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Nitrates Consultation
Water Advisory Unit,
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Re: Fourth review of Ireland's Nitrates Action Programme

The Environmental Protection Agency (EPA) has reviewed the Stage 1 Public consultation paper on the 4th review of the Nitrates Action Programme (NAP) and welcomes the opportunity to submit its views. The EPA notes that an interim review of the 4th NAP was undertaken in 2019 which has resulted in a further strengthening of the derogation measures, many of which only came into effect on 1 January 2021. While we welcome the focus on intensive farming during that interim review, this full review now provides an important opportunity to review the measures for all farmers.

The NAP provides an important implementation mechanism for many of the key measures that will be needed to achieve our Water Framework Directive objectives. This review is therefore timely as preparations are currently underway to develop the 3rd Cycle River Basin Management plan. It will be essential that the NAP takes account of, and is fully integrated with, the river basin management planning process. The NAP is also an important mechanism for delivering on our climate change, biodiversity and air quality objectives and additional benefits could be gained by broadening the focus.

This submission is supported by a series of published and unpublished EPA reports produced in 2019 and 2020, as well as recent relevant submissions to the DAFM and DHLGH, including the following:

- The Water Quality in Ireland report 2013-2018 and the Water Indicators report 2019.
- The State of the Environment Report 2020.
- The Annual Nitrates Derogation Report 2019, and the Article 10 report on the impact of the 4th NAP on water quality (2016-2019).
- Submissions to DAFM on the Agclimatise strategy, the Agrifood2030 strategy, the CAP strategic plan and the interim review of the nitrates action programme;
- Submission to DHLGH on the Significant Water Management Issues for the 3rd River Basin Management Plan (RBMP).

This submission should be read in conjunction with these documents.

Key water quality findings of concern from the Water Indicators Report 2019

- Nearly half (47%) of river sites have unsatisfactory nitrate concentrations. 44% of sites are showing an increasing nitrate trend for the period 2013-2019.
- Over a fifth (22%) of estuarine and coastal water bodies have unsatisfactory dissolved inorganic nitrogen (DIN) concentrations. The highest DIN concentrations are in the south and south east of the country.
- Loads of total nitrogen and total phosphorus to the marine environment from our rivers have increased by 24% (13,559 tonnes) and 31% (338 tonnes) respectively since 2012-2014.
- Over a fifth (22%) of groundwater monitoring sites have high (>25mg/l $N0_3$) nitrate concentrations, and three sites exceed the drinking water standard (50 mg/l $N0_3$).
- Almost half (49%) of all groundwater sites had increasing nitrate concentrations for the period 2013-2019.
- There is a strong regional pattern in all waters that have excess nitrogen concentrations and increasing trends. The areas of greatest concern are the south and south east of the country, which is also the area where the highest levels of intensive farming takes place. Figures 2 and 3 below show the regional nitrate concentrations and trends. Similar maps are available in the water indicators report for the other waterbody types.

Impacts of agriculture on water quality

Only just over half of our surface water bodies have satisfactory water quality. Agriculture is the most widespread and significant pressure impacting on the water environment. The key issues arising from agriculture are excess nitrogen and phosphorus causing eutrophication; pesticides which impact on ecological health and on drinking water quality; excess fine sediment arising largely from erosion and runoff; and land drainage practices and other factors which impact on habitat condition. Nutrient concentrations are too high in a significant proportion of our water bodies and the trends are going in the wrong direction.

It is recognised that on an individual farm, and farm-type basis, there is evidence of exemplary and low impact practice. However, taking the sector as a whole, the economic growth in recent years is happening at the expense of the environment, as witnessed by the trends in water quality, biodiversity and in greenhouse gas and ammonia emissions. This is one of the key messages of the EPAs latest State of the Environment report (SoER) (EPA, 2020) and urgent and effective action is needed to address this.

The Good Agricultural Practice regulations have not succeeded in preventing a deterioration of water quality in recent years, so further action is required. It would be helpful if this review included an assessment of what measures are, or are not, working. The evidence shows that water quality problems are not just a concern for the more intensive farms but are relevant to all farmers. At the farm scale, it is not just farm intensity that drives water quality outcomes, but also soil type, climatic conditions and farm practice. A one size fits all approach will not be adequate to achieve the outcomes we need; measures need to be targeted specific to the soils and risks on the farm.

