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Submission to the Department of Housing, Local Government and Heritage on the Public Consultation on Stage 2 of the Nitrates Action Programme.

September 2021

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## Introduction to An Fóram Uisce | The Water Forum

An Fóram Uisce | The Water Forum was established in June 2018 in accordance with the provisions of Part 5 of the Water Services Act 2017. The Water Forum is the statutory body representative of all stakeholders with an interest in the quality of Ireland’s water bodies. The Water Forum consists of 26 members including representatives from a wide range of organisations with direct connections to issues relating to water quality and public water consumers. Approximately 50 different organisations were involved in the nomination of members.

The role of the Forum is that of a strong independent stakeholder body contributing to water policy, which supports public and stakeholder engagement on all matters relevant to water. One of the strategic themes of the Forum is reviewing and advising on the implementation of Ireland’s River Basin Management Plan, which sets out Ireland’s requirements and objectives to meet the EU Water Framework Directive.

## Background

Since the inception of the latest Nitrates Action Programme 2017-2021, significant progress has been made in understanding catchments and the pressures that are impacting on water quality. EPA catchments unit have developed and made available Pollution Impact Potential Maps that rank the relative risk areas within the landscape for diffuse phosphorus to surface waters and diffuse nitrogen to surface or groundwater. The Local Authority Waters Programme (LAWPRO) have spent 3 years characterising 191 catchments and identifying critical source areas for pollutants entering waterways and potential point and diffuse sources of pollution. The Agricultural Sustainability Support and Advisory Programme (ASSAP) has been working with farmers in these priority catchments to undertake measures to protect water quality. ASSAP and LAWPRO have facilitated training programmes with farmers in Priority Areas for Actions (river catchments identified for improvement in the River Basin Management Plan). The Agricultural Catchments Programme (ACP) has also provided learnings on the effectiveness of current derogation measures and one of their key findings is that supporting farmers to make better decisions regarding how they manage nutrient applications is likely to be the single area with the greatest potential to improve outcomes for water quality.

By using the learnings from previous NAP iterations combined with the publicly available scientific data for each waterbody, the required measures can be identified and targeted. This allows for the right measure to be implemented on the right farm to protect water quality, thus contributing to agricultural activity such that it does not have a detrimental impact on the local environment. While the structures are in place for the agencies (LAWPRO, EPA and ASSAP as well as other agencies responsible for water management in Ireland) to work together to support farmers, the Forum is concerned that the effectiveness of the structure is reviewed and enhanced on an ongoing basis.

Ireland has had Nitrates Action Programmes in place since 2006 and yet the EPA reports continued deteriorations in water quality as a direct result of excess nutrients. The scientific knowledge of where the action is needed is known, the measures needed are known and structures to support farmers with implementation measures are in place therefore the key to real improvements in the environment is down to levels of ambition. It is within this context that The Water Forum makes this submission.

## Overview of Submission

1. The Water Forum welcomes the opportunity to respond to the Stage 2 Public Consultation Paper on the Fourth Review of Ireland's Nitrates Action Programme, hereafter the NAP, public consultation.
2. The Water Forum recognises the scope of work undertaken by the Department of Housing, Local Government and Heritage (hereafter, the DHLGH) to develop the NAP public consultation document and acknowledges the significant developments in the NAP for the protection of Ireland's water, climate and biodiversity.
3. The items included in this submission are those to which members of the Water Forum have identified as priority issues and which are within the remit of the Water Forum. These do not preclude the importance of items contained within the NAP public consultation to which the Water Forum has not responded. The Water Forum would like to address a number of items not highlighted in the draft paper of Stage 2 of the NAP which members feel are relevant to address.

4. The Forum welcomes the thorough introduction provided in the draft NAP, which acknowledges and provides evidence of the impacts of farming on water quality.
5. The Forum welcomes the acknowledgement for the 'right measure in the right place', which will require targeted measures for optimum environmental outcomes. The Forum acknowledges that there is a lag between the publication of scientific evidence around water quality and the information being shared with farmers.

The Forum believes that some of the key challenges for meeting water quality objectives of the Water Framework Directive are;

- ◆ Deciding on what measures are required and targeting measures for optimum environmental outcomes
- ◆ Deciding on how the necessary measures/actions can be implemented effectively and efficiently.
- ◆ Deciding how the measures/actions will be paid for.
- ◆ Ensuring that the 'polluter pays' principle is maintained.
- ◆ Integrating payments for environmental benefits, e.g. for carbon capture, with water quality and biodiversity enhancement such that the costs of necessary measures/actions are balanced by payments for 'public goods'.

