The proposed Nitrates Action Programme (NAP) for 2019-2022: Stakeholder Engagement Paper

February 2019

Department of Agriculture, Environment and Rural Affairs
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Purpose of this document

The purpose of this document is to present the findings of the review of the current Nitrates Action Programme (NAP) 2015-2018 and the proposals for the next Nitrates Action Programme 2019-2022.

The Department of Agriculture, Environment and Rural Affairs (DAERA) (the Department) would welcome any comment you may wish to make on the proposals made, and the issues raised, in this discussion document. Where you disagree with any proposal, please provide evidence in support of alternative proposals. Please structure your responses in line with 'Questions for Stakeholders' in section 9, where possible.

Please submit your comments in writing, preferably by email, to:

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Comments on the issues and proposals raised in this paper should reach the Department by 4pm on **Tuesday 19 March 2019.**

Timescale and EU Exit

The NAP was introduced in 2007 and is revised every four years. Following each review a new NAP for a 4 year period is proposed and stakeholders consulted.

The new NAP also needs to be agreed with the EU Commission through a formal process with DG Environment and the EU Nitrates Committee. The NAP is linked to the Nitrates Derogation with both covering the same 4 year period.

The NAP has been reviewed and the NI Nitrates Derogation renewed twice previously in 2010 and 2014. The timing of the UK's exit from the EU has an impact on the current NAP review and Derogation renewal process.

If the formal approval process is to be concluded before the UK's exit from the EU, the NAP 2019-2022 needs to be agreed with DG Environment before the final week of March. This would enable the renewal of the NI Nitrates Derogation to go before the Nitrates Committee for a vote of approval before the UK exit from the EU.

To meet this timescale, this stakeholder engagement on the proposed NAP 2019-2022 will run until 4pm Tuesday 19 March 2019.

The NAP has been established for 12 years and reviewed on two previous occasions. Given this experience and the positive approach of stakeholders evident in previous reviews, it should be feasible and reasonable to complete stakeholder engagement in the timeframe outlined.

Concluding the EU approval process before the end of March would provide independent endorsement of the NAP and derogation, certainty for farmers on the NAP 2019-2022 and demonstrate a commitment to improving environmental performance of farms and to achieve high environmental standards.

With the recent update of Ireland's NAP, and the associated derogation renewal, it would also ensure actions to tackle nutrients north and south of the border continue on a consistent and broadly similar basis.

DAERA will be holding a meeting with key stakeholder organisations on 27 February 2019. In addition, DAERA will be happy to consider requests for meetings from stakeholders during the engagement period to 19 March 2019.

1. INTRODUCTION

The Nitrates Action Programme Regulations (Northern Ireland) 2014 (the 2014 NAP Regulations) implement an action programme to reduce nitrates from agricultural sources entering the aquatic environment. The purpose of this discussion paper is to seek your views on the proposals on a revised NAP for the period 2019-2022.

The aim of the EU Nitrates Directive (91/676/EEC) (the Directive) is to improve water quality by reducing water pollution caused or induced by nitrates from agricultural sources and preventing further such pollution. In particular, a key objective is to promote efficient management of animal manures, manufactured fertilisers and other nitrogen-containing materials spread onto land.

The Directive requires EU Member States to set out action programmes to reduce nitrates from agricultural sources entering the aquatic environment and address both high nitrate levels in surface and groundwaters and eutrophication in surface waters. The Directive allows Member States to either designate discrete areas of land as Nitrate Vulnerable Zones (NVZs) or establish an action programme to be applicable to the whole territory.

The first NAP to apply across the whole of NI was introduced in 2007. At that time, a total territory approach was adopted to establish NI as the area to which an action programme would be applied. This approach was supported by a scientific report in 2002, which identified eutrophication as a major pollution problem throughout NI's water environment and highlighted the extent of the agricultural contribution to the problem.

The NAP established a range of measures and controls on livestock manures and chemical fertilisers. Key measures include closed periods for the application of organic and inorganic fertilisers, a livestock manure application limit to land of 170 kg nitrogen/ha/year and the requirement for sufficient slurry storage capacity on farms. The aim is to provide greater protection for surface waters and groundwaters in NI. The 2007 Action Programme has been reviewed and revised in 2010 and 2014.

The NAP is supported by a water quality monitoring programme and guidance and training offered to farm businesses. The NAP Regulations apply to all farm businesses in NI and are the responsibility of the Department of Agriculture, Environment and Rural Affairs (DAERA) (the Department).

The NAP is supported by the Phosphorus (Use in Agriculture) Regulations (Northern Ireland) 2014 (Phosphorus Regulations). The Phosphorus Regulations contain measures to control the land application of chemical Phosphorus (P) fertiliser. The Phosphorus Regulations apply to all farm businesses in NI and are the responsibility of DAERA.

2. NAP REVIEW

The current NAP is for the period 2015-2018. In accordance with the requirements of the Directive, a review of the current NAP has been carried out by a joint DAERA / Agri-Food & Biosciences Institute (AFBI) Scientific Working Group (SWG). The SWG assessed the effectiveness of the NAP and Phosphorus Regulations to date through analysis of the results of water quality monitoring, evaluation of changes in farming practice and examination of compliance data. Following the review, DAERA is now proposing a revised Action Programme for 2019-2022 as detailed in this document, and is seeking stakeholders' views and feedback.

3. NITRATES DEROGATION

NI has operated under a derogation granted by the European Commission (Commission Decision 2015/346/EU) which allows an increase in the amount of grazing livestock manure that may be applied to land from 170 kg N/ha/year up to a limit of 250 kg N/ha/year on grassland farms which meet certain criteria. The derogation was first granted in 2008 and the current decision expired at the end of 2018. Therefore, as with previous NAP Reviews, the Department has also initiated the application process with the European Commission to renew NI's Derogation Decision for the period 2019-2022.

The Nitrates Derogation is vital to some NI cattle farms with higher stocking rates. Subject to meeting certain nutrient management and environmental criteria, it enables farmers to better utilise the nutrients within grazing livestock manures and operate more efficiently with reduced chemical fertiliser requirements.

A derogation can only be applied to those farms with at least 80% grassland and is applicable only to manure from grazing livestock. The derogation does not apply to manure from pigs or poultry. To have an approved derogation farms must not exceed a phosphorus balance of 10 kg P/ha/year and soil test at least every four years. Annual fertilisation plans and accounts must also be produced. This is in addition to maintaining compliance with all other NAP statutory management requirements.

A principle of the derogation is that farms operating under derogation should not represent a greater risk to water quality. The requirements of other EU environmental legislation also continue to apply to derogated farms. The derogation is based on a scientific case and the additional requirements for farms under derogation are set by the European Commission.

4. STAKEHOLDER ENGAGEMENT

Stakeholder engagement has an important role in the implementation of the NAP in NI. As with previous reviews, a meeting for key stakeholder organisations will be held during the consultation period to present the findings of the NAP review and to discuss the proposals for NAP 2019-2022.

