IN THE MATTER OF
THE NATIONAL EMISSION CEILINGS REGULATIONS 2018

OPINION

Introduction

I am asked to advise Clean Air in London ("**CAL**") in relation to potential breaches of the National Emission Ceilings Regulations 2018 ("**NECR**") by the Secretary of State for the Environment, Food and Rural Affairs ("**the Secretary of State**").

I have been asked to focus my analysis on the steps taken to secure reductions in emissions of ammonia ("**NH_3**") and fine particulate matter ("**$PM_{2.5}$**"), on the basis that these are two of the most damaging air pollutants, directly or indirectly, from a human health perspective.

Executive summary

i. I have identified three respects in which I consider the Secretary of State is in breach of his obligations under the NECR. These are:

   a. A failure to prepare a National Air Pollution Control Programme ("**NAPCP**") in April 2019 which ensures that the UK's national emission reduction commitments will be met, in breach of Regulation 9(1) NECR;

   b. A failure to implement the NAPCP published in April 2019, in breach of Regulation 9(1) NECR; and,

   c. A failure to commence review of the NAPCP following projected failures to meet the UK's national emission reduction commitments in April 2019 and March 2020, in breach of Regulation 9(5) NECR.

ii. In addition, I consider it highly likely, on the basis of information published by the Government, that the Secretary of State failed to ensure that the UK met its emissions targets for NH_3 and $PM_{2.5}$ for 2020 or at any point since, in breach of his obligations under Regulation 6(2) NECR.

iii. The likelihood that the UK failed to meet its emissions targets for NH_3 and $PM_{2.5}$ for 2020 is of significant concern. It puts the UK in breach not only of its domestic law obligations but also its international law obligations arising under the 2012 revised Gothenburg Protocol under the Convention on Long-Range Transboundary Air Pollution ("**the LRTAP Convention**").

iv. Of equal, if not greater, concern is the Secretary of State's approach to his ancillary obligations to produce and implement a NAPCP that will ensure that the UK meets its emissions targets, and to take immediate steps to review that plan when there is a forecast that the emissions targets will not be met.

v. For the reasons set out in detail below, I have concluded that the Secretary of State failed, in April 2019, to prepare a NAPCP which ensured that the national emission reduction commitments for $PM_{2.5}$ and NH_3 would be met by 2020. The NAPCP published in 2019 was based on assumptions about timeframes for implementing measures which were inconsistent with the Government's Clean Air Strategy and clearly unrealistic.

vi. In addition, the Secretary of State failed to implement the April 2019 NAPCP in accordance with the timetable set out in the NAPCP. The NAPCP sets out (as it is required to do) a timetable for implementing measures. Only one measure designed to reduce NH_3 emissions has been implemented in accordance with the timetable set out in the NAPCP. This is funding for agriculture equipment. The principal measure for reducing $PM_{2.5}$ – the ban on the sale of wet coal and wood – only entered into force on 1 May 2021, whereas the NAPCP timetable stated that this would be implemented in 2019. There are a large number of further measures which were due to be implemented by 2019 according to the NAPCP timetable but have not yet been implemented. Compliance with the timetable is critical in order to achieve compliance with the deadlines for achieving emissions reductions. The consequence of the failure to implement measures in accordance with the timetable set out in the April 2019 NAPCP is that measures implemented under the NAPCP will have reduced emissions of $PM_{2.5}$ by only 1.8kt by 2020. This represents a significant shortfall from the 18.30 kt reduction from 2019 levels required to achieve the 2020 targets for $PM_{2.5.}$ The NAPCP does not provide an estimate of the reduction achieved through funding agricultural equipment, the single NH_3-reducing measure implemented before the 2020 deadline. However, it is highly unlikely to get close to the 16.44 kt reduction from 2019 levels required to achieve the 2020 targets for $NH_{3.}$

vii. The Secretary of State also failed to discharge his obligation to review the April 2019 NAPCP following a projected failure to meet the UK's national emission reduction commitments, in breach of Regulation 9(5) NECR. Exceedance of the 2020 targets for NH_3 and $PM_{2.5}$ emissions was forecast in the UK Informative Inventory Report published in April 2019, and then again in the UK Informative Inventory Report, published in March 2020. The Secretary of State was obliged, under regulation 9(5)(b), to review the NAPCP within 18 months of the forecasts that total anthropogenic emissions of $PM_{2.5}$ and NH_3 occurring within the UK were at risk of exceeding the 2020 national emission reduction commitment. Had the Secretary of State complied with his obligation, the first review would have been completed by October 2020, and the second by September 2021.

viii. These reviews would have identified the flaws in the initial NAPCP and the ongoing failure to meet implementation deadlines. By the time the NAPCP was published in March 2019, it was clear that the measures and policies in the NAPCP would not be implemented in accordance with the NAPCP timetable for adoption and implementation. For example, the NAPCP stated that the implementation date for measures falling within the agriculture package was 2019. Yet, the by the time of publication of the NAPCP, the Government's Clean Air Strategy (published several months earlier) stated in terms that most of the measures falling within the agriculture

package would not be implemented by 2019 or even 2020. It would also have been clear by April 2019 that legislation prohibiting the sale of wet wood or coal would not be implemented by 2020, even though the NAPCP projections for reductions in $PM_{2.5}$ emissions assumed that the legislation would be in force in 2020. A review of the NAPCP starting in April 2019 would have been completed by October 2020. It would have been necessary as part of that review to identify measures and policies, and a timetable for the same, which would enable the achievement of the emission reduction commitments. Instead, the Government failed to act and waited until March to commence a review of the NAPCP which will not be completed until September 2022.

ix. These failures indicate that the Secretary of State has not taken seriously his ancillary obligations under the NECR. It is important going forward that the Secretary of State confirms its commitment not only to produce a NAPCP which ensures that the UK meets its emissions targets but also that it complies with its obligation to implement that plan and to conduct timely reviews when exceedances are forecast.

