

# London-wide Ultra Low Emission Zone One Year Report

## Key information

Publication type: General

Publication date: Friday 7 March 2025

## Contents

[Background](#)

[About the report](#)

[Key findings](#)

[Air pollutant concentrations - general trends](#)

[Air pollutant concentrations - ULEZ impacts](#)

[Air pollutant and carbon emissions](#)

[Vehicle compliance](#)

[Footfall and economic spend](#)

[Supporting documents](#)

[Advisory Group](#)

## Background

There is a well-established and ever-growing body of scientific evidence linking exposure to air pollution and a number of adverse health effects across all stages of life, with these effects seen even in relatively low air pollution environments.

In 2021, the World Health Organization (WHO) updated its air quality guidelines, recommending more stringent guidelines to protect public health. The updated WHO air quality guidelines are more ambitious than the UK national legal limits and emphasise that no safe level of air pollution exists.

On the 29 August 2023, to help tackle air pollution in the capital, the Mayor of London expanded the Ultra Low Emission Zone (ULEZ) across all London boroughs.

The ULEZ boundary is now the same as the boundary for the Low Emission Zone (LEZ) for heavy vehicles. The London-wide zone measures 1,500 km<sup>2</sup> and covers nine million people, making it the largest zone of its kind in the world.

# About the report

This report covers the first year of the newly expanded scheme and provides analysis of air pollutant emissions and concentrations, as well as vehicle compliance, traffic, population exposure and economic impact, building on the previously published London-wide [ULEZ?Six Month Report](#).

The method used in this One Year Report has been extensively reviewed by an international advisory group of independent experts.

## Key findings

The findings indicate that the Mayor's air quality policies, and in particular the ULEZ and LEZ schemes, are having an important impact on reducing the number of older, more polluting vehicles seen driving in London and on reducing the levels of harmful air pollution that Londoners are exposed to. In summary, the key findings are:

## Air pollutant concentrations - general trends

Overall improvement in air quality has been observed across London. These trends are not attributable to ULEZ, however schemes and policies such as the ULEZ contribute towards accelerating these improvements.

- Average nitrogen dioxide (NO<sub>2</sub>) concentrations in 99 per cent of all monitoring locations<sup>1</sup> included in the analysis have improved between 2019 and 2024, with 80 per cent of monitoring locations showing reductions of more than 10 µg/m<sup>3</sup>.
- Long term trends indicate that average NO<sub>2</sub> concentrations over all London zones improved at a faster rate than the rest of England average over the same time period (2017 – 2024). This is particularly notable in outer London where concentrations have improved more rapidly over recent years and are now similar to the rest of England average which has historically been lower than London<sup>2</sup>.

## Air pollutant concentrations - ULEZ impacts

Due to the London-wide ULEZ expansion:

- In the first year of operation, roadside NO<sub>2</sub> concentrations in outer London were on average up to 4.8 per cent lower than would have been expected without the London-wide ULEZ expansion.

Due to all phases of the ULEZ:

- All phases of the ULEZ have had an impact on improving air quality across the capital. In 2024, compared to a scenario without the ULEZ, harmful roadside NO<sub>2</sub> concentrations are estimated to be:
  - 27 per cent lower across the whole of London than they would have been without the ULEZ and its expansions.
  - 54 per cent lower in central London than they would have been without the ULEZ and its expansions.
  - 29 per cent lower in inner London than they would have been without the ULEZ and its expansions.
  - 24 per cent lower in outer London than they would have been without the ULEZ and its expansions.
- London's more deprived communities are seeing greater benefits from the ULEZ; for some of the most deprived communities living near London's busiest roads, there's been an estimated 80 per cent reduction in people exposed to illegal levels of pollution<sup>3</sup>.
- Areas outside London are also seeing the impacts of the ULEZ, with roadside NO<sub>2</sub> concentrations within 5 km of the Greater London boundary on average 14 per cent lower in 2024 than an estimated "No ULEZ" scenario.

## Air pollutant and carbon emissions

Due to the London-wide ULEZ expansion:

- Air pollutant emissions in 2024 were lower than expected compared to a scenario without the ULEZ expansion. Specifically:
  - Nitrogen oxides (NO<sub>x</sub>) emissions from cars and vans in outer London are estimated to be 13 per cent and 16 per cent lower respectively.
  - Particulate Matter 2.5 (PM<sub>2.5</sub>) exhaust emissions from cars and vans in outer London are estimated to be 31 per cent lower.

