

3rd Review of Ireland's Nitrates Action Programme

Review of submissions received under Public Consultation

Report and recommendations to the Department of Housing, Planning and Local Government and the Department of Agriculture, Food and the Marine in relation to submissions received and suggested measures to be included in Ireland's 4th Nitrates Action Programme.

September 2017

1. Introduction

1.1 Review of the 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 surface waters and groundwater 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 the Environment, Community and Local Government, in consultation with the Minister for Agriculture, Food and the Marine reviewed the NAP for the first time in 2010, and for the second time in 2013. This resulted in a revised Nitrates Action Programme (NAP2 and NAP3) and the current Good Agricultural Practice Regulations (also known as the 'GAP Regulations' and the 'Nitrates Regulations') – S.I. no.31/2014.

NAP3 expires on 31 December 2017 and this third review of the NAP is due to be completed by the end of this year. Accordingly, it is intended to finalise Ireland's fourth NAP (NAP4) and related regulations shortly. NAP4 will run until end 2021.

1.2 Public consultation

To further inform the review, the Department of Housing, Planning and Local Government (DHPLG) and the Department of Agriculture, Food and the Marine (DAFM) jointly published a consultation paper on 2 March 2017 and invited submissions from interested parties and the public by 3 May 2017. A total of 28 written submissions were received in response to this invitation as detailed in appendix 1 to this report. These include submissions from local authorities, public service bodies, farmers and farming representative bodies, eNGOs, agricultural co-operative societies, trade and professional bodies and Teagasc. The Departments, and the Review Group formed to review these submissions, found this wide and considered input to the review process to be very valuable and they thank all parties involved for their contributions.

1.3 Review Group

All submissions received were reviewed by an expert group set up specifically for this task. The Group was jointly chaired by DHPLG and DAFM and comprised senior scientific experts from DHPLG, DAFM, the Environmental Protection Agency (EPA) and Teagasc. Membership of the Group is detailed in appendix 2 to this report.

1.4 Guiding Principles

The Group worked with the following guiding principles:

- that NAP4 should maintain and support the environmentally progressive outcomes achieved under the three previous NAPs and continue to secure consistency with the EU Nitrates Directive;
- that the present review should seek incremental improvements to the existing NAP that will build on the considerable achievements made to date and contribute to the delivery of Water Framework Directive (WFD) objectives; and
- that the NAP4 regime should be designed to operate as efficiently as possible, taking into account the objectives for Irish agriculture as set out in Food Harvest 2020 and Food Wise 2025, including sustainable farming practices objectives and also climate change objectives.

2. Background and Context

2.1 Water Framework Directive, 2nd Cycle River Basin Management Plan

The overarching aim of the Water Framework Directive is to achieve at least good status for all water bodies. It aims to do so by ensuring effective water management based on river basins and catchments.

A central element of the Directive is the requirement for member states to produce River Basin Management Plans. These plans must, amongst other things, assess the environmental pressures causing water bodies to be at risk of not meeting the objectives of the Directive. Based on this assessment a programme of measures is required to address the significant pressures on such water bodies.

Ireland's first cycle plan covered the period 2009-2015 and a draft second cycle River Basin Management Plan for 2018 -2021 has been published for public consultation. As required, this draft plan provides an assessment of the pressures on the water environment in Ireland, and the proposed programme of measures to be implemented in the period to 2021.

The Nitrates Directive, implemented by means of the Nitrates Action Programme, is the basic agricultural measure in the draft River Basin Management Plan for the protection of waters from agricultural sources. The NAP is the key agricultural measure for preventing and reducing water pollution from nutrients (nitrogen and phosphorus) arising from agricultural sources. However, it is acknowledged that other complementary measures are necessary to reduce agricultural source pollution. The draft second river basin management plan¹ identified these complementary measures as (1) the Rural Development Programme (RDP) 2014-2020, (2) the Agricultural Catchment Programme (ACP), (3) Knowledge Transfer (KT) initiatives to promote the adoption of best environmental practices and (4) Monitoring and modelling initiatives to assess the impact of sectoral changes on water quality.

Ireland's Rural Development Programme (RDP) 2014-2020 includes further optional farm level measures which farmers can undertake if they wish to build on progress made under the regulatory baseline. In general, RDP measures are designed to protect and enhance natural resources and the landscapes in rural areas, and to contribute to the EU's environmental priority areas of biodiversity, climate change and water quality.

2.2 Key elements of Ireland's NAP

Ireland has applied its NAP on a whole territory basis, thus ensuring 100% territorial coverage. In addition, the Programme also provides for legally binding phosphorus limits for all crops. 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;

¹ Public Consultation on the river basin management plan for Ireland (2018-2021). Department of Housing, Planning, Community and Local Government (February 2017)

- 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.

In common with other EU member states in which intensive agricultural activity is practised, Ireland has availed of a derogation from the 170kg livestock manure nitrogen limit as provided for in the Nitrates Directive. Such derogations are provided for where justified on the basis of long growing seasons, crops with high nitrogen uptake, high net precipitation or the occurrence of soils with exceptionally high denitrification capacity. The derogation was originally granted by the Commission in 2007 and renewed in 2010 and 2014. Discussion is ongoing with the Commission to allow Ireland to continue to avail of this derogation.

2.3 Water quality

In the 2012-2015 reporting period², nitrate concentrations across all water categories (groundwater, rivers, lakes and transitional and coastal waters) have remained stable. The relative stability highlights that the measures operated under the National Action Programmes for the last decade, such as improved nutrient use management, adherence with the prohibition of organic fertiliser application spreading during the closed period and the development of approaches to identify management solutions in critical source areas to prevent nutrient and soil losses, are providing a good level of protection to waters. Nitrate, phosphorus and ecological response data for 2016³ also confirm this relative stability although at a regional and local level there have been increases or decreases in concentrations, with ecological improvement and deterioration also recorded in some water bodies.

At a water body level, there was an increase in maximum nitrate concentrations for 47% (35 lakes) of all monitored lakes in the 2012-2015 reporting period. Four transitional water bodies and one coastal water body were assessed as showing a decline in trophic state between 2008-2011 and 2012-2015. The increased maximum nitrate concentrations observed in many lakes and increased nutrient concentrations, with associated ecological deterioration observed, observed in other water bodies does highlight the importance of adopting an integrated approach to catchment management and aligning agricultural management strategies with the objectives of the WFD, to prevent further deterioration in the status of waters.