Legal Framework

1. The National Emissions Reduction Commitments Directive (2016/2284/EU) ("**NEC Directive**") entered into force on 31 December 2016. It sets binding emissions reduction commitments for 2020 and 2030, compared to 2005 levels, for five air pollutants: nitrogen oxides (NOx), non-methane volatile organic compounds (NMVOCs), sulphur dioxide (SO_2), NH_3 and $PM_{2.5}$. The NEC Directive transposes the reduction commitments for 2020 agreed by the EU and its Member States under the 2012 revised Gothenburg Protocol under the LRTAP Convention. The 2010 emission ceilings for NOx, NMVOC, $PM_{2.5}$, NH_3 and SO_2 (as agreed in the Gothenburg Protocol) apply up to the end of 2019. These are then superseded by the 2020 emission reduction commitments.

2. The NEC Directive is transposed into UK law through the NECR which came into force on 1 July 2018.[1] The NECR continues to have effect in domestic law following the end of the transition period under s.2 of the European Union (Withdrawal) Act 2018. Amendments to the NECR made under the Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 and the Environment (Legislative Functions from Directives) (EU Exit) Regulations 2019 came into force on 1 January 2021, at the end of the transition period.

3. Regulation 2 NECR defines "*anthropogenic emissions*" as "*atmospheric emissions of pollutants associated with human activities with the exception of—*
(a) emissions from international maritime traffic;
(b) aircraft emissions beyond the landing and take-off cycle;
(c) emissions of NOx and NMVOC from activities falling under categories 3B (manure management) and 3D (agricultural soils) in NFR 2014"

and defines *"national emission reduction commitment*" as "*the emission reduction level for a relevant pollutant to be achieved in accordance with regulation 6(2) or (3) in a particular calendar year*".

4. Regulation 3(1) NECR requires the Secretary of State to prepare a national emissions inventory of emissions occurring within the United Kingdom. It provides:

[1] It is notable that the NECR does not transpose Part 2 of Annex 3 of the NEC Directive, which sets out mandatory and recommended measures to control ammonia emissions.

"(1) The Secretary of State must—
(a) by 15th February each year prepare an inventory of emissions occurring within the United Kingdom of the pollutants specified in Table 1 of Schedule 1, for the calendar year before the previous calendar year;

(b) by 15th March 2019 and every two years after that date prepare and update a projection of emissions occurring within the United Kingdom of the pollutants set out in Table 2 of Schedule 1, for the years specified in column 3 of that table that have not yet passed."

5. Regulation 5(1) NECR sets out the national emission ceilings which the Secretary of State must ensure are met up to 2019. Regulation 6 sets out the national emission reduction commitments which must be met from 2020. It provides:

"(1) Paragraphs (2) to (4) apply, subject to regulation 8.

(2) The Secretary of State must ensure that, in 2020 and in each subsequent year up to and including 2029, the total anthropogenic emissions occurring within the United Kingdom of each relevant pollutant do not exceed the percentage of base year emissions specified for that pollutant in Table 2 of Schedule 3.
(3) The Secretary of State must ensure that, in 2030 and in each subsequent year, the total anthropogenic emissions occurring within the United Kingdom of each relevant pollutant do not exceed the percentage of base year emissions specified for that pollutant in Table 3 of Schedule 3.

(4) The achievement of the objectives in paragraph (2) or (3) is to be assessed by reference to the relevant inventory of emissions prepared in accordance with Part 2.

(5) In this regulation, "base year emissions" means the total anthropogenic emissions for 2005 as published in the UK National Atmospheric Emissions Inventory."

6. The UK's emission reduction commitments pursuant to the NECR (and the Gothenburg Protocol), by reference to 2005 emission levels, are:

Pollutant	**2020 and in each year up to 2029**	**2030 and in each subsequent year**
SO_2	59 %	88 %
NOx	55 %	73 %
NH_3	8 %	16 %
$PM_{2.5}$	30 %	46%
NMVOCs	32%	39%

7. The national emission level (in kt) for 2020 which must be achieved for NH_3 and $PM_{2.5}$ in order to achieve the emission reduction commitments ("**ERC"**) are as follows[2]:

Pollutant	**Target required to achieve 2020 ERC (kt)**	**Emission reduction required from 2019 to 2020 to achieve 2020 ERC (kt)**
NH_3	255.41	16.44

[2] These figures are taken from Table 9-5 of the UK Inventory Report 1990-2019.

$PM_{2.5}$	90.41	18.30

8. In addition to achieving the 2020 and 2030 reduction commitments, Regulation 7(1) of the NECR requires that the Secretary of State ensure that in 2025 emissions levels do not exceed the linear reduction, defined as the straight linear trajectory between the national emission reduction commitments to be met in 2020 and 2030. Regulation 7(2) provides that emissions of a relevant pollutant may not follow the linear reduction trajectory if the Secretary of State considers that it is necessary to do so because it is economically or technically more efficient.

9. Regulation 9 requires the Secretary of State to prepare a NAPCP setting out the measures that will be taken to meet the respective national emissions reduction commitments in 2020 and 2030. It provides:

> *"(1) The Secretary of State must prepare and implement a national air pollution control programme in order to limit anthropogenic emissions in accordance with the national emission reduction commitments.*
>
> *(2) The Secretary of State must publish the initial national air pollution control programme by 1st April 2019, including at least the information set out in Part 1 of Annex 3 to the Directive.*
>
> *(3) When preparing, reviewing or implementing the national air pollution control programme the Secretary of State must—*
>
> *(a) assess to what extent national emission sources are likely to have an impact on air quality in the United Kingdom;*
>
> *(b) take account of the need to reduce air pollutant emissions for the purpose of meeting air quality objectives;*
>
> *(c) prioritise emission reduction measures for black carbon when taking measures to achieve the national reduction commitments for fine particulate matter;*
>
> *(d) ensure the programme is coherent with other plans or programmes established under source-based air pollution control legislation;*
>
> *(e) include the emission reduction measures that are obligatory in Part 2 of Annex 3 to the Directive.*
>
> *(4) Subject to paragraph (5), the Secretary of State may review the national air pollution control programme from time to time and revise it as considered appropriate, but must review it at least once every four years from 1st April 2019.*
>
> *(5) The Secretary of State must review the national air pollution control programme within 18 months of the date on which either of the following is prepared—*
> *(a) an inventory of emissions, prepared in accordance with regulation 3(1) or 4(1) as the case may be, that shows total anthropogenic emissions of a relevant pollutant occurring within the United Kingdom exceed a national emission reduction commitment;*
> *(b) a projection of emissions, prepared in accordance with regulation 3(2), that shows total anthropogenic emissions of a relevant pollutant occurring within the United Kingdom are at risk of exceeding a national emission reduction commitment."*

