

Climate & Environment Panel - Air Quality Annual Status Report 2024

Background

- In Oxford, Nitrogen dioxide (NO₂) is still the pollutant of most concern, and the entire city has been a designated Air Quality Management Area (AQMA) for NO₂ since 2010
- Transport is by far the most significant source of emissions of oxides of nitrogen in the city, accounting for 68% of emissions, 19% of emissions come from commercial and residential heating, 12% from industry and services, and 1% from a wider mix: waste, agriculture, solvents.
- There is a requirement for Oxford City Council to report annually to Defra on air quality in the city.
- The annual report combines information on monitoring undertaken in the city, trends in air quality and progress with the delivery status of the 30 measures that the city and its partners have committed to deliver in the city's current Air Quality Action Plan (AQAP).

Annual Status Report (2023)

- In 2023 air quality levels were monitored at 128 locations within the city.
- In 2023, NO₂ levels decreased (on average) by 14% across the city, when in comparison with the previous reporting year of 2022. This compares against an average UK reduction of 9% in 2023.
- NO₂ levels are now (on average) 33% below 2019 levels (the last pre-pandemic year).
- Only 2 sites out of the 128 were found to be in breach of the UK's legal annual mean limit value (40µg/m³) for this pollutant: Headington Hill and Southern Bypass, at Oxford's ring road¹.
- Only nine of the 128 sites were in breach of Oxford's local annual mean target for NO₂ (30 µg/m³) – a commitment laid out in the city's AQAP, and which is expected to be achieved across the city by 2025. Those locations are St Aldates, St Clements (2x), High Street, Holloway Road, Headington Hill, and Oxford's ring road (3x).
- PM₁₀ and PM_{2.5} were both monitored by automatic continuous monitors at AURN St Ebbes (urban background) and Oxford High Street (roadside) in 2023.
- The PM₁₀ annual means obtained for these sites were of 9 and 14 µg/m³ respectively. These values are both below the current UK legal annual mean limit of this pollutant (40 µg/m³) and of the WHO recommended annual mean (15 µg/m³).
- These PM₁₀ measurements represent reductions of 25% and 12.5% when compared with the levels measured at these sites in 2022. These reductions are much more pronounced than the overall average PM₁₀ decrease seen in the UK in 2023 (equivalent to 10%).
- The PM_{2.5} annual means obtained for these sites were of 6 and 8 µg/m³ respectively. These values are below the current UK legal annual mean limit of this pollutant (10 µg/m³) and just slightly above (at Oxford High Street) the WHO recommended annual mean (5 µg/m³).
- These PM_{2.5} measurements represent a reduction of 14% (at AURN St Ebbes) and an increase of 33% (at Oxford High Street) when compared with the levels measured at these sites in 2022. However, it is important to consider that PM_{2.5} data capture was relatively poor at Oxford High Street in 2022 (only 41%), as the PM_{2.5} monitor had only been installed in May. This is likely to be the reason that explains the slight discrepancy in the PM_{2.5} levels measured at this location between 2022 and 2023.
- PM_{2.5} measurements obtained at AURN St Ebbes in Oxford are aligned with the UK's national trend for this pollutant: average PM_{2.5} concentrations have reduced in the UK on average by 12%.
- Ozone measurements obtained from the automatic monitor at AURN St Ebbes exceeded the legal air quality objectives for this pollutant 113 times, during a total of 19 days in 2023.

¹ Although in breach of the UK's annual mean limit value for this pollutant (40µg/m³), none of these sites is particularly relevant to LAQM: Headington Hill is not considered a location of relevant exposure (i.e., a location where members of the public are likely to be regularly present for a period of time appropriate to the averaging period of the annual mean limit value; and Southern bypass does not form part of Oxford City Council's jurisdiction). The purpose of monitoring at these locations relates solely with the evaluation of the possible impacts' future interventions (traffic filters) can cause in terms of traffic displacement in those areas.