## Specific Items to Address

### 1. Governance

The implementation of the new NAP will require cross-component planning where disciplines and organisations from multiple Government departments and agencies should work together in a co-ordinated manner to achieve water, climate and biodiversity targets. The Water Forum recommends that a section is added to the draft NAP on the Governance of the Programme, which should outline the roles and responsibilities of Government departments and agencies for implementation, monitoring and evaluation of progress. The Forum recommends transparency in the role and actions taken by the Nitrates Expert Group, where information on its members, actions, monitoring and evaluation is made publicly available. Furthermore, monitoring of the NAP should be carried out by multiple agencies, with increased transparency on the developments and evaluation of the plan.

Recognising that the draft NAP was developed by the DHLGH in consultation with the Department of Agriculture Food and Marine (DAFM), the Forum recommends that this cross-departmental collaboration should be further developed to ensure coherence between national policies, such as NAP, the Common Agricultural Policy (CAP) and the River Basin Management Plan (RBMP).

While the Water Forum is predominantly focused on water quality, it takes the view that cross-policy coherence and the development of measures with multiple co-benefits will be essential for Ireland to meet both national and European water quality and climate targets. Furthermore, rivers, lakes and estuaries not meeting good ecological status are less resilient to the impact of climate change such as droughts and floods, increased water temperatures and acidification. Low flows mean pollutants are concentrated rather than diluted and temperature increases reduces water oxygen levels. Therefore, measures that are effective at reducing greenhouse gas emissions, will also have positive impacts on water bodies and aquatic ecosystems. Furthermore, water and biodiversity are inextricably linked, where many aquatic and terrestrial species depend on clean water. Solutions or measures for each of

the three environmental components (water, climate and biodiversity) will have synergies/co-benefits and trade-offs that must be considered.

Strong policy coherence will be required to deliver the NAP to allay the continued and worsening nutrient pollution of Ireland's waters, as outlined by the recent EPA report on water quality<sup>1</sup>. While there is an overview of the relevant national policies in the draft NAP, there is no outline or proposal as to how greater policy alignment can be achieved. In the response to Stage 1 of the NAP, the Forum outlined they could not provide a response to the issue of policy coherence as there was no detail on how it would be addressed. The Water Forum, therefore, recommends a designated policy coherence group to ensure alignment between the key national and European policies which impact both agriculture and the environment, in particular the RBMP, the NAP, the CAP and the Food Vision 2030. This is particularly important over the coming months where both the CAP and the NAP are being developed, where it is important to ensure that where measures that are identified as being required for NAP are also included as measures in the new CAP Strategy, so farmers can be paid for addressing the water, environment, biodiversity issues through CAP payments. Furthermore the Forum adheres to the principle of public money for public good and it recognises the likelihood of requirement of exchequer funding for spatially targeted measures above the current legal requirements. Overarching governance and an integrated and collaborative approach to managing Ireland's catchments, freshwaters and transitional, coastal and marine waters will be essential for Ireland to meet its requirements of the Water Framework Directive, along with climate and biodiversity targets.

#### Key Recommendations

- A section should be added to the draft NAP on the Governance of the Programme, which should outline the roles and responsibilities of Government departments, agencies and the nitrates expert group for implementation, monitoring and evaluation of the NAP.
- A policy coherence group should be designated to lead coherence and alignment between the national policies, particularly while measures for the NAP and CAP are being finalised.

## 2. Integrated landscape catchment level approach (FILLM)

In 2020, the Water Forum adopted the Framework for Integrated Land and Landscape Management (FILLM)<sup>2</sup>, as the overarching framework for not only catchment management, but also environmental management, (see additional document attached), or downloaded at this link: [Framework for Integrated Land and Landscape Management](#). The FILLM encourages multidisciplinary and multi-organisational approaches, as well as environmental policy coherence, policy integration and policy implementation.

The Forum welcomes the acknowledgement of the importance of co-benefits for biodiversity, soils protection and climate impact mitigation in the draft NAP, connecting the relevant environmental components, as advocated and recommended in FILLM.

