



Department
for Environment
Food & Rural Affairs

The draft Clean Air Strategy

Summary of responses

January 2019



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Executive summary

The consultation on the draft Clean Air Strategy ran from 22 May to the 14 August 2018. The draft strategy was wide-ranging, covering the current evidence base, the government's long-term ambition for reducing both the health and environmental impacts of poor air quality in England, and how to deliver these reductions. It included proposed actions in a variety of sectors, from agriculture and industry to the domestic sphere.

The consultation generated strong interest, with 393 organisations and 207 individuals responding. In addition, 111 campaign responses were received. Through these responses, stakeholders provided detailed feedback, which has helped shape the final strategy and will inform its implementation and the continued development of policy and evidence to improve air quality. This document summarises these responses.

Understanding the problem

1. The commitment to greater investment in evidence was favourably received by many, especially for the improvement of local-level data, monitoring of key sites and bringing local and national data together in a single portal. However, some felt the focus should be on reducing emissions rather than improving evidence and some commented that the scale of investment was too limited.
2. There were seen to be particular challenges around linking monitoring with health outcomes, providing good quality data on indoor air quality, bringing together local and national assessments, and maintaining the local authorities' automatic monitoring in the face of budgetary pressures. There were also calls to harmonise standards to encourage (and make best use of) citizen science.

Protecting the nation's health

1. The goal of halving the population exposed to PM_{2.5} over the WHO guideline of 10µgm³ was seen as a positive first step, but many challenged government to go further and faster.
2. There was a consensus that air quality communications needed to be improved (a theme that ran throughout the different areas of the consultation). As part of this, the plans put forward in the consultation (for example, working with media outlets and including air quality in the weather forecast) were generally welcomed. However, many called for greater ambition and additional investment in large-scale campaigns as well as improved localised information and information to vulnerable groups such as children and the elderly. As part of this, there were some calls for improvements to the Daily Air Quality Index and associated messaging.

3. A number of opportunities for communication were highlighted (such as schools and GP surgeries). As well as improved information on what air pollution is, where it comes from and what the risks associated with it are, there were widespread calls for information on the impacts of individual actions, and what people can do to reduce their contribution and to protect themselves. There were also calls for communications to be underpinned by well-evidenced work on behavioural responses.

Protecting the environment

1. There was broad support for the actions outlined in the chapter, especially for monitoring (with caveats that this does not mitigate impacts and takes time to do). This said, there was concern that local councils lack the power, incentives and funds to implement the guidance proposed.
2. Many talked about the need for changes in the transport sector to mitigate environmental impacts. There were also many proponents of urban vegetation schemes.

Securing clean growth and driving innovation

1. There was general support for proposals outlined in the chapter. Further suggestions related to: energy (with mixed views of how to approach biomass); transport (infrastructure improvements as well as modal shift); fuel type (moving away from diesel); planning (for instance, mandatory installation of insulation and/or greener infrastructure such as electric vehicle charging points); better communications; and strong implementation.
2. 'Science, research and the understanding of air pollution' was seen as offering real potential for UK leadership, as was 'monitoring and modelling' and 'mitigation technology'. Additional opportunities were highlighted in policy and international policy advice.
3. Upfront costs were seen as a key barrier to take-up of new technologies alongside other factors such as knowledge of available technologies and their fit with what currently exists. Some stressed the need for clarity and stability in the policy framework and provision of incentives. Innovation priorities outlined were felt to be broadly right.

Action to reduce emissions from transport

1. Transport was a recurring theme in the consultation responses across chapters. There was widespread support for addressing emissions from *all* transport modes as well as those from non-road mobile machinery (NRMM). Although not the focus of this consultation, there were general calls for more ambition and a more holistic approach to transport, particularly in relation to road. There was also strong support for investment in modal shift to active travel and cleaner means of transport, and calls for further action to encourage these.

2. Many commented on the lack of detail on actions to reduce emissions from road transport and the need to take action on local air pollution levels. Many also commented that the Road to Zero strategy lacked ambition.
3. On ports and maritime, there was strong support for reducing emissions from new and existing vessels and for the introduction of port air quality plans, with calls for the latter to address all emission sources including road traffic associated with the port.
4. On rail, there was widespread support for tackling emissions from diesel trains and improving air quality at railway stations. There were also calls for electrification plans to be reinstated, given the limitations of alternative technologies.
5. Aviation was perceived to be a high emission mode of travel. There were calls for greater air quality ambition in the Aviation Strategy, particularly due to concerns about the impacts of airport expansion.
6. On NRMM, respondents expressed a preference for national approaches, fearing that local controls would be confusing and burdensome to local authorities. There were calls for more detail on proposals to enable an understanding of business impacts, support for changes in the use of red diesel (subject to the availability of alternatives) and a timescale for changes compatible with machinery replacement cycles.

Action to reduce emissions at home

1. The package of actions to reduce the impact of domestic combustion was well received, with many welcoming further action. Some called for further and faster action to deal (for example) with the existing stock of heavily polluting stoves, use of inappropriate fuels, outdoor burning and canal boats.
2. However, there were concerns about: the enforcement of both the current regime and the proposed changes; the impact of the proposed changes on those in fuel poverty and/or in rural areas; and the impact on small wood suppliers of the 2m³ cut-off point in a proposed ban on the sale of wet wood. Responses received as part of the chimney sweep campaign echoed many of these points, opposing the proposal to regulate the sale of wet wood and arguing that the resulting drive to kiln-dried logs would increase emissions.
3. There were calls for a national campaign on the environmental and health impacts of domestic combustion and on burning efficiently. There were also requests for government to set out long-term plans for reducing emissions from the heat sector, integrate air quality and climate change goals, and make changes to building regulations.
4. Proposals on non-methane volatile organic compounds (NMVOCs) were well received, with particular support for a labelling scheme (and suggestions on how this might best be implemented). There was also support for NMVOC content to be included in product

advertising (both to inform the public and to encourage product innovation) as well as for better public education on NMVOCs. This said, there was concern from businesses that not enough is known about the health impact of NMVOCs to put effective frameworks in place and that proposals may lead to unintended impacts. They also highlighted time lags in product development.

Action to reduce emissions from farming

1. In the main, the overall package of measures to reduce emissions from farming was welcomed by both organisations and individuals. In particular, support was given to those measures aimed at providing financial and technical support. Some organisations welcomed incentivisation of ammonia reduction above the regulatory requirements through a future Environmental Land Management scheme, which could also target support to protect sensitive habitats.
2. The majority of respondents welcomed the introduction of a regulatory package, commenting that it would improve standards across the industry, create a level playing field and have a significant impact on emissions. Many highlighted the importance of funding, advice and enforcement in adopting regulations and ensuring they are effective. However, there were widespread concerns about the cost of making the proposed investments and about putting additional pressures on the farming sector during a period of uncertainty. A major industry association were strongly opposed to the regulatory package and voiced concerns that regulation would negatively impact productivity, businesses, welfare and the economy if not implemented correctly.
3. Environmental organisations were supportive of the proposal to introduce fertiliser limits. However, most farming organisations and advisory groups were concerned that limits would be too restrictive or were unnecessary. Many responses welcomed the proposed establishment of an expert group on fertilisers.
4. Many responses, including from some environmental organisations, local authorities and farmers, welcomed a proposal to require permits for large dairy farms. Some wanted permitting for all dairy and beef farms. However, organisations representing the dairy sector were opposed on the basis of cost, administrative burden and negative impacts on the industry.
5. There was a feeling that the farming sector would benefit from a joined-up approach to raising awareness and understanding of pollution to water and air (including greenhouse gases).
6. There was significant support for the proposed certification approach for anaerobic digestion plants in receipt of future government incentives, with some commenting that it would give a commercial imperative to invest in best practice technology. However, several prominent stakeholders objected to the approach, stating that existing voluntary guidance and assurance schemes are enough to ensure best practice, that uptake of low emission spreading equipment is already high and that few digestate producers are

responsible for spreading. Concern was also expressed about the cost of any additional administrative burden.

Action to reduce emissions from industry

1. There was support for the existing approach to industrial pollution control through the use of Best Available Techniques (BAT) and the government's commitment to this framework following withdrawal from the EU.
2. Signals of policy and regulatory stability following EU exit were welcomed, with some stakeholders calling for continued consistency with EU standards on BAT whereas others welcomed the opportunity EU Exit might bring to make amendments to BAT. Some questioned how effective market-based mechanisms (emissions trading) would be in tackling industrial emissions, and their ability to deliver an effective alternative to the BAT system. There was emphasis on the need for any new requirements to be proportionate and targeted appropriately, though mixed views on what this meant.
3. Suggestions for strengthening and improving BAT included a stronger regulatory framework for smaller industrial sites, tightened limits, more compliance inspections and reduced lead-in times. There were also calls for increased incentives for industry to encourage further emissions reductions. Several local authorities also called for more support (for example, updated guidance and resources) to assist the permitting process, while industry groups also called for improved guidance and a better coordination of the different legislative frameworks to which industries are subject.
4. Many responding felt there was scope to strengthen the current regulatory framework for smaller industrial sites by increasing the scope of sites within the regulations. However, there were calls to review the effectiveness of the existing framework before any changes were considered.
5. There was support for taking further action on medium combustion plant, although there was no clear consensus on the best approach for doing this. Some respondents considered that any furthering of the controls should be assessed once the impact of the current legislation is better known.

Leadership at all levels

1. The overall package of actions in the leadership chapter was viewed positively, with many seeing an opportunity to enhance environmental standards and show leadership. In particular, many supported the creation of a new, independent statutory body (with strong enforcement powers). Many also welcomed proposals to bring forward primary legislation, with some stakeholders calling for limit values and targets to be included.
2. There was agreement that local government needed more powers to tackle emissions from domestic combustion and transport/traffic, and that planning decisions, especially

the siting of schools and public buildings, should be subject to stronger air quality controls.

3. Concerns were expressed about responsibility for air quality being pushed to the local level, and the resources available to deal with this. Throughout the responses, there was significant apprehension that any increase in local council powers would not be accompanied by additional funding.
4. Although some identified benefits in shifting the balance of responsibility for clean air towards upper-tier authorities (especially where transport is the primary emission source), there was recognition that this came with risks in relation to local accountability and knowledge of local context. There was also mixed reaction to statutory framework proposals and calls for central government to take a more active leadership role, for example, in relation to infrastructure improvements, fiscal incentives, campaigns and provision of appropriate funding for local plans. There were also calls for a joined-up UK approach.

Progress towards our clean air goals

1. There were calls for more ambition in terms of targets, spatial coverage (i.e. that the commitments made should apply throughout the UK) and range of pollutants covered, as well as for more action, particularly on road transport. There was also a call to factor uncertainty into projections.

Introduction

The consultation on the draft Clean Air Strategy ran from 22 May to the 14 August. We received 393 responses from organisations and 207 from individuals, in addition to 111 responses from chimney sweeps and chimney sweep businesses that used text from a campaign run by the Guild of Master Chimney Sweeps and the Association of Professional Independent Chimney Sweeps. In total, therefore, we received 711 responses, having taken account of duplicate responses where individuals or organisations sent in two copies of their same response. Of these 398 were sent by email, 310 were received through the online portal, Citizen Space, and three came in by post¹.

Over 40% of the responses were from businesses, almost a third of which were from business representative bodies, such as trade associations. In particular, there were responses from a range of energy and transport-related organisations, as well as agriculture-related businesses. There were also responses from a variety of other industries.

Approximately 25% of the responses came from local government in England. They ranged in size from parish to county councils, but were largely borough and district local authorities. However, there were also a few responses from representative organisations and a number of joint responses.

A further approximate 10% came from non-governmental organisations, particularly those concerned with human and/or environmental health. There were also responses from a number of professional associations, public bodies, trade unions, community groups and other types of organisations. A list of organisational respondents is provided in Annex A.

This document provides a summary of the responses received during the consultation period. The government response to this consultation is the final Clean Air Strategy that is being published at the same time as this summary.

Some respondents focused on a specific policy area of the strategy, but many commented on a range of questions, sometimes in a lot of detail. Whilst the summary cannot reflect every response received, it does attempt to present an overview of the diversity of perspectives expressed in relation to each question and policy area. Given the breadth of the strategy, this means it is relatively long. Within this, there is some variation in the length and detail provided in each question summary. This variation is a consequence of differences in the question and responses received. Question summaries tend to be longer where a question covered more actions, received more response in terms of either detail or number, and/or there was a greater variety of views and reasons for these provided.

¹ These overall totals exclude any respondents who were found to have responded more than once. However, figures for the numbers of organisations and individuals who responded to an individual question in the next sections occasionally double-count an individual or organisation that sent in two responses, often because the second response included additional information. However, this is rare and does not make any material difference to what is in essence a qualitative analysis (see next section on analysis).

About the analysis

It is important to keep in mind that public consultations are not necessarily representative of the wider population. Since anyone can submit their views, individuals and organisations who are more able and willing to respond are more likely to participate.

Because of this likelihood for self-selection, the emphasis of this analysis has not been to count how many respondents held a particular view. Instead, it has been largely qualitative - with the aim being to understand the range of key issues raised by respondents, and the reasons for holding their particular views. This includes potential areas of agreement and disagreement between different groups of respondents.

The objective of a meaningful consultation process is to be as inclusive as possible. This allows as many people to share views in whatever form is easiest and best from their perspective.

In presenting the results, we have aimed to provide a broad picture of all views and comments. Therefore, a range of qualitative terms is used, including 'many' 'some', 'most', and 'a few'. Interpretation of the balance of opinion must be taken in the context of the question asked, as not every respondent answered all the questions, and not every respondent who provided an answer to a closed question provided additional detail.

In this respect, qualitative terms are only indicative of relative opinions to questions on the basis of who responded. Therefore, they cannot be assumed to relate numerically back to the total number of people and organisations.

Chapter 1 – Understanding the problem

This chapter focused on further strengthening the evidence base on the emissions of targeted pollutants and the transparency of air quality data. Two actions were proposed. These were:

- investing £10 million in improving our modelling, data and analytical tools to give a more precise picture of current air quality and the impact of policies on it in future
- increasing transparency by bringing local and national monitoring data together into a single accessible portal for information on air quality monitoring and modelling

There were two questions for the chapter, and the responses to these are summarised below.

Question 1: What do you think about the actions put forward in the understanding the problem chapter? Please provide evidence in support of your answer if possible.

In total, there were 350 responses to this question, 219 from organisations and 131 from individuals. This question had a large number of responses from local councils.

In general, there was a cautiously positive response to the actions and chapter content from organisations. However, whilst over a third of individuals made positive comments, over half made negative points (with some making a mix of both). These negative responses were motivated either by a view that the proposed £10 million investment was inadequate or that enough was known and this money would be better spent on emissions reduction.

Most positive organisational responses were supportive of the principle of investment in modelling and analytical tools, and of making local data available through a single portal. However, a significant number of these responses also wanted more detail and more idea of the wider purpose of these activities, about which there was some misunderstanding. Local authorities were keen to understand the details of the proposed actions and how the activities of local councils might be impacted by these actions.

A substantial minority of these positive organisational responses made clear that the additional transparency provided by the data portal in particular was the main reason for their approval. For example, the British Heart Foundation were supportive of the portal, saying that the monitoring regimes are difficult to interpret as they stand.

Some respondents focused on what was missing from the chapter rather than the actions. For example, there was a call from a number of organisations to link to health outcomes metrics. Several individual respondents expressed the view that there was a lack of oversight by national government of local councils, which were perceived to be failing on

air quality management. A number of others wanted government to work alongside academia, environmental groups and local authorities in delivering the actions.

1.1 Views on £10 million investment to improve air quality modelling, data and analytical tools

There were two main, but contrasting, reasons for the negative comments made by many individuals. These were that:

- we already have a lot of evidence and know that people are dying partly due to air pollution, so the money would be better spent on reducing emissions – some saw this proposal as further illustration of the government’s lack of commitment to actually doing something about air pollution and a diversionary tactic
- £10 million is not enough to invest in understanding the actions required to improve air quality at an acceptable rate – some misunderstood the context and took the £10 million to mean a total investment for the strategy rather than just on evidence aspects

Most responses from organisations did not comment on the size of the funding pot available. Those that did, for example ClientEarth, generally thought it was insufficient to improve the air quality evidence base significantly. The All Party Parliamentary Group (APPG) on Air Pollution questioned whether the £10 million was sufficient investment for modelling. Others queried whether the £10 million was a one-off investment or ongoing.

Some organisations felt that existing modelling for national compliance purposes was flawed at a local level. They tended to argue that investment should focus less on national level modelling and more on expanding the monitoring network (either at a local or national level). It was suggested by some respondents that investment should be in monitoring networks, not in modelling. One of the reasons provided is the lack of local data on PM_{2.5} and PM₁₀. But some reflected more generally on the relatively sparse monitoring networks that are run nationally.

Some responses were more supportive of investment in modelling, although many of these included the caveat that Defra should do more to use low-cost sensor or citizen science techniques to shape their monitoring and modelling priorities. Many responses from local councils asked whether they would have access to or see benefit from the £10 million investment in modelling and analytical tools.

Several responses (mainly from NGOs and charities) wanted the government to focus more on health metrics and personal exposure to air pollution. They tended to want a proportion of the £10 million funding to go towards research exploring exposure to air pollutants for vulnerable groups rather than the population as a whole.

A few explained the rationale for linking directly to health outcomes. For example, the British Lung Foundation said: “the proposals do not address the urgent need to protect

people who are most vulnerable to air pollution, including those who have a lung condition and children, or that information dissemination processes should adapt to target different audiences.” They went on to make the point that air pollution has the biggest impact on children, the elderly, and those with respiratory/coronary conditions. They suggested improvements in air quality might have varying degrees of impact on the population depending on where and how they are achieved.

Some organisational respondents felt that the chapter did not adequately express whether the government understood the problem of poor indoor air quality. It was not clear to these respondents whether any of the £10 million funding was going towards measurement of indoor air quality or on understanding this more.

1.2 Views on the single portal for local and national monitoring data

Almost all responses from local councils showed an enthusiasm for aligning national monitoring to local monitoring in some way. There were many references to the ‘two-tier’ system that is in operation, which can make for a confusing picture for the public. Many councils said they find explaining this system to be challenging. Most responses from local councils supported a single portal for local and national air quality data. However, many wanted assurance that this would not place an extra burden on councils while budgets are being cut. Some assumed that both their monitoring data and modelling data might be available through the portal. Some responses asked how the differences in data quality between local and national data would be explained to users.

Others felt that taking advantage of ‘high-quality’ local data was a positive step. A few responses from local authorities mentioned that having a single air quality data portal might help them to assess air quality better. They suggested that this would mean that they did not need to deal with multiple consultants and neighbouring councils to get the information they need to fully assess local air quality. The APPG on Air Pollution supported developing the portal as a means of raising public awareness.

However, the Local Government Association felt that the gain in public understanding may be minimal given the variable reliability of the data, and was therefore less keen on the idea of the portal. Some organisational responses highlighted the lack of monitoring at local level, particularly for PM_{2.5} and PM₁₀, so questioned the usefulness of the data portal for pollutants other than nitrogen dioxide.

Some individual negative responses drew on personal experience to focus on the lack of near real-time local monitoring data. Some organisations felt the current monitoring network was not “representative”, and supported placing more monitoring sites by public buildings such as schools and hospitals. ClientEarth emphasised that further collaboration is needed between local councils and central government to ensure monitoring networks are fit for purpose. They suggested action should not stop at bringing all the data into one place. They called for local monitoring to be brought up to the standard of national monitoring. Friends of the Earth made a similar call.

Some local authority responses suggested that there is a decreasing number of council-operated automatic monitoring sites due to budget constraints. They wondered whether councils would be given funding to maintain and expand their automatic monitoring, given the increased focus on local data.

A number of responses, including from the APPG on Air Pollution, made reference to 'hyperlocal' monitoring and/or low-cost sensor networks. A few mentioned the ongoing collaboration between the Greater London Authority (GLA) and Google. The GLA itself was supportive of the policies, but felt there was a need to support local authorities to bring their monitoring networks up to standard, as well as to implement 'hyperlocal' monitoring.

A few individual respondents revealed they had 'sensor technology' and were promoting its use. There was a suggestion elsewhere to provide personal-proximal monitoring systems to community and academic groups, and a few responses promoting the idea of citizen science and/or an open data platform. One individual suggested that air quality data needed to be freely available and easy to interpret.

Several responses highlighted the lack of action on ecosystems monitoring mentioned in the consultation document, and felt this has been an underfunded aspect of air quality in recent years. Environmental Protection UK expressed the view that the chapter content did not necessarily fit with the actions. They felt that emissions reduction is only part of the story, and that there is a need to tackle local hotspots.

Question 2: How can we improve the accessibility of evidence on air quality, so that it meets the wide-ranging needs of the public, the science community, and other interested parties?

A total of 310 respondents answered this question, 190 of which were organisations and 120 individuals.

There was general support for making existing evidence more available. Organisations in particular agreed with the proposal for bringing together air quality data within a single portal, with evidence and data tailored to the needs of different audiences. However, many – both individuals and organisations -- suggested that this needed to be presented in a user-friendly way so that it could be easily found and interpreted by the general public or vulnerable groups. There were also calls for methods of data collection, interpretation and presentation to be made transparent. Some felt there was a need to make forecasts on air quality as easily accessible as information on the weather.

The common theme of responses on air quality data within question four was that of localisation. A number of organisational and individual respondents called for the availability of air quality information that was sensitive to local effects and/or based on local monitoring, and for the presentation of that data at local level. Linked to this, there were also some calls for data to be based on personal monitoring. Several respondents called for easy accessibility of data, including for data to be presented in open data format. There were also calls for the use of infographics.

2.1 Suggestions to make existing evidence more accessible

Ideas to make evidence more accessible included the use of:

- a variety of forms of media for communications on air quality (newspapers, TV, websites, social media, and phone apps)
- communication aids to represent data in more easily understood ways, such as maps and infographics
- geoportals for representing data
- road-side signs or displays
- an open application programming interface (API) for the portal so as to assist third party development of apps
- advanced data science methods to tailor information for particular locations, audiences and lifestyle choices – for example, in relation to decisions on technologies and fuels

Many respondents were keen on the use of a range of stakeholders to disseminate evidence and information. Whilst individuals tended to focus on media outlets and online platforms, organisations highlighted primary care providers as having a potential role. Making use of industry bodies was proposed by a small number of respondents, and incorporating information on air quality into the school curriculum was mentioned by several others. This included the suggestion that science lessons might involve measuring air quality. Support for initiatives like national car free day and national clean air day was also advocated to spread information on air quality.

2.2 Quality, consistency and coverage of air quality data

A number of respondents argued that current evidence and data from different sources could produce a confusing and sometimes conflicting picture. For example, a few local councils pointed to the seeming ambiguities in compliance reporting and local authority reporting.

There were suggestions that some form of independent peer review process was required to ensure the authoritativeness and clarity of what the data and evidence was showing. A number of local councils suggested that the scientific and statistical basis, and related standards and assumptions, that underpin the data and evidence be made clear to enable interpretation and to ensure transparency and credibility. There was also a call for having denser monitoring networks as well as real-time data at a high temporal resolution to increase coverage and relevance.

There was a view that more robust evidence is needed to support local policy-making. It was suggested that data on pollution, traffic, fleet composition, weather and emissions should be added into the portal, and separately that air quality data for council planning processes should be added as a data stream. The training of local authority and Environment Agency staff in order to integrate data into national archives was mentioned too. In addition, there was a suggestion to adopt the UK Royal Statistical Societies and

Open Data Institute and UK Statistics Authorities code of practice on data use to make data more reusable.

2.3 Focus and content of air quality evidence and communications

It was emphasised by other respondents that the portal should bring together monitoring, modelling and assessment tools and should have good data mining capability and include data visualisation tools in addition to mapping of the data. Several respondents, including local authorities, argued that there was also a need to publicise the existence of the data portals.

Apart from making air pollution forecasting on a par with weather, there was a call for announcing pollution spikes. Others suggested evidence of the impacts of air pollution in rural areas needed to be communicated more widely. A few responses also highlighted a need to explain “hard-to-believe facts”, whilst a couple felt there was need to ensure full disclosure of data by local authorities. There was a suggestion too to regularly publish air quality data as BEIS does for energy trends.

A small number of respondents highlighted the importance of being more active with health messaging, particularly in terms of reaching vulnerable groups. This is where the ideas of integrating data into app alerts and road sign notices tended to be raised. However, this also included the importance of ensuring that messages were clear, consistent and used accessible language. It was advised that it is important to ensure that health alerts for vulnerable population groups are not impacted by digital exclusion. Suggestions of the focus of messages included:

- information on clean air walking routes
- the provision of focused, practical advice on how people can avoid exposure, for example walking on inside portion of the kerb or taking backstreet routes
- guidance on best practice during high pollution days, such as leave the car at home

There were also a few respondents who suggested there was a need to educate the public regarding consumer choices and their long-term impacts. Options put forward included air quality labelling on products and helping the public make vehicle choice decisions using data similar to the EQUA air quality index. There was a suggestion that there should be better publicising of the benefits of air pollution reduction measures on health.

2.4 Suggestions for further data gathering

A number of local authorities encouraged the use of citizen science as a means of gathering further data, but with the proviso that detailed and harmonised guidance and standards would be needed to ensure data quality, particularly where low-cost sensors are used. There was also a suggestion for a national schools’ monitoring programme, as well as more focus on personal exposure monitoring. A range of organisations, particularly local councils, emphasised the need to make the data relevant to people, both in terms of where they lived and worked, and in terms of their life choices.

