Rialtas na hÉireann
Government of Ireland

Ireland's Draft Nitrates Action Programme

2nd Stage Consultation

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Contents

1. Introduction

1.1 Importance of Water

Abundant, clean and healthy water is a fundamental cornerstone of any thriving society and is necessary for a vibrant economy and enjoyable living environment. A strong and healthy water ecosystem offers vital goods and services, such as the provision of drinking water and also protection against flooding and the impacts of climate change. However, water is a fragile resource that needs to be protected.

It is recognised across the European Union that climate change and environmental degradation need to be tackled urgently at local, national and international scale. In Ireland, as elsewhere, environmental indicators for water, biodiversity and climate are deteriorating despite policies, investments and actions intended to prevent and reverse deterioration. A new strategy is needed to deliver true sustainability. The European Green Deal is a comprehensive response to the challenge. It is proposed to make the EU's economy sustainable by turning climate and environmental challenges into opportunities, and making the transition just and inclusive for all citizens. The plan aims to;

- boost the efficient use of resources by moving to a clean, circular economy
- restore biodiversity and cut pollution.

The 2020 Programme for Government[1] contains a significantly more ambitious programme for the environment. Under the European Green Deal a comprehensive range of actions are outlined including for; water, natural heritage and biodiversity, climate and environmental emissions. The need for an integrated approach to these issues is recognised, including the potential to deliver integrated measures, which benefit all environmental objectives.

[1] https://www.gov.ie/en/publication/7e05d-programme-for-government-our-shared-future/

1.2 The Agri-Food Sector

The agri-food sector is Ireland's largest indigenous sector contributing to 7.8% of Gross National Income (GNI), 7.9% of total employment and 11.1% of all merchandise exports. Agri-food exports have grown by over 70% from 2009 to 2017 when they reached €13.6 billion. With the backdrop of the abolition of dairy quotas in 2015, Food Wise 2025[2] was published by the Minister for Agriculture, Food and the Marine, setting out the current ten-year plan for the industry. This strategy sets targets for further development and intensification in primary production and value added processing.

The plan aimed for an 85% increase in exports, the creation of 23,000 additional jobs, a 70% increase in value added and a 60% increase in primary production by 2025. It acknowledges that economic competiveness and environmental sustainability are equal pillars in the delivery of the strategic vision.

Food Wise 2025 is due to be replaced this year by a new Agri-Food Strategy. The new strategy recognises the changed political and environmental landscape in its approach to sustainability and environmental protection. It aims to deliver a more cohesive and integrated approach to farming, taking account of different policy areas related to agriculture, namely food, health, climate and environment.

The Strategy sets out four high-level missions to be achieved in order to develop a sustainable food system that is profitable throughout, has broad-based benefits for society and has a positive or neutral impact on the natural environment in Ireland:

1. A Climate Smart, Environmentally Sustainable Agri-Food Sector
2. Viable and Resilient Primary Producers with Enhanced Wellbeing Food that is Safe, Nutritious and Appealing,
3. Trusted and Valued at Home and Abroad,
4. An Innovative, Competitive and Resilient Sector, driven by Technology and Talent.

Notwithstanding the economic success of the Food Wise strategy to date, the sector faces a number of environmental and climate challenges as well as our water quality standards and climate change commitments. As the industry embraces new levels of growth, it will also be required to show an absolute commitment to the principles of sustainability, recognising that gains in productivity must not be at the expense of the environment. The success or otherwise of measures to mitigate and adapt to these challenges will inform the reforms to the Common Agricultural Policy (CAP), the cornerstone of agricultural support in Ireland and the EU.

[2] https://www.gov.ie/en/publication/a6b0d-food-wise-2025/

2. Policy Context

2.1 Introduction

Agricultural activity both relies on and influences the quality of our water, soils, biodiversity and air at a local, regional and national scale. EU and national policy and regulation guide agricultural activity to a great extent, with the Common Agricultural Policy (CAP) taking the overarching role. This section provides an overview of the EU and national regulatory and legal obligations, the science guiding policy and the challenges faced by the agriculture sector.

It is clear that there needs to be greater alignment between different environmental protection policies at a national and European level. In particular the EU Farm to Fork and Biodiversity strategies for 2030 have set ambitious targets for the agricultural sector.

In Ireland, the links between water quality plans and programmes, biodiversity strategies and climate adaptation plans needs to be developed to ensure we are achieving multiple benefits for as many implementation measures as possible. There are natural links between the measures required to protect each of these areas and it is the role of policy-makers and stakeholders to ensure these links are strengthened as much as possible.

2.2 Water Framework Directive

The Water Framework Directive (WFD) establishes a framework for the protection of all waters including rivers, lakes, estuaries, coastal waters and groundwater, and their dependent wildlife/habitats under one piece of environmental legislation. It was given legal effect in Ireland by the European Communities (Water Policy) Regulations 2003[3] (S.I. No. 722 of 2003). The WFD is linked to a number of other EU directives in several ways. These include Directives relating to the protection of biodiversity (Birds and Habitats Directives), Directives related to specific uses of waters (drinking water, bathing waters and urban waste water directives) and to Directives concerned with the regulation of activities undertaken in the environment (Industrial Emissions and Environmental Impact Assessment directives). Soil health is largely addressed indirectly through the implementation of the WFD.

Ireland is required to produce a river basin management plan under the WFD and the Minister for Housing, Local Government and Heritage published the second cycle River Basin Management Plan for Ireland in 2018. The plan sets out the actions that Ireland will take to improve water quality and achieve 'good' ecological status in our water bodies. Water quality in Ireland has deteriorated over the past two decades.

The RBMP provides a more coordinated framework for improving the quality of our waters — to protect public health, the environment, water amenities and to sustain water-intensive industries, including agri-food and tourism, particularly in rural Ireland.

The draft third cycle RBMP is due to be published imminently, followed by a period of public consultation before publication of the final plan in 2022. The draft plan will set out the proposed measures for addressing pressures on our water bodies from different activities and sectors, including agriculture. The NAP is one of the key measures for mitigating agricultural pressures and the two programmes are being developed by the Department of Housing, Local Government and Heritage (DHLGH) in close co-operation and with shared levels of ambition.

[3] http://www.irishstatutebook.ie/eli/2003/si/722/made/en/print

2.3 Nitrates Directive and Nitrates Action Programme

Ireland's first Nitrates Action Programme (NAP) came into operation in 2006. Giving effect to the Nitrates Directive and supported by successive national regulations, the NAP was designed to prevent pollution of waters from agricultural sources and to protect and improve water quality.

In accordance with the Nitrates Directive and Article 28 of the Good Agricultural Practice Regulations, the Minister for Housing, Local Government and Heritage, in consultation with the Minister for Agriculture, Food and the Marine reviewed the NAP in 2010, 2013 and 2017. The current NAP is given effect by the Good Agricultural Practice Regulations (also known as the 'GAP Regulations' and the 'Nitrates Regulations') – S.I. 605/2017[4] with amendments SI 40 2020[5], SI 225 2020[6] and SI 529 2020[7] derived from a review of the derogation in 2019. For ease of reference, an unofficial consolidated version of the GAP regulations has been included on our website as part of this consultation. The current NAP expires on 31st December 2021.

2.3.1 Key Elements of Ireland's Current Nitrates Action Programme (NAP)

Ireland has applied its NAP on a country-wide basis including both Nitrogen and Phosphorus control measures within its regulations. Ireland are only one of a few member states including both Nitrogen and Phosphorus, ensuring broad nutrient control delivery and 100% territorial coverage.

The scope of the NAP to date has been comprehensive, both in terms of addressing the major sources of agricultural nutrients and in covering a national farming population of over 139,600 farm holdings.