Key stakeholder representatives will also be invited to contribute to the development and updating of Guidance Documents for the new NAP.

5. SUMMARY OF THE NAP REVIEW

The key findings and recommendations of the review are presented below.

5.1 Water Quality - Nitrates

The vast majority of surface freshwaters and groundwaters in NI continue to have nitrate levels well below the 50 mg NO3/l limit. For the 2012-2015 reporting period, the annual average nitrate concentration for surface freshwaters and groundwaters was 5.28 mg NO3/l and 6.26 mg NO3/l respectively. 100% of surface water sites and 98.2% of groundwater sites had an annual average nitrate concentration below 25 mg/l. For surface waters, the trend in annual average nitrate concentrations was generally stable or decreasing (98% of points) between this and the previous reporting period (2008-2011). For transitional and coastal marine waters, all monitoring sites had an annual average of less than 10.0 mg NO3/l for the 2012-2015 reporting period.

For groundwater, 85.7% of sites showed a decrease or stabilisation in annual average nitrate concentrations since the previous reporting period. Seasonal trend analysis of surface freshwaters showed that the monthly trends in average nitrate concentrations in NI were mostly decreasing or stable over the 24-year period, 1992-2015 (288 sites or 95% of sites). However, the most recent data (2017) as reported in the 2017 Derogation Report for NI, has shown increasing nitrate levels at 13.4% of monitoring stations.

Rivers – Trophic Assessment

Compared with the previous reporting period, there was an increase (from 29.1% to 33.7%) in the proportion of river monitoring sites with Water

Framework Directive (WFD) Soluble Reactive Phosphorus (SRP) classification at moderate or worse status which is considered to be at risk from eutrophication or eutrophic. Of these sites, 5.6% were classified as Poor status for SRP, indicative of nutrient enrichment. No sites were classified as Bad status. The majority (79.1%) of river sites remained stable in WFD SRP classification status between the previous and current reporting periods. 8% of sites showed a decrease in SRP levels resulting in an improvement of at least one WFD class. However, 12.8% of sites exhibited an increase in SRP levels between the two reporting periods resulting in deterioration by one class.

The most recent data (2017) as reported in the 2017 Derogation Report for NI reinforces this deterioration in SRP as 28.1% of sites exhibited an increase in SRP levels resulting in a deterioration of WFD class. Seasonal trend analysis of river monitoring sites showed that the monthly trends of average SRP concentrations in NI were predominantly decreasing or stable over the 18-year period, 1998-2015 (160 sites or 97% of sites). Recent results from 2012 onwards show signs of an upward trend and this is a cause for concern.

When WFD trophic classification (based on SRP and biological parameters) was considered, 42.8% of river water bodies were classed as Moderate/Poor status which is indicative of eutrophic conditions. Biological components within rivers, in particular macrophytes (aquatic plants), are slow to respond to changes in nutrient loadings, hence changes in trophic status will be slow to manifest.

Lakes

WFD trophic classification (based on total phosphorus and biological

parameters) for NI's 21 surveillance lakes for 2012-2014 showed that five lakes and reservoirs were classed as High or Good status. Six were classed as Moderate, indicative of eutrophic conditions, (including Lower and Upper Lough Erne), and 10 were classed as Poor/Bad or exhibiting hypereutrophic conditions (including Lough Neagh). As in the previous (2014) review, the lack of change in lake systems is not unexpected for a variety of reasons. These include differences related to individual lake typologies e.g. flushing times of these systems and the release of phosphorus reserves already built up in sediments over many years.

Transitional and Coastal Marine Waters

For transitional and coastal marine waters, this reporting period indicates that the WFD trophic classification is stable or improving at 74.08% of sites. This is a 22.2% decrease since the last reporting period (96.3%) However, assessments also illustrate that 44% of NI transitional and coastal marine water bodies remain at moderate (or worse) status for WFD trophic classification (same as the previous reporting cycle). These changes are due to increases in the percentage of sites at High and Poor status since the last reporting cycle. Those marine water bodies that remain at moderate (or worse) status are in areas where there have been long standing issues over nutrient enrichment, and also tend to be transitional and/or heavily modified water bodies. As the marine receiving waters are at the very end of the catchment, it is anticipated that improvements will be slowest to manifest in these areas.

2018 Water Quality Statistics

The latest NIEA water quality statistics for 2018 have identified no overall progress has been made towards the WFD target of up to 70% "good" status

of waterbodies by 2021. The biggest change is due to deterioration in river phosphorus levels with 7.8% of river water bodies declining from 'good or better' to 'moderate or worse' for SRP. Sources of phosphorus in waterbodies are mainly attributed to agricultural and waste water treatment works.

Water Pollution Incidents

Confirmed water pollution incidents dealt with by NIEA remain around 1200 a year. In 2007, the two main sectors responsible for water pollution incidents were NIW at 28% and agriculture at 22%. With investment, the number of incidents attributed to NIW have reduced significantly to 13% of incidents in 2017. However, in 2017 agriculture had increased to 30% of incidents.

5.2 Land Use

NI farming is a predominantly grass-based system. There have been no significant changes to land use since the last review with currently, approximately 93% of the agricultural area being grassland and 5% arable and horticulture. In general, cattle and sheep numbers on farms in NI have remained stable in the last five years, while pig and poultry numbers have increased. Overall manure N loading, calculated on the area of grass and crops, is an average of 119 kg N/ha/year, up from 117 kg N/ha/year in 2012.

Chemical fertiliser purchases in NI have increased since 2009 and vary from year to year. The level of sales of nitrogen and phosphate based fertilisers in 2009 were at their lowest since 1975 and 1938 respectively. Usage rates of chemical fertiliser in 2017 were 4.5 kg ha for phosphorus and 96.6 kg ha for nitrogen. Nitrogen and phosphorus inputs and outputs to farms in NI have increased since 2009. The gross efficiency of nitrogen and phosphorus show annual variation.

5.3 Advisory Support

To help farmers understand the requirements of the NAP and the Phosphorus Regulations, and to continue to promote best working practice, DAERA produced updated guidance documents on the NAP 2015-2018 which were published on the DAERA website.

DAERA also continues to provide information, advice, training and support tools through a range of communication methods. This includes a suite of online nutrient calculators which help farmers with nutrient management and compliance with the NAP.

5.4 Compliance

Overall, compliance with NAP measures, identified by NIEA at on-farm cross compliance inspections, has been generally good during the current NAP. Key areas of non-compliance are the management and maintenance of farmyards and manure storage facilities, and the 170 kg N/ha/year livestock manure limit. DAERA is continuing to raise awareness of these issues through the media and training.

Other measures such as restrictions on chemical fertiliser and manure applications near waterways or using appropriate fertiliser application techniques consistently show high levels of compliance.

