Sustainable Water Network (SWAN)

Agri-Food Strategy to 2030

- Response to Public Consultation -

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1. Introduction to SWAN

The Sustainable Water Network (SWAN) is an umbrella network of 24 of Ireland's leading environmental NGOs, national and regional, working together to protect and enhance Ireland's aquatic resources through coordinated participation in the implementation of the Water Framework Directive (WFD), Floods Directive, Marine Strategy Framework Directive (MFSD) and other water-related policy and legislation. SWAN member groups are listed in Appendix I. SWAN has been actively engaged in Water Framework Directive (WFD) and other water policy implementation at both national and River Basin District (RBD) level since 2004, responding to water-related public consultations and representing the environmental sector on the Irish Water Stakeholder Forum, the National Rural Water Services Committee, the Public Water Forum and the National Water Forum. In 2012 SWAN published the report '*The Common Agricultural Policy (CAP): Interactions with the Water Framework Directive (WFD) and implications for the status of Ireland's waters*'. SWAN has responded to the last 3 reviews of the Nitrates Action Plan in 2017, 2013 and 2010.

2. Overall Comment: Agriculture to 2030 and achieving Nitrates Directive and WFD compliance

SWAN welcomes the acknowledgement in the consultation document that *"Agriculture, along with domestic wastewater discharge, is .. one of the primary reasons for not meeting water quality objectives."* However, this is somewhat misleading: It is clear from the 2018-2021 River Basin Management Plan that agriculture is, in fact, <u>by far the most prevalent pressure on the water environment</u>. Through the detailed catchment characterisation undertaken by the EPA, agriculture "*has been identified as a significant issue*" in 67% of 'At Risk' river and lake waterbodies and 53% of waterbodies overall (incl. coastal waters and groundwater). Urban wastewater, combined with domestic wastewater, on the other hand, poses a pressure in only 31% of At Risk waterbodies. There is a significant difference, therefore, between the threat posed by agriculture to water in comparison with the next biggest pressure. This should be more accurately articulated in the consultation document.

Furthermore, it is misleading to say that *"..food production **can** be a source of water and air pollution.."*, when it demonstrably <u>is</u> a source of such pollution, as evidenced by the characterisation work cited above and more recent catchment assessment work of the Local Authorities Water Programme.

It is clearly stated in the consultation document for the 2019 Nitrates Derogation Review [1], *"..there was no overall improvement in water quality over the first river basin cycle (2009-2015).."* and the recent EPA Water Quality Indicators report[2] reports *".. a **3% reduction in river water quality since 2015**"* and *"an increase in the percentage of sites with higher phosphorus concentrations that could lead to pollution, from 26.6% to 37.2% ..."* Map 5 in this report shows **upward trends in phosphate concentrations** at river

[1] Government of Ireland (2019) Public *Consultation 2019 Nitrates Derogation Review*. Dublin

[2] O'Boyle, B. & Trodd, W. (2018) *Water Quality in 2017: An Indicators Report*. EPA, Wexford

sites[3] in counties such as Cork and Waterford which SWAN understands coincide with an increased concentration of derogation farms. In addition, Map 11, illustrating winter dissolved inorganic nitrogen levels in estuarine and coastal waters 2015–2017, clearly shows exceedances, again on the South Coast. These trends raise significant concerns regarding the link between the targets of FoodWise 2025 and the recent downturn in water quality. Until this link has been further explored, claims of sustainability of the current food model are baseless in relation to water quality.

3. No evidence that Nitrate Derogation conditions constitute effective measures for prevention of agricultural water pollution

The claim of environmental sustainability in relation to water can only be made for the current agriculture model, when evidence is presented that the nitrates derogation - which facilitates dairy intensification - does not constitute a threat to water, nor a threat to achieving compliance with the WFD. No such evidence has been furnished by industry of DAFM and, in fact, much Teagasc research points to the contrary. (See below). The key question in relation to FoodWise2025, and the associated increasing application of the nitrates derogation, is compromising the quality and status of water bodies in the catchments of derogation farms. To be more specific, the following questions need to be clearly and transparently answered by DAFM:

- What impact, if any, has the application of derogations had on water quality in the catchments of derogation farms to date?
- Where are the derogation farms and how is this broken down by county and catchment?[4]
- What impact will the further expansion in derogation farming have on the state of Ireland's waters generally, and on the status of water-bodies in catchments of derogation farms?
- Does the granting of the derogation have an impact on the meeting of Nitrates Directive and Water Framework Directive (WFD) obligations?
- How is nutrient loss from derogation farms prevented when no consideration of physical and hydrological conditions, nor transport interception measures, are included in derogation stipulations?

