

Leeds Air Quality Strategy Report 2024

Date: 13th March 2024

Report of: Director of Communities, Housing & Environment

Report to: Executive Board

Will the decision be open for call in? Yes No

Does the report contain confidential or exempt information? Yes No

Brief summary

The 2021-30 Air Quality Strategy was approved to ensure that Leeds would embed continuous improvement of Air Quality beyond legal compliance. The Strategy brought into scope harmful pollutants from sources in addition to transport related emissions for targeted action and determined the Council's approach to emissions including those in the home, as well as from Industry, Domestic and Agricultural activities. Data shows that air quality is continuing to improve across the city, with measure such as changes to the transport system and modal shift as well as continued uptake of zero emission vehicles contributing to this improvement.

Whilst transport is a significant contributor to poor air quality, it is not the only contributing factor, internal or indoor air quality is increasingly being identified as having a significant impact on health outcomes. Internal air pollution can come from sources of external pollution entering a property, but also come from sources within the home, workplace, or public structure. Significantly we spend around 80% of our time indoors and as such exposure to pollutants in that setting is therefore critical. However, we have limited influence over building interiors and the activities carried out within them, as such outside of our own estate, we must focus on raising awareness of the issue.

Reducing emissions and improving air quality directly contributes to two strands of the Best City Ambition: Health and Well-Being and Zero Carbon and can also be linked to Inclusive Growth. Measures that improve air quality usually have a positive carbon reduction impact, whilst improved air quality means 'healthier' air which provides better health outcomes that can improve an individual's work or educational prospects. Accordingly, actions delivered under this strategy support the full breadth of the council's Best City Ambition. Close working with Public Health Leeds is also a vital element of the Air Quality Strategy.

This report updates Executive Board on the actions taken, and their impacts, as targeted by the strategy, including projects to both mitigate the sources of pollution as well as raise awareness of sources and exposure to air pollution. This report does not intend to replicate the full data reporting of monitored sites the council's Environmental Health team capture, as this is covered fully in the Annual Status Report 2023, with a [summary](#) of this available on line and the full report included as an appendix.

Recommendations

Executive Board is requested to.

- a) Note the current air quality data and the historical trends that show improvement and healthier air in the city.
- b) Note the work that has been undertaken to ensure delivery on the 2021-2030 Air Quality Strategy.
- c) Approve the council's position pursuant to the new World Health Organisation's air quality guidelines.
- d) Support the continuing multi-stakeholder collaborative approach across the city and region for action to address the direct impact of air pollution on health, such as the work of the Air Pollution Health Group.
- e) To note that the Chief Officer, Climate, Energy & Green Spaces, and the Director of Public Health will be responsible for any actions arising and subsequent implementation

What is this report about?

1. This report will set out to highlight the work undertaken in Leeds to both improve air quality through mitigation projects, raise awareness of the issue through communication and engagement as well as show how we develop greater understanding of the sources of air pollution through improved monitoring and engagement with academics and research groups on the issue. This therefore updates on the existing Air Quality Strategy as well as highlights the actions being undertaken to improve air quality as agreed in the September 2023 White Paper Motion that highlighted the right to clean air for Leeds Citizens.
2. This report will review progress against the actions identified in the Strategy as well as consider the changes in national and international targets for air quality improvement. It also covers the current trends in local air quality data and highlights work undertaken to target key sources of air pollution.
3. The Leeds Air Quality Strategy 2021-30 committed to meet the World Health Organisation (WHO) air quality targets as they were at the time of its drafting. The council remains committed to those targets and aims to improve upon them, however, the WHO targets have since been changed with their objectives becoming significantly more challenging/ This has been noted by the Chief Medical Officer (CMO) who states, "*With current measures, outdoor concentrations of PM2.5 are anticipated to further decline in the coming decades, although improvements will inevitably begin to slow, reflecting that many of the largest and most readily abated sources have already been addressed. What is left is a diverse mix of sometimes diffuse emissions, many of which have a more limited scope for reduction.*"
4. Leeds City Council has long acknowledged that there are no truly safe levels of air pollution and closely follows the emerging evidence and advice from the World Health Organisation and other respected bodies. The Director of Public Health states that; 'Poor air quality is the largest environmental risk to public health in the UK. Long-term exposure to air pollution can cause chronic conditions such as cardiovascular and respiratory diseases as well as lung cancer, leading to reduced life expectancy. Air pollution isn't just about the outdoor world, there are a number of sources of indoor air pollutants that can harm health. Although air pollution can be harmful to everyone, some people are more affected because they live in a polluted area, are exposed to higher levels of air pollution in their day-to-day lives or are more susceptible to health problems caused by air pollution. The most vulnerable face all of