Zero Emission Zone Pilot (ZEZ)

- The UK's first ZEZ was launched in February 2022. The monitoring results obtained in 2023 from all the locations in the ZEZ area show that:
 - NO₂ levels have continued to reduce overall within the ZEZ.
 - New Inn Hall St, Cornmarket St and Bonn Square all had reductions of 2 µg/m³ (or 13%, 11% and 9% respectively).
 - St Michaels St and Queen St had marginal reductions of 1 µg/m³ (7% and 5%).
 - George St (Magdalen St) saw a slight increase of 2 µg/m³ (or 9%).
 - The highest reduction was seen at New Road (7 µg/m³ or 24%). However, this relates with the interference of scaffolding works at St Peter's college, which have limited the effectiveness of the diffusion tube measurement.
 - Overall, NO₂ annual mean measurements have varied from a minimum of 13 µg/m³ (New Inn Hall St, S Michaels St) to a maximum of 21 µg/m³ (Queen St) in all the areas covered by the zone.
 - The measurement obtained at Queen St is the highest within the zone, due to this street being part of the city's bus route – however, this measurement is still 47.5% below the UK legal limit and 30% below the city's local target for this pollutant.
- A significant reduction of NO₂ levels is expected on Queen St and more widely across the city in 2024, due to the recent delivery of 159 fully electric buses from the Zero Bus Regional Areas (ZEBRA) scheme. The arrival of these buses will mean that 69% of the total bus mileage operating in the city will be electric.

Low Traffic Neighbourhoods (LTNS)

On the 17th October Oxfordshire County cabinet decided that the East Oxford LTNs located at St Marys, St Clements and Divinity Road would remain in place. An Oxfordshire County cabinet decision was also made on the 22nd June 2023 to approve proposals to remove LTN bollards on three roads in Cowley (Littlemore Road, Crescent Road and Littlehay Road) and to enforce the traffic restrictions using Automatic Number Plate Recognition (ANPR) cameras.

Air Quality on LTN boundary roads

- Holloway road (DT80) -boundary road for Temple Cowley LTN, saw NO₂ reductions of 3 µg/m³ (from 34 to 31 µg/m³). This matches the concentration obtained in 2020 (the year of the lockdowns) and represents a reduction of 6 µg/m³ (or 16%) in relation to the NO₂ levels obtained in 2019 (pre - pandemic).
- DT8 (Oxford Road/Cowley), DT7 (Oxford Road/In Between Towns Road) and TF32 (Garsington Road/St Lukes Road -boundary roads for Temple Cowley and Florence Park LTNs, saw NO₂ reductions of 4, 2 and 3 µg/m³ (or 14%, 7% and 15%) respectively.
- Diffusion tube TF38 on Church Cowley Road (boundary road for Florence Park and Church Cowley LTNs) measured an annual mean NO₂ of 21 µg/m³. NO₂ monitoring was only conducted at this location for the first time in 2023, reason why there is no element of comparison with 2022. The measurement obtained in 2023 is 48% below the UK legal limit for this pollutant and 30% below Oxford's local NO₂ annual mean target.
- Iffley Road/Henley Avenue/A4158 (boundary road with St Marys, Florence Park, and Church Cowley LTNs) saw NO₂ reductions of 4 µg/m³ (or 15%) at the cross with Boundary brook road (DT4), of 6 µg/m³ (or 23%) at the cross with Stanley Road (TF17) and of 8 µg/m³ (or 23%) at the cross with Newmans Road (TF34).
- St Clements Street saw NO₂ reductions of 5 µg/m³ (or 12%) at DT55, 1 µg/m³ (3%) at DT77 and of 2 µg/m³ (7%) at DT85.

- Morrel Avenue (boundary road for St Clements and Divinity Road LTNs) saw NO2 reductions of 3 µg/m3 (19%) at monitoring location TF18 and of 1 µg/m3 (8%) at LT4.
- Cowley road (boundary road for St Clements, St Marys and Divinity Road LTNs) saw NO2 reductions of 4 µg/m3 (15%) at the cross with James Street (DT72) and of 3 µg/m3 (16%) at DT81 (cross with Union Street).

Air Quality Inside LTNs

- St Marys LTN saw NO2 reductions of 2 µg/m3 (15%) at both Howard St and Hurst St;
- St Clements LTN saw an NO2 reduction of 2 µg/m3 (15%) on Prince St and of 1 µg/m3 (8%) at East Oxford Primary school.
- Divinity Road (within Divinity Road LTN) saw an NO2 reduction of 2 µg/m3 (17%).
- Diffusion tube LT6, located at St Christophers School (within Temple Cowley LTN), saw an NO2 reduction of 2 µg/m3 (17%).

All the monitoring locations both inside and on the boundary roads of Oxford's LTNS showed a decrease in NO2 levels measured in 2023, when in comparison with the previous year (2022).

None of the NO2 levels measured both inside and on the boundary roads of Oxford's LTNS was above the UK legal limit value for this pollutant, and only 3 monitoring locations (St Clements: DT55 - 38 µg/m3 and DT77 - 34 µg/m3), and Holloway Road (DT80 - 31 µg/m3) showed NO2 levels above the city's local annual mean target for NO2 (30 µg/m3).