Applications for derogation have increased from 225 to 478 over the course of the 2015-2018 action programme. The derogation from the Nitrates Directive continues to be an important measure to facilitate more efficient use

of manure on higher stocked grassland cattle farms in NI. A number of factors which may discourage application include the additional requirements and the Phosphorus balance. However, for farms operating under the derogation, compliance with derogation controls and NAP measures has, in general, been very good.

5.5 Research

In order to underpin the implementation of the NAP and Derogation for NI, AFBI has been carrying out a broad range of research studies aimed at understanding the sources, transportation and resulting impacts on aquatic ecosystems, of farm nutrients. The research spans a continuum of temporal and spatial scales from short-term lab experiments to long term catchment monitoring programmes. This includes monitoring work within the Colebrook and Upper Bann Catchments which has been implemented specifically to meet the terms of the Derogation.

The continued and expanding investment in catchment scale research by AFBI is helping to improve our understanding of nutrient cycling/transport at soil, field, farm, landscape and catchment scales. Newly commissioned research is now focussing on water ecology, on the use and efficacy of Decision Support tools and Light Detecting and Ranging technology (LiDAR) based run-off risk maps to facilitate reductions in nutrient entry to water bodies.

A key project in these investigations relates to '*Monitoring, modelling and mitigation of N and P losses from land to water under derogated and non-derogated conditions in the Colebrook and Upper Bann Catchments'.* In this research project, P and N sources, transport and impact are being

investigated at farm, sub-catchment (5-10 km²) and catchment (100-200 km²) scales. A number of other projects are building on this study to provide a holistic and integrated assessment of the contribution of septic tanks to P loads in rural catchments. These include, identification of high risk areas of P loss and the impact of nutrient enrichment on aquatic ecology.

The Environmental Change Network (ECN) provides a long term catchment scale study on biology, nutrients and eutrophication in large lake systems like Lough Neagh and Lough Erne. A detailed investigation of the nutrient loads entering Lough Neagh has highlighted the potential contribution of lake sediment to P concentrations recorded in the water. This has resulted in the establishment of a project to examine the potential of legacy P in the lake sediment on achieving the targets of the WFD by 2027. In addition, AFBI is expanding its research at catchment scale through the establishment of projects in which the impact of nutrients and pesticides on aquatic ecosystems will be investigated in a number of catchments across NI.

Field scale research is being conducted as part of AFBI studies to examine the impact of soil hydrology and biogeochemistry on nutrient, sediment and pesticides loss over a range of conditions. This includes investigations into mitigation measures such as willow riparian zones, planted in hydrological connected areas, to reduce runoff and associate contaminant loss at field scale. A major focus of AFBI's research will continue to be the identification of high risk areas of contaminant loss using LiDAR to identify hydrologically connected areas in the landscape.

The aim of this research is to improve the targeting of mitigation measures at field scale. With the availability of LiDAR data for the full Upper Bann

catchment, the identification of high risk areas of P loss was a major focus of the Project '*EU Exceptional Adjustment Aid - Soil Sampling and Analysis Scheme'*. A recent extension to the monitoring in the Colebrook and Upper Bann Catchments project will build on this work further by targeting measures at high risk areas in the catchment and monitoring water quality for improvements.

AFBI has a strong track record of conducting studies at farm scale through projects such as the EU DairyMan project. This research focus is being continued through AFBI studies in which farm and soil type specific nutrient management practices are being investigated. The aim of this research is to identify the most appropriate nutrient management practices to balance agronomic and environmental objectives in NI.

Land use interventions to improve water quality, evaluated under 'representative' conditions and scales, often do not respond as predicted when applied over a wide geographical area. The ability to accurately predict variability in field/farm/catchment characteristics and ecosystem responses is key to managing the impact of agriculture on water quality. Going forward a key objective for research related to the NAP in NI is reducing the uncertainty related to environmental variability and its impact on farm practices. The ability to predict variability in e.g. soil type, hydrology, and topography will enable the development of farm specific nutrient management practices on individual farms.

6. RECOMMENDATIONS OF THE NAP REVIEW

1. The NAP measures for 2015-2018 should be carried forward into the NAP for 2019-2022. However, on the basis of scientific evidence and/or technical, regulatory and policy developments a number of amendments or extensions to NAP and P Regulations measures should be considered. These are summarised below in section 7.

2. The monitoring and research programmes should continue to be supported and funded over the next NAP period to inform the next review and comply with reporting requirements for the Nitrates Directive.

3. Stakeholder engagement should continue to play a key role in the implementation of the NAP 2019-2022.

4. DAERA should continue with the process of application to the European Commission to renew the Nitrates Directive derogation.

5. DAERA, working in partnership with industry, should continue to promote the nitrates derogation, encourage more farm businesses to avail of it and provide support and guidance to farmers operating under it, subject to ensuring no adverse environmental impacts as a consequence.

7. PROPOSED CHANGES TO NAP FOR 2019-2022

Background

Following the NAP Review, DAERA is proposing revisions and additions to the measures in the existing NAP Regulations. The proposals are underpinned by a broad range of research studies, including those carried out by AFBI, aimed at understanding the sources, transportation and resulting impacts on aquatic ecosystems, of farm nutrients.

7.1 Water Protection: intercepting / breaking nutrient pathways

Recommendations

7.1 (1) Further restrictions on slurry applications in February and October for all livestock farms. (i) increase the buffer zone from 10m to 15m of any waterways and from 20m to 30m for lakes. (ii) reduce the maximum slurry application rate from 50m³ to 30m³ per ha.
7.1(2) From 1 January 2020, supplementary feeding sites to be situated a minimum of 20m from a waterway.
7.1(3) From 1 January 2022, livestock drinking points to be situated a minimum of 10m from a waterway, where there is a significant risk of water pollution arising from their use.

Rationale

High frequency P monitoring for agricultural catchments in the Republic of Ireland, show notable amounts of P being transferred to water during October and November. Some of these autumn losses may reflect the flushing of P

from slurry applied just before the onset of the closed period, which in turn may reflect efforts by farmers to empty storage tanks prior to winter housing of animals whilst land is still trafficable.

Such applications of manure P in early autumn may remain vulnerable to storm runoff during the winter months, particularly if the catchment hydrology is flashy. Likewise, early applications of manure in February could also be at risk of P run-off loss because of late winter/early spring storm events in February or March.

To reduce the risk at either end of the closed period of slurry application impacting water quality, a new measure is being proposed to reduce the maximum rate of slurry applied in both October and February, and also increase the width of buffer strips around waterways and lakes during these two months. The buffer zone of 3m for small fields, as specified in the NAP 2015 – 2018, will be increased to 5m during these two months.

These measures only apply to the months of February and October and are additional to the closed period for spreading slurry 15 October – 31 January.

Because of the likely risk of livestock congregation resulting in heightened P loss to water, new measures are also being proposed for supplementary feeding sites to be kept a minimum of 20m from waterways.

