Clean Air West Midlands

Working in partnership for cleaner air in the West Midlands





Greener Together



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West Midlands Combined Authority

The West Midlands Combined Authority (WMCA) is a partnership between local authorities working together to make their region a better place to live. The WMCA was created through a devolution deal in 2016, and the organisation works to bring powers and resources from government to the region. We have seven constituent local authority members that make up the WMCA Board (Birmingham, Coventry, Dudley, Sandwell, Solihull, Walsall and Wolverhampton). Our work to unlock private investment in the natural environment will primarily be within the constituent local authorities.





Foreword



West Midlands Combined Authority

Too many people in the West Midlands are living with the harmful effects of air pollution — and that's simply not acceptable. Clean air is a basic right, not a privilege, and delivering it will take bold, collective action from us all.

The air we breathe matters — not just for our health and the environment, but for our economy and quality of life. Cleaner air means fewer trips to hospital, healthier children, more productive workplaces, and more welcoming places for visitors and residents. That's why we're already taking decisive steps to turn the tide.

The power to change this is in our hands. Our Regional Air Quality Framework lays out practical actions that, if delivered together, will make a real difference across our towns, cities, and communities.

We've built one of the UK's largest networks of air quality sensors, giving residents and businesses near real-time data on the air they're breathing. For the first time, people can see exactly where pollution is highest — and take steps to protect their health and make positive changes in their own lives.

We're also investing in healthier homes, backing businesses to go greener, and transforming our public transport network to become zero-emission. These are visible improvements to every part of daily life.

This report shows how far we've come and just how much more we can achieve by working side by side — for cleaner air, for healthier lives, and for a greener, fairer West Midlands for everyone.

There's more to do, so I invite you — whether you're a resident, a business owner, a community leader or a partner — to be part of this journey and together we can deliver the change our region deserves.



Richard Parker Mayor of the West Midlands

Working in partnership for cleaner air in the West Midlands





















Clean Air West Midlands 7



Why is the quality of our air important?

Clean air is essential to our health and wellbeing, as well as the environment. Poor air quality is the largest environmental risk to public health in the UK, and in the West Midlands up to 2,300 people die early due to long term exposure to air pollution every year.

Our main sources of air pollution are road transport, domestic combustion, industrial processes and construction.

Short-term exposure to poor air quality can cause coughing, wheezing, shortness of breath and worsen asthma. Long-term exposure is linked to serious health issues like cardiovascular disease, lung cancer, stroke and respiratory conditions.

Air quality is seen as a 'wider determinant of health' and air pollution can affect everyone's health, from early childhood through to old age. Even before birth, air pollution can cause damage. Those with pre-existing lung or heart conditions, young children and the elderly are particularly vulnerable.

In addition to this, unequal exposure can be purely as a result of where you live. Air pollution frequently affects those already vulnerable, socially or economically – improving air quality for these communities must be a priority.



Air quality in a UK and West Midlands context

In the United Kingdom...

Air pollution in the United Kingdom has significant economic, health, and environmental impacts. For example:

- In 2017, the National Health Service (NHS) and social care costs attributable to fine particulate matter (PM_{2.5}) and nitrogen dioxide (NO₂) were estimated at £42.88 million. When including diseases with less robust evidence of association with air pollution, this figure rises to £157 million. Projections indicate that by 2035, these costs could escalate if current pollution levels persist.
- Achieving the air quality guidelines set by the World Health Organisation (WHO) could potentially boost the UK economy by £1.6 billion annually.
- In 2022, more than 1,100 cases of adenocarcinoma, the most prevalent form of lung cancer in the UK, were attributed to air pollution.
- It is estimated that in England, long-term exposure to outdoor air pollution causes 26,000 to 38,000 deaths a year.

In the West Midlands...

Health Impacts:

- Premature deaths: Air pollution contributes to up to 2,300 early deaths annually in the WMCA region.
- Disease diagnoses: Each year, air pollution is associated with approximately:
 - 3,300 new asthma cases
 - 1,400 coronary hear disease diagnoses
 - 300 lung cancer cases
 - 1,000 strokes.

