:

- Haverfordwest Showground
- IBERS or Pantyfedwen Hall, Pontrhydfendigaid
- Sioe Môn or Glynllifon
- Rhug Estate
- Royal Welsh Showground
- Raglan Livestock Market

Format

The events will be held between 1.00pm – 9.00pm on a drop-in basis and will include a variety of stands which will provide information for farmers and a specific seminar area which will hold 3 Sustainable Farming Seminars (same seminar repeated three times) at 2.00pm, 5.30pm and 7.30pm

Content of Sustainable Farming Seminar**

- Reducing Agri Pollution Film (10 mins)
- Providing Solutions – Keith Owen ADAS (30 mins)
- Farmer Case Study (15 mins)
- SPG – Gareth Wilson, Welsh Government & information on the Glastir Small Grant scheme – Water theme (15 mins)
- What's on offer from Farming Connect (5 mins)

**The content of the three seminars held during the event may be different if there is more than 1 agricultural impact in the area

Stands

Examples of stands include various elements of Farming Connect, FLS, Advisory Companies, Banks, Unions, CLA, YFC, and possibly companies who can provide the equipment listed on the SPG list. If commercial companies are allowed to attend, then an open call will be issued so that all interested companies will have to register by a specific date.

Self-reporting

A KPI has been set to:

- Increase the proportion of farmers self-reporting pollution incidents (with a potential increase in the number of reported incidents in the short term).

Self-reporting, and the support available from NRW, will be explained at the SPG meetings, and farmers will be encouraged to consider self-reporting.

Compulsory Attendance

We have proposed that Farming businesses who wish to apply for the SPG will be required to attend the Sustainable Farming Seminar. The business Head of Holding, or one of the business partners (as identified during registration with Farming Connect and registered with RPW online) will be required to sign in at the seminar.

Pre-booking and registration will be mandatory and individuals attending must be registered as a business partner with Farming Connect and Welsh Government Rural Payments Wales.

Water Quality Campaign

As part of the Water Quality Campaign all businesses identified within the 28 priority waterbodies will be personally invited by letter to attend these events.

The events however, will be open to all farming businesses in Wales and a general marketing campaign will be launched to promote the events.

Additional events

It was agreed at the last Wales Land Management Forum that we would arrange specific and additional events for holdings within waterbodies where there was a risk of beaches losing their blue flag status.

Following further discussions with Sarah Hetherington, it has been proposed that we will hold combined events for waterbodies that are in close proximity to each other and have the same agricultural impact.

There will be 15 events held during 2018, in addition to the 6 larger SPG events.

All holdings within the targeted areas will also be specifically invited to the SPG events.

Should those businesses want to apply for the SPG, they would need to attend one of the Sustainable Farming Events at a later date also.

So far, the following event has been arranged, with a letter from NRW been sent first, followed by an invitation to a Farming Connect event:

Waterbody	NRW letter sent	Date of FC meeting
Pendine	16/03/2018	11/04/2018
Gele	23/03/2018	18/04/2018
Tan 'Rallt and Wygyr	29/03/2018	30/04/2018
Ynys Mon Central Carboniferous Limestone	03/04/2018	01/05/2018

We have now received information from NRW for the following waterbodies and events are currently being finalised:

Gele	
Wygyr	Combined meeting as agreed by NRW
Tan Rallt	
Ynys Mon Central Carboniferous Limestone	

NRW are currently preparing the content for the remaining 23 waterbodies.

	<p>Input required from group members:</p> <p>Although the specific list of farms located within these waterbodies cannot be shared, we would encourage all organisations to encourage their members to attend these meetings if they have received a letter from NRW/Farming Connect</p> <p><u>Agri-Contractors</u></p> <p>We have been targeting agri contractors. The following agricultural machinery dealer shows were attended during February:</p> <p>21.02.2018 – CASE RWAS Showground 21.02.2018 – Mona Tractors, Ynys Môn 28.02.2018 – 1.03.2018 – Emyr Evans, Ynys Mon</p> <p>Factsheets were distributed and Development Officers engaged in conversations with farmers relating to the importance of reducing agricultural pollution.</p> <p>Most of the farmer related conversations were related to the grants available through the FBG, Glastir Small Grants and potentially the future SPG. Some of these included equipment and or capital infrastructure relating to clean and dirty water separation and slurry storage. Nutrient Management Planning and the funding available through Farming Connect was also discussed with many farmers.</p> <p>Development Officers also spoke to providers of slurry storage and water storage solutions. They had questions about the various grants, eligibility etc.</p>
Good practice case studies	Keith Owen has helped us identify potential case studies.
Training for all front-line staff	<p>Meeting was conducted with all front line staff on the 9th of January and Speakers included:</p> <p>Rachel Lewis-Davies, NFU Cymru Keith Owen, ADAS Brian Klass, NRW Dŵr Cymru</p> <p>An Agri-pollution CPD Seminar has been arranged for all front line staff for the 14th of May. The seminar will be provided by IBERS, Bangor University and ADAS.</p>
Farming for the future events	Key messages were included in all Farming for the Future events held during January and February

