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Permanent Secretary
Department of Agriculture, Environment and Rural Affairs
Klondyke Building
Cromac Avenue
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Malone Lower
Belfast
BT7 2JA

03 March 2023

By email only

Dear Ms Godfrey,

Response to the draft Northern Ireland Ammonia Strategy Consultation

I am pleased to submit the response of the Office for Environmental Protection to the consultation on the draft Northern Ireland Ammonia Strategy.

An effective Ammonia Strategy will make a significant contribution to the health, wellbeing and long-term wealth of the people of Northern Ireland, and notably improve the natural environment. While a thriving agri-food sector plays a particularly significant role in the overall economy of Northern Ireland, it also places exceptional demands on the environment, with consequential risks to long term prosperity, and to human and animal health. If the strategy is delivered effectively, DAERA will be seen as leading the way toward rebalancing the protection of the environment with growth in the agri-food industry. It signals a clear commitment to reverse the high levels of ammonia and the adverse trend in ammonia emissions, and to wider environmental stewardship.

There is much to welcome in the draft Ammonia Strategy. We especially welcome the ambitious 2030 emissions reduction target. It is a fair and proportionate contribution to the overall UK target required under the Gothenburg Protocol. We also welcome the significant investment in research that DAERA has made in the development of the strategy, and the commitment to take a combined approach decreasing national background concentrations alongside spatially targeted measures to produce higher reductions at designated sites.

All that said, we see that it will take strong political leadership, adequate funding and significant and sustained effort, to achieve the proposed 2030 target. Your plans for delivery will be pivotal. Our aim is to assist the Department in finalising a strategy that optimises the prospects of success in achieving Northern Ireland's aims for the environment. With that at the forefront of our minds, we make six recommendations.

1. *We recommend that DAERA develops a clearer package of consistently worded targets, which in combination represent a coherent and ambitious vision for measurable ammonia reduction in Northern Ireland.*

In our view, the stand-alone 2030 agricultural emissions target is suitably ambitious both in terms of the timespan and the level of reduction sought. However, the 2030 designated site target is inconsistent in its wording in the document, and it is not clear which sites this target will apply to. There is ambiguity whether there are one or two long-term targets - one is for 2050, while the other has no date. We consider that the overall package of targets could be clearer by using consistent wording. In that way, they could together represent a coherent and ambitious vision for measurable ammonia reduction in Northern Ireland.

2. *We recommend that DAERA publishes a comprehensive action plan for the delivery and evaluation of the final Ammonia Strategy and the 2030 targets.*

The 2030 targets are already pressing, we suggest that the strategy is swiftly accompanied by sufficient funding and a comprehensive action plan detailing delivery arrangements and their proposed impact. We appreciate that there is much to consider as detailed delivery arrangements are developed, for example the proportionality and practicalities of the measures required on different farm types, the level of funding needed, the role (if any) of incentive schemes, and the training required to support farmers. Without any indication of this detail in the strategy document, readers are likely to question whether the ambition can be delivered and doubt the commitment. It may also result in farmers understandably delaying taking action, when the wholesale change in agricultural practice that is required needs to start quickly if the 2030 targets are to be met. With farmers as key delivery partners, you will no doubt be considering now how best to engage them and their representatives in the development of this action plan.

3. *We recommend the final Ammonia Strategy sets out a long-term roadmap for achieving the 2050 emissions target, considering a wider range of drivers and pressures.*

The draft Ammonia Strategy is not at all clear about how the long-term target to 2050 will be met. Currently the draft Ammonia Strategy provides limited details on the measures, activities, and resources required to reduce ammonia emissions, and impacts on sensitive habitats beyond 2030. Of course, farming practice is likely to develop over time in ways that cannot readily be predicted. Wider societal changes may also be influential. But without any indication of the steps being considered to reach the 2050 target, the draft Ammonia Strategy is in our view incomplete. Not only that, the absence of outline plans beyond 2030 may well impinge on the perceived credibility of the strategy and the commitment behind it – the commitment to deliver the changes required to improve the environment in Northern Ireland as intended.

4. *We recommend DAERA publishes an updated Operational Protocol for assessing air quality impacts without further delay.*

The absence of a revised Operational Protocol to guide planning authorities and other competent authorities on the impact and assessment of ammonia emissions is extremely concerning. It threatens to undermine the ambition of the final Ammonia Strategy.

5. *We recommend that DAERA publishes the full evidence base and underlying assumptions used in the development of the draft Ammonia Strategy.*

While we welcome the significant investment in research, it would be best practice to publish the evidence base underpinning the strategy. Early publication would meet stakeholder expectations, and modern-day expectations of transparency. It is likely to build confidence in the strategy and hopefully reduce the risks. Publication of the evidence base will give confidence that investment will deliver on the intended outcomes of the final Ammonia Strategy.