these disadvantages. Improving air quality is crucial to reduce the impacts on health and help people live longer, healthier lives. The greatest impact will be achieved by working collaboratively, taking a strategic approach involving a combination of legislative, policy, behavioural and technological interventions. The Director of Public Health and LCC public health team are committed to working together on this important issue. ‘

5. Leeds has taken steps to protect health and save lives by improving air quality and working with partners to reduce people's exposure to pollution. Data shows a clear long-term trend of falling pollution levels and reducing exposure across the city. The council has a reputation as a leading local authority on this issue.
6. **The council therefore welcomes the updated WHO air quality guidelines and believes that they should be formally adopted as an ambition for the whole city to work towards.**
7. Adopting this ambition would be consistent with the vision of the Leeds Air Quality Strategy. Actions that reduce the health harms of pollution can have economic and environmental, as well as health benefits and would support Leeds Best City Ambition.
8. Studies indicate that most of the particulate population remaining in UK cities like Leeds is generated from outside of local boundaries.
9. **The council notes that while it can take decisions that further reduce pollutant emissions from within the city boundary, which will protect lives and support this ambition, the potential impact of authority-led action is limited.**
10. Successfully achieving the updated WHO guidelines ultimately depends on decisions that will be taken nationally and internationally, which Leeds can only seek to influence.
11. The council will continue to lead by example on this issue, taking further action to protect residents from pollution with the powers and resources available to us, as well as engaging regional and national policy makers to make further and faster progress possible.
12. As well as the WHO guideline air quality targets being changed, our national government have also made changes to UK air quality targets since the 2021 strategy was approved and published. These targets are mandatory for English Local Authorities, and we aim to continuously go beyond compliance with these.
13. The table below details the UK and WHO guidelines for air quality values. The 2021-30 Air Quality Strategy targeted compliance with both national and WHO guideline values as part of its overarching objective of continuous improvement of air quality. As above the updated WHO targets are significantly more stringent and rely upon international and national actions beyond the scope of local action alone. The target measurements below are annual average measurements.

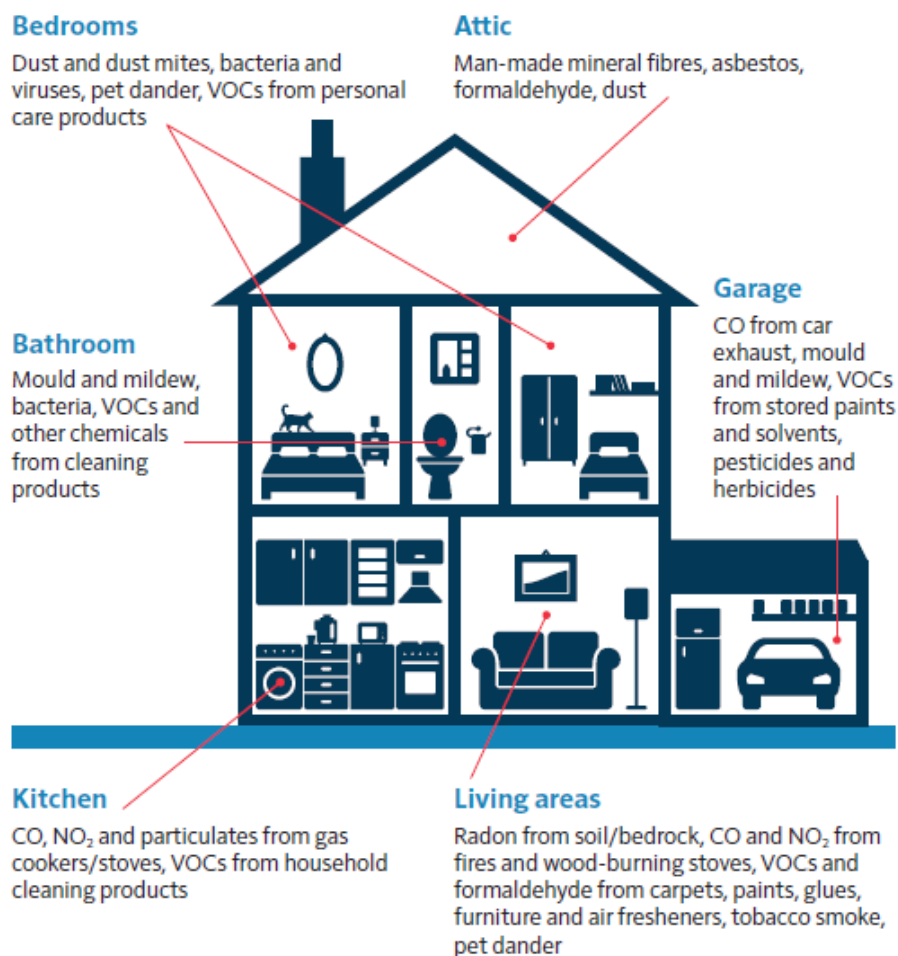
	Current UK limit values	New PM 2.5 target 2040	Pre-existing WHO guidelines	Updated WHO guidelines
PM 2.5 µg/m3 (annual mean)	20	10	10	5
PM 10 µg/m3 (annual mean)	40		20	15
NO2 µg/m3 (annual mean)	40		40	10

