



Environmental Audit Committee: Nitrates Inquiry

18th January 2018

The Northern Ireland Freshwater Taskforce (FWTF) represents a range of organisations working together to ensure that Northern Ireland preserves and improves freshwater eco-systems by encouraging Government and wider society to adopt a sustainable and integrated approach to water management. Members of the FWTF include: Northern Ireland Environment Link, RSPB, Ulster Wildlife, the National Trust, Wildfowl and Wetlands Trust, Friends of the Earth, Ulster Angling Federation and The River Trusts.

The FWTF is a working group facilitated by Northern Ireland Environment Link (NIEL). NIEL is the networking and forum body for non-statutory organisations concerned with the environment of Northern Ireland. Its 70+ Full Members represent over 90,000 individuals, 262 subsidiary groups, have an annual turnover of £70 million and manage over 314,000 acres of land. Members are involved in environmental issues of all types and at all levels from the local community to the global environment. NIEL brings together a wide range of knowledge, experience and expertise which can be used to help develop policy, practice and implementation across a wide range of environmental fields.

Introductory Comments

The FWTF welcomes the opportunity to comment on this Environmental Audit Committee Nitrates Inquiry. We understand the scope of the inquiry is UK wide, however our comments are mostly in relation to the impact of nitrates in Northern Ireland.

At the outset we would stress the following key points:

- As of 2015, 67.3% of river water bodies across NI are not meeting the Water Framework Directive target of Good Ecological Status (GES). Phosphorus levels in the majority of river monitoring sites are at levels which indicate a risk of eutrophication;
- To date, slow progress has been made to improve the health and use of our water environment. NI's rivers, lakes, wetlands and coasts are some of the best-loved parts of our country, and water bodies often sit at the heart of the local community. Yet only 32.7% of our water bodies are at good ecological status¹, much less than the European average of 40%.
- NIEA have stated that 95% of European designated sites in Northern Ireland have concentrations of nitrates which exceed Critical Levels.
- Agriculture remains the main contributor to water quality problems through nutrient enrichment, resulting in eutrophication causing accelerated growth of algae, excessive plant growth and damage to water quality. The 'Going for Growth' strategy was conceived without adequate plans for mitigating pollution emanating from agricultural intensification. The sustainable land

¹ https://www.daera-ni.gov.uk/sites/default/files/publications/daera/ni-environmental-statistics-report-2017_2.PDF

management strategy is intended to address this problem, but funding has yet to be secured to implement the proposals.

- Nitrate pollution has well documented risks to the health of future generations; the European Environment Agency costs this risk to the UK at €2.6bn annually;²
- While the Nitrates Directive aims to improve the use of nutrients on farms and so improve water quality, the Nitrates Action Programme alone will not resolve the issue of our poor water quality;
- The FWTF is keen to support a programme of measures that seeks to minimise the financial burden imposed on farmers whilst securing good water quality and delivering biodiversity objectives;
- Brexit presents a key challenge for the agriculture and environment industry. It is vitally important for the UK to retain and improve environmental legislation post-Brexit. The governance of transitional waters and shared catchments presents a significant challenge post-Brexit.
- To view the ongoing work of the e-NGO sector in NI on Brexit please follow this [link](#)

What is the scale of nitrate pollution in the UK and what is the likelihood of the pollution getting worse?

Nitrate pollution is a long term issue with many factors affecting the speed with which it travels from release into groundwater. In some instances, it could be decades before leached nitrate from soil discharges into freshwater. Intensive agriculture has resulted in a large store of nitrate pollution building up over time, even after putting in place controls on fertiliser use and spreading of slurry.

Water pollution (eutrophication) is still a major factor in freshwater protected areas and aerial deposition of Nitrogen a major factor, with critical thresholds exceeded for many habitats across NI. The intensive livestock sector is the major source of nitrate pollution in NI. Although this sector contributes significantly to the problem, sustainable production has the potential to be part of the solution.