The view of the Water Forum is that the NAP would similarly benefit from the conceptual framework provided by FILLM, as a means of optimising efficiency and effectiveness in achieving environmental

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<sup>1</sup> EPA, 2020. Water Quality in 2020, an Indicators Report. [Monitoring & Assessment: Freshwater & Marine Publications | Environmental Protection Agency \(epa.ie\)](#)

<sup>2</sup> The Water Forum, A Framework for Integrated Land and Landscape Management; [TWF-FILLM-Report-Feb21-v9WEB.pdf \(thewaterforum.ie\)](#)

outcomes for climate, biodiversity, water quality and soil enhancement. The Forum believe that while designing actions/measures to be included in the NAP, that emphasis is placed on those with a range of co-benefits for water, climate, soil and biodiversity to maximise capacity and resource efficiencies (see Table 1 below).

The Forum is of the view that a more holistic farm and catchment level approach encompassing all environmental pressures will be fundamental for not only reaching water quality objectives, but also making progress towards greater environmental sustainability and low-carbon food production.

The Forum recommends that the NAP adopts an integrated land use management plan, using nutrient management plans aligned with pollution impact potential maps and catchment assessments to form the basis of a joined up collaborative and cooperative approach to environmental management (EPA 2020 p346)<sup>3</sup>. Such an integrated approach could also identify and highlight the assimilative capacity of agricultural/ catchment landscapes to process nutrient loads associated with intensification.

The Forum welcomes the acknowledgement for the ‘right measure in the right place’ in the draft NAP. Spatially targeted measures throughout a catchment or at landscape-scale has the potential to have major environmental outcomes. The use of EPA PIP maps and collaboration between the EPA catchment scientists, LAWPRO, ASSAP and local authorities should be further developed and supported for the development of targeted measures within the NAP.

A catchment level approach could potentially encourage peer learning and the sharing of knowledge with the wider farm community. This is occurring in Priority Areas for Actions at present, and efforts should be made to implement this approach at a national level. The Forum recommends engaging with farmers early in the development of landscape-scale or catchment-based actions so that farmers are facilitated to co-design solutions.

#### Key Recommendations

- The NAP would benefit from the conceptual framework provided by FILLM, as a means of optimising efficiency and effectiveness in achieving environmental outcomes for climate, biodiversity, water quality and soil enhancement.
- Engaging with farmers early in the development of landscape-scale or catchment-based actions so that farmers are facilitated to co-design solutions.

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<sup>3</sup> EPA, 2020. Ireland’s Environment, An Integrated Assessment. [Ireland's Environment | Environmental Protection Agency \(epa.ie\)](https://www.epa.ie/publications/reports/assessments/ireland_environment_environmental_protection_agency_epa_ie)

Table 1. Illustration of the range of environmental benefits provided by different farming and forestry practices within the Framework for Integrated Land and Landscape Management. Taken from Page 20, FILLM

Management option to address pressures	Water quality	Biodiversity	Flood mitigation	Soil conservation	Landscape	Climate Change Mitigation	Climate Change Adaptation
Creation of buffer strips, e.g. riparian zones, grass margins.	●	●	○	●	○	●	○
Planting of clover and multi-species grasses	●	●	-	●	-	●	-
Planting hedges alongside watercourses & across slopes	●	●	○	●	○	●	○
Liming of mineral soil to ensure optimum pH	●	-	-	●	-	●	○
Agroforestry	●	●	○	●	○	●	○
Planting with native woodlands	●	●	●	-	○	●	○
Interception ponds and constructed wetlands	●	●	○	○	●	●	●
Rewetting peatlands	●	●	○	-	○	●	●

● = Management option contributes directly to an environmental benefit  
 ○ = Management option contributes indirectly to an environment benefit

### 3. Nutrient Management Planning (NMP) / Right Measure Right Place

The Water Forum welcomes the acknowledgement for the ‘right measure right place’ and the need to targeted measures for optimum environmental outcomes. The Forum also welcomes that the measures of the NAP are being developed with support of the EPA catchment scientists who can provide the data and scientific support to identify critical source areas. The Forum recommends that farmers are encouraged, trained and eligible to develop and submit NMPs to take ownership over nutrient management on their farms.