14. Whilst there is no ‘safe’ level of air pollution, the improvement curve of air pollutants will at best plateau at above zero due to the presence of naturally caused pollutants as well as transboundary particles that may travel across regions and national boundaries. As the Chief Medical Officer notes, *“In the long-term however, PM2.5 must inevitably reach a non-zero plateau in concentration that cannot be practically reduced further through reasonable technical or policy interventions”*. This means that longer-term, health gains will increasingly

need to come from changes that reduce exposure to air pollution as the potential to reduce air pollution necessarily decreases.

15. Leeds air quality is consistently improving and remains compliant with national air quality standards, though air quality monitoring is typically based on external measurements rather than internal monitoring, so data will largely provide a picture of external air quality, rather than that inside homes, workplaces and other locations in which people spend time inside. Outdoor air quality, however, provides a baseline for the air quality that will be exposed to. In the absence of air purification, air pollution will not necessarily be better indoors than the outdoor surroundings — but can be worse due to indoor contributions. Thus, improving outdoor air quality will help reduce exposure indoors as well as out.
16. Outdoor air quality improvements have been delivered in large part due to significant fleet change in the city. The majority of buses and heavy goods vehicles now use at minimum cleaner Euro VI engines with a growing number of the bus fleet in the city transitioning to electric. Ultra-low emission vehicles (electric, hybrid, hydrogen or liquid petroleum gas) are also surging in popularity among Leeds residents and businesses, having doubled in number in the last year alone, with over 50,000 registered plug-in vehicles in the city according to government data.
17. The data and detail of Leeds air quality can be reviewed through the 2023 Annual Status Report submitted to the Department for Environment, Food and Rural Affairs (DEFRA), with data also included in the Appendix document. What is critical however is that the data does show that Leeds has been compliant with UK air quality targets and that there is a clear and demonstrable trend of improving air quality over the last decade, with recorded NO₂ at the two DEFRA affiliated Automatic Urban and Rural Network (AURN) monitors showing long term compliance and historical improvement.
18. This demonstrates that except for the Bishopgate Street location we have been compliant with air quality standards across the city. Bishopgate is not an area in which government would determine non-compliance due to its non-residential nature, and as such DEFRA would not view higher readings here as exceedances of national targets. However, it should be noted that changes to the city centre layout are indicating that significant air quality improvements are being seen in this area due to traffic re-direction, changes in fleet emissions and changing transport behaviours.
19. Changes to the transport system will continue to be critical to the ongoing improvement in transport-based air pollution, with modal shift, re-prioritisation and transition to zero emission at tailpipe vehicles all playing key roles in improvement in kerbside air quality.
20. Particulate matter (PM)₁₀ and 2.5 monitoring data shows ongoing compliance with air quality objectives in the UK. A pollution episode that occurred in March 2022 was due to calm weather conditions, stagnant air and low wind speeds, plus air being drawn in from Europe carrying Saharan dust which reached the UK – leading to the peaks in March that can be seen across the 2022 data (see Appendix). Annual averages – which is what national and WHO targets are based on, however demonstrate that Leeds remains compliant with UK targets for air quality.
21. In 2019, 5 of the 6 Air Quality Management Areas (AQMAs) were measured with pollution levels within the UK objectives. These 5 AQMA's are in Chapel Hill, Morley, 'The Normans' in Kirkstall, Caspar Apartments in Leeds City Centre, the Tilbury's just off the M621 and Ebor Gardens in Burmantofts. This continued improvement in air quality means that the Environmental Health service are now undertaking a consultation on the process of revoking the AQMA status at these five locations in Leeds. A separate report will be undertaken as part of that process of revocation.

