



National Audit Office



# Tackling local breaches of air quality

Department for Environment, Food & Rural Affairs  
Department for Transport

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**REPORT**

**by the Comptroller  
and Auditor General**

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## Report by the Comptroller and Auditor General

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Commons in accordance with Section 9 of the Act

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**Gareth Davies**  
**Comptroller and Auditor General**  
**National Audit Office**

**10 June 2022**

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## Key facts

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**2010**

year since which the UK has been in breach of legal limits for localised concentrations of nitrogen dioxide (NO<sub>2</sub>)

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**64**

local authorities the government has directed to reduce NO<sub>2</sub> levels below legal limits since 2015

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**14**

local authorities that government considers have implemented all of the measures expected to bring NO<sub>2</sub> levels below legal limits

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**2017**

publication of government's 'UK plan for tackling roadside nitrogen dioxide concentrations', the current plan to tackle breaches of NO<sub>2</sub> limits

**after 2030**

date when government expects to achieve full compliance with legal limits for localised concentrations of NO<sub>2</sub>

**£883 million**

lifetime budget committed to support for local authorities under the NO<sub>2</sub> programme

**4.5 years**

average length of time the 17 local authorities that are in the process of implementing measures had been involved in the NO<sub>2</sub> Programme as at 1 April 2022

**17**

number of sections of the Strategic Road Network with no 'viable' measures to bring forward compliance

**7**

number of local authorities which have yet to agree a full plan with government for tackling breaches

# Summary

## Introduction

**1** While emissions of most air pollutants have been falling in recent decades in the UK, poor air quality continues to cause damage to people's health and the natural environment. Air pollution is unevenly distributed across the UK: urban areas tend to have higher concentrations of many pollutants and research suggests low-income and ethnically diverse neighbourhoods are particularly exposed. The UK has legal air quality limits for major pollutants at a local and national level, covering pollution from ammonia, particulate matter, nitrogen oxides, non-methane volatile organic compounds, sulphur dioxide, and more.

**2** The UK complied with most of these legal limits between 2010 and 2019 with the exception of the nitrogen dioxide (NO<sub>2</sub>) annual mean concentration limit, for which there have been longstanding breaches. In 2020, there was a large increase in compliance which government attributes to reduced road traffic flows brought about by the COVID-19 pandemic lockdown restrictions. While government expects all parts of the UK will eventually become compliant with the NO<sub>2</sub> limits as a result of trends in the transport sector such as growth in electric vehicles, government has a legal duty to draw up and implement plans to achieve compliance "within the shortest possible time".

**3** The Department for Environment, Food & Rural Affairs (Defra) and the Department for Transport (DfT) established the Joint Air Quality Unit (JAQU) in 2016 to oversee delivery of government's plans to achieve compliance with NO<sub>2</sub> limits in as short a time as possible. This NO<sub>2</sub> Programme (the Programme) is government's largest dedicated air quality initiative and involves two main elements:

- Ministerial Directions to specified local authorities requiring them to assess potential breaches in their local area, and identify and implement measures to tackle the problem, with support and funding provided by JAQU; and
- work by National Highways, a government-owned company, to assess and tackle breaches on England's motorways and certain major A-roads known as the Strategic Road Network.

**4** Measures to tackle NO<sub>2</sub> pollution include bus retrofit and traffic management schemes, and in some areas, Clean Air Zones where vehicle owners are required to pay a charge if their vehicle does not meet a certain emissions standard. As at May 2022, a lifetime budget of £883 million has been committed to the Programme to support local authorities. Separately government has spent £39 million to improve air quality on the Strategic Road Network from 2015-16 to 2019-20. Further funding is available to 2024-25.

**5** When government published its 2015 plan for tackling NO<sub>2</sub> concentrations it required five local authorities to take action to achieve legal limits in their area in the shortest possible time. Government published a further plan for tackling NO<sub>2</sub> concentrations in 2017 and issued directions to an additional 23 local authorities. Between 2015 and 2017 research showed that diesel vehicles had much higher emissions in normal driving conditions than laboratory tests had predicted, and legal rulings found that government's original plans were not ambitious enough. Since 2017 government has expanded the Programme to issue directions to a further 36 local authorities, directing 64 in total. Government also commissioned National Highways to examine breaches on the Strategic Road Network in England. This analysis has confirmed 31 sections of the Strategic Road Network to be above the limit value and therefore non-compliant.