The Forum recommends broadening the concept of nutrient management planning, to not only focus on effective nutrient use and production, but also environmental requirements. It is important to note that losses of nutrients (N & P) can occur in certain locations even when good NMP is practised. Where nitrate is a significant issue in freely draining areas, NMP on intensive farms, is not sufficient to prevent

nitrate leaching to underlying groundwater. Where phosphate is a significant issue, NMP is not adequate and pathway interception measures are needed.

Buffer zones are one of the most common and important measures used to mitigate impacts of farming on water quality from a large range of pollutants and significant issues such as phosphate, total phosphorus, sediment, nitrate, ammonium, pesticides and microbial pathogens<sup>4</sup>. It is important however, to consider that effectiveness of buffer strips for mitigating impacts on water quality will be dependent on the permeability of the soil, subsoil and bedrock, and on the topography.

The Forum recommend that spatially targeted and extended buffer zones in poorly draining areas are included as a proposed measures for good nutrient management planning, as they have the potential to have major environmental benefits including interception and reduction in phosphate, sediment and pathogen loss to waters from critical source areas in a catchment, along with co-benefits for biodiversity and climate mitigation. As recommended in the Forum's submission on CAP Proposed Interventions, the Forum recommends that farmers should be paid to establish spatially targeted buffer zones. It will be important to understand that not all farmers will be able to avail of this, it will depend on local conditions and pressures.

Spatially targeted buffer zones should be developed with support from catchment scientists and the new EPA Pollution Impact Potential (PIP-P)<sup>5</sup> maps, which would aid location of the flow delivery paths and points and help design and shape targeted buffer zones to suit the local topography to get optimum benefits. Furthermore, increased training and awareness of critical source areas and targeted measures among farmers would allow for increased collaboration with farmers and the co-design of measures.

#### Key Recommendations

- Broadening the concept of nutrient management planning, to not only focus on effective nutrient use and production, but also environmental requirements
- That farmers are encouraged, trained and eligible to develop and submit NMPs to take ownership over nutrient management on their farms.
- That spatially targeted and extended buffer zones in poorly draining areas are included as a proposed measures for good nutrient management planning

## 4. Soil Fertility

*“Ensuring soil fertility while balancing nutrition of our grassland system to minimise nutrient and sediment loss to the environment is one of the central focuses of this review.”*

The Forum understands that while soil fertility is a key component to minimise nutrient losses to the environment, the Forum recommends there should also be an emphasis on understanding local conditions, such as soil type and topography. There will be certain landscapes where the conditions are not appropriate to achieve optimum fertility levels. An alternative might be to associate 'optimum soil fertility' to being the optimum for the level of farming intensity, e.g. a suckler farmer with 1.0 LU/ha may not need to have the soils at P Index 3 and therefore would apply less P, while still liming

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<sup>4</sup> NFGWS, 2019. A framework for drinking water source protection. Published by the National Federation of Group Water Schemes. [NFGWS Source Protection Framework and Measures Guidance - National Federation of Group Water Schemes](#)

<sup>5</sup> EPA Pollution Impact Potential Maps; [EPA Maps](#)

to achieve the optimum pH. The Forum proposes that ‘optimum fertility’ could instead be considered as ‘appropriate soil fertility’.

The Forum is aware that the Government have invested €10million into a scheme of soil testing; the Forum recommend that there is follow up with those who avail of the soil tests, to ensure they are being used for more effective/efficient fertiliser use. If there will be a limited number of soil tests available to farmers, they should be first made available to those in catchments with at-risk water bodies.

#### Key Recommendations

- In relation to soil fertility, there should also be an emphasis on understanding local conditions, such as soil type and topography.
- Optimum fertility could be instead considered as appropriate soil fertility, where not all farms are suitable for achieving optimum fertility levels.
- Where soil tests under the Governments new initiative are limited, they should be focused in catchments with at-risk water bodies, rather than an even spread across counties.

## 5. Modelling

The Forum acknowledges the work carried out by Dillon et al. 2021<sup>6</sup>, which modelled the impact (environmental and economic) of a number of farm nitrogen mitigation measures in order to inform policy of the best current and potential actions to deliver the catchment-based nitrate load reduction estimated by the EPA.