22. In many UK locations, outdoor air quality can be better than the air found in indoor spaces, so increasing ventilation and allowing the ingress of outdoor air brings net benefits, not harms. Many of the most impactful pollutants outdoors are also found indoors, notably PM_{2.5} and NO₂ while indoor areas *can* experience higher concentrations of certain classes of pollutant that accumulate due to indoor sources. It is challenging to generalise about trends or projections for indoor air quality as it can be highly variable between buildings and is controlled to a great extent by the actions and behaviours of the building's occupants and the variance in heating, cooking or cooling mechanisms, or impact from other activities carried out.
23. The following image illustrates the typical sources and locations of household air pollutants, typically sources are from heating and cooking as well as cleaning or aerosol products as well as from household furnishings and background/natural sources.



Source: Copyright © 2016 Royal College of Physicians (2016).³ Adapted with permission

24. In contrast to the air outdoors, inside a home-owner's dwelling, the inhabitants have more control over the indoor air, through their behaviours and choices about products and building ventilation. As such advice on how to best manage indoor air quality and health is required, such as the impact on managing mould through active ventilation.
25. It is therefore important that as we develop greater understanding of indoor air pollution sources and how to mitigate them, we work to update our communications and engagement on this and provide new and more comprehensive advice to the citizens of Leeds.
26. Decarbonising homes through better insulation and the adoption of heat pumps, solar, and direct electric heating/cooking, removes significant combustion sources of air pollution from the home. Alternatives being considered, such as combustion of hydrogen or biogas methane in place of fossil methane, retains emissions of NO_x and particulates due to the presence of burning/combustion.

27. We are working with colleagues in the health sector to seek to raise awareness of the sources of air pollution and the impact of it with the health sector and more broadly across the public domain. This work is also aiming to encourage sharing of advice to assist patients and the public to find ways in which they can reduce exposure to air pollution, especially among the most vulnerable. More information is included on this in the appendices.
28. The work we have undertaken across a range of areas is detailed in the Appendix but can be summarised across these key themes.
- **Transport** – work to reduce emissions through transition to lower or zero-tailpipe emission vehicles and shifts in travel behaviours towards active travel and public transport use. This includes working on our own fleet, supporting the transition of private vehicles through development of electric vehicle charging infrastructure, working to deliver the infrastructure required for cycling and walking and supporting modal shift in line with the Connecting Leeds Strategy.
 - **Public Health** – The current position of Public Health on Air Quality is that it remains the largest environmental health risk in the UK and that there are no safe levels of the main pollutants of concern (NO₂ and PM). In line with the CMO's recommendations it is recognised that there is a clear role for public health action to reduce exposure and contributions to indoor and outdoor pollution. The Leeds Air Pollution and Health Group (LAPHG) is a citywide multi-agency partnership involving partners from Environmental health, NHS, Housing, Highways and Transportation, University of Leeds, Climate Energy & Green Spaces and is accountable to the Leeds Health Protection Board and Leeds Health and Wellbeing Board. LAPHG are working across these partners in health care provision and prevention to raise awareness of the critical links between air pollution, exposure, and ill-health. We have worked to deliver training to health professionals, developed the Air Quality Alert system, improved public health messaging, and supported the delivery of the Health Needs Assessment that targets the approach to addressing the health inequalities exacerbated by air pollution in Leeds.
 - **Air Quality Monitoring** – Developing the approach to measuring air quality across the city through collaborative working with the Combined Authority and academics to build and ever more in-depth picture of air pollution sources, trends and impacts. This also include providing greater access to air quality data to the public and informs better understanding of where work on air pollution and reducing exposure can be targeted.
 - **Domestic Energy, Insulation & Cooking** – Linked to the work to decarbonise homes and workplaces, improving the insulation, and improving the sources of heating can have a positive impact on the air pollution created by heating. Either by reducing the amount of energy burnt when homes are more efficient, to providing lower carbon heat sources, such as heat pumps, or district heat connections can reduce the air pollution from gas boilers. Providing information on the impact of wood burning, the impact of gas cooking and the benefits of switching to low carbon, low emissions sources of heating and cooking will provide opportunities to reduce exposure to indoor air pollution.
 - **Communication & Engagement** – Through working with key stakeholders, from Public Health, organisations such as Asthma+Lung UK, academics, and local and community groups across the city we can build better messaging and advice on both reducing emissions and reducing exposure to air pollution. Work targeting health care professionals, schools and other groups means we can raise awareness of how air quality can be improved.

