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Ulster Wildlife Response to the Consultation on the Draft Ammonia Strategy for Northern Ireland

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Chapter 3.1 Question 1. What are your views on the Northern Ireland 2030 targets outlined in the 3.1 Targets section?

Setting targets based on % reductions may not lead to desired outcomes as they depend on baseline levels only. Ulster Wildlife would prefer to see more bespoke targets based on critical loadings. Some key designated sites have such a high loading currently that even a 40% reduction might still result in depositions which will continue to cause vegetation damage and loss of habitat quality. If a more bespoke target was set for these areas, the resources and actions outlined in this report could be concentrated and targeted to within 2km radius of those sites.

Chapter 3.2 Question 2. What are your views on the proposed pillars of the ammonia strategy

We are content with the proposed pillars

Chapter 3.2 Question 3. What are your views on how DAERA will enable this strategy?

Ulster Wildlife feels the strategy needs more force behind its implementation and delivery than the term *support* implies. Ammonia reduction is such a critical matter for environmental and human health (see our answer to Q21) that farmers should be more aware that implementing these measures is crucial and that they must be given utmost priority if enforcement is to be avoided. Even in the absence of legislative authority from Stormont, the Department should proceed with worked-up proposals and actions so they will be ready to implement these without any further delay should the opportunity arise.

Farmers should also be made more aware of the direct impact high levels of ammonia has on their health. We are aware that there are no specific statistics held on farmer health, including the effects of ammonia in the short and long term. We encourage the Department to work with the PHA and Rural support to put in place the necessary mechanisms to record these data.

Chapter 4.1.1 Question 4. Do you have any comments on the proposals for low emission livestock housing?

The proposals are supported but if they are to have any appreciable effect, even in the short term, the cost and speed of retrofitting will be slow and prohibitive. Low emission housing design and construction must be compulsory for new builds. More encouragement and support needs to be provided for retrofitting. Farmers must be supported during retrofit and when they empty houses.

Chapter 4.1.2 Question 5. Do you have any comments on the proposals for emerging technologies?

Supported but the benefits from product development are too far down the line to make much impact by 2030.

Chapter 4.1.3 Question 6. Do you have any comments on the proposed additional progression point in the move towards LESSE adoption requiring slurry which is being exported between farms to be spread by LESSE from 1st January 2025?

We strongly support the implementation of trailing shoe/trailing hose and dribble bar spreading technology. The proven increased efficiency in nitrogen recovery from injected /LSSE can permit reductions in applied nitrogen fertiliser usage with concomitant reductions in nutrient leakage and water quality improvement.

Chapter 4.1.3 Question 7. What are your views on the proposal to require all slurry to be spread by LESSE by 2026?

Ulster Wildlife supports the use of LESSE for slurry spreading. However the cost of LSSE implementation will cause difficulties for small drystock farms, particularly in marginal/hilly areas and on land with over 15% slope. These farms make a significant contribution to the grass-based suckler beef industry and are the backbone of the rural community across most of Northern Ireland. Hence to take this forward it will largely be a contractor operation. If most farmers are going to be tied into contractors for their slurry spreading, this will remove the opportunity to follow good agricultural practice regarding slurry application and use (as in DAERA's Code of Good Agricultural Practice for the Reduction of Ammonia Emissions -p16).

Hence Ulster Wildlife encourages support for technology developments in the area of modifications for smaller tankers and slurry separation. For example there is currently a retrofit package available (c10k) to suit a 1350 gallon tanker. Whilst most smaller tankers have a 1150 gallon capacity, this is not a major increase in size. It should be noted that in the ROI, adaptations is currently grant funded at 60%.