The Forum welcome this approach and believe it is a very useful step as it allows stakeholders to participate in the planning process through discussions around environmental and economic synergies and trade-offs of the proposed measures of a new national environmental or agricultural policy. While this modelling exercise largely focused on the environmental impact of various measures, it could similarly be expanded in the future to also incorporate the economic impacts of these measures, which could subsequently be used to determine where farmers will need to be financially supported to transition to more sustainable farming practices, using the principle of public money for public goods. The Water Forum recommend that a similar modelling approach is developed for Phosphorus, chemical fertilisers and pesticides, along with socio-economic parameters (costs and their distributions)<sup>7</sup>. Furthermore, geo-spatial models which would integrate local hydrological conditions<sup>8,9</sup> would be extremely useful for assessing optimum locations for targeted measures such as wetlands, buffer zones, fencing, nutrient management and distribution of economic parameters. This spatial

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<sup>6</sup> Dillon, P. Shalloo, L., Ruelle, E., O’Donovan, M., Horan, B., Delaby, L., Richards, K., Wall, D., Spink, J. and O’Brien, D., 2021. [2021 - The Impact of Nitrogen Management Strategies within Grass Based Dairy Systems - Teagasc | Agriculture and Food Development Authority](#)

<sup>7</sup> Lintern, A., Webb, J. A., Ryu, D., Liu, S., Waters, D., Leahy, P., et al., 2018. What are the key catchment characteristics affecting spatial differences in riverine water quality? *Water Resources Research*, 54, 7252–7272. <https://doi.org/10.1029/2017WR022172>

<sup>8</sup> Sidiropoulos P, Tziatzios G, Vasiliades L, Mylopoulos N, Loukas A. Groundwater Nitrate Contamination Integrated Modeling for Climate and Water Resources Scenarios: The Case of Lake Karla Over-Exploited Aquifer. *Water*. 2019; 11(6):1201. <https://doi.org/10.3390/w11061201>

<sup>9</sup> Wang T., Kang F., Cheng X., Han H., Bai Y., Ma J., 2017. Spatial variability of organic carbon and total nitrogen in the soils of a subalpine forested catchment at Mt. Taiyue, China. *CATENA* (155):41-52, August 2017, <https://doi.org/10.1016/j.catena.2017.03.004>

analysis would require significant amounts of data which may not be currently available, but should be considered for future analysis. The Forum considers it necessary that the economic drivers of Nitrogen use inform decision making within the NAP .

One of the key learnings from this modelling exercise was the impact that meteorological conditions can have on nutrient losses to the environment. The Water Forum recommend that future funding is allocated for the development of technologies which can inform farmers on the suitability of weather conditions for the application of chemical fertilisers and slurry. This could build-on and expand precision management advice which has been issued weekly by Teagasc since 2020.

#### Key Recommendations

- The modelling approach carried out for nitrogen mitigation measures should be further expanded to consider economic impacts, which could support decision making within the NAP.
- A similar approach should be developed for measures around phosphate, chemical fertilisers and pesticides, along with socio-economic impacts.
- Future funding is allocated for the development of technologies which can inform farmers on the suitability of weather conditions for the application of chemical fertilisers and slurry.

## 6. Compliance

The draft NAP outlines that the level of compliance with the requirements of the GAP regulations are generally low. The Water Forum welcomes that the Nitrates Expert Group will propose a reform within the sector and recommends a joint approach between DAFM and DHLGH should be developed to outline the current resource issues to ensure compliance with current GAP and NAP regulations. As resources are often limited, inspections and enforcement should be targeted in critical source areas, in attempt to improve compliance in the areas at most risk.

There is concern among Forum members that there will never be enough resources available to increase inspections and enforcements nationally to ensure full compliance with GAP and NAP regulations. Awareness, training and supports should therefore be resourced in an attempt increase the understanding around the need for compliance with GAP regulations for the protection of water, climate and biodiversity, with a view to voluntarily increasing levels of compliance rather than through enforcement. If farmers are involved in the co-design of locally targeted mitigation measures, there is likely to be an increase in ownership and willingness to comply with these measures.

## 7. Training

While the Forum acknowledges that Training was included in Stage 1 of the public consultation on NAP, and that “all submissions were supportive of training for farmers, advisors and industry to ensure a cohesive and collective response to meeting the environmental challenges ahead”, members would like to emphasis the importance of this aspect of the NAP.

