Air quality: draft Clean Air Strategy 2018: A response from the Royal Association of British Dairy Farmers (RABDF)

1. The Royal Association of British Dairy Farmers (RABDF) is the only UK wide charity solely interested in providing a sustainable and economically prosperous dairy farming sector. Our response to Defra's 'Clean Air Strategy 2018' consultation follows, in which we aim to answer the following questions from the consultation document:
   - Q16. What do you think of the package of actions put forward in the farming chapter? Please provide evidence in support of your answers if possible.
   - Q17. What are your preferences in relation to the 3 regulatory approaches outlined and the timeframe for their implementation: (1) introduction of nitrogen (or fertiliser) limits; (2) extension of permitting to large dairy farms; (3) rules on specific emissions-reducing practices? Please provide evidence in support of your views if possible.
   - Q18. Should future anaerobic digestion (AD) supported by government schemes be required to use best practice low emissions spreading techniques through certification? If not, what other short-term strategies to reduce ammonia emissions from AD should be implemented? Please provide any evidence you have to support your suggestions.

2. The Royal Association of British Dairy Farmers (RABDF) understands and accepts the need for a reduction in ammonia emissions nationally. While we also accept the role of dairy farming industry in achieving reductions, we have concerns over some aspects of the strategy as currently laid out. The summary points are as follows.

3. Ammonia emissions from UK agriculture have continued to fall – by 19% since 1990 and 12% since 2000 (*Agriculture in the United Kingdom, 2017*), due to a reduction in cattle numbers and in fertiliser applications. The recent rise since 2013 simply reflects the poor economic environment and weather conditions in 2014 and 2015.

4. While it is clear dairy farming is seen as a major emitter of ammonia emissions, it is important to look at this in relation to productivity. According to Eurostat the top milk producing nations in Europe in 2015 were: Germany (21% of European supply), France (16%), UK (10%), Netherlands (9%), Italy (8%), Poland (7%) and Spain (4%). However, the greatest producers of ammonia emissions from agriculture were: Germany (19% of European emissions), France (18%), Spain (12%), Italy (10%), Poland (7%), UK (6%) and Netherlands (3%), indicating that the UK significantly 'underproduces' agricultural ammonia compared with its milk production levels. Despite this, the UK can learn from both the Netherlands, and Denmark (3.5% of milk production, 1.8% of agricultural ammonia), both of which are exemplified as case studies in the Clean Air Strategy report.

5. The strategy demonstrates a lack of understanding of dairy farming systems, hence the breakdown of the management category for ammonia emissions does not translate easily or fit as well into modern dairy farming systems as the report suggests. For example, while dairy cattle were held responsible for 28% of

ammonia emissions in 2016 (31%: 2015), production cannot be further split wholly into ‘housed’ and ‘grazed’ systems. Housing of dairy cattle is a necessity for between three and seven months of the year (depending on geography) due to no or limited grass growth taking place in the winter and to protect the ground from leaching and structural damage. The rest of the time, cows are generally outside with a relatively small proportion housed year round.

6. It seems clear, however, that the housed period can risk producing higher emissions and it is important that the information is presented this way so as to ensure all farmers who house cows at any point are aware of this, and the opportunity to vilify particular production systems does not exist.

Q16

In response to the six points outlined under section 7.5: Action to reduce emissions from farming, we outline the following points.

National Code of Good Practice

7. A code would be beneficial in providing a template for good management. However, it could be further promoted and leveraged with further work on costs and opportunities, as well as a better understanding among farmers of their own situation.

   The provision of free audits identifying ammonia use and potential for change, and recommending the most appropriate mitigation measures (similar to green audits in residential homes) could help increase uptake of a code. These should clearly summarise costs, gains and impacts of various interventions. They would help farmers identify the longer term benefits rather than just seeing ammonia mitigation as compliance. Interventions that boost income or save costs – especially if those changes improve long term resilience – should prove attractive for uptake in their own right without need for regulation. This would support increased knowledge transfer activities. Any audit to establish the base level on a farm also affords the opportunity to benchmark ammonia emissions against other farmers, further driving engagement.

Regulation

8. It is accepted that some regulation may be necessary to drive change, but it is strongly advised that given the relatively low starting position for the UK (as detailed above), greater emphasis is given to tax breaks, financial incentives, behaviour change and knowledge transfer. It is clear that the full range of mechanisms to spur voluntary change have not yet been explored, and in our experience, change is more actively embraced and sustained when adopted from grass roots rather than applied from above. Additionally, the costs saved from lighter regulation could be used to sustain a wider range of incentives.