**6** Government published a Clean Air Strategy in January 2019 outlining its approach to air quality more broadly. Government expects to publish an update of its National Air Pollution Control Programme in September 2022 to set out the measures that will be required for the UK to meet its 2030 national emissions limits.

### **Scope of this report**

**7** This report examines government's progress in tackling local breaches of NO<sub>2</sub> limits and gives an overview of its performance and approach to air quality more broadly. Drawing on our *Framework to review programmes* we evaluate whether government is on track to achieve value for money from its spending on the NO<sub>2</sub> Programme, within the constraints imposed by the legal requirement to deliver compliance in as short a time as possible. While a significant part of our focus is on NO<sub>2</sub>, we recognise the level of concern about other pollutants, especially fine particulate matter, and that is covered in our broader overview of air quality.

**8** As part of examining government's management of the Programme and its understanding of progress, we summarise the information government holds on local authorities' progress with measures to tackle NO<sub>2</sub> breaches, but we have not independently verified this information, or assessed the realism of government's expectations. We have not assessed, and make no judgement about, the performance of any individual local authority in relation to air quality.



**9** The report covers:

- an overview of government's approach to air quality (Part One);
- government's approach to tackling local breaches of NO<sub>2</sub> in England (the NO<sub>2</sub> Programme) (Part Two); and
- progress made on the NO<sub>2</sub> Programme (Part Three).

## **Key findings**

Government's performance and plans for its wider air quality targets

**10 Existing policy measures will not be sufficient to achieve most of government's 2030 emissions ceilings and government is developing further plans.** Government expects to outline the measures required to achieve its 2030 emissions ceiling targets in the upcoming update to the UK's National Air Pollution Control Programme in September 2022. Ammonia emissions have remained broadly stable since 2007 which Defra told us was due to difficulties it has experienced in influencing agricultural practices such as fertiliser use. The latest data would imply that the UK missed its 2020 ceiling for this pollutant, although the UK has applied for an adjustment to the method that calculates the emissions total which, if accepted, will mean that the UK was compliant. Defra told us that there are practical and behavioural challenges to reducing emissions of particulate matter, including because of the potential impact of increased energy prices on domestic wood burning (paragraphs 1.12 and 1.13).

**11 There are particular concerns about the health impacts of fine particulate matter, and government will set a new long-term target for this pollutant by October 2022.** In March 2022, government published proposed legal targets for air quality to be achieved by 2040, as part of a consultation required under the Environment Act 2021. The proposed targets relate to mean concentrations of, and population exposure to, fine particulate matter pollution. Government chose these targets on the basis that fine particulate matter is the air pollutant of greatest harm to human health. It does not propose to set legal 2040 targets for other serious pollutants, such as ammonia, and has not set out what its long-term objectives for these pollutants are. In 2020 we recommended that government clarify each of its environmental ambitions so that by the time it puts forward legislative targets, these are part of a coherent plan for the medium term (2030) to long term (2040 onwards) (paragraphs 1.7 to 1.9 and Figure 3).

**12 Government does not bring together information on annual spend across all its air quality initiatives.** While Defra tracks spend on its own air quality initiatives, it could not provide us with a breakdown of committed and actual spend across all the cross-government initiatives it expects to contribute to air quality improvements. As we have found when examining, for example, preparations for EU Exit and for achieving Net Zero, a lack of spending information at a cross-government level makes it harder for government to reprioritise when necessary. It also reduces public accountability (paragraphs 1.16 to 1.18).

**13 Government has arrangements to manage the links between its work on air quality and Net Zero, although these could be strengthened.** Government's approach to tackling climate change could have knock-on impacts for air quality, with some measures bringing risks as well as potential benefits. For example, increased uptake of electric vehicles will cut tail-pipe emissions of both greenhouse gases and NO<sub>2</sub>, but not fine particulate matter from brakes and tyres. Defra has arrangements for managing the links between air quality and Net Zero including ensuring that Defra's air quality staff sit on and can influence decision-making on relevant Net-Zero related boards such as the Department for Business, Energy & Industrial Strategy's (BEIS's) Industrial Decarbonisation and Hydrogen board, and through its chairing of a cross-government group on clean air. It has agreed a process for resolving potential trade-offs with Net Zero across the different policy areas it is responsible for. However, government has not yet identified clear and specific senior responsibilities for handling the most significant trade-offs and opportunities across government more widely (paragraph 1.19 and 1.20).