6. *We recommend that the final Ammonia Strategy's links with, and impacts on, other major policies and commitments, both national and international are clearly mapped.*

A theme throughout our analysis is the need for greater coherence. Addressing ammonia emissions is integral to a range of strategies and plans being developed to improve the environment and public health in Northern Ireland. For example, ammonia reduction is vital for the successful delivery of the draft Northern Ireland Peatland Strategy 2021-2040. This is consequential for the carbon sequestration potential of peatlands and the contribution they make to achieving Net Zero by 2050, as committed in the Climate Change Act (Northern Ireland) 2022. We appreciate this may already be in hand elsewhere, but we recommend that the draft Ammonia Strategy's links with, and impacts on, other major policies and commitments (both national and international) are mapped clearly within the final document. In that way, any potential incoherence is more likely to surface early.

I trust that our recommendations will be of assistance in finalising the Ammonia Strategy and look forward to its publication at the earliest opportunity.

Yours sincerely,



Dame Glenys Stacey

Chair, Office for Environmental Protection

CC: Mr. Dave Foster,

Director of Regulatory and Natural Resources Policy,

Department of Agriculture, Environment and Rural Affairs

Assessment of the draft Northern Ireland Ammonia Strategy

The OEP is an independent body that protects and improves the environment by holding government and other public authorities to account. Its powers were extended to cover Northern Ireland in February 2022. We are responding to this consultation under Schedule 1 Paragraph 8 of the Environment Act (2021).

In this consultation response, we analyse the draft Ammonia Strategy in the context of the six ‘building blocks’ that we presented in our May 2022 “Taking Stock” report¹ and our response to the draft Environment Strategy.² We consider these building blocks to characterise the essential elements to have in place for strong environmental stewardship: understanding environmental drivers and pressures; creating a vision; setting targets; coherent strategy and policy; governance; and monitoring, assessing and reporting.

We present a summary of our conclusions and six recommendations below. This is followed by our analysis for the six building blocks. Where appropriate we have linked our responses to specific consultation questions in the draft Ammonia Strategy.

Conclusions and recommendations

The draft Ammonia Strategy provides interim (2030) and long-term targets for the reduction in ammonia emissions nationally and locally at designated sites. Four targets are proposed. We consider the interim target for a 30% reduction in ammonia emissions by 2030, based on the 2020 emission levels, to be a proportionate contribution to achieving the overall UK targets under the Gothenburg Protocol and the UK National Emissions Ceiling Regulations 2018. However, the wording of the rest of the interim and long-term targets are inconsistent throughout the Ammonia Strategy leading to ambiguity for stakeholders. In response to Question 1 in the draft Ammonia Strategy, **we recommend that DAERA develops a clearer package of consistently worded targets, which in combination represent a coherent and ambitious vision for measurable ammonia reduction in Northern Ireland.**

In the short term, we agree with the draft Ammonia Strategy’s focus on agricultural emissions. Agriculture is the dominant source of ammonia emissions in Northern Ireland. The 19% increase in ammonia emissions between 2009 and 2019 was due to increasing livestock numbers and greater use of indoor housing systems,³ which was, in part, driven by the Government’s and the agri-food industry’s ambitions to increase production and sales,

¹ OEP, *Taking stock: protecting, restoring and improving the environment in England*, 2022, www.theoep.org.uk/report/taking-stock-protecting-restoring-and-improving-environment-england.

² OEP, *OEP supports adoption of NI EIP but identifies areas for improvement*, 2022, www.theoep.org.uk/report/oep-supports-adoption-ni-eip-identifies-areas-improvement.

³ Refer to page 22 of the draft Ammonia Strategy.

as set out in the Going for Growth Strategy.⁴ However, the draft Ammonia Strategy does not set out a comprehensive action plan to stimulate the pace and scale of change required by 2030. With only seven years to go, this is urgent. In response to Questions 3, 18 and 20 **we recommend that DAERA publishes a comprehensive action plan for the delivery and evaluation of the final Ammonia Strategy and the 2030 targets.**

Looking further ahead to 2050, the draft Ammonia Strategy provides limited consideration of longer-term ammonia reduction which is essential for the long-term commitment required from stakeholders. In response to Questions 3, 14 and 20, **we recommend the final Ammonia Strategy sets out a long-term roadmap for achieving the 2050 emissions target, considering a wider range of drivers and pressures.** The optimal time to develop an action plan for the next steps to 2050 is at the review point in 2028 that is identified in the draft Ammonia Strategy timeline for action (page 66 of the draft Ammonia Strategy).

The absence of a revised Operational Protocol to advise planning authorities and other competent authorities on the assessment of ammonia emissions undermines the vision and the achievement of targets. In response to Questions 17 and 21, **we recommend DAERA publishes an updated Operational Protocol for assessing air quality impacts without further delay.** This will reduce the risk of planning approvals in Northern Ireland causing an increase in ammonia emissions.