10. The information which the NAPCP must contain, as set out in Part 1 of Annex 3 of the NEC Directive, includes the following:

"(a) the national air quality and pollution policy framework in which context the programme has been developed, including:
(i) the policy priorities and their relationship to priorities set in other relevant policy areas, including climate change and, when appropriate, agriculture, industry and transport;
(ii) the responsibilities attributed to national, regional and local authorities;
(iii) the progress made by current policies and measures in reducing emissions and improving air quality, and the degree of compliance with national and Union obligations;
(iv) the projected further evolution assuming no change to already adopted policies and measures;

(b) the policy options considered to comply with the emission reduction commitments for the period between 2020 and 2029 and for 2030 onwards and the intermediate emission levels determined for 2025 and to contribute to further improve the air quality, and their analysis, including the method of analysis; where available, the individual or combined impacts of the policies and measures on emission reductions, air quality and the environment and the associated uncertainties;

(c) the measures and policies selected for adoption, including a timetable for their adoption, implementation and review and the competent authorities responsible;

(d) where relevant, an explanation of the reasons why the indicative emission levels for 2025 cannot be met without measures entailing disproportionate costs;

(e) where relevant, an account of the use of the flexibilities set out in Article 5 and any environmental consequences arising from such use;

(f) an assessment of how selected policies and measures ensure coherence with plans and programmes set up in other relevant policy areas."

Factual Background

11. The Government has described air quality as the largest environmental health risk in the UK, and the fourth greatest threat to public health after cancer, heart disease and obesity.[3] It shortens lives and contributes to chronic illness. The Government's Clean Air Strategy, published in January 2019, describes the environmental and human health risks presented by PM as follows (at p.16):

> *"PM is formed of tiny particles that can get into the lungs and blood and be transported around the body, lodging in the heart, brain and other organs. PM affects health in two ways: by being toxic or by providing a surface for transporting toxic compounds to where they can do harm. PM can have short-term health impacts over a single day when concentrations are elevated, and long-term impacts from lower-level exposure over the lifecourse. Effects are amplified in vulnerable groups including young children, the elderly, and those suffering from breathing problems like asthma. The Department of Health and Social Care's independent Committee on the Medical Effects of Air Pollutants (COMEAP) quantified the longterm impacts of UK PM concentrations in terms of mortality as equivalent to 340,000 life years lost."*

12. The Clean Air Strategy describes the environmental and human health risks presented by NH_3 as follows (at p. 17):

[3] Clean Air Strategy 2019, p.4.

"The main concerns resulting from ammonia emissions are the contribution to particulate matter and … human health effects …. Ammonia is converted by mixing with nitrogen oxides and sulphur dioxide, producing ammonium compounds that turn into fine particulate matter. This PM is transported large distances and adds to the suspended background levels of particulates in the atmosphere. Public Health England attributed the 2014 smog in London in part to agricultural ammonia emissions.2

NH_3 stays in the atmosphere for just a few hours as a gas but this extends to several days when converted to PM. In this form it can travel very long distances before being removed from the atmosphere by rain and snow and deposited to land. In this way ammonia can cause significant long-term harm to sensitive habitats, depositing more nitrogen onto soils and plants, and into freshwaters, than they can cope with. This has led to significant changes to plant communities, and also affects the animal species that depend on them."

13. The Government's Clean Air Strategy states that agriculture is the dominant source of NH_3 emissions (88% in 2016). NH_3 is emitted during the deposit, storage and spreading of manures, slurries and fertilisers. Emissions of NH_3 fell by 13% between 1980 and 2015. Since then there has been an increase of 10% during the period up to 2017, principally as a result of fertiliser use.[4] Application of inorganic nitrogen fertilisers, which contributed to 16% of total NH_3 emissions in the UK and 18% of agriculture NH_3 emissions in 2017, increased by 25% during this period.[5]

14. The Clean Air Strategy describes the sources of primary PM emissions as follows: 38% of UK primary PM emissions come from burning wood and coal in domestic open fires and solid fuel stoves, 12% comes from road transport (e.g. fuel related emissions and tyre and brake wear) and a further 13% comes from solvent use and industrial processes (e.g. steel making, brick making, quarries, construction). Secondary PM is formed in the atmosphere through chemical reactions between other air pollutant gases, including NH_3. Between 1970 and 2016 primary PM_{10} emissions fell by 73%, and primary $PM_{2.5}$ emissions fell by 78%. However, emissions of PM_{10} and $PM_{2.5}$ have been relatively stable since 2009.

Clean Air Strategy

15. In January 2019 the Secretary of State published the Clean Air Strategy for England. The Strategy sets out the action which the Government has identified as being required to tackle air pollution and meet the UK's legally binding targets to reduce emissions of the five pollutants covered by the NEC Directive and NECR, including $PM_{2.5}$ and NH_3, by 2020 and 2030.

The NAPCP (April 2019)

16. In April 2019 the Secretary of State published the NAPCP as required by Article 9 of the NECR. The cover page states that it "*sets out measures and technical analysis which demonstrate how the legally binding 2020 and 2030 emission reduction commitments (ERCs) for 5 damaging pollutants (nitrogen oxides, ammonia, non-methane volatile organic compounds, particulate matter and sulphur dioxide) can be met across the UK.*"

[4] Impact Assessment carried out for proposed regulation to reduce NH_3 emissions from solid urea fertilisers in England (5 June 2020), § 5).
[5] Impact Assessment carried out for proposed regulation to reduce NH_3 emissions from solid urea fertilisers in England (5 June 2020), § 5).