The impacts of agricultural intensification have the potential to be felt particularly acutely in Northern Ireland given the current policy context. The FWTF has previously raised environmental concerns regarding the Northern Ireland Agri-food Industry's plans to grow the value of the sector from £5bn to £7bn by 2020. We share the European Commission's concerns about the environmental impacts of expansion in some agricultural sectors, particularly in relation to manure management, nutrient loading on farms and protection of the improvements in water quality. This growth agenda, without appropriate mitigation, poses a major threat to present and future water quality in Northern Ireland. For example, the continued failure to develop a solution to the problem of poultry litter will carry a heavy environmental price through damage caused to local water quality from enriched phosphorus status of local soils.

Improvements have been made in sewerage collection treatment, with benefits to the wildlife in many rivers and lakes. These improvements must continue. However, many smaller sewage treatment works still fail to meet modern standards, while un-sewered areas with often poorly-maintained septic tanks are causing considerable damage through nutrient pollution. NI Water, who manage waste water management infrastructure, has been active in managing their catchments through the

² European Environment Agency (2013) Late lessons from early warnings: science, precaution, innovation. EEA Report No 1/2013.

Sustainable Catchment and Management Programme (SCAMP). FWTF supports further application of the SCAMP Programme across NI and would encourage NI Water to look beyond their own catchments to influence land management in the wider countryside.

Anaerobic digestion is a mechanism for disposing of farm and food waste but presents challenges around the disposal of effluent. From 2017 to 2019 there are 103 AD sites either in construction or with applications approved or submitted. While the pollution potential of digestate is less than that of the original feedstock, it is still very high; most of the nitrogen phosphate and potassium present in the feedstock remain in the digestate. Given the on-going challenge of complying with the EU Nitrates Directive, nutrient management should be a major consideration when determining the appropriateness of an AD scheme and the robustness of the mechanisms for digestate disposal at the planning consideration stage.

What are the consequences of nitrate pollution for the environment and for human life?

Our freshwater network of rivers and lakes support life, health and well-being, our economy, wildlife and leisure activities. Our rivers and lakes provide society with numerous benefits and 'ecosystem services' including: drinking water; water for bathing/sanitation; water for food production; hydroelectric power generation; water purification and waste removal; nutrient cycling; recreation; flood control and climate regulation. However, we are currently failing to manage our freshwater environment in a way that reflects the importance of this critical resource and its true value to society. Nitrate pollution has well-documented risks to the health of future generations; the European Environment Agency costed this risk to the UK at €2.6bn annually³.

Consequences of nitrate pollution in UK aquatic ecosystems include:

- Acidification of freshwater ecosystems which reduces species diversity of phyto- and zoo-plankton with some species of macro benthic invertebrates being acid sensitive. Acidification has led to significant loss of fish and affects the development of embryonic and larval stages of amphibians. The distribution of fish-eating birds may be influenced by the effects of acidification on the performance of their prey⁴.
- Eutrophication is the enrichment of water by nutrients, especially compounds of nitrogen and/or phosphorus, causing an accelerated growth of primary producers, some of which may be toxic and/or not grazed effectively by aquatic grazers to produce an undesirable disturbance to water quality and the balance of organisms present in the water;
- This can cause significant fish and shellfish kills and impair the ability of aquatic animals to survive, grow and reproduce. Nitrate pollution also affects the water chemistry causing a decline in dissolved oxygen concentrations which can promote the formation of reduced compounds, such as hydrogen sulphide, resulting in higher toxic effects on aquatic animals.

European agricultural policy has succeeded in delivering plentiful food, but often at environmental cost. Many rivers and lakes are polluted with high levels of fertilisers and pesticides damaging wildlife

³ European Environment Agency (2013) Late lessons from early warnings: science, precaution, innovation. EEA Report No 1/2013.

⁴ <https://www.cambridge.org/core/journals/proceedings-of-the-royal-society-of-edinburgh-section-b-biological-sciences/article/freshwater-acidification-its-effects-on-species-and-communities-of-freshwater-microbes-plants-and-animals/8141A4F525B599FBC2B43EEFA8E5B20E>

and driving up the cost of water treatment for society. Changes in financial support to farming could protect rural economies while reducing this damage to our freshwater environment. We would like to enable farmers to prevent pollution and restore rivers and wetlands through advice, training and public money for public good payments. This aligns with the current 25 Year Environment Plan and the direction of travel signalled by the Agriculture and Environment secretary.