**14 Government does not clearly and consistently communicate air quality issues and its proposed solutions to the public.** Government publishes many different sets of air quality data and an annual UK air quality report. However, these publications are inaccessible to members of the public not already familiar with the details of air quality legislation. As a result, residents cannot easily find out about air quality problems in their local area, whether pollution levels breach legal limits and what progress their local authority is making on tackling those problems. In June 2021 government committed to carry out a comprehensive review of its air quality information, following a coroner's report on the tragic death of a nine-year-old girl in 2013 who became the first person in the UK to have air pollution listed as a cause of death (paragraphs 1.21 to 1.23).

## Progress and oversight of the NO<sub>2</sub> Programme

### **15 Government has made progress in tackling illegal levels of NO<sub>2</sub> pollution.**

Over the course of the NO<sub>2</sub> Programme, government has identified 64 local authorities with potential breaches of NO<sub>2</sub> concentration limits, and 31 non-compliant sections of the Strategic Road Network. As at April 2022, information from JAQU showed that 14 of the 64 directed local authorities had implemented all of the measures agreed with central government, which are expected to bring NO<sub>2</sub> levels below legal limits: two of these local authorities have introduced charging Clean Air Zones, with twelve adopting non-charging measures such as improved road layouts or traffic signalling to reduce traffic queues. Seventeen authorities are in the process of implementing measures, including one which has already introduced a charging Clean Air Zone and is in the process of implementing additional non-charging measures. A further 16 authorities were found to be already compliant, based on local modelling, and seven are yet to agree a full plan with government for tackling breaches. National Highways has introduced speed limits in four of 31 non-compliant road sections on the Strategic Road Network to help tackle breaches, and is evaluating whether existing speed limits in a further four sections will bring forward compliance. Government has also established a digital vehicle charging service called the Central Clean Air Service to support local authorities in implementing charging clean air zones (paragraphs 3.2, 3.7, 3.14 and Figures 7 and 8).

**16 However, progress has been slower than expected.** In 2017, central government expected that measures would take three years or less to implement, with all measures outside London implemented by 2021. As of 1 April 2022, information provided by JAQU showed that the 17 local authorities still in the process of implementing measures had been involved in the NO<sub>2</sub> Programme for 4.5 years on average, with two of these having been in the Programme more than six years. JAQU does not have a firm expected completion date for most (12) of these 17 local authorities, 10 of which fall within Greater Manchester where plans are under review. Progress against local authority directions has not been consistently visible to residents and external stakeholders, limiting transparency and accountability (paragraphs 1.22 and 3.23).

**17 While the COVID-19 pandemic has undoubtedly been a factor, it is not the only cause of delay, and the relative impact of different issues is not clear.** JAQU told us that the COVID-19 pandemic has been the main cause of delay, and the pandemic clearly affected local authority capacity to develop and implement air quality plans. However, JAQU does not have summary data on the extent to which other factors have also contributed. Two local authorities have publicly attributed delays in their implementation of Clean Air Zones to the delivery of the central Clean Air Service, and some local authorities in our focus groups raised concerns about slow-decision making processes in JAQU. JAQU considers that of 38 local authorities that have implemented, are implementing or are planning measures, 25 missed a legal deadline for providing a full business case, and told us that it considers a further cause of delay has been due to local authorities submitting evidence late, or evidence not meeting required standards. Without a good overview of the underlying reasons for delay it is harder to identify where national action might be needed to tackle common barriers across local authorities (paragraphs 3.22 to 3.25).