In SWAN's view there are three significant weaknesses in the system in place to control water pollution from the current agricultural system:

3.1 Inadequate monitoring, at sufficient scale, of intensive (derogation) farms and adjoining water bodies

Article 8 of the Implementing Decision requires that "*The competent authorities shall monitor soil, surface water and groundwater …. at farm field scale..*". It further requires that they *"..conduct reinforced water monitoring in agricultural catchments located in proximity to the most vulnerable water bodies."* and that

[3] for the period 2007–2017

[4] SWAN notes that the Commission Implementing Decision requires the generation of such data, including in map form

"Information and data collected from nutrient analysis … be used for model-based calculations of the magnitude of nitrate and phosphorus losses from grassland farms covered by authorisations".

While trends are emerging, SWAN does not believe that current water quality monitoring carried out by the EPA and Local Authorities is at a sufficient spatial and temporal scale to determine whether there is an impact on water quality and WFD status from the nitrates derogation. In other words, we do not have the information we need to determine whether or not the application of the derogation is compromising WFD obligations and causing water pollution. This information must be attained, made publicly available and closely analysed as part of the derogation review.

3.2 No consideration of nutrient pathways, lack of integration with EPA water risk assessments and no measures proposed to address losses at local level

To assess the adequacy of management controls / measures on agricultural water pollution, it is necessary to look at the effectiveness of the GAP Regulations in protecting the aquatic environment, under the requirements of the Nitrates Directive and the Water Framework Directive (WFD). Two significant state-sponsored monitoring and research programmes[5] were developed to do exactly this, and both have found that the Nitrates Regulations are insufficient to protect water from agricultural impacts under FoodWise 2025. This applies equally to the nitrates derogation because it is based on the same nutrient management system: The assessed risk of nutrient loss from soils to water from derogation farms is based almost entirely on soil phosphorus levels measured by the standard soil Phosphorus test, which was developed as an agronomic indicator of P requirements for crop growth and not for assessing the desorption of phosphorus from soils. Over time, it has come to be used to indicate risk of P loss from agricultural areas;[6] however, as indicated by Irvine & Ní Chuanaigh,[7] *"The adequacy of soil index 3 as a reasonable threshold to be used for the protection of surface and groundwaters is unproven"*. The lack of linkage between Soil P and water quality is also highlighted in the Natura Impact Statement For Ireland's Nitrates Action Programme[8].

Critical Source Areas, not Soil P thresholds, must be at the centre of a new strategy to manage agricultural water pollution, including on derogation farms.

The current measures in the Regulations and in the derogation conditions aim to reduce the risk of diffuse nutrient loss to water by primarily setting phosphorous input limits, linked to livestock units and based on the soil P index, while allowing soil phosphorus levels across all catchments to increase to Index 3, and indeed to Soil P 4 in certain conditions. **A significant omission from the derogation conditions is any consideration of pathway risks.**

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[5] EPA Catchment Characterisation Programme (and associated EPA Water Quality monitoring) and Teagasc Agriculture Catchments Programme

[6] Daly, K. (2005) 'Evaluating Morgan's Phosphorus Test as an Environmental Indicator'. Teagasc - Project Report - 4976

[7] Irvine, K. and Ní Chuanigh (2011) Management Strategies for the Protection of High Status Water Bodies: A Literature Review. STRIVE Report (2010-W-DS-3). Environmental Protection Agency, Wexford.