The principal elements of the NAP include:

- limits on farm stocking rates,
- legal maxima for nitrogen and phosphorus application rates,
- prohibited spreading periods preventing the application of organic and chemical fertilisers during more environmentally vulnerable times of the year,
- minimum storage requirements for livestock manures,
- requirements regarding maintenance of green cover in tillage lands, and
- set-back distances from waters

[4] http://www.irishstatutebook.ie/eli/2017/si/605/made/en/print
[5] http://www.irishstatutebook.ie/eli/2020/si/40/made/en/print
[6] http://www.irishstatutebook.ie/eli/2020/si/225/made/en/print
[7] http://www.irishstatutebook.ie/eli/2020/si/529/made/en/print

In common with other EU member states in which agricultural activity is practised, Ireland has availed of a derogation from the 170kg N/ha livestock manure nitrogen limit as provided for in the Nitrates Directive. The derogation was originally granted by the Commission in 2007 and renewed in 2010, 2014 and 2017.

Ireland's next Nitrates Action Programme will be developed in the context of significant greater environmental ambition in the Programme for Government and at EU level.

2.3.2 Science Guiding Policy - Agricultural Catchments Programme

The primary function of Agricultural Catchments Programme (ACP) is the evaluation of the effectiveness of the package of measures contained in Ireland's NAP. The programme is operated by Teagasc and funded by DAFM.

The ACP works in partnership with over 300 farmers in six intensively farmed catchments and this farmer engagement, which is built on the relationships of the advisers with their farmer clients, facilitates the research elements of the programme. The research work is carried out according to a single experimental design which is implemented rigorously in each catchment. A range of biophysical and socio-economic parameters are used to evaluate the impact of the NAP measures and the derogation implemented by farmers under the Nitrates Directive. The outcomes of this research provide a valuable insight into the processes that determine the impact of agricultural activity on water quality in the catchments.

Overall, evidence from the ACP indicates 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 on Irish farms - delivering better profits for the farmer while reducing risk of nutrient loss to water.

The fourth phase of the ACP commenced in 2020 and has received an increased budget of 65%. This will facilitate the recruitment of new researchers, technicians and technologists to conduct new experiments and support the on-going and extended data collection and research.

Key messages from the ACP

- Ireland's landscape is heterogeneous in terms of factors controlling N and P transfer pathways, transformation processes and timing of delivery.
- The influence of soil type, subsoil and geology on nutrient loss to water can override source pressures at the farm scale. At catchment scale (ca. 10 km2) the link between nutrient source pressures and nutrients monitored in the stream water was most obvious when the critical source areas were identified.
- Weather drivers play a more important role in temporal nutrient transport than farm practice changes.
- The influences of weather shifts were different for different physical settings. Both long-term weather shifts and short-term offsets need consideration.

Science Guiding the Importance of the Closed Period

The “closed period” when application of fertiliser is prohibited and “storage periods” for livestock manure under the GAP regulations are necessary to minimise loss of nitrogen and phosphorous to waters. Nitrogen and phosphorus are both major elements essential for plant growth. If not adsorbed by soil or taken up by growing plants they are available for loss to water. The main route taken by unused (surplus) nitrogen lost to water contrasts with that of phosphorous.

Nitrate does not bind to clay particles and is easily dissolved in water percolating through the soil. Growing plants will capture this nitrogen dissolved in soil solution. However, during autumn, winter and early spring, plant growth rates fall in line with soil temperatures and day light. Less growth results in less nitrogen uptake. At the same time of the year, soils are more likely to be saturated as rainfall amounts exceed evapotranspiration rates. While rainfall amounts can vary from season to season, evapotranspiration always fall to negligible amounts during the winter. The moisture in saturated soils transports dissolved nitrogen to ground water, which will eventually reach streams and rivers by springs. Nitrogen from organic manures is vulnerable to loss during the closed period as (i) there is little crop growth to take Nitrogen from soil solution and (ii) moisture in saturated soils will readily carry dissolved nitrogen away (below) the root zone.

Phosphorous is usually lost via surface runoff when soils are saturated and rainfall amounts exceed the ability of soils to soak up the amount of water falling. Soil can “bind” and hold onto phosphorus but does not get to opportunity to do so when it is carried in rain runoff, across the surface pathway to a watercourse.

Research from the Agricultural Catchments Programme (Shore et al 2016) has shown that this is more likely to occur during the closed period. Low evapotranspiration rates (discussed above) result in a greater likely hood of saturated soils and a disproportionate amount of nutrients are lost to water. 43% of total Phosphorous and 45% of nitrogen gets into catchment streams during the closed period.

Weather conditions in Ireland are unpredictable and can worsen after the closed period finishes. Organic manure storage periods are longer than closed periods in order to reduce the likelihood of running out of storage should this happen. Nitrogen use efficiency on grass based systems are low (typically around 25%). Efficient use of organic fertilisers, getting the maximum response from the N that they contain is a major way to improve this, and minimise costs incurred in chemical N purchases. Spreading organic manures at the right time in the right place in key to achieving this.

2.4 Climate Challenge

2.4.1 Background

The Ag-Climatise roadmap was published in December 2020 by the Department of Agriculture, Food and the Marine. The document sets out a series of 29 actions to deliver a 10-15% reduction in GHG emissions by 2030. Implementation of this roadmap will deliver a reduction in emissions of approximately 3MT on 2018 levels of 22MT, bringing the agricultural inventory to approximately 19 MT. The actions in the roadmap are primarily based on the Teagasc Marginal Abatement Cost Curves (MACC) regarding greenhouse gas and ammonia emissions.

2.4.2 Climate Neutral Agriculture by 2050

Ag-Climatise sets out an objective for a climate neutral food system compatible with the Paris temperature goals, whereby the climate impact of biogenic methane from the livestock herd is neutralised and remaining agricultural emissions are balanced by removals through land use and a significant contribution to renewable energy. The roadmap is presented as a living document which can be updated to reflect developments with regard to the Climate Action (Amendment) Bill and the Climate Action Plan 2021 and future iterations.

The roadmap focuses both on the immediate actions that the sector must take, alongside the more medium to long term actions. This roadmap will underpin the environmental chapter of the new 2030 agri-food strategy.

The approach to ensuring the sector achieves its climate ambitions is three pronged and includes

- reducing emissions,
- enhancing the development of sustainable land management, and
- contributing to sustainable energy.

Significant progress will be needed in all three areas if the sector is to achieve its overall objective of becoming climate neutral. The main focus of the roadmap will be on nitrogen management and reducing fertiliser nitrogen use to a maximum of 325,000 tonnes by 2030.

2.4.3 Climate Action Measures

The recently published Climate Adaptation Plan[8] for agriculture sets out high-level objectives for achieving Ireland's significant climate-related targets. These have not been translated into measures on the ground and the review of the NAP is an opportune time to look at implementing measures that can have multiple benefits for water quality and climate mitigation (as well as biodiversity).

A significant amount of research has been undertaken by Teagasc and others, looking at mitigation measures for agriculture to reduce GHG emissions and promote more sustainable farming practices. Some of this research could be adopted into measures in the next NAP as part of a roadmap for achieving Ireland's climate targets.