In addition, a suggestion was made to slightly expand statutory monitoring capability to provide co-benefits for the research community. There was a call too to reduce uncertainty in the ammonia emissions inventory and to ensure there is disclosure of source in agricultural data.

2.5 Other points and suggestions

There was a range of other points raised. For example, councils emphasised that they would not be able to bear any additional financial burden from having to submit data into a single portal. Other suggestions included:

- mandating local authorities to submit an annual status report
- highlighting good practice that has achieved results
- setting up an air quality research forum similar to the e-cig research forum
- publishing any technical assessments used to support the Clean Air Strategy alongside its publication and including more detail on implementation

Chapter 2 – Protecting the nation's health

This chapter provided an outline of the way government currently provides air quality information through the air quality forecast and episode advice, and outlined work currently underway to improve how air quality is represented in health professions' education and training.

The chapter included information on vulnerable groups and on increased personal exposure to poor air quality from everyday activities, including both in-vehicle exposure and in-home exposure. It put forward a series of actions. The ones highlighted were:

- progressively cutting exposure to particulate matter pollution, and halving the population living in areas with concentrations of fine particulate matter above WHO guideline levels by 2025
- providing a personal air quality messaging system to inform the public, particularly those who are vulnerable to air pollution, about the air quality forecast, providing clearer information on air pollution episodes and accessible health advice
- working with media outlets to improve public access to the air quality forecast
- working to improve air quality by helping individuals and organisations understand how they could reduce their contribution to air pollution, showing how this can help them protect their families, colleagues and neighbours
- publishing updated appraisal tools and accompanying guidance to enable the health impacts to air pollution to be considered in every relevant policy decision that is made

They also included: creating new powers to enable targeted local action in areas where air pollution is a problem; equipping health professionals to play a stronger role by working with the Medical Royal Colleges and General Medical Council to embed air quality into the health profession's education and training; and working with the NHS, hospitals, emergency departments, GPs and local authorities to gather better information on patients reporting and being treated for air quality related health conditions.

This chapter included two questions. The responses are summarised below.

Question 3: What do you think of the package of actions put forward in the health chapter? Please provide evidence in support of your answer if possible.

In total, 360 responses were received in response to this question, 225 from organisations and 135 from individuals. A number of responses to question four also referred to the proposed plans and the points raised in these are added here.

Some respondents reacted to the package as a whole, or did not specify which of the measures they were responding to. However, many provided feedback on specific measures and their responses have been treated differently in this analysis.

About half of organisations and a third of individuals responding to this question were broadly supportive of the overall actions proposed in this chapter (though there was variation in level of support for specific actions). The remainder largely suggested that the proposed package did not go far enough fast enough.

This reflects comments on the actions provided in response to question four in which individuals and organisations often gave support for the principles of what was being proposed, but in a measured way. In particular, several organisations felt that the plans outlined lacked detail. In addition, a few voiced a view that the emphasis should be on improving air quality rather than expecting those who are adversely affected by poor air quality to change their behaviour.

3.1 Views on the goal of halving the population exposed to PM_{2.5} over the WHO guideline of 10µgm⁻³

Whilst some responses on this action were positive, many organisations suggested that it did not go far enough fast enough. There was also demand for more detail on how achievement of such a target would be measured. A significant number of responses, particularly from organisations, suggested that the WHO guideline should be adopted into UK law. Some, such as the British Lung Foundation, suggested going even further. Several local authorities said that they were disappointed that their population would likely remain above the WHO guideline, particularly in London.

Some respondents, particularly a number of councils, professional bodies and non-governmental organisations, pointed to current scientific research suggesting there is no safe long-term concentration for exposure to particulate matter, sometimes as supporting evidence that we should commit to go beyond WHO guideline levels. Additionally, some respondents highlighted the WHO's expected revision of these guidelines.

Several respondents felt there was not enough detail of how the population living in areas above the guideline PM_{2.5} concentrations would be halved. Elsewhere a respondent questioned whether the health target in the draft was achievable with the strategies outlined.

3.2 Views on the proposed personal air quality messaging system

The vast majority of responses to the proposed personal air quality messaging system came from organisations rather than individuals. Many were positive about the proposals. The British Medical Association stated: “We support the provision of clear and transparent information about air pollution [...] which is particularly important to those who are more vulnerable to the impacts of air pollution such as children, the elderly and those with chronic health problems.”

Negative comments tended to focus on a perceived lack of detail in the proposal. Several commented that messaging systems were already in operation (notably AirText, AirAlert and CityAir) and questioned the difference between those and what was being proposed. Linked to this, there was concern that increasing the number of messaging systems may lead to confusion due to differing systems giving conflicting messages (as was already said to be the case in London where existing systems overlap). There were also comments about the effectiveness of messaging being unproven.

For example, the Tower Hamlets council said: “There are [...] two in London – AirText, funded by the London Boroughs and a new system funded by the GLA. On occasions, forecasts issued by the two systems do not match, which may lead to the public having confidence in neither.”

There were also suggestions that creating a personal air quality messaging system that is personal enough to take account of an individual’s particular circumstances and location at specified points in time may be very challenging. There were also calls for messaging to link to practical advice on reducing exposure. For example, Stafford council commented: “The proposed actions are sound but forecasts may raise alarm unless there is robust data confidence relevant to the location of the vulnerable person supported by effective advice on actions to take.” There was a call for any such personal messaging system to be properly tested and piloted.

One particular area of concern was the ability of at-risk groups to engage with systems of this nature. Cambridge council asked: “Many sensitive people are young children/elderly who don’t have as much access to IT/apps – how would it work for them?” In addition, there was feedback from the Royal College of General Practitioners that not enough attention was being paid to socio-economic differences contributing to vulnerabilities.

3.3 Views on working with media outlets

The majority of respondents were positive about this action, and there was also strong endorsement of working with media outlets to improve public access to the air quality forecast in responses to question four. Some felt this should be coupled with better dialogue between Defra and media outlets regarding the accuracy of reporting. As Stockton-on-Tees council put it: ‘There is far too much scope for media to pick and choose from the ‘air quality menu’ to suit a headline. The negative responses mainly suggested

that the government should focus on reducing air pollution at source rather than on the provision of information.

3.4 Views on helping individuals and organisations understand air quality

The majority of responses to this proposal came from organisations, rather than individuals. Though more were positive than negative, quite a lot expressed mixed views. Some were pleased to see the proposal to communicate health advice with groups who are more vulnerable to poor air quality. For example, elsewhere Allergy UK called, like others, for evidence-based education and campaigns “so vulnerable people can develop protection strategies”.

However, others also argued that clear messages needed to be sent to encourage behaviour change to reduce emissions. One individual suggested equating domestic combustion emissions to cigarette smoke, whilst another called for health warnings on stoves. Where negative responses were received, these tended to call for a focus on emissions reduction rather than the provision of information (as they did in response to suggested work with media outlets).

3.5 Views on the publication of appraisal tools and guidance

The majority of responses to this proposal came from organisations, rather than individuals. There was no clear consensus on these proposals with views relatively evenly split. Some local authorities questioned whether the framework, which would enable the health impact of air pollution to be considered in every relevant policy decision that is made, would apply at a local level. They asked for more detail.

For example, Sefton council saw it as “quite a sweeping statement, with very little definition. What is ‘relevant’ and at what level will this be applied.... Given our understanding of health impacts there should be further consideration of instances when requiring, rather than simply enabling assessment of the health impacts of air pollution is appropriate.” Several respondents also asked that the planning framework is updated to take into account the new appraisal tools and guidance.

Question 4: How can we improve the way we communicate about poor air quality and what people can do?

In total, we received 328 responses to this question, of which 204 came from organisations and 124 from individuals.

Although in the responses to question four there were some comments on current air quality (AQ) communications and on the plans outlined in the health chapter, the majority of both individual and personal responses focused on future communications. Many of these called for better AQ communications and in particular, the need for large-scale campaigns.

4.1 Existing communications

A small proportion of responses related to existing communications. On the whole, feedback on these was not positive. In particular, there was criticism (particularly from organisations) that air quality communications were not high profile enough and that the information and health advice provided was poor and/or unclear (for instance, episode advice leading to perverse consequences in relation to discouraging exercising outdoors, and ongoing confusion between air quality and climate change).

A small minority of organisational respondents, including Client Earth, also raised specific concerns about current arrangements for episode response. For instance, there was criticism of how warnings are issued. These responses included requests for a national warning system on the same footing as weather warnings to enable local government to make proactive use of existing mechanisms for cascading information to social services and to support vulnerable clients. There were also calls for advice to be issued to schools, care homes and hospitals.

There were a few calls too for revisions of the Daily Air Quality Index (DAQI), both in relation to pollutants/pollutant levels covered and in relation to the language used. For example, Friends of the Earth stated: “We strongly urge the government to revise the DAQI thresholds, or the banding whereby currently ‘moderate’ is very unhelpfully used to describe air pollution over short-term WHO standards, and over the level set for short-term EU limits.” Concerns included:

- DAQI thresholds being too high, not matching EU standards, not aligning with the WHO short-term standards, and not incorporating any mechanism to recognise spikes in particulate matter
- misleading language used in the DAQI because over the long term, exposure to “low” levels of air pollution is nevertheless dangerous
- potential for unintended consequences from the accompanying health advice (particularly in the absence of more general advice) by giving an impression that outdoor exercise is dangerous
- the mechanisms used for issuing warnings, with comments made that government tend to do as little as possible
- the lack of short-term action plans for NO₂, SO₂ and ozone

4.2 Perspectives on proposed plans

Much of the feedback on the plans outlined in chapter two was given in response to question three. However, some was also provided in response to question four and this is covered in the summary above.

4.3 Future communications

In outlining their thoughts on how communications with the public about poor air quality could be improved, responses from both organisations and individuals covered a broad range of areas: who communications should come from, who they should be aimed at, their scale, the medium and tone used to communicate, the focus of the message and the behaviours that should be targeted.

Scale and medium of communications

There was general support for improving communications on air quality, with many individual and organisational respondents calling for air quality information to be provided as part of the weather forecast, alongside the pollen count. However, above and beyond this, many organisations explicitly called for large-scale, multi-channel and/or mass-media campaigns on air quality (described as “public health” campaigns in some cases). There was strong support for both mainstream and social media to be used (including TV advertising and programming, as well as radio).

There was also support for updated and expanded online resources and mobile apps (including council websites and improvements to UK-AIR), as well as roadside and public space displays of local live air quality information. Indeed, the requirement for localised data based on local monitoring was a theme apparent in a range of responses, and this is reflected in the summary of question two earlier.

Several noted that improved communication would do little to change behaviours or address poor air quality per se, but that public information on this scale was a necessary precursor to the public being willing to accept measures being proposed to deal with air quality problems. Analogies for what was considered necessary were drawn with existing campaigns on obesity, anti-smoking and road safety.

There appeared to be agreement that a one-size-fits all approach was not suitable and instead, that a range of communication methods should be used and tailored to their intended audience. For example, the National Centre for Atmospheric Sciences noted: “One section of society that is particularly sensitive to air pollution, and where considerable health cost is incurred, is the elderly. Using text messaging, mobile apps, Twitter and email may not be the most effective way to communicate advice and alerts to this section of society”.

Content of communications and attempts to influence behaviours

Key areas to cover in communications were felt to be:

- information about what air pollution is and where it comes from
- what the risks and impacts associated with air pollution are
- the impacts of individual actions such as driving and idling
- what people can do to reduce their contribution
- how people can protect themselves

Significant numbers of organisations in particular called for information on the latter two. There were also calls for communications aimed at changing behaviours, and linked to this, for significant investment in behavioural research (and social marketing campaigns). In particular, there were many calls to encourage cycling and active travel, dissuading people from driving and idling, encouraging the use of quieter streets (or “clean routes”) and addressing both indoor air quality and domestic burning. This included tackling misconceptions about exercise and cycling in relation to air quality.

However, there was also acknowledgement of the need to develop a better understanding of responses to the provision of complex information and to test behavioural responses to the messages being given. The possibility of increased communication having unintended consequences (for instance, current episode warnings scaring people off exercising outdoors or advocating “quiet routes” creating an obstacle to cycling or other active travel) was widely voiced as a concern.

The London Sustainability Exchange suggested: “Together with providing the information, effective behaviour change requires investment in proper social marketing campaigns with segmentation targeting specific behaviours”. The Behavioural Insight Team outlined a range of useful suggestions for effective communications and behaviour change initiatives based on behavioural research, such as harnessing pro-social motivations (for instance, by showing how people can help protect their families, colleagues and neighbours).

There was also a recognition that any communication, however well pitched, could only be one part of a set of factors leading to behavioural outcomes, which include technological improvements and infrastructural changes. In Leeds City council’s words: “In order to support and encourage behaviour change (i.e. active travel) national and local government need to inspire (communications and engagement), encourage innovation (i.e. improved national standards for vehicle manufacture) and provide the infrastructure to enable individuals to change behaviour”.

The tone of communications

A significant proportion of those responding to the consultation asked for communications to be clear, simple and/or easy to understand. There were also calls for the messages and information provided to be consistent, truthful and/or fact-based. Several organisational respondents emphasised the need to avoid provoking fear or anxiety in the messaging used. Linked to this, a more significant number called on any campaign or messaging to communicate a positive way forward for dealing with air quality to avoid inciting feelings of helplessness, powerlessness and resignation.

Source and audience

Although many called for communications to be aimed at the general public, consultation respondents mentioned several other key audiences for communications on air quality. They highlighted some of the audiences and messengers which they saw for disseminating messages:

- vulnerable and ‘at risk’ groups

- health professionals, including GPs and other medical staff
- schools (as institutions)
- children (including school children) and their parents
- workplaces and professional networks
- community groups and NGOs

There were several calls for communications to come from trusted sources and led by, or co-produced with, those at risk. However, there was also a strong sense that the medical community needed to be involved, given its expertise. Several organisational respondents called on Public Health England (PHE), the Department of Health and Social Care (DHSC) and/or the National Health Service (NHS) to front campaigns, and for doctors and medical staff to take the lead in talking to patients who might be at risk.

Several also commented on the role that local government could play, with appropriate support, given existing communication channels with residents, vulnerable groups and community organisations. For example, West Suffolk councils suggested: “If a national campaign and national literature was developed, that could be partially delivered at a local level, then this would remove inconsistency, remove the need for numerous local authorities to be researching the same topic and producing similar literature making a much more reliable and efficient message”.

Wider opportunities to communicate on air quality

Respondents highlighted several opportunities for communicating about air quality. These included information being displayed in doctors’ surgeries or provided by medical staff during their interaction with patients, air quality being incorporated into the school curriculum, and engaging civil society and community groups. There were also mentions of incorporating air quality messages into health campaigns (e.g. Change4Life), using coverage of episodes of poor air quality to disseminate messages, and mirroring the current arrangements for heatwaves and weather warnings to alert vulnerable groups.

However, in addition to this, several organisations called on government departments to work together to ensure that the public receives a consistent message. They highlighted the inconsistencies of planning and transport policies, but also opportunities for public sector organisations, as employers, to communicate with staff about air quality. Other opportunities highlighted included green prescribing, indoor air quality forming part of home buying information, joining up on Green Great Britain Week and government or Department for Transport providing better consumer information on vehicle emissions (for example, like energy ratings on appliances).

A few organisations highlighted recommendations from recent health federation research on how best to communicate health messages, as well as research carried out for Defra on communicating air quality. www.nlincsair.info was given as an example of successful communications.

Chapter 3 – Protecting the environment

Chapter 3 outlines the case for the actions set out in the subsequent chapters to protect the natural and built environment from the damage caused by air pollution. Whilst the aim of this chapter is predominantly to introduce the necessity for focus on the environment (alongside human health) when targeting air pollution, it contains two specific actions.

These are:

- monitoring the impacts of air pollution on natural habitats and reporting annually so that we can chart progress as we reduce the harm air pollution does to the environment
- providing guidance for local authorities explaining how cumulative impacts of nitrogen deposition on natural habitats should be mitigated and assessed through the planning system

Mention was also made of a review of research into microplastics from vehicle tyres and brakes. The chapter had two consultation questions. The responses are summarised below.

Question 5: What do you think of the actions put forward in the environment chapter? Please provide evidence in support of your answer if possible.

A total of 302 responses were received to this question, 176 from organisations and 126 from individuals.

There was broad support for the chapter's overall purpose and actions from organisations, particularly councils, though some argued that sufficient resources would need to be made available for implementation to be successful. However, a range of environment-focused non-governmental and professional bodies (including the Wildlife and Countryside Link, a coalition of 49 environment and wildlife organisations, and the Chartered Institution of Water and Environmental Management) felt the actions proposed in the chapter lacked substance and detail on targets and/or timescales, as well as resourcing. They suggested there was a need to go further to address the urgency of the situation.

Many individuals were also critical of the proposals for similar reasons. Some suggested that monitoring and/or guidance would not have a positive impact on the state of the environment (at least not on their own). A few argued that monitoring and provision of guidance are not actions. Again, those who took this stance were not necessarily against these measures, but wanted more commitments to reduce or prevent emissions. Very few respondents saw the environment as unimportant and therefore not a priority. However, the National Farmers Union echoed a few responses by saying that planning decisions need to take a balanced view that takes account of economic benefit and health impacts

too. A couple of mineral companies pointed to the habitat restoration work they undertake after mining.

An issue raised by a number of organisations and individuals was that the planning system was an obstacle. For example, Solihull council said: “The actions are sound, however there is a concern that individual planning processes within local authorities (as laid out in their individual Local Plans) may hinder the aspiration to mitigate and assess the cumulative impacts of nitrogen deposition on natural habitats through the planning system.” The National Centre for Atmospheric Science suggested that a re-evaluation of the implementation of the existing planning framework would be beneficial not only in terms of the environment, but in relation to the whole strategy.

5.1 Views on the proposal to monitor and report impacts on the natural environment

The majority of organisations supported this action, recognising that it was important for assessing the effectiveness of the implementation of actions listed elsewhere in the strategy and/or for local planning. The Joint Nature Conservation Committee, a public advisory body, argued: “Monitoring is essential not only to track reducing exposure and impacts but also to better understand the nature of recovery”. They cited a number of existing networks and schemes that they felt could contribute to effects-based monitoring.

However, some individuals questioned the purpose of, or the need for, monitoring. A number were concerned about the ability of monitoring to represent the environmental impact of air pollution. Several felt monitoring would either not lead to, or be a diversion from, tangible, effective action to reduce emissions. Valero Energy pointed to the discontinuation of deposition monitoring at seven potentially vulnerable Natura 2000 sites by the Environment Agency. They reported that whilst seen as useful, the monitoring was deemed “unlikely to provide any further insight”.

Some organisations and individuals felt that more detail was required as to what would be monitored, by whom and how. A number of organisations called for monitoring a wide range of types of habitats, not necessarily only those that have special designation.

Several respondents suggested that existing monitoring approaches may be too immature, inaccurate or unrepresentative to accurately reflect the condition of environmental sites. The Institute of Air Quality Management stated that monitoring the impacts of air pollution on natural habitats is very challenging and said more detail was needed on how it would be undertaken and financed. Doncaster council suggested that Natural England might be better placed than local councils to assess impacts from nitrogen deposition because of existing expertise and responsibilities.

There were a number of comments made on annual reporting. The Centre for Ecology and Hydrology believed this was a helpful step, but that it would “require investment of time and scientific expertise, as some of the measurements are not at a well-developed stage”, as well as alignment of different methodologies. They suggested setting up a working

group to facilitate this. There was also a call that annual reporting should be locally relevant. Stevenage Borough council said that it “needs to be able to be manipulated at different administrative levels... so that it can be useful to a range of organisations” and include air quality and impact projections. Luton council suggested adopting a similar approach to Local Tobacco Control Profiles for bringing reporting on air quality and impacts together in one place.

5.2 Views on the provision of guidance to local authorities

There was a mixed response from organisations on this specific measure and the majority of individuals highlighted problems with it. Again, it was less there was active opposition to the proposal, but more that there was concern that local councils lack the power, incentives or funds to implement the proposed guidance. For example, FABRA UK said: “Guidance is good but what incentives or penalties will there be for LA [local authorities] who choose not to follow it.”

Some also felt that other government policies (such as providing new homes) would override the aim of this guidance. For instance, North Hertfordshire district council wrote: “more guidance whilst welcomed does not alleviate: the pressure being put on local authorities to accommodate the demand for housing and associated infrastructure; or the pressure on the resources within local authorities environmental health to enable them to review and assess planning applications alongside their other duties; or the resources available within planning departments to process planning applications and then ensure that obligations and conditions are enforced.”

There was a call for any guidance to be clear, detailed, evidenced and/or enforceable, particularly where proposed development is in areas with significant air quality issues. Lancashire councils stated: “Guidance on the significance of impact should not be left to the varying opinions and priorities of local authorities, planning inspectors and developers.” York council suggested there was a need for clarity on chain of command and “how much weight should be placed on the issue (compared to human health and other material considerations) and what should be done when an authority fails to meet its responsibility to the protection of flora and fauna”.

A range of recommendations were made as to what the guidance should include from organisations such as the Cannock Chase Special Area of Conservation Partnership. In particular, the Planning Officers Society requested that the guidance be “widened out to recognise the opportunities for providing greater certainty in terms of plan-making with respect to the approach taken to the development of Local Plan Habitats Regulations Assessments (HRAs)”. They gave a number of examples.

The Joint Nature Conservation Committee advised assessing both “cumulative impacts and “in combination” effects to take into account all source sectors, including agriculture, with the aim of developing greater consistency in approach across the UK”. They pointed to Natural Resources Wales as an example of an integrated approach using planning and permitting regimes. Leicester City council suggested there was a need to provide councils

with more information on types of pollution, their origins, dispersal and measurement, and on mitigating measures and evaluation, so as to ensure effective local action.

One individual suggested that the guidance for local authorities should be made widely available so that individuals might also help with the mitigation or hold their councils to account. The Local Government Association argued that there was a need for greater powers for councils to refuse development proposals on air quality grounds.

A few respondents also pointed to other stakeholders that might require guidance. The Chartered Institute of Environmental Health (CIEH) stated: “Whilst we applaud the commitment to produce guidance for local authorities on how nitrogen mitigation may be delivered via the planning system, we are concerned that similar guidance should also be given to both water companies and the Environment Agency who, equally, have a part to pla[y] here.” United Utilities asked whether the guidance would “impose additional requirements on businesses/developers and if so, how will planning system requirements be communicated and when?”

The Association of Directors of Environment, Economy, Planning and Transport on the other hand asked why this guidance was focused on councils at all, given Natural England’s role in relation to nitrogen deposition, natural habitats and planning.

5.3 Other points

A few respondents felt the focus was on the rural and that more acknowledgement should be drawn to the importance of the urban environment, such as parks, particularly as these tend to be more polluted. However, a few others felt not enough attention was paid to air quality issues in rural areas across the strategy, with an assumption that this was an urban problem. A number advocated a greater link be made between air pollution and climate change action, and/or the co-benefits with health.

Question 6: What further action do you think can be taken to reduce the impact of air pollution on the natural environment? Where possible please include evidence of the potential effectiveness of suggestions.

A total of 240 responses were received to this question, of which 131 were from organisations, and 109 came from individuals.

Responses were received which covered the breadth of the other chapters in the proposed Clean Air Strategy. Many of these suggestions and comments are reflected in the summaries of these other chapters, and so are only briefly summarised here to avoid repetition. The most common focused on further actions involving the transport sector or the mitigation of environmental impacts. This summary concentrates on mitigation.

6.1 Transport-related suggestions

Of proposals covering the transport sector, individuals were more likely than organisations to suggest public transport investment. Several organisations proposed enhanced street cleaning measures. Organisational responses often cited behavioural change or modal shift to facilitate fewer and/or less-polluting journeys. They also advocated rapid changes of fuel type (including electrification). Further investment and/or taxation was advocated by some individuals and organisations.

6.2 Suggestions for mitigating environmental impact

There were both organisational and individual proponents of green infrastructure, green space and landscaping as an approach to mitigation. Many of these advocated vegetation planting, although a few acknowledged that some trees emit volatile organic compounds or can impede air flows. Most focused on urban schemes.

For organisations in particular, the predominant theme was that mitigation in planning needs to be more specific, extended or better enforced. For example, the Sustainable Food Trust argued “for extending Nitrogen Vulnerable Zones (NVZ) to cover all UK territory”, though they felt improvements were needed to the NVZ approach.

Waverley Borough council suggested: “It might be helpful to require assessments undertaken in respect of the Habitat Regulations Assessment to be undertaken together with impacts on public health (including air quality levels)”. The London Borough of Southwark argued for the promotion of biodiversity net gain as an approach. Meanwhile, Sefton council reflected the view of a few by suggesting: “the LAQM process of identifying AQMAs could be adapted and applied to sites of nature conservation and importance”.

There were also calls for more research into the impacts of nitrogen, and pollution more generally, on ecosystems and wildlife, and on issues of sensitivity. The Woodland Trust recommended reviewing critical levels and load sets for habitats in relation to sensitivity as they were concerned they were not always appropriate. However, a few industries argued that habitats have often proven resilient to pollution, so action needs to be proportionate.

A broad coalition of environmental and wildlife non-governmental organisations – the Wildlife and Countryside Link – made a number of recommendations, including:

- committing to delivery of the Natura 2000 Thematic Action Plan on Air Pollution: Nitrogen Deposition and Site Improvement Plans
- incorporating atmospheric nitrogen depositions into the monitoring, assessment & management of Sites of Special Scientific Interest
- learning from pilots of the Shared Nitrogen Action Plan pilots, and rolling them out with appropriate funding
- assessing the impact of air pollution on national capital so as to embed air quality in this framework

There were also suggestions that there was a need to upgrade the skills of council staff or ecologists in taking account of air quality, for example through training by organisations such as CIWEM and CIEH.