Government needs to be transparent on its evidence and how the draft Ammonia Strategy helps DAERA balance its agricultural, rural development and environment priorities. In response to Questions 1 to 13 and 16 to 19 **we recommend that DAERA publishes the full evidence base and underlying assumptions used in the development of the draft Ammonia Strategy.** This will enable scrutiny and understanding of the rationale and decision-making that led to the measures and approach presented, meeting modern day transparency expectations. The current lack of transparency undermines the confidence and commitment needed from the farming community and agri-food sector, the backing of financial institutions and reduces the legitimacy of public expenditure. Without that commitment from key stakeholders, the final Ammonia Strategy will not have the impact required.

Addressing ammonia emissions is integral to a range of strategies and plans being developed to improve the environment and public health in Northern Ireland. Coherence between the final Ammonia Strategy and related policies and strategies in Northern Ireland is vital for successful delivery. In response to Questions 14 and 21, **We recommend that the final Ammonia Strategy's links with, and impacts on, other major policies and commitments, both national and international are clearly mapped.** This will both increase the effectiveness of action taken and ensure that unintended consequences, risks and trades-offs are identified and managed.

⁴ DAERA, *Going for Growth - a strategic action plan*, n.d, <https://www.daera-ni.gov.uk/articles/going-growth-strategic-action-plan>, accessed 1 March 2023.

Building Block One: Understanding Environmental States, Drivers and Pressures.

Here we also include our response to:

Q4. Do you have any comments on the proposals for low emission livestock housing?

Q21. Do you have any other comments or contributions on this document?

Understanding the environmental states, drivers and pressures is vital for the development of an evidence-based strategy. This enables the prioritisation and targeting of measures to deliver environmental improvement.

At a UK scale, the total national ammonia emission levels exceed the 2020-2029 ceiling⁵ set out under the National Emissions Ceiling Regulations 2018.⁶ Northern Ireland makes a disproportionate contribution to this exceedance, and instead of decreasing, there has been a 19% increase in ammonia emissions in Northern Ireland between 2009 and 2019.⁷

As is set out on page 17 of the draft Ammonia Strategy, most Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Areas of Special Scientific Interest (ASSIs) in Northern Ireland exceed their critical load of nitrogen deposition. In general, ammonia levels increased on designated sites between 2010 and 2018.⁸ It is also stated on page 18 of the draft Ammonia Strategy that all SACs and SPAs and 99.7% of ASSIs in Northern Ireland had ammonia concentrations exceeding critical levels of 1 µg/m³ and 27.8% of SACs, 21.4% of SPAs and 24.6% of ASSIs in Northern Ireland had ammonia concentrations greater than 3 µg/m³.

However, it is unclear whether these percentages relate to a generic 1 or 3 µg/m³ threshold across all sites or whether they consider the site-specific critical levels depending on their designated features. Understanding which designated sites are exceeding their critical level for ammonia, and by how much, is key to understanding the state of the designated sites in Northern Ireland. Landowners and stakeholders need to understand level of ambition needed for them to contribute to a reduction in ammonia emissions for designated sites they have an interest in. This detail should be included in Conservation Management Plans and similar documents, a point we also make within Building Block Three.

Agriculture accounts for 97% of ammonia emissions from Northern Ireland.⁹ We welcome the quantification of ammonia sources, demonstrating which agricultural sectors and practices are making the biggest contribution. The management and application of manure from livestock housing is highlighted as the principal driver of ammonia emissions in Northern Ireland.¹⁰ The solution pathways are based on increasing uptake and knowledge transfer of 10 ammonia reduction measures.

The draft Ammonia Strategy's immediate focus on ammonia from agriculture is appropriate; in particular, the proposed measures around low emission livestock housing. Beyond 2030,

⁵ Defra, *Emissions of air pollutants in the UK – Ammonia (NH₃)*, 2023, www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-ammonia-nh3, accessed 1 March 2023.

⁶ The National Emission Ceiling Regulations 2018, www.legislation.gov.uk/ukxi/2018/129/contents/made, accessed 1 March 2023.

⁷ As stated on page 24 of the draft Ammonia Strategy

⁸ Rowe and others, *Trends Report 2022: Trends in critical load and critical level exceedances in the UK*, report to Defra, 2022, https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2208301034_Trends_Report_2022.pdf, accessed 1 March 2023.

⁹ As stated on page 22 of the draft Ammonia Strategy.

¹⁰ As stated on page 24 of the draft Ammonia Strategy.

however, we suggest that greater consideration is given to the wider barriers and enablers to achieving the 2050 target. We were concerned, therefore, to find limited consideration in the draft Ammonia Strategy of emerging drivers and pressures in relation to the 2050 target. Nor are climate change or the time lag in ecosystem responses adequately addressed.

Addressing these deficiencies will help to clarify the additional funding and advisory resources required to deliver a reduction in ammonia emissions in a changing environment. Improved understanding of the future will enable the Department to anticipate the risks to and opportunities in achieving its long-term ambitions for the environment and increase the robustness of any action plan.