Economic Impacts:

Healthcare costs: Reducing air pollution to meet WHO guidelines could lead to an estimated £3.2 billion in economic benefits over 20 years for the region, through decreased healthcare and social care demands, and improved productivity.

Environmental Impacts:

Air quality levels: All local authorities within the WMCA exceed WHO guidelines, which are more stringent than UK government limits, for nitrogen dioxide (NO₂) and particulate matter (PM_{2.5}), indicating widespread air quality issues.

Pollutants in the West Midlands

The main pollutants of concern in the West Midlands are nitrogen dioxide (NO₂), particulate matter (PM₁₀, PM_{2.5}), and ground level ozone (O3).



Most NO_2 emissions (82%) come from road transport.



Combustion from residential, industrial, agricultural and commercial processes is the primary source of $PM_{2.5.}$ Domestic combustion is the primary source of PM_{10} , followed closely by production processes and road transport.

Air quality in the West Midlands: impact is not felt evenly by people across the region

The UK Government Department for Environment Food and Rural Affairs (Defra) provides air pollution estimates of pollution concentrations at 1km resolution. When averaged to ward level, this data shows annual average $PM_{2.5}$ levels in 72 of the 192 wards within the West Midlands exceed 10 μg m-3l. This equates to 1.2m people or ca. 40% of the West Midlands' population.

The highest annual average PM_{2.5} concentrations in the West Midlands are modelled in central Birmingham, Coventry, Sandwell and Walsall. The least advantaged areas (highest Indices of Multiple Deprivation – IMD - score) tend to have the worst air quality. This is because areas with the highest IMD tend to be those with the busiest roads and industrial sources.



Modelled 2021 annual average concentrations of PM_{2.5} (left) and NO₂ (right) in the West Midlands. Provided by WM-Air modelling.

Public understanding of issues around air quality

The Environment Team holds a six-monthly survey, from a representative sample of the West Midlands population, to understand attitudes on environmental and net zero issues. The most recent survey indicates the following from 2,000 interviews:

- 70% of respondents indicated a level of concern about how clean the air is.
- Only 20% rated the air quality where they live as very good/good.
- 17% felt air quality had got worse over the last year. Only 9% thought air quality had got better.
- In general, residents felt they already did many of the actions related to improving air quality: 71% ventilated the kitchen when they cook, 64% turn off car engine when stationary; just over 40% close windows to avoid pollution or chose alternative walking/cycling routes to avoid pollution.
- The main sources of air pollution were seen to be pollution from industry (32%), lorries/vans (30%), and private cars (20%).



Ranked sources of air pollution (%)



Actions to improve air quality (%)



West Midlands air quality stakeholder activity

Local authorities

Most of the region's local authorities have **Air Quality Management Areas (AQMAs)** and associated **Air Quality Action Plans,** except for Solihull, which does not have an AQMA and therefore has an **Air Quality Strategy.**

Local authorities are the main statutory bodies for tackling air quality and delivery at the local authority level includes pollutant monitoring, behaviour change, planning policies, transport and traffic management, active travel promotion, and industry and commerce engagement.

WM-Air

The West Midlands Air Quality Improvement Programme -

WM-Air was a Natural Environment Research Council funded initiative, led by the University of Birmingham, that worked in collaboration with over 20 partners across the region, to apply environmental science expertise to support the improvement of air quality, and associated health, environmental and economic benefits, across the West Midlands.

The WM-Air project was instrumental in providing support to the WMCA in developing a **Regional Air Quality Framework** through the provision of an initial 'options paper'. The data and modelling around air quality, and its health impacts, were also fundamental in making the case to take action and secure funding. The WMCA is continuing to work with the University of Birmingham, following the end of WM-Air, through the development of stretch targets for the region.