Livestock drinking points are to be kept a minimum of 10m from waterways, where there could be a significant risk of pollution occurring from their use. There will be exceptions for pasture pumps, which are unable to pump more than 10m.

Many existing livestock drinking points are within 10m of waterways, given the wide definition of waterways which includes sheughs and field drains. It is recognised that many of these drinking points may not pose a significant risk to water quality. Consequently, it is proposed that this measure will apply only to drinking points where there could be a significant risk of pollution occurring from their use. Significant risk will be further defined in guidance.

These measures will prevent animals congregating close to waterways and therefore, reduce the potential for poaching and excretion around feeding and drinking points. This will help to reduce the risk of manure nutrient runoff, particularly P and sediment, being transferred to water.

In future, consideration may need to be given to a measure to prevent cattle livestock from accessing waterways, as this is identified as having an impact on water quality. Currently, support for creation of riparian margins and fencing of waterways is provided through DAERA's Environmental Farming Scheme (EFS). While participation in the scheme is voluntary, the number of farmers undertaking these water protection measures is encouraging. These EFS measures will have a positive impact on water quality.

Farmers are required to identify if there are areas on their farms where livestock could be accessing waterways and impacting on water quality. If so, farmers should work to rectify the situation and consider the support available through the EFS.

7.2 Phosphorus Reduction and Efficiency

Background

Nutrient enrichment of freshwaters waters, primarily by phosphorus, is the major cause of poor water quality in Northern Ireland, with agriculture identified as the major contributor of phosphorus.

Losses of phosphorus measured at the plot, field and catchment scales show that erosive particulate phosphorus losses to water are low in NI, reflecting the small area devoted to arable agriculture. Research has also shown that the direct impact of phosphorus losses from grazing systems is very low when cattle are grazed under the commonly adopted grass management systems employed in NI.

The principal causes of elevated phosphorus losses are considered to be:

- application of manures
- application of chemical phosphorus fertiliser
- accumulation of phosphorus in the soil

Soil Phosphorus

Soil phosphorus in NI has increased steadily for over 60 years to the extent that many soils are now above soil Index 2, which is the index that is sufficient to maintain optimal production from intensively managed grassland. For example, recent soil samples from dairy farms showed that 50% of grassland fields were above Index 2.

This contrasts with the situation in NI 60 years ago when less than 5% of soils were above agronomic optimum. This increase in soil

phosphorus reflects a steady phosphorus surplus on farms since the 1940s.

Phosphorus Surplus

The phosphorus surplus represents the difference between phosphorus inputs to the farm and outputs in agricultural products.

A phosphorus balance for agriculture in NI shows that approximately three quarters of phosphorus inputs currently come from bought-in animal feedstuffs or concentrates and one quarter from chemical fertilisers**.**

Outputs are in the production of meat, milk, eggs and crops. On many grassland farms phosphorus brought onto the farm in animal feeds can compensate for the loss of phosphorus in product sold. Soil phosphorus is often above agronomic optimum, with no agronomic response to further phosphorus additions.

However, average use of phosphorus in chemical fertilisers in 2017 was 4.5 kg P/hectare/year. The average for the past 10 years is 3.7 kg P/hectare/year, with an upward trend over the last 5 years. This suggests that insufficient attention is being given at farm level to both soil phosphorus levels and the availability of phosphorus in animal manures.

Increases in soil phosphorus (P) also arise when P inputs in imported feed concentrates are higher than farm P exports. In autumn 2005, the trade association for suppliers of animal feedstuffs in NI (the Northern Ireland Grain Trade Association) entered into an agreement to lower

the P content of animal concentrates by 10% relative to the level used previously.

While this reduction in the P content of feed is very welcome, in recent years it has been offset by an increase in the volume of feed inputs on NI farms. From 2010 to 2017, there has been an overall increase in feed inputs to an average of 16.8 kg/P/hectare in 2017. In 2010, feed P inputs averaged 15.0 kg/P/hectare, the same level as in 2005.

The phosphorus surplus for NI agriculture averaged 11.3 kg/P/hectare/ year in the period 2014 – 2017. To reduce P losses to water and prevent continued buildup of soil P, it is important that this phosphorus surplus is reduced.

The measures on chemical P fertilisers at 7.2(2) and (3) should reduce fertiliser P inputs, particularly on grassland. This could have a beneficial impact on the P surplus. If, for example, fertiliser P inputs were reduced to an average of 1 kg P/hectare/year, which would allow for some use in the arable and horticultural sectors, the NI P surplus would be around 8.8 kg/P/hectare/year. This would be a reduction of some 28% and should have minimal cost or provide cost savings for farmers.

However, action is also needed to reduce feed P inputs. Scope for further reduction of the P content of animal diets, without compromising animal performance, has been identified through industry-funded research at the AFBI. Reductions in the P content of poultry and pig feeds have now been achieved and there is limited scope for further reduction.

There is scope for further reduction in the P content of cattle feeds, such as that recently implemented in the Netherlands. Production of lower P diets, particularly in the dairy sector, increases feed costs, as the lower cost ingredients used in formulating dairy feeds tend to have high P contents.

Therefore, there is an economic cost to the adoption of lower P diets. In addition, in view of the variable P concentration of grass silages within NI, caution is required. Where silages have a low P content, there is a risk of animals experiencing P deficiency problems if offered concentrate feeds with very low P levels.

During the NAP 2019 – 2022 period, DAERA would like to work with animal feedstuff suppliers, fertiliser suppliers and other representative organisations to reduce the NI phosphorus surplus and improve the sustainability of NI agriculture.

A voluntary approach to reduce P inputs at the supply side would be preferable. If a voluntary approach does not achieve sufficient reductions, further regulatory controls may be required. Potential options could include phosphorus surplus limits at farm level, or overall NI level, an NI quota on P inputs, a statutory limit on the P content of animal feedstuff, or some mandatory level of targeted manure processing.

7.2(1) Voluntary Declaration of Phosphorus content in animal feeds to be provided to farmers by all animal livestock feed supply companies.

Rationale

This measure will provide farmers with precise information on the P content of the animal feed used on farm. This will assist with more accurate calculation of phosphorus inputs and aid more precise nutrient management.

Under current feed regulations, the P content of complimentary feed (including concentrates for cattle and sheep) must be declared on the label where it is 2% or greater. However, most of this feed has a P content well below that level, and there is no requirement to declare the actual content.

Therefore, at this stage, a voluntary approach is proposed and DAERA would like to work with feed suppliers to explore how this could be developed and implemented.

7.2(2) Include Regulations on Chemical P fertiliser in Cross Compliance requirements.

Rationale

There is a need to further reduce phosphorus in inputs from chemical/mineral fertilisers. Some farmers are using chemical phosphorus fertiliser where it is not needed. Bringing the Phosphorus Regulations under Cross Compliance will encourage farmers to make better use of P from organic manures

generated on farm and only using chemical fertiliser containing P where there is a demonstrable agronomic need.