<p>Demonstration Network Events</p>	<p>Input required from Forum:</p> <p>In addition to project work which is continuing on Demonstration sites, as outlined in the original proposal, we propose to arrange a series of meetings entitled “Soil, Muck and Money” on focus sites during May. These events will promote the benefits of good soil management and nutrient management planning and technical advice on agricultural infrastructure.</p>
<p>E Factsheets</p>	<p>We currently have a supply of these factsheets, brought over from the last contract available in hard copy and online.</p> <p>Clean and Dirty Water Separation Clean and Dirty Water: Case Studies Sustainable Water Use Buildings and Animal Health: Identifying Problems, Providing Solutions Land Drainage Planning and Managing Outwintering Outwintering Cattle Successfully Maize Under Plastic Soil Structure Sustainable Water Use</p>
<p>E-learning Module</p>	<p>Completed:</p> <ul style="list-style-type: none"> • Nutrient Management Planning • Good Soil Husbandry • Manure Management Planning & Advantages and best practice for lower risk methodologies for slurry applications <p>In Progress:</p> <ul style="list-style-type: none"> • Importance of riparian habitats and buffer zones, swales and sediment traps • Farm Infrastructure, slurry and silage storage <p>Following are outstanding:</p> <ul style="list-style-type: none"> • Clean-dirty water separation, • Code of Good Agricultural Practice • Storage and handling of oil; <p>If anyone has a fact sheet or technical document on any of the above that we could use to develop the module that would be a great help.</p>
<p>Partner Engagement</p>	<p>Once the materials have been produced then they will be made available to all members of WLMF</p>

Technical Publication	<p>An article entitled 'Good practice guidance: slurry stores' has been written by Keith Owen, ADAS for inclusion in the next Farming Connect Technical Publication which will be posted to all registered businesses on the 23rd of March.</p> <p>The following messages is included at the end of the article to promote the Farming Connect Advisory Service:</p> <p>It is important that you seek professional advice for their design and construction. Farming Connect offers an advisory service which could help save significant time and money and future proof your storage requirements. By making improvements to yard areas and water management it may be possible to reduce your storage requirements significantly before making any costly infrastructure changes. For more information, contact Farming Connect on 08456 000 813.</p>

Annex 6 - RDP Investment Measures relevant to reducing agricultural pollution

Sustainable Production Grant Scheme (SPG)

The SPG Scheme aims to provide capital investment in facilities and equipment relating to:

- animal health and welfare
- crop storage
- production housing and handling
- renewable energy production
- soil and crop management.

The maximum grant rate for any individual investment project is 40% of the total investment cost, regardless of the size of the enterprise and location. The maximum grant threshold per enterprise for any individual investment project is £400,000 whilst the minimum is £16,000. Only one grant award per enterprise will be made in the period from 29 July 2015 to 31 December 2020.

The scheme is open to farmers, landowners, small and medium-sized enterprises (SMEs) and large businesses, voluntary organisations and co-operatives, involved in primary production of agricultural products. Applications are invited from all farming sectors including Arable, Beef, Dairy, Goats, Pigs, Poultry, Sheep, Horticulture (including hydroponics and aquaponics) and Apiculture.

A total of 3 application windows have been opened so far - with £14M awarded to 81 farms.

Amongst the types of projects relevant to agricultural production that might be supported under the SPG investment themes are those listed under "Production Infrastructure, Housing and Handling" viz:

Effective housing and handling facilities for livestock and buildings for protected cropping is critical to any farming business. This can lead to efficiencies in the production system as well as increased health and safety. All housing facilities should demonstrate that appropriate energy, water and nutrient management infrastructure is considered as part of the application.