[8] https://www.gov.ie/en/publication/a8e47-climate-change-bioenergy-biodiversity/#agriculture-forest-and-seafood-climate-change-sectoral-adaptation-plan

2.5 Greenhouse Gases

Ireland's national policy position is to transition to a low-carbon, climate resilient economy and society with 80% decarbonisation by 2050 including an approach to carbon neutrality in the agriculture and land use sector which does not compromise sustainable food production. Ireland's commitments under the EU Effort Sharing[9] decision and the Climate and Energy Framework[10] to 2030 can be summarised as follows:

Key indicator	2020	2030
Reduction in non-emissions trading - GHG emissions	20%	30%
Increase in energy efficiency	20%	32.5%
Increase in renewable energy (across electricity, heat and transport)	16%	>16% - 32%

[9] https://ec.europa.eu/clima/policies/effort_en
[10] https://ec.europa.eu/clima/policies/strategies/2030_en

2.6 Ammonia and Other Emissions to Air

There are a number of EU Directives on air quality in place that set standards for a wide variety of pollutants. Additionally, Ireland is a Party to the Convention on Long Range Transboundary Air Pollution (CLRTAP) under which certain transboundary air pollutants including ammonia are controlled. As a member of the EU, implementation of the Gothenburg protocol (a daughter protocol of the CLRTAP) is achieved through limits set out in the National Emissions Ceilings Directive 2001/81/EC (NECD).

A key component of the NECD is more ambitious and protective national emission ceilings for key pollutants such as ammonia. The NEC Directive sets new national targets for 2020 and 2030 for five air pollutants – particulate matter (PM10 and $PM_{2.5}$), sulphur dioxide (SO_2), nitrogen oxides (NO_x), ammonia (NH_3) and volatile organic compounds (VOCs). The aim of the Directive is to cut the negative impacts of air pollution on human health by almost half by 2030. Reducing levels of illness, including respiratory and cardiovascular diseases and premature death is the main priority.

Ammonia in our air causes two main issues; potential damage to human health causing respiratory issues and habitat degeneration through deposition on soil and vegetation. Agricultural activities account for over 99% of the national NH3 emissions. In 2020 the Environmental Protection Agency (EPA) reported our NH3 emissions for 2018 were 119.4 kt against a ceiling of 116.0 kt- therefore exceeding our ceiling.

Based on the EPA's 2020 reported emissions for 2018 a reduction of approx. 12kt to a new legislative ceiling of 107.5Kt would be required by 2030.

The EPA have now completed their 2021 report on air pollutant emissions for Ireland. The report "**Ireland's CLRTAP/NECD Submissions 2021**" details a significant recalculation of ammonia emission factors in the agricultural sector. For example, as result of these recalculations, emissions from agriculture for 2018 have increased from a total of 118.31 kt in the 2020 report to 134.33 kt in the 2021 report. This represents a 13.53% increase in the 2018 total agricultural emissions. A comprehensive analysis of the risks associated with exceeding the ceilings as set out in the National Emissions Ceiling Directive has not yet been undertaken.

Ammonia Projections

Ammonia emissions have been steadily increasing in Ireland since 2011 (EPA, 2021) as a result of increasing agricultural activity, with the first exceedance of the emission ceiling reported in 2016, and subsequently in 2017, 2018 and 2019. Moreover, emissions are projected to continue to breach the ceiling for the new commitment periods (EPA, 2021), therefore the implementation of abatement strategies are urgently required.

In 2019, DAFM published a code of good practice for reducing ammonia emissions on farms, with a view to increasing the awareness of the options open to farmers. In October 2020 Teagasc published an Ammonia Marginal Abatement Cost Curve which sets out 13 measures for potential implementation at farm level to address compliance of agriculture with the NECD ceilings. While each of the measures deliver a contribution to the reduction of NH3 emissions from Irish agriculture, increasing the proportion of slurry applied using low emission spreading systems (LESS) can reduce ammonia emissions by up to 60% over current application methods (splash plate). The use of LESS for applying 90% of all slurry from Irish bovines can deliver a potential abatement in 2030 of 11.69 Kt of NH3 emissions. The uptake of these technologies is currently being supported through DAFM's Targeted Agricultural Modernisation Schemes (TAMS) and Green, Low-Carbon, Agri-Environment Scheme (GLAS).

2.7 Biodiversity

Globally biodiversity has been in decline and this is true of Ireland also. Agricultural land management has impacted on much of Ireland's biodiversity and continues to influence it. Biodiversity loss has not been halted in Ireland and agriculture remains a threat to protected habitats and species both directly and indirectly.

The National Parks and Wildlife Service (NPWS) monitor and report on the status of Natura[11] sites in Ireland, forming an integral network across the country. Habitats and species dependent on, for example, high water quality can potentially be negatively impacted by agricultural activity. While these Natura sites are predominantly in the extensively farmed areas of the country it is important that all agricultural areas of the country are implementing appropriate measures to maintain and enhance national biodiversity.

2.7.1. Biodiversity Measures

A cornerstone of the National Biodiversity Action Plan 2017-2021 is to bring biodiversity into mainstream policy-making decisions and ensure that our biodiversity targets are met and that we can introduce biodiversity targets for individual sectors.

Agriculture, being the dominant land use, has the greatest potential to impact, both positively and negatively, on biodiversity in Ireland. While primarily a water protection tool, the Nitrates Action Programme has introduced measures that provide positive benefits for water quality and biodiversity and these measures to enhance biodiversity have been introduced for farmers operating with a Nitrates Derogation from 1st January 2020. This includes the adoption of at least one measure from the All Ireland Pollinator Plan[12] on order to enhance biodiversity on farms which are either/or;

- Leave at least one mature Whitethorn/Blackthorn tree within each hedgerow.
- Maintain hedgerows on a minimum 3-year cycle. Cutting annually stops the hedgerow flowering and fruiting.

[11] Natura 2000 is a network of core breeding and resting sites for rare and threatened species, and some rare natural habitat types which are protected in their own right.
[12] https://pollinators.ie/

2.8 Drinking Water Protection

Protecting drinking water sources from diffuse microbial contamination from animal excreta continues to be an area of concern for public health. Generally poor farm management practices or inappropriate land spreading near source abstraction points are the cause of such contamination. The threat and impact are often caused or exacerbated by extreme weather events. 18 drinking water sources have been identified by the EPA as being at risk from elevated nitrate concentrations from land use practices within their catchment.

2.9 Common Agricultural Policy (CAP) and the Rural Development Programme (RDP)

In each iteration the CAP is increasingly concerning itself with sustainability from an environmental perspective. The greening of the basic payment along with the cross compliance requirements for direct payments when land is maintained in Good Agricultural and Environmental Condition set an environmental baseline.

The RDP consists of a suite of measures designed to enhance the competitiveness of the agri-food sector, achieve more sustainable management of natural resources and ensure more balanced development of rural areas, with an enhanced focus on delivering positive environmental outcomes including for water and climate change. The GLAS programmes under the RDP were designed to implement meaningful actions at a regional and local level, especially in areas with high water quality. Knowledge transfer also has a key role here to allow for research findings to be disseminated and applied on the ground. Targeted measures introduced under the current Rural Development Programme (RDP) also contribute to meeting our ambitions for climate change measures, water protection biodiversity and soil. Examples are low emission slurry spreading, efficient livestock breeding, and the upgrade of farm facilities. The impact of these policy measures are under review and will inform the next CAP Strategic Plan.

3. Summary of Water Quality

3.1 Background

The EPA is responsible for carrying out the national water quality monitoring programme[13]. The EPA produces annual reports on water quality outlining the condition and trends of Ireland's waters, and the pressures causing the impacts. This chapter provides a summary of the most up to date information.

Further detail is provided in the following EPA reports:

- Water Quality in Ireland Report 2013-2018[14]
- Water Quality in Ireland; An Indicators Report[15]
- Ireland's Environment; An Integrated Assessment[16]

3.1.1 Impacts of Agriculture on Water Quality

Just over half of Ireland's monitored surface water bodies have satisfactory water quality. Agriculture is the most widespread and significant pressure impacting on the water environment. The key issues arising from agriculture are:

- excess nitrogen and phosphorus causing eutrophication;
- pesticides which impact on ecological health and on drinking water quality;
- excess fine sediment arising largely from erosion and runoff; and
- land drainage practices and other factors which impact physical habitat condition.