7.2(3) From 1 January 2020, a Fertilisation Plan will be required for any farms using Chemical P fertiliser, *P rich manure and anaerobic digestate.

Organic manure is to be used first to meet crop P requirements on the farm and soil analysis is required.

For extensively managed grassland (i.e. less than 60 kg N/ha/year of chemical N fertiliser applied and with manure N loadings less than 120 kg N/ha/year), a Phosphorus Index of 2- (Olsen P) (16-20 mg P/l) is proposed to meet crop requirement, reflecting lower grass offtake.

*'*P Rich manure' is defined as organic manures which contain more than 0.25 kg of total phosphorus per 1 kg of total nitrogen. These include some anaerobic digestate and some pig and poultry manures and slurries.*

Rationale

In 2017, AFBI led a major EU funded EAA (Exceptional Adjustment Aid) Soil Sampling and Analysis Scheme (EAASSAS) for NI. The Scheme provided farmers with free soil sampling and analysis and demonstrates the benefits for profitable and environmentally sustainable nutrient management on farms.

This was one of the largest soil testing schemes ever carried out within the British Isles and provided soil test data for some 20,000 fields on more than 1000 farms in NI.

Furthermore, 70% of the farmers who registered for the province-wide component of the scheme, subsequently attended a training course on nutrient management planning, again illustrating the potential of such schemes to markedly and rapidly shift attitudes towards nutrient management planning. The ambition is that the need for soil testing to underpin sustainable farm nutrient management, which is implicit in NI NAPs, becomes fully accepted and embedded within the grass-based livestock industry.

Thanks to EAASSAS (*Open Component - covering 12,000 fields on 500 farms across all counties in NI*), for the first time, we have data on the distributions of soil P, K, pH and lime requirement statuses of grassland for each of the three major ruminant livestock sectors – dairy, beef and sheep.
As expected, the dairy sector was shown to have the largest P surplus with 50% of grassland fields with P Index ≥ 3. But beef and sheep sectors also have significant P issues, with 40% of fields with P Index ≥ 3 in both Lowland and Disadvantaged areas (DA), and 30% in Severely Disadvantaged areas (SDA).

In the Beef and Sheep sectors it would appear from discussions with farmers at nutrient management training sessions, that long-held ingrained (*but now out-dated*) views concerning the continued need for chemical P fertilisers on grassland, may be responsible for sizeable areas of land remaining P enriched despite sufficient manure-P resources being present on farms to meet crop P requirements.

Therefore, a new measure is proposed for the 2019-22 NAP which would make it mandatory for farmers wishing to use chemical P fertiliser, P rich manure and anaerobic digestate to have a fertilisation plan in place, and be able to demonstrate both agronomic need and an insufficiency of ‘on-farm’ manure-P resources to meet crop P requirements. This measure will help

ensure chemical phosphorus is being used more efficiently and only when it is needed. It will provide greater controls on fertilisers higher in phosphorus. The fertilisation plan required under this measure will be in the same format as that currently used by farms operating under the nitrates derogation.

P requirement for extensively managed grassland

Grassland managed 'extensively' with relatively low N inputs, should have lower P requirements and a lower target soil P level than grassland managed 'intensively' with high N inputs driving high levels of grass production and P removal.

On-farm research by AFBI has provided evidence that grass Dry Matter (DM) production on land receiving less than 60 kg N/ha/year as chemical N, and with manure N and P loadings of less than 120 kg N/ha/year and 20 kg P/ha/year, respectively, is under 6 t DM/ha/year, and is limited by N deficiency rather than inadequate P availability. Accordingly, there is no justification for applying rates of P needed to support DM production at 9-12 t DM/ha/year and maintain soil P at Index 2^{+}, when such levels of production cannot be achieved with the N inputs typical of extensively managed grassland systems in NI (< 60 kg N/ha/year). Furthermore, there is clear evidence that over-use of P fertiliser on many extensive cattle and sheep farms, even within LFA's, is raising soil P to unacceptably high levels (Index 3 - 5) and exacerbating water quality problems.

It is proposed that for grassland managed extensively and receiving less than 60 kg N/ha/year as chemical N and with manure N loadings less than 120 kg N/ha/year (*supporting grazing and one cut of silage or hay per season*), the target soil P Index should be 2- (16-20 mg P/l) and the following P limits should apply.

Maximum phosphate fertiliser application limits (kg P2O5 per ha) for extensively managed grassland (< 60 kg chemical N/ha/year and < 120 kg manure N/ha/year loading).

	Soil P Index					
	0	**1**	**2-**	**2+**	**3**	**4**
Grass establishment	80	65	50	30	0	0
Grazed grass (whole season)	50	35	20	0	0	0
First cut silage	70	55	40	0	0	0
Hay	55	43	30	0	0	0

These limits will be validated by AFBI in a series of field experiments over the next 3 years and may be revised where necessary.

7.3 Nitrogen Efficiency

7.3(1) Mandatory use of low emission slurry spreading equipment (LESSE) for digestate from AD plants, slurry spreading contractors and farms with 100 livestock units or more of cattle and pig farms with a total annual livestock manure nitrogen production of 10,000 kg or more.

LESSE includes Trailing shoe; Trailing hose or dribble bar, and Soil injection.

Applies to:

- From 1st February 2020, digestate from AD plants.
- From 1st February 2021, slurry spreading contractors. Contractor defined as *"any person spreading slurry on an agricultural area and that person is not claiming direct agricultural payments on that agricultural area".*
- From 1 February 2022, farms with 100 livestock units or more of cattle and pig farms with a total annual livestock manure nitrogen production of 10,000 kg or more.

- If using LESSE on fields sloping towards a waterway, slurry must be applied along the contour of the slope. Limited exemptions for some fields e.g. where there is a risk of P runoff on sloping fields. Health & Safety risks and practicalities e.g. field access. These issues will be covered in NAP guidance documents.
- 'No Spread Buffer Zone' to be increased from 3m to 10m in these fields.

Livestock units:

For the purposes of calculation, cattle livestock units are as defined in the DAERA Farm Business Data 2018 handbook and detailed below.

Coefficients for converting into cow equivalents (ce)

Type of Livestock	ce
Dairy cow	1.0
Beef cow (excluding calf)	0.8
Breeding bull	1.0
Other cattle	
under 1 year old	0.4
between 1 and 2 years old	0.6
over 2 years old	0.8
Breeding ewe and lamb(s)	0.2
Breeding ram	0.2
Lamb 6 months to 1 year old	0.1
Other sheep over 1 year old	0.2

Rationale

The benefits of LESSE are well established and this technology is effective in increasing manure nitrogen utilisation efficiency and reducing ammonia emissions.