A few organisations advocated specific action on ozone. Environmental Protection UK stated: “We strongly recommend that ozone pollution is considered in more depth, as this has significant environmental and health impacts.” The Centre for Ecology & Hydrology suggested: “Ozone episode guidance for farmers could be provided at relevant scales, including if there is anything they can do to minimise damage to crops and reduce crop yield impacts”. Providing guidance on other pollutants was also mentioned.

Whilst the proposed review of microplastics from tyre and brake wear was welcomed by a few organisations, Environmental Protection UK called for a commitment to take action on microplastics after related research and review is completed. The Southampton Collective CIC (in their response to Q5) argued that the promotion of electric vehicles (EV) in other parts of the strategy was contradictory to this intention because EV tend to produce more microplastics from tyres and brakes due to their increased weight.

Anglian Water Services felt there was a need also to address plastic particulate matter from other sources such as the incineration of waste for energy because it provides “a potential alternative disposal route for sewage sludge” if spreading on land becomes no longer feasible. A few organisations also called for the air quality impacts of construction to be considered.

6.3 Other suggestions

There were many who advocated additional funding, legislation and involvement of local authorities in decision-making. Devon county council suggested that an approach to “quantify the negative economic consequences of air pollution should be created so it can be considered in cost-benefit analyses and business cases for infrastructure projects”. The Kew Society argued for creating a network of Clean Air Zones across the country as the most effective way forward. In their response to Q5, the Greater London Authority drew attention to the Air Quality Neutral approach they adopted in the London Plan, and the Air Quality Positive concept now included in the draft London Plan, to reduce emissions.

Some also advocated explicitly or implicitly focusing on actions that tackle pollution at source, such as domestic burning. There were also those who argued for changes in farming practices. This included advocating slurry management, shelterbelts or other targeted mitigation, as well as legislated change to type or amount of fertilisers used.

Chapter 4 – Securing clean growth and driving innovation

This chapter outlined how addressing air pollution can stimulate innovation and contribute to clean growth. It included a number of actions:

- in partnership with UKRI, seeking ways to support further investment in clean air innovation to enable the development of novel technologies and solutions that tackle emissions from industry, vehicles, products, combustion and agriculture, and support both improvements in air quality and decarbonisation
- making the UK a world leader in goods and services focused on tackling air pollution
- improving air quality and tackling climate change through future energy, heat and industrial policies – phasing out coal-fired power stations, improving energy efficiency, and shifting to cleaner power sources will reduce emissions of air pollution as well as carbon dioxide, ensuring this transition improves air quality wherever possible and cost effective to do so; in addition, conducting a cross-departmental review into the role of biomass in future policy for low carbon electricity and heat, focusing on the air quality impacts
- minimising the air quality impacts of the Renewable Heat Incentive scheme, for example by tackling non-compliance and consulting on excluding biomass from the RHI if installed in urban areas which are on the gas grid; and consulting on making coal to biomass conversions ineligible for future allocation rounds of the contracts for difference scheme
- seeking evidence on the uses of non-road diesel, mainly in urban areas, considering the air quality impacts and the potential for market distortion (the Treasury has also announced it will review how alternative fuel rates line up with rates of petrol and diesel ahead of Budget 2018)
- cutting emissions from non-road mobile machinery and giving local authorities tough new powers to control the use of such machinery where it is causing an air pollution problem
- starting in autumn 2018, engaging the public on air quality, alongside climate change, in Green Great Britain Week, and highlighting the economic opportunities it offers for the UK

There were four questions for this chapter. The responses are summarised below.

Question 7: What do you think of the package of actions put forward in the clean growth and innovation chapter? Please provide evidence in support of your answer if possible.

In total, 340 responses were received that related to this question, 221 from organisations and 119 from individuals. Relevant responses from questions thirty-one and thirty-two are also covered here.

Overall, there was support for the package of actions put forward in this chapter from both organisations and individuals. Organisations particularly favoured the proposals for investments in clean air innovation and ensuring air quality is considered in future heat, energy and industrial policies.

Those who were more negative about the actions proposed in the chapter tended to point to perceived inconsistencies in current policies, such as fracking and road-building schemes, or other measures or focus they felt should be included. At either end of the scale were respondents who thought that the actions were aspirational but possibly unachievable, and those who thought the proposals did not go far enough and that stronger, more urgent action was required.

A significant number of respondents sat somewhere in the middle and agreed with the general principles, but would have liked more detail and/or timescales, or had additional suggestions on how the clean air goals could be achieved.

Many different further suggestions were provided. These can be themed broadly around energy and fuels, transport, the planning system, raising awareness and how the government can implement actions suggested.

7.1 Energy and fuels

There was a range of comments related to energy both here and later in the consultation, but they were very varied in focus and view. This included significant amount of comment on biomass and the Renewable Heat Incentive (RHI). Some respondents favoured banning biomass and RHI incentives for it. Others felt caution should be exercised on excluding biomass.

Biomass UK argued there was no need for a review of the role of biomass in energy policy, given its contribution to a low carbon transition, and the British Lime Association suggested biomass fuels could be appropriately used as an energy source. Nevertheless, others saw biomass combustion as problematic for air quality. For example, Environmental Protection UK suggested: "Biomass, emergency diesel generators and other balancing plant can cause major problems in urban areas, and need to be more tightly controlled, through the various existing regimes, such as industrial regulation and planning, and new controls needed where there are gaps or the controls are too lax."

In relation to generators, Eon argued that it is vital that any additional controls on smaller generating plant is "proportionate to the risk that they pose". They urged the prioritisation of compliance of all plant currently covered under the existing scheme. In addition,

Centrica suggested the need to differentiate between types of generators, suggesting gas is much better than diesel.

Another point made by Centrica was their view that the RHI should be extended beyond 2020/21 for off-grid homes to encourage take-up of renewable heat options in these contexts. Meanwhile, the Federation of Petroleum Suppliers argued for the need to set up round table discussions with consumers and Citizen Advice Bureaus for the 1.2 million people with oil-based systems, who they suggested tend not to be on the grid. Their view was such consumers were likely to be negatively impacted by related proposals within the Clean Air Strategy, and so should be consulted.

Other responses were in favour of measures to encourage renewable energy, particularly those that can produce electricity such as solar and wind power. These were seen as cleaner, and potentially more cost-effective, though there was advocacy for a further Feed-in Tariff scheme to support them. The need for effective energy storage, such as large batteries, to smooth out power spikes (as a result of the intermittency of such renewable sources) was also raised. One respondent mentioned nuclear power, saying: "Let's have a debate".

Cory Riverside Energy argued there was also a need for more energy from waste facilities as there will always be waste that cannot be recycled and there is more than currently can be treated. Another respondent suggested learning from Sweden's promotion of anaerobic digestion and biogas. Ground source heat pumps, area-based or communal heating systems and combined heat and power (CHP) were advocated too. However, London councils and Brighton and Hove council flagged concerns about both CHP and emergency generators in urban areas in terms of their contribution to air pollution. There was also a call from a range of local authorities to support non-combustion forms of heat and power.

A few respondents saw fracking as a potential air quality issue, with the All Party Parliamentary Group (APPG) on Air Quality pointing to a recent Air Quality Evidence Group report and an individual citing her own health experiences as evidence. Scepticism tended to be expressed by these respondents about the seriousness of government commitments to air quality.

There were other comments around energy efficiency, with some arguing for the need to reduce energy demand and for more efficient energy networks. There was also a call to reduce diesel pollution, either through tax penalties and incentives or technical efficiencies and infrastructure changes. One respondent argued there was a need to address the tax relief North Sea oil receives.

Overall, there was support for action on red diesel, with a number of respondents arguing that the rebate should be phased out immediately. However, several organisations highlighted financial implications in terms of replacing equipment and costs to customers. A couple of respondents suggested this would make road travel more competitive than marine or rail, arguing that this would encourage a modal shift towards road transport.

7.2 Transport

Many responses addressed transport, in particular road transport. Overall, these echoed what was said in relation to the transport chapter and more detail can be found in the summary of question eleven. Some respondents thought that a step change is required to move from car reliance to public transport and active travel, and the improved infrastructure required. Some thought that 'mobility as a service' could work as a solution.

A number of respondents also commented on non-road mobile machinery (NRMM). The majority of these respondents were in favour of proposals. However, concerns were also raised. One organisation felt that a 'one-size fits all' approach was not appropriate to the range of NRMM and contexts in which they are used, and there was a comment that construction equipment will depend on diesel for some time. Another expressed caution that any new powers for councils to regulate NRMM is done in a meaningful way.

7.3 Planning

A number of respondents saw the planning system as a tool for improving air quality. Examples included: making renewable technologies and provision of infrastructure that encourages use of cleaner technologies mandatory in new developments (such as electric vehicle charging points); restricting larger biomass installations in urban areas; preventing fracking; and increasing insulation standards.

7.4 Raising awareness

Some respondents felt that raising awareness was vital, whether through better dialogue with industry, or with the general public on what actions we can all take (for example, incorporating messages into the education system).

7.5 Suggestions for government approach

Quite a number of respondents were of the view that the government needs to strongly support an improvement in air quality and this should be reflected in all government policy areas as it is a cross-cutting issue. Some felt (particularly individuals or those groups with a public health interest) that policies and decisions should be led from a public health perspective, taking into account carbon dioxide reduction, air quality and other environmental considerations. Several respondents thought that lessons could be learned and applied from others who have already implemented effective air quality initiatives (from experience in other countries, or from businesses, local authorities or community groups within the UK).

There were a few suggestions in relation to financing air quality improvements, particularly in terms of taxing polluting fuels and industries, and providing financial incentives for cleaner technology development and investment. The clean growth agenda was also reflected in later suggestions to explore patent restrictions on less polluting technological options, such as the hot air engine, and to incentivise the creation and use of air pollutant-absorbing technology.

Question 8: In what areas of the air quality industry is there potential for UK leadership?

Altogether 203 respondents addressed this question. This comprised 101 organisations and 102 individuals.

Online, respondents were given the choice of selecting from the following options as potential areas for UK leadership:

- science, research and understanding of air pollution and its impacts
- monitoring and modelling
- mitigation technology
- low or zero emissions technology
- other suggestions

8.1 Views on identified areas for UK innovation leadership

Organisations' and individuals' responses followed a similar pattern. The predominant view was that 'science, research and the understanding of air pollution and its impacts' is a key area in which there is potential for UK leadership. Within this category, a small number of respondents believed this would require government support and backing at different levels. Greenwich council gave their example of acting as "a 'test-bed' borough" to lead "the way in investigating the possible applications of those EV [electric vehicle] technologies which it is trialling."

'Monitoring and modelling' and 'mitigation technology' came jointly second as potential areas for UK leadership. A number of points were raised in relation to monitoring and modelling. This included a suggestion that the focus should be on real-time modelling. EIC thought that monitoring was a potential area for global leadership, with "London instituting a world-leading hyperlocal monitoring system".

The Breathe Clean Air Group presented an alternate view that suggests monitoring is an area where the UK may need more work. They stated: "UK's Air monitoring system (undertaken by Local Authority Officers) only requests compliance with instructions issued by the Secretary of State... It doesn't matter if road transport pollution is very high when school children are walking to/from school as long as the annual mean is under the limit... We do need to 'get real' and recognise the dangers of these 'anomalies'".

Again, there was a view that government funding would be needed, this time to support innovation in areas identified for potential UK leadership. A few argued that focusing on mitigation technology such as filters was preferable to restricting consumer choice.

Although the least popular of the options suggested, there was still some who thought that low or zero-emissions technology was also an area where the UK had potential for leadership, for instance in zero-emissions vehicles. Again, government investment was mentioned by a number of respondents as being important for enabling innovation in this area, as was the need to improve consumer knowledge.

8.2 Suggestions for other areas for UK innovation leadership

A range of suggestions were made in relation to other areas which offered potential for UK leadership. The two most commonly suggested were government policy and strategy, and international policy advice.

A significant number of organisations pointed to other factors, which they argued also need to be considered in facilitating the UK to become a dominant player in specific areas of the air quality industry. The common theme was the need for government “policy and strategy to support it” (York council). There was a suggestion too that we should learn from other countries. This said, a few others pointed to the expertise that UK already has, suggesting this needs to be better harnessed.

There were a number of other suggestions. Amongst individuals, the most frequently mentioned was the need to engage and educate the general public, with a few suggesting this requires encouraging people to adopt a healthier lifestyle to reduce their contribution to air pollution emissions. There was also a view that greater utilisation of technology already in use in other countries would be beneficial to support. Examples of technologies that were seen as worth supporting were electric bikes and graphene filters for NOx pollution hotspots. A few individuals also pointed to the expertise within the industrial sector, suggesting this needed to be better utilised.

Question 9: In your view, what are the barriers to the take-up of existing technologies which can help tackle air pollution? How can these barriers be overcome?

Within the online version of the consultation, respondents were provided with a number of possible barriers from which to select (see below), as well as the opportunity to suggest further barriers. The pre-set selections were:

- Upfront cost
- Operational cost
- Lack of knowledge of the technologies available
- Lack of information on the technologies available
- Lack of reliable advice on the technologies available
- Lack of track record for the technologies available
- Familiarity with existing technology
- Fit of older technology with other infrastructure and organisational processes
- Lack of a strong reason to use a new technology.

We received responses from 194 organisations and 114 individuals, making a total of 308.

9.1 Barriers to take-up of innovations

Many organisations and individuals selected a number of the barriers suggested above, with quite a few selecting all of them. While there was no clear agreement on the

combination of barriers chosen, respondents most frequently chose 'upfront costs' as a barrier to take-up of new technologies. Sefton council explained: "Barriers to uptake of existing technologies to tackle air pollution are that they are largely voluntary choices and that they have additional cost associated with them, in particular, when there is additional (sometimes prohibitive) cost for no apparent benefit beyond environmental credentials".

Many organisational respondents also agreed that 'familiarity with existing technology', 'operational costs', 'lack of knowledge of the technologies available', and 'fit of older technology with other infrastructure and organisational process' are other factors that impact on uptake of new technologies. However, these were closely followed by the other barriers that were identified in the online consultation. The pattern for the choices of individual respondents was similar.

Many respondents also suggested there could be additional barriers to the uptake (and development) of new technology. These included a lack of a clear and stable policy framework or political leadership, insufficient appropriate infrastructure, and absence of viable cleaner alternatives. Risks of adopting new technologies, uncertainty around financial incentives, length of some business investment cycles, and lack of awareness of air quality issues, were also mentioned.

Some responses focused on the uptake and/or development of particular new (cleaner) technologies within their own industry or sector, whilst others focused on the uptake of new cleaner technologies by the general public, particularly in relation to transport. A common concern raised was that the uptake of electric vehicles will be slow due to 'range anxiety' (the fear that the car will run out of electric charge when driving longer distances). Some also believed that the insufficient charging infrastructure and uncertainty regarding battery lifetime is preventing people from fully embracing the move from fossil fuel based vehicles to electric vehicles, even where charging is available.

9.2 Suggestions of how these barriers can be overcome

There were a variety of suggestions made as to how the barriers identified might be overcome, which given the range of barriers and range of technologies is unsurprising. There was no clear consensus on one 'silver bullet'. However, many respondents suggested that the provision of incentives to encourage take-up of technologies, and disincentives to discourage continued use of polluting technologies, is important in overcoming barriers. The British Vehicle Rental and Leasing Association (BVRLA) suggested incentives did not need to be financial. They gave the example of creating "green lanes" in areas of congestion to encourage the purchase of first and second hand low-emissions vehicles.

Another frequently cited suggestion for overcoming barriers was investment in technology development and/or the infrastructure required by certain technologies (such as renewable energy systems and electric vehicle charging points). Many respondents focused in particular on electrical vehicle charging, advocating the need for a national approach. For example, ABB suggested: "charging infrastructure should be made mandatory at petrol

stations on motorways and major roads. A fully competitive market for charging services in other locations will result in them being installed when and where they are needed by drivers.”

However, others suggested it was important to overcome the barrier of the upfront cost of purchasing low-emission vehicles. One suggestion was to adopt the ‘mobility as a service’ approach. There were also a few respondents who supported the provision of grants and low interest loans for the purchase of low-emission vehicles. The BVRLA suggested there was a need to stimulate the market for second-hand low emission vehicles.

More generally, some respondents saw a lack of awareness of air quality issues as a barrier to the take-up of cleaner technologies. The main way to overcome this was seen as education and social marketing to encourage changes in patterns of consumption and provide demand for cleaner innovation. As the London Borough of Islington put it: “the government needs to engage with the public and businesses to make air quality and climate change a higher priority and to promote the benefits of alternative technology, as well as a bigger shift to walking and cycling. However, this is not enough on its own. The government also needs to provide sufficient resources and funding to make the technologies more viable”.

There was also a range of other suggestions of how the government could encourage the development and take-up of new technologies, such as:

- funding/support for companies to “de-risk” trialling of new industrial equipment (British Glass and Solihull council)
- provision of standards that apply across sectors, for instance by the new environmental body, to enable more coordinated action (according to one respondent) or drive competition (according to another)
- use of government procurement to provide leadership in new technology adoption
- development of road-maps for technology uptake, for example for electric vehicles
- roll-out of local schemes that have been successful in promoting adoption of cleaner technologies, for example loans to SMEs to buy cleaner technologies that are paid back with the savings they make (West Suffolk councils)
- creation of a central point for impartial advice on new cleaner technologies
- consideration of retrofit technologies for older technologies, not just replacement, particularly for long-lived assets (Rail Safety and Standards Board)

However, there were also a number of individuals, local authorities and community groups who felt that there was too much focus on technology as a solution. Instead, they wanted more attention on tackling the causes of air pollution. One respondent said: “concentrate

on reducing demand”, which, it was suggested, requires “substantive and transformative policy change in other areas - planning, transport etc”.

Question 10: In your view, are the priorities identified for innovation funding the right ones?

The priorities identified for innovation funding were:

- particulate matter emissions from industrial combustion, tyre, brake and road wear, industrial processes, and domestic burning
- zero or ultra-low emission heavy goods vehicles
- volatile organic compounds from industrial processes and product formulation
- low and zero-emission options for non-road mobile machinery
- ammonia emissions from agriculture

Within the online version of the consultation respondents were asked to choose from the following options for whether the priorities for innovation funding identified were the right ones: yes, no, partly right, or don't know. They were also able to make suggestions for other priorities and were asked to explain their answer.

Altogether 291 respondents addressed this question. This comprised 176 organisations and 115 individuals.

10.1 Views on the innovation funding priorities identified

Many organisations felt the funding priorities outlined were the right ones. The main reason they gave was that the suggested priorities produce significant emissions and that there was a lack of research or innovation in these areas. For example, Colchester council explained: “These are all areas (particularly brake and tyre wear) where there is anecdotal information but very little clear scientific evidence”.

In addition, a substantial number of respondents agreed that the priorities identified for innovation funding are partly right. Whilst many in this group did agree that the priorities identified made sense, they also felt there were other priorities that were missing, sometimes suggesting the priorities they identified were more important. For example, the Waltham Forest council stated: “We broadly support the areas identified as priorities for innovation funding [...] However there should also be funding for encouraging more people away from private vehicles altogether and more support for new approaches to congestion reduction, whether it is developing Mobility as a Service (MaaS) systems, or road user pricing approaches”.

A small minority of respondents said they did not think the priorities were right. When reasons were provided, these were varied but often these respondents felt the focus of the innovation funding was wrong and/or that technological innovation is not the answer. For example: Regenerus felt there was too much focus on technology, “not enough on building resilient ecosystems”; the Southampton Collective called for a focus on design of “liveable

cities”; and Unicef felt innovation funding should focus on pollution alert systems and public health campaigns.

From across the responses, from negative to positive, there were some who suggested that technological innovation was only a part of the solution and that if air quality was to be tackled effectively, then more was needed, particularly in relation to reducing vehicle use. For example, Clean Air Southampton stated: “‘business as usual’ is not possible if ambitious reductions in particulate matter are to be achieved. We must find ways to change the relationship between local authorities and public transport operators in order to make it easier, cheaper and more accessible to users. How else can we get fewer vehicles on the road? Only government can do this.”

10.2 Suggestions for other innovation funding priorities

Across the responses there were many suggestions of other innovation funding priorities , particularly from those who had said they felt those identified were partly right. There was no clear consensus on which was the greatest priority, but a couple of the respondents suggested diversity was the “key” and it was important that the criteria for innovation funding was not too narrow. Greenpeace suggested prioritising funding for innovation that could deliver on multiple objectives, not just improving air quality, for example, reducing greenhouse gas emissions and reducing biodiversity loss.

The following suggestions were mentioned a number of times:

- energy system-related: renewable technologies, non-combustion heating and cooking, synthesis gas, energy storage, boiler efficiency, Mobility as a Service systems
- other modes of transport: buses/coaches, light goods vehicles, rail (particularly retrofit of abatement technology on freight trains), electric ships, battery improvement (for Heavy Goods Vehicles, for example), advancements in conventional fuel and engines, liquid fuels (for transport, energy and other sectors), technologies to encourage a modal shift (for instance, “mobile applications to integrate public transport, shared transport forms and active travel effectively” and homeworking innovations)
- building-related: innovations to facilitate zero-emissions housing, energy efficiency, reducing emissions from demolition and construction
- emissions monitoring technology (in particular for particulate matter and ammonia)
- use of vegetation to mitigate emissions
- behavioural change innovations

However, a few respondents were concerned that there was not enough attention and funding being paid to assist in the uptake and practical application of innovations. For

example, the Greater London Authority said: “there should be extra focus on support or funding for the post-innovation stage of bringing successful products or technologies to the mass market”. The Soil Association suggested there should be “a dedicated farmer innovation fund” to support farmers to test innovations “in the field”.

10.3 Other points on innovation

A few respondents focused on what they saw as tried and tested technologies and methods, such as heat pumps, energy efficiency methods or electric bikes. For example, the Somerset Air Quality Steering Group commented on electric cycles: “these battery assisted vehicles are excluded from virtually all discussion and funding of electric vehicles, yet are proven technology with huge potential to improve public health and air quality”. The implication was that, in these respondents’ view, promising innovations already existed, but as yet had not been successful in being rolled out, and that this was more of a priority than funding further innovation.

A number of respondents argued too that much more was needed than technological innovations. Some of these focused on the role of policy and regulations. For example, Rolls Royce suggested standards are drivers of innovation. However, they advocated for harmonising any new standards with those being developed by international players such as the UN International Civil Aviation Organisation “in order to allow the cost-effective development and availability of products”.

The British Medical Association argued that “increased funding for research into the economic and health impacts of air pollution over the short and long-term, as well as research on the effectiveness of interventions to tackle air pollution” would drive innovation.

North Tyneside council suggested that that there was a need for more clean air competitions to be opened up by Innovate UK. Another respondent suggested such innovation funding should be available to small and medium-sized businesses, not just large companies.

Chapter 5 – Action to reduce emissions from transport

This chapter focused on action to reduce emissions across all modes of transport, highlighting actions on road, rail, maritime, aviation, modal shift and active travel. However, it also included non-road mobile machinery (also mentioned within the clean growth and innovation chapter) and aspects of freight. The chapter did not cover in detail the action government is taking to improve air quality in places exceeding legal limits by working closely with local authorities and Local Economic Partnerships, as set out in the NO₂ Plan, or to reduce exhaust emissions from road vehicles, set out in the Road to Zero strategy that was published after this consultation went live.

The actions it did cover were summarised as follows:

- ending the sale of new conventional petrol and diesel cars and vans by 2040, and during the transition, ensuring the cleanest conventional vehicles are driven on our roads; positioning the UK as the best place in the world to develop, manufacture and use zero exhaust emissions vehicles
- working with international partners to research and develop new standards for tyres and brakes to address toxic non-exhaust emissions of microplastic from vehicles which can pollute air and water
- enabling the Transport Secretary through new legislation to compel manufacturers to recall vehicles and machinery for any failures in their emissions control system, and making tampering with an emissions control system a legal offence
- reducing emissions from rail and reducing passenger and worker exposure to air pollution; rail industry producing plans to phase out diesel-only trains by 2040
- setting out ambitious plans to drive down emissions from shipping and aviation in 2018, and reviewing policy on aviation-related emissions
- English ports producing air quality strategies to reduce emissions which will be reviewed periodically to establish if the measures are effective or whether government action is required

The proposed actions for non-road mobile machinery included granting local authorities powers to impose minimum emission standards where required to tackle serious air pollution problems, introducing compliance tests and launching a call for evidence on a number of other measures.

There were two questions in this chapter. The responses are summarised below.

Question 11: What do you think of the package of actions put forward in the transport chapter? Please provide evidence in support of your answer if possible.

There was a total of 402 responses to this question, of which 254 were from organisations and 148 were from individuals.

There was strong support for addressing emissions in all modes of transport, noting that so far there has been a focus on road transport only. A majority of responses received for this question called for greater ambition in the Clean Air Strategy on actions to reduce emission from transport, at least for some sectors. Very few considered they were too ambitious.

A common suggestion was that better planning and a more holistic approach to transport and logistics is required to reduce emissions. Suggestions included: designing transport hubs which encourage lower-emission modes of transport; developing solutions for meeting mobility needs which are more sustainable and result in lower emissions; and designing systems for goods distribution which minimise movements and use as far as possible lower-emission modes of transport, including for last mile deliveries.