- Outer London boroughs are seeing the largest impacts from the London-wide expansion. NO<sub>X</sub> emissions are estimated to be between nine per cent and 15 per cent lower across all boroughs than would have been expected without the London-wide ULEZ expansion.

Due to all phases of the ULEZ:

- Cumulatively over a six-year period (2019 – 2024), air pollutant and carbon emissions across London are lower due to all phases of the ULEZ, compared to a scenario without the ULEZ. Specifically:
  - NO<sub>X</sub> emissions are estimated to be 24 per cent lower.
  - PM<sub>2.5</sub> exhaust emissions are estimated to be 29 per cent lower.
  - CO<sub>2</sub> emissions are estimated to be two per cent lower.
- In 2024 alone, NO<sub>X</sub> emissions are estimated to be between 33 per cent and 39 per cent lower across all boroughs than they would have been without the ULEZ and its expansions.

## Vehicle compliance

- A larger proportion of vehicles recorded driving in London are cleaner. The London-wide compliance rate for vehicles subject to the ULEZ standards after the first year of the expansion (as of September 2024) was 96.7 per cent. For reference, compliance was 91.6 per cent in June 2023 prior to the expansion and 39 per cent in February 2017, when changes associated with the ULEZ began.
- In the expanded outer London area, ULEZ vehicle compliance is now 96.7 per cent, up from 90.9 per cent in June 2023. This is the same level of compliance as seen in inner and central London, with 96.9 per cent and 96.7 per cent respectively. Van compliance in outer London is over 90 per cent for the first time, an increase of 11.4 percentage points since June 2023.
- There are fewer older, more polluting ULEZ vehicles seen driving in the zone. There were nearly 100,000 fewer non-compliant vehicles detected in London on an average day in September 2024 compared to June 2023. This is a 58 per cent reduction in non-compliant vehicles between those dates.

## Footfall and economic spend

- Despite some concerns that economic activity in outer London may be reduced as a result of the London-wide ULEZ expansion, the expansion has had no negative impact on footfall and spend in the outer London area, or at a London-wide level. The following trends were observed although the changes were not statistically significant:
  - Visitor footfall in outer London increased 1.87 per cent in the year after the London-wide ULEZ expansion, compared to an increase of 0.08 per cent across all of London.
  - Worker footfall in outer London increased by 8.89 per cent compared to 8.54 per cent across all of London.
  - Spend in outer London decreased by 3.17 per cent compared to 3.42 per cent across all of London and 3.36 per cent across the rest of England<sup>4</sup>.

#### Footnotes:

1 - 92 roadside and urban background NO<sub>2</sub> monitoring sites were used for this analysis, which includes sites that have data in both 2019 and 2024.

2 - 44 µg/m<sup>3</sup> compared to 32 µg/m<sup>3</sup> in 2017, and 22 µg/m<sup>3</sup> compared to 21 µg/m<sup>3</sup> in 2024 for outer London and the rest of England respectively.

3 - The UK legal limit for NO<sub>2</sub> is 40 µg/m<sup>3</sup> as an annual average.

4 - The per cent change in spend for Outer London was calculated using a different data source (Mastercard Retail Location Index (MRLI)) compared to the per cent changes reported here for London and England (Mastercard Spending Pulse). See Appendix 7 for more detail on these data sources.

## Supporting documents

Read the full evaluation of the ULEZ impacts one year after its expansion to outer London.

[London-wide ULEZ One Year Report](#)

[Supplementary Data Sheet 1 - Emissions](#)

[Supplementary Data Sheet 2 - Concentrations](#)

## 1. Advisory Group

A group of independent air quality analysis experts was set up to assist Transport for London (TfL) and the Greater London Authority (GLA). Their main role was to impartially review, and quality assure, the London-wide ULEZ analysis carried out by TfL and the GLA.

The Advisory Group had a technical function. It was not a forum for policy commentary or for advising the GLA on its objectives for clean air policies or wider policy issues.