17. Section 2.6 sets out the policy options considered in order to comply with the emission reduction commitments for 2020 and 2030, as well as intermediate emission levels for 2025. Section 2.7 sets out the policies selected for adoption by sector, including a timetable for their adoption, implementation and review and the competent authorities responsible. The measures which are projected as possibly having an impact for NH_3 emissions by 2020, 2025 and 2030, as well as the timetable for adoption and implementation, are as follows.[6]

Policy or measure	**Currently planned year of adoption (M)**	**Currently planned timetable for implementation (M)**		**2020**	**2025**	**2030**
		Start year	**End year**			
Domestic package *Legislate to prohibit the sale of the most polluting fuels*	2019	2019	Beyond 2030	*NH_3: 0*	*NH_3: 0 to 0.1*	*NH_3: 0 to 0.2*
Agriculture package • *Funding for low emission equipment* • *Regulation to reduce urea-based fertiliser emissions & regulation to reduce emissions from fertiliser use* • *Requiring covers on slurry & digestate, stores and requiring spreading by trailing hose, trailing shoe or injection* • *Incorporation of manures within 12 hours* • *Mandatory standards for livestock housing* • *Environmental Permitting for dairy & intensive beef units*	2019	2019	2027	*NH_3: 0 to 26.3*	*NH_3: 0 to 44.1*	*NH_3: 0 to 61.8*

[6] Information in the table is taken from: Table 2.6.1 (p.35) of the NAPCP, which summarises the projected reductions for policies and measures identified, as well as the timetable; and, Table 2.7 (p.58), which lists the policies and measures selected for adoption.

18. The measures which are projected as possibly having an impact for $PM_{2.5}$, as well as the timetable for adoption and implementation, are as follows: [7]

Policy or measure	**Currently planned year of adoption (M)**	**Currently planned timetable for implementation (M)**		**2020**	**2025**	**2030**
		Start year	**End year**			
Road transport package • *Road to Zero for cars & LGVs* • *Influencing modal shifts in urban*		2019	*Beyond 2030*	*$PM_{2.5}$: 0*	*$PM_{2.5}$: 0.1 to 0.6*	*$PM_{2.5}$: 0.1 to 0.7*
Shipping package • *Changes to domestic Regulations Extending* • *ECAs to all UK coastal Waters* • *Major port AQ plans*		2019	*Beyond 2030*	*$PM_{2.5}$: 0*	*$PM_{2.5}$: 0 to 0.5*	*$PM_{2.5}$: 0 to 0.7*
Other transport Package • *Aviation AQ Strategy* • *Action to reduce rail emissions* • *Action on NRMM via publicly funded infrastructure projects*		2019	*Beyond 2030*	*$PM_{2.5}$: 0*	*$PM_{2.5}$: 1.5 to 1.7*	*$PM_{2.5}$: 1.3 to 1.7*
Domestic package *Legislate to prohibit the sale of the most polluting fuels*	2019	2019	Beyond 2030	*$PM_{2.5}$: 12.4*	*$PM_{2.5}$: 13.9 to 15.5*	*$PM_{2.5}$: 13.6 to 16.1*
Industry Package • *Implementation of MCPD, HNG and other IED measures* • *Industrial roadmaps* • *Closing the regulatory gap & regulation for*	2019	2019	*Beyond 2030*	*$PM_{2.5}$: 1.8*	*$PM_{2.5}$: 6.6 to 10.7*	*$PM_{2.5}$: 10.6 to 14.6*

[7] Information in the table is taken from: Table 2.6.1 (p.35) of the NAPCP, which summarises the projected reductions for policies and measures identified, as well as the timetable; and, Table 2.7 (p.58), which lists the policies and measures selected for adoption.

smaller sites • *Challenging industry on VOCs*						

19. Table 2.6.1 (p.35) of the NAPCP sets out total emissions reductions expected for all policy measures if the Clean Air Strategy policies are taken forward (expressed as kt per annum or as a range compared to the scenario without measures).

2020	**2025**	**2030**
$PM_{2.5}$: 15	$PM_{2.5}$: 24-32	$PM_{2.5}$: 28-39
NH_3: 0 to 26	NH_3: 0-44	NH_3: 0-63

20. Table 2.6.1 (p.42) shows the expected reductions are lower for $PM_{2.5}$ if the Clean Air Strategy policies relating to devolved powers are applied to England only but the same for NH_3.

2020	**2025**	**2030**
$PM_{2.5}$: 14	$PM_{2.5}$: 22-29	$PM_{2.5}$: 26-34
NH_3: 0 to 26	NH_3: 0-44	NH_3: 0-63

21. Section 2.8 sets out the projected combined impacts of policies and measures with additional measures on emission reductions and associated uncertainties. These are set out in Table 2.8.1 (pp61-62) as follows:

2.8.1 Projected attainment of emission reduction commitments (WAM)
Numbers in square brackets assume that where Clean Air Strategy polices relate to devolved powers they are applied in England only

	Total emissions (kt), consistent with inventories for year x-2 or x-3 , please specify the year (M):				**% emission reduction achieved compared with 2005 (M)**			**National emission reduction commitment for 2020-2029 (%) (M):**	**National emission reduction commitment from 2030 (%) (M):**
	2005	2020	2025	2030	2020	2025	2030		
NH_3	288	253 to 279 [253 to 279]	231 to 276 [231 to 276]	214 to 277 [214 to 277]	3% to 12% [3% to 12%]	4% to 20% [4% to 20%]	4% to 26% [4% to 26%]	8%	16%
$PM_{2.5}$	127	89 [89]	69 to 78 [73 to	61 to 71 [66 to 74]	30% [30%]	39% to 46% [38%	44% to 52% [42%	30%	46%

			80]			to 43%]	to 48%]		
Date of emission projections (M):					March 2018				

Implementation of policies and measures identified in NAPCP to reduce NH_3 and $PM_{2.5}$ emissions

22. The timetable in section 2.7 of the NAPCP states that all of the policies and measures identified in the NAPCP to reduce NH_3 and $PM_{2.5}$ emissions will be adopted in 2019 with implementation to begin in 2019.

23. The NAPCP identifies only three packages of measures which are projected to reduce NH_3 and $PM_{2.5}$ emissions by 2020. These are:

    a. The domestic package – i.e. legislation to prohibit the sale of the most polluting fuels (projected to achieve reductions of $PM_{2.5}$ emissions by 2020);

    b. The agriculture package (projected to achieve reductions NH_3 by 2020);

    c. The industry package (projected to achieve reductions of $PM_{2.5}$ by 2020).

24. Implementation of the domestic package: The Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020 entered into force on 1 May 2021. It prohibits the sale of coal or wood with a moisture content at or above a prohibited level. Under the NAPCP the timetable for this legislative measure was stated to be 2019 for finalisation of policy and 2020 for implementation.

