

## Air Quality & Climate

Date: 19<sup>th</sup> February 2024

Report of: Chief Officer Climate, Energy and Green Spaces

Report to: Climate Emergency Advisory Committee

Will the decision be open for call in?  Yes  No

Does the report contain confidential or exempt information?  Yes  No

### Brief summary

1. Leeds air quality is consistently improving and remains compliant with national air quality standards.
2. Over the course of the last five years there have been significant improvements in air quality across the city.
3. Ultra-low emission vehicles (such as electric, hybrid) 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 DVLA data, providing both improvements in tailpipe emissions, but also carbon emissions.
4. The full data and detail of Leeds air quality can be reviewed through the 2023 Annual Status Report submitted to DEFRA – link in appendices.
5. There are links between air quality and the aim for net zero, but equally there are differences between ‘greenhouse gasses’ and air pollution and as such measures need to be considered with both local air quality and global decarbonisation outcomes in mind.

### Recommendations

- a) That the report outlining the ongoing work on improving air quality is noted.
- b) That reference is further made to the Annual Status Report 2023 and the forthcoming update report to Executive Board in March 2024.

### What is this report about?

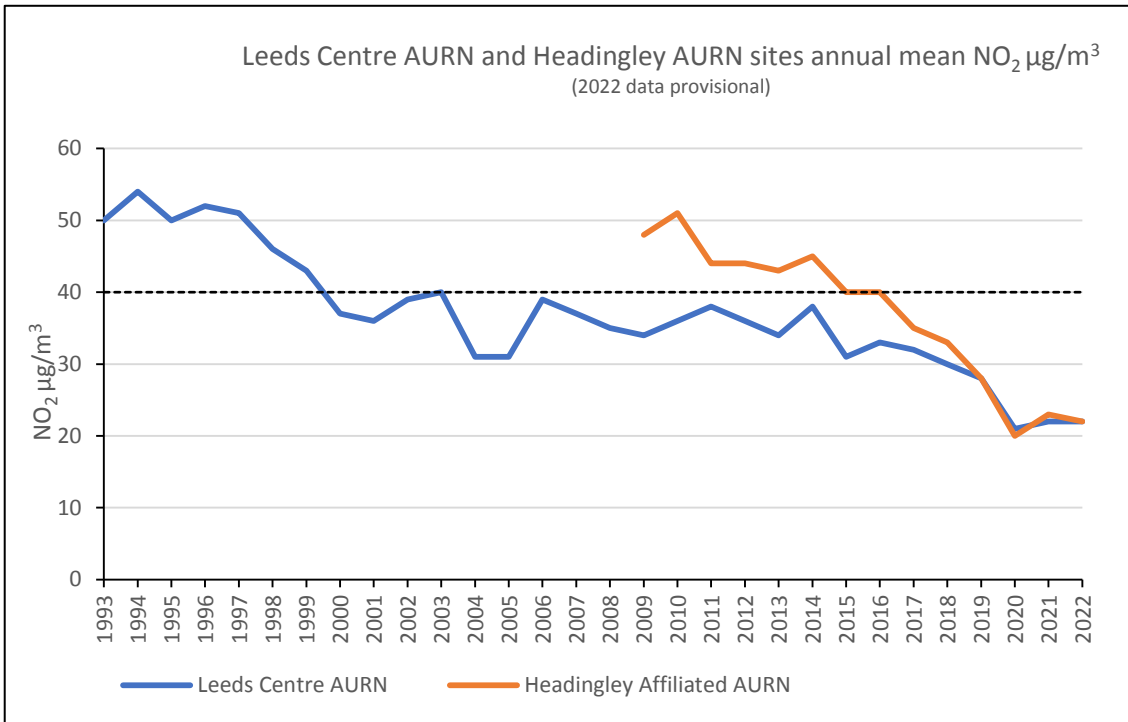
- 1 This report aims to highlight the ongoing monitored improvements in air quality in Leeds and highlight the key areas of work relevant to the alignment between decarbonisation and air pollution.
- 2 This report will aim to clarify the difference between consideration of air pollution and the Climate Emergency related to carbon emissions through the emission of greenhouse gases.

3 This report does not seek to cover the impact on health from air pollution as this is covered across the Health & Wellbeing Strategy at a high level and is also the focus of work of the Public Health service. More detail on this work is also due to be included in the update on the Leeds Air Quality Strategy 2021-2030 through a report to Executive board in March 2024.