- **Environmental Health & Planning** – Ongoing assessment of industry, evaluation of new developments and collaborative and consultative work on the Leeds Local Plan Update means that air quality remains a critical consideration in Leeds and part of any decision-making process when building a sustainable city.

Work across these key areas will support the ongoing delivery of improved air quality for the people of Leeds, to ensure we meet our ambitious commitments and ambitions for the city.

What impact will this proposal have?

29 Through ongoing work to deliver the objectives of the Air Quality strategy we aim to continuously improve air pollution levels in the city. An Equality Diversity Cohesion and Integration screening was undertaken when the Strategy was developed, this has been reviewed for this update report and is included as an appendix. Reducing levels of air pollution will enable us to achieve the following objectives:

- To remain legally compliant with emissions of NO₂ and PM, and through further actions that we take we will reduce emissions further as far as possible and take pro-active action to address other harmful emissions.
- To enhance our understanding of and develop further actions to tackle the impact of indoor Air pollution.
- To revoke 5 of the 6 Air Quality Management Areas (AQMAs) in the city and continue work to improve air quality in the remaining AQMA.
- To adopt the new WHO targets for PM_{2.5}, PM₁₀ and NO₂ as ambitions for the city.
- To work citywide, helping to reduce health inequalities.
- To ensure that citizens and other stakeholders are well informed about indoor and outdoor pollutants and how to mitigate exposure and reduce their own contribution.

How does this proposal impact the three pillars of the Best City Ambition?

Health and Wellbeing

Inclusive Growth

Zero Carbon

36 Inclusive Growth: Clean Air supports the Inclusive Growth agenda by addressing health inequalities which can create barriers to work, training, and education. Air Pollution has significant cost to the economy through sickness absence, cost to the NHS and reduced productivity.

37 Health and Wellbeing: It is well documented that poor air quality leads to adverse health outcomes. Any improvement to air quality or limitations to exposure have positive health outcomes.

38 Climate Emergency: Most measures that target reductions in pollution also have a positive carbon reduction impact. For example, meeting compliance with NO₂ limit values was estimated to have achieved a 47,594t carbon saving. Individual measures and projects delivered under the umbrella of the Air Quality will have a carbon impact assessment as part of the business case in order that the benefit is recorded.

What consultation and engagement has taken place?

Wards affected:

Have ward members been consulted?

Yes

No

- 39 Significant consultation and engagement are ongoing across stakeholder groups, from the health sector, environmental health, community groups, activists, academics and ward members in terms of ongoing action to tackle the impacts and causes of air pollution.
- 40 Whilst additional public consultation is not legally required for the purpose of updating on the progress of the Air Quality strategy, given the clear benefits that arise from it, the Council continues to undertake the following:
- Report to the Executive to approve the updated Strategy.
 - Liaison with stakeholder groups in the City.
 - Contact with members of the public and academia.
 - Ongoing Clean Air Leeds messaging and information.
 - Engagement with UK100 on CANZ work (Clean Air Net Zero).
 - Engagement with NGO and Third Sector organisations to understand learnings from research and share best practice.

What are the resource implications?