[8] Government of Ireland (2018) *Natura Impact Statement For Ireland's Nitrates Action Programme*. Dublin

Transfer pathways have been highlighted as a major factor in determining the risk of nutrient loss to waters by research over many years by both the EPA and Teagasc.[9,10] There is a high risk of nutrient loss from agricultural soils when pressures from nutrient sources coincide with pathways of nutrient transfer. Nutrient source pressures and transfer pathways vary considerably throughout different catchments and regions of the country[11] and Archbold *et al.*[12] have defined hydrological pathway categories for the Irish landscape. Nitrate is highly mobile in soil water and is typically leached from a surface source to groundwater and enters a waterbody via subsurface pathways. This occurs in free-draining soil. [13] On the other hand, Phosphorus transfer pathways are dominated by overland flow on poorly draining soil, but may also leach into groundwater, and are very much dictated by diffuse sources from rainfall-events.[14,15] Transfer pathways within a catchment depend on soil permeability and geology. In a study of five Irish catchments of varying soil type and P and N transfer risk, significant differences were found in P attenuation and loss between catchments.[16] The less intensive catchments that had a lower proportion of Index 4 fields, and which therefore may be considered less risky, in conjunction with their soil hydrology properties actually posed a greater risk to waterbodies.[17] The catchments with permeable soils were dominated by subsurface N transfer pathways and those of poor-moderate drained soils were characterized by near-surface and surface P pathways.[18] Interestingly, the ACP Report states that *"A grassland catchment with a flashy hydrology had three times higher annual P loss than an arable, mostly groundwater fed catchment despite the latter having higher soil P sources prone to losses."* [19]

EPA peer-reviewed research, published as part of their catchment characterisation work (Deakin et al., 2016),[20] concludes that "*achieving successful WFD outcomes depends on having a site-specific, three-*

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[9] Archbold, M., Bruen, M., Deakin, J., Doody, D., Flynn, R., Kelly-Quinn, M., Misstear, B. and Ofterdinger, U. (2010) *Contaminant movement and attenuation along pathways from the land surface to aquatic receptors-a review*. STRIVE Report No. 56. Environmental Protection Agency, Wexford.

[10] Teagasc (2017) Agricultural Catchments Programme Phase 2 Report. Teagasc, Wexford

[11] Archbold, M., Bruen, M., Deakin, J., Doody, D., Flynn, R., Kelly-Quinn, M., Misstear, B. and Ofterdinger, U. (2010) *Contaminant movement and attenuation along pathways from the land surface to aquatic receptors-a review. STRIVE Report No. 56*. Environmental Protection Agency, Wexford.

[12] ibid

[13] Jiao, P., Xu, D., Wang, S., Wang, Y., Lin, K., and Tang, G. (2012) 'Nitrogen loss by surface runoff from different cropping systems'. Soil Research. 50: 58-66.

[14] Jordan, P., Arnscheidt, A., McGrogan, H. and McCormick, S. (2007) 'Characterising phosphorus transfers in rural catchments using a continuous back-side analyzer'. Hydrology and Earth System Sciences. 11(1): 372-381.

[15] Jordan, P., Melland, A.R., Mellander, P.E., Shortle, G. and Wall, D. (2012) 'The seasonality of phosphorus transfers from land to water: Implications for trophic impacts and policy evaluation'. Science of the Total Environment. 434: 101-109.

[16] Wall, D.P., Murphy, P.N.C., Melland, A.R., Mechan, S., Shine, O., Buckley, C., Mellander, P.E., Shortle, G. and Jordan, P. (2012) 'Evaluating nutrient source regulations at different scales in 5 agricultural catchments'. *Environmental Science and Policy*. http://dx.doi.org/10.1016/j.envsci.2012.06.007.

[17] ibid

[18] Mellander, P.E., Melland, A.R., Jordan, P., Wall, D.P., Murphy, P.N.C and Shortle, G. (2012) 'Quantifying nutrient transfer pathways in agricultural catchments using high temporal resolution data'. Environmental Science and Policy. http://dx.doi.org/10.1016/j.envsci.2012.06.004.

[19] Teagasc (2017) Agricultural Catchments Programme Phase 2 Report. Teagasc, Wexford

[20] Deakin, J., Flynn, R., Archbold, M., Daly, D., O'Brien, R., Orr, A., and Misstear, B. (2016) Biology and Environment: Proceedings of the Royal Irish Academy, Vol. 116B, No.3 pp. 233-243

dimensional understanding of contaminant transfer pathways" and that "*Where P is the limiting nutrient, as it is in the majority of Irish freshwaters, reducing the diffuse source load as a measure on its own is unlikely to result in improved water quality outcomes".* This paper also concludes that *"One of the key principles adopted for the river basin management planning process in Ireland, moving into the second cycle, is* ***putting 'the right measure in the right place'*** *… Characterising the nature of the hydro(geo)logical pathway linkages, and the nature of that pathway, provides a critical part of the evidence base for selecting the most effective measures."* (SWAN's emphasis). Supporting this, Shore et al[21] states that ***"Identification of surface hydrological connectivity at scales where critical source areas (CSAs) can be managed is fundamental to achieving effective management of phosphorus loss in agricultural catchments."*** (SWAN's emphasis)