**Main Issues**

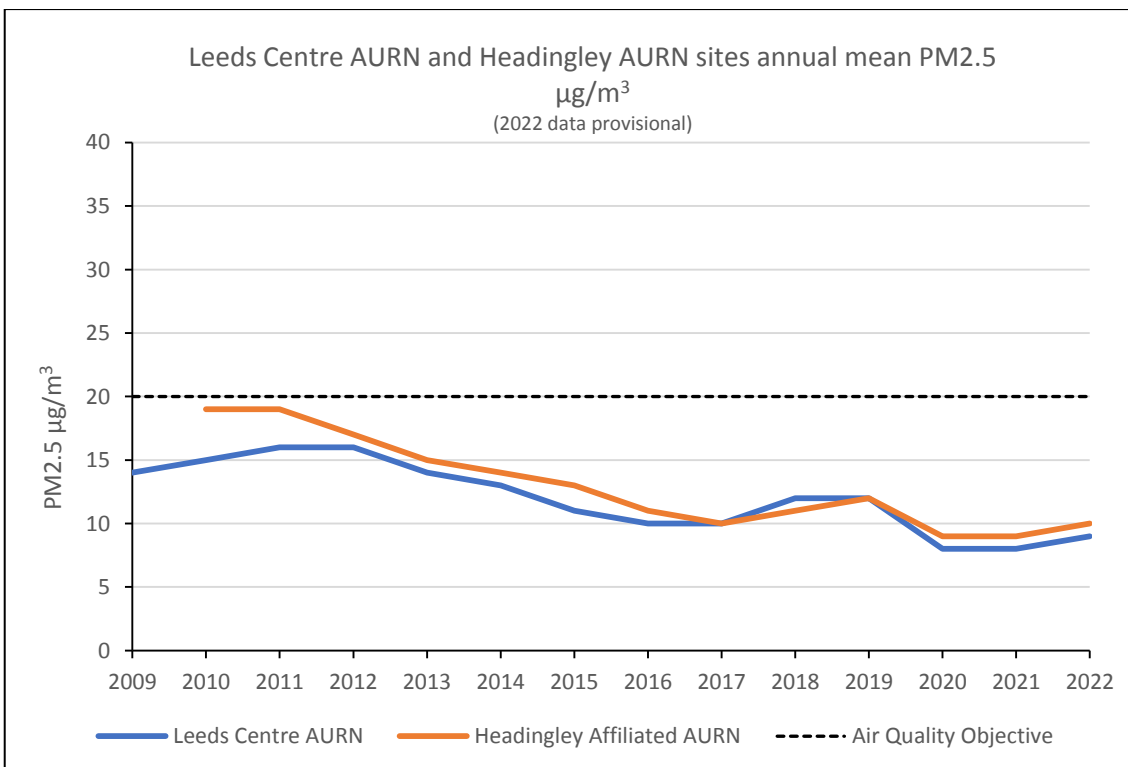
4 Historical analysis best demonstrates the annual improvements in air quality across both NO<sub>2</sub> and PM across the 2 key DEFRA affiliated monitoring stations in the city, also showing compliance on both NO<sub>2</sub> and PM 2.5.

5 Below shows the trends in monitored NO<sub>2</sub> emissions across from 1993 onwards.



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7 Below shows the trends in monitored PM<sub>2.5</sub> emissions across from 2009 onwards