25. Implementation of the agriculture package: Of the six measures referred to in the NAPCP as forming the agriculture package, only one measures has been implemented, namely funding for low-emission equipment. The NAPCP provides no estimate if the quantity of NH_3 that will be abated through this measure. As for the remaining measures:

    (1) Rules on urea-based fertilisers: A consultation on reducing NH_3 emissions from solid urea fertilisers in England began in November 2020 and ended on 26 January 2021. No consultation response has been published and no time-frame provided for when such measures will be introduced. The Clean Air Strategy states (at paragraph 7.4.2) that "*we will consult on this policy in 2019 with a view to introducing legislation in the shortest possible timeframe*". This indicates significant slippage from the timetable set out in the NAPCP and the Clean Air Strategy.

    (2) Environmental Permitting: The Clean Air Strategy (paragraph 7.4.2) indicates that environmental permitting for dairy and intensive beef farms will be implemented by 2025.

    (3) A requirement to spread slurries and digestate using low-emission spreading equipment: The Clean Air Strategy states (paragraph 7.4.2) that this will be implemented by 2025.

(4) A requirement for slurry and digestate stores to be covered: The Clean Air Strategy states (paragraph 7.4.2) that this will be implemented by 2027.

(5) Mandatory design standards for new intensive poultry, pig and beef livestock housing and for dairy housing. The Clean Air Strategy states (paragraph 7.4.2) that the standards will be designed in collaboration with industry experts. To date, no consultation has taken place on this measure.

(6) A requirement for all solid manure and solid digestate spread to bare land (other than that managed in a no-till system) to be incorporated rapidly (within 12 hours). The Clean Air Strategy states (paragraph 7.4.2) that legislation will be introduced in the shortest possible timeframe. To date, no consultation has taken place and there is no suggestion that legislation is imminent.

26. The Clean Air Strategy states (paragraph 7.4.2) that Defra will consult on each policy as quickly as possible. To date, there has only been a consultation on one of the measures set out above.

27. Implementation of the industry package: It is unclear from published information whether, and to what extent, the steps set out in the industry package have been implemented. The Clean Air Strategy gives little information about these measures. In terms of industrial roadmaps, it states (at paragraph 8.4) that the Government will work with industry "*to develop a series of ambitious sector roadmaps to make UK industry world leaders in clean technology and to secure further emissions reductions from industry by 2030 and beyond*". In terms of "*closing the regulatory gap & regulation for smaller sites*" it states "*the Government will review existing guidance to support effective emission controls at smaller industrial sites and consider whether further action is needed to strengthen the current regulatory framework. This will include a review of the current local authority permitting system, including fees and charges*".

UK Inventory Report 1990-2019 (March 2021)

28. The UK Inventory Report 1990-2019 ("**the 2021 Inventory Report**") prepared by the UK pursuant to Regulation 3 NECR was published in March 2021.[8] The 2021 Inventory Report contains final emissions estimates for NH_3 and $PM_{2.5}$ for the years 2005 to 2019. It also contains projected emissions for NH_3 and $PM_{2.5}$ for the calendar years 2020 to 2030.

29. Section 9.4 is headed "*Progress against UK air quality emission commitments*". It explains that Table 9-5 sets out how the national emissions totals compare with the 2020 targets applying the NERC and Gothenburg Protocol ERCs to the 2005 baseline. Table 9-5 shows as follows for NH_3 and $PM_{2.5}$.

Pollutant	**NH_3**	**$PM_{2.5}$**

[8] The Report states (p. 314) that projections rely upon data from various sources, key among which are the updated Energy and Emissions Projections, issued by BEIS in October 2020, data from DfT, including updated Road Traffic Forecasts, agriculture forecasts based on the Scenario Modelling Tool (SMT, Defra project ECM 55618) and other forecasts. It explains that "*the emission projections take account of measures in place as far as is possible, given the data available, but do not reflect measures that are still in development under the UK's Clean Air Strategy".*

2005 National Total, kilotonnes (base year)	277.62	129.16
2019 National Total, kilotonnes (final emission estimate)	271.85	108.71
Target required to achieve 2020 ERC, kilotonnes	255.41	90.41
Emission reduction required from 2019 to achieve 2020 ERC, kilotonnes	16.44	18.30
Projected 2020 National Total, kilotonnes	**274.39**	**101.16**
Exceedance of, or amount below, 2020 ERC, kilotonnes	**18.97**	**10.75**
Exceedance of, or amount below, 2020 ERC, %	7%	12%

30. The 2021 Inventory Report sets out the following conclusion (at pp.339-340):

> "*Based on these latest projections, the UK will need to take further action to meet its 2020 ERCs under both the NECR and Gothenburg Protocol and 2030 ERCs under NECR. The UK Government published its Clean Air Strategy and NAPCP in 2019, which sets out how it will work towards its 2020 and 2030 emission reduction commitments. Emission projections described in this report take account of measures in place as far as is possible, given the data available, but do not reflect measures included in the Clean Air Strategy or NAPCP which are still in development.*"

Impact Assessment on proposed regulation of solid urea fertilisers

31. The Impact Assessment carried out for proposed regulation to reduce NH_3 emissions from solid urea fertilisers in England (5 June 2020) states:

> *"5. Emissions of ammonia fell by 21% between 1990 and 2013. However, there has been a subsequent increase of 10% during the period up to 20176. This recent development is mainly the result of emissions from agriculture which increased by 11%. Application of inorganic nitrogen fertilisers, which contributed to 16% of total ammonia emissions in the UK and 18% of agriculture ammonia emissions in 2017, increased by 25% during this period.*
>
> *6. The Government must take action to reduce ammonia emissions. The emissions reduction target was to reduce emissions of ammonia against the 2005 baseline by 8% in 2020. However, it is likely that this emissions target will not be met, and this will be known in February 2022 when the emissions data will be published for the year 2020. Therefore, this policy focuses on reducing ammonia emissions as early as possible after 2020 and on achieving the 16% reduction by 2030, in line with commitments made under National Emissions Ceilings Regulations, 2018 as well as the Convention on Long-Range Transboundary Air Pollution (CLRTAP) and the Gothenburg Protocol."*

32. The Impact Assessment sets out (Table 8, p. 21 at paragraphs 57-58) projections of solid urea fertiliser use and NH_3 emission, which show that solid urea fertiliser application and NH_3 emissions are projected to stay flat over the period 2018-2030.