**18 Government has a robust methodology to evaluate the effect of local measures to tackle NO<sub>2</sub> pollution and early results are showing a positive impact on air quality.** JAQU has commissioned Ipsos UK and the Institute for Transport Studies, University of Leeds to run the central evaluation of these plans, including seven deep dives into the effects of measures, but the COVID-19 pandemic and delays to the Programme slowed its delivery. Its evaluation plans should enable JAQU to understand the effects of measures and learn lessons. Local authorities also run their own monitoring and evaluation to estimate the effect of measures. Bath and North East Somerset is the first local authority to provide a progress update following the implementation of a Clean Air Zone and its preliminary analysis suggests it is likely helping to reduce the number of more polluting vehicles, changing people's travel behaviours, and improving the city's air quality. Bath and North East Somerset reported that when the Clean Air Zone first launched, 33% of chargeable vehicles travelling within it met the emission standards; three months later, that figure had risen to 82%. Local authorities' own modelling indicates that in those areas that have implemented all measures, the date by which they achieve compliance will be brought forward by 1.5 years on average, compared with doing nothing (paragraphs 3.3 to 3.6).

**19 National Highways considers it is limited in what it can do in some places on the Strategic Road Network, which means full compliance will be delayed until after 2030.** JAQU told us that at the time of the government's 2017 plan for tackling NO<sub>2</sub>, it believed that measures could be found to bring forward NO<sub>2</sub> compliance across the Strategic Road Network. Since 2015, National Highways has carried out research aimed at improving air quality, including 10 pilots. Despite this, National Highways concluded that there were no viable measures for 17 of the 31 non-compliant sections of the Strategic Road Network. Government expects all these sections to come into compliance over time as a result of wider trends towards cleaner vehicles. However, National Highways' modelling predicts that up to four sections of the Strategic Road Network will still be in breach in 2030. This means that full compliance with legal limits will not be achieved until after 2030, more than four years later than government expected when it published its plan for tackling NO<sub>2</sub> in 2017 (paragraphs 3.9 to 3.16, and Figure 8).

**20 There is a lack of transparency about decisions that there are no viable measures for particular road sections, and government has been slow to consider wider options.** National Highways considers a 'viable' measure to be one that can reduce NO<sub>2</sub> levels by at least 1% of the limit value, which is physically possible to introduce and which will bring forward compliance by at least one year. However, government does not currently publish these criteria. National Highways also considers other factors such as the extent to which mitigations could create safety risks by diverting traffic onto local roads. Again, there are no published criteria that set out the point at which these types of issue render a particular measure non-viable. While government carried out a cost-benefit analysis of national measures to bring forward compliance as part of developing its 2017 plan, it did not review national options to help tackle persistent breaches on the Strategic Road Network until 2021, when JAQU began to assess the effectiveness of a targeted vehicle upgrade scheme. To date it has found that upgrades would be required on 34% to 89% of vehicles frequently using the network to bring forward compliance by two to four years. In January 2022, the Transport Select Committee recommended that government "assess the potential effect of a road pricing mechanism based on telematic technology on changing drivers' behaviour and delivering its wider policies" including air quality. JAQU's information shows seven local authorities were also deemed to have no viable measures for bringing forward compliance in their area (paragraphs 3.8, 3.15 and 3.19).

**21 Locally-led public communications campaigns about Clean Air Zones do not appear to have been fully effective.** Some local authorities planning to implement a Clean Air Zone or other clean air measures have faced political and public opposition. JAQU recognises the need for effective public engagement to address these risks. JAQU told us that after considering options for a national approach, government decided that local authorities should lead on communicating with people and businesses about the Clean Air Zone in their area. To support local authorities, JAQU has developed marketing materials to be used by local authorities and has led a programme of stakeholder engagement. Independent evaluations of the locally-led communications campaigns for the first two Clean Air Zones showed mixed results. Some of the local authorities we spoke to in focus groups raised concerns about the lack of a coordinated national communications campaign on NO<sub>2</sub>. They felt a national campaign could help inform road users about the need for clean air measures in certain locations, and explain that there are different types of Clean Air Zone with different vehicle emissions requirements (paragraphs 3.26 to 3.30).