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- 9 Detailed analysis of air quality data can be found with reference to the Annual Status Report 2023 issued to DEFRA, this collates all results from the full inventory of air quality monitors across the city.
- 10 When we refer to 'air pollution' we typically mean the kind of pollutants that we monitor as being present in the air locally, such as NO<sub>x</sub> and Particulate Matter. These are the gases and tiny particles in the air that can cause health impacts. Discussions regarding climate change and the climate emergency are often linked to greenhouse gases, such as carbon emissions. These gases trap heat in the atmosphere, leading to changes in climate patterns, rising sea levels, and other environmental impacts – that can include pollution in the air. While air pollution and global warming are distinct issues, they are often interconnected. Many of the pollutants that cause air pollution also contribute to global warming and vice-versa. For example, climate change will see increasing numbers of wildfires, these in turn create air pollution from the burning with particulate matter being dispersed from such fires.
- 11 Typically, air pollution – especially NO<sub>x</sub> is localised – the concentrations will be linked to the source – such as emissions from vehicles concentrating at kerbside, or emissions from heating or cooking sources concentrating in your home. The sources of greenhouse gases will also be local (as well as global) but the effects are generally accumulative, global and as such are likely to impact beyond your community, whilst still posing a threat to how we live locally, such as with broader impacts on global food production, to local impacts from flooding or other extreme weather events.
- 12 The Air Quality Strategy update to Executive Board will provide a more holistic update on the state of air quality in Leeds, this report aims to focus on the aspects of air quality more relevant to decarbonisation of the city and net zero, rather than the Health & Wellbeing priorities.
- 13 Key Air Quality actions in Leeds that relate to the Climate Emergency response are highlighted in this report, for more detail the Executive Board Report will follow in March.
- 14 Accelerating the city's transition to zero emission vehicles (ZEVs) will reduce both air pollution and greenhouse gas emissions from vehicles overall, although may possibly increase transport-related particulate emissions from tyre and brake wear. It can also save vehicle users money as the running costs and lower fuel costs of plug-in vehicles mean that total cost of ownership of plug-in vehicles is typically lower than that of diesel or petrol vehicles. More than 90% of buses and 80% of heavy goods vehicles now use cleaner Euro VI engines, a huge increase from the 3% of buses and 20% of HGVs that did so in 2016. A growing number of the bus fleet in the city are 100% EV, including those operating from the Stourton Park & Ride site since September 2021 as well as a growing number of those operating from First's Bramley depot which has benefited from ZEBRA funding to install electric vehicle charging infrastructure – with the depot aiming to operate a fully electrified fleet soon.
- 15 More than 3,000 of the city's licensed taxi and private hire cars are now ultra-low emission, up from around 830 in 2018. The consequence of fuel switching, modal shift, and improvements in Internal Combustion Engine technology have therefore resulted in improving air quality trends over time, as well as reducing the carbon emissions from those vehicles.
- 16 In line with the Connecting Leeds Strategy, we are enabling more people to use active travel or public transport through planning and transport policy that both reduces air pollution and greenhouse gas emissions from vehicles as either vehicles are left at home, or shared transport options are utilised. This may also indirectly reduce transport user exposure to pollution as we know drivers and car passengers are more exposed to pollutants than cyclists/pedestrians, therefore as well as active directly improving health through physical activity it can also reduce exposure to pollutants.

- 17 Improving the energy efficiency of buildings will reduce both air pollution and greenhouse gas emissions from buildings because it means less fossil fuel heating is required. It may also improve air quality (especially indoors) and reduce emissions from wood burning if a more efficient home means that people feel a reduced need to burn or burn on fewer days. It will also save building users money both through energy costs, or solid fuel costs.
- 18 Installing low carbon heating like electric radiators, heat pumps, or Leeds PIPES will reduce both air pollution and greenhouse gas emissions from buildings. It may also save building users money, although this depends on usage, system efficiency, other technologies (like solar) and how policy costs are added and distributed across electricity/gas.
- 19 Discouraging burning and enforcing smoke control and nuisance burning policies will reduce both air pollution and greenhouse gas emissions, as studies show that wood emits more carbon for the same amount of heat produced than most other fuels including oil and gas. There is also evidence that as well as the pollutants that are emitted from solid fuel burning, such as wood burning stoves, they are not actually a cheaper source of heating, so moving away from these as heating sources can also save money.
- 20 Transitioning from gas hobs/cookers to safer, cleaner (e.g., electric induction) alternatives will reduce both air pollution (especially indoors) and greenhouse gases. It may also save money over the long-term, depending on the lifespan of the product. Significantly greater use of electricity for heating and cooking also means that the fuel source can be decarbonised as the mix renewable source electricity on the grid increases.
- 21 We know that domestic burning accounted for 25% of the UK's primary PM2.5 emissions in 2020, with around 1.5 million households burning wood and 400,000 using coal and other solid fuels. Nationally, the use of wood stoves is increasing and can impact air quality significantly in urban areas. Air pollution emissions can be reduced, but not fully eliminated, by using modern, less polluting stoves and burning wood that is dry, however the act of burning still creates particulates.
- 22 Studies have been undertaken on the impact of wood burning – Global Action Plan have published a report '[Relight my Fire – Investigating The True Cost Of Wood Burning](#)'. This established that counter to popular belief, wood burning is not only harmful, but also is more expensive than using central heating, with Air Source heat Pumps offering both a cleaner heat source, but over whole life cost analysis a cheaper heat source, whilst also being lower carbon sources of heat.
- 23 International studies have also been undertaken on the impact of gas cooking in homes, with significant findings. The NGO, 'Clasp' have identified that cooking with gas releases toxic pollutants, including nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO) and ultrafine particulate matter into the air directly impacting the health of those in the household. Essentially, similar to the emissions from a car exhaust pipe, breathing the pollution from burning fossil fuels in your kitchen will have a negative health impact. Forty years of research is showing that gas cooking appliances can cause respiratory diseases like asthma, with children and low-income communities facing the greatest risk of negative health effects.
- 24 In the UK the Clasp study has found that 53.9% of homes have gas cooking appliances, with 557,326 paediatric asthma cases being linked to gas cooking. The below graphic illustrates the difference in NO<sub>2</sub> concentrations in monitored UK homes that have electric cooking rather than