Ammonia is a highly reactive form of nitrogen which is emitted following agricultural activities such as manure management and the spreading of chemical fertiliser. When ammonia emissions are subsequently deposited as nitrogen, they can have negative impacts on sensitive habitats such as peat bogs. Achieving reductions in ammonia emissions is a key priority for NI.

Spreading slurry using low emission spreading techniques has been an important part of government policy on reducing the impact of farming on the environment for a number of years. Government funded support for LESSE under the Manure Efficiency Technology Scheme (METS) provided grant aid for some 300 machines over 3 Tranches of METS and continued through 2 tranches of the Farm Business Improvement Scheme.

Benefits of LESSE

There are significant agronomic benefits of using LESSE. AFBI research has demonstrated that low emission slurry application can increase grass growth by 18% and 26% for trailing hose and trailing shoe respectively. Inorganic nitrogen fertiliser application rates for grass silage crops can be reduced by up to 38 kg per hectare when typical rates of slurry are applied by trailing shoe.

The trailing hose slurry application system will reduce ammonia emissions from spreading by around 30%. The trailing shoe system provides an approximate 60% reduction in ammonia emissions. Shallow and deep injection techniques reduce emissions by 70% - 90% but these are less suitable for most of NI's soil types and landscapes. These figures can vary

significantly depending on a range of factors including weather, soil and growth conditions.

DAERA would welcome comments, evidence and feedback, from manufacturers/suppliers of LESSE and farmers, on the benefits and practicalities of using trailing shoe and dribble bar / trailing hose spreading systems. In particular, experience and evidence of the benefits these systems provide in improved manure nutrient efficiency and ammonia reduction, in comparison to splash plate spreading.

DAERA proposes making spreading by LESSE compulsory from 1 February 2022 for all farm businesses with more than 100 livestock units of cattle and pig farms with a total annual livestock manure nitrogen production of 10,000 kg or more.

Spreading by LESSE to be compulsory from 1 February 2021 for contractors spreading slurry. Digestate from AD plants can be more susceptible to ammonia loss as the nitrogen is more freely available. Therefore, all digestate should be spread by LESSE from 1 February 2020.

DAERA recognises that spreading by LESSE may not be practical in all fields. For example, due to the sloping nature of the field or issues with access. Therefore, it may be appropriate to exempt some fields from the requirement to spread using LESSE. These exemptions are likely to be rare however and available only on application to NIEA.

The cattle farm size of 100 livestock units and over is proposed because it will deliver significant impact from the least number of farms. There are approximately 3400 of these farms in NI.

This category of farm represents around 15% of all farms but some 55% of total livestock units, and therefore manure, in NI. These larger farms are also more likely to be able to invest in LESSE, or use a slurry spreading contractor, than smaller farms.

For pig farms, the size of a 'total annual livestock manure nitrogen production of 10,000 kg or more' is proposed because it will include the largest pig farms. As pig production systems vary, this definition is considered more appropriate than by pig numbers. There are approximately 180 specialist pig farms out of a total of 322 farms with pigs in NI. 66 of these farms have over 2000 pigs and hold 82% of total pig numbers.

Data on use of LESSE

The 2016 Farm Structure Survey (FSS) for NI reported that 3341 farms used low emission technology for some of their slurry spreading in the previous 12 months. 1059 of these were medium and large farms and they represented 36% of farms in that category. The FSS also indicated that large farms have a higher percentage of slurry applied by low emission technology that other farms. The FSS estimated that 43% of farms used a contractor for spreading some slurry/manure/fertiliser/lime during the previous 12 months. Since the FSS in 2016, it is likely that use of LESSE will have increased.

A significant number of low emission slurry spreading systems will need to be built and there may be constraints on manufacturing/supply capacity. However, given the current usage of LESSE and manufacturing/supply capacity, it is considered that the proposed requirement, for farms with a 100 livestock units or more of cattle and pig farms of the specified size, to use LESSE by January 2022 is achievable.

The longer term aim post 2022 will be for all farms to spread slurry by LESSE, other than by exceptions, such as those outlined above. A possible way to achieve this phased transition to LESSE could be a future ban on the supply of splash plate spreading equipment.

7.3(2) From 1 January 2020, prohibit use of chemical UREA fertilisers unless they contain inhibitors.

Rationale

In relation to chemical nitrogen fertiliser application, between 7% and 53% of the N in urea can be lost as NH_3 compared with an average of 4% for Calcium Ammonium Nitrate (CAN). However, CAN is susceptible both to nitrate leaching and to denitrification, having significantly higher N_2O emissions than urea.

Results from a study by AFBI and Teagasc in the Republic of Ireland, have shown considerable benefit from using urea in combination with the urease inhibitor NBPT, with urea + NBPT offering a reduction in ammonia losses of

78.5% compared with straight urea, whilst maintaining similar agronomic yields to CAN (Forrestal et al., 2015).

7.3(3) Revised nitrogen excretion rates for cattle, with rates for dairy cows based on different milk yields. To apply from 1 January 2020.

Rationale

In the current NAP, the value of 91 kg N/head/year for N excretion from dairy cows was established in 2006. It was based on comprehensive research carried out at AFBI Hillsborough on dairy cattle which were representative of NI dairy farms at that time. It was calculated on an annual milk yield of 6206 litres per cow.

Since 2006 the profile of NI dairy cows has changed. In particular, recent research has shown that the average milk yield has increased (by approx. 15%) but the amount of N excreted as a proportion of N eaten has decreased. It is also recognised that the crude protein content in dairy cattle diets has reduced in recent years, which will have a direct effect on N excretion. However, in order to drive the higher milk yields, cow feed intake, and hence protein intake is overall higher. Thirteen years on, it was therefore appropriate to re-evaluate N excretion rates to ensure they are representative of current dairy farming in NI.

Using similar methodology as that applied in 2006, research at AFBI Hillsborough has identified, that due to the above changes, the net result equates to an N excretion rate for dairy cattle of 100 kg N/head/year, based on an average milk yield of 7220 litres. This represents a 10% increase on the current value of 91 kg N.

As mentioned, in the current NAP a single annual manure N excretion value of 91 kg was adopted and applied to all dairy cows, regardless of their milk yield. While the use of a common excretion value introduced simplicity into the calculation of excretions from NI farms, it also potentially 'penalised' farms operating lower input/lower output systems. In contrast, the system introduced by DEFRA within GB included 'banding', with bands determined by annual milk yields/cow.

Given the increasing spread of milk yields across herds within NI, and the strong relationship between milk yield and manure nitrogen excretion, it is proposed that banding will now be adopted within NI. Banding will ensure more precise calculation of manure N loading on farms.

Three bands have been identified, based on annual 'milk yields' per cow namely: <6000 litres, 6000 – 8500 litres, and >8500 litres of milk. The middle band is centered (7250 litres) on the average 'annual milk production' in NI between 2013 and 2017 (7228 litres), as derived from the Statistical Review of Northern Ireland Agriculture.