Farmers are the primary custodians of their environment, and it is vital that they are supported through education and training in sustainable farming; Training should be considered for;

- Nutrient management planning (which includes environmental factors)
- EPA PIP maps and critical source areas
- Communication and awareness to all rural dwellers on the GAP regulations, local pressures and solutions.
- The impact of fertiliser on water quality and how to reduce its use
- Best practice in nutrient management should be provided to contractors who spread organic and inorganic fertiliser for the farmers.
- Social learning, knowledge exchange events for farmers and co-design of solutions

## 8. Review of ASSAP

This is potentially the first NAP that has a considerable amount of data available on the status of waterbodies through the work of the EPA Catchments team and LAWPRO desk studies and field assessments. The EPA Pollution Impact Potential Maps and the training on Integrated Catchment Management provided to Local Authority personnel and to ASSAP team means that information is available to farmers on the pollution sources, pathways and the mitigation measures that are needed. Reviews of ASSAP's work shows that farmers are receptive to the proposed measures to improve water quality in their river catchments. The Forum acknowledges that ASSAP have faced significant challenges during the Covid pandemic which has prevented them from engaging with farmers on the ground.

To date, the work of ASSAP has been concentrated within the Priority Areas for Action (PAA) and the Forum would recommend that the focus should include all deteriorating and at-risk water bodies. This will require an expansion of local authority staff to characterise the sub-catchments, identify pollution sources and recommend solutions that achieve the right measure in the right place. The Forum supports the need to expand ASSAP, but recommend it expands in parallel with increased catchment scientists, to ensure the ASSAP team have the necessary scientific data and evidence to develop effective farm actions.

The Forum recommends there is increased transparency on the work being delivered by ASSAP, where details of ASSAPs monitoring and assessment programme is with available to stakeholders and to the public. This material should be suitable for all audiences, both farmers and academics.

### Key Recommendations

- That ASSAP should address all deteriorating and at-risk water bodies, rather than only PAAs
- The Forum supports the need to expand ASSAP, but recommend it expands in parallel with increased catchment scientists, to ensure the ASSAP team have the necessary scientific data and evidence to develop effective farm actions

## 9. Slurry Storage

The lack of adequate storage is the main reason for farms failing compliance inspections<sup>10</sup>. Farmers should be supported to assess their requirements and the provision of additional storage, if necessary,

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<sup>10</sup> Lunn, P., Lyons, S. and Murphy, M., 2019. Predicting Farms' Noncompliance with Regulations on Nitrate Pollution. ESRI, Working Paper 109. [WP609\\_0.pdf \(esri.ie\)](#)

needs to be addressed as a business investment. The Forum recommends assessment of current practice in slurry storage in an attempt to improve compliance.

Many intensive farming operations including poultry<sup>11</sup> and pig units export nutrients; the Forum recommends that these movements, particularly those from poultry, should also be assessed, tracked and monitored. This will ensure transparency and accountability where nutrients are being moved within and between catchments to avoid nutrient overload in any particular catchment area.

#### **Closed Period;**

The draft NAP highlights that *“43% phosphorus and 45% of nitrogen gets into catchment streams during the closed period”*, where nitrogen remains in the soil during winter as plants are not growing, while the Phosphorus load is a legacy from the previous autumn. To reduce the impact of nutrient leaching to local water courses during the closed period efforts must be made to reduce the nitrogen at the source (restricted spreading of slurry and chemical fertiliser), while measures to reduce the impact from phosphorus will require pathway interception measures, such as spatially targeted buffer strips as described earlier.

While the Forum would like to respond to the proposal to extend the closed period, the Forum believes there is not sufficient scientific evidence publicly available to support our response on this proposed measure.

The Forum recommends a communications campaign around the closed period and associated weather implications, increasing awareness of the rationale, the impacts of not adhering to the periods and actions to prevent loss to water course (source reductions and pathway receptors). Campaigns should ideally be targeted to local conditions with local examples of best practice.

Furthermore, the Forum recommends that training on best practice in nutrient management should be provided to contractors who spread slurry for the farmers (in particular set back distances, including impact of slopes etc), so they to are aware of the importance of local conditions and practices to reduce nutrient losses to the local environment.

The Forum recommends that further funding and research is carried out by Teagasc or ACP for the development of an App to help farmers decide when the most appropriate time to spread slurry and fertilizer, linking geo-spatial data (soils, topography) and weather forecasts.