It is also important to recognise the serious challenge, and immediate action required, to address ammonia emissions in Northern Ireland⁵, as outlined in *'Making Ammonia Visible' (2017)*⁶. Ammonia emissions, which have hit crisis levels in Northern Ireland, arise primarily from livestock excretions, livestock housing, manure or slurry storage, excretions in grazed pastures or after manure spreading. Ammonia contributes to acidic deposition on soils and aquatic ecosystems, with detrimental impacts on plants, freshwater diversity, buildings and human health. A joined-up approach is therefore required to ensure holistic solutions are put in place to address the multiple sustainability challenges posed by agriculture. Successive agri-environment schemes have attempted to provide incentives for farmers to manage their land to help reduce water pollution through buffer strips, however the challenge remains that these schemes are voluntary measures and there has not been sufficient funding to ensure all farmers benefit from this approach. As noted by the European Court of Auditors, cross-compliance has also been an ineffective mechanism for delivering resource protection in the form of good water quality.

Additionally, pollution incidences in bathing waters also restrict free recreational use of the marine environment, and pollution of shellfish waters can have negative economic and environmental impacts.

How important are the different sources of nitrate pollution? Where should action be undertaken?

Diffuse water pollution is pollution from many different sources. It cannot be attributed to one single source, and therefore requires a holistic solution. Pollution run-off from land, farms, roads, abandoned or illegal landfill, residential, septic tanks, atmospheric deposition and commercial areas accounts for a significant amount of contamination in our rivers, lakes and wetlands.

Agricultural land is the major source of nitrates in UK groundwater. More than two thirds of the nitrate in groundwater comes from past and present agriculture. If too much is applied, or is applied in the wrong place or at the wrong time, it can get leach out of the soil and into groundwater.

Other major sources of nitrate are leaking sewers, septic tanks, water mains and atmospheric deposition. Atmospheric deposition of nitrogen makes a significant contribution to nitrate inputs to groundwater. Much of this type of pollution goes undetected meaning those responsible may suffer no cost, while those who depend on a healthy supply of freshwater suffer the consequences. A small

⁵ <http://www.agriland.ie/farming-news/ammonia-action-urgently-needed-on-every-farm/>

⁶ <https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Ammonia%20Annex-%20Expert%20Working%20Group%20%28final%29.pdf>

amount of pollution can do a lot of damage to the water environment; however, the penalties often do not reflect the extent of damage.

Coastal and transitional water bodies are particularly affected by pollutants (including nitrates) discharged episodically from combined storm overflows. Sufficient event monitoring is not yet undertaken to determine the relative importance of this source of nitrate pollution (for example, when breaches of bathing water quality are detected it is not normally possible to confidently attribute its source, as pollutants are dispersed rapidly following an incident).

Atmospheric nitrogen deposition continues to be a significant problem throughout the EU, with over 40 percent of terrestrial and freshwater ecosystems currently subject to atmospheric nitrogen deposition beyond their critical loads (European Environment Agency, 2014). The EEA believe that further reductions are needed to avoid the harmful acidic deposition and eutrophication that continue to be problematic across the EU. Given these findings, as well as the conclusions of the Northern Ireland Article 17 Report for the Natura Network in NI and the 2016 Article 10 report on Nitrates, it is clear that ammonia deposition is having a significant negative impact on our habitats. Therefore, we urge government to take urgent action to address nitrogen and ammonia deposition. Revised regulations could include:

- Raising industry awareness of the issue of ammonia emissions and abatement measures;
- Use of low emission spreading equipment should continue to be promoted by DAERA through the Manure Efficiency Technology Scheme (METS). Consideration should be given to targeted support in areas around designated sites sensitive to ammonia;
- Promotion of retro fitting covers on existing outdoor manure storage;
- Any slurry storage tank constructed, substantially enlarged or substantially reconstructed after 31st December 2016, which is not contained within or underneath a roofed building, shall be covered in a manner which minimises emissions of odour and ammonia.
- Derogation, which enables spreading outside of the closed period, is having a direct impact on the environment. However, the NIEA Nitrates Derogation report was unable to accurately conclude that derogation is not having a detrimental impact. Therefore, serious consideration must be given to ending derogation.