From the above research it is clear that **interception of the nutrient transport pathway must be central to mitigating nutrient loss and controlling pollution from derogation farms**. It also shows that the pressure (or livestock units (LUs)) is not the primary driver in areas susceptible to P loss, again highlighting the fact that the nitrates derogation, which is based on LUs, will not adequately deal with the impact on water bodies of phosphate arising from farming and that mitigation measures need to focus on pathway interception, particularly in the CSAs or 'hot spots' for phosphate runoff. It is crucial that a means of implementing such measures is developed and implemented, and that this must not rely solely on voluntary initiatives in selected catchments.

The EPA Catchments Unit has developed two extremely pertinent maps that show the susceptible areas and the critical source areas for phosphate loss to surface water: the Susceptibility of Surface Water Impact by Phosphate maps and Pollution Impact Potential Maps (PIP) for Phosphate to Surface Water. These provide robust information on the potential CSAs at sub-catchment scale which should be used to make the Nitrates Derogation much more effective. This is supported by the NAP SEA[22] which recommended that *"..the Teagasc online NMP system is updated to link with the EPA's WFD web Application.."* to facilitate *"..detailed assessment"*.

The EPA characterisation process has also generated maps of 'At Risk' waterbodies, which are included in the WFD App. and SWAN believes that the Nitrates Derogation should take account of this and impose more stringent requirements on derogation farms in the catchment areas of At Risk water bodies, where land has been assessed as susceptible to nutrient loss.

It is also important to acknowledge that **very intensive farming (≥171 kg) may well not be feasible in areas of high P susceptibility, even with mitigation measures, and that certain sub-catchment areas may need to be zoned ineligible for derogation farming.**

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[21] Shore, M., Murphy, P.N.C., Jordan, P., Mellander, P-E., Kelly-Quinn, M., Cushen, M., Mechan, S., Shine, O., Melland, A.R. (2013). Evaluation of a surface hydrological connectivity index in agricultural catchments. Environmental Modelling and Software. 47, 7-15.

[22] Government of Ireland (2018) *Strategic Environmental Assessment Statement For Ireland's Nitrates Action Programme*. Dublin.

3.3 Excessive nutrient input nationally, regardless of individual on-farm efficiencies & mitigation measures

Regardless of on-farm efficiency and local conditions, it must be ensured that the absolute input of nutrients nationally - then reflected in the volume of manure from the national herd - does not exceed that which can be safely land-spread in a way that does not cause water pollution or environmental damage. When taking into account the 'assimilative capacity' of the area of land available for land-spreading, excluding the proportion which is unsuitable due to nutrient loss susceptibility, there is no evidence that the volume of manure to be produced nationally under FoodWise 2025 is environmentally sustainable from a water quality / WFD perspective.

On-farm best practice techniques are subsidiary to this fundamental issue. The effectiveness of on-farm technical solutions will be limited if taking place within a flawed system where there is a fundamental mis-match between the volume of organic nutrients in the form of slurry and the ability of the national agricultural land-bank to take it up.

4. Responses to consultation questions

4.1 Question 1: How important has Food Wise 2025 and previous strategies been in providing strategic direction for the agri-food sector? How do you think it could be improved in the new strategy?

Food Wise 2025 (FW2025) has been instrumental in driving the economic direction for the agri-food sector, and the resultant significant expansion in the dairy industry, with significant indications that it is linked to water quality declines and no evidence provided that it is anything other than a significant threat to the water environment, as outlined in detail above.

It is of concern to SWAN that FW2025 was developed with limited involvement of smaller farmers and civil society. While the current consultation is to be welcomed, SWAN strongly urges DAFM not to repeat this mistake and not to disregard the submissions of environmental organisations as it has done in the past, most recently in the review of the nitrates derogation. It further strongly recommends a comprehensive programme of public engagement in the development of the agri-food strategy to 2030.

