

Written evidence submitted by Airly

About Airly

Airly is a technology company, and provider of a turnkey local air quality monitoring solution giving more local, higher-resolution, and cost-effective air quality insights. Our mission is to empower the world to tackle air pollution by building more actionable information on air quality. Our solution is designed to enhance existing monitoring and modelling capabilities, to create a true understanding of the efficacy of local interventions and transform how governments respond to air quality.

Airly currently works with several councils across UK and England to monitor local emissions, including Southwark, Lambeth, Haringey, Birmingham, and Southampton.

Further information about Airly can be found at: airly.org

Airly welcomes the opportunity to provide written evidence to the Environmental Audit Committee's call for evidence on outdoor and indoor air quality targets. Airly is concerned that - in addition to lack of ambition in targets - there is currently insufficient focus, funding, and best-practice support for local authorities to deploy local air quality monitoring to confirm the efficacy of local interventions to reduce air pollution and exposure.

This submission has been prepared by Jonathan Gartside (COO) and Wiktor Warchalowski (CEO & co-founder).

Executive summary

- There is a significant risk that an inability of local authorities to measure the effectiveness of their local actions to tackle air pollution will mean the current measures will be inadequate to reach national targets.
- You can't improve what you can't measure. Yet there is currently no requirement on local authorities to use dense local real time monitoring to identify air quality hotspots and trends when designing appropriate interventions, or to validate the efficacy of the implemented interventions in Air Quality Management Areas (AQMAs).

- The monitoring in many AQMAs is wholly inadequate; without time granular real-time data or measurement of particulates - a pollutant critical to the new targets.
- Current air quality monitoring infrastructure and tools are unsuitable for this role of measuring change, as they were designed to measure compliance.
- The latest small sensors have dramatically lowered the cost of local air quality monitoring, whilst also improving the simplicity of installation and operation.
- Yet faster adoption of the new technology of small sensor networks to monitor local air quality is hindered by insufficient funding and guidance on best-practice from the central Government. This leads to hesitation from local authorities to adopt the technology, and results in continued reliance on the status-quo of distant compliance monitors and inaccurate emissions inventories, and no knowledge of the true effectiveness of local interventions.
- To de-risk the plans to achieve air quality targets, the Government should mandate local real-time monitoring in AQMAs and near sensitive locations like schools (including particulates); increase funding for local monitoring; and enhance best-practice guidance for the use of small sensor networks to give confidence to local authorities to make use of this emerging technology.
- To support the EAC's discussion, Airly would be happy to offer a demonstration of small sensor technology for the use-case of monitoring local emissions and tracking the effectiveness of local actions.

Question 5: What are the major barriers and challenges to achieving national targets on air quality?

1. There is a significant risk that current measures are insufficient to achieve national targets, as central Government and local authorities lack the capability to measure the true effects of local projects and interventions.
2. You can't improve what you can't measure. Yet most local authorities are "flying blind" when tackling air pollution without a data-backed understanding

of how air quality varies across time and space, and without evidence on if their local projects and interventions are making an impact.

3. The traditional approach to air quality monitoring with a sparse network of reference-grade monitors, while well suited to measuring long-run compliance, is inadequate to measure local emissions and changes.
4. Reference-grade monitors are not economical or practical to deploy in dense networks in urban environments. Consequently, local air pollution levels are often assumed to be the same as those measured at monitoring stations located tens of miles away, despite significant changes in air quality over short distances. Similarly, diffusion tubes, while suited to measuring compliance over long-run averages, are unable to provide temporal resolution or real-time data to drive public awareness and behaviour change.
5. Equally, dispersion models provide valuable insight into future scenarios, but have significant uncertainty in their results without feedback from monitoring. This is because models rely on theoretical emissions inventories, and vehicle emissions are rarely consistent with standard drive cycles.
6. Small sensor networks are the missing piece of the puzzle. An economical way to increase the coverage, resolution, and timeliness of air quality data. Generating decision-ready data to inform the design of local interventions, track the efficacy of local interventions, engage community and drive behaviour change. In addition, small sensor networks can provide real-time feedback to improve emissions inventories and modelling.
7. However, there is currently no requirement on local authorities to use local monitoring to validate the efficacy of their interventions, and so most interventions are untracked and unproven. This resembles the situation in river pollution, prior to the introduction of requirements to monitor in real-time upstream and downstream of outfall pipes from sewage treatment works.
8. Many Air Quality Management Areas (AQMAs) employ wholly inadequate monitoring. Some do not monitor air quality continuously, relying completely on diffusion tubes. Others do not monitor all important pollutants, such as

particulates. The government cannot hope to achieve “ambitious new PM2.5 targets” if particulates are not even monitored in AQMAs.

9. The latest small sensors have dramatically lowered the cost of air quality monitoring, whilst also improving the simplicity of installation and operation. Just a few years ago, it would not have been feasible to install hyperlocal air quality monitoring networks, but technology has advanced considerably, so reliable local air quality data is now both achievable and, with sufficient budget, affordable.

Question 6: Does the Government provide sufficient funding and devolved powers to local authorities in England to improve local air quality? If not, what additional funding or devolved powers are required?

1. Current funding from the central Government is not sufficient to allow local authorities to enhance their existing air quality monitoring infrastructure and tools with small sensor networks.
2. While some pioneering councils (such as Birmingham, Southwark, Lambeth) see sufficient value in small sensor networks to self-fund a roll-out, nationwide adoption is required to meet national air quality targets.
3. In 2022 DEFRA air quality grants available to local authorities totalled £10.7 million, with c.£1 million granted to projects focussed on local air quality monitoring. Airly estimates that a nationwide local air quality monitoring network, even were it only to cover urban areas, would require recurring funding in the order of £40 million annually.
4. Beyond funding, there is also inadequate best-practice guidance from the central Government on how to use small sensor networks to understand local air quality and track local interventions. Technical Guidance, such as TG22, fails to do enough to inspire confidence to adopt new technologies such as ‘low cost sensors’. Local authorities require clearer best-practice on which use-cases low cost sensors are suitable, and what is the best practice to deploy and use them in policy work. We’re hopeful upcoming guidance from PAS 4023 will do more in this regard.

5. To de-risk the plans to achieve air quality targets, the Government should:
 - a. mandate local real-time monitoring in AQMAs and near sensitive locations like schools (including monitoring of particulates) to evidence the effectiveness of interventions;
 - b. increase funding specifically for local monitoring;
 - c. and enhance best-practice guidance for the use of small sensor networks to give confidence to Local Authorities to make use of this emerging technology.

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