Some responses noted that air pollution can be very localised. It was felt, therefore, that there was a need for more action at local level to improve air quality and reduce exposure, particularly where there are people who may be more vulnerable to air pollution such as near schools or hospitals. Suggestions included restricting vehicle access or introducing Clean Air Zones. Some felt that government funding was only available where there were exceedances in air quality limits, and called for greater support at other locations.

However, whilst some called for greater action to address pollution at local level, there was a preference for national actions to avoid inconsistencies between local schemes. In addition, several considered the transport chapter should include Road to Zero and the NO₂ plans to provide a complete view of action to address air quality within transport.

11.1 Views on road transport proposals

There was strong and widespread support for action to reduce emissions from road transport, which is perceived as a major cause of poor air quality.

Some said that the target to end sales of new conventional petrol and diesel cars and vans by 2040 was unambitious and should be brought forward. Reasons included that alternative technologies are already available and other countries have adopted more ambitious targets. However, a few expressed concern about the higher costs and current functionality of electric cars. There were also those who felt more needed to be done to improve charging infrastructure, particularly in existing and new residential buildings.

Many felt that rather than a focus on vehicle technology and fuels, there should be a much greater emphasis on increasing car occupancy, use of public transport and modal shift,

since these would deliver exhaust and non-exhaust emission reductions and reduce congestion. Several noted that they thought this should go in parallel with actions to reduce emissions from public transport, such as a shift to low-emission buses. Some suggested that investment in road infrastructure to create new capacity needs to be balanced with investment in other modes of transport to encourage modal shift. Some other respondents supported a focus and action on non-exhaust particulate matter emissions.

Several responses said that while there are long-term targets to address exhaust emissions, there is a need to address emissions from the existing fleet to deliver greater benefits for air quality. They proposed measures such as fuel taxation, support for alternative lower-emission fuels, scrappage schemes and driver training. A number of individuals called for action to reduce vehicle idling and supported action to prevent tampering with emissions abatement in vehicles.

11.2 Views on maritime proposals

There was widespread support for addressing emissions from shipping and for the proposed port air quality plans. Some questioned why this measure is not extended to Scotland and Wales. Many considered ports a significant source of air pollution, especially for coastal towns. In particular, there were calls for provision of power from shore to reduce emissions from docked ships and action to reduce road traffic associated with ports, including a shift to rail.

However, some noted that ports are commercial entities, which do not have full control over the associated emission sources (for example, road freight and shipping) and must remain commercially viable. However, others suggested that ports could introduce green levies to encourage cleaner technologies.

Many noted that lower or zero-emission alternatives already exist, such as electric or hybrid port machinery and alternative fuel and lower-emission vessels. However, it was also suggested that there are many older vessels and machinery, which pre-date the introduction of emission standards and need to be addressed. A common view was that action and support will therefore be needed to make the transition to lower-emission technologies. Several thus welcomed the creation of the Clean Maritime Council to support the development and uptake of cleaner technologies.

Industry called for further clarity on what ports would need to produce for their air quality plans, and the scope and nature of proposals for regulating emissions from domestic shipping.

Some noted that inland waterway boat emissions should also be addressed, particularly canal boats, which usually use solid fuels for heating in addition to having diesel engines. However, (elsewhere) representative organisations of canal boat residents and owners argued against such action, suggesting this could impact disproportionately on people who were low income and lived low-impact lifestyles.

11.3 Views on rail proposals

Rail was generally considered a cleaner mode of transport, which could deliver air quality benefits when replacing road traffic. However, there was widespread support for tackling emissions from diesel trains and improving air quality at railway stations. Some pointed also to the need to address PM emissions from braking and track wear. Some argued that rail could also reduce emissions by encouraging alternatives to travelling to and from stations by road. There were several calls to curb idling of diesel trains at stations to improve air quality.

Some councils and NGOs called for the electrification programme to be reinstated as the best approach for reducing diesel train use. Some industry noted that there are limited alternatives for reducing emissions and replacing diesel trains, and more effort is needed to develop these. Industry noted that action to reduce emissions from rail could have an impact on cost to passengers and competitiveness of rail freight, which could in turn hinder modal shift.

There was some support among individuals for addressing emissions from rail. A number considered the 2040 target was too long, particularly after cancellation of the electrification programme which would have brought zero-emission trains much sooner to some lines. However, many were sceptical about this target, pointing to the lack of alternatives and concerns about functionality of bi-mode trains.

11.4 Views on aviation proposals

There was widespread support for addressing emissions from aviation. A significant proportion of responses called for greater ambition in this sector, which was generally perceived as a higher-emission mode of travel. Consideration of air quality in the upcoming Aviation Strategy was therefore welcomed, particularly as the sector will need to mitigate impact on air quality as it expands. There was also support for continued effort at the international level to reduce emissions from aircraft.

However, many noted that land transport to and from airports is a large source of emissions and road congestion, which needs to be addressed and requires action on road vehicles as well as provision of alternative modes of transport. Some noted concerns about ultrafine particulate emissions from aircraft and the link to fuel sulphur content. One stakeholder suggested that airports should be required to develop air quality plans, as proposed for major ports.

It was also noted by some that aviation fuel does not attract duty, and that this may discourage a shift to other modes of transport. Amongst individuals, airport expansion was a widespread concern. Several noted noise and air quality impact under flight paths and in proximity to airports.

11.5 Views on active travel proposals

There was widespread support for encouraging cycling and walking, which was seen to have benefits both for air quality and human health due to increased physical activity. A majority of responses considered that there was a case for greater support, to increase public awareness and uptake, provide cycle and walking routes and ensuring cyclist safety. Some responses from local authorities and industry argued for greater support for electric bikes as a means to making cycling accessible to a wider range of people.

11.6 Views on other modal shift proposals

There was strong support for modal shift to rail and public transport, and calls for actions to enable this: provision of a convenient and competitive transport network and sufficient capacity and infrastructure to support rail freight, through port connectivity and suitable transport hubs. Some suggested investigating also the scope for shifting freight to ships. There was also a suggestion later on from the Institute of Marine Engineering, Science and Technology to evaluate the benefits of a modal shift of freight transport from road to ships to ease congestion.

There was a general view that there is too much emphasis on road transport and cars, and so there were several calls for public investment to favour lower-emission modes of transport. This includes more investment in rail and bus travel to encourage a shift over a longer timescale, and in the shorter term to encourage car sharing. There were also calls to invest in reducing emissions from public transport.

Question 12: Do you feel that the approaches proposed for reducing emissions from Non-Road Mobile Machinery (NRMM) are appropriate or not? Why?

Altogether, 293 respondents addressed this question. This comprised 172 organisations and 121 individuals. In the online version, respondents were asked to choose from yes, no, neither yes/no or don't know, and then to explain their answer.

12.1 Views on the proposed NRMM actions

The majority of organisations answered 'neither yes nor no' to the question on the appropriateness of non-road mobile machinery (NRMM) proposals. The predominant view was that organisations were generally supportive of controlling emissions from NRMM, but had concerns about the approaches proposed. Of the individuals who answered 'yes', many cited the reason being that NRMM is a significant source of local pollution in the areas they live. Individuals who responded negatively to the appropriateness of the proposals often suggested that they should go further and happen more quickly than proposed.

Many of the organisational respondents felt that there was insufficient detail on the approaches and a lack of evidence provided to understand their scope and potential

impacts. Therefore, some respondents felt that they could not come to a conclusion on whether the proposals are appropriate or not. For example, Dartford Borough council stated: “There is no detail of what this would involve or through what regime it would be enforced and it is therefore not possible to comment as to how much of a benefit this is likely to achieve or how much of a burden on local authority resources this would create.”

Many noted that some types of machinery and sectors, which are responsible for low emissions and/or operate only in areas where there is low human exposure should not be subject to such stringent emission controls. The Heritage Alliance, for example, asked for the heritage sector to be made exempt from NRMM and red diesel proposals because of the negative impact this would have on the heritage industry and given their small contribution to air pollution. Similarly, while there was some support for a national register for NRMM, it was deemed an excessive burden for smaller and lower-emission equipment.

Some supported compliance checks throughout the life of the equipment, for example, through an MOT-style assessment, to ensure emissions do not increase as the machinery ages. However, a few businesses raised concerns about the increased costs that the new proposed measures may imply and questioned if they were proportionate.

12.2 Concerns about the NRMM proposals

There were repeated concerns from local councils about resources for enforcement of new emission controls, with many stating that they would not have the resources to carry out compliance checks. However, a few welcomed local autonomy. Often those who responded positively to the proposals stated that for effective enforcement local authorities would need to be provided with sufficient resources.

Manufacturers and some users suggested that emission standards will deliver a significant reduction in emissions and so it would be more effective to encourage a shift to new lower-emission machinery. However, elsewhere, the British Lime Association pointed to the “innovation gap for NRMM fuels and innovations”, suggesting this is an area that may require focus.

Many organisations expressed concern about different emission controls being applied locally and stated that this would lead to problems where NRMM is used throughout the country and therefore is moved across different local administrative boundaries with different controls. This variation might make it difficult for operators to meet local standards in their supply of NRMM in different parts of the country. A few respondents suggested using the air quality plan for HS2 rail project as a model.

There were therefore calls for national approaches. For example, the Construction Equipment Association argued that “consistency across all local authorities is essential” due to the fact that contractors will move plant from one site to another and use machines across multiple locations.

12.3 Suggestions for other actions on NRMM

A small number of respondents stated that red diesel should not be used in Transport Refrigeration Units (TRUs). Several respondents also suggested incentives for developing lower-emission alternatives and phasing out older, higher-emission equipment (for example, scrappage schemes) and requirement for electrification of construction sites to reduce reliance on NRMM.

Some respondents who identified as having a particular interest in the environment, mainly NGOs, suggested that red diesel should be taxed at a higher rate. A few organisations, however, stated that this would result in an increased cost to business. The Rail Delivery Group argued: “any significant increase in fuel duty for red diesel would have a serious and detrimental impact on rail passenger and freight operators”.

Alternative views expressed were that NRMM use in construction should be controlled through planning conditions similar to those applied in London. A few organisations suggested financial incentives to adopt non-diesel alternatives for NRMM. Another respondent suggested later that government procurement should mandate the use of clean NRMM to encourage innovation and use.

Chapter 6 – Action to reduce emissions at home

The chapter provided information about fine particulate matter emitted as a result of burning solid fuel in open fires and stoves, and non-methane volatile organic compounds, and their effects on human health and the environment. In this second area, the chapter focused on the effects of the build-up of non-methane volatile organic compounds (NMVOCs) inside the home and the fact that this can lead to the production of secondary chemical products, which may be more harmful than those in source products.

A number of actions were highlighted:

- legislating to prohibit the sale of the most polluting fuels (and working with industry to identify an appropriate test standard for new solid fuels entering the market)
- ensuring only the cleanest stoves are available for sale by 2022 (and that consumers understand what they can do to reduce their impact from burning)
- updating outmoded legislation on 'dark smoke' from chimneys and underused provisions of Smoke Control Areas to bring these into the 21st century with more flexible, proportionate enforcement powers for local government
- government working with industry, retailers, health experts and consumer groups to reduce emissions of NMVOCs from consumer products, developing options to promote product innovation and encourage the use of low-emissions alternatives

Actions on NMVOCs also included working to improve awareness of (a) NMVOC build-up in the home, and the importance of effective ventilation to reduce exposure, and (b) VOC content of everyday products, possibly through the development of a voluntary labelling scheme.

There were three questions in this chapter. A summary of responses is provided for each question below.

Question 13: What do you think of the package of actions put forward to reduce the impact of domestic combustion? Please provide evidence in support of your answer if possible.

In total, 328 responded to this question, 197 organisations and 131 individuals. There was also a campaign by chimney sweeps and chimney sweep organisations, signed by 111 organisations and individuals in total. The views expressed in this campaign are highlighted separately in 6.3.

13.1 Views on the domestic combustion proposals

Many of the organisations and individuals who responded to this question were generally positive about the proposed package of actions to reduce the impact of domestic combustion, and welcomed further action. A number referred to the environmental impact of domestic burning, and expressed support for the proposed measures to prohibit the sale of the most polluting fuels, ensuring only the cleanest stoves are available by 2022, and updating the current smoke legislation.

Some organisations and individuals were concerned about the proposals. This was mainly because they wanted the government to go further. For example, several suggested that all domestic burning should be banned. Some individuals argued that the timescales were not ambitious enough, and action was needed sooner.

13.2 Concerns and suggestions

A few respondents suggested that the proposed package of actions did not deal with heavily polluting stoves or fires, which are currently in operation. They argued that the government should ban, or introduce incentives, for people to replace these (especially in urban areas). Suggestions elsewhere included providing a tax-break for replacement of old inefficient appliances, heavily taxing more polluting stoves, or adding health warnings to them.

A trade association, meanwhile, pointed to a need to develop and support a “harmonised test methodology for measuring wood-burning stoves”. Another respondent advocated requiring stoves have an ‘annual health check’. Several suggested that the use of inappropriate fuels should be made an offence, particularly in urban areas.

A number of respondents wanted the scope of the proposals to be extended. Several individuals raised issues with bonfires and outdoor burning, arguing that existing legislation did not deal with this problem effectively. Some organisations suggested that nitrogen oxides from domestic boilers should be tackled, as these are a source of pollution in some areas. They considered that minimum nitrogen oxide standards could be specified in building regulations to tackle this. A suggestion was made elsewhere in the consultation for introducing a scrappage scheme for high NO_x emitting boilers.

Several organisations wanted the proposals to apply to canal boats. This said, one felt that many boat dwellers rely on coal and could not afford more expensive fuels. There was also a suggestion that the benefits of applying the policy to boats would be outweighed by the costs.

A key theme emerging from the responses from both organisations and individuals was that education was important. The view was that many of those who are domestic burners simply are not aware of the environmental or health impact of their actions.

Several local councils suggested that a national campaign would be useful, including on basic measures such as the importance of ventilation. This would help them to influence their residents' behaviour locally and to enforce provisions more effectively. Others suggested that consumers should be given information at the point of sale (when buying fuel or appliances) about how to use and maintain their appliances effectively.

Another recurring theme related to difficulties enforcing current and future legislation, with some respondents arguing that banning the sale of wet wood below a certain volume was unenforceable. A number of local authorities advised that they lacked the resources to enforce the proposals effectively, but that it would help if income from fixed penalty notices related to domestic burning was ring-fenced.

Some concern was expressed about the proposal to establish a cut-off point of 2m³ below which wet wood would not be sold. The concern was mainly focused on the impact this could have on small local suppliers who supply small amounts of unseasoned wood to their customers for them to season at home before use. Requiring these micro-businesses to be covered by the proposed certification scheme was seen to be disproportionate by some respondents. There was a risk, they felt, that this requirement could lead to small suppliers selling the wood to larger organisations who would then dry it and sell it, with increased transportation having a negative environmental impact.

A number of organisations argued for a more coordinated approach. They wanted the government to set out a long-term strategy for reducing emissions from the heat sector, ensuring policies relating to both air quality and climate change are aligned. Elsewhere, a few local authorities argued for greater investment in research and development of non-combustion heat technologies.

Some others suggested that the National Planning Framework should be used to reduce emissions from domestic burning, by requiring developers of new housing to install low-emission heating or insulating properties more effectively to reduce the amount of heating needed in the home. Several respondents flagged that Defra should ensure that it links with the National Institute for Health and Care Excellence (NICE)'s forthcoming guidance on indoor air quality at home.

Fuel poverty was highlighted as an issue by a number of respondents, who were concerned that the proposals could impact disproportionately on the most vulnerable in society (particularly the plans to phase out the more polluting fuels). Some suggested that a scrappage scheme should be introduced so that people on low incomes could replace existing appliances with newer cleaner burning appliances. Several suggested that measures should be targeted at the most vulnerable homes first, such as those in fuel poverty.

A number of local authorities said they would need more information on the proposed changes to legislation to deal with domestic burning before they could comment. Some expressed frustration that the current legislation did not enable them to take action when a householder was using unsuitable fuels in an exempt appliance, for example. Others

wanted additional powers to limit burning where it was causing a significant impact on local air quality.

13.3 Chimney sweep campaign

The Guild of Master Chimney Sweeps, a national trade association representing approximately 450 individual chimney sweeps and over 400 chimney sweeping businesses, and the Association of Professional Independent Chimney Sweeps, ran a campaign supported by 109 emails from chimney sweeps and chimney sweeping businesses. This campaign highlighted that whilst they broadly welcomed the actions set out in the strategy, they had some concerns with what was proposed in relation to domestic combustion.

A main concern was the proposal to regulate the sale of wet wood. They argued that this would damage “small business across the country”, be difficult to enforce, increase costs for suppliers and customers, some of whom may be in ‘fuel poverty’, and lead, possibly, to greater carbon footprint for logs, due to kiln-drying and transport. They suggested that education, not legislation, was the solution.

A key issue reported by chimney sweeps and chimney sweeping businesses, is appliance operation, which they argued was partly about consumer education on efficient burning methods. They suggested there was also a need for a robust and transparent process for determining what constitute ‘best’ stoves, through testing and approval that is independent of the manufacturer. However, they raised the issue of how this would be applied to imported stoves.

They also advocated consideration of installation, as well as the nature of the stove, in particular ensuring that the installation of a new appliance requires a new flue way. In addition, they sought clarification on whether new local government powers would be a statutory or discretionary service in the context of perceptions of local government capacity.

They appreciated the commitment to working with chimney sweeps and the Burnright campaign and suggested that, with the right support, they could assist with householders’ understanding of issues related to air quality and domestic burning.

One campaign respondent added that the aim of the advice he gives to customers as a Master chimney sweep with many years’ experience is to prevent fires, but this mirrors the aim of pollution reduction. Another respondent advocated for the lining of old flues, and suggested financial incentives to encourage householders to do this.

Question 14: Which of the following measures to provide information on a product's non-methane volatile organic compound content would you find most helpful for informing your choice of household and personal care products, and please would you briefly explain your answer?

The measures include:

- “A B C” label on product packaging (a categorised product rating for relevant domestic products, similar to other labels such as food traffic light labels)
- information on manufacturer website
- leaflet at the point of sale
- inclusion in advertising campaigns
- other option

The total number of responses to this question (not including those who said they were not sure about any of the options) was 253, of which 135 came from organisations and 118 came from individuals.

Virtually all the individual and most of the organisational responses were completed on Citizen Space where respondents were asked to categorise each of the four options according to whether they thought they would be very helpful, helpful, not helpful or were unsure. However, almost 50 organisational responses came in by email and most of these gave their preferences using an explanatory narrative and a yes/no categorisation.

Overall, the idea of labelling was the most favoured of the options presented amongst organisations and individuals. Over three quarters of those who responded saw labelling as very helpful or their preferred option. The next most popular option (that approximately half of these respondents saw as very helpful or a positive option) was provision of information on NMVOCs in the advertising of products. This was followed by information on manufacturers' websites and leaflets at point of sale, which both received very positive support from approximately a quarter of respondents.

Whilst some respondents did have a clear preference, others suggested that a combination of two, three or four of the above measures would be the best option. A number of other options were also suggested. More detail is provided below.

14.1 Views on ABC labelling

As mentioned above, this was the most favoured of the options presented. A major reason given, for example by the London Sustainability Exchange, was that consumers were now well versed in a variety of labelling schemes, such as that for food and energy appliances. Another reason given for support was that labels can provide information at 'point of use', not just 'point of sale'.

However, a lot of organisations suggested a traffic-light system would be a better labelling system to adopt than an ABC approach because it is more straightforward to interpret.

However, the Behavioural Insights Team recommended online testing to see whether an ABC or traffic-light system would work better for consumer understanding of products with NMVOCs.

Some felt labelling would need to be accompanied by a media campaign to raise awareness about the health implications of NMVOCs and the scheme. Several respondents suggested that a campaign was needed to help the public understand how to interpret any labelling, and was thus to support the labelling. A few others argued that labelling was a further tool to help raise awareness, but the priority was a media campaign.

A few respondents argued that labelling should be mandatory, not voluntary. The Institute of Air Quality Management reasoned that this would help “to ensure that it is the same for all products”. A number of respondents also suggested that the scheme would need to be a “nationally-prescribed approach” (East Hertfordshire district council) to ensure consistency. Yet a couple of trade associations argued that it was important to align with international developments to ensure there were not competing systems. They differed in opinion, however, as to whether the French indoor air quality labelling scheme of A+ to C used as the basis for the mock-up in the strategy was working. The British Coatings Federation pointed to a global label they use for decorative paint products as preferable.

However, a few trade associations suggested there were potential issues. The Wood Panel Industries Federation felt that labelling is a “blunt tool that can harm products”, such as those made of wood that has naturally-occurring VOC, but for which, they argued, there is little evidence of negative health impacts. The Solvents Industry Association suggested it is important for labelling to distinguish between NMVOC content and NMVOC emitted, and that clarity is needed on what should be addressed.

There was also a minority of respondents who felt that labelling would not be helpful. Their reasons were diverse and included questioning the effectiveness, need and cost of such a measure. Both the UK Cleaning Products Association and the Cosmetic Toiletry and Perfumery Association were concerned that labelling would be misinterpreted by consumers as meaning their products were unsafe, when by law all their products need to be safe.

14.2 Views on inclusion in advertising campaigns

Over half of respondents were positive in their support of NMVOC content being included in product advertising campaigns. A major reason for this was experience from other sectors, which suggested this was an effective approach to both inform the public and to encourage manufacturers to produce cleaner products. For instance, Luton council suggested it would help the public “make their minds up if they wish to purchase a product. In this way manufacturers will be led by consumer demand”. Reasons provided for the few responses that saw this option as ‘not helpful’ were scarce, but included the suggestion that advertising was not to be trusted.

14.3 Views on information on a manufacturer's website

Putting information on a manufacturer's website as a means of providing information on a product's NMVOC content was the least favoured option, along with leaflets at point of sale. A main concern was that few people would see it and that the information would not be appropriately tailored. For example, Solihull council argued: "Only those who are highly motivated will visit manufacturer websites. These are likely to be those people who are already avoiding high VOC products where possible." Of the minority who strongly supported this option, many did so as part of a package of measures.

14.4 Views on leaflet at the point of sale

This option was, jointly, the least popular, along with information on a manufacturer's website. Reasons varied but were largely related to a view that such information would not be read. A number of respondents also suggested that it would contribute to more litter. The Association of Convenience Stores argued that it is difficult to communicate advice at point of sale because these areas are usually cluttered with other material. Where there was support for the idea, this was together with at least one of the other options.

14.5 Suggestions of a combined approach

As mentioned earlier, many respondents felt that a combination of measures was the best approach because different communication methods reach different audiences and have different purposes. However, the combinations suggested varied. The Chartered Institution of Building Services Engineers responded: "We think that all options would be useful, and none on its own would be sufficient". However, a few respondents questioned the need and/or effectiveness of any of the options presented as a means of changing behaviour.

Question 15: What further actions do you think can be taken to reduce human exposure from indoor air pollution?

In total, 193 responses were received for this question, 102 from organisations and 91 from individuals.

The answers were split into three categories: those clearly relating to domestic burning, those clearly relating to NMVOCs from domestic products, and those not clearly relating to either. Relevant suggestions made in response to questions fourteen, thirty-two and ten are also included here.

15.1 Suggestions for further action on domestic burning

Not many respondents focused on further actions on domestic burning in this question, though some of the same and other suggestions were made in the responses to question thirteen. The respondents here included a number of councils and a few non-governmental organisations, with the most common responses calling for:

- further regulatory powers to limit burning
- launching a public information campaign to educate people about the impact of domestic burning and what can be done to reduce emissions from this source

As mentioned earlier, there were also calls for increased focus on outdoor burning, including managing emissions from the burning of household waste outside.

A few councils suggested encouraging the installation of ultra-low NO_x domestic gas boilers, for instance through support for a scrappage scheme (Hackney council), as well as research and support for non-combustion forms of heat and power. However, Biomass UK felt that the strategy had confused biomass with domestic burning, arguing that “biomass for power has a different emissions profile” because it has a different feedstock.

15.2 Suggestions for further action on NMVOCs

There were more suggestions for further action on NMVOCs than on domestic burning. Environmental Protection UK argued that more needs to be done to reduce NMVOCs than was proposed in the draft strategy in order to meet VOC targets. The most common suggestions for further action were:

- an update to planning guidance or ventilation regulations in homes
- regulation to ban or reduce NMVOC content in domestic products
- better information provision to the public

The trade union, Unite, suggested, though, that removing NMVOCs from household cleaning products should be done first, with awareness-raising only being done where this is not possible.

In contrast, the UK Cleaning Products Association argued that NMVOCs provide “a range of key functions in cleaning and hygiene products, [and] removal or reformulation would prove challenging both technically and economically and disproportionate to the overall reductions likely to be achieved”. However, in question ten, the Royal Society of Chemistry saw opportunities for the UK chemical industry to become world leaders in this area. They advocated for a targeted approach to NMVOC abatement as being the most beneficial and cost-effective because the “polluting effects of non-methane volatile organic compounds (NMVOCs) are unique to each chemical”.

The British Coatings Federation expressed a need for a “stable regulatory scenario” in terms of NMVOCs and the content of paints and coatings. They argued that testing takes many years, particularly as paints and coatings often have to meet performance objectives and may need to provide a guarantee against failure. In terms of suggestions for other actions on NMVOCs, they suggested the licensing of body shops and removing exemptions from relevant EU Directives.