Investment

9. While some grant funding has been available in the UK for ammonia mitigation, this has mainly been for manure store covers and low-emissions spreaders for farmers in specific schemes or certain areas. It is clear in the Netherlands and Denmark case studies that while regulation has been implemented, substantial funding has been directed at the same time into tackling this issue, with tax breaks in the Netherlands and substantial amounts of Pillar 2 money allocated – we understand – to helping farmers upgrade their housing facilities in Denmark. For this reason, widening the accessibility of smaller grants and considering financial mechanisms such as tax breaks to drive the upgrading of existing buildings as well as the introduction of new low emissions housing would be extremely beneficial.

10. It is important to consider all options when looking at ammonia reductions. Not all ammonia mitigation efforts are equal; some have greater impact than others, but this has not been recognised in the report. It is important information and should be provided to help farmers prioritise actions.

11. Furthermore, some interventions have been omitted altogether. The practice of adding acid to slurry – used in Netherlands and Denmark – has been omitted despite indications of having one of the highest success rates at lowering ammonia emissions – potentially by up to 49% when combined with floor scraping *(Reduction of ammonia emissions from dairy cattle cubicle houses via improved management – or design-based strategies: A modeling approach. Mendes et al (2017) Science of the Total Environment)*.

12. Another key opportunity to reduce emissions has been omitted – nutritional adjustments to increase the supply of microbial protein. Research has shown that overall, dairy diets with reduced crude protein and ruminally degraded protein will produce manure with lower ammonia-emitting potential without affecting cow performance, if metabolisable protein requirements are met. Indications are that this could provide the additional benefit of lowering feed costs. *(The effects of ruminally degraded protein on rumen fermentation and ammonia losses from manure in dairy cows. Agle et al (2010) Journal of Dairy Science)*

Inclusion of ammonia emissions in an environmental land management system

13. We support the proposal that ammonia mitigation should be included in any plans to more widely incentivise positive environmental practices through funding. Aside from financial input, it reduces the risk of conflicting measures being promoted through different schemes. Environmental measures need to be considered in their totality not in isolation.

14. As a caveat to this, no mention is made in the document of zoning any restrictions, for example applying caps on modelled ammonia emissions near to designated Natura 2000 areas or other sensitive sites such as residential areas of schools and hospitals. Denmark has had extensive regulation applied but geographically is a smaller area with a more dense population and more intensive agriculture than the UK as a whole. It is understood that the

Netherlands has also applied restrictive 'ammonia quotas' near sensitive receptors, and this would seem a more sensible and appropriate response for the UK to adopt.

Working with the agriculture sector

15. We welcome collaborative working and the 'real-time' approach to ensure the sector is always using the latest information. Further to collaboration and learning opportunities, the UK pig and poultry sectors have worked on reducing ammonia emissions for many years and while there are many differences between dairy and monogastric management – as noted throughout this response – there is much the dairy sector can learn from these sectors in terms of technological techniques. Steps to bring the sectors together for knowledge transfer would therefore be advantageous.

Maximum limits for fertiliser application

See response to Q17.

Q17

1) Introduction of nitrogen (or fertiliser) limits

16. We note that manure and fertiliser application are presented as the second and third highest contributors respectively towards ammonia emissions by management category (no reference provided but we presume this is from Defra's latest Inventory of Ammonia Emissions from UK Agriculture, although the 2016 report is not available online).

17. While support into how farmers could better utilise manure and slurry reserves and cut use of urea-based fertilisers – identified as a major source of ammonia emissions – would be welcome, there are several areas of concern within this proposal.

18. Firstly, the proposals do not differentiate between manures and slurry produced on the farm, and bought-in sources. Helping farms maximise 'home-grown' nutrients and contribute to overall best practice will be vital in the future of resilient dairy farming. The idea of reducing spend on bought-in fertiliser is also tangible with farmers. The approach suggested may be termed as 'flexible', but we believe it should focus on utilisation of manures produced on-farm.

19. A mandatory approach would ignore the difference in soils, cropping patterns and forage productivity between farms and how efficiently nitrogen is being used. While restricting nitrogen use is a simple measure, monitoring its effectiveness would be virtually impossible.

20. While it is also clear is that nitrogen usage should reflect optimum crop utilisation and be backed up with a comprehensive nutrient management plan, we believe many farmers are already delivering this because of either EU cross-compliance

measures, catchment-sensitive farming or NVZ rules (widespread, eg covering 58% of England). How would any new cap work alongside existing NVZ rules?

21. Furthermore, recent volatile milk markets mean many farmers have already worked to trim their fertiliser inputs to match grass growth and avoid either excess use or diminishing returns. Is there much more that can be gained from regulating this area at what is likely to be considerable cost?

22. Lastly, recent efforts to re-integrate dairy farming into less populated arable areas to help make better use of manures on land which has suffered degradation through monocultural cropping over a number of decades, have frequently met with planning obstacles. These farms tend to be large to afford economies of scale, and sometimes grazed or sometimes fully housed, but are a common source of contention with planning authorities and campaigners. Support to properly investigate environmental and emissions-reduction opportunities would be welcome rather than the out of hand rejection many face.