The most widespread issue is elevated nutrient concentrations which are present in a significant proportion of our water bodies, and the current trends are showing a continuous and sustained decline in water quality.

[13] EU Member States are also required to monitor the effectiveness of their Nitrates Regulations, under Article 5 (6) of the EU Nitrates Directive. The Agricultural Catchments Programme (ACP), is tasked with monitoring the effectiveness of Ireland's measures since 2008. The ACP undertakes monitoring in relation to the impacts of derogation farms on water quality.
[14] https://www.catchments.ie/water-quality-in-ireland-2013-2018/
[15] https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/water-quality-in-2020.php
[16] https://www.epa.ie/publications/monitoring--assessment/assessment/state-of-the-environment/irelands-environment-2020---an-assessment----report.php

3.1.2 Nitrogen Issues

The most recent Water Quality Indicators Report published in July 2021 noted that nitrate concentrations are too high in many of our waters, particularly in the south and south east of the country, and the trends are going in the wrong direction.

Nearly half of our river sites and one quarter of our groundwater sites have elevated nitrate concentrations. Our estuaries and coastal waters are particularly sensitive to high nitrogen concentrations.

The key nitrogen indicators are as follows:

- Nearly half (47%) of river sites have unsatisfactory nitrate concentrations. Over one third (38%) of sites are showing an increasing nitrate trend for the period 2013-2020 while only 3% have a decreasing trend.
- Over a fifth (22%) of estuarine and coastal water bodies have unsatisfactory dissolved inorganic nitrogen (DIN) concentrations. The highest DIN concentrations are in the south and south east of the country.
- Loads of total nitrogen to the marine environment from our rivers have increased by 26% (14,574 tonnes) since 2012-2014.
- Almost one quarter (24%) of groundwater monitoring sites have high (>25mg/l N03) nitrate concentrations, and three sites exceed the drinking water standard (50 mg/l N03).
- Almost half (47%) of all groundwater sites had increasing nitrate concentrations for the period 2013-2020.
- There is a strong regional pattern in all waters that have excess nitrogen concentrations and increasing trends. The areas of greatest concern are the south and south east of the country.

The main sources of nitrogen from agricultural activities are organic manures and urine from livestock, and chemical fertiliser. The predominance of free draining soils in the south and southeast make these areas particularly susceptible to nitrate leaching. The vast majority of the nitrogen loads in these catchments come from agriculture and there is a strong relationship between farming intensity and nitrate concentrations in waters at the catchment scale. There is however, water quality variability within and between sub-catchments. Detailed research work in the Agricultural Catchments Programme has highlighted that soils, weather and farming practices can have a significant influence on nitrate concentrations, at the local scale. This has important implications for targeting the right measure to improve water quality in the right place.

3.1.3 Phosphorus Issues

Excess phosphorus contributes to eutrophication and is a particular concern for the ecological health of rivers and lakes, and some estuaries. The main sources of phosphorus in the Irish environment are agriculture and urban waste water. The majority of urban waste water is discharged in coastal areas, while agriculture is the most significant source inland.

The key phosphorus indicators[17] are as follows:

- Over one quarter (29%) of river monitoring sites have unsatisfactory phosphate concentrations, and one quarter (24%) of river sites are showing an increasing phosphate trend for the period 2013-2020.
- Almost one third (30%) of monitored lakes had unsatisfactory total phosphorus concentrations and 33% had an increasing total phosphorus trend.
- Phosphorus loads to the marine environment have increased by 35% since 2012-2014.

The most susceptible areas for phosphorus losses are poorly draining soils, from which the runoff over land discharges to watercourses. While many of the catchments in the east and northeast have elevated phosphorus concentrations there are typically areas of poorly draining soils in most catchments. Research has shown that most of the phosphorus loss in catchments typically comes from a relatively small area (the critical source areas), within a relatively short time, during significant rainfall events. The best outcomes will be achieved when measures are targeted into the critical source areas.

[17] EPA Water Indicators report 2020

3.2 The EPA's Assessment of the Catchments That Need Reductions in Nitrogen Concentrations to Achieve Water Quality Objectives

The EPA published a report in June 2021 on the "**Assessment of the catchments that need reductions in nitrogen concentrations to achieve water quality objectives**[18]" The report sets out that nitrogen concentrations have been increasing in coastal waters in the south, southeast and east over the period since 2009 and it estimates that 85% of nitrogen in mainly rural catchments is from agriculture. The report provides estimates of how much of a reduction in the nitrogen load in the rivers in each catchment is needed to support healthy waters, this ranged from 0 in some catchments in a number of years to 8,000 tonnes for the Barrow in 2018. The impacts of climate and weather are acknowledged, the 2018 drought had a significant negative impact on water quality and the impacts of this were still being shown in 2019. In the Barrow and Slaney catchments c 27% of the losses are from arable land but the majority of losses across all catchments are from grassland. The report identifies that there are areas of land in all catchments of free draining soil which are most susceptible to losses and these are termed critical source areas and should be targeted for interventions to reduce losses. On average these make up 40% of the catchments or 690,000 ha. The agricultural area of Ireland excluding commonage is 4.5mn ha, the report states the reduction required will be on less than 15% of the land area which will be a significant challenge.

3.3 Targeting Measures

All the evidence shows that water quality, and the factors influencing it, varies widely across the country, depending on land use, soil type and climate. The most effective water quality outcomes will be achieved by targeting the measures to the specific water quality problems and risks. The EPA has developed pollution impact potential maps which can be used to target measures to reduce nutrient emissions from diffuse agriculture to waters. This improved mapping functionality will feed into the development and implementation of measures as part of the new NAP and will be a key resource for all stakeholders involved in the agricultural and environmental sectors.

Further information and a link to these maps is available on www.catchments.ie

[18] https://www.catchments.ie/assessment-of-the-catchments-that-need-reductions-in-nitrogen-concentrations-to-achieve-water-quality-objectives/

4. Review of the First Stage Consultation[19]

4.1 Introduction

In accordance with the Directive, Ireland's Nitrates Action Programme (NAP) must be reviewed by the end of 2021 and the first stage consultation was the exploratory commencement of the review process. The purpose of the first stage consultation was as follows:

- To set out the draft timetable and work programme to produce the next Nitrates Action Programme (NAP);
- To set out the potential issues to be considered as part of the review;
- To highlight milestones in the review cycle where further consultation will take place; and
- To invite interested parties to make submissions on the above.

The first stage consultation also aligned with the commitments in the Programme for Government:

- Review the effects of the nitrates derogation on water quality, in conjunction with the EPA, which will inform future policy in this area.
- Work with nitrates derogation farmers to improve environmental outcomes on their farms, ensuring the sustainable use of the derogation, in line with our environmental objectives.