<u>Opinion</u>

33. I have identified three respects in which I consider the Secretary of State is in breach of his obligations under the NECR. These are:

a. A failure, in 2019, to prepare a NAPCP which ensures that the UK's national emission reduction commitments will be met, in breach of Regulation 9(1) NECR.
b. A failure to implement the NAPCP published in April 2019, in breach of Regulation 9(1) NECR.

c. A failure to commence review of the April 2019 NAPCP within 18 months of April 2019 and March 2020, both being dates on which a projection of emissions, prepared in accordance with regulation 3(2), showed total anthropogenic emissions of $PM_{2.5}$ and NH_3 occurring within the UK were at risk of exceeding the 2020 national emission reduction commitment, in breach of Regulation 9(5) NECR. The first review should have been completed by October 2020 and the second by September 2021.

34. In addition, I consider it highly likely, on the basis of information published by the Government, that the Secretary of State failed to ensure that the UK met its emissions targets for NH_3 and $PM_{2.5}$ for 2020 or at any point since, in breach of his obligations under Regulation 6(2) NECR.

A. Failure to prepare a NAPCP which ensures that national emission reduction commitments will be met in breach of Regulation 9(1) NECR

35. Regulation 9(1) requires that the Secretary of State "*must prepare and implement*" a NAPCP "*in order to limit anthropogenic emissions in accordance with the national emission reduction commitments*". There are three elements to this obligation.

a. First, the provision means that the Secretary of State must prepare a NAPCP which contains measures which ensure that national emission reduction commitments will be met.

b. Secondly, the Secretary of State is obliged to ensure that the NAPCP is devised in such a way as to ensure that the national emission reduction commitments will be met. Unlike the requirement of Article 23(1) AQD, which imposes an obligation to keep the exceedance period as short as possible, there is no flexibility within the obligation in Regulation 9(1). It is a requirement to have a plan that will ensure the national emission reduction commitments will be met by the deadline.

c. Thirdly, Regulation 9(1) also requires that the Secretary of State must implement the measures set out in the NAPCP.

36. In addition, Regulation 9(2) imposes minimum requirements as to the content of the NAPCP. This includes a requirement that the NAPCP set out:

a. A timetable for the adoption, implementation and review of measures and policies selected for adoption.

b. The individual or combined impacts of the policies and measures on emissions reductions, air quality and the environment and the associated uncertainty.

37. Regulation 9(4) provides that Secretary of State may review the NAPCP from time to time and revise it as considered appropriate. Regulation 9(5)(b) provides that the Secretary of State must review the NAPCP within 18 months of the date on which a projection of emissions, prepared in accordance with regulation 3(2), shows total anthropogenic emissions of a relevant pollutant occurring within the UK are at risk of exceeding a national emission reduction commitment.

38. The Secretary of State has failed to prepare a NAPCP which ensures that the national emission reduction commitments for $PM_{2.5}$ and NH_3 would be met by 2020. I have reached this conclusion for the following reasons.

39. First of all, a plan must logically enable the main causes of exceedances to be addressed within the required timeframe. For NH_3, the predominant cause of exceedances is agriculture. The only measures in the NAPCP for achieving reductions in NH_3 emissions by 2020 are contained in the agriculture package. The NAPCP is based on assumptions about timeframes for implementation which are clearly unrealistic. The NAPCP states that the start date for these measures was 2019, continuing to 2027. Yet, the Government's Clean Air Strategy, published several months earlier, states in terms that most of these measures would not be implemented by 2019 or 2020. It follows that the NAPCP does not identify measures which would ensure that, or even make it likely that, the national emission reduction commitments for 2020 would be met.

40. Secondly, even on the optimistic forecast for implementing these measures, the forecast impact ranges from 0 to 26 kt by 2020. It follows that the NAPCP fails to adopt measures which would ensure that the 2020 reductions were met. Instead, it identifies measures which, if very optimistic forecast about timeframes for implementing measures happened to be right, and all measures were adopted, might achieve compliance. In sum, the Secretary of State has adopted and maintained a plan which does not ensure the 2020 emission reduction commitments for $PM_{2.5}$ and NH_3 would be met by 2020.

41. In addition to these substantive problems, the NAPCP fails to comply with the statutory requirement to set out key information about the measures and policies on emission reductions. Regulation 9(2) requires that the NAPCP include at least the information set out in Part 1 of Annex 3 to the NEC Directive. That information includes:

    a. The policy options considered to comply with the emission reduction commitments for the period between 2020 and 2029 and, where available, the individual and combined impacts of the policies and measures on emission reductions: NEC Directive Annex 3, Part 1, paragraph 1(b);

    b. A timetable for the adoption, implementation and review of measures and policies selected for adoption: NEC Directive Annex 3, Part 1, paragraph 1(c).

42. It must also, where available, set out the individual or combined impacts of the policies and measures on emission reductions, air quality and associated uncertainties.

43. The NAPCP fails to do this for agriculture measures. Instead it groups together all measures forming part of the agriculture package and provides a generic timetable for all measures, stating that they will start in 2019 and continue until 2027. It provides a single range for all measures, failing to identify the individual impacts of the policies or measures.

B. Failure to implement the NAPCP in breach of Regulation 9(1) NECR

44. The Secretary of State has failed to take the steps set out in the NAPCP, and relied upon, as creating a possibility of compliance with NH_3 and $PM_{2.5}$ emissions in accordance with the timetable for adoption and implementation set out in the NAPCP.

a. As set out above only one measure has been implemented in accordance with the timetable set out in the NAPCP. This is funding for agriculture equipment. The NAPCP does not provide an estimate of the reduction which can be achieved through this measure.

b. It is unclear whether measures included in the industrial package (implementation of BAT conclusions and changes to the regulation of medium combustion plant) were implemented in accordance with the NAPCP timetable. Assuming that they were, these measures are estimated to have had a combined impact of a reduction in $PM_{2.5}$ of 1.8kt by 2020.

c. The ban on the sale of wet coal and wood only entered into force on 1 May 2021, whereas the NAPCP timetable stated that this would be implemented in 2019.

d. The following measures were due to be implemented by 2019 according to the NAPCP timetable but have not yet been implemented:
   i. Rules on urea-based fertilisers;
   ii. Environmental permitting for dairy and intensive beef farms
   iii. Requirement to spread slurries and digestate using low-emission spreading equipment;
   iv. Requirement for slurry and digestate stores to be covered
   v. Mandatory design standards for new intensive poultry, pig and beef livestock housing and for dairy housing
   vi. Requirement for rapid incorporation of all solid manure and solid digestate spread to bare land.
   vii. Closing regulatory gap and regulation for smaller sites
   viii. Challenging industry on VOC emissions
   ix. Implementation of Industrial Emissions Directive measures.