#### **Key Recommendations**

- That the movements of nutrient export from poultry farms should also be assessed, tracked and monitored
- Initiate a communications campaign around the closed period and associated weather implications
- Training on best practice in nutrient management should be provided to both farmers and contractors who spread inorganic and organic fertiliser on farms

## **10. Dairy Industry N Reduction Initiative**

The Water Forum welcomes the Dairy Industry N Reduction Initiative, along with the interaction between the Nitrates Expert Group and representatives of the dairy industry. The Forum also welcome the key topics of the project being carried out by the Dairy Sustainability Ireland Working Group (slurry

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<sup>11</sup> An Board Pleanála, 2020. Inspectors Report for an Organic Poultry House. [r306612.pdf \(pleanala.ie\)](#)

management, compliance, nutrient management, communication and knowledge transfer and behavioural change).

#### Key Recommendations

- That efforts of this initiative are focused in critical source areas, identified as being at risk from nitrogen pollution, supported by EPA PIP maps.

### 11. Chemical Fertiliser

The Forum welcomes the proposed extended periods where application of fertiliser to land is prohibited, along with the reduction in nitrogen allowances of 10% nationally and up to 15% in some places. The Forum supports the proposal that the areas for higher nitrogen reductions will be determined by the Nitrates Expert Group which will be supported by EPA catchment assessment report and EPA PIP maps. The Forum supports and further recommends targeted measures to critical source areas which will ensure maximum environmental benefit and efficient use of resources.

### 12. Sewage/Industrial Sludges and Circular Economy

The draft NAP plan aims to move to a “*clean, circular economy*”, therefore nutrient recovery and reuse from sewage and industrial sludge is an important topic to address and allocate sufficient funds for research and innovation in this area.

The recycling of non-toxic phosphorus and nitrogen from municipal wastewater for use as a fertiliser, would not only reduce the amount of artificial fertiliser produced, it could also support the reduction of nutrients from municipal sewage treatment systems. Sustainable phosphorus management is already being highlighted within Europe due to concerns over a future global supply shortage of recycled fertilisers to meet growing consumer food demand<sup>11,12</sup>. The Forum acknowledges that nutrient recycling will require collaboration with Irish Water and Government departments, again highlighting the need for cross-component planning between Government departments and agencies.

The Forum recommends liaising with lead partners of the ReNu2Farm project<sup>12</sup> at Cork Institute of Technology, to further develop best practices in how nutrient recovery and re-use can be implemented in Ireland.

Integrated and systemic approaches, such as the FILLM can significantly facilitate the successful application and use of circular measures, as they assess all environmental components<sup>13</sup>. Embedding such measures to support the circular bioeconomy is crucial, and we suggest seeing it as an opportunity for additional income and employment, new technologies, and environmental sustainability through emissions’ reduction<sup>14</sup>.

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<sup>12</sup> [ReNu2Farm- Nutrient Recycling from pilot production to farms and fields | Interreg NWE \(nweurope.eu\)](https://www.nweurope.eu/re-nu2farm-nutrient-recycling-from-pilot-production-to-farms-and-fields)

<sup>13</sup> Genovese, A., Acquaye, A. A., Figueroa, A., & Koh, S. C. L. (2017). Sustainable supply chain management and the transition towards a circular economy: Evidence and some applications. *Omega*, 66, 344–357. <https://doi.org/10.1016/j.omega.2015.05.015>

<sup>14</sup> Geissdoerfer, M., Pieroni, M. P. P., Pigosso, D. C. A., & Soufani, K. (2020). Circular business models: A review. *Journal of Cleaner Production*, 277, 123741. <https://doi.org/10.1016/j.jclepro.2020.123741>

## Key Recommendations

- Allocate resources for research and innovation around nutrient recovery and re-use on farms

## 13. Phosphorus

While the issues around nitrate pollution are clearly outlined, in the draft NAP, it does not address Phosphorus measures adequately. While applications of 10kg of P per hectare is common it only takes 0.5kg P loss to a water course to cause pollution and Environmental Quality Standards (EQS) exceedance. Consultation reports 43% losses of Phosphorus during closed periods.

The identification of critical source areas and the implementation of source reduction and pathway interception measures will be essential to prevent further deteriorations of water courses particularly in areas with heavy clay soils that are prone to overland flow.

As above, the Forum recommend additional resources for catchment scientists (LAs, LAWPRO) to identify critical source areas to develop targeted pathway interception to reduce the impact of Phosphorus on our water courses.