The EPA welcomes the acknowledgement that there is a need to better align policy across multiple environmental pressures. The SOER notes that there are many interlinkages and dependencies between environmental policies and legislation, and better alignment between them is an essential step towards achieving our environmental ambitions. A more holistic and integrated farm and catchment management approach, encompassing all environmental pressures, is needed.

We welcome also the commitments to integrate climate and biodiversity measures with the Nitrates Action Programme measures, and to considering how best to ensure that derogations on individual holdings do not compromise achievement of compliance with the Birds and Habitats Directives.

The EPA supports the need to strengthen measures to protect drinking water sources. The key impacts from agriculture on drinking water include pesticides (most typically MCPA), pathogens and increasing nitrate concentrations in groundwater in some areas. The recast Drinking Water Directive, which was adopted by the European Parliament in December 2020, places a greater emphasis on protecting drinking water at source and this should be fully considered in the NAP.

The SoER noted that the agriculture and food sector needs to demonstrate and validate its performance around producing food with a low environmental footprint. This will require an increased focus on capturing and recording farm activity data to help build the evidence base and understanding of what measures are working and where, so that the ask of farmers can be better targeted in the future. Better data are also important to support the greenhouse gas and air pollutant inventories.

The EPA is committed to working constructively and collaboratively with both Departments to provide the evidence base for assessing the impacts of agriculture on the environment, and to assisting the Departments to develop plans and programmes that will protect and restore Ireland's natural environment. We look forward to continued engagement as the development of the NAP and the River Basin Management Plan progresses.

Yours sincerely,

Micheál Lehane
Director

Appendix – specific comments and maps

Nitrogen issues

The most recent Water Quality Indicators Report published in late 2020 noted that nitrate concentrations are increasing in nearly half of our river sites and half of our groundwater monitoring sites, which is a significant concern. Our estuaries and coastal waters are particularly sensitive to high nitrogen concentrations. The inputs of total nitrogen to the marine environment have increased by 24% since 2012-2014.

The predominance of free draining soils in the south and southeast make these areas particularly susceptible to nitrogen losses from agriculture. Over 90% of the nitrogen loads in these catchments come from agriculture and there is a strong relationship between farming intensity and nitrate concentrations in waters at the catchment scale. There is however, water quality variability within and between sub-catchments. Detailed research work in the Agricultural Catchments Programme has highlighted that soils, weather and farming practices also have a significant influence on nitrate concentrations, at the local scale. This has important implications for targeting the right measure in the right place. Figure 1 shows the locations where nitrate measures are needed.

Measures to stabilise and reduce nitrogen losses, and reverse the deteriorating trends are required as a matter of urgency. Measures must reduce nitrogen losses – a reduction in nitrogen use, use of nitrogen more efficiently, and adoption of alternative farming practices that require less nitrogen should all be considered. As a first step we should be aiming to achieve the emissions reductions targets set out in the EU Farm to Fork strategy.

Phosphorus issues

Over one third (34%) of river monitoring sites have unsatisfactory phosphate concentrations, and one quarter (26%) of sites are showing an increasing phosphate trend for the period 2013-2019. Over one quarter of monitored lakes had unsatisfactory water quality and 22% have an increasing phosphorus trend. Phosphorus loads to the marine environment have increased by 31% since 2012-2014. The main sources of phosphorus in the Irish environment are agriculture and urban waste water. The majority of urban waste water (volumetrically) is discharged in coastal areas, with agriculture the most significant source inland. Figure 1 shows the locations where phosphorus and sediment measures are needed from the agricultural sector.

Excess phosphorus contributes to eutrophication and is a particular concern for the ecological health of rivers and lakes, and some estuaries. The most susceptible areas for phosphorus losses are poorly draining soils, from which the runoff discharges to watercourses. While many of the catchments in the east and northeast have elevated phosphorus concentrations there are typically areas of poorly draining soils in most catchments. Research has shown that most of the phosphorus loss in catchments typically comes from a relatively small area (the critical source areas), within a relatively short time, during significant rainfall events. It only takes a very small amount (<200g/ha) of phosphorus loss to cause a water quality problem. Pathway interception measures are likely to be most effective to prevent surface runoff reaching watercourses. These types of measures can include buffer zones, engineered ditches, native woodlands, and other nature-based solutions. The best outcomes will be achieved when measures are targeted into the critical source areas.