45. The NAPCP assumed, and relied upon, the adoption and implementation of <u>all</u> of the above measures in accordance with the NAPCP timetable in order to achieve compliance with the 2020 national emission reduction commitments for NH_3 and $PM_{2.5}$ emissions. The consequence of the failure to implement measures in accordance with the timetable set out in the NAPCP is that measures implemented under the NAPCP will have reduced emissions of $PM_{2.5}$ by only 1.8kt by 2020. This represents a significant shortfall from the 18.30 kt reduction from 2019 levels required to achieve the 2020 targets for $PM_{2.5}$. The NAPCP does not provide an estimate of the reduction achieved through funding agricultural equipment. However, it is highly

unlikely to get close to the 16.44 kt reduction from 2019 levels required to achieve the 2020 targets for NH_3.

46. This failure to implement the NAPCP is contrary to Regulation 9(1) NECR and unlawful.

C. Failure to commence review of NAPCP in breach of Regulation 9(5) NECR

47. The 14th UK Informative Inventory Report (1990 to 2017), published 12 April 2019, projected national NH_3 emissions for the year 2020 to be 291 kt, 31 kt in excess of the 2020 target amount. It projected national $PM_{2.5}$ emissions for the year 2020 to be 98 kt, 11 kt in excess of the 2020 target amount.

48. The 15th UK Informative Inventory Report (1990 to 2018), published in March 2020, projected national NH_3 emissions for the year 2020 to be 284.30 kt, 27.64 kt in excess of the 2020 target amount. It projected national $PM_{2.5}$ emissions for the year 2020 to be 96.83 kt, 9.70 kt in excess of the 2020 target amount.

49. Regulation 9(5)(b) provides that:

> *"(5) The Secretary of State must review the national air pollution control programme within 18 months of the date on which either of the following is prepared—*
> *[…]*
> *(b) a projection of emissions, prepared in accordance with regulation 3(2), that shows total anthropogenic emissions of a relevant pollutant occurring within the United Kingdom are at risk of exceeding a national emission reduction commitment."*

50. It follows that the Secretary of State was under an obligation to review the NAPCP within 18 months of April 2019 and March 2020, both being dates on which a projection of emissions, prepared in accordance with regulation 3(2), showed total anthropogenic emissions of $PM_{2.5}$ and NH_3 occurring within the UK were at risk of exceeding the 2020 national emission reduction commitment. The first review should have been completed by October 2020 and the second by September 2021.

51. In addition, the Government has known since at least June 2020 that the NAPCP was unlikely to have achieved compliance with 2020 emissions targets for NH_3. This was expressly acknowledged in the June 2020 Impact Assessment carried out for proposed regulation to reduce NH_3 emissions from solid urea fertilisers: see passage cited at paragraph 31 above. The Impact Assessment goes on to say that the proposals to reduce NH_3 emissions from solid urea fertilisers "*focuses on reducing ammonia emissions as early as possible after 2020 and on achieving the 16% reduction by 2030."* This means that the Government is acknowledging that the existing NAPCP has not fulfilled objectives. However, the Government did not act at that point to review the NAPCP. Instead, the Government waited until publication of the 16th UK Informative Inventory Report (1990 to 2019) in March 2021 to commence a review of the NAPCP which will not be completed until September 2022.

52. As a result of the failure to carry out a review of the NAPCP, the Secretary of State is in breach of his obligations under Regulations 9(4) NECR.

53. I am unable to identify any cogent justification for this failure. The language of Regulation 9(5) is clear: it imposes a mandatory obligation on the Secretary of State ("*must*") to review the NAPCP. It contains no qualifications, relating to the lapse of time since the publication of the NAPCP or a previous review or otherwise, and confers no discretion on the Secretary of State.

54. Compliance with this mandatory obligation is of critical importance. Prompt review of the NAPCP ensures that action is taken to respond to new information – such as projections – that emission reduction targets may not be met. The importance of timely review is illustrated by the facts of this case. By the time the NAPCP was published in March 2019, it was clear that the measures and policies in the NAPCP would not be implemented in accordance with the NAPCP timetable for adoption and implementation. For example, the NPAPC stated that the implementation date for measures falling within the agriculture package was 2019. Yet, the by the time of publication of the NAPCP, the Government's Clean Air Strategy (published several months earlier) stated in terms that most of the measures falling within the agriculture package would not be implemented by 2019 or even 2020. It would also have been clear by April 2019 that legislation prohibiting the sale of wet wood or coal would not be implemented by 2020, even though the NAPCP projections for reductions in $PM_{2.5}$ emissions assumed that the legislation would be in force in 2020. A review of the NAPCP starting in April 2019 would have been completed by October 2020. It would have been necessary as part of that review to identify measures and policies, and a timetable for the same, which would enable the achievement of the emission reduction commitments.

D. Likely breach of Regulation 6(2) NECR

55. Regulation 6(2) provides that the Secretary of State "must ensure" that in 2020 and in each subsequent year up to 2029, the total anthropogenic emissions of NH_3 and PM2.5 are 8% lower than NH_3 emissions for 2005 and 30% lower than $PM_{2.5}$ emissions for 2005. The absolute nature of the obligation is made clear by the mandatory language of Regulation 6(2) and the inclusion of derogations which are permitted under only limited circumstances. Consequently, the Secretary of State must take all measures to secure compliance with that requirement: see by analogy the reasoning of the CJEU in *ClientEarth v Secretary of State for the Environment, Food and Rural Affairs* (Case C-404/13) EU:C:2014:2382 at §31.

56. On the basis of the information currently published by the Government, it is highly unlikely that the UK met emission targets for NH_3 for 2020 or at any point since for the following reasons:

(1) The UK Inventory Report published in March 2021 shows that the national total of NH_3 emissions for 2019 was far in excess of the level required to meet the 2020 emission reduction commitment (16.44kt above 255.41 kt).

(2) The UK Inventory Report published in March 2021 projected the national total of NH_3 emissions for 2020 to be 274.39 kt; this is an increase on the 2019 level and 18.97 kt above the level required to meet the 2020 emission reduction commitment).