Groundwater

In 2016 average nitrate concentrations were less than 25mg/l NO₃ at 83% of groundwater monitoring sites and less than 50 mg/l NO₃ at all bar two sites. Generally, higher concentrations are found in the south and southeast of the country. There has been an overall decline in nitrate concentrations in groundwater since 1995, although, since 2013, there has been a slight increase in nitrate concentrations nationally.

86.1% of national groundwater monitoring sites had average phosphorus concentrations less than 0.025mg/l P with only five (2.6%) sites had an average concentration greater than 0.050mg/l P in 2016. The monitoring sites with elevated phosphate concentrations are dispersed geographically.

² (Source: National report submitted in response to Article 10 of the Nitrates Directive)

³ (Source: EPA report under Article 29(1)(b) of S.I. 31 (2014))

Elevated phosphate concentrations in groundwater are attributed to the impact of diffuse pollution from agricultural sources and point source pollution from domestic wastewater treatment systems (generally septic tank systems) and farmyards, particularly in areas of extreme groundwater vulnerability. The proportion of monitoring sites with an average phosphate concentration greater than 0.035mg/l P in 2016 (7.7%) is less than in 2015 (9.3%) but is still higher than it was in 2008 (5.2%), 2009 (4.2%) or 2014 (7.2%).

Rivers

Nitrate concentrations have been relatively stable since 2009, and represent an improvement on the river nitrate concentrations measured since 1995. In 2016, 73.2% of river monitoring sites had average nitrate concentrations of less than 10mg/l NO₃. 1.4% of sites had concentrations exceeding 25mg/l NO₃.

The phosphorus concentrations over the last decade vary from year to year, with the 2016 phosphorus data assessment highlighting stability in phosphorus concentrations since 2014, although the improvements measured between 2009 and 2014 appear to have ceased. 68.8% of river monitoring sites had average phosphorus concentrations less than 0.035mg/l P and only 5% of sites had an average concentration greater than 0.1mg/l P in 2016.

Lakes

In 2016, all monitored lakes sites had average nitrate concentrations less than 10mg/l NO₃, with nitrate concentrations continuing to remain low and relatively stable in lakes. At a water body level, there was an increase in maximum nitrate concentrations in 47% (35 lakes) of all monitored lakes in the 2012-2015 reporting period.

69.7% of lakes had average total phosphorus concentrations less than 0.025mg/l P and 12% of lakes had an average concentration greater than 0.05mg/l P in 2016. Since 2007, the percentage of lakes with average total phosphorus concentrations less than 0.025mg/l P has steadily increased, although 2016 saw a reversal in this trend, with concentrations deteriorating to the levels measured during 2010.

Transitional and coastal waters

The assessment undertaken using transitional and coastal monitoring data from 2014 to 2016 indicates that all transitional and coastal sites had median nitrate concentrations below 25 mg/l NO₃. The highest nitrate concentrations were found along the south-eastern and southern coasts. Overall, nitrate concentrations since 2011 have remained stable, however four transitional water bodies and one coastal water body have shown a decline in trophic state between 2008-2011 and 2012-2015ⁱ.

Data from the 2014 to 2016 assessment indicates that median phosphorus concentrations in most estuaries and coastal waters were low, except for few locations in the Shannon estuary. Median phosphorus concentrations were less than 0.04mg/l P at 91% of monitoring sites and only 2% of sites had median concentrations greater than 0.06mg/l P. Nationally, since 2007, median phosphorus concentrations in transitional and coastal waters have been stable or have been reducing slightly.

High status sites

High status water bodies reflect water quality that has not been significantly impacted by human influences and are close to a natural background condition. The WFD environmental objectives

require that there should be no deterioration in the status of water bodies. 243 rivers, 25 lakes, 13 transitional and nine coastal water bodies were identified as being at high status in the 2013-2015 in the draft River Basin Management Plan⁴. The status of these water bodies is under threat with continuing loss in high status river sites in the last three decades (Figure 1). In addition to high status river and lake water bodies, there are other sensitive ecosystems that depend on good water quality, for instance, freshwater pearl mussel catchments and catchments of groundwater dependent terrestrial ecosystems, such as turloughs and alkaline fens. As highlighted in the draft River Basin Management Plan, the on-going loss of high status sites is a key issue for compliance with the WFD. Implementation of the National NAP contributes positively towards the protection of these ecosystems.

To protect the remaining high status sites and to reverse the trend of decline, it is important to tackle the principal pressures causing the ecological damage. Even relatively low intensity activities can cause deterioration in water quality and status at these locations. Agricultural sources, both point and diffuse, are central in this context.

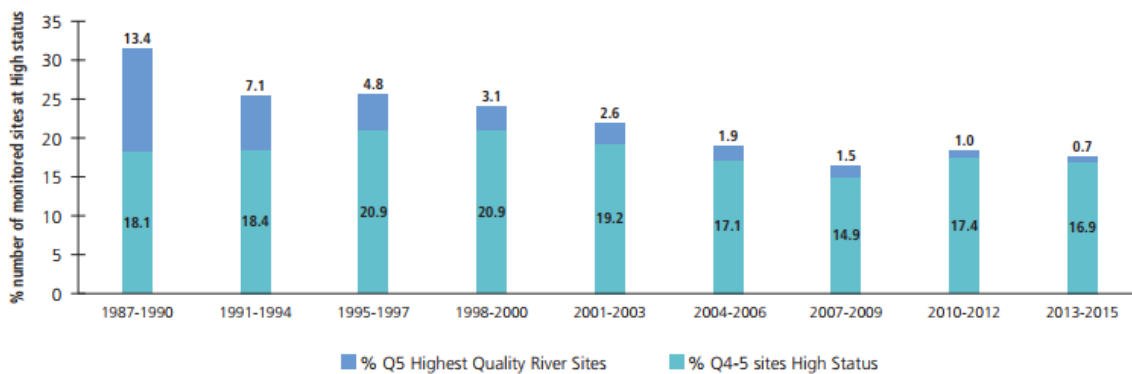


Figure 1: Long-term decline in the extent of high ecological quality river sites⁵

While implementation of the Nitrates Action Programme will be beneficial, in some areas supplementary measures will be required beyond the NAP to provide the necessary protection of high status water bodies and other sensitive ecosystems. The draft RBMP describes additional measures to be undertaken in relation to high status catchments including the establishment of a “Blue dot catchments programme” by local authorities aimed at providing a means of focussing attention and resources across a range of agencies with the aim of protecting and, where required, restoring high ecological status. A detailed assessment of the pressures on individual water bodies has been undertaken nationally under the WFD and it is expected that this will facilitate the targeting of the most appropriate measures in the right place. Consequently, adoption of a collaborative response to addressing these identified water quality issues is essential. This right measure in the right place approach has been incorporated into the WFD characterisation assessments, and as such areas are being identified for investigation and associated measures in the River Basin Management Plan.