To carry out this technical function, members brought a range of professional analytical skills, diverse experiences of air quality expertise (including from non-UK based experts) and knowledge of data analysis techniques.

Members were selected based on their:

- publications and involvement in relevant UK or international research assessing the impacts on air quality of clean air policies
- experience in previous evaluation panels or committees at national and international level
- relevance of their area of work and experience.

Find out more about the group's purpose and mandate in the [Advisory Group Terms of Reference \(PDF, 139 KB\)](#)

**Advisory group members:**

### **Gary Fuller (Chair) – Imperial College London, UK**

Dr Gary Fuller is an air pollution scientist at Imperial College London. He has over 30 years' experience in air pollution measurement having led and developed London's air pollution measurement network from the mid-1990s. His research interests focus on sources of air pollution, how these are changing and how they affect our health. He is one of three clean air champions for the UKRI Clean Air Programme, a member of Defra's Air Quality Expert Group and sits on several project steering groups for the Irish Environmental Protection Agency.

### **Anna Font – IMT Nord Europe, France**

Dr. Anna Font is an Assistant Professor of Environmental Data Science at IMT Nord Europe (France). Her research focuses on analysing air quality measurements to identify and quantify pollution patterns associated with emission sources and mitigation policies. She has contributed to key studies assessing air pollution trends in

London and Paris, in relation with changes in vehicle fleet and the introduction of mitigation policies such as low emission zones (LEZs). Notably, she co-authored the study "A Tale of Two Cities: Is Air Pollution Improving in Paris and London?", which examined ambient air quality data to assess the impact of mitigation policies in these major European cities.

### **David Carslaw – University of York, UK**

David is a Professor of Urban Air Pollution at the Department of Chemistry, University of York and has a joint position with Ricardo. His main research interests relate to the impact that vehicle emissions have on air quality. These interests have been supported by extensive vehicle emission remote sensing measurements and other field work. He has published extensively on a wide range of topics including vehicle emissions quantification, the development of novel data analysis techniques and the quantification of the air pollution impacts of interventions. David is also lead author of the openair R package which is used extensively around the world by academics, the public and private sectors. David has been a member of Defra's Air Quality Expert Group since its inception in 2002.

### **Elizabeth Fu – AirParif, France**

Elizabeth Fu is an air quality data analyst and project coordinator at Airparif, Île-de-France's air quality observatory. She assesses the air quality impacts of Low Emission Zones, including the [Greater Paris Metropolis LEZ](#). Elizabeth coordinates Airparif's regional inventory of energy consumption, [emissions of air pollutants and greenhouse gases](#). She leads measurement campaigns on Ultrafine Particles (UFP) and is [a lead data analyst](#). She holds a Master's Degree in Applied Mathematics, with a thesis on metamodelling fine-scale urban air pollution in Île-de-France.

### **Ludo Vandenthoren – Mutualités Libres, Belgium**

Ludo Vandenthoren holds master's degrees in biological psychology and management. Through his tenure at the Belgian Independent Health Insurance Funds he found an interest in the impact of air pollution on health and socio-economical inequalities. He has co-authored articles regarding this topic and acts as a representative member for the Belgian Independent Health Insurance Funds at the EU Healthy Air Coalition.

### **Martin Lutz – Formerly head of air quality management at Berlin City Government, Berlin**

Martin Lutz graduated in meteorology and air chemistry. About 35 years ago, he started in Berlin's Environment Department managing winter smog alarm with traffic bans for polluting vehicles. In the nineties, he was working some years for the European Commission, drafting the EU's strategy against ozone pollution. Back in Berlin he became head of air quality management, developing Berlin's air quality strategy with the LEZ scheme as the core measure. He has been advisor on AQ management in Eastern Europe, Turkey, Mexico, China, India and

Southeast Asia. Until his retirement end of 2023, he co-chaired EuroCities' air quality working group together with London. Now he is still doing some air quality consultancy work for the European Commission. In his second life, Martin is a passionate cycling lobbyist, promoting the bike as the healthiest means of transport in urban areas, for both the cyclists and all other urbanites.

Supporting documents:

[Advisory Group Terms of Reference](#)

[Minutes from Advisory Group meetings](#)

[Back to table of contents](#)