Other suggestions included:

- working with consumer groups, health organisations, industry & retailers to promote development of lower VOC-content products (East Hertfordshire district council)
- providing advice on how to use products safely, as well as resources to support removal of existing unsafe or high risk products from homes through properly funded disposal programmes (Norfolk councils)

15.3 Other suggestions on indoor air quality

The most common responses which did not fit clearly into either category were about increasing education and raising the public's awareness of indoor air quality as an issue. For instance, on the previous question on NMVOCs, the Royal College of General Practitioners advocated a media campaign, as well as suggesting incorporating air quality into the school curriculum. A council suggested involving "local environmental groups and possible information dissemination to local parish councils" for promotion to parishioners.

There were also a few comments on the need to encourage ventilation in homes. One respondent highlighted that domestic energy efficiency measures which should lower the need for heat can also inadvertently negatively impact on indoor air quality unless appropriate ventilation is installed. However, another respondent cited their negative air quality experience with mechanical ventilation in a house where nearby properties used solid fuel stoves and therefore issued smoke.

Chapter 7 – Action to reduce emissions from farming

This chapter outlined the sources of ammonia emissions from agriculture and proposed actions to reduce emissions in line with 2020 and 2030 targets. Ammonia is an air pollutant that has negative impacts on both human health and the environment, as described in chapters 2 and 3. Proposed actions to reduce emissions from farming were:

- providing a national code of good agricultural practice to reduce ammonia emissions
- regulating to reduce ammonia emissions from farming and seeking views on three possible approaches to regulation
- requiring and supporting farmers to make investments in the farm infrastructure and equipment that will reduce emissions
- funding targeted action to protect habitats impacted by ammonia through a future environmental land management system
- continuing to work with the agriculture sector to ensure the ammonia inventory reflects existing farming practice and the latest evidence on emissions

This also included tasking a group of independent experts to make recommendations by November 2019 on the maximum limits that should be applied for (organic and inorganic) fertiliser application, taking account of economic efficiency and commitments to reduce ammonia and greenhouse gas emissions from agriculture, and to protect sensitive habitats and water bodies.

There were three questions in this chapter. Summaries of responses for each are provided below.

Question 16: What do you think of the package of actions put forward in the farming chapter? Please provide evidence in support of your answer if possible.

A total of 236 respondents answered this question, 130 organisations and 106 individuals.

The overall package was predominately welcomed by both organisations and individuals. Many organisations and individuals described the proposals as sensible or reasonable on the basis that action is needed to improve air quality. Several organisations highlighted the need to reduce ammonia emissions to protect human health and habitats. The Royal Society presented their report on the impacts of ammonia on biodiversity and what can be done to alleviate the problem. Their synthesis suggests there is “no silver bullet” to dealing with ammonia emissions.

Some suggested knowledge of the ammonia issue amongst farmers is low and that a joined up approach with industry is key to raising awareness of the need to implement measures. Others stated that a similar approach has worked well in the Netherlands and Denmark. Some welcomed the systems-based approach, but others would prefer a greater emphasis on soil health. Many individuals said the package was insufficient and that the government needs to act further and faster.

However, repeated concerns were raised by many individuals and organisations regarding the expense of making the required investments. Some were concerned that farms may close or that the farming industry would be less competitive when compared to other countries without similar requirements.

Several respondents were wary of putting additional pressures and requirements for investment on the farming sector during the UK's exit from the European Union. Some organisations representing manufacturers were concerned over the impact on the price and availability of food to the supply chain and consumers. Some said the proposals are currently too vague to give an informed response.

16.1 Views on the Code of Good Agricultural Practice for Reducing Ammonia Emissions (COGAP)

The Code of Good Agricultural Practice for Reducing Ammonia Emissions (COGAP) was predominately welcomed as a way to improve uptake of best practice and highlighting the productivity benefits to farmers of some ammonia reduction methods. Several organisations applauded the collaborative approach between Defra and industry in developing the document and would like this to be continued.

The National Farmers Union (NFU), which represents 50,000 farmers, would like Defra to take more of a supportive, advice-led approach to addressing ammonia emissions, particularly with geographically targeted advice. In addition, some individuals said the methods in the document should be required by regulation, rather than optional. One organisation commented that, in order to be effective, extra resources will be needed to provide advice and support on-farm.

16.2 Views on requiring and supporting farmers to make investments

On requiring and supporting farmers to make investments, many respondents were concerned over the cost to farmers and said significant financial and technical support would be required. Some organisations said that grants must be available to all and not restricted to certain catchments, as with the current Countryside Stewardship Scheme grants.

Several organisations suggested the scope of grant schemes should be widened to include, for example, slurry stores, tanker refurbishment and second-hand equipment. The Agricultural Industries Confederation (AIC), which represents over 250 members of the agri-supply trade industry, would welcome a scrappage scheme for broadcast spreaders.

Some organisations would like only large farms to be required to make the proposed investments, and commented that some previous grants have been complicated and time consuming to apply for. Other organisations said grant schemes are needed but must be accompanied by sufficient investment, time and expertise. Several organisations suggested that smaller grants, no-interest or low-interest loans with repayment holidays and tax breaks would be beneficial to help farmers. Some noted that tax breaks and Pillar 2 funding were used to support uptake of low emission animal housing in the Netherlands and Denmark.

A number of organisations said support should be delivered through a future Environmental Land Management scheme, with some saying support should only be available to farmers delivering above the regulatory baseline. One organisation highlighted the importance of being clear on the overlap between regulation and an Environmental Land Management scheme so that farmers can plan for the necessary changes. Some environmental organisations would prefer the priority area for public money to be habitat restoration, with a maximum 40% grant towards the cost of investments for farmers.

Some organisations, including the Tenant Farmers Association highlighted that special considerations will need to be given to tenant farmers, especially those on short-term tenancies where investment in infrastructure is not feasible or where, in longer-term agreements, fixed equipment is the responsibility of the landlord. Other organisations including the National Association of Agricultural Contractors (NAAC) highlighted the current lack of grant funding available to agricultural contractors as a result of EU rules. They asked that contractors have access to grants, loans and training to encourage use of best practice.

16.3 Views on targeted protection for habitats

A number of organisations supported targeted protection for habitats, with a few being neutral or against. Some highlighted the importance of protecting habitats. The Joint Nature Conservation Committee (JNCC), the public body that advises the UK Government and devolved administrations on nature conservation, said ammonia reduction must be a priority part of future agri-environment schemes.

The Royal Association of British Dairy Farmers (RABDF) would welcome 'ammonia quotas' putting limits on emissions near to sensitive habitats as an alternative to blanket regulation. However, one organisation would prefer all farms to be subject to the same regulations and sources of support, whilst another was concerned about the impact on the viability of farm businesses close to habitats. No comments were received from individuals.

16.4 Views on ammonia inventory updates

The proposal to regularly review the ammonia inventory and work with the farming industry to reflect uptake of ammonia mitigation measures was welcomed by all the organisations

that commented on this aspect of the proposals. No comments were received from individuals. Several organisations highlighted the importance of regular reviews in ensuring action taken by the sector to reduce emissions is recognised and to ensure industry confidence in the inventory. Some organisations suggested areas for priority research, including research into a 'Best Available Techniques' approach and refining the emission factors for digestate and the dairy sector.

16.5 Views on regulatory package

The proposal to introduce a regulatory package was welcomed by the majority of organisations and individuals, but many also said their support relied on farmers receiving financial and technical support. Dairy UK, a trade association for the dairy supply chain, echoed the comments of many farming organisations by saying regulations and enforcement must be "proportionate, effective and deliverable".

A few responses highlighted the effectiveness of similar regulations introduced in the Netherlands and Denmark and a number expected that regulations in the UK will have a large impact on reducing ammonia emissions. Other respondents said that regulations would raise standards across the farming sector and welcomed that farmers would be given a set time to make the necessary investments. One environmental organisation and some individuals wanted the regulations to be introduced sooner. Some respondents highlighted the need to ensure new regulations complement rather than conflict with existing regulations.

The NFU was strongly opposed to the regulatory approach in each of the three areas, with concerns regulation would negatively impact on productivity, businesses, welfare and the economy if not implemented correctly. The Country Land and Business Association (CLA) was also opposed to a regulatory approach. They argued that any regulations must have a thorough evidence base and be developed through consultation with the affected sectors.

A small number of organisations and individuals were opposed to regulation. There were a number of reasons given, such as that there is already a large body of existing regulations affecting farmers, and concern about potential impact on the competitiveness of the industry compared to other countries. There was also expression of a preference for farmers to pick the best practice options most suitable for their farms. It was also felt that many farmers are new to the ammonia issue. Other respondents suggested an increase in grant money available could sufficiently increase voluntary uptake of measures to reach ammonia reduction targets without introducing the proposed regulations.

Comments on the individual regulatory measures are included in the summary of responses to question seventeen.

16.6 Suggestions for further action

There was a wide range of suggestions for further action that could be taken to reduce ammonia emissions. RABDF wanted to see more knowledge transfer between the dairy

sector and the intensive pig and poultry sector, which has typically greater awareness of ammonia abatement methods. They also wanted free on-farm audits to identify and cost ammonia mitigation measures. The Agriculture and Horticulture Development Board (AHDB), a UK statutory levy board funded by farmers, growers and others in the supply chain, were keen for measures to reduce ammonia emissions that also have wider benefits, such as for animal welfare and plant health.

A number of organisations and individuals raised concerns about greenhouse gas emissions from agriculture and many wanted to see a greater joined-up approach between policy on air quality, greenhouse gas emissions and water quality. To address both air and water pollution, WWF-UK suggested grants or loans be offered for the upgrade of the 50% of slurry stores which were built pre-1991 and are therefore exempt from the Water Resources (Control of Pollution) Silage, Slurry and Agricultural Fuel Oil (SSAFO) regulations 1991. WWF-UK estimated this would cost around £1.8 billion.

The National Pig Association (NPA), a trade association for British commercial pig producers, wanted a verification method to be developed for new slurry stores, either verifying the contractor or the work undertaken, to ensure the stores are fit for purpose.

Some respondents including AHDB and the Renewable Energy Association (REA), which represents over 550 corporate members of the renewable energy sector and submitted a joint response with the Wood Heat Association, suggested establishing a baseline standard or certified course for spreaders of organic manures. Dairy UK and AHDB were keen for more communication campaigns, more knowledge exchange and use of farm calculators.

Alternative approaches suggested included banning slurry spreading, encouraging slurry acidification or slurry composting, feeding livestock low protein diets, encouraging anaerobic digestion and funding research into microbial action. Other respondents suggested reviewing closed periods in Nitrate Vulnerable Zones to minimise inappropriate spreading, or banning the spreading of all fertiliser and slurry in certain weather conditions. Some local authorities and individuals highlighted that local authorities and enforcement agencies will require extra resource to ensure compliance with regulations, and that farmers may need help to process any additional paperwork.

The NFU and Leeds council suggested planning guidance be issued to local authorities to assist with consideration of ammonia emissions where new or improved farm infrastructure is planned. The National Pig Association wanted planning application costs to be reviewed as, they argued, they are limiting investment and expansion in the pig sector.

Some respondents suggested there was a need for greater awareness amongst the public of the environmental impact of food production, such as through a Gold standard or environmental rating system for food labelling. Alternative responses suggested: setting up a delivery group or think-tank of industry representatives; planting more trees; taxing inorganic fertilisers or crops grown using inorganic fertilisers; lowering thresholds of emissions that invoke planning restrictions or require permits; tightening the BAT

standards for intensive pig and poultry units; training FACTS-qualified advisors in giving habitat restoration advice; or introducing a Clean Air Act.

Many environmental organisations and individuals said they would like extensive or organic farming to be encouraged and/or a change to more plant-based diets to minimise ammonia emissions from farming.

Question 17: What are your preferences in relation to the three 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.

A total of 130 respondents answered this question, 71 from organisations and 59 individuals.

Most respondents did not express a preference for a particular approach and of those that did, the majority preferred a combination of the three approaches. Several respondents, particularly environmental NGOs, expressed the view that the proposed timeframes for implementing the policy measures were too long.

17.1 Views on fertiliser limits

The majority of those who expressed an opinion on fertiliser limits, including farming organisations and advisory groups, did not agree with the proposal to set mandatory limits on organic and inorganic fertilisers. Some respondents had neutral or mixed views while environmental NGOs and the Soil Association were supportive.

The reasons given for opposing this policy were varied. They included concern about damage to output, the inflexibility of the approach and administrative burdens. The measure was also seen as unnecessary by some because mandatory limits are currently in place within Nitrate Vulnerable Zones and fertiliser recommendations are available. There were also concerns that there could be confusion or conflicts with nitrogen limits set in Nitrate Vulnerable Zones. The NPA expressed concern that limits would put further pressure on slurry storage, potentially leading to pollution incidents. Some responses strongly disagreed with the principle that limits should be restricted below the financial optimum point and suggested that this policy has been unpopular in Denmark.

Other responses expressed mixed or neutral views with some indicating that limits could be effective if accompanied by other regulatory policies, advice and funding for slurry storage and equipment to drive emissions reductions and enable farmers to achieve limits. Some responses noted concern about limits potentially leading farmers to favour inorganic fertilisers because these deliver improved nitrogen use efficiency compared with organic sources.

Some who were supportive of introducing limits highlighted the success of similar policies in Denmark, noting that this had led to improved use of nitrogen efficiency, particularly from organic fertilisers, and that it had driven innovation. One response advocated the merits of the German approach, which is based on regional soil testing and nitrogen balances.

All those who expressed an opinion supported the proposal to set up an advisory group on fertilisers. However, several thought that the scope of the group should have a broader remit considering how to promote efficient use of crop nutrients and some stated that the group should include industry expertise.

17.2 Views on permitting of large dairy farms

Among those who expressed a view on permitting, the majority of responses, including those from environmental NGOs, the Soil Association and the NPA, indicated support for this approach. Several responses, particularly those from local councils, but also several from farmers, expressed a preference for the permitting approach. Some noted that it would bring the dairy sector in line with the pig and poultry sectors, would raise standards, and could be enforced. A few respondents thought that the proposed 2025 implementation date was too late.

Several responses expressed the view that permitting should not be targeted at large dairy farms since ammonia emissions from large dairy farms were no worse pro rata than small farms. Some thought that permitting should be extended to the beef sector, while others expressed the view that the permitting regime should be extended in the pig and poultry sector where permitting currently applies only to large farms. These responses cited evidence from Natural Resources Wales which indicates that a large number of farms have animal numbers just below the permitting threshold. The same evidence was noted in responses concerned that size limits for permitting in the dairy sector could force restructuring of the industry. Several responses noted the importance of funding and advice in ensuring the success of this proposal.

Responses from those opposing the proposal to permit large dairy farms, including those from RABDF, Dairy UK and NFU, noted a number of concerns. These encompassed the costs, administrative burdens and potentially negative impacts on the international competitiveness of the dairy industry. The challenges of delivering a policy of this nature in the years after the UK's exit from the European Union was also raised.

Concerns were also expressed about data availability to develop an approach of the nature currently used in the pig and poultry sectors. Several responses noted the importance of working with the industry to develop a suitable approach. RABDF said if permitting is introduced, it should be based on a calculation of ammonia per farm and the bar set at the limit that poses a threat to sensitive local habitats.

17.3 Views on specific policies to reduce ammonia emissions

Of the number of responses received that expressed a view on the proposal to introduce specific policies to reduce ammonia emissions, the majority were supportive. They mostly highlighted the benefits of applying regulations to all farms and the large impact on emissions that could be achieved through this approach. Some responses highlighted the importance of funding, advice and enforcement to ensure the effectiveness of this approach. Those who opposed this approach expressed concerns about inflexibility and costs.

17.4 Views on introducing legislation to restrict urea-based fertiliser use

There were a number of responses on this proposal. Views were fairly evenly split between those who supported the proposal and those who were opposed to introduction within the timeframe suggested.

Supportive responses included that from ADAS, an agricultural and environmental consultancy. The Centre for Ecology and Hydrology noted clear evidence demonstrating the emissions reductions that can be achieved by using urease inhibitors. Some noted the benefits of adopting this proposal in combination with fertiliser limits. Manufacturers of inhibitors indicated that it would be possible to meet demand in time for introduction of this proposal by 2020. Responses also highlighted the introduction of a similar measure in Germany and proposals under consideration in France and Ireland.

Responses opposing this policy included those from AIC and the NFU. These responses highlighted concerns about the underpinning data used in the ammonia inventory, as well as concerns about the availability, price, efficacy, health and environmental impacts of urease inhibitors. The AIC response noted that the European Committee for Standardisation (CEN) is scoping plans to develop performance standards for urease inhibitors. They suggested that 2024 is likely to be the most practical timeframe in which to introduce regulatory requirements in view of concerns around supply, standardisation and farmer confidence.

17.5 Views on mandatory livestock housing standards

There were a number of responses on this proposal. Views were fairly evenly split between those who supported the proposal and those who opposed it. Those who supported it noted the potential for the housing standards to have a large impact on emissions. The potential of housing standards in simplifying the planning process and in avoiding the need for permitting were also noted. Responses from environmental NGOs were keen to accelerate the timeline for this proposal, extend the development of standards to other types of livestock housing and cover existing livestock housing.

Some responses offered support for this proposal only if funding is available. Responses opposing the introduction of mandatory standards expressed concerns around the impact on tenanted farms, the ability of ammonia standards for housing to consider animal health,

and the ability of farmers to build their own units. One response noted that standardisation of dairy housing systems, which are designed in response to local needs is not desirable.

17.6 Views on incorporation of manure into bare soil within 12 hours of spreading

There were a number of responses on this proposal and they were mixed. Positive responses acknowledged the ammonia reduction benefits of widespread action and some suggested reducing the timeframe allowed from 12 to 6 hours for greater emissions reductions. Several responses noted that the 12-hour timeframe was not practical for farmers. The reasons given were varied: for instance, labour availability, weather conditions and potential for harmful impacts on soil from cultivating land in wet conditions, and bacterial contamination of water bodies. Other responses noted potential conflicts with no-till systems, which can help to retain soil organic matter and biodiversity.

17.7 Views on low-emission spreading equipment

There were numerous responses on this proposal and the majority welcomed the approach. Several responses expressed the view that the requirement could or should be introduced earlier than 2027. The positive impacts of this proposal on ammonia emissions and potential benefits for farm productivity were also noted in some responses. Several responses expressed support, provided funding was available.

BioCover, a Danish acidification company, suggested the proposed 2027 regulations should be amended to say that acidification, which meets EU Best Available Techniques, can be used as an alternative to bandspreading of slurry. They also proposed that both acidification and bandspreading should be required when spreading digestate.

Some expressed concerns about possible impacts of low-emission spreading equipment on soil compaction and health. One response noted practical concerns about using low-emission spreading equipment on steep or stony land.

One response indicated that this requirement could be sped up for digestate, given higher emissions and that it is already the recommended guidance for PAS110 certified digestate. The Anaerobic Digestion and Bioresources Association (ADBA), which represents 400 members of the AD industry, noted that digestate does not currently generate income for AD operators and that higher spreading costs may impact the future growth of the sector. The REA and ADBA ran a survey of 43 members and found around 70% use bandspreaders and almost all use low-emission spreaders for liquid digestate. AIC advocated consideration of a scrappage scheme for old spreaders.

17.8 Views on covers on manure heaps and slurry stores

There were some responses to this proposal. The majority were strongly opposed to introduction of covers on manure heaps. The main concerns were practicality, generation

of waste plastics, and health and safety. Some responses also mentioned possible impacts on wildlife that feed from manure heaps and slurry lagoons.

Positive responses relating to a requirement for slurry store covers noted the effectiveness and benefits of reducing costs of slurry spreading for some farmers, as well as the application of this measure in other countries. The main concern expressed in relation to any requirement to cover slurry stores was cost, although some also noted that many existing stores would not support covers, so the store would need to be rebuilt. Practical issues associated with slurry handling if dilution was reduced and the management of floating covers on crusted stores were also raised. Responses that were positive about this requirement indicated a preference for moving the timescales for implementation forward.

17.9 Other points

Two opposing views were commonly expressed in relation to the timeframes for policy implementation. Environmental NGOs and members of the public were mostly in favour of bringing forward the implementation dates for all measures. Farming organisations (and some environmental NGOs working with them) expressed the view that implementation needed to be done on a realistic timeline bearing in mind the pressures of EU exit and the availability of funds through the new Environmental Land Management scheme.

Most responses highlighted the need for funding, training and advice to support farmers in adopting low-emissions farming techniques and effective nutrient planning. The case was made by some, including AHDB, for accreditation and continuing professional development of those applying manures and slurries.

The role of contractors in providing professional services, particularly in relation to slurry spreading was made in several responses. These also highlighted the importance of ensuring funding options, such as low interest loans, are available to contractors. Suggestions were made regarding phased introduction of measures requiring investment.

AIC suggested that an expert group should design a “menu of basic and additional public good farm requirements”. They argued farmers should be mandated to implement basic options covering feed, housing, manure storage and application, and incentivised to adopt additional measures through a future Environmental Land Management scheme.

Question 18: 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.

In total, 145 responses were received for this question from 82 organisations and 63 individuals (not counting those who answered ‘don’t know’). Of these, 100 were received

online where respondents were asked to first respond to the question by selecting yes, no, neither yes/no or don't know, before explaining their answer.

18.1 Positive responses to the proposed certification approach

The majority of the organisations and individuals who responded were in favour of the certification proposal. Many gave no explanation for their positive response or simply described the certification approach as logical or appropriate. Some said certification would help to reduce ammonia emissions by giving a commercial imperative to invest in best practice technology. ADBA was supportive of the proposal and has a certification scheme that could be considered as an option. ADBA suggested a certification scheme might also drive uptake of good practice in wider health and safety, and operational and environmental performance, as well as emissions management.

Some respondents suggested pollution control should be a requirement of all government incentives, or that best practice should be required when spreading all organic manures. One respondent noted that low-emission spreading equipment is already a condition of some permits and that it is included as guidance under PAS110, having previously being classed as a requirement of the scheme. Other comments were that certification could bring non-permitted AD facilities in line with permitted AD facilities, and that industry investment in low-emission spreaders may make them more accessible to the rest of the farming sector.

Some respondents supported the certification approach, but with some caveats. This included that it must be well enforced, introduced with time to make the required investments, non-burdensome in terms of paperwork, and/or different rules should be applied to different forms of separated digestate.

A few local authorities welcomed potential co-benefits for reducing odour, but one highlighted that extra resource must be available for those enforcing any certification approach. A couple of respondents suggested the proposal is reasonable only if financial support is provided, such as grants towards the purchase of low-emission spreading equipment.

A few respondents, including the NFU, said the certification approach could be possible if only required of future recipients of incentive schemes. Others, including the Environmental Services Association, which represents half of the UK resource and waste management industry, questioned why the certification scheme would be restricted to future plants and not those already in receipt of incentives. AHDB suggested that using low-emission spreaders will increase the crop-available nitrogen and decrease the amount of any additional mineral fertiliser required, adding to the carbon reduction objective of AD.

The majority of individuals were supportive of the certification approach. Some reasons given included the impact on reducing ammonia emissions and wider pollution, and that it may discourage over-application. Some respondents suggested they would prefer all

spreading of organic manures to be done using best practice. A few respondents thought the sector needed more close monitoring for pollution control in general.

18.2 Negative responses to the proposed certification approach

Though the number of those who responded negatively to the proposal was small, several prominent stakeholders objected to the certification approach, including the REA and the CLA. Some respondents, including the REA, suggested existing voluntary guidance and assurance schemes are enough to ensure best practice and that uptake of low-emission spreading equipment is already high. The REA conducted a joint survey with ADBA, which found that 93% of the volume of digestate spread by the 43 members who responded was spread using low-emission spreaders, most typically a trailing hose.

The REA and the CLA highlighted that few digestate producers are also responsible for spreading, which the CLA suggested may increase the cost of using digestate if plants are required to certify. The REA also objected to holding a digestate producer liable for how another person might spread the digestate, beyond a requirement to handover relevant information to allow them to make an informed choice about application.

United Utilities said AD supported by government schemes should follow the RB209 guidelines for spreading digestate. They also argued that a certification approach is not needed for the biosolids sector (digestate from sewage sludge) as spreading is completed in accordance with existing regulations and guidelines.

The CLA, the NFU and others reported a recent slow in industry growth in response to declining government incentives, with concern over the impact of further requirements on the industry. The CLA expressed concern about the cost of the administrative burden. This was echoed by several other respondents, who were also concerned about the wider financial implications of any investments required. The REA suggested that although the cost of becoming certified may not be prohibitive, given high existing uptake of low-emission spreading equipment, many contractors are not currently certified on the existing scheme run by the National Association of Agricultural Contractors (NAAC).

The Chartered Institution of Water and Environmental Management (CIWEM) highlighted the need to assess availability and affordability of low-emission spreaders before considering certification. The reason given was that this would avoid limiting the number of farmers who can use digestate, and therefore avoid creating disposal problems. One organisation was concerned that adverse impact on the AD sector may result in benefits of AD being lost, such as reduction of greenhouse gas emissions from food waste.

The few individuals who responded 'neither yes/no' or 'no' gave a variety of reasons. These included preferring a voluntary approach, supporting the certification approach if it was required to sell the product, or not supporting incentives for the AD sector. Two organisations also suggested AD should not receive government subsidies.

18.3 Suggestions for alternative approaches to reduce emissions from the AD sector

The REA suggested a preferable alternative approach would be the introduction of a baseline standard for the operation of spreading equipment by farmers, contractors and operators. The REA suggested that this could be similar to the existing NRoSO scheme for sprayers of pesticides. This might cover application of all organic manures (including slurries, manures and digestates), with operators leaving records to be checked under farm assurance schemes.