⁴ (Source: Department of Housing, Planning and Local Government (2017). Draft River Basin Management Plan, Department of Housing, Planning, Community and Local Government, Custom House, Dublin 1)

⁵ (Source: EPA (2016). *Ireland's Environment - An Assessment 2016*, Environmental Protection Agency, Wexford)

2.4 Food Wise 2025

Food Wise 2025 sets a course for Ireland's agri-food industry, and builds on the previous industry-led initiative of Food Harvest 2020. Food Wise 2025 identifies ambitious and challenging growth projections for the industry over the next ten years including:

- 85% increase in exports to €19 billion;
- 70% increase in value added to €13 billion;
- 60% increase in primary production to €10 billion and
- The creation of 23,000 additional jobs all along the supply chain from producer level to high end value added product development.

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 Review Group considers that any proposed changes to the Regulations must be consistent with the objectives of the Nitrates Directive, the Water Framework Directive, the Birds and Habitats Directives as well as the sustainability objectives of the Food Wise 2025 strategy. The Group is of the view that NAP4 cannot of itself address all the issues but it is an important component of the required co-ordinated approach.

2.5 Climate change

Methane (CH₄) and nitrous oxide (N₂O) make up the majority of Irish agriculture greenhouse gas (GHG) emissions, mainly due to the dominance of cattle and sheep livestock production. While methane is the most significant GHG emitted from agricultural activity in Ireland, it is difficult to mitigate as it arises principally from enteric fermentation. The principal other GHG is N₂O which contributes up to 35% of Ireland's agricultural GHG emissions. As N₂O emissions arise mainly from applications of nitrogen-based fertiliser and organic fertilisers to agricultural soils it provides more opportunity for abatement. Improving soil fertility and optimising the nutrients in organic fertilisers are critical elements in driving improvements in N use efficiency, reducing N₂O emissions. Improving soil fertility potentially has co-benefits such as protecting and enhancing the soil carbon pool through improvements to sequestration, especially in grasslands. Furthermore, the efficient use and recycling of livestock manure fertiliser within the Irish agricultural production system will offset some of the demand for artificial fertilisers.

The Review Group, in making the proposed changes to the NAP, has taken into account consequential climate change priorities.

2.6 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. Ireland's agriculture and food landscape has evolved rapidly during the life of the project and increasing farm output, especially milk, is now an objective in national policy. The ACP is constantly reviewed to take account of the changing policy environment.

Phase 2 of the Programme concluded in December 2015. This followed on from Phase 1 which finished at the end of 2011. In the eight years of Phase 1 and Phase 2 the programme has continuously developed and established itself as a unique asset in meeting Irish farming's sustainable intensification challenge. Phase 1 was concerned with project design, development and

establishing the science behind the processes at work in the catchments using the data collected in those years. Phase 2 (2012-2015) has mainly been concerned with validation of the science and exploration of the potential policy impacts.

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.

ACP research shows substantial changes in nutrient management on farms. The proportion of fields with excess soil P has declined in four out of the five catchments and fields with very low or low P have increased indicating an overall decline in soil P levels thus reducing risk of P loss to water – this reflects national trends. However, soil type and geology can override soil P index as a predictor of P loss risk, therefore, a ‘one size fits all’ approach that does not take account of soil type may not adequately address P loss risk mitigation. Climate pressures can override both source and soil type - excessively wet years and wet pulses following dry periods have become more common patterns during the ACP monitoring period.

Overall, evidence from the ACP indicates that supporting farmers, through technical advice, 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. This should deliver increased efficiencies for the farmer while reducing risk of nutrient loss to water.

2.7 Rural Development Programme 2014-2020

The Nitrates Directive is designed to provide a basic general level of protection for the water environment against pollution from agricultural sources. It applies general binding rules on a whole territory approach bringing all farm nutrient (nitrogen and phosphorus) loading under a well-defined environmental regime. The universal application of the GAP Regulations to all farms within the State is a significant strength. However, as it is designed for such general application, the Regulations cannot specifically address more specific environmental issues, for example, the requirements of individual high status catchments. As mentioned above the establishment of a “Blue dot catchments programme” by local authorities is specifically aimed at providing a means of focussing attention and resources across a range of agencies with the aim of protecting, and where required, restoring high ecological status in these catchments.

With an enhanced focus on delivery of good environmental outcomes, a ‘targeted’ approach has been taken in the current Rural Development Programme (RDP 2014-2020). 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.

There is a strategic focus on water quality objectives. The Green Low Carbon Agri-Environment Scheme (GLAS) is a targeted agri-environment scheme under the RDP, with a budget of €1.4bn for the period 2014-2020 and 50,000 participating farmers. The objective of the scheme is to improve the rural environment by improving water quality, mitigating climate change and promoting

biodiversity. Actions to-date such as fencing of watercourses (16,600 km), low input farming (281,600ha) and catch crops (24,800 ha) are examples of key measures at farm level for the protection of water. Participating farmers in GLAS must also engage a trained agricultural advisor, participate in action specific training, and have a nutrient management plan in place. Prioritisation of farms within vulnerable catchments and 'high-status' waterbodies is a key feature of the GLAS programme. Additionally, there is increased focus within the programme on ensuring farmers understand the reasoning behind the environmental benefits of the measures they are undertaking, improving implementation of 'best practices' at farm level. The cumulative environmental benefits from these actions are expected to materialise over the period towards 2020 and beyond and the results will be monitored and evaluated.

Under the RDP 2014-2020, the Targeted Agricultural Modernisation Schemes (TAMS) provides grant assistance to farmers for investments related to the pig and poultry sectors, dairy equipment, the storage of slurry, soiled water and other farmyard manures and related facilities. €190m is specifically targeted at two TAMS schemes benefiting the protection of water: the Animal Welfare, Safety and Nutrient Storage Scheme and the Low Emission Slurry Spreading Scheme. This will lead to a significant investment in nutrient storage and improved nutrient utilisation.