**22 More than half of the £522 million awarded to local authorities in the Programme so far is for support to individuals and businesses.** HM Treasury told us it has not set a firm limit on the funding for local authorities' implementation of measures to tackle breaches, because of the legal requirement that cost cannot be a limiting factor to achieving compliance within the shortest possible time. Local authorities must develop full business cases setting out their proposed measures, which are reviewed by an expert independent panel before ministerial approval. As at February 2020 government had allocated £522 million to local authorities through to 2021-22, with more than half (54%) to support those affected by the plans by making it easier, more attractive or more affordable for individuals and businesses to change to cleaner modes of transport (the Clean Air Fund), around one-third (35%) going towards the implementation of measures (the Implementation Fund) and 10% towards funding for feasibility studies (paragraphs 2.16 to 2.19 and Figure 6).

## Conclusion

**23** The NO<sub>2</sub> Programme, established to tackle illegal and dangerous levels of pollution, has become government's largest dedicated air quality initiative. Government has made progress, with measures fully implemented in 14 local authorities and four sections of the Strategic Road Network. However, the Programme has not moved as fast as expected. While this is undoubtedly due in part to the COVID-19 pandemic, other factors including the effectiveness of public engagement have likely played a role, and government has not had a good overview of the relative impact of different issues. It has also been slow to consider the case for national action to tackle the challenges on major roads and motorways that mean overall compliance cannot be achieved until after 2030. This is more than four years later than government expected when it published its plan for tackling NO<sub>2</sub> in 2017. For these reasons we cannot yet be confident that the Programme is on track to deliver value for money.

**24** NO<sub>2</sub> is only one source of air pollution, and there is particular concern about the health risks from particulate matter and ammonia. Government is not yet clear how it will meet existing 2030 ceiling limits, and expects to set new long-term targets for particulate matter by October 2022. It will need to move quickly with robust plans to meet these targets if it is to put itself in a good position to meet them and secure value for money from its work on air quality.

**25** Government publishes a lot of air quality data, but not in a way that gives the public accessible information about air quality problems and action in their area. There has been little public engagement at a national level about the purpose and progress of the NO<sub>2</sub> Programme and the choices government has made to tackle breaches. This creates a lack of transparency which risks undermining value for money because positive public engagement is important for success across the NO<sub>2</sub> Programme and government's wider work on air quality.

## Recommendations

**26** To ensure it is well placed to deliver value for money from its work on air quality:

Defra should:

- a** ensure that the update to the National Air Pollution Control Programme includes sufficient clarity on how proposed measures will enable the UK to achieve its 2030 targets and the timetable for implementation, given there are now eight years to the deadline, and policies will take time to develop and take effect;
- b** clarify its long-term (2040) ambitions for all major air pollutants, taking account of the plans of international partners, and identify interim (2030) objectives where these do not already exist;
- c** improve the accessibility and usability of air quality information for the public;
- d** collate information on government's committed/actual spend on measures it expects to make a substantial contribution to improving air quality, alongside the expected/actual impact these measures are having;
- e** together with BEIS, clarify its framework for making decisions about the interdependencies between its work on air quality and Net Zero, and identify clear and specific senior responsibilities for handling the most significant trade-offs and opportunities.

**27** Defra, DfT and JAQU should:

- f** review and clarify interim milestones for the expected timetable for the remainder of the Programme, re-baselining to account for delays introduced by the COVID-19 pandemic;
- g** collate consistent and complete information on progress against these milestones, including reasons for any further delays and carry out a periodic (at least six monthly) stock-take of progress to consider overall trends and any solutions needed at a national or programme level;
- h** publish six-monthly updates on the progress of the Programme, including the measures local authorities expect to take, their expected implementation date and expected date of local compliance and consider encouraging local authorities to share an update of their progress publicly;



- i** **Defra should set and agree with DfT, JAQU and National Highways the outline criteria for 'non-viable' measures.** Defra should then publish these criteria. The Department for Transport, together with National Highways, should report on an annual basis on breaches where it considers there are no viable measures explaining what options were considered. This should cover no viable measures breaches both in local authorities and on the Strategic Road Network; and
- j** **review their approach to public engagement on Clean Air Zones** to do more to ensure that there is good understanding across the country of the purpose of these zones, how and why charging regimes differ and to ensure that all road users are aware of how to check whether their vehicle is compliant and make payments if needed. As part of this, JAQU should seek to coordinate with the behaviour change and public engagement team for Net Zero within BEIS, to understand whether public engagement about Clean Air Zones can be amplified alongside wider messaging about Net Zero where there is overlap in the policy options.