Renewable Energy Assurance Limited (REAL), which delivers the Biofertiliser Certification Scheme, suggested a preferable alternative approach would be a new protocol to place requirements on AD operators, spreading contractors and farmers. This would follow digestate from the point of being dispatched from the AD plant to being applied to land. This could be in place by January 2020. REAL are also planning to consult on a redraft of the Biofertiliser Certification Schemes Rules and are considering options to increase voluntary uptake of use of best practice when spreading digestate.

The NFU would prefer digestate use to be encouraged through a future Environmental Land Management scheme, incentivising the landspreading of digestate from local AD facilities using low-emission spreading equipment. The CLA suggested that policy should focus on encouraging voluntary uptake of low-emission spreaders amongst contractors who spread particularly large volumes of digestate. The 4R Group, a waste recycling and environmental consultancy, suggested that a technically competent person should be allowed to assess the digestate. This would provide flexibility as to how it is applied to land, based on the risk of ammonia release from the specific material and field conditions.

A few organisations suggested that government fund research and encourage voluntary uptake of innovative technology to further reduce ammonia emissions in the AD sector. The Sustainable Food Trust advocated mandatory requirements on AD facilities to look more broadly at environmental impacts, such as requiring cover cropping. The Soil Association, which supported the certification approach in the short-term, would also welcome this broader approach in the long-term as part of cross-compliance requirements.

Chapter 8 – Action to reduce emissions from industry

This chapter explored what has already been achieved in terms of reducing industrial emissions, and reiterated a commitment to continuing improvement. This included highlighting the following actions:

- maintaining our longstanding policy of continuous improvement in relation to industrial emissions, building on existing good practice to deliver a stable and predictable regulatory environment for business as part of a world-leading clean green economy
- working with industrial sectors to review improvements to date, and exploring opportunities to go further through a series of sector roadmaps that set ambitious standards – moving beyond a focus on minimum standards to make UK industry world leaders in clean technology and securing further emissions reductions
- developing a UK approach to determine Best Available Techniques for industrial sectors, and reviewing existing guidance, in conjunction with devolved administrations, regulators, industry and other interested stakeholders
- reviewing existing guidance to support effective emission controls at smaller industrial sites and considering whether further action is needed to strengthen the current regulatory framework
- closing the regulatory gap between the current eco-design and medium combustion plant regulations to tackle emissions from plants in the 500kW to 1MW thermal input range, and considering the case for tighter emissions standards on this source of emissions as legislation on medium combustion plants and generators comes into force

There were six questions in this chapter. The responses to these are summarised below by question.

Question 19: What do you think of the package of actions put forward in the industry chapter? Please provide evidence in support of your answer if possible.

In total, 214 respondents answered this question, 145 of which were organisations and 69 individuals.

In general, many respondents were supportive of the actions proposed. Many organisations welcomed the recognition in the draft strategy of the efforts made by industry to date to reduce their emissions, their need for policy and regulatory stability, and the importance of this for investment cycles.

However, there were some concerns, expressed by a range of respondents, about possible implications. The most common related to potential financial costs for particular industries and sectors, possible enforcement and compliance issues, and the quality of the evidence base. There was therefore a call to ensure required action was proportionate and appropriately targeted, although no clear consensus on what this might mean. There was also demand for clear and timely plans and guidance.

19.1 Views on maintaining the policy of continuing improvement

Overall, there was support for the government's commitment to continuing improvement with a Best Available Techniques-led (BAT) approach. However, there was not a clear consensus of how best to pursue this in the longer term. Some stakeholders called for continued consistency with EU standards on BAT. A few concerns were raised with regards to the development of a UK approach to BAT and the implications this may have on resources. However, some felt that this could present an opportunity to resolve implementation issues relating to EU-derived BAT.

Those industries that advocated continuing the current system sometimes mentioned the role of the Industrial Emissions Directive (IED) and the associated system of BAT and related reference documents (BREF) in helping to drive down emissions in their sector. Energy UK commented that the UK implementation of the IED, and its embedded requirement to apply BAT, provides an effective framework for driving continuous improvement, particularly noting that there is an enduring requirement to periodically review and update BAT requirements. British Steel suggested no additional measures were required beyond IED given its effectiveness, and the level playing field it creates with EU competitors. The Food and Drinks Federation explained: "Such continuity is essential for business investment and planning purposes and the framework also enables some consistency across the same/similar markets within the EU."

Others, such as the Environmental Services Association (ESA), which represents many waste and resource management businesses, saw opportunities in leaving the EU to tailor BAT to the UK context. However, there appeared to be different interpretations of what that might mean. A trade association pointed to recent BAT changes that lowered emissions limits, which they saw as disproportionate. The Sustainable Energy Association on the other hand urged the UK "to increase its standards of environmental protection" after EU exit, as did the environmental NGO, ClientEarth.

The Chemical Industries Association (CIA) recommended that "the UK approach should be to resolve the issues with how BAT is defined in some cases, by focusing on the actual environmental impact itself, addressing BAT conclusions the UK was/is not in favour of and fill any "gaps" where necessary." A suggestion was also made to extend the remit of BAT to encompass a more holistic, integrated assessment of environmental impact, rather than focusing on driving down emissions at source.

However, the CIA also saw risks in a UK approach in terms of adding costs and a layer of bureaucracy. Another respondent urged caution that the opportunity to develop a UK BAT system does not lead to a race to the bottom in terms of setting environmental standards.

A joint response from EEF and UK Steel suggested that developing a UK approach should only be considered if the UK no longer has a say in IED decisions after leaving the EU. If the UK stops being able to have a say, they did not favour the existing IED model, but suggested instead seeking “comparable standards” to the EU using a BAT approach. However, the UK Petroleum Industry Association argued that development of a UK approach to determine BAT is not considered feasible or desirable for their sector and that continuing strong alignment to the EU process will be required.

Several respondents questioned how effective market-based mechanisms (in other words, emissions trading) could be in tackling industrial emissions, as an alternative mechanism to the BAT system. The Greater London Authority suggested that it is unclear how this would target the most polluting industries or polluted areas, and that it would not address peak concentrations in emissions. British Glass also pointed to the uncertainties in the continuous measurement of NO_x emissions, which would make such an approach very challenging to implement. There was very little support for such an approach.

Whilst councils that responded in relation to BAT generally welcomed proposals, there was a call for more support for local authorities for the permitting process. Redcar and Cleveland council echoed a point made by a few others that timely and clear guidance is required to drive continual improvement. In addition, Hounslow council argued that more stringent controls that go beyond BAT are needed for the automobile industry because of difficulties in this sector to date.

19.2 Views on sector road maps

The proposal to work collaboratively with industrial sectors to explore further opportunities for emission reductions was largely well received by those who commented on this aspect. It was seen as a real opportunity to improve the evidence base and to review the effectiveness of the existing regulatory regime. Several organisations indicated their willingness to work with government to discuss the development of sector roadmaps. Some, such as RWE Generation UK, welcomed the opportunity to work collaboratively with government on a roadmap for their sector. The Association of Decentralised Energy also supported the development of new sector roadmaps and suggested these should align well with ongoing evaluations of other industrial emissions policy areas, including carbon, and that government should work together on these.

Those that commented on the proposal to take a sector-specific approach felt that this was the right approach. The British Ceramic Federation (BCF) suggested that because industries are “heterogeneous, both intra-/inter-sector”, industrial emissions should be considered at both a sector and pollutant-specific level so appropriate and proportionate action can be taken. The BCF also advocated that sector road maps should be “harmonised” with other policies such as the Clean Growth Strategy.

However, respondents' views diverged as to the extent of further action required and which sectors to incorporate. For instance, the BCF itself suggested a road map for ceramic industries was unnecessary because of other ongoing plans and initiatives. Some industries felt there was limited scope to take action to reduce emissions beyond BAT standards, which some thought to be already stretching. For example, the Society of Motor Manufacturers and Traders suggested their application of BAT meant there was little scope for further effective improvement in emissions reduction from a financial and/or technical perspective.

Many industries emphasised the need therefore to ensure any requirements for further action are proportionate and well-targeted so that there are evident and cost-effective health or environmental gains. However, for several this meant focusing on sectors and industries which have done less to attempt to curb emissions, whilst others felt this should mean the most polluting industries. Meanwhile, ESA argued that 'energy from waste' industries have been more strictly controlled than other sectors and there needs to be a more consistent approach across all sectors.

A few suggestions were made as to how best to target action. Several industries advocated cost-benefit analyses, and a suggestion was also made to adopt a risk-based approach. There was also a call not to focus on absolute emissions alone. For example, EDF Energy argued: "Reductions from large power stations may deliver substantially lower benefits per tonne compared to reductions from other sectors due to the dispersion from tall stacks and the lack of proximity to urban conurbations". Several industries felt there was a need for better data for decision-making and evaluation. In addition, the British Lime Association suggested there should be improved standards for monitoring to demonstrate compliance.

Other organisations and individuals suggested industrial sites should do more to reduce their air quality impact by aiming for a gold standard. Some suggestions for achieving this included reducing the number of derogations, making BAT for energy efficiency binding and removing subsidies for power stations. The Royal College of Physicians and the UK Health Alliance both pointed to the NHS as a large emitter of pollutants such as carbon dioxide, suggesting there is potential for much more action in this sector.

19.3 Other points

Views on closing the regulatory gaps in relation to combustion plant and generators are covered in the summaries to questions twenty-two to twenty-four. There were a few other points made in the responses here. Several respondents felt there was not much new in the actions proposed. There was also a call in a few responses for more focus on smaller businesses, though this included a request to ensure any related action is not too burdensome.

There were also some comments on permitting which voiced the opinion that permits are given out too easily by the Environment Agency and that local councils should be consulted in such decisions. The Chartered Institute of Environmental Health also

suggested that there is a need to update advice for planners in light of current practice and legislation to ensure potential air quality impacts from industrial sites are taken into account in decisions.

Question 20: We have committed to applying Best Available Techniques (BAT) to drive continuous improvement in reducing emissions from industrial sites. What other actions would be effective in promoting industrial emission reductions?

In total, 158 respondents answered this question, 110 of which were organisations and 48 individuals. Many organisations focused on the BAT approach and whether/how this might be improved. However, there were also additional suggestions made.

20.1 Views on the Best Available Techniques approach

Several organisations felt that the application of Best Available Techniques (BAT) works well. Energy UK noted: “the application of BAT is an embedded requirement within the existing regulatory framework and this has proved to be an effective mechanism for driving emission reductions for our sector”. Similarly, the British Ceramic Confederation “welcome continued commitment to integrated pollution control and application of BAT in driving continuous improvements”.

There were also some calls from organisations for BAT to be strengthened and improved, largely reflecting what has been outlined in the summary of question nineteen. For instance, the All Party Parliamentary Group (APPG) on Air Pollution, as well as EIC, suggested the IED-based BAT discouraged innovation because of a focus on the adoption of existing technologies.

However, the Chemical Industries Association (CIA) argued that an impact assessment was necessary “once BAT has been defined in order to identify any areas that need amending”. They suggested this should focus on environmental risks, costs at different scales as appropriate, and site-specific considerations should be properly addressed.

Some organisations and individuals also called for strengthening of regulation, including tightening limits and more inspections on compliance. The CIA advocated that regulation “should focus on processes as a whole rather than emissions to individual media to avoid unachievable requirements and unforeseen environmental consequences”.

The Greater London Authority felt there was need for reduced lead-in times for BAT upgrades, and noted how this could be linked to sector-specific roadmaps and a drive for continuous improvement. A few called for a widening of BAT beyond industrial emissions to encompass fleet vehicles and the wider supply chain.

20.2 Other suggestions

There were several calls for increased incentives for industry to encourage further emissions reductions. Suggestions ranged from grants, interest free loans and tax relief schemes to the introduction of Enhanced Capital Allowances for cleaner technology. A few non-industry organisations also called for more stringent emissions targets.

Others called for more resources for regulators. Several local councils called for more support, updated guidance and resource to assist the permitting process.

A few respondents highlighted the role of innovation. For example, Rolls Royce stated that: “Further R&D should be considered to assess the feasibility of going beyond the Best Available Techniques (BAT). Such R&D needs to be collaborative and more holistic in its approach to help develop more sustainable technology that can support initiatives including Circular Economy.”

As noted in the summary to question nineteen, some voiced concerns about potential market-based measures for other pollutants. Energy UK noted that “the low levels of current total emissions mean that it is unlikely that there would be sufficient liquidity for an emissions market to function in practice”.

Some organisational and individual respondents called for greater education of both practitioners and the public on what the new requirements are, who regulates which industrial sites and/or how to raise concerns. Leicester council suggested: “A database of effective measures would help to reduce the pollution as well as training in best practice for the industry.”

Some individuals and organisations called for strengthening of regulation, including increased penalties, lower limits and more compliance checks. However, CF Fertilisers UK suggested waiting to make a decision on further regulation to see how revised BAT and the sector road maps work. A couple of councils suggested that there is a need for better alignment between planning and permitting decisions. Lincolnshire county council therefore wondered whether a review of all permitting regulations might be useful. The British Coatings Federation also called for greater enforcement of existing regulations to curtail “irresponsible users” of their products.

A few responses, both to this question and question nineteen, also drew attention to the role of the EU Emissions Trading Scheme (ETS) for carbon dioxide emissions. One respondent suggested that the EU ETS incentivises biomass use, which may be deleterious from the perspective of air quality goals. Another point made, this time by SEE, was that the EU ETS does not cover combustion plant smaller than 20MWth or plant made up of individual units smaller than 3MWth, even where this exceeds 20MWth. They therefore argued that the EU ETS should be extended to cover small plant in the UK as these “loopholes risk incentivising construction of smaller, less efficient generation”.

Other suggestions included the “introduction of industry-specific Environmental Management Systems” (Chartered Institute of Environmental Health) and embedding public reporting of air pollutant release into annual sustainability reporting guidance, such as HM Treasury’s guidance and energy and carbon reporting for the private sector.

Question 21: Is there scope to strengthen the current regulatory framework in a proportionate manner for smaller industrial sites to further reduce emissions? If so, how?

A total of 133 responses were submitted for this question, with 89 from organisations and 44 from individuals, though a number of individuals and a few organisations stated they did not know the answer to the question posed. Over half of the organisational respondents were from local government.

The majority of responses said that there was scope to strengthen the current regulatory framework for smaller industrial sites. The proportion responding in this way was higher amongst organisational respondents. Some responses provided a mixed or neutral assessment of whether the existing regulatory regime could be strengthened, while a few stated that there was not any scope to strengthen the existing framework.

21.1 Suggestions for strengthening the current regulatory framework

There was strong support for strengthening the current regulatory framework for smaller industrial sites. In particular, most local government bodies that responded believed that there was scope to strengthen the existing framework. Their most common suggestion of how to do this for the existing framework was centred on increasing the scope of sites within the regulations. A few local councils specifically mentioned lowering the thresholds for applicability within the current regime. Others suggested including more sectors or practices within the current framework.

Other suggestions from local authorities to strengthen the current framework included reviewing:

- methods of controlling and enforcing emissions from smaller sites, in particular, removing ‘simplified permits’ – for example, Newark and Sherwood district council said: “[due to] simplified permitting [...] and the reduced inspection frequency that came with it in the last few years, the regulation of smaller industrial sites has been significantly weakened”
- regulatory guidance and ensuring the Best Available Techniques and associated emissions limits are prescribed – one suggestion, provided by the GLA and others, included considering the grouped effect of smaller sites because of the cumulative impact of several co-located smaller sites, particularly for dust
- current fees structure paid by smaller industrial facilities (for example, through scaling the cost of the permit according to the amount of emissions released) –

several councils felt that the fees were not sufficient to recover the costs of issuing permits and ensuring compliance

There were also suggestions for improving the existing regulation, including improving coordination between relevant regulatory frameworks. Making changes to enforcement or compliance assessments for sites, such as increasing the number of site inspections for regulated sites, was also mentioned. A few local authorities also suggested exploring ways to improve financial support for industry, for instance, through loans and subsidies.

Several respondents suggested that an area for potential improvement was the vehicle refinishing sector. According to respondents, this could be achieved through reducing the inclusion threshold for sites (therefore including more sites within framework) and improving enforcement. Strengthening the controls on this sector was supported by several local authorities, the Institute of Air Quality Management and the British Coatings Federation.

Similar to responses from local authorities, several trade associations and businesses also called for improved guidance and better coordination of the different legislative frameworks to which industries are subject. The Solvents Industry Association suggested that trade bodies could play a role in ensuring best practice was shared throughout smaller industries. Other suggestions also included improved cohesion between the regulation of smaller industrial sites and the planning framework, particularly in considering the cumulative impact several industrial sites could have, and assessing the impact of stricter controls on medium combustion plant on smaller industrial sites.

Maximising the use of technology was a common theme in many responses, with suggestions to move away from the current paper-based compliance assessments towards an electronic system. Technical innovation also appeared in responses proposing to include emission limits for some machinery.

Suggestions from individuals to improve the framework included stricter enforcement of sites by local authorities and greater transparency in data surrounding enforcement and compliance. Other suggestions included removing some derogations or exemptions, and ensuring that both the health and environmental impacts were considered when assessing how proportionate additional measures are.

21.2 Other views

A number of respondents questioned the need to strengthen the regulatory framework or saw little scope for doing so, though this was very much a minority view. The most common reason given, particularly by local government, was a need to review the evidence on how effective the existing framework is. For instance, whilst the simplified permit structure was praised by Transport for Greater Manchester for reducing the burden on both Industries and local authorities, they suggested a review of the current regulatory framework could be useful.

Other organisational explanations of why there was no need to strengthen the current regulatory framework included concerns around the resources necessary to change the system, that the existing system is already subject to iterative improvements, and that future technological developments may bring about improvements. A few individuals felt that the existing framework was sufficient and that any changes would be overly burdensome for smaller industries.

Responses across many organisations highlighted the importance of protecting businesses, particularly small and medium enterprises, and ensuring any additional measures were proportionate. This was the most common area of caution from trade association responses, including the British Ceramics Confederation, the British Lime Association and FABRA UK. Recognising the potential burden on smaller businesses, several individuals called for a greater availability of financial support, or a time-limited derogation for small businesses or new start-ups. Several organisations also wished for further consultation on specific measures or called for further evidence for the necessity of reviewing the current framework.

Question 22: What further action, if any, should government take to tackle emissions from medium plants and generators? Please provide evidence in support of your suggestions where possible.

Overall 142 responses were received, 107 from organisations and 35 from individuals.

The majority of these responses did advocate action to benefit health and the environment by controlling the use of medium combustion plants and generators (MCP). This was seen as particularly important in urban areas, clean air zones and smoke control areas.

For example, Environmental Protection UK argued that any new local authority system (covering Smoke Control Areas, Clean Air Zones, or Local Air Quality Management) should include some levers on new combustion plants, generators or other combustion balancing plant. Where combustion plant regulated by the Environment Agency also affected an Air Quality Management Area they encouraged the close involvement of the council.

Suggestions for action on MCP can be grouped into: ideas to control emissions from medium combustion plants and generators; moving to cleaner fuel sources; increasing monitoring and tightening operating controls; and supporting local authorities to exert more control over MCPs and MCGs. However, there was some opposition to further action on MCP from businesses, particularly given recent changes in this area, which still need to be embedded and assessed.

22.1 Opposition to further action on MCP (at this time)

A number of businesses and industry representative organisations, and several local authorities, felt that the current Medium Combustion Plant Directive (MCPD) framework, which was transposed into UK law in 2018, was sufficient and adequate. Indeed, some

organisations opposed additional regulation on the grounds that it could impact on competitiveness, or cause disruption to businesses. However, none of the individual responses advocated this view.

Some agricultural and manufacturing industry representatives promoted a 'wait and see' approach, advocating a review of existing measures before further new ones were considered. A number of similarly worded responses flagged that current measures had only recently been introduced and had not necessarily been fully implemented as yet. They argued that the current legislation should be fully reviewed before introducing further changes and some stressed that future policy changes should take account of industry delivery timescales and broader milestones.

Others felt that better guidance was needed for how to use the Medium Combustion Plant Directive, suggesting the production of additional written guidance as well as webinars. Some local authorities stated that MCP should be covered by Environmental Permitting Technical Guidance Note (draft) guidance 1/1(18).

22.2 Suggestions for controlling emissions from MCP

Responses from businesses, local authorities and NGOs were supportive of the aim of reducing emissions from medium combustion plants and generators. This view was even expressed by many of those who advocated a 'wait and see approach' indicating an acceptance that emissions from smaller plant with high NO_x intensity will become increasingly important. There was therefore a general understanding that emissions from medium plants and generators need to be controlled.

The question of standards was raised in some responses. For example, Environmental Protection UK suggested using City of London guidelines for minimum standards (which were described as filling the gap between eco-design and MCPD emission limit controls). The Sustainable Energy Association suggested that government should lead by example by setting higher standards in its public buildings.

Suggested ways of achieving reductions in emissions included:

- setting and enforcing more stringent emission controls, such as legal limits
- implementing an emissions tax/levy on companies using high emissions machinery
- requiring or incentivising zero emissions from new systems
- incentivising the use of systems with ultra-low emissions
- working with manufacturers to develop lower-emission plants and generators
- providing a workable timescale for statutory replacement of higher emissions plant and generators

One respondent mentioned what they saw as a specific need to reduce emissions from generators used for data storage and to supply the grid, citing lower emissions limits in effect in the Netherlands. RWE Generation UK recommended that emission limits should

be met by primary measures rather than secondary abatement as the latter is less efficient and has environmental costs including ammonia deposition.

Individuals who mentioned emissions tended to advocate tighter controls on emissions. For example, one response recommended banning everything without a particulate filter or a catalyst, and another suggested locating director and CEO offices next to sources of emissions so that they could experience the issue at first hand.

22.3 Suggestions for moving to cleaner fuel sources

Individuals and organisations put forward the view that cleaner fuels should be promoted as alternatives to diesel plant and generators. Organisations providing this type of response included power and utility companies, local authorities, NGOs and community groups.

Some advocated restrictions, bans and fines to discourage the use of diesel generators. Others advocated incentives to encourage Best Available Techniques (BATs), clean burning fuels, renewables and non-fossil fuels, fuel cells and hydrogen combustion. Calor Gas suggested that the success of the Renewable Transport Fuels Obligation could be replicated in this area. Another suggestion was to consider biomethane in the short-term as an alternative to diesel, but this was not universally supported. One individual respondent advocated avoiding biodiesel and banning biomass burners at schools and other community facilities.

22.4 Suggestions for increasing monitoring and tightening operating controls

More effective monitoring of the emissions from MCPs and generators was advocated by respondents from energy companies, local environmental groups and local authorities. Some individual respondents said that monitoring information should be made available to the public.

Suggestions for monitoring included:

- the installation of compulsory monitors
- government investment in automatic measure net and monitoring
- testing new medium combustion plants and generators on site on commissioning to ensure that emission standards are met under varying load and power settings
- developing technologies to enable the public to contribute to monitoring
- allocating more resource to the Environment Agency for monitoring
- monitoring of annual operating hours as well as emissions performance of generator plant

One specific issue raised by local authorities was the facility for generators operating intermittently to fall outside the remit of current legislation. They suggested that the regulations applying to generators contributing power to the Short-Term Operating

Reserve (STOR) needed to be tightened to ensure that loopholes could not be exploited. They recommended the removal of the limited time derogation, especially in urban areas. They also suggested reconsidering other derogations to MCP/SG rules (for example, for auxiliary power units on shipping), and removing them where there was no technical barrier to complying with emissions limits.

A number of local authorities said that electricity sales from diesel generators should be discouraged. Other councils thought there should be more stringent controls on emergency generators planned/installed by power companies. They felt that those installed as backup/emergency generators should be banned from operating as commercial peak time suppliers to the national grid. It was also suggested that the electricity supply market should face further regulation to avoid financial incentives for businesses with diesel generators to self-supply, undermining air quality.

A number of responses also advocated the end of emissions target exemptions for smaller generators. They suggested that all plants should be subject to the same requirements, regardless of size. Aggregation of the effects of co-located generators was one of the reasons given for failure of current systems of regulation.

Combined heat and power installations (CHP) were seen as a potential source of cleaner energy that could help tackle emissions. This was mentioned by energy companies, NGOs, community groups and local authorities. For example, Npower and the Association for Decentralised Energy (formerly the Combined Heat and Power Association) both stated: “it is vital that the MCPD works in harmony with the Clean Growth Strategy, which requires that at least 17% of UK domestic heating and hot water demand be met by heat networks in 2050 to meet UK emission targets”. However, elsewhere in the consultation, a few councils also questioned the impact of CHP on air quality in urban areas.

22.5 Suggestions for supporting local authorities to exercise more control

Energy companies, NGOs, community air quality groups and local authorities themselves all provided responses advocating the importance of the local authority role in enforcing regulations for MCPs and generators. Their suggestions included:

- requirements for planning permission before such units were introduced, particularly in urban and smoke control areas (some said that there should be a presumption against the introduction of new generators in such areas), with the planning process including assessment of air quality impacts and mitigating actions
- local authorities being a statutory consultee for applications for plant within or adjacent to Air Quality Management Areas
- local authorities having responsibility for ensuring that new plant met specific emission limits, and for carrying out spot checks on emissions when this is justified

- local authorities operating a register of relevant equipment, linked to a central register, receiving certificates of testing for generators installed

However, responses also expressed a concern that councils do not have sufficient resources to enforce the legislation and would need additional support in order to do so.

Question 23: How should we tackle emissions from combustion plants in the 500kW-1MW thermal input range? Please provide evidence you might have to support your proposals if possible.

A total of 122 responses were received, 95 from organisations and 27 from individuals.

A significant number of both organisational and individual responses called for government to take action to tackle emissions from combustion plants in the 500kW – 1MW thermal input range. However, there was no clear consensus on what this action should be.