Current research (from Germany) shows that there is only a marginal advantage (6% Nitrogen losses after application) in using a trailing shoe (TS) over a dribble bar (DB) LESSE method. However when other factors are taken into consideration:-

- the Trailing Shoe is 300kg heavier than the Dribble Bar
- the Trailing Shoe has a 20HP greater tractor requirement than the Dribble Bar
- The Trailing Shoe is less easy to fit and the additional weight is unbalanced on smaller tankers and tractors
- at current prices the Trailing Show costs approx. £7400 more to fit than the Dribble Bar

The Department should not base their support position on such a marginal advantage in performance and should prioritise their support recognising the particular need to retain a viable, environmentally and economically sustainable beef and sheep industry, largely dependent on smaller farms. The suitability of the Dribble Bar system may facilitate its uptake on many more farms than the Trailing Shoe system and help address the problem of dependence on contactors and promote concomitant adherence to Good Agricultural Practice as outlined above. Despite this, we note that DAFM plans to grant aid the Trailing Shoe and exclude the Dribble Bar in the first round of the of the On-Farm Capital Investment Scheme (which replaces the current TAMS-Targeted Agricultural Modernisation Scheme). This move is already causing considerable farmer discontent and DAERA should note the reaction and try and get farmer buy-in wherever possible in implementing the measures proposed in this consultation.

We also recommend that the Department consider measures such as supporting machinery rings and co-operative practices with shared equipment for smaller farms. In such a situation, the cost advantage of the DB over the TS might lead to more LSSE machines being available for use and thus achieving greater value for money invested.

To avoid the measured spikes in slurry application around the opening/closing date mechanism currently in place, we recommend a more flexible system of approval for application based on weather condition and soil type be implemented. This would also enable more nutrients to be recovered and more climate resilience to be built into the system.

Chapter 4.1.4 Question 8. Do you have any comments on the proposals to encourage implementation of longer grazing seasons?

Ulster Wildlife strongly supports this measure. While recognising the ease of management for stock movement and milking and the simplicity of straight fertiliser -based grassland production from zero grazing i.e. permanently housing animals, we are opposed in principle to this practice and therefore support the implementation of longer grazing seasons. We

have particular concerns about the practice of zero grazing from standpoints of: animal welfare; animal health; gaseous emissions management; grassland management – increasing sward diversity, particularly encouraging more widespread use of legumes and other species is dependent on rotational grazing systems; public perception of farming. As 61% of ammonia emissions come from the management and spreading of slurry and 6% from grazing livestock, the longer animals are able to be kept outdoors the better.

The practice also fails to take account of predicted change in weather patterns against the broader picture of climate warming. For example increased summer heat stress on animals, the carbon footprint of frequent cutting of grass-often involving significant heavy vehicle transport for increasing distance from the livestock housing and associated fuel usage. If the practice continues to expand, it will further exacerbate the ammonia problem and act against the reduction measures being implemented. We also draw attention to the point made in the response to question 12 regarding the proven benefit of extended grazing season from silvopastoral systems. A relative small area of silvopasture on farms saved for late autumn or early spring grazing could significantly extend the period animals can remain grazing. We would encourage the Department (particularly CAFRE) to include a better understanding of soil management into its educational and training courses.

Chapter 4.1.5 Question 9. Do you have any comments on how to reduce ammonia emissions from chemical fertiliser, including the potential introduction of a prohibition on the use of unprotected urea fertiliser?

Ulster Wildlife supports all moves leading to a reduction in the use of chemical fertiliser and a greater awareness of, and encouragement for, measures that focus on soil health and biological regeneration of soil fertility. These include more emphasis on the use of rotational grazing based on herbage regrowth condition (rather than simply daily targets), legumes and mixtures of grass and herbs with different rooting patterns and seasonality and quality of production than perennial ryegrass and the use of precision farming techniques to maximise the efficiency of applied nutrients. We also recognise the value of urea fertiliser and the move towards regenerative farming will be slow, not suit all farmers but will eventually be driven by increased costs and, in the case of phosphate, decreased availability of phosphatic fertilisers (it is recognised that mineral phosphatic mining has now passed “peak production”) of raw materials in fertiliser production. Hence, while urea use continues, we support the use of the protected form of urea.

Chapter 4.1.6 Question 10. Do you have any comments on the proposals to reduce crude protein levels in livestock diets?