PROPOSED BANDING FOR DAIRY COWS AND NITROGEN EXCRETION RATES

Annual Milk Yield per cow	Nitrogen Excretion Rate Kg/N/head/year
Up to 6000 litres	85
6000 – 8500 litres	100
Over 8500 litres	116

It is proposed that banding and 'annual milk yield' for a farm is determined on a 'whole farm' basis on the basis of gross farm milk production per calendar year divided by the average number of dairy cows in that year. This average annual milk yield per cow will determine the N excretion band for the farm.

Grass farm milk production would be calculated from monthly buyer statements. Average number of dairy cows would be calculated from APHIS herd counts.

Phosphorus Excretions

The proposed annual phosphorus (P) excretions associated with these three bands are 16, 19 and 22 kg P per cow. These excretion values have been calculated *pro-rata* using the N : P ratio adopted within the NAP 2015 - 2018, namely 5.4 : 1 (91/17) and are broadly supported by a modelling exercise involving predicted P intakes, and assumed P utilisation efficiencies for each milk yield band.

Other Cattle – Changes to N excretion Rates

With regard to other cattle (i.e. young stock and beef cattle), the research at AFBI Hillsborough has also identified that the proportion of N excreted compared to N intake has also decreased, compared to 2006 data. As such this improved efficiency has lowered the N excretion rates for a number of other cattle categories. The new rates are summarised below.

Other Cattle - Revised Nitrogen Excretion Rates for NAP 2019-2022

Livestock Type	2006 Rate Kg/N/head/year	Revised Rate for NAP 2019-2022 kg/N/head/year
Dairy heifer (over 2 years)	54	45
Dairy heifer (1 - 2 years)	47	39
Beef suckler cow over 2 years	54	52
Breeding bull	54	52
Cattle (over 2 years)	54	45
Cattle (1 - 2 years)	47	39

Note that N excretion rates for younger categories of cattle:

bull beef 0 – 13 months, 6 – 13 months and calves 0 – 1 year, 0 – 6 months and 6 – 13 months, remain unchanged.

Phosphorus excretions

The proposed annual phosphorus excretion rates for other cattle are:

Dairy heifer and cattle over 2 years - 8.3 kg per head

Beef suckler cow over 2 years and breeding bull - 9.6 kg per head

Dairy heifer and cattle 1-2 years - 7.2 kg per head.

Impact of changes in N excretion rates

An illustration of the impact on a dairy farm is given in the example below.

Dairy farm with 100 cows, 5 dairy heifers over 2 years, 30 dairy heifers 1 – 2 years and 30 cattle under 1 year.

Livestock Type	Average number per year	N Produced per head per year (kg N)	N Produced (kg per year)
dairy cows	100	100	10,000
Dairy heifers > 2 years	5	45	225
Dairy heifers 1- 2 years	30	39	1170
cattle < 1 year	30	19 (unchanged)	570
Total N produced			11,965

Previous Total N produced = 11,350 using 2006 Nitrogen excretion rates

$\frac{11,965}{11,350} = 1.0541$ ➲ 5.41% increase in overall farm Nitrogen loading as a result of updated N excretion rates.

For beef farms, N excretion rates will reduce.

Operational Date

It is proposed that the revised excretion rates for dairy cows and other cattle, will apply from 1 January 2020. These revised rates are subject to verification and approval by the European Commission.

7.3(4) Proposed development and introduction of a licencing system for slurry spreading contractors during NAP 2019-2022.

Rationale

This measure will improve practice and standards of compliance with the NAP. Contractors need to act responsibly and only spread in suitable conditions in accordance with the NAP Regulations. There is evidence that some contractors spread in unsuitable conditions. It is proposed that training will be required in order to obtain a licence. This is a longer term measure to be developed during the NAP 2019-2022.

7.4 Slurry and Manure Storage

7.4(1) From 1 January 2020, new above ground slurry stores and lagoons to be covered.

7.4(2) From 1 January 2022, existing above ground slurry stores to be fitted with floating or fixed cover.

Rationale

Where above ground slurry stores are uncovered nitrogen is lost to the environment, resulting in reduced manure nitrogen efficiency. Ammonia is released into the atmosphere on an ongoing basis, contrary to best practice. The addition of a solid cover to a manure store may reduce ammonia emissions by up to 80%. Floating covers may reduce emissions by 60%. Ammonia emissions from stored AD digestate can be higher as from stored raw slurry due to the higher pH and TAN content of the digestate.

In 2010, approximately 8% of NI farms had above ground slurry tank storage facilities, with only 1% of these covered. The predominant form of slurry storage in NI is under-house tanks (65% of farms), for which physical covers cannot easily be installed.

There are two broad categories for implementation of this measure. New above ground slurry stores and existing above ground slurry stores. DAERA proposes that from 1st January 2020, new above ground slurry stores should be fitted with a rigid cover, in line with best practice. In the case of existing above ground slurry stores, floating covers should be installed to reduce ammonia emissions.

DAERA recognises that these measures will place additional cost on some farm businesses.

These measures will improve manure nutrient efficiency and significantly reduce ammonia losses. Rigid covers will provide increased storage capacity due to less rainwater entering storage tanks.

7.4(3) From 1 January 2020, new slurry tanks to be sited 50m from waterways. No overflow pipe allowed except to a storage tank. Flexibility on the 50m requirement based on on-site circumstances will be included.

Rationale

This measure will help reduce the risk of water pollution from leaks, spills, tank failure or operator error/ mismanagement of slurry.

7.5 Controls on Anaerobic Digestion (AD) Plants and Digestate

7.5(1) **Controls on farms AD as a fertiliser**

From 1 January 2020

(i) Importing farm only to accept AD if it is accompanied by analysis provided by the AD plant operator.

(ii) Importing farm to retain record of AD analysis provided by AD plant operator and make available for cross compliance on-farm inspection for 5 years.

(iii) Importing farm to apply digestate to meet crop requirement, subject to soil analysis.

(iv) Farmers applying AD to land as a fertiliser must prepare and keep a fertilisation plan (fertilisation plan in same format as derogated farms).

(v) Storage of AD fibre:

(a) AD fibre stored in field to be covered unless it is ploughed in within 24 hours of storage.

(b) AD fibre stored in open middens must be covered within 24 hours of storage.

(vi) From 1 February 2020, digestate to be spread by Low Emission Slurry Spreading Equipment (LESSE). If spreading on grassland, digestate must be

spread by Trailing Shoe.

(vii) Restrictions will apply when spreading digestate when there is potential for impact on any environmentally designated or protected sites.

7.5(2) **Controls on AD Plant Operators**

From 1 January 2020

(i) AD plant operator to submit a record, showing quantity, N & P analysis and date of AD exported to farms in NI. 'Export of AD' defined as "anaerobic digestate exported to farms in NI, for the purpose of land spreading as a fertiliser". Records to be submitted to NIEA (either on-line or paper records will be acceptable).