Examples of emerging pressures include the potential increased generation of ammonia from waste management and road traffic. These each accounted for about 0.5% of emissions from Northern Ireland in 2020.¹¹ While minor at present, emissions from the waste sector are from point sources that are likely to grow in the future with significant investment in waste treatment infrastructure,¹² such as increased composting and anaerobic digestion of waste infrastructure. In the transport sector, increases in road traffic and infrastructure are likely to increase the impact of localised ammonia emissions on nature and public health.¹³ How emerging point sources could affect background ammonia concentrations, along with the associated best available practices for mitigation, need to be considered now, to avoid the need to mitigate impacts in the future.¹⁴

There is significant overlap between what is already delivered through the Code of Good Agricultural Practice for the Reduction of Ammonia Emissions and Nutrient Action Plan and the proposed measures outlined in Chapter Four of the draft Ammonia Strategy. While coherence between these is welcome and increases the likelihood of adoption, progress required to meet the targets can only be achieved by going beyond current agricultural practices and technology. Other pathways to reduce emissions are worth considering such as alternative scenarios for agricultural systems and land use change, such as 'Site Nitrogen Action Plans' developed with site managers/stakeholders and implemented, for example, by agri-environment schemes, to minimise effects from local sources of atmospheric nitrogen on designated sites as recommended by the DAERA EMIND (Evaluating and mitigating impacts of N deposition to Natura 2000 sites in Northern Ireland Project) Report.¹⁵

¹¹ Ricardo Energy & Environment, *Review of draft Northern Ireland Ammonia Strategy. Report for Office for Environmental Protection. Ricardo ref. ED17175_NIS*, 2023, www.theoep.org.uk/reports-publications.

¹² Department for Economy, *Energy Strategy - Path to Net Zero Energy - Action Plan*, 2022, www.economy-ni.gov.uk/publications/energy-strategy-path-net-zero-energy-action-plan, accessed 1 March 2023.

¹³ Ricardo Energy & Environment, *Review of draft Northern Ireland Ammonia Strategy*.

¹⁴ Ricardo Energy & Environment, *Review of draft Northern Ireland Ammonia Strategy*.

¹⁵ DAERA, Carnell, E.J., and Dragosits, U., *EMIND - Evaluating and mitigating impacts of N deposition to Natura 2000 sites in Northern Ireland Project Report*, 2016, <https://www.daera-ni.gov.uk/sites/default/files/publications/daera/EMIND%20-%20Evaluating%20and%20mitigating%20impacts%20of%20N%20deposition%20to%20Natura%202000%20sites%20in%20Northern%20Ireland.PDF>

Building Blocks Two and Three: creating a long-term vision and setting targets.

Here we also include our response to:

Q1. What are your views on the Northern Ireland wide 2030 targets outlined in the 3.1 Targets section?

Q2. What are your views on the proposed pillars of the Ammonia Strategy?

Q16. What are your views on the proposals for spatially targeted measures around designated sites?

Q17. What are your views on the proposed conservation actions to restore habitats and support sustainable development?

To drive environmental improvement the vision of the final Ammonia Strategy needs to be bold, clearly articulating the future state to be achieved and the scale of change needed. Once established, all departments, public bodies and stakeholders can support and promote this vision and embed it within related strategies such as the draft Environment Strategy or the draft Green Growth Strategy.

In the draft Ammonia Strategy, the vision to reduce ammonia emissions is articulated by a package of targets. We support the 2030 target to reduce agricultural ammonia emissions from Northern Ireland by at least 30%. The design and articulation of the remaining targets must be clearer, the current ambiguity impacts the overall vision.

Targets to reduce agricultural ammonia emissions

We support the 2030 target (stated on pages eight and 36 of the draft Ammonia Strategy) to 'Reduce agricultural ammonia emissions from Northern Ireland by at least 30%, based on the 2020 emission levels'. This contributes to the UK target set out in the 1999 Gothenburg Protocol¹⁶ and the National Emissions Ceiling Regulations 2018.¹⁷ This 30% reduction in agricultural ammonia emissions for Northern Ireland is a proportionate contribution to the UK targets.

The draft Ammonia Strategy does not set out with sufficient clarity the evidence used to develop the targeted 30% reduction in emissions. For example, in Chapter Two of the draft Ammonia Strategy, the research programme suggests that the reduction in ammonia emissions from the proposed measures fall short of the 30% target. Within Building Block Six we also comment on the uncertainty surrounding the combination and uptake of measures leading to the 30% reduction in emissions, leading to our recommendation on the publication of evidence. Publication of up-to-date values for ammonia emission for 2021 & 2022, would also be beneficial as changes in livestock numbers during this period may impact on achieving this 2030 target.

In addition to the 2030 target, a long-term commitment is set out in the Executive Summary 'to reduce ammonia emissions to a point where critical loads of nitrogen deposition and critical levels of ammonia are at a more sustainable and pragmatic place by 2050'. We are pleased to see this ambitious commitment appears to include all habitats in Northern Ireland. However, the phrase 'sustainable and pragmatic' is not sufficiently SMART¹⁸, we would like

¹⁶ Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (adopted 30 November 1999, entered into force 17 May 2005) 2319 UNTS 137.