We strongly support this measure through a combination of a reduction in imported feed usage and increased reliance on grass-based production. This would result in a gradual increase in arable cropping to produce protein and carbohydrate crops for local livestock

consumption. Climate change predictions are for conditions more favourable to diverse arable production so this measure will lead to more climate resilience and lower gaseous emissions (particularly methane and ammonia) from livestock production. Arable soils are already very low in carbon, so adoption of minimum tillage, improved varieties, more hedges and green manuring rotations can mean that such a shift in production will have minimal negative effect on carbon emissions from farming generally. Any emissions will be more than offset by gains in food security and sovereignty and the overall benefits decreased numbers of livestock will bring. There will be no need for decreases in individual animal output or performance. We appreciate there may be a conflict of policies within this approach and we would encourage the Department to look more closely at cross-policy linkages. We recommend that an all-Ireland approach be taken to some of these wider issues of food security and regionality of climate change impact predictions.

Chapter 4.1.7 Question 11. What are your views on the proposals relating to improving feed efficiency through genetic improvement?

Ulster Wildlife is supportive of this research which will help ensure that those livestock kept specifically for production will be growing and producing as efficiently as possible. We urge caution however in selection of the targets and traits which breeding programmes are based on and feel that basing genetic improvement on feed conversion of cereal and high protein diets alone could have adverse repercussions. Animals should be selected for higher grazed and conserved forage feed ratios. This would be more environmentally sound, would encourage the use of more home grown forage diets and hence the higher ratio of grass in the diet. Any move away from this direction runs the risk of adverse criticism of the farming industry and the image it wishes to create of grass fed meat from a clean green source. There are good examples in England where cattle are being finished at 22 months off a grass based system, with the correct genetics.

We are also very cognisant of the need to retain livestock which have particular value for conservation grazing. The benefits of lower-productivity animals, often of native breeds adapted to our climate and vegetation to manage habitats for their biodiversity value is well proven.

Chapter 4.1.8 Question 12. What are your views on the proposals to encourage tree plantations around livestock housing?

Ulster Wildlife strongly supports this nature-based proposal and draws attention to the Department's own estimate of the significant reduction in emissions this can bring (15-20%). As well as recognising the ammonia capture from trees planted around buildings, we encourage further research into planting design and management of these trees. Extending the concept, we would highlight the agroforestry research programme based at Loughgall which has shown that planting wide spaced trees into pasture can be associated with high levels of grass production, animal output, carbon sequestration, welfare- friendly animal performance and significant extensions in the grazing season (14-17 weeks after trees are

about 14 yrs old from one local example). These benefits, particularly the latter, when combined with this proposal to encourage more densely planted trees around livestock housing and other spatially planned /targeted benefits eg linear features around waterways, hedges and other habitats which can help deliver Nature Recovery Networks, have the potential to reduce ammonia emissions by a highly significant amount while delivering the range of ecosystem services outlined in our reply above (Bealey et al 2014).

We draw the Department's attention to the 5 and 10 year duration of various tree planting support measures. These are too short to encourage farmers to into measures such as this which require a long term commitment from **both** parties.

We encourage the Department to use the results from the current ongoing Soil Nutrient Health scheme and build in the Lidar surveys and carbon measurements to the Ammonia Strategy, particularly in relation to bespoke targeting and buffer creation to incentivise and promote further tree planting on farms (i.e. policy linkages).

Chapter 4.1.9 Question 13. What are your views on how to encourage the safe covering of existing above ground slurry stores and lagoons?

Given the high ammonia emissions from above ground stores (as opposed to below ground tanks) as far as possible within the grounds of human health and safety, we would encourage retrofitting of some form of safe covering on existing above ground tanks (bearing in mind the resource implications given approx. 80% of above-ground stores are currently not covered) and on all new ones. The resource allocated to this measure must reflect the prediction that it will only lead to a 1% overall agricultural emissions reduction and other measures have the opportunity to deliver greater value for money.

Chapter 4.2.1 Question 14. What are your views on DAERA's plans to support ammonia reduction measures through Green Growth and future agricultural policy?