The EPA recognises there may be an agronomic need for phosphorus build up on some farms, and that there is a requirement under the current regulations for farmers availing of the allowance to engage in a specific knowledge transfer programme on landscape risks of P loss. Consideration should be given to incorporating an additional requirement that the critical source areas for

phosphorus loss, if any, be managed with appropriate pathway interception measures. This will help ensure that the additional phosphorus used is not lost to waters.

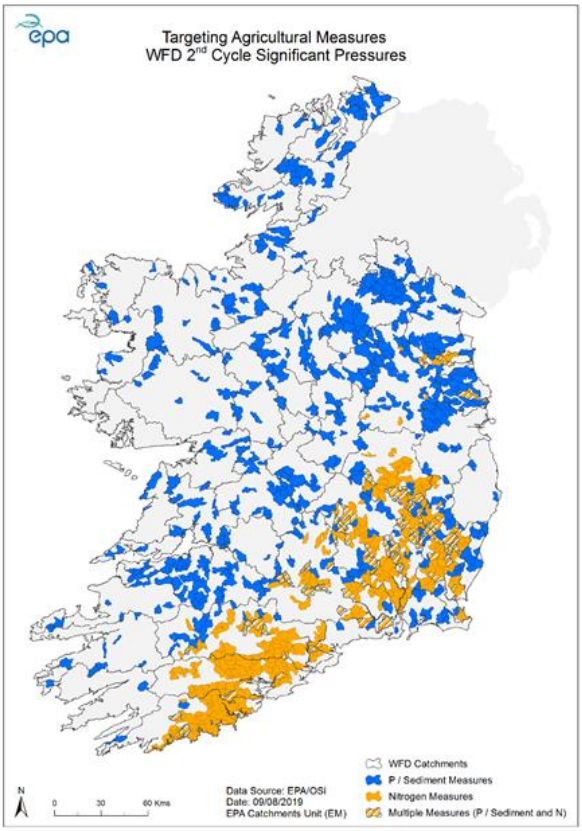

Figure 1: Locations where phosphorus/sediment measures (blue) and nitrate measures (orange) are needed from the agricultural sector.

Other issues

Although the Nitrates Directive is focussed mainly on nutrients, opportunities should also be sought to implement measures that achieve multiple benefits where possible. For example, pathway interception measures for phosphorus can also be targeted to achieve associated reductions in the loss of sediment and pesticides to waters. Similarly, reduced emissions of ammonia and nitrous oxide to air can be achieved through reductions in nitrogen input and/or increases in nitrogen use efficiency.

One additional issue that needs to be reviewed, if not through the NAP, then then through the wider reform of the CAP, is current land eligibility rules that mean farmers are effectively incentivised through the Pillar 1 payment structures to remove areas of scrub and previously unworked land. These are typically natural habitat areas, that if retained, could serve as pathway interception measures between the better farmland and watercourses. This could provide multiple benefits for water quality, biodiversity and climate.

Evidence base

The EPA has developed national nitrogen and phosphorus pollution impact potential maps which can be used to target measures where they are needed. Updated versions of these maps will be publicly available in early 2021. The selection and implementation of the right measure in the right place at the right time however, will require support from advisors, who may require additional

environmental training. The commitment in the consultation document to reviewing the training needs of farmers and advisors is therefore welcome. The EPA is supportive of the extra step that was taken during the 4th NAP to carry out an interim review and would advocate continuing with this approach for the 5th NAP.

Several EPA funded research projects, many of which are co-funded by DAFM, are in progress that will provide useful information to inform the review of measures. Smarterbufferz for example, is looking at how best to design buffer zones in agricultural landscapes; Diffuse Tools has developed the new pollution impact potential maps; Roadrunner is looking at the water quality impacts of runoff from farm roadways; Slowaters is researching suitable water retention measures or nature based solutions in agricultural settings; and Watermarke is looking at the socioeconomic and behavioural science aspects of implementing agricultural measures. A new very large scale project WaterFutures project is also just commencing which will look at climate and future proofing measures.

Figures 2 and 3: Regional patterns in nitrate concentration and trends in rivers