Examples of items that might be included in an investment proposal are:

- *Livestock handling systems*
- *Livestock housing - demonstrating how the housing will offer the most efficient facilities relating to the cross cutting themes*
- *Crop production infrastructure e.g. glasshouses, hydroponic systems*
- *Specialist horticultural handling equipment*
- *Slurry / manure stores - these should have sufficient capacity for 5 months*

- *storage and meet the SSAFO Regulations 2010*
- *Dairy production infrastructure e.g. milking parlours, bulk tanks, dairy equipment*

Farm Business Grant (FBG)

The FBG was launched in 2017 and is designed to help farmers improve both the economic and environmental performance of their holdings. It provides a 40% contribution towards capital investments in equipment and machinery that have been pre-identified as offering clear and quantifiable benefits to farm enterprises.

We understand from the Welsh Government website, a total of £40M funding will be made available over 4 years. The minimum grant available is £3,000, and the maximum is £12,000 (the latter would equate to a maximum £30,000 investment per farm). Only one application can be approved per business throughout the lifetime of the Scheme. There have been three application windows to date.

Glastir Advanced

Glastir Advanced is intended to deliver environmental improvements for a range of objectives including habitats, species, soil and water and is available to farmers and other land managers. Financial support is targeted at specific locations where action will best deliver the intended outcomes. The targeting process is based on using a set of Geographical Information System (GIS) maps. Different areas of Wales are targeted for particular objectives with specific management options and capital works available to help deliver the required outcomes.

Glastir Advanced contracts begin on 1 January of each year and have a five year duration. Participating in Glastir Entry is no longer necessary in order to access Glastir Advanced.

Data provided by Welsh Government shows that commitments under the Glastir Advanced water quality options (Focus Area 4B) involve 919 CRN's with annual management commitments as well as 666 CRN's with capital works. Annual commitments cover 8960 ha of land and there are over 3340 capital items. Soil sampling, field boundary work, hard surfacing and guttering are amongst some of the most frequently deployed capital projects.

A key part of Glastir Advanced is the use of GIS-based maps which enable the scheme administrators to negotiate contracts meeting the particular environmental priorities of each locality. In the case of water quality, these maps enable the negotiation of specific prescriptions which can help to mitigate the risk of agricultural pollution within farmyards, as well as field works such as buffer strips, new hedgerows, tree planting, conversion of arable land to grassland and a reduction of agricultural inputs/stocking levels on sensitive locations within particular catchments.

Resource constraints mean that the current Water Quality targeting maps are based on analysis completed in 2012. This means that the maps do not take account of WFD Cycle 2 data and so may not take account of more recent agricultural pollution issues.

Glastir Small Grants

This stand-alone capital works scheme contributes to the delivery of Welsh Government's ambitions to tackle climate change, improve water management, restore traditional landscape features and enhance habitat linkage for pollinators.

The scheme comprises three themes:

Carbon – aid the delivery of Welsh Government's ambitions to increase carbon sequestration.

- **Water** - improve water quality and reduce the risk of flooding.
- **Landscape and Pollinators** - maintain the traditional landscape features in Wales, and provide habitat linkage for pollinating insects.

Initial applications for the first round of the carbon theme commenced in 2016, with all projects to be completed and claimed for by 31 March 2017.

The first round of the water theme opened in 2016 with contracts issued from April 2017. All work is to be completed and claimed for by 31 March 2018.

The first round of Landscape and Pollinators theme opened 2017 with all projects to be completed and claimed for by 31 March 2018.

Information on current window.

The maximum funding per farm under each of the grant themes was initially set at £5000 for the Carbon theme, although this was subsequently increased to £7500 for Water and also for Landscape and Pollinators. The maximum limit per farm only applies during a particular application window. In theory, if a farm has been selected for full funding in each of the three windows, the payment would be £20,000.

Farmers holding a Glastir Advanced contract cannot apply for Glastir Small Grants.

The water theme is the particularly relevant in terms of reducing the risk of agricultural pollution and the main capital works available under the most recent application round are listed below. Plainly some capital works are more directly related to the control of pollution than others (eg rainwater goods) whilst the impacts of hedgerow establishment and management are more dependent upon location (and are often focussed rather more on reducing flood risks than on the management of water quality).