WMCA activity

The WMCA does not act within any formal air quality role currently, however, there are many benefits in leading and assisting on air quality coordination for the region. Working alongside local authorities and key partners, the WMCA produced a **Regional Air Quality Framework** which was approved by WMCA Board in November 2023. This, with its accompanying 2-year implementation plan, outlines priorities for tackling air quality at regional scale, working with stakeholders across the following themes:

- Monitoring and Digital Engagement
- Air Quality Communications
- Schools
- General Air Quality Engagement and Behaviour Change
- Dedicated Engagement and Behaviour Change Package for Domestic Combustion
- Net Zero and Retrofit
- Planning and Air Quality Assessment
- Natural Environment
- Research
- Significant standalone projects (including transport)

In 2023, the WMCA was granted over £1million in funding from Defra and MHCLG to implement a region wide air quality sensor network of 90 sensors, deliver 7 behaviour change trials, organise community outreach events and coordinate a regional approach to communicating air quality.

Delivery Activit

Summary of WMCA delivery activity

In 2023, the WMCA secured £1m of Defra funding, through its air quality grant scheme. This was later supplemented with £500k from MHCLG to support the rollout of air quality sensors across the West Midlands region.

The aim of the project was to highlight the impact of PM_{2.5} on health for West Midlands people and communities, as well as to provide people and businesses with tools to help reduce that impact. A summary of deliverables is highlighted below:



90 low-cost sensors have been installed across the West Midlands region, working closely with local authorities. This is now the largest regional sensor network outside London. In addition, 3 reference sensors have been procured to support the network.

7 behaviour change trials have been completed (one in each local authority), looking at different ways to communicate and manage air pollution issues with a view to scaling and replicating the most effective campaigns.



The University of Birmingham has supported data gathered from the network, as well as understanding **'hot spots'** identified through previous modelling work.

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A dedicated air quality platform has been launched for people to understand the air quality in their area. This will be supplemented with a forecast and alert system paid for by WMCA.



We worked with a local artist an community groups to develop an **air quality art exhibition** that toured the region to support conversations with people about air quality. In addition, an **air quality literacy programme** has been developed to engage and support policymakers.

Air quality sensor network

The West Midlands region-wide sensor network was launched at the end of January 2025 and is made up of 90 sensors. The network focuses on the monitoring of $PM_{2.5}$ concentrations for a minimum period of five years and provides us with near real time data.

The network will aid in providing greater spatial resolution on air pollutant concentrations, helping WMCA and local authorities to gain a greater understanding of air quality within the region, at the same time providing the public with easily accessible information on concentrations through a public-facing data platform.

The data platform is hosted on the new WM air quality website, which also provides wider air quality information to the public and regional partners, helping to raise awareness on how to reduce pollutant concentrations and personal exposure.

Scan the QR code or visit https://cleanair.wmca.org.uk



Now the website is live we have started to develop a roadmap on future additions and updates. This includes the potential to add sensors and monitors hosted externally from the WMCA to be integrated into the platform.



Defra project: behaviour change trials

WMCA commissioned WSP and the Behaviouralist to develop behaviour change trials in each local authority to investigate the best ways we might change behaviours to reduce $PM_{2.5}$ concentrations, as well as personal exposure. As air pollution can be a difficult and complex topic for people, a range of trials was put in place to test what worked, and which best suited the regional needs, before we look to scale. This has the best chance of ensuring both value for money and highest possible impact.

Trials were co-designed with local authorities and all seven contributed to answering these questions:

- Identify what type of behavioural change campaigns have a scalable and demonstrable impact.
- Identify what interventions are likely to result in the largest impact to public health.



Across all seven trials we engaged with a total of 2,731 residents. The demographic information for everyone who was engaged in the trials is as follows:

Questions were asked within each trial to assess participants' understanding and perception of air quality before and after the intervention. The graphs below show how understanding and perception improved at a regional level. The responses are a percentage share of those that responded to survey questions in each trial. The total number of responses varies per question.



"If you can't see air pollution then it's not that bad"



"It is important to take steps to improve air quality"



"Improving air quality should be a high priority for my local council"



"Air quality can significantly impact people's health"



Trial outcomes

Wolverhampton: Reducing idling in commercial vehicles at construction sites

Trial: We worked with a housing developer to reduce idling of construction machinery on small to medium sized construction sites.