Furthermore under the RDP 2014-202, there is a focus on the 'bottom-up' approach to delivery of environmental objectives by means of 'Locally Led Agri-Environment Schemes' with a budget of €70 million. This includes a locally-led Freshwater Pearl Mussel (FPM) Scheme targeting 8 priority Freshwater Pearl mussel sites which will be launched in late 2017.

A budget of €100m has been allocated under Ireland's Rural Development Programme (2014-2020) for knowledge transfer (KT), targeting over 20,000 farms. The KT programme is aimed at the adoption of best practice. This voluntary programme will help to ensure that participating farmers fully implement the relevant plans and practices for the protection of water, including the prevention of pollution from farmyards, effective nutrient management planning and identifying vulnerable areas and relevant measures.

3. Main Issues Raised in Public Consultation and Group Recommendations

3.1 Approach to reviewing the submissions

As with the last public consultation in relation to the delivery of NAP3, this public consultation process produced many detailed and considered submissions. The Review Group, in considering all submissions, also took into account EPA water quality monitoring data and both current and emerging agricultural pressures on water quality. The Group sought to focus its advice to the Departments on the major themes emerging from the public consultation and to make clear the Group's advice and/or recommendations on these for the purposes of NAP4. The submissions and recommended changes to the NAP can be categorised as follows –

- New strengthened water protection measures
- Enhanced Knowledge Transfer
- Simplification of the regulations for improved implementation
- Achieving optimum soil fertility and improving nutrient use efficiency
- Limited adjustments to nutrient allowances and application
- Additional minor and technical changes to the regulation

3.2 New strengthened water protection measures

The Review Group agreed on the requirement for additional measures for achieving incremental improvements to the existing NAP, building on the achievements made to date. The new measures recommended by the Group focus on intercepting and breaking nutrient transport pathways and preventing sediment and nutrient losses to waters and are as follows –

3.2.1 The exclusion of bovines from watercourses on farms with grassland stocking rates above 170 kg N/ ha

Cattle access to watercourses is often considered a pressure as a result of potential increased nutrient and sediment inputs caused by both direct contamination and erosion of banks; this can result in siltation and overland nutrient flow. The Group noted studies suggesting that unrestricted cattle access can result on deteriorating water quality and also that there are divergent overall conclusions. It is further noted that the Cosaint project will, over the coming years, provide scientific data on the impact of fencing watercourses. Under the Green Low emission Agri-Environment Scheme (GLAS), 20,100 farmers have committed to fencing 16,600 km of watercourses.

The Group considers that cattle accessing watercourses on the more intensively stocked farms can pose a threat to water quality. The Review Group recommends that farms with grassland stocking rates of above 170 kg N/ ha be required to fence watercourses 1.5 metres from the top of the river bank, thereby preventing bovine access. It is noted that there are 12,350 farms with grassland stocking rates above 170 kg, with a total farmed area of over 674,264 ha.

This new measure would be effective from 1 January 2021, allowing farmers the opportunity to plan for such fencing and provide alternative drinking sources as required. It is proposed that it will be permissible to move livestock across a watercourse only where it is necessary to access a grazing land parcel which is otherwise isolated from the remainder of the farm holding, provided that both sides of the watercourse are fenced. In such situations livestock will not have free access to the watercourse.

The Group considers that this proposed measure will, on the more intensively stocked farms where cattle currently have access to watercourses, reduce potential nutrient and sediment inputs. It will also allow vegetation to recover on banks, breaking the pathway and reducing mobilisation of sediment and losses of phosphorus.

The findings from the Cosaint project which is due to be completed by September 2018 will be considered in the next NAP review process.

3.2.2 Livestock drinking points to be located at least 20m from waters, on farms with grassland stocking rates of above 170 kg N/ ha

There are no current controls as regards the location of livestock drinking points relative to waters; it is noted that supplementary feeding points must not be located within 20m of waters. It is considered that this poses a risk to water quality, particularly on the more intensively stocked farms, as a result of potential poaching of the ground surrounding drinking points leading to nutrient and sediment losses. The Group recommends that a measure is introduced on 1 January 2021 requiring that drinking points must not be located within 20m of waters on farms with grassland stocking rates above 170 kg N/ ha. It is considered that the introduction of this measure will break the pathway for potential runoff from areas around drinking points, preventing nutrient and sediment losses. The

time frame of January 2021 is recommended to allow farmers to relocate all existing drinking points as required.

3.2.3 Prevention of direct run-off from farm roadways to waters

The current regulations contain effective farmyard management measures for the protection of waters; these include the minimisation of soiled water and the collection and storage of manures, effluents and soiled water. It is noted that there is currently no provision for the prevention of direct runoff from farm roadways. There are 15,500 specialist dairy farms, with a total farmed area of 870,000 ha, with farm roads facilitating daily movement of animals from the farmyard to the grazing platform. Available data indicates that the typical length of farm roadways is 1.4 km per farm.

The Group recommends that a measure is introduced requiring the prevention of direct runoff from farm roadways on all farms to waters. This requirement would be introduced from 1 January 2021 allowing farmers the opportunity to modify roadways as deemed necessary to prevent runoff. There will be a range of potential options to prevent such direct runoff including cambering of the roadway directing water to one side, measures to reduce the speed of water flow and earth bunding along the road. DAFM will provide relevant guidance information for farmers through specifications and knowledge transfer. Training will also be provided for advisors.

The Group considers that this measure will be effective in the prevention of sediment and nutrient runoff from farm roadways thereby protecting and improving water quality.

3.2.4 Prevention of runoff resulting from poaching

It was noted that while poaching is addressed under the Good Agricultural and Environmental Conditions (GAEC) requirements, it does not feature in the GAP regulations. The Review Group considers that moderate to severe poaching can lead to sediment and nutrient losses and there is a requirement to bring the GAP regulations in line with the GAEC requirements in this respect. The Group recommends that a provision is introduced in the GAP regulations requiring the prevention of runoff resulting from poaching. Under this proposed measure farmers will be required to manage livestock grazing to ensure that the risk of soil erosion/ runoff to surface waters is minimised by means of appropriate management.

3.2.5 Reduction in area for individual soil sample

In order to give a more accurate picture of nutrient status of soils for the purpose of soil analysis the group recommends that the sampling area should be reduced to 5 ha from 8 ha currently. It is also recommended that soil analysis results will be valid for 4 years (a reduction from 6 years currently).