A key part of the Glastir Small Grants application process is the use of electronic maps showing the "likelihood of selection" across Wales for each of the capital works listed above. These maps are based on the risks to water quality and the likelihood

of flooding in each location, together with an assessment of the extent to which each type of capital work is likely to be contribute to mitigating the risks.

In terms of adding additional capital items to those already available, the provision of red clover and other nitrogen fixing crop seed would help to reduce fertiliser inputs whilst also supporting pollinators.

Glastir Woodland Creation (GWC)

Research undertaken in Wales and elsewhere has shown just how effective trees can be in improving river quality, enhancing low flows, and reducing the impact of storm run-off and diffuse pollution. Major benefits can be achieved even with small planting schemes (provided these are properly sited) and many can be accommodated without affecting farming activities.

Welsh Government is committed to planting more trees in Wales through the GWC so as to deliver a wide range of benefits including providing shelter for stock and buildings for severe weather, establishing habitats for wildlife and reducing the risk of downstream flooding and siltation in watercourses. Financial support targets those locations where tree planting will not impact priority habitats and species. Welsh Government has developed the [Woodland Opportunities map](#) on the Lle portal - this provides information to applicants on the suitability of any proposed site for new planting.

There have been two Expression of Interest windows for GWC in 2017. The 1st window closed on 1st May 2017 and the 2nd window will open in August 2017. All applications are scored against Glastir Woodland Creation GIS layers. Once all successful expressions of interests are confirmed, applicants must use a registered woodland planner who is a member of a professional institute (most planners are members of the Institute of Chartered Foresters). Planners write a management plan which must comply with the scheme rules and the UK Forest Standard.

The complexity of tenancy legislation provides a barrier to uptake of Welsh Government's aim to expand farm woodlands. The ownership of trees either existing or planted by the tenant, remains with the land owner. Coupled with the short length of many Farm Business Tenancies (which currently average just four years) there is little incentive for tenants to take advantage of such grant schemes.

Sustainable Management Scheme (SMS)

The SMS offers grants to collaborative groups looking to:

- improve natural resources and the benefits they provide;
- take action to reduce greenhouse gas emissions;
- improve business and community resilience to the impacts of climate change.

Grants can range from a minimum of £10,000 to a maximum of £5,000,000 to help start up and facilitate new collaborations through to landscape-scale ambition co-ordinating actions and input from several parties to achieve lasting benefits across

our communities. The maximum grant rate for any individual investment project is 100% of total costs.

The scheme is open to a wide range of collaborations made up of a variety of individual and organisations including:

- small and medium-sized enterprises (SME's) and large businesses, education or research establishments
- farmers, foresters, other land managers
- community or voluntary groups (inclusive of all non-government organisations) associations of owners, community woodlands, and trusts
- local authorities.

Of those SMS proposals submitted so far, the BRICS' (Building Resilience in Catchments) project in Pembrokeshire is the most relevant to tackling agricultural pollution. This application comprises an ambitious landscape scale collaborative programme, bringing together partners from across the supply chain, with land managers, industry, conservation managers and local communities viz:

BRICS involves working in three diverse sub-catchments (circa 100 farms in total) to develop Climate Change mitigation plans and actions to improve soil management, water management and related habitat measures. The proposed sub-catchments are located at Llys y Fran reservoir (Dairy/Mixed), Pelcomb Brook (Dairy/Mixed) and Winterton Marsh (Arable) and have been chosen to protect drinking water intake and enable further commercial development.

Targeted measures such as nutrient soil mapping, precision farming and constructed wetlands will benefit farms economically as well as environmentally, creating a business leader culture with earned regulatory recognition. Improvements will be measured financially and environmentally through modelling and analysis.

The SMS is currently listed on the Welsh Government website as “closed”, but with future dates for expressions of interest “to be confirmed”²³.

It would be worth exploring the cost-benefit ratios and value-for-money of schemes such as BRICS (Building Resilience in Catchments) by comparison with more traditional agri-environmental approaches. For example, BRICS cannot provide measures which are offered by under any other agri-environment scheme such as Glastir.

²³ <http://gov.wales/topics/environmentcountryside/farmingandcountryside/cap/ruraldevelopment/wales-rural-development-programme-2014-2020/?lang=en>