¹⁷ The National Emission Ceilings Regulations 2018, www.legislation.gov.uk/ukxi/2018/129/contents/made, accessed 1 March 2023.

¹⁸ OEP, Taking stock: protecting, restoring and improving the environment in England, 2022, www.theoep.org.uk/report/taking-stock-protecting-restoring-and-improving-environment-england.

to see this replaced by a metric against which progress can be measured. In its current form we do not support this target.

Targets to protect nature

The target (stated on pages eight and 36 of the draft Ammonia Strategy) to reduce ammonia concentrations at designated sites by at least 40% or to below critical levels by 2030 is ambiguous. On page eight the target covers 'internationally designated sites', while on page 36 the target is broader, relating to 'all designated sites'. In our opinion, this target should apply to all designated sites, SACs, SPAs, ASSIs and Ramsar sites as a minimum. Subject to this revision, we would support this target.

On page 36 of the draft Ammonia Strategy, it is stated 'the long-term target is to reduce ammonia emissions to a point where Critical Loads of nitrogen deposition and Critical Levels of ammonia are not being exceeded at designated sites.' This target is aligned with that described in Strategic Environmental Outcome One of the draft Environment Strategy and we welcome this coherence. Again, the designated sites covered by this target need to be clearly stated. We would expect this to include all designated sites, SACs, SPAs, ASSIs and Ramsar sites as a minimum. We also suggest this target is given an explicit timeframe rather than being 'long term'. We suggest the timeframe is aligned with other commitments such as the 2040 draft Peatland Strategy.

The importance of spatially targeted ammonia reduction for designated sites is set out on pages 57 to 58 of the draft Ammonia Strategy. This will be critical for achieving the 2030 and the long term designated sites targets to improve the environment. There is insufficient detail in the draft Ammonia Strategy on the area over which spatially targeted measures will be applied and how these measures will be delivered. We would like to see this detail provided in the comprehensive action plans we have recommended to accompany the final Ammonia Strategy.

Pillars of the Ammonia Strategy

We agree with the draft Ammonia Strategy being structured around the two pillars of 'an ammonia reduction programme' to cover all of Northern Ireland and more focussed 'conservation actions to protect and restore nature'. We note the success of Pillar two is dependent upon the successful delivery of Pillar one.

The importance of conservation management plans for designated sites is stressed (pages 60 to 61). These will be critical for achieving the 2030 and long-term designated sites targets. Research we have commissioned highlights that each designated site will require different percentage reductions in ammonia concentrations¹⁹, a point we also make in Building Block One. Therefore, each site is likely to require a bespoke management to address ammonia.

The commitment for conservation management plans to be prepared for the full suite of 58 terrestrial SACs by December 2022 was made (page 61). We look forward to the publication of these conservation management plans setting out the measures to address ammonia and nitrogen deposition. Similar plans will be needed to address the impacts of ammonia at all designated sites which are sensitive to ammonia.

¹⁹ Ricardo Energy & Environment, Review of draft Northern Ireland Ammonia Strategy. Report for Office for Environmental Protection. Ricardo ref. ED17175_NIS, 2023, www.theoep.org.uk/reports-publications.

Building Block Four: Coherent Strategy and Policy.

Here we also include our response to:

Q3. *What are your views on how DAERA will enable this strategy?*

Q14. *What are your views on DAERA's plans to support ammonia reduction measures through Green Growth and future agricultural policy?*

Q17. *What are your views on the proposed conservation actions to restore habitats and support sustainable development?*

Coherence between the final Ammonia Strategy and related policies and strategies in Northern Ireland is vital for successful delivery. This will both increase the effectiveness of action taken and ensure that unintended consequences, risks and trades-offs are identified and managed. For example, the final Ammonia Strategy needs to clearly align with the Future Agricultural Policy, Climate Change Action Plan, Peatland Strategy, Biodiversity Strategy, Waste Management Strategy, Clean Air Strategy and the Soil Nutrient Health Scheme. While some are referred to in the draft Ammonia Strategy, no details are provided on the interactions between them or how delivery will be aligned. In unison, these policies and strategies will underpin the draft Environment Strategy²⁰ and the draft Green Growth Strategy.²¹

We are particularly concerned by the low level of coherence across agricultural policy (see Building Block Five), peatland management, nutrient management, and human health. We strongly suggest that the final Ammonia Strategy ensures coherence and alignment with the ambitions set out in these other strategies and work programmes.

The draft Peatland Strategy²² will 'ensure where possible that all semi-natural peatlands in Northern Ireland are conserved or restored to healthy, functioning ecosystems by 2040'. However, current atmospheric ammonia concentrations greatly exceed levels which are sustainable to the growth of a range of nitrogen sensitive plant species, leading to die-back of lichens and bryophytes. These are particularly important for the peat building function of bog sites.