[19] https://www.gov.ie/en/consultation/6c940-public-consultation-on-irelands-nitrates-action-programme/

4.2 Scope of the First Stage Consultation

The initial consultation paper contained some of the potential issues to be considered as part of the next NAP review. A number of detailed issues were considered in order to inform the second stage consultation process. These were outlined as;

- Cattle access to watercourses
- Phosphorus Build Up
- Record Keeping
- Training (for farmers and advisers)
- LESS Slurry Spreading
- Nutrient Management Planning
- Assessment of technical tables in Schedule 2 of Regulations
- Slurry Storage requirements incl. soiled water
- Drinking Water Source Protection

Additional potential requirements were also listed, including:

- Liming
- Soils
- Grazing Intensity/Zero Grazing
- Exports of Livestock Manures
- Large Herds
- Interim review of the Nitrates Action Programme
- Compliance with the Birds and Habitats Directive

4.3 Findings of the First Stage Consultation

A total of 101 written submissions were received in response to the open consultation. These include submissions from local authorities, public bodies, farmers and farming representative bodies, NGO's, agricultural co-operative societies, agricultural advisors, trade and professional bodies and Teagasc. The Nitrates Expert Group reviewed these submissions and it was clear that the need to recognise both scientific and technical guidance is central to informing policy and to ensuring the outcomes from this review are sufficiently robust and practical. There was also broad support throughout the submissions for existing measures while recognising there has been a number of policy reviews since the commencement of the current NAP in 2018 notably;

- The Interim Review of the Nitrates Derogation in 2019,
- Additional measures introduced for farmers operation above 170kgN/ha and exporting slurry in 2020.

All submissions received were reviewed by The Nitrates Expert Group and formed part of their deliberations on the development of proposed measures for the new NAP. The group is jointly chaired by DHLGH and DAFM and comprised senior scientific experts from DHLGH, DAFM, the Environmental Protection Agency (EPA) and Teagasc.

4.4 Reviewing the First Stage Consultation Topics

4.4.1 Cattle Access to Watercourses

The current regulations prevent cattle access to watercourses, effective from 1st January 2021, on farms with a grassland stocking rate of 170 kg N/ha or above. The measure requires water courses to be fenced 1.5 meters from the top of the river bank or water's edge as the case may be. The consultation sought views on these requirements and should the current requirements of farms be extended and if so, to what extent.

Based on a broad review of responses, the following general points emerged;

- The requirement to fence watercourses should be extended to all farms.
- All watercourses identified as being at risk from agricultural pressures should be fenced within 3 years.
- This measure should be reviewed in future NAPs to effectively determine its impact.

4.4.2 Phosphorous Build-up

The provision allowing for P build-up on farms with stocking rates of 130 kg N/ha or above was introduced in the most recent review of the Nitrates Action Programme in 2017. It allows for landowners to introduce higher levels of Phosphorous onto lands with a Phosphorous Index of 1 or 2 in order to optimise soil productivity.

The main point to emerge from the consultation response highlighted a perceived disproportionate reliance on the soil P test, to determine the risks of nutrient runoff. It was suggested that soil type and geology are better predictors than soil P level for predicting P loss from agricultural land. It was further suggested that the NAP should move away from the reliance on Morgan P testing as a means of assessing run-off risk to waters.

4.4.3 Record Keeping

Management, maintenance and submission of records is becoming a more important element of demonstrating compliance with the GAP regulations. At present all farmers are required to maintain up to date paper records and failure to produce these records during an inspection can lead to significant penalties for farmers.

While it was generally accepted that maintenance of good records was best practice across all aspects of the farm enterprise, a number of the submission responses identified that a more streamlined process should be developed to ensure more farmers are able to manage their records and free up additional time for farm advisers, whose time is often taken up with record-keeping on behalf of farmers.

4.4.4 Training (For Farmers and Advisers)

Knowledge transfer, both from adviser to farmer and peer-to-peer, has clear benefits in sharing best practices and helping to develop farmer's knowledge of the requirements of the GAP regulations. It also provides farmers with a better understanding of environmental protection in general and the impacts poor farming practices can have on local watercourses.

All submissions were supportive of training for farmers, advisors and Industry to ensure a cohesive and collective response to meeting the environmental challenges presented.

4.4.5 LESS Slurry Spreading

Low Emission Slurry Spreading (LESS) has been demonstrated to improve nutrient use efficiency while reducing atmospheric emissions of ammonia from slurry-spreading. This method of slurry spreading is a requirement for all derogation farmers from 2020.

A number of issues were raised during the first stage consultation which will need to be considered by the Nitrates Expert Group as part of the NAP review. These issues should be considered in the context of integrated policy responses, including ammonia reduction as a key consideration in the extent of LESS usage;

- Contractors must be supported to purchase appropriate equipment.
- In order to meet our ammonia targets, the proportion of slurry (calculated either at farm or national scale) that should be applied by LESS needs to be determined.

4.4.6 Nutrient Management Planning

Nutrient Management Planning (NMP) is one of the most efficient means of ensuring a farmer maximises the value of their chemical and organic nutrient inputs. NMP is also a cornerstone of compliance with the derogation requirements. The advent of online nutrient management planning tools in recent years has greatly simplified this task and many farmers that are not in derogation are also using these tools to maximise their nutrient usage.

It is clear from a number of the submissions that nutrient management planning is not being implemented in many cases. This is further borne out in research undertaken by Teagasc.

Mainstreaming the use of these tools and ensuring their regular use will be a key component of any successful NAP. It was also suggested that all farmers should be encouraged to engage in nutrient management planning.

4.4.7 Assessment of Tables in Schedule 2

Schedule 2 of the 2017 GAP regulations includes 22 tables that set out various criteria as to storage capacity and nutrient management. These include several tables relating to permitted fertilisation rates, animal excretion rates, slurry storage capacities, etc.

While some of this information was updated or introduced during the last review of the Nitrates Action Programme, a full assessment of the robustness of the information contained in the tables is being considered. This assessment must take account of improvements in scientific knowledge relating to nutrient management, climate change data and climate adaptation measures. Scientific evidence is currently available to demonstrate that the excretion rates for the dairy cow should be updated. A number of the submission responses highlighted the recent increase in the excretion rate for the dairy cow and noted the potential impacts that increase will have on stocking rates.

4.4.8 Slurry Storage Requirements Incl. Soiled Water

It has become clear in the past number of years that the slurry storage available on farms is not always sufficient. This is linked to a variety of factors, including changed rainfall patterns brought about as a result of climate change and the capital cost of installation of storage infrastructure is also an obvious factor.

The issue of slurry storage generally arose in submissions in the context of the costs associated with construction and proper maintenance of appropriate storage facilities on farms. While DAFM cannot grant-aid storage to compliance levels, Grants are available for installation of additional slurry storage on farms and DAFM always encourage farmers to ensure that they future-proof their storage requirements during design and installation.

4.4.9 Drinking Water Source Protection

The protection of drinking water sources is a key element of the GAP Regulations, and the regulations include several measures to protect drinking water sources from contamination by agricultural pollutants and pathogens. These can be caused by poor slurry or chemical fertiliser application practices (i.e. application timing, rates, types) or by applying slurry or fertiliser too close to the water source.

A number of submissions suggested that this is an area of the NAP that needs to be strengthened and it also needs to link with ongoing source protection work under the Water Framework Directive and the provisions of the recast Drinking Water Directive.

4.4.10 Liming

The 2020 Good Agricultural Practice (Amendment) Regulations (SI 40 2020) introduced a requirement for farmers availing of a derogation to incorporate a liming programme into their fertilisation plan.

The control of soil pH through application of lime is a common practice on many farms, however, it had not previously been prescribed in the regulations until the recent amendment. The benefits of liming were broadly accepted in the consultation responses and the uses and benefits of liming will form part of the discussions around the NAP review and the input of stakeholders will be key to these discussions.

4.4.11 Soils

It was clear from the consultation responses that the optimization of soil fertility to ensure efficient use of nutrient inputs will be a key component of this NAP review. The proportion of soils tested with levels of soil fertility at the agronomic optimum (pH >6.3, P and K > Index 3) remains low at approximately 18% in 2018. Balancing both macro- and micro- nutrients to meet optimum soil fertility appropriate to the farm enterprise will be reviewed by the Nitrates Expert Group.