We recognise the linkages shown by the Department between its ammonia strategy and green growth capital proposals. We support these but urge that sufficient capital allocation is made available to implement them. To reiterate the point we have made in our answer to Question 3 – "Ulster Wildlife feels the strategy needs more force behind its implementation and delivery than the term *support* implies. Ammonia reduction is such a critical matter for environmental and human health (see our answer to Q21) that farmers should be more aware that implementing these measures is crucial and that they must be given utmost priority if enforcement is to be avoided."

Chapter 4.2.2 Question 15. What are your views on DAERA's plans for knowledge transfer and education on ammonia reduction?

We fully support these, particularly the desire to work with the private and voluntary sectors and the need to ensure that ammonia science, management and reduction is built into CAFRE educational programmes and science courses taught in schools and universities.

Chapter 4.2.3 Question 16. What are your views on the proposals for spatially targeted measures around designated sites?

Ulster Wildlife is committed to a landscape scale approach, in delivering nature recovery networks. Hence we are implementing "Nature Recovery Zones" around our key reserves by engaging and collaborating with surrounding landowners/managers to buffer our nature reserves. These buffer zones should be implemented around all designated sites. We define these areas as "areas surrounding core areas that serve to protect them from the effects of any damaging external activities. These areas should aim to reconcile biodiversity conservation and economic activities, compatible with the protection of the core area they surround"

However we do not feel it is necessary or appropriate to have a blanket 50m exclusion zone around all designated sites. There is a clear gradient of sensitivity and risk to designated sites and this should be drawn up to reflect the need for and recommended width of, an exclusion zone. Given that all slurry will be spread by LSSE by 2026, this will further minimise the risk to sensitive sites and make a 50m exclusion band excessive and unnecessary on many sites. Such a move would greatly ameliorate farmer resistance to this regulation and deliver better buy-in by the industry. If this were acceptable to the Department, we welcome the Department's commitment to making the appropriate advisory and financial resources to support the establishment of a site-specific targeted approach to buffer zone width. We support the measures but would particularly encourage the Department to start encouraging the regulation of spreading on a bespoke, tailored basis, of all Natura 2000 designated sites by Jan 2024 rather than 2025, even if only starting the run-in and build-up period earlier. It is clear from at least one farmer consultation event attended that working with and supporting farmers on this measure should be given a very high priority and started as soon as possible.

While we appreciate that some progress can be made in the absence of legislative backing for Ammonia Reduction strategies, there will be ongoing issues over the funding allocations. Hence we encourage the Department to continue with implementing the measures in the report and have shovel-ready schemes and policies in place ready to be implemented once the political and financial barriers are lifted.

Chapter 5.5 Question 17. What are your views on the proposed conservation actions to restore habitats and support sustainable development?

Ulster Wildlife strongly supports these measures as outlined in Pillar 2. We would particularly encourage the Department to recognise, consult with and consider the recommendations of

the substantial body of experience and knowledge which currently exists within the environmental NGO sector.

We welcome the Department's linking of the Ammonia strategy to the Peatland strategy but would like to see firm, costed commitments to delivery in this area. Likewise, we fully support proposals to build ammonia reduction measures and Critical Levels and Loads considerations into SAC Conservation Management Plans as outlined. We strongly encourage the development of such plans with ROI counterparts. We encourage the Department to fully consult with the environmental NGO sector which has a wealth of knowledge in this area. In this context there are a number of successful examples of EIP project examples in ROI embracing carbon sequestration and retention and water quality and linking these to habitat quality and enhancement-all of which are tied in with impact of ammonia emissions. Prioritising funding for peatland restoration will directly help ameliorate the impact of ammonia deposition on these habitats.

Chapter 5.5 Question 18. What are your views on the appropriate delivery and funding mechanisms to deliver habitat restoration?

Ulster Wildlife agrees with the Department's proposals to support landowners and the necessary conservation actions to restore habitats. We feel that further resource needs to be allocated to training in the area of advice on habitat restoration (for example as delivered by the Scottish Government in its Crichton Carbon Centre).

Chapter 6.1 Question 19. Do you have any comments on what evidence or issues should be considered when assessing these impacts?