Peatland restoration and conservation is important because peatlands in Northern Ireland, in their current condition, make a significant contribution to current greenhouse gas emissions. The draft Peatland Strategy aims to reverse this and enable them to become an effective carbon sink. This in turn is a strategically important part of the nature-based solutions for Northern Ireland to meet its Net Zero commitments^{23 24} and Programme for Government Outcomes. However, the current timelines for emission reduction set out in the draft

²⁰ DAERA, Draft Environment Strategy for Northern Ireland, 2021, <https://www.daera-ni.gov.uk/sites/default/files/consultations/daera/Draft%20Environment%20Strategy.PDF>, accessed 1 March 2023.

²¹ DAERA, *Draft Green Growth Strategy for Northern Ireland*, 2021, <https://www.daera-ni.gov.uk/consultations/consultation-draft-green-growth-strategy-northern-ireland>, accessed 1 March 2023.

²² DAERA, *NI Peatland Strategy Consultation*. 2021, <https://www.daera-ni.gov.uk/consultations/ni-peatland-strategy-consultation>, accessed 01 March 2023.

²³ DAERA, *The Climate Change Act (Northern Ireland) 2022 – Key elements*, n.d., <https://www.daera-ni.gov.uk/articles/climate-change-act-northern-ireland-2022-key-elements>, accessed 01 March 2023.

²⁴ HM Government, *Press release, UK's path to net zero set out in landmark strategy*, 2021, www.gov.uk/government/news/uks-path-to-net-zero-set-out-in-landmark-strategy, accessed 1 March 2023.

Ammonia Strategy may not be sufficiently rapid to achieve the 2040 ambitions of the draft Peatland Strategy.^{25,26}

The impact of ammonia in the context of human health is stated in the draft Ammonia Strategy. No details are provided, however, on the contribution the 30% reduction in agriculture emissions towards the PM_{2.5}²⁷ targets in the draft Clean Air Strategy. The draft Clean Air Strategy²⁸ states that ammonia contributes up to 20% of PM_{2.5} monitored in air and that ammonia emissions are the reason for levels of particulate matter remaining static, despite declining levels of primary particulate emissions, such as from combustion and road traffic.²⁹ Even with a 30% reduction in emissions by 2030, agriculture will continue to make a significant contribution to PM_{2.5}, with adverse consequences for human health. The final Ammonia Strategy needs to achieve ammonia reductions sufficient to reduce the risk to human health significantly as the Clean Air Strategy intends.

Northern Ireland's surplus of manures is a significant driver of ammonia emissions. While this is not addressed in the recent draft Circular Economy Strategy, we would expect for this to form a significant part of a future Waste Management Strategy. A transition to a circular bioeconomy, where anaerobic digestion plays a key role in valorisation of manure waste, will require stringent monitoring and management to prevent an increase in ammonia emissions.

Linked to this, the Soil Nutrient Health Scheme³⁰ will provide farmers with information and support to manage manures applications effectively with consequences for manure redistribution between farms and regions as manures are moved between soils with high and low nutrient content. We suggest that the final Ammonia Strategy therefore carefully considers the consequences for ammonia emissions as a result of the transition to a circular bioeconomy and implementation of the Soil Nutrient Health Scheme.

²⁵ Sheppard, L.J., and others, *Dry Deposition of ammonia gas drives species change faster than wet deposition of ammonium ions: evidence from a long-term field manipulation*, 2011, 17, *Global Change Biology*, 3589-3607, <https://doi.org/10.1111/j.1365-2486.2011.02478.x>.

²⁶ International Peatland Society, *Peatland Restoration and Rehabilitation*, *Peatland Restoration webinar* 2021, <https://peatlands.org/peatland-restoration-and-rehabilitation/#:-:text=Peatland%20restoration%20can%20take%20between%20five%20and%2030,d ata%20and%20techniques%20from%20all%20around%20the%20world>, accessed 1 March 2023.

²⁷ PM_{2.5} is airborne particulate matter where the particles are less than 2.5 micrometres in diameter. This can impact human health.

²⁸ DAERA, *A Clean Air Strategy for Northern Ireland – Public Discussion Document*, 2020, www.daera-ni.gov.uk/clean_air_strategy_discussion_document, accessed 1 March 2023.

²⁹ Air Quality Expert Group, *Fine Particulate Matter (PM_{2.5}) in the United Kingdom*, 2012, [https://uk-air.defra.gov.uk/assets/documents/reports/cat11/1212141150_AQEG_Fine Particulate Matter in the UK.pdf](https://uk-air.defra.gov.uk/assets/documents/reports/cat11/1212141150_AQEG_Fine_Part particulate_Matter_in_the_UK.pdf), accessed 1 March 2023.

³⁰ DAERA, *Update on DAERA's Zone 1 Soil Nutrient Health Scheme*, 2023, www.daera-ni.gov.uk/news/update-daeras-zone-1-soil-nutrient-health-scheme-0, accessed 1 March 2023.

Building Block Five: Governance and the Policy Context.

Here we also include our response to:

Q14. What are your views on DAERA's plans to support ammonia reduction measures through Green Growth and future agricultural policy?