23.1 Suggestions for tackling 500kW-1MW combustion plants

Suggestions for tackling 500kW-1MW combustion plants included:

- banning plants in this range
- treating plants in this range in the same way as other larger plants
- extending the principles of the current Clean Air Act exemptions and authorisations and possibly expanding the ECO Design scheme to cover these installations
- closing loopholes which permit backup generators to avoid meeting requirements
- creating a central register which local authorities can access (to be certified, smaller plants must meet Emission Limit Values (ELVs) and have annual servicing)
- enforcing restrictions through the planning system, such as specifying minimum standards for new combustion plants in the National Planning Policy Framework
- introducing financial incentives through the permitting process, for instance, graduated scale of permitting fees based on emissions
- introducing controls on manufacturers so agreed emissions standards are met
- encouraging uptake of alternative fuels
- implementing better enforcement

A number of respondents suggested that any decision to extend controls to plants in this range should be based on evidence such as an Impact Assessment.

A number of organisations argued that introducing requirements on smaller plants could place a relatively significant burden on operators. They felt that a proportionate, light touch approach was needed. One organisation argued that feedback from the implementation of the Medium Combustion Plant Directive should help inform the best way forward.

A small number of stakeholders voiced concerns about tackling emissions from 500kW-1MW combustion plants. The Anaerobic Digestion and Bioresources Association (ADBA) suggested that introducing requirements on smaller plants could make projects unviable. The National Farmers Union (NFU) argued that all agricultural generators should be exempt from any requirements affecting this size of plant. This, the NFU suggested, is because on-farm plants are operated by small and medium-sized enterprises and the requirements and permitting regime would not be proportionate to the environmental impact. Placing additional burdens on them would be detrimental to the UK food industry and the UK economy, the NFU argued.

There was also a call to review the permitting charging scheme and fee calculation and range/scope of factors included in fee calculation. Incentivisation was preferred to penalisation in this case. One suggestion was therefore to consider additional financial incentives via the permitting process, such as a graduated scale of permitting fees based on total emissions and environment/public health risks and damage costs associated with the activity. It was also recommended that switching to alternative technology (such as fuel cells) should be incentivised.

Additional suggestions and comments made by organisations included:

- regulating these plants under the Environmental Permitting Regulations (EPR) – it was argued that this is already a tried and tested regulatory system and the approach would ensure consistency
- enveloping combustion plants of this size into the Local Air Pollution Prevention and Control regime (LAPPC)
- ensuring a widely-defined Standard Rules Permit is available to the vast majority of sites on the basis that the operators of small sites are unlikely to have the resources to use the bespoke permitting route
- taking account of the possibility of multiple units being used in one location to avoid other regulatory processes
- discouraging the implementation of combustion plant for heating and drying applications and instead encouraging electro-heat solutions
- providing further funding for solar energy and on and off-shore wind programmes
- adopting the use of lower sulphur-content fuel for boilers, scrubbers and the ability to buy allowances from other utilities and organisations
- providing incentives to improve overall energy efficiency, including increased usage of Combined Heat and Power (CHP)

Question 24: Do you agree or disagree with the proposal to exempt generators used for research and development from emission controls? Please provide evidence where possible.

In total, 188 respondents answered this question, of which 118 were organisations and 70 were individuals.

There was no clear consensus in favour of, or against, the proposal to exempt generators used for research and development (R&D) from emission controls.

A sizeable number of organisations and individuals who responded to this question disagreed with this proposal. A number stated that there was no reason to treat the R&D sector differently to other polluters because they emit pollutants and should be treated the same as other generators. Some argued that the proposal would open up loopholes, and that those engaging in research should set an example.

Other respondents agreed with the exemption, with some arguing that R&D is needed to innovate and change things for the better, and that such exemptions are routine and necessary to allow the flexibility needed for this type of work. One organisation considered that the exemption would be consistent with the Innovation Principle. Others argued that the exemption would be consistent with the Medium Combustion Plant Directive, the Environmental Permitting Regime, and the Industrial Emissions Directive. Some suggested the exemption should run for a limited timeframe, such as for three years.

A number of respondents considered that some operators could seek to exploit this potential loophole, and there would need to be independent verification that the generator was being used for R&D. Some respondents suggested that decisions should be made on a case-by-case basis, since the key issue is how polluting the R&D generator is.

Chapter 9 – Leadership at all levels

This chapter highlighted the need for action at different scales (local, national and international) and the leadership being demonstrated by different levels of government, including by the devolved administrations of Scotland, Wales and Northern Ireland. It outlined a number of actions being taken to facilitate and exemplify this leadership, in particular in relation to the legislative framework. This can be summarised as:

- consulting on a new independent statutory body to hold government to account on environmental commitments following EU exit, including transparency and accountability in how we achieve our clean air ambitions
- bringing forward new clean air legislation that updates long-standing frameworks for local and national action by providing stronger powers and clearer accountability
- ensuring local action to reduce air pollution remains robust and relevant through transforming existing structures to increase transparency and backing this up with stronger statutory powers to tackle local air pollution
- working in partnership with the governments of Scotland, Wales and Northern Ireland to develop a detailed National Air Pollution Control Programme as required under the National Emissions Ceilings Directive for publication in 2019

The consultation also asked for views on a proposal to consult on transformative changes to the Local Air Quality Management system to minimise bureaucracy and reporting burdens. This proposal would shift the focus to taking action to clean up local air through strong collaborative local partnerships, and driving stronger local action on reducing particulate matter (PM) emissions. We also proposed encouraging greater public transparency about local air quality to empower local citizens and air quality decision-makers in their local communities to take action. This included providing stronger incentives for local authorities to use their tools and powers.

There were five questions in this chapter, and the responses to these are summarised by question below.

Question 25: What do you think of the package of actions put forward in the leadership chapter? Please provide evidence in support of your answer if possible.

In total, 266 respondents addressed this question, 174 organisations and 92 individual respondents.

Of those organisations and individuals who commented on the overall package of actions put forward in this chapter, the predominant view was largely positive. Several

respondents identified this as an opportunity to enhance environmental standards, while others commented that the UK was showing leadership by setting a clear direction with stronger national policies.

However, some raised concerns. One concern expressed by certain local authorities and reiterated by some individuals, was that central government needs to play a more active leadership role. Suggested actions included greater investment in public transport and cycling infrastructure and improved national air quality campaigns. Views expressed elsewhere were that responsibility is being pushed to the local level and different rules and enforcement regimes may lead to the relocation of pollution.

There were a few calls later from organisations such as the Chartered Institute of Environmental Health and the Institute of Air Quality Management for a national approach to air quality to ensure consistency across the country. The example of Clean Air Zones (CAZs) was used to illustrate this point. For example, UPS suggested that there is a need for “a nationwide policy” and central payment system for intercity charging that would see vehicles only charged once per day regardless of the number of CAZs that were entered. However, a few felt the current flexibility in such policy allows adaptation to local contexts and makes it more appropriate.

Another concern put forward by some local councils, including the Greater London Authority, was the issue of funding. Several explained that resources were currently stretched and asked for reassurances over funding to enable them to deliver the expected results.

25.1 Views on a new independent statutory body

The proposal to establish a new independent statutory body with air quality accountability was supported by the majority of respondents. Local authorities and organisations such as UK Health Alliance and ClientEarth argued that it was important it should have powers commensurate with that of the EU to hold government to account.

Several organisational respondents and a significant number of individuals stressed the need for the statutory body to be independent, well-funded and have strong enforcement powers. In responding to another question, one respondent expressed the view that it needed to be able to support citizens affected by poor air quality take the government to court. Others highlighted that the body would need to be appropriately financed and staffed with qualified academic experts.

25.2 Views on primary clean air legislation

Similarly, the leading view on the government’s proposal to bring forward primary legislation at the earliest opportunity was positive. Several, including ClientEarth, Greenpeace and Friends of the Earth, argued that limit values and targets for pollutants, along World Health Organisation guidelines, should be included in this legislation.

In line with what was said elsewhere, several local authorities commented they would need additional resources to provide effective enforcement of this legislation. Some local councils also requested more details on timescales, as they and a number of individuals considered that the lack of a set target date for the introduction of new legislation failed to demonstrate a firm commitment from national government. There were also a few calls elsewhere to enshrine the 'polluter pays principle' in legislation.

25.3 Views on greening government commitments

The ambition to improve the coverage of air quality in greening government commitments was addressed by a limited number of respondents, and only by organisations. These largely welcomed the idea of the government leading by example and highlighted that local authorities currently vary in their support for the greening of towns and for active travel. Elsewhere, the council for the London Borough of Redbridge suggested air quality should be considered within government procurement.

25.4 Views on proposals for local action

On the proposals for local action on clean air, many respondents argued that leadership from central government and appropriate funding would be required in order to deliver local plans effectively. This opinion was shared by various local authorities and organisations such as ClientEarth and the Sustainable Energy Association. Several local authorities addressing this question, however, welcomed the proposal for stronger statutory planning guidance on air quality.

This was supported by comments in questions thirty-one and thirty-two, which expressed a need for nationally driven standards, requirements and guidance to ensure air quality considerations were prioritised at the local level. For example, Hackney council suggested there was a need for guidance and tools on what different types of authorities (for instance rural or urban) should do in relation to air quality.

There were also suggestions for changes to building codes/regulations and nuisance controls on smoke and odour. These included ensuring that ultra-low NO_x emission boilers are installed when a boiler is replaced, making Part F on ventilation fit for purpose, and including air quality goals in the Common Minimum Standards for Investment in Public Estate.

Question 26: What are your views on the England-wide legislative package set out in section 9.2.2? Please explain, with evidence where possible.

We received 185 responses for this question, 133 from organisations and 52 from individuals.

Those who commented on the overall legislative package expressed a variety of views. Though the majority supported the legislative package, a significant number argued that

improvements would need to be made for it to be successful. A notable number of local authorities, including the Local Government Association, raised the need for resources to be available to councils for enforcement.

Another concern was that the legislative package does not involve the devolved administrations. Representative bodies and businesses such as SMMT and the Construction Equipment Association argued that consistent regulation throughout the entirety of the UK would be beneficial to businesses. Others, such as the Chartered Institute of Environmental Health expressed the view that a UK-wide approach is necessary to tackle the issue as air pollution is transboundary.

Some respondents, both organisations and individuals, were negative about the overall legislative package, suggesting it was not ambitious enough or lacked detail. Though their suggestions for what more was required varied, a significant number, in particular, non-governmental organisations such as the Wildlife and Countryside Link and Greenpeace, called for clear targets set in legislation. The targets provided by the World Health Organisation were put forward as one possible solution. In addition to targets, several individuals highlighted emissions from vehicles as a particular issue that needed addressing further.

26.1 Views on vehicle emissions control failures and smoke-related powers

In discussing the specific proposals within the legislative package, the predominant view on the power to recall vehicles for emissions control failures and to make tampering illegal was positive. This opinion was shared by various local authorities and organisations such as SMMT and National Express. A small number of respondents asked, however, for more details on how this measure would be effectively enforced.

Similarly, the proposal to update outmoded and underused smoke-related legislation received a largely positive response, primarily from local authorities.

26.2 Views on statutory framework proposals

Many respondents commented on proposals for a single coherent legislative framework and a new statutory framework for Clean Air Zones together. These proposals produced a diverse range of responses: while many were positive, some expressed concerns.

In their responses to the proposal to create a simple framework that merged Smoke Control Areas, Air Quality Management Areas and Clean Air Zones several local authorities suggested the framework might be ineffective or undermine the value that each designation provides.

Some respondents, such as the All Party Parliamentary Group on Air Pollution and the British Vehicle Rental and Leasing Association, stressed that a national framework for Clean Air Zones would be necessary to ensure regulatory alignment and consistency for

long-haul vehicle operators. A small number of respondents argued that charging Clean Air Zones should be promoted and mandated by national government. An opinion shared by several local authorities, however, was that many of them lack the resources required to implement and enforce Clean Air Zones effectively.

26.3 Views on prohibiting sale of inefficient stoves and associated polluting fuels

The proposal to prohibit the sale of polluting fuels and inefficient stoves was not addressed by many of those responding to question twenty-six (many responded in Chapter 6). The few opinions that were expressed were varied: several supported the proposal but a few more opposed it. Others suggested an alternative approach of altering public behaviour by implementing a tax on the most polluting fuels or subsidising the least polluting.

26.4 Views on other legislative proposals

The remaining proposals put forward in this question generated a limited number of responses (possibly because they were addressed in other questions). The few respondents who referred to the proposal to limit ammonia emissions from farming requested further information on the limits and possible enforcement measures.

The predominant view held by local authorities on considering tighter emissions controls for biomass installations was positive.

The ambition to close the regulatory gap for medium combustion plants also received a degree of support from a few local authorities.

The majority of respondents who addressed the proposal to drive up emissions standards for diesel non-road mobile machinery (NRMM) replied positively. Representative bodies such as the Construction Equipment Association and SMMT suggested that promoting the use of the latest Stage V NRMM had the greatest potential to reduce emissions from NRMM.

Question 27: Are there gaps in the powers available to local government for tackling local air problems? If so, what are they?

Altogether 216 respondents addressed this question, 150 organisations and 66 individuals. Those who responded online were asked to provide a yes/no/don't know response before explaining their answer.

The predominant view among organisations and individuals was that there are gaps in the powers available to local government for tackling local air problems. There was no clear consensus on what these gaps currently are, although there was a call from some for more powers on domestic burning. Suggestions made elsewhere in the consultation included a call from the National Centre for Atmospheric Science for "powers to take action in response to forecasts of extreme air quality events".

However, several expressed some caution about extending local government powers, with a few suggesting focusing on enforcing existing regulation and laws, rather than introducing new ones. Forth Ports warned against 'double regulation': "The provision of powers to local authorities also require considerable thought, as it is not clear what additional benefits this would give that local authorities do not already have, especially if some of the other actions proposed are implemented." Meanwhile, a unitary council said it was important that new powers take account of the differences in the way two-tier and unitary authorities work.

27.1 Gaps in powers to tackle domestic burning and bonfires

The most common response to question 27 was a view that there are gaps in powers to enable local authorities to tackle domestic burning and bonfires. This opinion was expressed mainly by local authorities themselves. Suggestions included improving the framework for Smoke Control Areas, improving enforcement powers and including powers to prevent sale of non-smokeless fuel in Smoke Control Areas.

27.2 Gaps in transport-related powers

Some respondents, mostly councils, suggested improvements to current legislation to address what they saw as gaps in powers relating to transport. For example, a review of the anti-idling legislation was requested by Greater London Authority (GLA) and some other councils in order to discourage this behaviour and improve enforcement. Suggestions included increasing fixed penalty notices or removing the requirement for enforcement officers to warn drivers before issuing them.

In general, the Local Government Association suggested elsewhere that there was a need to improve local authorities' powers "to manage traffic flows and the nature of vehicles using our networks". This view was echoed in responses from local authorities and some non-governmental organisations suggesting specific traffic control measures.

27.3 Gaps and opportunities in the planning system

Some respondents felt the planning system provided additional opportunities to tackle air pollution. This was mentioned in responses from both councils and non-governmental organisations. Requests included reviewing the guidance for planning matters, requiring local planning departments to take advice from their environmental health officers in respect of developments, and providing the power to refuse planning applications for developments on air quality grounds. Other suggestions mentioned elsewhere in the consultation were that electric vehicle charging points should be mandated in all new developments.

In responses to questions thirty-one and thirty-two, a few individuals provided examples of where new developments appeared (to them) to be poorly planned from an air quality perspective. The GLA also expressed concern that the National Planning Policy

Framework could be used in practice to reduce the ability of local councils to improve air quality. They called for Defra and the Ministry of Housing, Communities and Local Government to work together to use the Planning Practice Guidance and AQMA development to avert such a risk.

27.4 Funding and resources for local councils

As mentioned elsewhere, many respondents highlighted the need for councils to have appropriate resourcing in order to tackle air pollution effectively. Some highlighted that further funding would need to accompany any extension of powers if these were to be effectively used and enforced. Others believed that, though there may be gaps in powers, resourcing was the major issue local authorities faced when tackling air pollution. Concerns about resources were expressed by a range of organisational respondents, including local authorities, non-governmental organisations and representative bodies such as the APPG on Air Pollution and ADEPT.

Many individuals also saw funding and resources as the most significant issue, believing that it had compromised effective action to tackle air pollution. Some proposed that councils' current enforcement powers could be bolstered by an increase to funding. Suggestions put forward by a number of organisations to address this issue included reviewing Environmental Permitting fees.

27.5 Role of national government and other actors

Some respondents, many of them local authorities, argued that the problem of tackling air pollution did not rest with local government, but with national government. Some suggested that decisions made at a national level would be best able to tackle emissions from transport in particular. Some argued that the government could incentivise the uptake of electric vehicles by supporting fuel taxes or subsidies and by promoting electric charging infrastructure, and that strong action by national government would be more effective than extending local authority powers.

An alternative perspective put forward by several respondents was that current powers to tackle emissions from key sources of transportation do exist, but reside with other authorities such as Highways England and county councils. They felt that lower-tier authorities are therefore unable to tackle traffic pollution directly and that the authorities with the power often have different priorities, hindering cooperation and resulting in limited action. This view was echoed by a small minority of individuals who also tended to perceive a lack of support from national government as a barrier preventing local authorities from taking effective action on air pollution.

Question 28: What are the benefits of making changes to the balance of responsibility for clean local air between lower and upper-tier authorities? What are the risks?

A total of 165 responses were received to this question, of which 100 came from organisations and 65 from individuals. Whilst the focus was on two-tier authorities, which have district councils as the lower tier and county councils at the upper tier, a number of respondents also discussed the role of other bodies such as central government, highways authorities, and combined authorities. A few seemed to equate upper tier with national level and lower tier with local level, rather than the specific structure of two-tier councils.

Many respondents used their responses to suggest what kinds of changes in the balance of responsibilities they would like to see, if any. Many favoured giving more responsibility to the upper tier (county councils), though not necessarily reducing responsibilities at the lower tier. Most appeared to support responsibilities sitting with both upper and lower-tier authorities, though some argued that responsibilities would need to be clearly defined.

28.1 Giving more responsibilities for air quality to upper tiers

There was support, particularly among councils, for giving more responsibility for air quality to the upper tier (county councils). There were a number of reasons given as to why this was felt to be beneficial.

The primary reason was that road transport is seen as a significant cause of pollution and highways are largely the responsibility of county councils. Therefore, respondents felt that giving air quality responsibilities to the upper tier would help ensure air quality becomes a central consideration in transport and related infrastructure decisions. Another reason cited was that public health responsibilities also lie with county councils, but that often public health teams are not actively involved in air quality issues. South Lakeland council suggested: “Shifting responsibility would force engagement”.

A third reason given was that air pollution crosses administrative boundaries and so joint action is needed to tackle it, which is better coordinated by the upper tier. A few councils suggested there was a need for more collaboration between neighbouring local authorities to tackle air pollution. County councils were seen by some as a mechanism to facilitate this, although one local authority pointed to their regional combined authority as another. Clean Air Zones were given as an example of where such a coordinated approach would be beneficial to ensure consistency across districts.

This said, a number of organisations also identified what they considered to be risks in giving more responsibility for air quality to the upper tier. In particular, they identified a lack of local knowledge and specific expertise at upper tier. There was a fear too that relevant local knowledge might be lost at the lower tier if responsibility moved upwards. One respondent suggested this might lead to a reduction in “frontline presence” in district councils, and that this might impact local engagement and behaviour change. Worcestershire Regulatory Services was concerned that there might be “a potential loss of

focus on local air quality in amongst the competing demands and priorities of upper-tier authorities.”

28.2 Sharing responsibilities

Although there was demand from many for the upper tier to be given more responsibilities, it was often not clear whether this was in addition to, or instead of, air quality responsibilities at lower-tier level. APSE Energy argued that: “The focus should be on encouraging both to tackle the issues and not on moving responsibilities away from one and to another.” The few who did make their views explicit on how responsibilities should be shared largely favoured an equal distribution of responsibilities between the two tiers.

However, a few responses suggested that one of the two tiers needed to take lead responsibility. For example, the Association of Directors of Environment, Economy, Planning and Transport (ADEPT) advocated that transport authorities be given “the lead role and a duty to co-ordinate the actions of other agencies” because of the link between transport emissions and air pollution and their strategic position. ADEPT suggested adopting a similar approach to that of Lead Local Flood Authority (LLFA), a view echoed by Lincolnshire council though the latter implied lead responsibility could lie with either tier. Lancashire councils too felt a “non-responsible authority (in two-tier authorities) should have a consultative and overseeing input to ensure delivery of actions”, but did not state a preference for which tier this should be.

28.3 Maintaining the current balance of responsibilities

Some respondents, however, were concerned about giving more powers to the upper tiers, and therefore suggested that the balance of responsibilities should remain with lower-tier authorities (as currently). A major reason given was the risk cited above that local accountability and knowledge of local context could be lost if responsibilities shifted from lower to upper-tier authorities. Nottingham council was concerned that such a transfer of staff “is likely to fragment activity between Environmental Health and Planning functions.”

In addition, a coalition of Cambridgeshire councils argued that there is potential for conflict of interest if responsibilities are transferred to upper-tier authorities because of their responsibility for transport. A few councils pointed to examples of partnerships between lower and upper-tier authorities as an alternative. Norfolk councils wondered whether some form of duty to co-operate or enhancing statutory consultees might “add weight and visibility” to such an approach.

28.4 Other points

A range of respondents also saw central government as playing an important role at national level in setting direction and providing the necessary legislative and financial framework. A few respondents expressed concern that the proposals in the leadership chapter pushed responsibility downwards, possibly, in the Farnham Society’s view, to a

level that cannot handle them. However, Better Transport echoed the views of a couple of other organisations in saying that: “In general, we support delegation of powers to the lowest effective level, with accompanying resources.”

There was a call from a range of London councils, as well as a few outside London, for the different tiers of government – national, regional and local – to work together. For example, the London Borough of Camden argued that the “main consideration is that air pollution should be by its nature a national problem and responsibility for control must remain with central, not local government. It is vital therefore that all levels of government work together to tackle poor air quality.”

Beyond a more joined-up approach, a number of respondents called for greater clarity on roles and responsibilities of the two tiers. As elsewhere, there was also a call for appropriate resourcing, with Unite suggesting that this needed to be addressed before addressing responsibilities. A few responses also suggested extending responsibilities beyond two-tier councils to Highways England and/or clinical commissioning groups.

Question 29: What improvements should be made to the Local Air Quality Management (LAQM) system? How can we minimise the bureaucracy and reporting burdens associated with LAQM?

In total, 182 responses were received to this question. Of these, 133 came from organisations and 49 from individuals. Almost half of the organisational responses were from councils, reflecting the fact that LAQM is a local authority run system.

Overall, there were mixed views on reducing reporting burdens, broad support for increasing public transparency and some support for more action on PM_{2.5}. Some responses called for alignment of the National (Ambient Air Quality Directive) and LAQM regimes for monitoring public exposure (concentrations of pollution) as they considered the discrepancies between the two regimes to be a problem.

A number of organisations and individuals highlighted funding and resources as a problem for LAQM. A few respondents, particularly individuals, suggested that upper-tier authorities should be responsible for producing Air Quality Action Plans (AQAPs) for traffic related exceedances in accordance with Local Transport Plans, with district councils supporting with measures under their direct control.

Responses from individuals were often not directly relevant to the LAQM system, but made general comments about issues such as resources for councils and transport. One response could be seen as illustrative, and supports the argument for greater public transparency: “There is an LAQM system? Who knew?”

29.1 Suggestions for minimising bureaucracy and reporting burdens

Some organisations, mostly councils, addressed the issue of minimising bureaucracy and reporting burdens. This relates to the requirement for local authorities to submit an Annual

Status Report (ASR) to Defra, along with monitoring data. There were mixed views on this. Some organisations broadly welcomed measures to further streamline reporting. A number considered the ASR template to be too restrictive, repetitive and time-consuming, and felt the reporting of monitoring data to involve unnecessary duplication. A few suggested that ASRs should be replaced with bi-annual or tri-annual reporting.

However, some organisations felt the current reporting process to be about right, noting that the 2015 review had streamlined reporting requirements. A few individuals supported retaining the current system, but including more pollutants. A few organisations suggested that reporting was necessary to ensure accountability.

29.2 Accessibility of monitoring data

A few organisations suggested open source approaches to make monitoring data more available and some suggested an online portal to enable uploading monthly monitoring data. Where organisational responses addressed the questions of greater public transparency, there was support for improved public accessibility to data and reports and for these to be easily understood by the public. One residents' association called for availability and use of more portable monitors to improve the evidence base.

Individuals who responded on the issue of greater public transparency were supportive of improvements in this area. Several responses considered the question of monitoring and wanted earlier access to monitoring data. Some wanted more monitoring of pollutants and greater public involvement.

29.3 Additional resources

Some local authorities cited resources and funding as a problem in delivering improvements to air quality. Some called for additional funding to be made automatically available where an exceedance of legal concentration limits is demonstrated. A number of organisations and individuals called for harmonisation of local (LAQM) and national (AAQD) compliance monitoring regimes.

29.4 Local authority suggestions for improvements

A partnership of a number of Cambridgeshire councils submitted a joint response, which addressed the proposal to drive stronger local action on reducing PM emissions. Their response supported improving statutory guidance on PM_{2.5} and suggested that including this in regulations as well as guidance would enhance its status and encourage action and expenditure by local authorities. However, they argued that additional monitoring of PM_{2.5} has a cost implication, while relying on national modelling may not be sufficient.