4.2 Question 2: Do you think that the five cross-cutting themes (environmental sustainability, human capital, competitiveness, innovation and market development) should continue to feature in the next strategy? Are there alternative approaches or themes that you would suggest?

We strongly recommend that these themes be restructured in a tiered way, with environmental sustainability as the foundation, without which social and economic development can never be sustainable. We further recommend a dedicated theme of High Nature Value farming, with a sub-theme related to farming which supports the protection of high status waters under the WFD.

4.3 Question 3: What do you think should be the absolute priority for the agri-food sector strategy to 2030?

The priority for Ireland's agri-food strategy to 2030 must be the limitation, below a certain threshold, of nitrogen and phosphorous inputs to agriculture and the prevention of water pollution, biodiversity loss and greenhouse gas emissions derived from agriculture. In relation to water, the meeting of WFD objectives for all waters in agricultural catchments must be priority between now and the directive's deadline, 2027.

4.4 Question 4 : Do you agree that these are the most important challenges and emerging trends for Irish agri-food in the period to 2030? Are there others that should be considered?

Biodiversity loss, climate change and water pollution are the biggest challenges for Irish agriculture, for the Irish State, and globally. It is unacceptable that the current agriculture system is disproportionately contributing to all three in Ireland.

4.5 Question 5: What do you think could be done to improve resilience to risks across the sector, from 'farm to fork'?

It is imperative that the current focus on increasing intensification, especially in the dairy and meat sectors be reversed. In order to ensure resilience, agriculture in Ireland must be diverse and respond to global consumer demand for plant-based foodstuffs. Further, it must reward farmers who deliver ecosystem services through high nature value farming, which also protects water.

4.6 Question 6: What do you think the vision for the sector to 2030 should be?

A resilient system, which puts the protection of the natural environment at its core, in line with the recommendation of the Joint Oireachtas Committee on Climate Action (JOCCA) for *'a more diversified, resilient, sustainable and equitable model for Irish agriculture'*. We further recommend a specific focus on the protection of high status waters.

4.7 Question 8: What do you think would be the key words that you would wish to associate with the agriculture, fishing, forestry and food sector in 2030?

High nature value; resilient; diverse; environmentally sustainable; water-friendly.

4.8 Question 9: What can be done to improve the extent and rate of uptake of practices that improve water and air quality, mitigate greenhouse gas emissions and protect biodiversity? What are the barriers to uptake of those practices?

- Reform the CAP so as to support nature, climate and water-friendly farming and disincentive farming systems which currently constitute the biggest threat to the water environment, as

described in detail above: Agricultural subsidies must represent money for public goods, with results based payments.

- Provide free advisory services from qualified agri-environmental experts (not agricultural advisors with limited training in environmental science) to farmers;
- More effective enforcement of water pollution regulations

The barrier is substantial incentivisation, through the public purse, of environmentally damaging farming practises through CAP payments.

APPENDIX I

SWAN Member Organisations

SWAN National Groups		SWAN Regional & Local Groups	
1.	An Taisce	14.	Carra Mask Corrib Water Protection Group
2.	Bat Conservation Ireland		
3.	Birdwatch Ireland	15.	Cavan Leitrim Environmental Awareness Network
4.	Coastwatch Europe Network		
5.	Coomhola Salmon Trust Ltd.	16.	Celebrate Water
6.	Eco-UNESCO	17.	Cork Environmental Forum
7.	Friends of the Earth	18	Cork Nature Network
8.	Friends of the Irish Environment	19	Dodder Action
9.	Irish Peatland Conservation Council	20.	Longford Environmental Alliance
10.	Irish Seal Sanctuary	21.	Macroom District Environmental Group
11.	Irish Whale and Dolphin Group	22.	River Shannon Protection Alliance
12.	Irish Wildlife Trust	23.	Save The Swilly
13.	Voice Of Irish Concern for the Environment (VOICE)		
		24.	Slaney River Trust

APPENDIX II

SWAN Board of Directors

SWAN Board of Directors:	
Mark Boyden, Chair	Coomhola Salmon Trust
Mindy O'Brien, Vice Chair	VOICE
Karin Dubsky, Director	Coastwatch Europe
David Healy, Director	Friends of the Irish Environment
David Lee, Director	Cork Environmental Forum
Elaine McGoff, Director	An Taisce
Gerry Siney, Director	River Shannon Protection Alliance