3.3 Achieving optimum soil fertility and improving nutrient use efficiency

3.3.1 Adoption of appropriate phosphorus build-up rates on farms with grassland stocking rates of above 130 kg N/ha

The previous NAPs have been successful in reducing the proportion of soils with high P levels (index 4) from 30% in 2007 to 15% in 2016; these soils have a higher risk for P losses to waters. However, data from Teagasc's soil analysis services indicates that the proportion of soils at soil P index 1 and 2, which are suboptimal levels, has increased from 40% in 2007 to 62% in 2016. The continuing decline in soil P combined with suboptimal soil potassium (K) and pH levels has resulted in only 10% of soils having optimum fertility status.

The current P application rates for build-up of 10 (P index 2) and 20 (P index 1) kg/ha/year were adopted from early nutrient management advice, at a time when production levels were lower and for grass varieties with lower production potential than modern varieties. These levels of build-up are much too low to achieve significant increases in soil P levels within a reasonable time; currently it would take 21 years to move the soil from P Index 1 to 3 and 12.5 years for moving index 2 to 3.

The consequences of suboptimal P levels include reduced nitrogen use efficiency, increased nitrogen emissions to water and air and reduced grass production impacting on sustainability objectives.

The Review Group is satisfied that based on the latest scientific studies, encompassing a range of soil types, the P allowances for build up should be increased from the current levels on farms with grassland stocking rates above 130 kg N/ha. The Group recommends that the P build up allowances for grassland be revised; that soils at P index 1 be allowed a maximum build up allowance of 50kg/ha, and index 2 a maximum build up allowance of 30 kg/ha. The proposed build up rates are contained in Table 13b of Appendix 3.

The Group recommends that a number of safeguards are built in to this proposal to ensure the transfer of P into water is prevented –

- Farmers who wish to build up P levels would be required to carry out soil analysis including for both soil P and soil organic content (unless it is demonstrated that all soils on a farm holding are mineral soils as opposed to high organic peat soils). The sampling area will be 5 ha (a reduction from 8 ha currently). Soil analysis results will be valid for 4 years (a reduction from 6 years currently). Farmers will be required to submit detailed nutrient management plans using the on-line NMP system. Farmers will be obliged to consult with DAFM approved Farm Advisory System agricultural advisers and participate in relevant Knowledge Transfer programmes;
- The allowances would apply for a maximum of four years and the P build up rates would only apply to index 1 and 2 soils;
- The build-up rates are set at 80% of the maximum required to build soil P levels to the top of P index 3 band over the four year programme which provides a significant safety margin to ensure that excess applications do not occur.

The Review Group recommends that these P build up rates would only apply to the more intensively stocked grassland farms with grassland stocking rates above 130 kg N/ha, where soil fertility is important in achieving target grass productions levels. Analysis of the 2015 National Farm Survey (NFS) shows that only 13.8% of farms above the 130 kg limit applied the full maintenance rates of P. There are 21,474 (2015) with grassland stocking rates above 130 kg N/ha; consequently it is estimated that around 3,000 farms with a total farmed area of 170,000 ha would avail of the P build-up. It is considered that the adoption of the proposed P build-up rates by this relatively small number of farmers coupled with the proposed safeguard measures outlined above would have a negligible impact on national P usage.

3.3.2 Permit limited importation of pig manure, above the current 170 kg N/ha limit, onto farms with grassland stocking rates of above 130kg N/ ha where the soil P index is 1 or 2.

In considering this proposal the Review Group took into account the high nutrient value of pig manure, the difficulties experienced by pig farmers in sourcing adequate spreadlands, the high proportion of sub-optimal P index soils and that farms with higher stocking rates have higher requirements for nutrients. It was noted that the volume of manure that can be imported and applied on the holding decreases with increasing stocking rate because of the 170 kg limit. This limits the potential for utilising pig manure on such farms to replace chemical P fertiliser.

With the dual aims of using all available organic fertilisers within the state efficiently to meet crop requirements and of reducing the overall dependence on chemical fertilisers as a consequence the Group recommends that farms with grassland stocking rates above 130 kg N/ha be allowed to import above the current 170 kg limit and up to a maximum manure nitrogen limit of 250kg/ha; the calculations would be based on the previous year's stocking rate data. This would help to address the sub-optimal soil P in a cost effective manner leading to improved nutrient use efficiency and would facilitate optimising the use of pig manure to displace chemical P reducing costs. It would be required that the pig manures be applied by Low Emission Slurry Spreading technology to further improve utilisation of nutrients. This proposal does not entail any change in N and P allowances. In making this recommendation the Review Group recognises that while the proposal represents a progressive step towards the more efficient use of livestock manure and reduced reliance on chemical fertilisers there may be difficulties in its operation within the strict terms of the Nitrates Directive.

3.4 Simplification of the regulations to improve implementation

A number of submissions were received regarding simplification of the regulation in order to facilitate the better understanding of requirements thereby improving farmer implementation.

3.4.1 Simplification of calculations for determining the maximum fertiliser N and P allowances

Under the current GAP regulations the calculation of the total maximum permitted chemical N and P imports must take into account the contribution of total available N and P from grazing livestock manures stored in tanks during the storage period. Under the regulations the country is divided into four zones of slurry storage requirements. Currently these slurry storage capacity zones are used to determine how much N and P a farmer can import. This is resulting in the maximum N and P allowances for farmers in the zones with the longer storage requirements (18, 20, 22 weeks) being lower than for those in the zone with the shortest storage requirements (16 weeks), which is inequitable. The current system results in complexity in the nutrient management planning calculations; it creates difficulties for farms in such areas in achieving optimum P levels. It is also based on historic calculations which do not reflect the current level of phosphorus offtake.

The Review Group recommends the removal of the requirement to deduct N and P in grazing livestock manures in the calculation of maximum N and P fertiliser allowances. It is considered that this change in the regulations will make the calculation of N and P allowances easier to understand for farmers, advisors and the wider industry and will make nutrient management planning more effective. It will also result in farms in areas with longer storage requirements having the same N and P allowances as those in areas with the lower storage requirements.

The Group considers that this change will further facilitate the attainment of optimum soil P levels thereby improving nutrient use efficiency with the consequential production and environmental benefits. New maximum N and P tables would be incorporated into the new regulations to take account of this change.