Other comments received from local authorities included:

- making upper-tier authorities responsible for producing the Air Quality Action Plan in accordance with the Local Transport Plan where traffic is the primary pollution source (Boston council)
- creating a regional status report co-ordinated by either an upper-tier authority or the proposed new independent environmental body (Solihull council)
- overhauling the statutory powers available in Air Quality Management Areas (AQMAs) to include road speed, idling patrols and signage to increase the responsiveness of lower-tier authorities to specific local issues (Stafford council)
- disbursing air quality grants on a set criteria basis rather than by competitive bidding (Lancaster council)

29.5 Non-governmental organisations' suggestions for improvements

A number of non-governmental organisations also responded to this question. ClientEarth provided a detailed response. They considered that the action plans local authorities are obliged to draw up with respect to identified AQMAs lack effectiveness. This they saw as being because the Environment Act 1995 has no explicit obligation on local authorities to carry out the measures set out in action plans. ClientEarth also suggested that local councils should be subject to a firmer duty to take action to reduce pollution, as well as to reduce exposure to pollution. They felt that this duty should be incorporated into wider local authority decision-making. However, they also advocated that central government should have the power and obligation to require and fund measures to be implemented by specific local authorities.

Friends of the Earth considered current requirements to be too weak and suggested that councils should be required to act, and have the powers to act, to bring levels of air pollution down to within legal limits to protect health. The British Lung Foundation wanted more monitoring stations to cover PM and for extra monitoring to be located to better take into account pollution hotspots where vulnerable groups meet, such as primary schools, care homes and hospitals. Greenpeace welcomed moves to simplify LAQM reporting, making best use of new technology and encouraging local authorities to work in partnership with neighbouring bodies and allies.

Chapter 10 – Progress towards our clean air goals

This chapter provided analysis showing that the actions set out in the strategy can meet emissions reduction targets. There were no actions outlined, so the three questions the chapter contained asked for views on the strategy as a whole, and any further suggestions or comments.

Question 30: What do you think of the package of actions in the strategy as a whole?

There were 271 responses to this question, of which 166 were from organisations and 105 from individuals. Responses to questions thirty-one and thirty-two that mirrored the themes highlighted here are also reflected.

Overall, organisations welcomed the strategy, a few enthusiastically, but many with some reservations or caveats. Individuals were more likely to be explicitly negative about the strategy, or only discuss perceived weaknesses. However, overall there were a lot of mixed responses, as well as some that were exclusively positive. Comments ranged from “this strategy is really good” to “a waste of time”. The reasons for negative, mixed and cautiously positive responses from organisations and individuals alike can be divided into two camps: those who felt more needed to be done on air quality and those who felt too much was being proposed, at least in some sectors. Whilst there was not a clear consensus, the majority fell into the first camp.

A wide range of respondents discussed the negative impacts poor air quality can have on people’s lives and/or the environment, with a few mentioning the health and social costs that can result. It was this perspective that seems to have been dominant in informing the responses from both organisations and individuals.

A relatively large number of respondents raised concerns about aspects of the strategy, irrespective of their overall view of the document. These included calling for more detail, further ambition, more action on transport, greater resourcing, stronger national-level leadership, better joint working and integration with other strategies and policies. These are discussed in greater detail below.

30.1 Level of detail

A common comment was that the draft strategy lacked detail in terms of one or more of the following: clear targets or objectives, how the strategy would be implemented and/or achieved, and within what timeframes. A few felt this made it difficult to assess the potential effectiveness of the strategy or its likely impact. In addition, the Greater London Authority and Bureau Veritas UK felt that it was important that the strategy maintained the

flexibility for actions to be adapted to changing circumstances, and learning of what worked.

30.2 Extent of ambition

Some respondents felt that the strategy, or specific aspects of it, was not ambitious enough in terms of the strength of the target(s) or the action(s) proposed, and/or in its timing. A few commented that they felt it lacked concrete action, focusing on monitoring, proposal development and/or communications rather than reducing emissions as quickly as possible. One respondent described it as “a plan of a plan”. A few questioned whether the strategy would therefore be effective in improving air quality, particularly in the shorter term and in urban ‘hotspots’. There was a call for more restrictions on polluting activities, particularly from individuals.

30.3 Road transport

Road transport was the area most frequently mentioned as needing more action, particularly encouraging modal shift to reduce vehicle usage and congestion through the promotion of active travel and public transport. A few felt the strategy was not the comprehensive air quality strategy it should be because road transport was largely ignored and Road to Zero published separately.

The Road Haulage Association, however, saw the transport actions as expensive “to the point of being anti-mobility”. They argued that some of the data Defra used suggested that air quality limits would be reached in “normal business cycles” and there was therefore no need for measures such as Clean Air Zones. However, this was not a view expressed by the majority of respondents.

30.4 Resourcing

Many respondents questioned whether additional resources would be made available to councils to make effective use of the new powers proposed, particularly for enforcement. This concern was not only raised by many councils, but by a range of other organisations as well as a few individuals. As Newark and Sherwood district council put it: “Currently we have one dedicated pollution officer covering air quality, contaminated land, environmental permitting, private water supplies and nuisance complaints. This looks like more work for us.” There were different views as to whether such resourcing should be targeted on particular areas, and if so where and how.

A number of businesses mentioned the need for additional resourcing too, either to assist them to transition their operations to cleaner technologies, or to support their customers to do so.

30.5 National-level action and leadership

There was quite a lot of concern from local councils, but others too, that responsibility for air quality is being pushed to the local level. Though often related to resourcing, a number of respondents suggested that more needs to be done at national level by central government to provide the necessary framework, leadership and guidance for local action. The London Borough of Hackney said they would “like to see the government make better use of its powers under the Environment Act 1995 by requiring local authorities across the country to take more consistent actions to address poor air quality. For example by requiring every local authority to monitor and take pragmatic actions to reduce emissions and childhood exposure at and around schools likely to be impacted by air pollution. Such an approach will ensure equitable actions and avoid a borough by borough lottery.”

However, a few other local authorities commended the strategy on recognising the need for local authorities to adapt approaches such as Clean Air Zones to the needs and circumstances of their areas: “It is not a one size fits all situation”, suggested York council. This said, a few also expressed the view that the transboundary nature of air pollution required a UK-wide approach, though the strategy seemed to be largely England-focused. The Joint Nature Conservation Committee stated: “The strategy is ambiguous with regards whether it is truly a joint UK strategy.” The Law Society of Scotland argued for the importance of a collaborative process for policies which cross jurisdictional boundaries.

Other ideas for national-level action echoed elsewhere in the responses received included: a Clean Air Act, with a couple of responses suggesting this should focus on clean air as a human right; creating a national network of Clean Air Zones; taxation on fuels and /or technologies with poorer air quality outcomes; and national campaigns to raise awareness about air quality issues.

30.6 Joint working and integrated policies

Some respondents emphasised the need for joint working with stakeholders (such as local authorities, businesses and communities) and/or across government departments. A number also argued for the need for collaboration within and between levels (for example, planners cooperating with environmental health officers at local-level), though clarity of roles was called for by a couple of respondents. Wandsworth council suggested joint working is important for promoting consistency and a sense of ownership of the air quality agenda. Others saw such cooperation as a way of promoting the “concerted and holistic national and local response” needed to deal effectively with air quality.

Some respondents also called for better integration with other government policies and strategies to ensure alignment and co-benefits. For example, both the Chartered Institute of Environmental Health and Environmental Protection UK argued there was a need to embed air quality considerations into key policy areas, such as housing and transport management at national and local level. The strategies and policies mentioned were varied, however, and included: Road to Zero, the National Planning Policy Framework, the Climate Change Act, Local Industrial Strategies, Resources and Waste Strategy, and the

Private Rented Sector Energy Efficiency Regulations. One respondent argued that these needed to be “backed up by clear well-resourced plans”.

A number of comments expressed the view that government policy was sending mixed messages on air quality objectives in relation to other priorities, such as industrial strategy. WM-Air advocated a “health in all policy” approach. The decision to allow a third runway at Heathrow or permit fracking were examples given of perceived inconsistency that led a couple of respondents to question the government’s commitment to the air quality agenda. A few respondents were sceptical as to whether anything would actually be done.

30.7 Including other pollutants

In addition, there were a few responses (here and in the other questions for the chapter) that advocated including a wider range of pollutants in the strategy. However, there was little consensus on which pollutants to include. Greenhouse gases, particularly methane and ozone, were mentioned, but so were black carbon, chemicals and tobacco smoke in the context of indoor air quality. Environmental Protection UK felt that action to investigate policies to reduce ozone were missing from the strategy as a whole.

30.8 Other minority views

As mentioned above, not all respondents felt more action on air quality was required. A number of organisations and individuals felt there might be negative consequences from at least some of the actions proposed, in particular for some businesses and certain groups. The businesses in this category tended to be concerned about the potential impact of some of the air quality measures on costs and/or international competitiveness.

A few respondents also questioned whether the air quality benefits that would be gained from some of the emissions-reductions measures in their sector would be justified by the costs. They suggested this was because cost-effective action had already been taken or there were no cost-effective alternatives available – or even any alternatives at all – and/or the air quality gains would be small. For example, the Builders’ Merchants Federation argued their members had no choice but to use diesel vehicles. A couple of companies therefore advocated proportionate targeting of sectors where there was more potential for air quality abatement at less cost.

A few respondents also pointed to particular (possibly overlapping) groups who might be adversely affected by the measures:

- those living in off-grid contexts who rely on oil or biomass forms of heating
- those in fuel poverty
- those living in rural contexts without good access to public transport
- motorists (particularly those who have to commute)
- farmers
- canal boat residents (on a low income)

Q31. Do you have any specific suggestions for additional or alternative actions that you think should be considered to achieve our objectives? Please outline briefly, providing evidence of potential effectiveness where possible.

Q32. If you have any further comments not covered elsewhere, please provide them here.

There were a wide range of responses to Q31 and Q32. However, the themes were the same, and suggestions and comments were made in both. As a result, the responses have been combined in this summary to avoid repetition, together with relevant responses made in response to question thirty. What is highlighted here is what is not covered elsewhere.

In total, 185 responses were received for question thirty-one, 106 from organisations and 79 from individuals, and a total of 126 addressed question thirty-two, 88 from organisations and 38 from individuals.

Together the responses touched on all the chapters in the strategy, but the main areas were suggestions for more action on (road) transport, which some suggested would require changes in planning and funding priorities. This was followed by a range of comments related to the leadership chapter. There were also quite a lot of comments on the energy sector and the best way forward to achieve a low carbon energy system that was also beneficial for air pollution. Evidence and data was also mentioned. These comments are largely incorporated in relevant chapter summaries.

Transport

Transport, particularly road transport, was the most common sector on which both organisations and individuals made suggestions or comments: nearly half the organisations that responded to question thirty-one mentioned it. Many echoed what has already been said in the summary of responses for the transport chapter. These are therefore not repeated here, apart from to say that a major emphasis was a call for more encouragement of a modal shift to reduce car usage. Suggestions largely focused on greater support for active travel (particularly walking and cycling) and public transport, especially buses. However, there were some additional points made too which are captured below.

A few respondents suggested there needed to be more joined-up working between decision-makers on transport, infrastructure and housing at local-level. This was to ensure development and building took account of air quality considerations and minimised the need for cars. There was also mention of the need to support the systematic roll out of electrical charging infrastructure to promote uptake of ultra-low emissions electric vehicles, with suggestions for a national and/or more evenly distributed electric charging programme to avoid contributing to inequalities. However, a few questioned the environmental impacts

of electric vehicles due to car battery manufacturing or increased tyre and brake wear. There was also a call to pay greater attention to the experiences of drivers using electric vehicles to understand the challenges.

The benefits of consolidating deliveries (and freight more generally), use of click & collect methods, and cargo electric bikes and tricycles for last mile deliveries were also raised by different organisational respondents. UPS said there was a need for providing “legal clarity for the use of bikes and trailers on roads and on pavements (the latter in walk mode, with the trailer following the walker)”.

Other comments relating to roads and traffic included WM-Air’s suggestion for incentives for “local authorities to introduce workplace parking levies” and there was a call for higher parking charges. A few respondents also recommended some form of road-charging, with a suggestion that the technology exists to make emissions-based road-charging feasible.

There was also a scattering of suggestions and comments regarding the other modes of transport. These are largely reflected in the transport summary. However, there was a suggestion from the Institute of Marine Engineering, Science & Technology for annual testing of vessel exhaust emissions for commercial shipping as part of annual safety survey or IAPP certification.

Data and its use

There were a number of comments across the two questions on data as a “bedrock of policy change” as a couple of respondents put it. This is the main focus of chapter 1 on understanding the problem and the points made by respondents are largely covered there, although a few additional ones were made here, particularly in relation to the data used to inform the strategy. These are outlined below.

ClientEarth, for example, urged “the government to provide clearer information to evidence their strategy and future NAPC programme”, whilst Energy UK felt there was a need to factor in uncertainty into the emissions projections in the scenarios in Chapter 10. Wandsworth council suggested outlining the costs and benefits of each action. There was also a call for the development of a monitoring framework for the Clean Air Strategy.

More broadly, the Chartered Institute of Environmental Health asked for clarity “on the methodologies [to be] used to determine emission levels (national vs local compliance assessments). Such clarity would be helpful to provide confidence when delivering messages to the public regarding where the problems lie and what are their causes.” In addition, the National Centre for Atmospheric Science suggested creating “an independent organisation to assess and constructively challenge the provision of air pollution forecasts” as is done for weather forecasting.

Other

There were many, but varied, comments related to the leadership chapter, most of which are reflected either in the summary of the responses for chapter 9 or in the previous question summary. For instance, some respondents felt there should be more focus in the strategy on encouraging the role of development and planning in controlling emissions. Individual responses in particular seemed to favour a regulatory approach as a way forward, although this was by no means a universal opinion. A few individuals also expressed scepticism about the commitment of local authorities to address air quality.

There were quite a lot of responses that mentioned energy, a few of which focused specifically on the measures in the clean growth and innovation chapter. These are covered in the summary for that chapter, but were varied and mixed in view as to the ways forward for a clean, low-carbon energy system.

There were also quite a number of responses that discussed domestic combustion, several on health, and a few on ammonia and farming. Though the comments and suggestions were wide-ranging, overall they suggested support for action in these areas from those who responded on these areas. A couple of respondents encouraged greater focus on social and behavioural aspects of air pollution, not “just techno-fixes”.

Annex A – List of organisations

The following organisations responded to the Clean Air Strategy consultation. (The list does not include those that requested their response be treated in confidence or chimney sweep businesses that signed the campaign, except for the two lead organisations).

4R Group	Biomass UK
ABB Ltd	Birmingham City Council
ADAS	Boston Borough Council
ADPH (Association of Directors of Public Health)	Breakspear Medical
Aeris Europe Ltd	Breathe Clean Air Group
Aggregated Micro Power Holdings	Bright Blue
Agricultural Industries Confederation	Brighton and Hove City Council
Airbus	British Cardiovascular Society
Aireborough Civic Society	British Ceramic Confederation
AirSensa	British Coatings Federation
Allergy UK	British Glass
Anaerobic Digestion and Bioresources Association (ADBA)	British Heart Foundation
Anglian Water Services	British Lime Association
APPG on Air Pollution	British Lung Foundation
APSE Energy (Association for Public Service Excellence)	British Medical Association
ARUP	British Parking
Associated British Ports	British Ports Association
Association of Convenience Stores	British Steel
Assured Biosolids Limited	British Vehicle Rental and Leasing Association
Asthma UK	Builders Merchants' Federation
Barnsley MBC	Bureau Veritas UK Ltd
BASF	Bury Council - Environment Team
Basingstoke and Deane Borough Council	Cadent
Bath and North East Somerset Council	Calderdale Council Environmental Health (Air Quality and Environmental Permitting)
BEAMA Ltd	Calor Gas
Behavioural Insights Team	Cambridge City Council & Greater Cambridge Partnership, Huntingdon District Council, and East Cambridgeshire District Council
Best Sweep	Canal & River Trust
Better Transport	
BioCover	

Capital Fireplaces
 CBI Minerals Group
 Centre for Ecology & Hydrology
 Centre for London
 Centrica
 Certainly Wood Ltd
 Certas Energy UK
 CF Fertilisers UK
 ChargePoint
 Charlton & Jenrick Ltd
 Chartered Institution of Highways and Transportation
 Chemical Industries Association
 Chideock bypass working group
 Chiltern and South Bucks District Councils
 Chimney Sweep Service
 City of Bradford
 City of London Corporation
 City of York Council
 CIWEM (The Chartered Institution of Water and Environmental Management)
 CIWM
 CLA (Country Land and Business Association)
 Clean Air for Brent
 Clean Air in London
 Clean Air Southampton
 Clean Stove Consultant Ltd
 ClientEarth
 CoallmP – Association of UK Coal Importers and Producers
 Colchester Borough Council
 Confor - Confederation of Forest Industries
 Construction Equipment Association
 Construction Plant-hire Association
 Construction Products Association
 Cornwall Council
 Cory Riverside Energy
 Coventry and Warwickshire Air Quality Alliance
 Coventry City Council
 CPRE Sussex
 CPTA (Cosmetic Toiletry and Perfumery Association)
 CRADRA - Church Road and Districts Residents Association
 Cummins Inc.
 Cycling Scotland
 Cycling UK
 Cycling UK/Milton Keynes Cyclists Touring Club
 Dairy UK
 Darlington Borough Council
 Environmental Health
 Dartford Borough Council
 Dearman
 Devon County Council
 Dogwood Alliance
 Doncaster Council
 Doosan Babcock
 Drax Group
 DVS Ltd
 E.ON
 East Herts District Council
 Eastbourne Borough Council
 EDF Energy
 Energy and Utilities Alliance
 Energy Systems Catapult
 Energy UK
 Enfield Council
 Enterprise Holdings
 Environmental Defense Fund Europe
 Environmental Protection UK

Environmental Services Association (ESA)
 Envirosystems UK Ltd
 FABRA UK
 Faculty of Public Health
 FDF
 Federation of Petroleum Suppliers
 Federation of Small Businesses
 Forever Fuels Ltd
 Forth Ports
 Freewheel Bikes
 Freight on rail
 Freight Transport Association
 Friends of the Earth
 Fulton Boilers Ltd
 Game and Wildlife Conservation Trust
 Garden Organic
 Gatwick Airport
 GLA
 Go Ahead Group
 Green Frog Power
 Greener UK
 Greenpeace
 Guild of Master Chimney Sweeps
 H.A.Simpson and son ltd
 Hammersmith & Fulham Council
 Haringey Council
 Heathrow
 HETAS
 Hitachi Zosen Inova AG
 Hornsey and Wood Green Labour Party
 Climate Change and Environment Group
 Horsham District Council
 Hounslow Council
 ICAX Ltd
 Indoor Air Quality Consulting Limited
 Ingersoll Rand
 Institution of Environmental Sciences,
 and The Institute of Air Quality
 Management
 Institute of Marine Engineering Science
 and Technology (IMarEST)
 ITM Power
 J A Wilson and Son Ltd
 J Bird Chimney Sweep
 Joint EEF and UK Steel
 Joint Nature Conservation Committee
 Kendall Sweeping Services
 Kent County Council
 Kew Society
 Kingston & Sutton
 Kingston Environment Forum
 Koch Agronomic Services
 Lancashire Director of Public Health
 Lancaster City Council and on behalf of
 Lancashire Local Authorities
 (Environmental Health Lancashire)
 Laughtons of Louth
 Leeds City Council
 Leicester City Council
 Leicestershire County Council Waste
 Disposal Authority
 Lewes District Council
 Lewisham council
 Lincolnshire County Council
 Living Streets
 Llanelli Naturalists
 Local Government Association
 London Borough of Camden
 London Borough of Hackney sent on
 behalf of Cllr Demirci (Deputy Mayor)
 London Borough of Islington
 London Borough of Lambeth
 London Borough of Redbridge
 London Borough of Richmond Upon
 Thames

London Borough of Southwark
 London Borough of Tower Hamlets
 London Borough of Waltham Forest
 London Councils
 London Sustainability Exchange
 Luton Council
 Luxulyan Parish Council
 Maidstone Borough Council
 Manchester Environmental Education Network
 Manchester Friends of the Earth
 Manor Coating Systems
 Marley Eternit
 MASC
 Merton councils
 Metaelectric Battery Systems
 Middlesbrough Borough Council
 National Centre for Atmospheric Science (NCAS)
 National Education Union
 National Energy Action
 National Express
 National Franchised Dealers Association (NFDA)
 National Physical Laboratory
 National Pig Association
 National Wildlife Federation and Southern Environmental Law Centre
 Natural Resources Defense Council (NRDC)
 New Forest District Council
 Newark & Sherwood District Council
 NFU (National Farmers Union)
 Norfolk councils
 North East Combined Authority/Transport
 North East Committee
 North Hertfordshire District Council
 North Lincolnshire Council
 North Tyneside Council
 Nottingham City Council
 Nottinghamshire County Council
 Npower
 Octopus Group
 Oil and Gas UK
 Ordnance Survey
 Origin Fertilisers
 Ovo Energy
 Oxfordshire City Council
 Partnership for Policy Integrity
 Pause for Thought
 Peterborough City Council
 Petrol Retailers Association
 Planning Officers Society
 Plantlife
 Port of London Authority
 Portsmouth City Council
 Promar International Limited
 Pure Air Industries (Mamambo group)
 R D Jaggard & Son
 R.J. Butler and son
 Rail Delivery Group
 Railfuture
 REAL
 Redcar and Cleveland Borough Council
 Environmental Protection Team
 Regenerus
 Renewable Energy Association
 Repsol Sinopec Resources UK
 Residential Boat Owners' Association
 RF Percy
 Ricardo
 Richmond council
 Richmond Heathrow Campaign (RHC)
 Road Haulage Association
 Road Surface Treatments Association (RSTA)

Rolls-Royce plc

Royal Association of British Dairy Farmers - RABDF

Royal College of General Practitioners

Royal College of Physicians

Royal Society

Royal Society for the Prevention of Accidents (RoSPA)

Royal Society of Biology

Royal Society of Chemistry Response

Royal Town Planning Institute

RPS responding on behalf of Statera Energy

RSSB (the Rail Safety and Standards Board)

Rushcliffe Borough Council

RWE Generation UK

Save Highbury Fields

Scarlett Energy Ltd (TA Scarlett Fireplaces)

Schneider Electric

Scottish Power

Sefton Council

Sevenoaks District Council

SIA (Stove Industry Alliance)

Society of Maritime Industries

Society of Motor Manufacturers and Traders (SMMT)

Soil Association

Solihull Council

Solvents Industry Association

Somerset Air Quality Steering Group

South Derbyshire District Council

South Gloucestershire Council

South Herts CTC

South Lakeland District Council

South Sefton CCG

Southampton City Council

SSE plc

St Albans City and District Council

Stafford Borough Council

Stevenage Borough Council

Stockton-on-Tees Borough Council

Strategy and Performance Scrutiny Board, Calderdale Council

Suffolk Coastal District Council and Waveney District Council

Surrey Air Alliance

Sustainable Aviation/Airport Operators Association

Sustainable Energy Association

Sustainable Food Trust

Sustrans

Swale Borough Council

Sweep Safe

Tantalum Corporation

Tees Valley Environmental Protection Group

Teignbridge District Council

Tenant Farmers Association

Thames Water

Thanet District Council

The Agriculture & Horticulture Development Board (AHDB)

The Association for Decentralised Energy

The Association of Directors of Environment, Economy, Planning and Transport (ADEPT)

The Association of Manufacturers of Power generating Systems (AMPS)

The Association of Professional Independent Chimney Sweeps (APICS)

The Cannock Chase Special Area of Conservation Partnership

The Central Association of Agricultural Valuers (CAAV)

The Chartered Institute of Environmental Health	United Kingdom Indoor Environments Group (UKIEG)
The Chartered Institution of Building Services Engineers	United Utilities
The Environmental Industries Commission (EIC)	UPS
The Farnham Society	Valero Energy Ltd
The Heritage Alliance	Verdesian Life Sciences
The Intergenerational Foundation	Vivergo Fuels
The Law Society of Scotland	Wade Chimney Sweep Services
The Maltsters' Association of Great Britain	Waltham Forest Borough
The National Bargee Travellers Association's (NBTA)	Wandsworth Council
The Ramblers	Waverley Borough Council
The Royal Borough of Greenwich (RBG)	West Lancashire Borough Council
The Scout Association	West Somerset Council
The Southampton Collective CIC	West Suffolk councils
The Wood Recyclers' Association (WRA)	West Yorkshire Combined Authority
Transport for Greater Manchester	Western Docks Consultation Forum
Transport Policy, Cardiff Council	Westminster Business Improvement Districts (BIDs)
Trees and Design Action Group (TDAG)	Westminster City Council
Truro City Council	White Horse Energy
UK Chamber of Shipping	Wildlife and Countryside Link - representing an environment and wildlife coalition in England of 49 organisations, such as CPRE, Plantlife, RSPB, the Wildlife Trusts, Wildfowl and Wetlands Trust, Woodland Trust
UK Cleaning Products Industry Association (UKCPI)	Willand Biogas
UK Health Alliance on climate change	Winchester Friends of the Earth
UK Major Ports	WM-Air: West Midlands Air Quality Improvement Programme" at the University of Birmingham
UK Pellet Council	Wood Panel Industries Federation (WPIF)
UK Petroleum Industry Association	Woodland Trust
UK Power Networks	Worcestershire Regulatory Services
UK Power Reserve	WWF-UK
Unicef	Yara UK Ltd.
Uniper	
Unite the Union	