- 41 Staff in the Climate, Energy & Green Spaces service are responsible for maintaining the delivery of the air quality strategy, with resource and support required across the council to ensure that improvement of air quality and provision of healthy air remains a priority.

What are the key risks and how are they being managed?

- 42 Air Quality is recorded as a risk on the Community, Housing and Environment directorate risk register and is reported on a regular basis. The probability of the risk of breaching air quality limits has been reduced due to Air Quality improvements in the city over the last few years. Ongoing actions such as those described in this report are the mitigating actions to manage the risk. In the unlikely event of breaching the Air Quality Directive requirements, the Council will need to take the necessary steps to ensure that compliance is achieved in the shortest time possible. This is a continuing obligation.
- 43 Central Government may take a decision to make the current legislation tighter in respect of NO₂ emissions. The AQ action plan will review any such changes and update the strategy to ensure the Council can respond positively if any changes occur. We are mitigating against this risk through establishing our own commitments that are more ambitious and seek more rapid improvements than those required by national policy.

What are the legal implications?

- 44 The requirements of the Air Quality Directive have, in 2020, been met by Leeds City Council. It is nonetheless obliged to ensure that compliance is maintained thereafter. The steps outlined in the Air Quality Strategy provides for a non-statutory mechanism to ensure continued compliance and offer improved Air Quality for the citizens of Leeds. Review and updates to the Strategy will maintain Leeds's position in remaining compliant and meeting any future targets.
- 45 There is the need to ensure that our air quality improvements meet governments 2040 targets for compliance, though our own aims require achievement of those targets by 2030.

Options, timescales and measuring success

What other options were considered?

- 46 Option 1: Do nothing. This option was discounted because there are no safe levels of air pollution and continual improvement is required to ensure positive health outcomes for all citizens and visitors to the city. As such it remains prudent to continue to review and evaluate data and update the actions required to deliver on the aims of the strategy as necessary.
- 47 Option 2: remain solely focussed on Transport based emissions at kerbside concentrations of NO₂. This option was discounted because it only focusses on Transport related emissions from specific segments of the fleet and does not consider other sources of air pollution. As evidence increasingly identifies risks from indoor pollutants it is vital that we reflect that in ensuring the strategy is delivered to reflect new understanding of risks and mitigating actions and develop those to improve public awareness.
- 48 Option 3: Review and update the actions delivered in support of the air quality strategy based on developing knowledge, best practice, improved data and changes to national targets.
- 49 Option 3 was selected because it offers a holistic and sustainable approach to tackling a broader range of emissions and exposure.

How will success be measured?

- 50 Progress and outcomes will continue to be measured annually and reported to DEFRA through the Annual Status Report process as well as to the Executive Board. Progress can be measured through data capture through monitoring, but also through evaluation of behaviour change, engagement levels and longer term through measurement of health outcomes.
- 51 Continuing implementation of the Action Plan will sit within the Council's Climate, Energy & Green Spaces service. The service will meet with task owners across the council and externally on a regular basis to track progress and update the plan.
- 52 PM and NO₂ monitoring stations are in place and are being increased in number and proliferation to ensure ongoing NO₂ and PM compliance and to record any changes.
- 53 Diffusion tubes will continue to be utilised at strategic locations around the city. Data from diffusion tubes will inform any required interventions.
- 54 Fleet make-up monitoring via UK Parliament Library PowerBi dashboard that monitors plug-in vehicle registrations by local authority and charge infrastructure
- 55 A reduction in the number of AQMAs with an aim to eventually eradicate all AQMAs.
- 56 Implementation of the Health Needs Assessment Reports recommendations under the guidance of the Leeds Health Protection Board.

What is the timetable and who will be responsible for implementation?

- 57 Implementation of the Air Quality Strategy Action Plan is ongoing. Cross-service engagement to maintain delivery of the actions contained with the Strategy and stakeholders are prepared to update on and review the strategy in line with the HNA and government directives on air quality, as well as responding to new data and evidence from academics.
- 58 The Action Plan will be refreshed every 12 months with a full review being undertaken as part of the update on the strategy.

Appendices

59 Appendix – Air Quality Data and Actions

60 EDCI Screening Document

61 Annual Status Report 2023

Background papers

62 None