gas cooking. Significantly lower NO<sup>2</sup> monitoring is found when cooking is undertaken with electric appliances than gas, due to the elimination of combustion from the process. Heating that relies on electricity, using electric heaters or heat pumps, is not a source of air pollution at the point of use improving local air quality both in the home and community, but also offers greater scope for decarbonisation through renewable generation of that electricity.

- 25 By using heat and energy recovered from non-recyclable waste at the Recycling and Energy Recovery Facility (RERF) to provide warmth and hot water to buildings in the city, the Leeds PIPES district heating project is helping businesses and residents to move away from costly fossil-fuel powered heating systems. Removal of combustion-based heating in homes, such as gas boilers will have a positive impact on local air quality as the impact of gas heating on indoor air pollution is becoming increasingly known (as detailed earlier in this report), this is a significant additional benefit from the district heat programme as well as providing more affordable and lower carbon heating.
- 26 Leeds City Council estimates that the network, delivered in partnership with Vital Energi, is helping existing customers to collectively save nearly half a million pounds (£490,000) in reduced energy costs this year alone, with health benefits from the improved air quality providing further value to the city as well as individuals. The £62million network continues to expand and is regularly connecting to new buildings. Leonardo & Thoresby student accommodation buildings and St James's Hospital are the latest buildings to have begun taking heat from the scheme. Last year, the network of insulated underground pipes supplied 22,029 megawatt-hours of heating in total and helped reduce the city's carbon footprint by 3,975 tonnes.
- 27 To reduce the impact of gas cooking within the Leeds City Council Housing estate several changes are being made to transition our housing stock to electric based cooking.
- Our new build specification is for electric cooking only to be facilitated.
  - We're reviewing void specifications with a proposal to remove gas cooker points during the void process. Consultation with tenant representatives is scheduled in the New Year as part of this review.
  - There is no proposal yet to remove gas cookers from tenanted properties, this has been assessed in terms of how it would work, and the costs are prohibitive at this stage. Cookers are the tenants' own appliances and therefore LCC has no obligations around maintenance or replacement. If we were to remove these appliances, we would be liable to replace them. As such a phased approach to encourage electric cooking through the new build and void processes is currently the more feasible approach.
  - There is work under way with the communications team in Housing around how to develop meaningful and appropriate messaging for tenants to encourage them to consider electric cookers when replacing existing appliances. The preference of Housing property maintenance would be to offer to disconnect tenant's gas cookers (for safety reasons) but maintain that the tenant would be responsible for the new appliance purchase, delivery, and maintenance. The messaging for tenants will be designed to make clear the health benefits of making this change.
  - We are not aware of any other local authorities being as pro-active in this area, yet with the data we have seen from studies on the impact of gas cooking on indoor air pollution in the home, this work will make significant health outcome improvements.

18. Further work is also being delivered regarding improving awareness of the various sources of air pollution, as well as developing the systems of monitoring of pollutants across the city and wider region.
19. Work is also ongoing in terms of the transition of the council's own fleet of vehicles as well as development of electric vehicle infrastructure. (Covered in supplementary report to CEAC).

### **What impact will this proposal have?**

20. Continuing work across these areas of air pollution will contribute to the reduction of airborne pollutants and will align with the Council's best city ambitions on Net Zero and Health & Wellbeing.

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

Health and Wellbeing       Inclusive Growth       Zero Carbon

21. This report highlights independent recognition of the city's progression towards the zero-carbon ambition.

### **What consultation and engagement has taken place?**

Wards affected:

Have ward members been consulted?       Yes       No

22. Not applicable, though engagement across key stakeholders both internal and external is ongoing as part of the programme of work on improving air quality.

### **What are the resource implications?**

23. There are no direct resource implications as a result of this report.

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

24. There are no specific risk management implications because of this report. Risks regarding Air Quality are recorded as part of the corporate risk register with project specific risks managed as part of delivery.

### **What are the legal implications?**

25. There are no direct legal implications because of this report.

### **Options, timescales and measuring success**

#### **What other options were considered?**

26. Not applicable

#### **How will success be measured?**

27. Not applicable

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

28. Not applicable

### **Appendices**

29. [Annual Status Report 2023](#) (link)