3.4.2 Basing nutrient management plans on previous year's data

The maximum N and P allowances in the regulations are based on the farm stocking rate. Currently these allowances are calculated based on forecast stocking rates, taking into account the previous year's stocking rate information as detailed on the full year N and P statement provided by DAFM. This usually results in nutrient management planning being completed in the first quarter of the year

(January – March), which is often too late to accurately plan specific fertiliser purchases to meet requirements. Furthermore, the current system can create excessive caution in the calculation of fertiliser requirements in order to avoid penalties, which is one of the factors contributing to the decline in soil fertility levels.

The Review Group recommends that farmers be allowed to use the previous year's N and P figures for grazing livestock to determine the maximum N and P allowance, rather than using forecast data. The Group is satisfied that this would allow for more certainty and more effective planning ahead of the fertiliser purchasing season. It would also remove the risk of penalties for farmers as a result of unforeseen changes in livestock and land area during the year. The Group is satisfied that there is no negative environmental impact from this solution and it does not entail any change in N and P allowances.

3.5 Knowledge Transfer (KT)

The Review Group makes two recommendations in relation to Knowledge Transfer (KT) initiatives. These are as follows;

1) In order to minimise the risk of phosphorus losses to waters the Review Group recommends that a farmer wishing to avail of the proposed increased P build-up rates referred to in section 3.3.1. above would be required to participate in a KT programme consisting of the following elements;–

- Nutrient management - based on soil sampling and analysis for the whole farm, with a maximum sampling area of 5ha and the results valid for the subsequent four production seasons. A nutrient management plan (NMP) would be prepared by a DAFM trained advisor providing a tailored organic and chemical fertiliser programme taking account of soil analysis and the crop/ grassland requirements.
- Assessing P loss risk on a field-by-field basis - this would be developed through discussion between the advisor and farmer of areas of the farm susceptible to P nutrient loss and appropriate mitigating measures.
- Farmer training - all participating farmers would be required to complete a half-day training module delivered by trained advisers which would cover farmyard and landscape management for the protection of water, and principles of nutrient management best practice
- Annual advisory visit - to facilitate the farmers' full understanding of the NMP, its implementation and fertiliser purchase planning.

2) The Review Group recommends that a collaborative approach involving State agencies and the farming sector be adopted aimed at bringing about behavioural change within the farming sector in order to achieve sustainable farming practices and positive environmental outcomes. The view of the Review Group is that the most significant potential for improving implementation at farm level lies in adopting a collaborative approach. To support this collaborative approach, the Review Group further recommends that consideration be given to the establishment of a dedicated unit of sustainability advisors to provide one-to-one technical advice to farmers so as to effect behavioural change within the farming sector towards more sustainable farming practices. The risk assessments carried out by the EPA and the prioritisation of catchments by local authorities for further action undertaken as part of the preparation of the second cycle river basin management plan will provide a good starting point for targeting sustainability advisory support in catchments, where needed.

The Irish Nitrates Action Programme (NAP) is recognised across the EU as one of the most comprehensive and robust national programmes across the Union. However, despite significant initial improvements in water quality in response to the NAP since its commencement in 2006,

further improvements have not been observed within the past six years. In addition compliance levels among farm holdings have not improved since the introduction of the NAP. Against this background the implementation of the Foodwise 2025 strategy requires careful guidance to ensure sustainable intensification occurs. Almost 7,000 farmers (predominantly dairy) avail of the Nitrates derogation. This allows them to farm at a more intensive stocking rate than normally allowed and is critical to achieving the targets set out in the Foodwise 2025 strategy as well as ensuring the processing investment by industry will be paid back. Any future declines in water quality will threaten the possibility of future derogations being granted under the Nitrates Directive. Furthermore, evidence from the ACP suggests that there is poor understanding of the Good Agricultural Practices (GAP) regulations and that more direct one-to-one advisory support is needed to assist farmers to understand and comply with the regulations. A more innovative approach, such as the one proposed, is now needed to effectively protect and restore waters as required by the Nitrates Directive and Water Framework Directive, to protect Ireland's prospects of future derogations under the Nitrates Directive and to ensure the FW2025 targets of sustainable intensification are achieved.

To facilitate the collaborative approach it is proposed that Article 30(5) of the GAP regulations will be amended to provide that the Minister for Housing, Planning and Local Government will establish an environmental inspection protocol for farm holdings to be followed by local authorities in consultation with the Minister for Agriculture, Food and the Marine and other parties, as appropriate.

3.6 Adjustment to nutrient allowances and timing of application

3.6.1 Phosphorus (P) application timing on winter cereals

Chemical P applications are currently prohibited after 15 September. However, most winter cereal crops are sown after this date and it is not possible to incorporate chemical P into the soil when planting takes place after 15 September. This is likely to restrict early growth of the crop during the following season, particularly where P levels are sub-optimal (index 1 or 2). Research has found that where the P was applied with the seed at sowing on low P soils, crop yield and P use efficiency was increased compared to surface applications after sowing. The Review Group recommends that for winter cereals on soils with P index is 1 or 2, an application of 20 kg/ha P would be permitted. This is to be incorporated into the soil at or before the sowing time up to 31 October. This proposal does not entail any change in P allowance, only a change in the timing of incorporation.

3.6.2 Nitrogen (N) and Phosphorus (P) limits for potato crops

As a result of the introduction of new potato varieties and potato groups, more specific N advice is required to meet the crop N requirements and also market requirements in terms of tuber quality and end use. Teagasc fertiliser N advice for potatoes had not been altered in the previous two reviews of the 'Green Book' (Major & Micro Nutrient Advice for Productive Agricultural Crops) which contains crop nutrient advice.

Over recent years N trials have been conducted on new and existing potato varieties with more limited research work for new potato groups such as salad potatoes. In the recent review of the 'Green Book' 4th edition these trial results have been aligned with recommendations in the UK fertiliser manual RB209 resulting in updated potato N advice. This new advice system now classifies varieties into four groups based on haulm longevity and gives more specific N advice based on the length of the growing season and crop maturity to meet specific market/ processing requirements.

The Review Group recommends that the allowable N and P limits are brought in line with the recommendations as per the Teagasc Green Book 4th edition 2016.