(ii) AD plant operator to provide the importing farm with an analysis of the nutrient content of each consignment of digestate exported to each farm.

(iii) Introduction of fixed penalty notice for offences/breaches:

(a) failure to submit records to NIEA of export of AD to farms.

(b) failure to provide digestate analysis to farmer with each consignment of digestate.

Rationale

In addition to the high nitrogen content, due to AD digestate's low viscosity, it requires extra care when spreading and therefore represents a high water pollution risk. NIEA have found that this can result in a high pollution impact to a waterway which includes fish kills where pollution from digestate occurs. It is important to ensure that the level of all pollution incidents from agriculture does not increase as it has remained stable recently. It is therefore necessary to have measures that address the additional water pollution risk from this material.

AD (from both food and manure sources) is a rich source of N fertiliser. Phosphate and potash concentrations are also high.

The UK-wide Quality Protocol (QP) for AD, allows accredited digestate to be applied to land as a fertiliser without the need for waste regulation. However, it is the user's responsibility to know the content of the AD so that the nutrient loading can be calculated accurately before it is land spread. In order to do this the user should have either received an analysis of the digestate from the supplier or, if producing digestate as part of their own business, they must have the digestate analysed. This analysis should be made available to NIEA.

As part of the on-farm NAP Cross Compliance inspection, NIEA are responsible for checking for compliance with the 170 kg N/ha/year limit to land. This requires accurate import and export records to be made available on-farm at the time of inspection. The NAP Regulations require on-farm records of all imports and exports of AD. However, there is currently no legislative requirement for AD plant operators to provide information to the NIEA on the quantity or location of AD exported to farms in NI if the AD plant is not part of an active farm. Similarly, there is no legislative requirement for AD plant operators to provide farmers with an analysis of the nutrient content of the digestate / compost exported to NI farms unless it is deemed to meet the AD QP. In these cases, the operator must supply the recipient with the analysis.

It is likely that the vast majority of digestate/compost is spread on agricultural land as a 'fertiliser'. Therefore, greater transparency is needed over the quantity, location and nutrient content of AD / compost being supplied to farms for spreading as a fertiliser. This information will enable NIEA to check

that the N loading limits in the NAP are being complied with for more accurate selection of farms for inspection.

It is proposed that AD fibre stored in a field should be covered, unless it is ploughed in within 24 hours. Also, if stored in a midden, AD fibre should be covered within 24 hours of storage. For field storage of AD fibre, the same requirements as for poultry litter apply i.e. only store what will be used in the field, AD fibre to be applied within 120 days, prior notification to be provided to NIEA and covered with an impermeable membrane.

The application of AD to land must meet crop requirement, established though soil testing and be in accordance with a fertilisation plan of the same format as derogated farms. This is to ensure effective nutrient management and balanced fertilisation.

The requirements of other environmental legislation may mean additional restrictions on spreading digestate where it has potential for impact on any environmentally designated or protected sites.

7.6 Manure Export Records

The NAP Regulations require all farms exporting organic manure from their farm to submit their records to NIEA annually by the 31 January for the previous calendar year**.** While both importer and exporter must keep these records, only the exporter is required to submit their records to NIEA. Failure to submit manure export records by the deadline will result in the exported manure not being taken into account in the calculation of the livestock manure loading for the farm at a future inspection. From 1 January 2017, it

could also result in a breach of the NAP Regulations and a Basic Payment penalty.

DAERA reviewed the current requirement under the NAP Regulations. DAERA findings were that the current measures are still needed to allow for traceability of manure movements and to allow NIEA to verify compliance with the NAP Regulations. However, DAERA has introduced an on-line submission of manure export records to NIEA. This will streamline administration for both farmers and NIEA.

DAERA is considering enhancing this on-line system to include a facility for the importing farmer to register receipt of the manure. This would improve the verification of movement of manures from the exporting farm to the importing farm.

Farmers are encouraged to import and export slurry between farms to ensure manure nutrients are being distributed and applied to land where they are needed. Applying organic manure to meet crop need reduces the reliance on chemical fertiliser and also reduces the environmental impact of manure to land which is already nutrient enriched.

7.7 New title: "Nutrients Action Programme".

The proposed NAP for 2019 – 2022 incorporates Phosphorus measures that were previously in separate Phosphorus Regulations. Also, nutrient enrichment of freshwaters due to phosphorus is the main cause of poor water

quality in NI.

Therefore, it is proposed to rename the Action Programme to the “Nutrients Action Programme” as this better reflects the nutrient management measures it contains, covering both nitrogen and phosphorus, and its objectives. Alternative suggestions for a new title are also welcome.

8. Habitats Regulations Assessment (HRA) and Strategic Environmental Assessment (SEA)

DAERA will be commissioning an HRA and SEA for the proposed Nitrates Action Programme for 2019-2022 and Derogation. These assessments will be contracted to third parties, completed in 2019 and published on the DAERA website.

9. Questions for Stakeholders

1. **What are your views on the proposed Water Protection Measures?**

   7.1(1) Further restrictions on slurry applications in February and October.

   7.1(2) Siting of supplementary feeding sites a minimum of 20m from a waterway.

   7.1(3) Siting of livestock drinking points a minimum of 10m from a waterway.

2. **What are your views on the proposed measures on Phosphorus Reduction and Efficiency?**

   7.2(1) Voluntary declaration of Phosphorus content in animal feeds to be provided to farmers by all animal livestock feed supply companies.

   7.2(2) Including the Phosphous Regulations under the Cross Compliance requirements.

   7.2(3) Requirement for all farms using chemical phosphorus, phosphorus-rich manure and anaerobic digestate to have a fertilisation plan.

3. **What are your views on the proposed measures to promote Nitrogen Efficiency?**

   7.3(1) Introduction of mandatory use of low emission slurry spreading equipment (LESSE).

   7.3(2) Prohibit the use of chemical UREA fertilisers unless they contain inhibitors.

   7.3(3) Proposed banding of N excretion rates for dairy cows

based on different milk yields.

7.3(4) Proposed development and introduction of a licensing system for slurry contractors.

4. **Have you any comments, evidence and feedback, on the benefits and practicalities of using trailing shoe and dribble bar / trailing hose spreading systems? In particular, experience and evidence of the benefits these systems provide in improved manure nutrient efficiency and ammonia reduction, in comparison to splash plate spreading.**

5. **What are your views on the proposed measures to promote better slurry and manure storage on farms?**

7.4(1) Covering of new above ground slurry stores and lagoons.

7.4(2) Covering existing above ground stores with a floating or fixed cover.

7.4(3) Siting of new slurry tanks 50m from a waterway.

6. **What are your views on the proposed controls on farms applying anaerobic digestate as a fertiliser?**

7. **What are your views on the proposed controls on anaerobic digestion plant operators?**

8. **What are your views on the proposed name "Nutrients Action Programme"?**