4.4.12 Grazing Intensity/Zero Grazing

Grazing intensity relative to whole farm stocking will be assessed as part of this NAP review based on most recent research available. Zero grazing is a practice being adopted more and more at farm level and a review on best practice for grazing and nutrient management will be undertaken by the Expert Group. While the intensity of the grazing platform did not form a major component of many submissions, it is still an issue that needs to be considered during the review.

4.4.13 Exports of Livestock Manure

Over 4,500 farms export livestock manure to remain compliant with stocking rate limits in the regulations. Some additional measures to control the export of livestock manure were introduced by the GAP amendment regulations (SI 40 of 2020) however the practice of exporting livestock manure is one which needs a full assessment. The Nitrates Expert Group review of the NAP in 2019 recommended the introduction of further measures for these holdings. Many of the submission responses from the first stage consultation also highlighted the unsustainable current practices related to manure movement, and the limited controls in place.

4.4.14 Intensive/Large Herds

There is an increasing disparity between the small proportion of very large herds in the country and holdings that are operating with average-sized herds.

With the intensity of these large operations having the potential to put significant pressures on the water quality and quantity in their local catchment, the question was asked in the first consultation whether additional measures should be considered to address this issue.

Many of the submission responses were not concerned at the scale of the herd sizes, pointing to the stocking rate controls as sufficient protection. A number of responses highlighted the potential for cumulative effects on nutrient levels of several very large herds within a single catchment, or adjacent catchments.

4.4.15 Interim Review of the Nitrates Action Programme

The existing Nitrates Action Programme (NAP) sets out the requirements for managing agricultural nitrogen and phosphorous for a 4-year period. While a similar period is expected for the next NAP it is proposed to undertake an interim review of the programme towards the end of Year 2 of the programme to assess progress nationally in achieving the objective of reducing pollution from agricultural sources. Where considered necessary for the purpose of achieving this objective, amendments to the programme will be proposed.

There was support both for and against the potential inclusion of an interim review of the NAP in the consultation submissions. Many submissions also believed that time should be given for the current measures to be implemented and to have a more significant effect on water quality trends.

4.4.16 Compliance with Birds and Habitats Directives

Compliance with the Birds and Habitats Directives is an integral part of the development of any plan or programme, including reviews of those plans or programmes. While the overall NAP review will be subject to a high-level appropriate assessment, this assessment must be detailed enough to incorporate impacts at a ground level on each individual holding. Several submissions reflected the importance of the assessments required under Habitats Regulations and the Strategic Environmental Assessment Regulations and their importance in mitigating any potential adverse effects of the proposed new NAP.

4.4.17 General Comments Submitted re. Review

- Need for better coordination of policies between the Water Framework Directive, the Nitrates Directive and the National Emissions Ceiling Directive. Ensure it is in line with targets in biodiversity and farm to fork strategies.
- Consider the pillars of sustainability and the overall environmental, economic and social impact of increased productivity, taking account of fishing, tourism and public health.
- Improved public engagement /public consultation.
- Provide links to the science supporting the data, research and reports.
- Improved Implementation and enforcement.
- Eliminate spreading of soiled water in the closed period.
- Funding/Grant aid particularly for storage but also lime, etc.
- One of the key principles adopted for the river basin management planning process in Ireland is putting ‘the right measure in the right place’. The same approach should be applied to nutrient management across Irish farms.
- The approach should be based on targeted knowledge transfer and advisory supports for herds Identified as adding pressure in a catchment. It is suggested that a targeted advisory approach through the ASSAP programme for farms located in free draining Critical Source Areas where there is N or P excess should be examined.
- Specific measures re ammonia to be incorporated, eg low crude protein diets and compulsory use of low emission equipment on all dairy farms and all farms stocked >130 kg N/ha.
- The right measure in the right place, taking account of critical source areas and nutrient pathways in addition to soil type, geology and precipitation mapping

5. Second Stage Consultation

5.1 Background

The proposed measures set out in this consultation document are based on the consideration by the Nitrates Expert Group of a number of different information sources, including the public consultation responses and research and data from Teagasc, EPA and academia. The deliberations of the expert group were also informed through discussions with a variety of key stakeholders, including the European Commission.

5.2 Modelling the Impact of Environmental Measures

DAFM have commissioned Teagasc to carry out some analysis on the impact of potential measures to reduce losses of nitrogen to the environment. The draft report on the analysis, entitled '**The Impact of Nitrogen Management Strategies within Grass Based Dairy Systems**' is due to be published in the coming weeks. The analysis will link directly to the EPA report mentioned at section 3.2 above and it will be used to inform potential measures in the final Nitrates Action Programme (NAP) and derogation.

5.3 Proposed Measures

Ireland has a predominately grassland based system of agricultural production however all farming systems will be reviewed to ensure all systems of farming are protecting water and contributing co-benefits to the environment. Ensuring optimum soil fertility while balancing the nutrition of our grassland system to minimise nutrient and sediment losses to the environment is one of the central focuses of this review. Within this, a number of key areas will be considered for review, iteration or removal based on the most up to date scientific information available and practical data to measure its impact.

In responding to this consultation you are invited to gives your views on the following taking into consideration the relevant links with Chapters 1 to 4 inclusive.

5.3.1 Proposed Non-GAP Regulation Measures

This is the first review of the Nitrates Action Programme whereby not all measures introduced during the review will be incorporated into a new set of Good Agricultural Practice Regulations. During the discussions with stakeholders, and the deliberations of the Nitrates Expert Group, it has become clear that a wider, more holistic approach to controlling nutrient and sediment losses from agriculture is needed at this stage. The measures set out below are intended to address all of the significant issues that arose during the first stage consultation, and in discussions with stakeholders and the EU Commission. The measures are also intended to help Ireland to meet its climate, biodiversity and water quality targets set at both national and EU level.

In setting out the proposed measures below, the broad principles will be elucidated, and these will be refined following an assessment of the consultation responses, and prior to the publication of the final NAP. Part of the reasons for including the high level principles at this stage is to allow interested parties to bring forward supporting information and opinions that will allow the Nitrates Expert Group to design robust, realistic and achievable measures that will deliver real results that can be measured and accounted for.

The proposed measures are broken down into a number of groups, depending on their scale and application. The initial focus in this section will be on those measures that will be progressed within the framework of the NAP review but outside of the scope of the new Good Agricultural Practice Regulations. These measures are designed to apply across all agricultural activities, regardless of the nature or scale of that activity. They are based on the principle that some measures are best applied at the local level, while others achieve best results when applied at a national scale.

5.3.1.1 Chemical Fertiliser Register

The Department of Agriculture, Food and Marine has already commenced the process of developing legislation that will provide for the adoption by the Minister of a register of chemical fertiliser sales across the country. The purpose of the register is to provide for accurate tracking of fertiliser sales and provide a more realistic picture of where fertiliser is being applied to land. In addition, it will help to establish a better understanding of the value of livestock manure and the need to re-use nutrients as much as possible on farms.

Along with the recently launched online slurry movement register, it will bring a level of regulation to the industry which is needed to ensure chemical fertilisers are used for optimum efficiency. While it is acknowledged that the majority of farmers apply chemical fertilisers in an efficient manner, and in compliance with the requirements of the GAP regulations, the inter-farm movement of fertilisers and stockpiling of fertiliser does not lend itself to an accurate calculation of the chemical fertiliser loadings at farm scale.

Similar to the pesticides register provided for under SI 155 of 2012 and SI 159 of 2012, the proposed new chemical fertiliser register will place the responsibility on merchants to register chemical fertiliser sales against individual farmer's herd numbers. This data will be reported periodically to the DAFM, where it will feed into the Department's analysis of farming activities generally, and more specifically into assessing compliance with the requirements of the GAP regulations.