## Key Recommendations

- The NAP should have more focus on mitigation for Phosphorus measures, with emphasis on targeted pathway interception measures
- Further resources allocated to catchment scientists to identify critical source areas and develop targeted pathway interception measures.

## 14. Drinking water source protection

The Water Forum recommend that the NAP should not only consider the impacts nutrients (N&P) are having on our water courses, it should also consider measures to reduce the environmental and public health impacts from microbial pathogens, such as cryptosporidium, sediment and pesticides which arise from agricultural activities. A catchment-based approach incorporated into the NAP could support drinking water source protection and prevent a reliance on treatment, rather than reliance on drinking water treatment alone.

As proposed earlier, spatially targeted buffer zones can also protect drinking water and bathing water from pathogens, such as cryptosporidium, therefore should be considered as part of the NAP measures. The NFGWS (2020) 'A Handbook of Source Protection and Mitigation Actions for Framing' provides relevant advice. It is available at this link: <https://nfgws.ie/nfgws-source-protection-publications/>. The Forum considers that there is a need to raise awareness of the need to protect drinking water sources particularly with landowners located within zones of contribution for public and private drinking water supplies.

When considering how farmers can be supported and encouraged to cohere with and contribute to spatially targeted measures to improve water quality, learnings should be sought from the National Federation of Group Water Schemes (NFGWS), who is the representative organisation for the community-owned group water scheme (GWS) sector in Ireland. By building awareness of the

potential damage that can be caused to a drinking water source through specific actions (e.g. careless land-spreading) or inactions (e.g. failure to properly maintain a wastewater treatment system), the NFGWS's primary objective is to alter behaviour and to recruit farmers, householders, community organisations and businesses within the catchment area as partners in devising and implementing a source protection plan. Through engagement with farmers at a local level to take steps to protect and/or improve the local drinking water sources, there is more interest among farmers to participate and results in significant reductions in the treatment costs of drinking water.

#### Key Recommendations

- The NAP should also consider measures to address microbial pathogens, sediment and pesticides from agriculture.
- Spatially targeted buffer zones could also protect drinking and bathing water from pathogens
- The NAP should take learnings from the NFGWS on effective engagement and support for farmers to take ownership over local water quality issues.

## 15. Ammonia and other emissions

The Forum acknowledges the statement in the draft NAP that *“from an air quality perspective, ammonia provides the most significant challenge to agriculture”*. In Ireland, the agriculture sector produces about 99% of ammonia emissions and emissions are increasing each year<sup>17</sup>. Ammonia deposition has negative environmental impacts such as the loss of biodiversity, eutrophication of surface waters and soil acidification. While Ireland is committed to ammonia emission reductions it is currently exceeding these requirements.

Teagasc have identified 13 abatement measures<sup>15</sup> with an estimated 80% of the total abatement potential being met by the use of protected urea fertiliser and the use of low emission slurry spreading techniques for cattle slurry. Measures such as slurry covers to prevent emissions are proposed in NAP.

The development and piloting of these technologies should be pursued to address these issues particularly as DAFM's Targeted Agricultural Modernisation Schemes (TAMS) and Green, Low-Carbon, Agri-Environment Scheme (GLAS) support such initiatives.

The Water Forum welcomes the proposed compulsory implementation of LESS to reduce ammonia emissions. The Forum acknowledges there is an issue around the practicalities and logistical issues around meeting LESS targets and recommends that the Government ensure there are adequate numbers of contractors who can carry out LESS to ensure farmers can achieve these LESS commitments. The Forum recommends that greater consideration is given to the impact of trans-boundary ammonia emissions between the Republic and Northern Ireland. High density intensive poultry and pig units can also be linked to phosphate pollution.

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<sup>15</sup> Buckley et al. 2020. An Analysis of the Cost of the Abatement of Ammonia Emissions in Irish Agriculture to 2030 [\\*NH3-Ammonia-MACC.pdf \(teagasc.ie\)](https://www.teagasc.ie/publications/2020/NH3-Ammonia-MACC.pdf)

Ammonia is an issue in water in certain catchments; the cumulative impact of intensive poultry and pig units in sensitive catchments should also be considered particularly by planning authorities and measures should be put in place to ensure that local ammonia emission targets are not exceeded. High density intensive poultry and pig units can also be linked to phosphate pollution.