The report, 'Making Ammonia Visible'⁷ published in December 2017 states that:

"...availability of excess nitrogen results in vulnerable and sensitive species being effectively outcompeted by other, more N-tolerant species, thus causing environmental damage through biodiversity loss, soil acidification and changes in ecosystem structure and function."

The report goes on to provide a road map for improvement stating that:

"...our priority should be to take steps to (i) introduce no more nitrogen into our production systems than is necessary and efficient and (ii) retain it within the production system rather than releasing it to the atmosphere."

⁷ <https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Ammonia%20Annex-%20Expert%20Working%20Group%20%28final%29.pdf>

How effectively does Government regulate nitrate usage so that nitrate pollution is reduced as quickly as possible?

Nitrates are currently regulated in Northern Ireland through transposition of the Nitrates Directive. There is a need for synergy with other important pieces of legislation. Dealing with Nitrogen in isolation will not solve the issue. A report prepared for the European Commission (IEEP June 2012) stated that when examining the WFD, the Groundwater Directive; the Urban Waste Water Treatment Directive, the Nitrates Directive and the Floods Directive, overall: “Policies across the agriculture, water, energy and environment spheres are formulated without sufficient consideration of their interrelationship in any comprehensive manner, or their unintended consequences”. We support the conclusions of the Report that greater efforts are therefore required to ensure better coordination if we are to see improved water quality. We recommend therefore that the Environmental Audit Committee Inquiry ensures greater synergy between departments and their responsibilities in order to deliver an effective sustainable water policy.

The FWTF has made these points, and others, in responses to DAERA (previously DARD) in 2010, and again in 2014. These points are contained within [the 2014 FWTF response to the Nitrate Action Programme](#) and remain relevant today.

As the UK exits the EU it is important that a strong regulatory and legislative framework is put in place to deliver improved land management in Northern Ireland for water quality and other natural resources.

Are other nations taking more effective action on nitrates that the UK can learn from?

The Agricultural Catchment Programme (ACP)⁸ was initiated to address needs brought about by the introduction of the Nitrates Directive and WFD in Ireland. It has demonstrated how a catchment based approach can have an impact on nitrate and phosphate loadings in agriculture. The programme works with farmers to gain knowledge, promote good agricultural practice and spread that knowledge to a wider audience.

What more could Government do to reduce nitrate pollution as quickly as possible?

As our waters are used for a range of activities, government alone cannot achieve the improvement in water quality that is required to restore our freshwater environment. This will require government and agencies working in partnership with local communities and businesses. The benefits of engaging local communities include the development of a shared responsibility for managing water bodies and utilising local knowledge to identify and implement solutions. We would like to see all sections of society enabled to actively contribute to the protection of our freshwater systems.

Our recommendations include:

⁸ <https://www.teagasc.ie/media/website/environment/water-quality/Draft-Agricultural-Catchments-Programme-Phase-2-Report.pdf>

- The problem with nitrates is one symptom of the wider regulatory challenges associated with environmental governance in Northern Ireland and supports the need for an independent environmental regulator, as stated in the NI Environment Link submission to the NI Affairs Committee Inquiry on Devolution and Democracy.
- Equivalent Water Framework Directive targets should be retained and enforced in NI after Brexit, preferably through a common UK framework. New farm subsidy models should be underpinned by public money (payments) for delivery of a wide range of public goods which will help deliver, amongst other issues, an improved water quality environment.
- The farm advisory service should be expanded to enable all farmers and landowners to receive advice on fulfilling their environmental obligations and in particular with regard to protection of biodiversity and water quality.
- Effective and enforced baseline land management regulations replacing current cross compliance and GAECs (Good Agricultural and Environmental Condition Standards) is required to:
 - reduce the use of artificial fertilisers
 - reduce the extent of ploughing in the autumn
 - avoiding bare ground in the winter by sowing cover crops
 - delaying the ploughing-in of crop residues
 - carefully manage the disposal of farm wastes
- Although agriculture is part of the problem, it can also be part of the solution. Within the current GAEC 19 in England, farmers are strongly encouraged to implement 6m buffer strips next to vulnerable water courses. This is in line with evidence that 2m buffer strips are not sufficient to intercept pollutants⁹. Buffer strips can contribute to other ecosystem services, many of which benefit the farmer directly, including carbon sequestration, soil formation and natural pest control. Consideration should be given to increasing the buffer strip to beyond the current proposed two metre threshold in Northern Ireland.
- Government must continue to develop and fully fund local river management plans that are informed by local communities and clearly map out the actions to achieve good water quality targets as demonstrated by the RIPPLE (Rivers Involving People, Places and Leading by Example) project.
- Land management has lagged behind other sectors in reducing its pollution of watercourses. This must be addressed urgently, using a careful combination of incentives and regulation.
- Ongoing investment in SCAMP with NI Water is required; involving Northern Ireland Water and NGOs working together to address land management issues that negatively affect both wildlife and water quality
- Continued support is needed for the creation of Rivers Trusts to coordinate and utilise local knowledge and skills to deliver improvements to our freshwater environment
- Management measures should include efforts to remove Combined Sewer Overflows (CSOs). Overflow from sewers results in untreated sewage, including FIOs & sanitary pollutants, being