Findings:

- A 20% reduction in idling was recorded during the trial period.
- **Myth-first messaging** was effective at **debunking** idling myths.
- The most effective intervention message for management was about **cost-savings.** The most effective intervention message for workers was about **health impacts.**



Coventry: Monitoring air quality in homes with wood burning stoves

Trial: Installed low-cost sensors in homes with log burners / open fires to monitor pollution levels and provide advice on reducing pollution.

- Having the monitors **increased awareness** about indoor air quality but also led people to conclude that their wood burning stove use had relatively little impact compared to other household activities, such as cooking.
- No participants had made, or planned to make, any significant behaviour changes. Instead, the trial reinforced current behaviours.
- While the monitors and information sheet were perceived as clear and helpful, these interventions were **insufficient** to trigger behavioural change related to stove use.



Trial outcomes

Dudley: Encouraging modal shift in park groups

Trial: Encouraging sustainable travel behaviours among council park groups through peer-led surveys, social norms, financial incentives, and personal goal setting.

Findings:

- **Social norming** (working as a team) was the most effective mechanism at encouraging **behaviour change**.
- Participants were motivated by not wanting to let down their team and by encouragement from team members.
- **Convenience** is the primary factor motivating car use. Attitudes, perception and knowledge of air quality were low in this group.
- Most participants stated they were likely/very likely to continue using active travel modes.



Sandwell: Smoke Control Area Messaging

Trial: A survey-based experiment to test the framing of information on the Smoke Control Area.

- Compliance framing was most effective at changing people's attitudes.
- People in compliance framing were more likely to perceive the Smoke Control Area as positive.
- Both compliance and health framing were effective at improving people's knowledge.
- Neither message was effective at changing people's behaviour.



Trial outcomes

Walsall: Measuring daily exposure to air pollution

Trial: Used low-cost sensors to capture the average person's exposure to pollutants across their day and to provide tailored advice on the best ways to mitigate their exposure through practical and actionable advice.

Findings:

• Carrying an air quality sensor made participants more aware of the topic of air quality and all participants stated they have made behavioural changes to minimise their exposure to air pollution following the trial.



Birmingham: Debunking air quality myths

Trial: Assessed which myth-busting approach was most effective at improving people's knowledge about air quality through a survey-based experiment.

- Myth followed by fact approach is effective at improving people's knowledge about air quality.
- Short, punchy bullet point statements resonate better with readers.
- People want to know upfront what actions they can take to reduce or avoid emissions. Future approaches to communications will take a myth-first approach and keep information concise.



Solihull: Engaging with people with pre-existing respiratory conditions

Trial: Worked with pharmacists to disseminate information on air quality to patients with pre-existing health conditions.

- Participants **engaged with pharmacists in a face-to-face setting** and were interested in talking about air quality.
- The flyers alone were **not effective at** motivating people to find out more about air quality. Only one recipient chose to scan the QR code to find out more.
- People with pre-existing health conditions generally had better knowledge and awareness of the impacts of air quality compared with others.





Engagement and communications

Air quality art competition

A key part of delivery has involved engaging people to raise awareness on what air quality is in the context of the West Midlands, as well as promoting the data platform and website. This part of the project was delivered through workshops held with local community groups and facilitated by artists, an art competition (winner opposite top), a pop stand stall in public spaces to exhibit art pieces, and attendance at community events.

People who visited the stall in public spaces were asked 'how they felt' and 'what they wanted to do' after viewing the exhibition. Findings from these questions will be analysed to see what the impact of the pop ups were on people's awareness of air pollution.

We have also delivered school workshops and launched a Small Sparks Fund for community groups to apply for funding for new ideas on raising awareness around air pollution.

A new air quality communications toolkit has also been launched along with specific toolkits for the NHS and schools to promote the air quality sensor network.

The toolkit and assets can be downloaded from **cleanair.wmca.org.uk**/





A sample of communication toolkit assets



Stop burning garden or building material waste.

Use your council collection service or dispose of in the correct way. Burning waste releases harmful pollution into the air. Do your part for the community: avoid burning waste to reduce air pollution. The air isn't going to clean itself.

Avoid using log burners.

In an hour, wood burning produced the same amount of harmful PM2.5 pollution as six HGVs. A cosy log fire or clean breathable air? Keep the log burner off this winter.



Stop idling your car.