Summary of some of the most relevant air quality measures delivered in 2023/2024

September 2023 – A new Oxfordshire air quality website was launched, to provide air quality guidance and resources for all residents and visitors in Oxfordshire. The development of the new website (www.oxonair.uk) was led by Oxford City Council using £162,500 of DEFRA Air Quality Grant funding, and delivered in partnership with all the local authorities in Oxfordshire – [link to press release](#):

January 2024 – The first electric buses from a total of 159 buses which had been partly secured by the government's Zero Emission Bus Regional Areas (ZEBRA) have arrived in Oxford. The full delivery of all the 159 buses (which will represent 69% of all the bus mileage of the city) will be delivered by June 2024. Once delivered, Oxford City will have one of the biggest UK fleets of electric buses outside London - [link to press release](#):

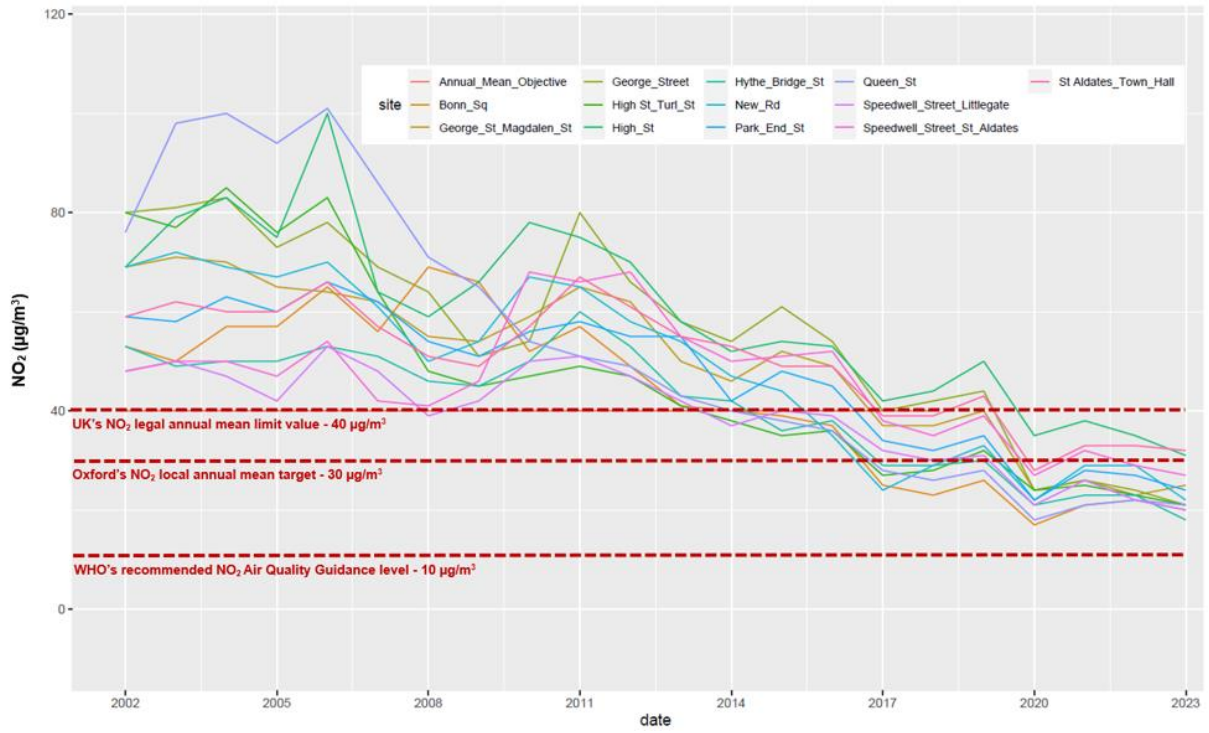
February 2024 – Oxford City Council decided to move ahead with its plans to expand Oxford's Smoke Control Area, after the plans to consult on the matter had been [approved](#) by Oxford City Council's cabinet meeting in September 2023, and following the [results](#) of its public consultation. Oxford currently has 23 Smoke Control Areas, which cover about 48% of the Oxford area. The plans for having a city-wide Smoke Control Area constitute an effort to try to reduce PM_{2.5} emissions in the city. The final decision is currently pending formal approval by the Secretary of State -[link to press release](#);