2) Environmental Permitting Regulations (EPR)

23. The proposal to introduce a similar permitting system to that currently used in the pig and poultry sectors seems, at present, unclear and unsubstantiated. The main issue is where the bar is set. The administrative cost and burden of requiring farms of 150 cows to undergo such an exercise would be prohibitive. In reality, many farms of this size are small family farms which are already supported by family members working off the farm. Burdened with this legislation and additional cost, they would inevitably be forced out of business, contributing to a further decrease in UK dairy producer numbers.

24. Unlike most pig and poultry farms, dairy farms do not generally adhere to a single category or production, for example, all continuously housed, all continuously grazed. Instead, different numbers of cows will often spend different periods of time inside and out from year to year, thus significantly impacting annual ammonia generation.

25. A more sensible approach would be to allocate an ammonia emissions quota in sensitive areas (ref point 14.) and allow farmers to adopt whatever methods are best suited to their farm to reduce emissions. For example, they may wish to separate urine and faeces collection, acidify slurry storage, modify the cows' diets, or extend the grazing season.

26. If some sort of permitting facility is to be introduced, then it should be based on a factual calculation of the standard quantity and density of ammonia production on that unit. Furthermore, the bar for permitting should be set at the level where that density and volume of ammonia production poses a threat to sensitive local receptors, thus validating the need for a permit.

27. The displacement and spread of farms must also be considered, with the majority of dairy farms in the UK concentrated in the west of the country.

28. Similarly dietary protein levels will have an impact on ammonia emissions levels, and needs to be considered. For example, housed cows on a 15.5% crude protein diet compared with a grazing cow on a 20-25% crude protein diet will contribute very different levels, especially when looking at the level for each litre produced. This related to point 12.

3) Rules on specific emissions-reducing practices

29. The use of urease inhibitors is growing and would be beneficial.

30. Similarly, better technology would help seed the efficient use of nitrogen, GPS & yield mapping similar to the arable sector, and incentives or encouragement from Government would help speed this up.

31. Regarding the requirement for all slurry and digestate stores and manure heaps to be covered by 2027, we would ask whether there is sufficient evidence to recommend these changes and what proportion of ammonia could be mitigated through this? Covering lagoons would be a more feasible exercise but it would be almost impossible to ensure all muck heaps are covered, especially those located in fields.

32. While it is proposed to introduce a requirement for all solid manure and solid digestate spread to bare land to be incorporated within 12 hours, it must be noted that leaving muck spread on land unincorporated for 72 hours greatly reduces the levels of bacteria reaching ground water, reducing the risk of contamination. This trade-off should be recognised.

33. A 12 hour target for incorporation is also not practical. Dairy farmers are heavily dependent on the availability of contractors for the necessary supply of plant, labour and expertise. The time taken to contact and instruct contractors and for them to arrive in the right location with the right equipment means that it would be extremely difficult for dairy farmers to meet a 12 hour target.

34. The proposal for all farms to spread slurry and digestate using low emission spreading equipment is sensible, but again the investment required to purchase this equipment is not expenditure that all farms will be able to afford – hence point 9. about widening the accessibility and eligibility of grant funding.

35. An area of concern remains around the current practice of dirty water separation of spreading via a rain gun or dribble mechanism can work with incorporation. The point of using this practice is to minimise soil compaction and crop or pasture damage. Research into combining the two practices would be welcome.

36. Despite these reservations, considerable benefits could be derived through low emission spreading equipment if the slurry spreading rules under NVZ Action Plan were refined to take account of local circumstances and weather variations.

37. Mandatory design standards for new livestock housing pose a major challenge. Housing design for pigs and poultry are relatively standardised which allows for

the adoption of uniform solutions. The situation in dairy is very different given the range of systems operated by the sector. With the huge diversity of system type/breed & geography within the UK, standardising housing would be a step in the wrong direction – plus dairying is not as intensive as poultry/pigs.

38. The effect of tenancy agreements on the ability of dairy farmers to invest in new housing also needs to be considered. Mandatory design standards for new livestock housing must be discussed and developed in conjunction with the industry, the proposals must also be realistic and cost effective and there must be assistance available through funding or tax breaks.

Q18.

39. The RABDF was one of only a few UK organisations to take part in the EU's Intelligent Energy Programme, which ran until 2013. From our involvement, we believe that anaerobic digestion as a standalone venture using animal waste as a feedstock is not economically viable without grant support. We believe that any plant receiving grant support should be required to incorporate digestate within 12 hours of spreading, particularly as it is more possible to schedule in spreading and incorporation of manures from this source, plus the 'curing' process within the digester has already effectively eliminated many bacteria.

40. An additional point is that economic support for anaerobic digestion should be restricted to those utilising a minimum percentage of animal waste as feedstock. Not only does this better utilise the value of animal waste, but using crops as the only feedstock can end up removing feed from animals, and incurs larger carbon emissions in the process.