Idling your engine for 60 seconds creates enough toxic air to fill 150 balloons! Up to 2300 people die prematurely each year due to long term exposure to por air quality, turn your engine of

Keep your car serviced.

Up to 2300 people die prematurely each year due to long term exposure to poor air quality. One action you can take to reduce your cars emissions is to make sure your car is serviced each year, and keep your tyres correctly inflated. This is just one way of reducing harmful emissions.



Air quality literacy training

We've created the Air Quality Literacy Training to support councillors, local authority officers and professionals within the West Midlands to understand more about air quality in our region.

The training has been created by the WMCA with contribution from WM-Air, funded by Defra's Clean Air Grant. The training has been certified by the CPD Certification Service.

What's included in the course?

The course is split into three e-learning modules, that you can complete at your own pace covering:

Module 1 - Introduction to air quality

- Common air pollutants
- Health Impacts
- Air pollution and inequality

Module 2 - Air quality at a regional and local level

- Regulations and standards
- What is happening locally
- Monitoring
- Air quality and net zero

Module 3 - How we can improve air quality and the benefits of clean air

- Air quality planning and policy
- Community engagement and communications
- Case studies

What do I achieve upon completing the course?

Once you have completed the three modules, you can take the assessment and if you pass you will be issued with an Air Quality Literate digital badge, that you can display in your email signature or via LinkedIn. You will also receive a certificate from the CPD Certification Service and can use the hours towards your CPD portfolio or system.

You can access the training here https://wmca.org.uk/air-quality-literacy-training

Air Quality Literacy Training

Improve your knowledge of air quality in the West Midlands

West Midlands Combined Authority



Stakeholder delivery activity

In addition to the delivery of the WMCA's Defra project activity, stakeholders across the region continue to deliver a wide variety of initiatives to improve air quality.

The University of Birmingham are a key partner in the delivery of the air quality work by the WMCA. As part of the Defra project, they have been responsible for multiple project outputs including:

- Deployment of a mobile air quality supersite to explore potential 'hotspots' in the region. Hotspots were identified by air quality modelling undertaken by the university.
- Quarterly commentary from Birmingham Air Quality Supersite (BAQS). This work has included providing a quarterly overview of the meteorological parameters (temperature and wind speed) and key pollutants (O3, NO₂, PM₂.₅) observed at BAQS every three months from December 2024 to February 2025. Once all data has been collected and analysed, results will be presented on the West Midland Air Quality website.

Local groups and campaigners have an important role to play in driving cleaner air policy and delivery across the region. Their work ranges from lobbying government to delivering awareness raising campaigns. Below are just a few of the important community groups and organisations working across the West Midlands.

Asthma + Lung UK have campaigned in the West Midlands to ensure local authorities and the WMCA prioritise improving air quality across the region. They also offer helplines, support groups and resource on various aspects of lung health, as well as working with communities.

Mums for Lungs was started by mums on maternity leave but has grown to become a network for everyone, and they campaign to make cleaner air for all.

The **Birmingham Healthy Air Coalition**, facilitated by The Active Wellbeing, society brings together like-minded organisations, campaigners and a range of professions and backgrounds to advocate for equity in air quality as a social justice matter.









Birmingham City Council

Project Title: Birmingham Schools' Air Quality Monitoring Programme

Objectives: to enhance air quality around schools in Birmingham, raise awareness about air pollution, and engage students, teachers, and the wider community in understanding how positive behaviour change can improve air quality.

Delivery:

Poor air quality is the largest environmental health risk in Birmingham, particularly affecting vulnerable groups like children, making it a key social justice issue.



- Pledge 2 of the Brum Breathes Clean Air Strategy focuses on improving air quality around schools, educating the public on the causes of pollution, and taking steps to reduce exposure.
- Schools in Birmingham have been provided with free real-time air quality sensors that monitor nitrogen dioxide and particulate matter levels for two years. Phase 1 began in January 2022, with 68 schools receiving sensors. Phase 2, started in February 2025, and will see 376 sensors installed across the city. Schools will also receive signage and access to online resources.
- 30 schools in areas with high pollution will receive higher-specification sensors, providing more detailed data on exposure levels.
- Schools receive a free app to access real-time data, a personalised monthly air quality report, and a resource pack to integrate the data into the curriculum. The revenue costs are funded by the Transport and Environment Clean Air Zone Programme.