March 2024 – Oxford City Council launched a new e-cargo bike delivery trial to support businesses operating in Oxford City Centre. The project is being delivered in partnership with local cargo bike delivery company Velocity Cycle Couriers and allows participating businesses to offer same day and next day zero emission deliveries to their customers – [link to press release](#);

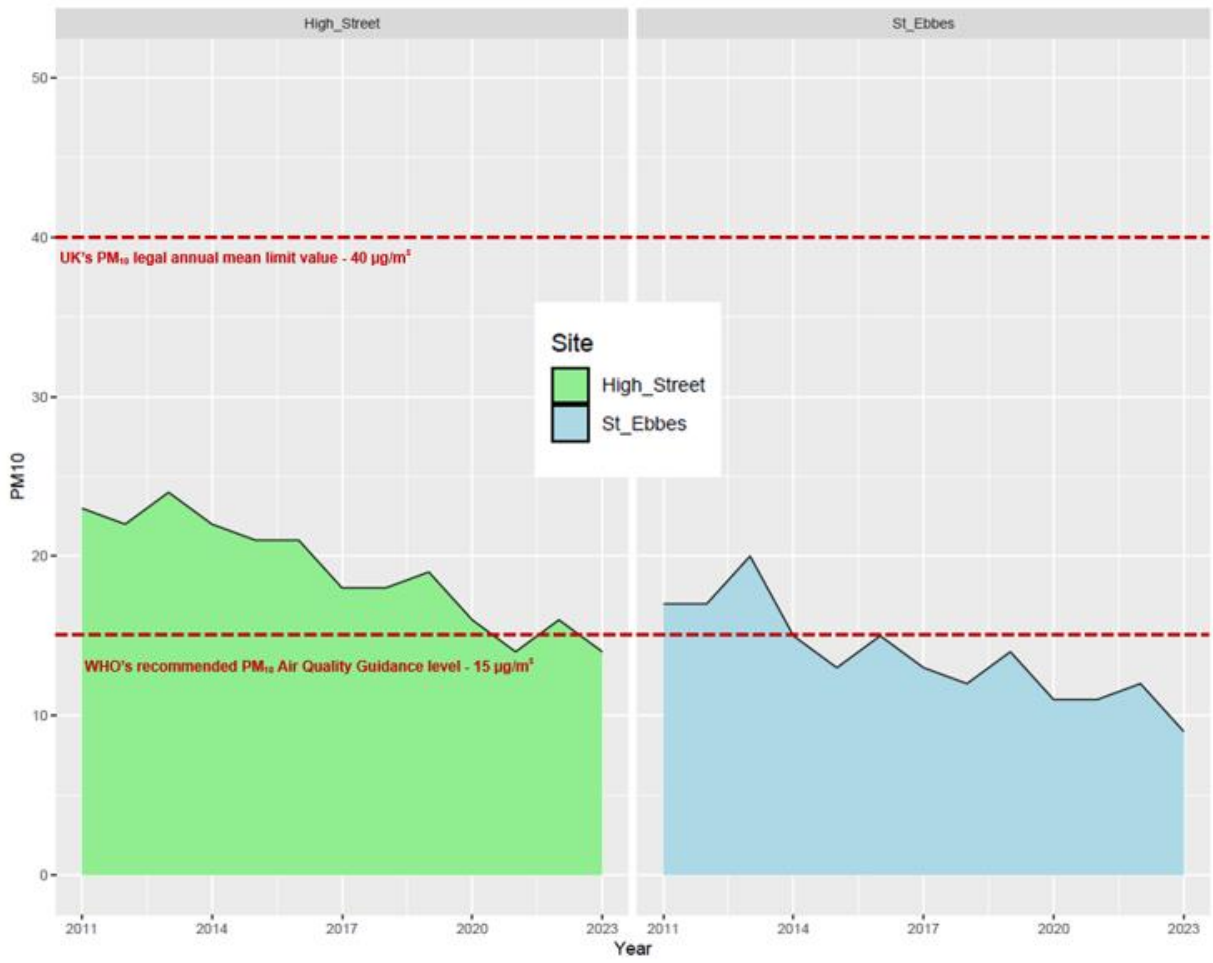
Priorities for 2024

In the next reporting year, Oxford City Council and its partners will continue to progress delivery of the air quality measures committed to in on our Air Quality Action Plan 2021-2025 and will also initiate work to develop a new AQAP for the city (a document that will need to be finalised and approved by December 2025).

Oxford City Centre historic annual mean nitrogen dioxide levels (2002-2023)



Oxford's long-term trends in annual mean PM10 levels (2011-2023)



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