⁹ See for example Rasmussen, J.J. et al. (2011). Buffer strip width and agricultural pesticide contamination in Danish lowland streams: Implications for stream and riparian management. *Ecological Engineering* 37: 1990-1997

deposited directly into rivers and the sea. These excess volumes are predominantly caused by significant amounts of surface water runoff generated by extreme weather events.

- Government should commit to better regulation of septic tanks supported by community awareness campaigns to ensure compliance. Upgraded septic tanks must be installed in accordance with manufacturer's instructions.
- Funding must continue to be provided to enable upgrading of Waste Water Treatment Works. The weak elements in the sewerage systems must be prioritised.
- Government policy and funding is required to promote the use of wetlands and reed beds as an alternative source of waste treatment.
- Upgrading of urban drainage systems, and novel ways of managing runoff through natural solutions, is crucial in order to deal with pollution coming from CSOs.
- Interaction with the planning system and engagement with strategic planning policy in Northern Ireland is vital. If Good Ecological Status (GES) of our rivers is to be realised on the ground, these principles must be adopted and promoted across government – including engagement with planners at Local Council level. The concept of resilience (promoting robust and healthy freshwater ecosystems to absorb environmental extremes and complex changes) must be an integral part of public policy and planning.

Government could facilitate the development of local integrated constructed wetlands projects at a catchment level. Benefits of ICWs include their capacity to:

- Treat and greatly improve the effluent quality of a wide range of point and diffuse sources of polluted water, through the removal of nutrients and other contaminants such as heavy metals, pathogens and harmful organic compounds, thus meeting both regulatory and ecological requirements;
- Impede water flow during high rainfall events, thereby reducing the potential impacts of flooding whilst also providing storage of water for use;
- Facilitate de-watering, composting (fungal and bacterial) and re-use of accumulated detritus and organic matter;
- Reuse intercepted water from different sources and at selected stages in the ICW treatment-train (whether; municipal, industrial or agricultural, etc.);
- Support biodiversity through the reanimation of habitat-infrastructure;
- Interface and facilitate other land uses; agricultural, forestry and fishing enterprises;
- Sustain long-term in situ sequestration of carbon-C, phosphorus-P and nitrogen-N;
- Advance education, amenity and recreational use.

The issue of water quality cannot be dealt with in isolation from the range of other inter-related factors and land uses impacting on our environment. In order to ensure a strategic approach to dealing with these issues, the NI Executive should develop a land strategy for Northern Ireland¹⁰. Such a strategy would have direct relevance to water quality and would ensure this issue is being addressed in a holistic manner. Furthermore, the devolved administration should seek to develop and deliver a 25 Year Plan for the Environment to complement the overall policy direction being

¹⁰ http://www.nienvironmentlink.org/cmsfiles/Towards-a-Land-Strategy-for-NI_2015-Main-Report.pdf

followed across the UK and ensure that Northern Ireland is not left behind in the delivery of a 'green Brexit'.

WFD statistics Report:

<https://www.daera-ni.gov.uk/sites/default/files/publications/doe/water-report-ni-wfd-statistics-october-2015.pdf>

http://ec.europa.eu/environment/archives/water/implrep2007/pdf/EU%20pressures%20and%20measures_Task_4b_Final%20report.pdf