Q15. What are your views on DAERA's plans for knowledge transfer and education on ammonia reduction?

Q17. What are your views on the proposed conservation actions to restore habitats and support sustainable development?

Q18. What are your views on the appropriate delivery and funding mechanisms?

Q20. 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 draft Ammonia Strategy does not set out a comprehensive action plan to stimulate the pace and scale of change required by 2030. We recommend that the Strategy is supported by a sufficiently detailed and resourced action plan.

We welcome the commitment on page 10 of the draft Ammonia Strategy to 'Provide appropriate financial support for the implementation of ammonia reduction measures on farms through the Green Growth capital investment plan and relevant Future Agricultural Policy Programme Measures'. Limited details are provided on these delivery and funding mechanisms, and the risks and barriers associated with delivery. Detail is required, especially on the cost-effectiveness of the actions and investments needed and how these will align with the timing and structure of the proposed Farming for Nature Scheme, for example.

Until funding is secured and clarified, significant uncertainty will remain around the final Ammonia Strategy's future implementation. This will impact negatively on stakeholder confidence and their willingness to act to address ammonia issues. For example, the draft Ammonia Strategy does not provide sufficient clarity on the additional resources and budget to deliver the advisory support and training necessary to achieve the uptake rates on which the agricultural emissions target depends. We envision that incentive schemes for farmers could play a significant role in stimulating and front loading the behaviour changes necessary for success. Equally, consumers and the wider agri-food industry have a role to play in the response.

Adoption of the new measures/technologies can be challenging for farmers and will directly impact on whether the emission reduction targets are achieved. Adequate support for farmers is essential. In particular, greater consideration needs to be given to the practicalities and impact that measures will have on different farm types and how lead-in times for adoption will impact on achieving the targets of the final Ammonia Strategy.

The balance between voluntary and mandatory measures has important consequences for the funding that can be provided to farmers to deliver a reduction in ammonia emissions. And while we are not commenting on where this balance should lie, we do suggest greater clarity. While legislation to require uptake of ammonia reduction measures is listed on page 53 of the draft Ammonia Strategy as one of four 'mechanisms to support the adoption of ammonia reduction measures' no details are provided. The extent of the legislation that DAERA plan to bring forward for the implementation of the final Ammonia Strategy and whether all other measures will be adopted on a voluntary basis are unclear. Further

consideration also needs to be given to the monitoring and enforcement of mandatory measures when they are introduced.

The draft Ammonia Strategy does not address the transboundary challenges for managing ammonia emissions and impacts on the island of Ireland. The implementation of the final Ammonia Strategy will need coordination with the National Air Pollution Control Programme in the Republic of Ireland,³¹ giving careful attention to the EU's recent (Jan 2023) commencement of infringement proceedings against the Republic of Ireland due to breach of air quality regulations related to ammonia.³² This is of particular importance for designated sites that span both jurisdictions. Coordination on environmental issues such as agricultural practice, and ammonia impacts on designated sites, is a priority for the North South Ministerial Council.³³

The Operational Protocol

The Operational Protocol (for assessing air pollution impacts of plans and projects on designated sites) is referred to in Chapter One. It is vital for achieving the final Ammonia Strategy's targets. As stated within the draft Ammonia Strategy 'the Department and public bodies, in undertaking their statutory responsibilities, must be cognisant of the requirement that projects or plans should only proceed where the absence of adverse effects on the integrity of any Special Area of Conservation can be demonstrated'.

Page 28 of the draft Ammonia Strategy references a plan to develop a call for evidence before to inform a revised Operational Protocol. The lack of transparency in the evidence base underpinning the draft Ammonia Strategy makes it difficult to assess the extent to which a further call for evidence in the development of a revised Operational Protocol is required. We advise it is important to act in a manner consistent with the precautionary principle and to recognise that nearly all designated sites currently exceed the critical levels and loads at which damage to habitats and plant communities may occur³⁴ it is our view that there should be no further delays in the implementation of a revised Operational Protocol which delivers DAERA's full responsibilities under the Habitats Regulations.

³¹ Department of the Environment, Climate and Communications, *National Air Pollution Control Programme (NAPCP)*, 2021, <https://www.gov.ie/en/publication/23bdb-national-air-pollution-control-programme-napcp/#>, accessed 1 March 2023.

³² European Commission, *NEWS ARTICLE 26 January 2023 Representation in Ireland Infringements: European Commission start two new procedures against Ireland for non-compliance with EU law, continues a third one*, 2023, https://ireland.representation.ec.europa.eu/news-and-events/news/infringements-european-commission-start-two-new-procedures-against-ireland-non-compliance-eu-law-2023-01-26_en, accessed 1 March 2023.

³³ North South Ministerial Council, *Environment*, n.d., www.northsouthministerialcouncil.org/areas-of-co-operation/environment, accessed 1 March 2023.

³⁴ As stated on page 7 and 17 of the draft Ammonia Strategy.

Building Block Six: Monitoring, Assessing and Reporting.