It is anticipated that the process of developing the legislation to provide for the fertiliser register will take in the region of 18-24 months, with an expected lead-in time of 6 months after publication for full compliance.

5.3.1.2 Improving Compliance

On average, approximately 2,000 Nitrates related inspections are undertaken on farms across Ireland each year by Local Authority and DAFM personnel. The level of compliance with the requirements of the GAP regulations varies from county to county but it is generally considered to be low, relative to compliance with other national legislation. Submissions received during the first consultation stage, and discussions with local authority personnel suggests that reform of the overall enforcement of the GAP regulations is required to:

- Further improve compliance levels,
- Ensure local authorities are adequately resourced,
- Prioritise targeting of high-risk areas.

While it is not expected that there will be significant changes to the enforcement powers of authorised personnel within the GAP regulations, the Nitrates Expert

Group will set out a series of recommendations for the Minister for Housing, Local Government and Heritage to provide for appropriate reform within the sector. Your observations on the current and future scope of enforcement of agricultural activities is appreciated to help shape the recommendations of the expert group, and set out a template for improving compliance rates and a more effective enforcement regime that is fit for purpose and delivers on its key objectives.

5.3.1.3 Review of the Agricultural Sustainability Support and Advisory Programme (ASSAP)

The Agricultural Sustainability Support and Advisory Programme (ASSAP) was introduced during the second cycle River Basin Management Plan (RBMP) to act as a more collaborative approach to achieving positive water quality outcomes for Irish agriculture. Funding from DAFM and DHLGH has enabled Teagasc to provide 20 advisors and funding from the Dairy Processing Co-ops have provided 10 advisors as part of the Dairy Sustainability Initiative (DSI).

In their interim report on the programme[20], Teagasc identified that strong collaborative relationships have been established between the ASSAP advisors, Teagasc, the dairy processing co-ops and the Local Authorities Water Programme (LAWPRO). There is a commitment in the current programme for government to expand the ASSAP programme, however in order to expand and improve the programme, some clarity is needed on the future role and scope of ASSAP. As a result, an assessment of the programme is currently being prepared by Teagasc to be carried out by a panel of external experts from outside ASSAP.

The assessment will focus on the rationale, efficiency, effectiveness and sustainability of ASSAP, as well as providing recommendations for the future and its role in achieving water quality objectives set out in the third cycle RBMP. The assessment is due for completion before the end of 2021 and the recommendations will be sent to the Minister for Agriculture, Food and Marine, and the Minister for Housing, Local Government and Heritage.

5.3.2 Proposed new GAP Regulation Measures

5.3.2.1 Slurry Storage and Management

The management of organic manure, especially slurry, is an important area for the potential reduction in losses of nutrients to the environment. These measures are intended to address the fact that there is a slurry storage deficit on approximately 40% of dairy farms. The rules around slurry storage are clear and have been for a number of years now.

[20] https://www.teagasc.ie/publications/2020/assap-interim-report-1.php

Inspection statistics show that one of the primary non-compliances identified through enforcement activity is inadequate slurry storage on farms. For farmers who wish to apply for a derogation, they have to have the legal minimum slurry storage capacity in place in order to be eligible.

For farmers that do not wish to operate in a derogation, or who are at a lower stocking rate the requirement is to retain at least minimum legal capacity however reduced storage through outwintering in accordance with the regulations will only be allowed on farms with stocking rate less than 100 kg N/ha.

- From 1st January 2022 it shall be a requirement that all slurry must be applied by;

  a) 30th September for 2022 for Zones A, B and C

  b) 15th September for 2023 and subsequent years for Zones A, B and C

- From 1st January 2023, farmers stocked >170 kg N/ha must demonstrate clear separation of slurry and clean water management in the farmyard.

- From 1st January 2022, all newly constructed external slurry stores must be covered.

- All existing external slurry stores should be covered as soon as practically possible, but no later than 31st December 2027.

5.3.2.2 Soiled Water Storage and Management

The control and management of soiled water from farmyards needs greater emphasis across all delivery mechanisms for the Nitrates Action Programme. The addition of soiled water to slurry tanks is causing many of the issues related to storage capacity that are being observed across the country.

It is proposed to address this issue in the following manner;

- Soiled water must be collected and kept separate to slurry on all holdings,

- From 1 Jan 2022 - To reduce the impact of nutrient losses in the riskiest period, the spreading of soiled water will be prohibited between 15th November and 15th January.

- All holdings producing soiled water must have a minimum of 4 weeks' storage in place by 31st December 2024.

5.3.2.3 Livestock Excretion Rates

The excretion rate of all livestock categories (As per Table 6 of the regulations) is being reviewed as part of the NAP following the most recent increase in the annual livestock nitrogen excretion rate for the dairy cow (from 85kg/ha organic N to 89kg/ha organic N).

Additionally, the EU Commission have raised issues with Ireland's approach of a single organic output figure and have requested Ireland to evaluate allocating an excretion factor to the dairy cow based on milk yield.

DAFM requested Teagasc to review this request and have undertaken preliminary analysis reviewing the organic output versus milk yield. In conclusion, as milk yield increases, the organic output of the dairy cow also increases. DAFM has undertaken some preliminary analysis and provisionally estimate that if banded against annual milk yield, dairy cows would produce an organic output per cow as follows:

Band 1	<4,500kg – 80 kg Organic N/ha
Band 2	4,501 and 6,500kg, - 92 kg Organic N/ha
Band 3	>6,500kg – 106 kg Organic N/ha

It is proposed to introduce these new excretion rates in a phased manner into Table 6 of the new Good Agricultural Practice Regulations, commencing on 1st January 2022.

5.3.2.4 Dairy Industry N Reduction Initiative

Recent EPA water quality reports have highlighted the level of nitrogen reductions needed in dairy-intensive catchments in order to achieve good water quality. There is potential for the dairy industry to support the achievement of these targets through financial incentives similar to the approach taken in other Member States and successfully employed in Ireland to achieve compliance with the Sustainable Dairy Assurance Scheme. Representatives of the dairy industry have been engaged in bilateral discussions with the Nitrates Expert Group about the role the industry must play in ensuring their suppliers operate in an environmentally sustainable manner. As a key stakeholder group within the agricultural sector, dairy co-ops have a responsibility to their 18,000 farmers as well as to Irish citizens to engage in the NAP review process and bring forward proposals to help reduce nutrient loses to water

and the wider environment and improve the environmental performance of the industry.

The Dairy Sustainability Ireland Working Group has commenced a project to look at options for driving N reductions at both national and catchment scales. The project is at its initial stages at present and its main focus is on:

- Driving improvements in slurry management,
- Promoting compliance with GAP regs requirements,
- Change Management Strategy to drive N reductions,
- Communications/knowledge transfer programme, linked to ASSAP,
- Major behavioural change programme around slurry storage.

Further work on the proposal will continue in the coming months, with input from key stakeholders including Teagasc, DAFM and DHLGH. In order to have an impact the project must have the full commitment of the industry and be adequately resourced before the Nitrates Action Programme is finalised.

5.3.2.5 Chemical Fertiliser Controls

In 2020, Teagasc updated the Green Book on Major and Micro Nutrient advice (2016 and 2020) [21].

These updated scientific revisions will be included in the next iteration of the technical tables of the regulations where appropriate.

Additionally, the nitrogen allowances as outlined in Table 12 of the regulations will be reduced by 10% nationally and potentially up to 15% in some areas based on the EPA catchment assessment report. These areas will be determined by the Nitrates Expert Group, based on input from the EPA, and any reductions in specific catchments will be undertaken on a phased basis.