(3) The data for the period 2010-2019 show emissions have mostly increased each year since 2010. The 2021 UKIR states that this increase is largely attributable to increases in numbers of dairy cattle and in particular due to increased use of urea-based fertilisers. It is also clear from that data that throughout that period, the level of NH_3 emissions has significantly exceeded the level required to meet the 2020 emission reduction commitment.

(4) The NAPCP states that in the event that no changes are made to already adopted policies and measures (as at 2019), projected emissions of NH_3 for 2020 are 279 kt/annum.

(5) The NAPCP identifies plans policies and measures which have the potential (but are not certain) to reduce NH_3 emissions by 2020. Only measures in the agriculture package have the potential to reduce NH_3 emissions by 2020. The NAPCP projects that if all of the measures in the agriculture package were implemented by 2019, emission reductions which could be achieved range from 0 to 26.3 kt/annum by 2020.

(6) Only one of the measures identified in the NAPCP as having the potential to reduce NH_3 emissions by 2020 has been implemented despite the NAPCP stating that the start date for implementation of the agricultural package was 2019. One of the measures – rules on urea based fertilisers – is still at the consultation stage. Three of the measures have projected implementation dates of 2025 or 2027 (environmental permitting; requirement to use low-emission spreading equipment for spreading slurries; requirement for covered slurry and digestate stores). The remaining measures (rapid incorporation of solid manure and digestate and mandatory design standards) have not yet been the subject of consultation. This is despite the NAPCP stating that the start date for the agricultural packages measures was 2019.

(7) In the Impact Assessment carried out for proposed regulation to reduce NH_3 emissions from solid urea fertilisers in England (dated 5 June 2020 and published in November 2020) the Government has acknowledged the likelihood that the 2020 emission reduction commitment would not be achieved by 2020.

57. The position in relation to $PM_{2.5}$ is less certain as a result of two factors which may impact on the 2020 projections published in the March 2021 UK Inventory Report The first is the impact of Covid-19 restrictions on $PM_{2.5}$ emissions in 2020. The second is that the volume of wood used for domestic burning was assessed to be overestimated in the National Atmospheric Emissions Inventory, resulting in a downwards adjustment to the emissions inventory in 2021. However, for the reasons set out below, it remains unlikely that the UK will have met emission targets for $PM_{2.5}$ for 2020:

(1) The UK Inventory Report published in March 2021 shows that the national total of $PM_{2.5}$ emissions for 2019 was 108.71kt, 18.3 kt above the level required to meet the 2020 emission reduction commitment (90.41 kt). Although these projections may be impacted by reduced activity in 2020 resulting from lockdown restrictions, it should be noted that the UK Information Inventory Report (1990-2019) explains (at section 9.3) that the "*2020 emission projections are based partly on published historical activity data for the calendar year 2020 which will reflect the impact of the COVID-19 pandemic as well as other factors that influenced the levels of activity during that year*" and (at section 9.1) "*we have, where available, used statistics already published for 2020 to*

ensure that our projections reflect activity during the pandemic as accurately as possible". Given that the UK achieved a 16% reduction in $PM_{2.5}$ emissions between 2005 and 2019 it is unlikely the 30% reduction required from 2019 levels will have been achieved.

(2) The UK Inventory Report published in March 2021 shows that the projected total for 2020 is 101.16 kt, 10.75 kt above the level required to meet the 2020 emission reduction commitment.

(3) The data for the period 2010-2019 show emissions have mostly increased each year since 2010. The 2021 UKIR states that small stationary combustion is responsible. It is also clear from that data that throughout that period, the level of $PM_{2.5}$ emissions has significantly exceeded the level required to meet the 2020 emission reduction commitment.

(4) The NAPCP states that in the event that no changes are made to already adopted policies and measures (as at 2019), projected emissions of $PM_{2.5}$ for 2020 are 104 kt/annum.

(5) The NAPCP identifies plans policies and measures which have the potential (but are not certain) to reduce $PM_{2.5}$ emissions by 2020. Legislation to prohibit the sale of the most polluting fuels has the potential to reduce $PM_{2.5}$ emissions by 12.4 kt by 2020. Industry package measures have the potential to reduce $PM_{2.5}$ by 1.8 kt by 2020. These are the only measures identified in the NAPCP which have the potential to reduce $PM_{2.5}$ emissions by 2020.

(6) Legislation to prohibit the sale of the most polluting fuels entered into force on 1 May 2021. It follows that this measure will not have contributed to achieving the 2020 target. It is not clear what, if any, steps have been taken as part of the industry package measures. However, even if the maximum potential reduction for industry package measures were achieved (1.8 kt) this would not be enough to meet the reduction of 18.3 kt from 2019 levels required to achieve the 2020 emission reduction commitment.

Conclusions

58. For the reasons set out above, I have concluded that the Secretary of State has breached his obligations under Regulation 9 NECR (i) to prepare a NAPCP which ensures that the UK's national emission reduction commitments will be met; (ii) to implement the NAPCP, in breach of Regulation 9(1) NECR; and, (iii) to commence review of the NAPCP following a projected failure to meet the UK's national emission reduction commitments. I have also concluded that it is highly likely, on the basis of information published by the Government, that the Secretary of State failed to ensure that the UK met its emissions targets for NH_3 and $PM_{2.5}$ for 2020 or at any point since, in breach of his obligations under Regulation 6(2) NECR.

59. Whether the UK has met its 2020 emissions targets for NH_3 and $PM_{2.5}$ will be confirmed when the UK publishes its 17th UK Informative Inventory Report in February 2022. The ongoing exceedances of emissions limits for NH_3 and $PM_{2.5}$ are of grave concern in light of the risks to human health posed by these emissions. However, of greater concern in the longer term is the Government's attitude to its obligations under NECR. It has not complied with its obligations to implement the plan which is prepared to ensure that it would meet the NECR emission

reduction targets for 2020. It has not complied with its obligation to review the NAPCP following a projected failure to meet the UK's national emission reduction commitments. It is important going forward that the Secretary of State confirms its commitment not only to produce a NAPCP which ensures that the UK meets its emissions targets but also that it complies with its obligation to implement that plan and to conduct timely reviews when exceedances are forecast.

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17th December 2021