When discussions are further developed on how these can be built into Agri-environment measures and what delivery mechanism to adopt, our strong recommendation is that any new AE measure should be developed on a partnership basis, involving the landowner at all stages to deliver a bespoke, outcomes based scheme. Targets can be set around ammonia reduction and habitat restoration. There are good examples of appropriate scorecards from EIP projects in Ireland e.g. the Freshwater Pearl Mussel project.

In identifying solutions, the potential contribution of wet woodland creation on peat soils should be considered. As the peat soils will be in close proximity with peatlands impacted by ammonia, the one intervention of land use change could make a significant contribution to both ammonia and carbon reduction strategies. This should be adequately incentivised through agri-environment schemes.

Chapter 6.2 Question 20. What are your views on how DAERA should work with stakeholders to inform the direction and delivery of the strategy, and the detail of the various measures?

The Department should be willing to adopt a partnership approach. It should also consider the model of the EFS Group strategy. The outcomes of the training need to implement the Ammonia strategy and should not be assessed as merely a tick-box exercise. The adoption of an Integrated solution focus should be made clear and stressed by the Department in it's delivery of the Strategy.

Chapter 6.2 Question 21. Do you have any other comments or contributions on this document

Public Health implications

Ammonia enhances atmospheric reactions of sulphur dioxide and nitrogen dioxide, and leads to larger concentrations of those very damaging, minute particles. Prolonged exposure is associated with increased mortality from lung and heart disease and is also linked to conditions such as dementia. Across Northern Ireland as a whole, it has been projected (British Heart Foundation) that poor air quality leads to 500 premature deaths each year. Separate statistics for the farming community and those exposed to higher levels of Ammonia are not kept.

In a recent Teagasc comprehensive peer-reviewed analysis of the contribution of ammonia emissions from agriculture and their effect on fine particulate matter and subsequent contribution to human health Wyer et al, (2022 - funded by DAFM. Attached), concluded that " The potential direct impact of NH₃ on the health of the general public is under-represented in scientific literature, though there have been several studies which indicate that NH₃ has a direct effect on the respiratory health of those who handle livestock. These health impacts can include a reduced lung function, irritation to the throat and eyes, and increased coughing and phlegm expulsion. More recent studies have indicated that agricultural NH₃ may directly influence the early on-set of asthma in young children.

In addition to the potential direct impact of ammonia, it is also a substantial contributor to the fine particulate matter (PM_{2.5}) fraction where it accounts for the formation of 30% and 50% of all PM_{2.5} respectively. PM_{2.5} has the ability to penetrate deep into the lungs and cause long term illnesses such as Chronic Obstructive Pulmonary Disease (COPD) and lung cancer. Both premature deaths associated with the health impacts from PM_{2.5} and economic losses could be mitigated with a reduction in NH₃ emissions resulting from agriculture. As agriculture contributes to more than 81% of all global NH₃ emissions, it is imperative that food production does not come at a cost to the world's ability to breathe; where reductions in NH₃ emissions can be easier to achieve than other associated pollutants".

Central estimates of the fraction of mortality attributable to this type of anthropogenic particulate air pollution range from 2.5% in some local authorities in rural areas of Scotland and Northern Ireland, 3-5% in Wales and 8% in some London Boroughs (Gowers et al 2014) to Fine Particle Emission (PM 2.5). Air pollution causes 1,600 premature deaths in Ireland every year.

Ulster Wildlife is concerned that if the measures proposed in this strategy are proving to be insufficient to meet the reduction target, does the Department have any plans to enforce the regulations more rigorously? For example we feel that the public health implications of atmospheric ammonia have not been sufficiently publicised and when they are, there will be significant pressure on the farming community and the Department to adopt a much more rigorous and enforceable strategy. It would be prudent of the Department to take this on board at an early stage to pre-empt such pressure and the need to enforce more draconian measures. It is also important that farmers are aware of the direct risk to their personal health and we encourage the gathering of statistics on farmers (and their family's) health

Potential impact of Climate change considerations

The design of tree-based remedial measures needs to take projected increases in storminess and windspeeds into consideration. Milder, wetter winters may lead to more wet deposition. This needs to be factored in to medium and long-term reduction plans.

Supporting references.

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