3.6.3 Nitrogen (N) and Phosphorus (P) limits for vegetable crops

It was noted that Irish fertiliser recommendations for vegetable crops date back to the 1960s and anomalies have arisen in these recommendations which need to be addressed for agronomic and environmental reasons. For most of these horticultural crops many of these anomalies relate to potassium (K) due to changes in the K index on 2002. In addition the P recommendations require to be changed for some crops, for example the current P advice for vegetable crops on high P soils needs to be reduced for agronomical and environmental reasons. The Review Group recommends that the allowable N and P limits for vegetable crops are brought in line with the recommendations as per the Teagasc Green Book 4th edition 2016.

3.7 Setback distances for the prevention of water pollution from fertilisers

The Review Group recommends that amendments be made to Article 17 clarifying the roles of Irish Water and local authorities in relation to the establishment of alternative setback distances to the default ones specified based on technical assessment.

The Review Group considered other recommendations made to it on increasing buffer zones around water courses, potable water and lakes. The Group agreed that the recommendations were unworkable.

3.8 Minor changes to the regulations

The Review Group recommends that the following minor changes be made –

- For the purpose of clarity, where there is reference made in the regulations to silage pits there will also be reference made to silage clamps. This is intended to make it clear that the requirements relating to silage pits in the regulations also apply to silage clamps.
- Article 17(2)(d) will be amended to include turloughs likely to flood in addition to lake shoreline. This is intended to ensure that setback distances for the prevention of water pollution from fertilisers also apply to turloughs.

3.9 Prohibited periods for the application of fertilisers

The two main issues raised in submissions in relation to prohibited periods for the spreading of organic fertilisers were whether the prohibited periods are correct and if flexibility could be introduced in relation to the opening/closing of the period.

The Nitrates Directive requires all Member States to define periods when the land application of fertiliser is prohibited and the Group noted that this must be regarded as a fundamental requirement of the Directive. In addition they noted that recent data from the ACP supports the current closed periods in Ireland.

In relation to flexibility, the Group were of the opinion that any changing or relaxation of closed periods would need to be supported by science. Having considered all information available to it, the Group concluded that no scientific justification had been provided to support increased flexibility in the prohibited period.

3.10 Proposals outside the scope of the NAP Regulations

Whilst all submissions were given due consideration the Expert Group concluded that a certain number of proposals were outside the scope of the NAP Regulations or in certain circumstances insufficient scientific evidence was provided to justify a change being made.

4. Concluding Comments

The Review Group has examined all submissions received and made recommendations for change where the matter raised falls within the scope of the Nitrates Directive and where the Group considered it appropriate to propose a change on the merits of the scientific evidence presented. A summary of the proposed changes is attached at Appendix 4. Each proposal has been considered on its individual technical merit and in combination with current climate change predictions.

The proposed new action programme includes measures aimed at further strengthening the protection of water and attaining optimum soil fertility that is consistent with both efficient agricultural production and effective water quality protection. The new proposed measures focus on intercepting and breaking nutrient transport pathways and preventing sediment and nutrient losses to waters, which is a major development on the 3rd NAP.

Other proposed changes to the NAP relate to technical modifications of the existing regulations which are based on more up-to-date research and/or information which was not available at the last review, or on practical experience gained during the implementation of the NAP to date.

The view of the Review Group is that while the above-mentioned changes represent important incremental improvements to the action programme, the most significant potential for improving implementation at farm level and achieving further significant improvements in water quality lies in adopting a collaborative approach focussed on changing behaviours at farm level.

The recommendations made represent the agreed common position of all the experts comprising the Group.

Appendix 1: Nitrates Review Consultation - Submissions Examined and Considered

1. Kildare County Council
2. Limerick County Council
3. Offaly County Council
4. Monaghan County Council
5. Cavan County Council
6. Richard Greene
7. Inland Fisheries Ireland
8. Irish Water
9. The Mulcair Group
10. SWAN
11. Fertilizer Association of Ireland
12. Cré
13. ICMSA
14. ICOS
15. Teagasc
16. Macra Na Feirme
17. IFA
18. EPA
19. Cllr Aoife Thornton
20. Greengas AD Plant
21. HSE
22. IDI
23. Indaver Ireland
24. Justin Good
25. Ormonde Organics
26. Mulcair Group
27. Richard Green
28. UCD

Appendix 2: Review Group Membership

Cian Ó Lionáin (co-chair) - Department of Housing, Planning and Local Government

Jack Nolan (co-chair) - Department of Agriculture, Food and the Marine

Seamus Barron - Department of Agriculture, Food and the Marine

Colin Byrne - Department of Housing, Planning and Local Government

Donal Grant - Department of Housing, Planning and Local Government

Deirdre Fanning - Department of Housing, Planning and Local Government

Susan Murphy - Department of Housing, Planning and Local Government

Tracey O' Connor - Department of Housing, Planning and Local Government

Ger Shortle - Teagasc

David Wall - Teagasc

Jenny Deakin - EPA

Appendix 3: Revised Tables

Table (12) Annual maximum fertilisation rates of nitrogen on grassland

Grassland stocking rate ¹	Available nitrogen ²
(kg/ha/year)	(kg/ha)
170	206
Grassland stocking rate greater than 170 kg/ha/year ³	
171-210	282
211-250	250
>250	250 ⁴

¹Total annual nitrogen (kg) excreted by grazing livestock averaged over the eligible grassland area (ha) (grazing and silage area). Stocking rate refers to grassland area only.

²The maximum nitrogen fertilisation of grassland shall not exceed that specified for stocking rates less than or equal to 170 kg/ha/year unless a minimum of 5% of the eligible area of the holding is used to grow crops other than grass or a derogation applies in respect of the holding.

³This table does not imply any departure from Article 20(1) which prohibits the application to land on a holding of livestock manure in amounts which exceed 170kg Nitrogen per hectare per year, including that deposited by the animals themselves (or 250kg in the case of a holding to which a derogation has been granted, in accordance with the Nitrates Directive).

⁴The application of Nitrogen from livestock manure (including that deposited by the animals themselves) to the eligible grassland area shall not exceed 250 kg Nitrogen per hectare per year.

Table (13a) Annual maximum fertilisation rates of phosphorus on grassland

Grassland stocking rate ¹ (kg/ha/year)	Phosphorus Index			
	1	2	3	4
	Available Phosphorus (kg/ha) ^{2,3,6}			
<85	27	17	7	0
86-130	30	20	10	0
131-170	33	23	13	0
Grassland stocking rate greater than 170 kg/ha/year ^{4,5}				
171-210	36	26	16	0
211-250	39	29	19	0
>250	39	29	19	0

¹Total annual nitrogen (kg) excreted by grazing livestock averaged over the eligible grassland area (grazing and silage area). Stocking rate refers to grassland area only.