Sandwell Metropolitan Borough Council

Project Title: Auntie Duck – Air Quality Education Programme.

Objectives: to help Key Stage 2 children (primarily children age 7 to 9) to understand the complex topic of air pollution through the medium of storytelling.

Delivery: The programme was launched in June 2024 and centres around the 'Auntie Duck' storybook, written by the Dog, Duck and Cat Charitable Trust with advice from Sandwell's Air Quality Officers. The resource pack has been designed to make it simple for teachers, parents and guardians to use, and does not require any prior knowledge of air pollution to teach or share with children. The book can be accessed for free online, and a printed copy of the book and resource pack is available to to all primary schools in Sandwell, including lesson plans aligned with Key Stage 2 of the National Curriculum, worksheets and activities designed to consolidate children's learning.



- Events are being delivered by the Air Quality and Climate Change Engagement Officer, and uptake is increasing as more schools become aware of the offer.
- Book readings have also taken place on the children's ward at Sandwell General Hospital, and at several of Sandwell's libraries.
- Schools are using the Auntie Duck programme to complement their science and geography teaching. So far over 25% of primary schools in Sandwell have requested the Auntie Duck resource pack and 800 children have attended an Auntie Duck book reading or workshop. The aim is that 80% of schools will have engaged with the book and resources by the summer of 2026.



AT Quality Framework Next steps

West Midlands Air Quality Framework and Framework Group

The WMCA Board approved the Air Quality Framework in November 2023 after it was developed in collaboration with key stakeholders including the seven constituent local authorities. The Framework sets out actions the WMCA, in collaboration with regional partners, could undertake to improve air quality across the region, building on the work local authorities currently deliver. The Air Quality Framework Implementation Plan sets out actions which should be prioritised for delivery between 2024 – 2026. The Framework and Implementation Plan are available on the resources section of https://cleanair.wmca.org.uk/

An Air Quality Framework Delivery Group has also been set up to help strategically and collaboratively align air quality work in the region, including prioritised Framework actions which were granted funding by the WMCA board.

Task and finish groups have been set up, with key representatives from regional stakeholders, to deliver these Framework actions which include an air quality schools project, air quality planning guidance, an air quality forecast and alert system, and a feasibility study into stretch targets for the West Midlands region.



Priority activities for 2025 and 2026

WMCA and partners will:

Launch an air quality alert system



WMCA will be launching an air quality alert system in autumn 2025, to help people within the West Midlands better understand daily air quality concentrations and provide advice on how to reduce personal exposure and reduce emissions during heightened air pollutant events. The forecast and ability to sign up to the alert system will be hosted on the WM air quality data platform **cleanair.wmca.org.uk** Produce planning guidance



WMCA will work with local authorities to produce relevant planning guidance that can be used. The initial focus of this work will be an air quality planning guidance document, which can be adopted by all constituent local authorities within the WMCA region to ensure air quality is consistently and adequately considered within the planning process across the region.

Produce an air quality schools toolkit



WMCA is working with a task and finish group to deliver a consistent regional schools engagement programme across the West Midlands, with flexibility to account for variations across the area (such as city vs suburban locations). In its first phase this will include funding the rollout of an Auntie Duck book produced by Sandwell Metropolitan Borough Council and producing an air quality schools toolkit that will be linked to the national curriculum to support educators in delivering the content.

Identify regional air quality stretch targets



WMCA is working with the University of Birmingham to investigate the potential to set further air quality "stretch" targets for the West Midlands, reflecting policy ambitions for the protection of health. Once identified and agreed upon by the WMCA Air Quality Framework Delivery Group, work will be done to seek regional adoption of the stretch target.

Continue to work with UK Government on devolution opportunities



WMCA will continue to work with Defra to identify opportunities for devolution and funding to the region.





Scan the QR code above to visit our webpage for resources and more information

cleanair.wmca.org.uk | **email:** environment@wmca.org.uk