Here we also include our response to:

Q16. What are your views on the proposals for spatially targeted measures around designated sites?

Q19. Do you have any comments on what evidence or issues should be considered when assessing these impacts?

Q20. 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?

We strongly recommend that the final Ammonia Strategy includes a monitoring and evaluation framework to ensure that lessons learned inform and increase the likelihood of successful delivery for 2050. This will have the added benefit of enabling the Government to acknowledge and highlight best practice on farms across Northern Ireland. We welcome that the draft Ammonia Strategy sets out review points in 2025 and 2028 but there is no scope or methodology provided for these reviews. The assessment methodology to measure and report progress in achieving the objectives of the final Ammonia Strategy should be evidence-based, accessible, consistent, and transparent.

There is a lack of clarity on what will be assessed and by who, how the different evaluations of progress will combine, and what will be done by DAERA or other delivery partners if sufficient progress is not being made towards the targets. A clear plan for monitoring, assessing, and reporting, allows key barriers, trends and interventions to be identified and accounted for during the implementation of the final Ammonia Strategy. A monitoring and evaluation framework could be detailed in a comprehensive action plan alongside the final Ammonia Strategy.

Within the draft Green Growth Strategy,³⁵ Executive Commitment No. Six commits to evidence-based decision making to ensure 'decisions and actions associated with the transition to low emissions, green jobs and a clean environment are underpinned by robust and timely evidence and science'. We welcome the investment in research and development by DAERA outlined in Chapter Five of the draft Ammonia Strategy and related webinar held in September 2020. However, the transparency of this evidence is limited and restricts scrutiny of the decision-making process. For example, it is unclear how the combination of measures in Box two (page nine of the draft Ammonia Strategy), their ammonia reduction potential, and uptake rates will combine to deliver a 30% reduction in agricultural emissions. This ambiguity impacts negatively on stakeholders' confidence, limiting their ability to fully understand the rationale and comment on the targets, measures and support mechanisms, as detailed in the draft Ammonia Strategy.

For example, application of aluminium sulphate (alum) for the acidification of manure is mentioned as a potential mitigation measure. Acidification of slurry is proposed, in particular, as a mitigation measure to reach higher ammonia reductions around designated sites. However, advice developed with Natural England and the Environment Agency is that 'the

³⁵ DAERA, *Draft Green Growth Strategy for Northern Ireland*, 2021, <https://www.daera-ni.gov.uk/consultations/consultation-draft-green-growth-strategy-northern-ireland>, accessed 1 March 2023

use of aluminium should be avoided... as it is not currently possible with any certainty to determine what levels would avoid adverse environmental impacts'.^{36 37}

Similarly, the draft Ammonia Strategy proposes a prohibition of spreading of manures within 50 metres of a designated site. Firstly, it is unclear if this measure will also prohibit the spreading of manure within the boundaries of designated sites. Secondly, if the intention is to remove sources of ammonia close to designated sites, then clarification is sought on why other ammonia-emitting inorganic and organic fertilisers are not included in the 50 m exclusion zones. Thirdly, on page 27 of the draft Ammonia Strategy the impact of emissions from farms and agricultural activities can be very high beyond this proposed threshold of 50 m, with ammonia concentrations found to be at or above critical levels 650 m from a source. It is therefore unclear why the 50 m has been selected as the boundary. The Joint Nature Conservation Committee (JNCC) Nitrogen Futures Report modelled exclusion zones (or Emission Displacement Zones, EDZ) of one km from the boundaries of designated sites in which no slurry or manure was applied.³⁸ Evidence presented³⁹ suggests that proposed prohibition on spreading of manures within 50 m of a designated site as recommended on page 57 would be inadequate and a much wider exclusion zone would be needed to improve the condition of designated sites. As such further clarification is required on the effectiveness on the current proposal of 50 m. If a larger exclusion boundary is proposed within the final Ammonia Strategy, appropriate financial support for farmers and land managers would be required for example, through agri-environment or circular bioeconomy schemes.

³⁶ Somerset West and Taunton Council and others, *Advice Note – Considering Package Treatment Plants and Septic Tanks as part of nutrients mitigation in Somerset*, 2022, www.somersetwestandtaunton.gov.uk/media/3535/issue-ntp-and-septic-tanks-ea-and-ne-advice-note-for-slm-ramsar_22092022.pdf, accessed 01 March 2023.

³⁷ Rosseland, B.O., and others, *Environmental effects of aluminium*, 1990, 12(1) *Environ Geochem Health*, 12, 17-27 (1990). <https://doi.org/10.1007/BF01734045>

³⁸ JNCC, *Nitrogen Futures*, JNCC Report No. 665, 2020, <https://jncc.gov.uk/our-work/nitrogen-futures/>, accessed 1 March 2023.

³⁹ Ricardo Energy & Environment, *Review of draft Northern Ireland Ammonia Strategy. Report for Office for Environmental Protection. Ricardo ref. ED17175_NIS*, 2023, www.theoep.org.uk/reports-publications.