²The fertilisation rates for soils which have more than 20% organic matter shall not exceed the amounts permitted for Index 3 soils.

³Manure produced by grazing livestock on a holding may be applied to Index 4 soils on that holding in a situation where there is a surplus of such manure remaining after the phosphorus fertilisation needs of all crops on soils at phosphorus indices 1, 2 or 3 on the holding have been met by the use only of such manure produced on the holding.

⁴The maximum phosphorus fertilisation of grassland shall not exceed that specified for stocking rates less than or equal to 170 kg/ha/year unless a minimum of 5% of the eligible area of the holding is used to grow crops other than grass or a derogation applies in respect of the holding.

⁵This table does not imply any departure from Article 20(1) which prohibits the application to land on a holding of livestock manure in amounts which exceed 170kg Nitrogen per hectare per year, including that deposited by the animals themselves (or 250kg in the case of a holding to which a derogation has been granted in accordance with the Nitrates Directive).

⁶An additional 15 kg of phosphorus per hectare may be applied on soils at phosphorus indices 1, 2, or 3 for each hectare of pasture establishment undertaken.

Table (13 b) Annual maximum fertilisation rates of phosphorus on grassland with stocking rates >130 kg/ha/year organic N adopting increased P build-up application rates

Grassland stocking rate ¹ (kg/ha/year)	Phosphorus Index			
	1	2	3	4
	Available Phosphorus (kg/ha) ^{2,3,6}			
131-170	63	43	13	0
Grassland stocking rate greater than 170 kg/ha/year ^{4,5}				
171-210	66	46	16	0
211-250	69	49	19	0
>250	69	49	19	0

¹Total annual nitrogen (kg) excreted by grazing livestock averaged over the eligible grassland area (grazing and silage area). Stocking rate refers to grassland area only.

²The fertilisation rates for soils which have more than 20% organic matter shall not exceed the amounts permitted for Index 3 soils.

³Manure produced by grazing livestock on a holding may be applied to Index 4 soils on that holding in a situation where there is a surplus of such manure remaining after the phosphorus fertilisation needs of all crops on soils at phosphorus indices 1, 2 or 3 on the holding have been met by the use only of such manure produced on the holding.

⁴The maximum phosphorus fertilisation of grassland shall not exceed that specified for stocking rates less than or equal to 170 kg/ha/year unless a minimum of 5% of the eligible area of the holding is used to grow crops other than grass or a derogation applies in respect of the holding.

⁵This table does not imply any departure from Article 20(1) which prohibits the application to land on a holding of livestock manure in amounts which exceed 170kg Nitrogen per hectare per year, including that deposited by the animals themselves (or 250kg in the case of a holding to which a derogation has been granted in accordance with the Nitrates Directive).

⁶An additional 15 kg of phosphorus per hectare may be applied on soils at phosphorus indices 1, 2, or 3 for each hectare of pasture establishment undertaken.

Appendix 4: Summary of proposed changes to Nitrates Action Programme

<p>Bovine Exclusion from watercourses on farms with grassland stocking rates above 170kg N/ha</p>	<ul style="list-style-type: none"> • Will come into effect from 1 Jan 2021 • Watercourses to be fenced off • Alternative livestock drinking sources as required
<p>Prevention of direct run-off from farm roadways to water</p>	<ul style="list-style-type: none"> • Will come into effect from 1 Jan 2021 • Guidance will be provided by means of a farm roadway specification • Farmers will receive KT programmes • Comprehensive training will be provided for advisers
<p>Livestock drinking points</p>	<ul style="list-style-type: none"> • Will come into effect from 1 Jan 2021 • Drinking points must not be located within 20m of waters on farms with grassland stocking rates of above 170kg N/ha
<p>Adoption of appropriate phosphorus build-up rates for farmed soil</p>	<ul style="list-style-type: none"> • Update of table 12 and 13a and insertion of new table 13b • For soils at P Index 1, the maximum build-up allowance, in addition to crop requirement to be increased to 50kg/ha • For soils at P Index 2, the maximum build-up allowance, in addition to crop requirement to be increased to 30kg/ha
<p>Facilitate the use of pig slurry to meet phosphorus requirements</p>	<ul style="list-style-type: none"> • Permit the importation and application of pig manures for those farmers with a stocking rate > 130 kgs ha to meet crop phosphorus requirement. A limit of 250 kg N/ha from livestock manure would apply. It is recognised there may be constraints within the Nitrates Directive to this approach.
<p>Simplification of calculations of maximum fertiliser N and P allowance</p>	<ul style="list-style-type: none"> • Removal of stored grazing livestock manure N and P from the calculation of farm P balance and for calculating maximum chemical

	<p>nitrogen and phosphorus allowed onto a holding</p> <ul style="list-style-type: none"> • Nutrient management plans to be based on the previous years' data to enable more efficient forward planning
Implementation of comprehensive knowledge transfer Programme for farmers availing of increased phosphorus build up allowances.	<ul style="list-style-type: none"> • Knowledge transfer programme based on nutrient management, gauging P loss and NMP adoption and implementation
Collaborative approach involving State agencies and the farming sector be adopted aimed at bringing about behavioural change within the farming sector in order to achieve sustainable farming practices and positive environmental outcomes	<ul style="list-style-type: none"> • An environmental inspection protocol for farm holdings to be followed by local authorities will be developed by the Minister for Housing Planning and Local Government in consultation with the Minister for Agriculture, Food and the Marine and other parties, as appropriate.
Phosphorus application period and nutrient allowances	<ul style="list-style-type: none"> • Phosphorus to be incorporated into the soil at or before sowing of winter cereals • Application of 20kg/ha of fertiliser P be permitted to be applied to winter cereals at Soil index 1 and 2 where such application takes place before October 31st • The allowable N and P limits for potato crops be brought in line with recommendations in the Teagasc Green Book • The allowable N and P limits for vegetable crops be brought in line with recommendations in the Teagasc Green Book
Additional minor and technical changes to the regulations	<ul style="list-style-type: none"> • For clarity, reference will be made to silage clamps as well as pits. • Regulation 17 (2)(d), shall be amended to include turloughs likely to flood. • Article 30 (5) will be amended to - 'a local authority shall follow the inspection protocol as established by the Minister'.