Also, the period when the application of chemical fertilisers to land is prohibited will be extended. Schedule 4 of the regulations precludes the application of chemical fertilisers from 15th September to 31st January, depending on location. It is proposed to extend these dates as follows;

- In counties Carlow, Cork, Dublin, Kildare, Kilkenny, Laois, Offaly, Tipperary, Waterford, Wexford and Wicklow, the application of chemical fertilisers to land will be prohibited in the period from 15th September to 31st January.
- In counties Clare, Galway, Kerry, Limerick, Longford, Louth, Mayo, Meath,

[21] https://www.teagasc.ie/news--events/news/2020/revisedteagascgreenbook.php

Roscommon, Sligo and Westmeath, the application of chemical fertilisers to land will be prohibited in the period from 15th September to 3rd February

- In counties Cavan, Donegal, Leitrim and Monaghan, the application of chemical fertilisers to land will be prohibited in the period from 15th September to 19th February.

Also, Additional chemical fertiliser allowances for certain tillage crops (Table 16, Schedule 2) will be reviewed.

5.3.2.6 Sewage/Industrial Sludges

The use of sewage sludge is managed by Irish Water through its National Wastewater Sludge Management Plan. The application of sewage sludge to agricultural land is controlled by local authorities through the maintenance of sludge registers and inspection/enforcement programmes.

The control of other industrial sludges (including sludge from dairy processing industry) is managed, where applicable, through IPC licences granted by the EPA. A comprehensive understanding of the movement of sludges and the application of sludges to agricultural land is required to ensure the existing controls are fit for purpose. During the NAP review, the Nitrates Expert Group will be working with the various stakeholders to adequately address the risk from this ever-increasing nutrient source.

5.3.2.7 P Build-Up

The P Build-Up facility is considered an important mechanism to balance soil fertility and achieve optimum nutrient efficiency at farm level. In this context, the annual maximum fertilisation rates of phosphorus on grassland adopting increased P build-up application rates will be reviewed and it is being proposed to include the measure in the next programme and extend this facility to farmers operating above 100 kg N/ha.

5.3.2.8 Green Cover on Tillage Ground

To reduce any potential losses of nutrients post-harvest and building on current requirements to naturally regenerate a green cover within 6 weeks post-harvest, it is now proposed that shallow cultivation of harvested crops must be undertaken 7 days post-harvest.

Additional requirements are needed for late harvested crops i.e. Potatoes, Forage Maize and late harvested spring cereal crops especially those in critical sources areas. These will include the identification of critical sources areas for these crops and putting in place appropriate buffers to protect any intersecting water bodies.

5.3.2.9 Organic Matter Determination

In the current regulations, there is a requirement that “An occupier of a holding located in an area where soils have an organic matter content of 20% and above, as defined on the Teagasc- EPA Indicative Soils map, shall ensure that the soil test undertaken includes organic matter determination. The phosphorus fertilisation rate for soils with more than 20% organic matter shall not exceed the amounts permitted for Index 3 soils. Soil organic matter determination shall not be required where it is certified by a Farm Advisory System Advisor that soils on a holding/field in such areas are mineral soils”

There has been various amendments afforded to the implementation of Organic Mater determination through SI 65 of 2018 and DAFM Circular 02 of 2020 however the soil sampling for organic matter from soils within the EPA Indicative layer needs to be considered as part of the next NAP and the best approaches for its implementation.

The procedure for the certification of a soil as a mineral soil is provided under the current regulations however in order to streamline the process where soil samples are required in some instances and certification in other instances, the regulatory framework require a more streamlined approach to ensure consistency and accuracy of OM estimation. Therefore, from 2022, all soils in the indicative Teagasc/EPA layer for >20% OM are required to be soil tested for Organic Matter.

5.3.2.10 Soil Tests

A soil test refers to the results of an analysis of a soil sample carried out by a soil-testing laboratory that meets the requirements of the Minister for Agriculture, Food and the Marine for this purpose.

The analysis of phosphorus, specifically the Morgan extractable P test, is currently used to determine the Soil P Index. A review of the soil test methodology for phosphorus availability will be undertaken however guidance is required on the best approach to consider to ensure phosphorus availability is evaluated correctly.

5.3.2.11 Grazing Land Management

In terms of short term grazing, only land within 30km allowed to be considered in stocking rate calculation

Currently for Nitrates Derogation Farms, Commonage and Rough Grazing are permitted for inclusion for 170kg N/ha allowance. In order to protect these areas further and the whole farm nutrient planning process, it is proposed to reduce these below the 170kg N/ha threshold.

5.3.2.12 Review of Technical tables

In some instances, the information is not up to date in the technical tables and these will all be considered as part of the review. Examples include the nutrient content of livestock manures including pig slurry and poultry manure and whether existing slurry storage capacity figures are considered to accurately reflect changes in animal size over the last number of years.

5.3.2.13 Air Quality

From an air quality perspective, ammonia provides the most significant challenge from agriculture. The current regulations provides for the compulsory usage of Low Emission Slurry Spreading (LESS) equipment for all farmers operating above 170 kg N/ha and Derogation farmers. In order to meet our Ammonia and Agclimatise targets, the further compulsory implementation of LESS for more farmers will be required.

In order to align with these targets, the compulsory usage of LESS will be introduced for all farmers operating above 100 Kg livestock N/ha from 2023 and for all Pig farmers from 2023 onwards.

In addition, all organic manures applied to arable land must be by low emission or incorporated within 12 hours of application.

6. What Happens Next?

6.1 Have Your Say

To get involved in the consultation, please email your response to: wau@housing.gov.ie

Postal responses can be sent to:

Nitrates Consultation

Water Advisory Unit,

Department of Housing, Local Government and Heritage

Custom House,

Dublin 1

Any queries can be sent to the email address above or telephone 01 888 2000.

Further copies of the consultation paper and associated documents are available in electronic and hard-copy format on request to the section named above.

The papers can also be accessed through https://www.gov.ie/en/consultation/0b39f-public-consultation-on-irelands-nitrates-action-programme/

or

https://www.gov.ie/en/organisation/department-of-agriculture-food-and-the-marine/

You do not have to respond to every question in the consultation. If you have a specific area of interest, you are free to respond to just those questions.

The closing date for receipt of responses is 20 September 2021.

6.2 What We Will Do With Your Response

Responses will inform the development of the 5th cycle of the NAP for Ireland. Please note, while we will not publish names of those that have responded, submissions received may be made available on the Department's website. In any event, all submissions received will be subject to the provisions of the Freedom of Information Act and Data Protection legislation. A copy of the Department's Privacy Statement is available at https://www.gov.ie/en/organisation-information/648102-data-protection/

6.3 Freedom Of Information

All submissions and comments submitted to the Department for this purpose are subject to release under the Freedom of Information (FOI) Act 2014 and the European Communities (Access to Information on the Environment) Regulations 2007- 2014. Submissions are also subject to Data Protection legislation.

Personal, confidential or commercially sensitive information should not be included in your submission and it will be presumed that all information contained in your submission is releasable under the Freedom of Information Act 2014.

A privacy statement has also been published which details how the Department of Housing, Local Government and Heritage (DHLGH) and Department of Agriculture, Food and the Marine (DAFM) will manage your personal data as part of this consultation process, in accordance with the GDPR Regulations.

6.4 Next Steps

The development of the 5th cycle of the Nitrates Action Programme will continue right up to the end of 2021. The 5th NAP, covering the period 2022 – 2025 will be finalised following the review of responses and stakeholder engagement before being sent for Ministerial sign off. This is to be completed in the end Quarter 4 2021.

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