



# BREATHING EASY

Understanding Air Quality and its Impact on Health in  
Hackney and the City of London, 2023

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23



CITY OF LONDON AND HACKNEY

**PHIT**

# EXECUTIVE SUMMARY

- Air pollution can affect our **physical** and **mental health** throughout our life course.
- In the City of London and Hackney, the main air pollutants of concern are nitrogen dioxide (**NO<sub>2</sub>**) and particulate matter (**PM<sub>2.5</sub>** and **PM<sub>10</sub>**).
- Since 2016, the amount of **NO<sub>2</sub>** recorded in the City and Hackney **has decreased** substantially.
- Concentrations of **PM<sub>10</sub>** and **PM<sub>2.5</sub>** have also reduced over the past 10 years, but the **rate of decline is slowing down**.
- High levels of NO<sub>2</sub> persist on the busiest roads and most congested intersections, with a disproportionate impact on **global majority residents** and **deprived communities**, **exacerbating** existing **health inequalities**.
- Air pollution is closely linked to a range of serious health conditions, including **asthma, chronic heart disease, chronic obstructive pulmonary disease, diabetes, lung cancer, and stroke**.
- The most recent data indicate that **Hackney had a higher proportion of deaths related to particulate matter** compared to the overall rates in London and England **for all major causes of death associated with air quality**.
- The proportion of adult **deaths attributed to particulate matter** has **decreased** over the past four years. Despite this, City and Hackney PM<sub>2.5</sub>-related mortality rates are **still higher compared to the regional and national rates**.
- City and Hackney are undertaking a wide range of measures to improve air quality and reduce population exposure to air pollution. These include **monitoring, controlling emissions, awareness raising, engagement, lobbying, and leading by example**.

**Prepared by the City and Hackney Public Health Intelligence Team in collaboration with the London Borough of Hackney's Climate, Sustainability and Environmental Services. December 2023.**

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# AIR POLLUTION AND HEALTH

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Poor air quality is known to harm our health. The 2019 **City and Hackney Quality of the Local Environment Needs Assessment** mentions this, but the evidence base is continuing to grow. For example, a recent study, funded by the Greater London Authority (GLA), found that air pollution, including black carbon (or soot), nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>) and sulphur dioxide (SO<sub>2</sub>), can affect our **physical** and **mental health**. This impact extends **throughout our life course**, from pregnancy and birth all the way through to adulthood. During pregnancy, it can harm normal **foetal development** and increase the risk of **miscarriage**. In childhood, it can cause problems like **underdeveloped lungs, asthma, and high blood pressure**. And, as we grow older, exposure to air pollution increases the risk of serious health issues, such as **stroke, dementia, cancer, and long-term conditions** like lung and heart problems, which could result in an earlier **death**. (1)

This report has been created to provide updated information and expand on what was presented in the 2019 Quality of the Local Environment Needs Assessment. This update aims to contribute to the development of local air quality and climate action plans and strategies.



**The impact of poor air quality extends throughout our life course**

# AIR POLLUTION IN CITY AND HACKNEY

The main air pollutants of concern in City and Hackney (as elsewhere) are NO<sub>2</sub>, PM<sub>2.5</sub> and PM<sub>10</sub>. According to the London Atmospheric Emissions Inventory, road traffic is the main source of all of these pollutants. However, other important sources include: (2)

**NO<sub>2</sub>**

## Nitrogen dioxide

any type of combustion, such as heating and power generation in industrial, commercial, and residential buildings, as well as from industrial processes

**PM<sub>2.5</sub>**

## Particulate matter

the burning of wood and solid fuels in homes and from commercial cooking.

**PM<sub>10</sub>**

## Particulate matter

construction activities and the resuspension (disturbance) of dust from various sources

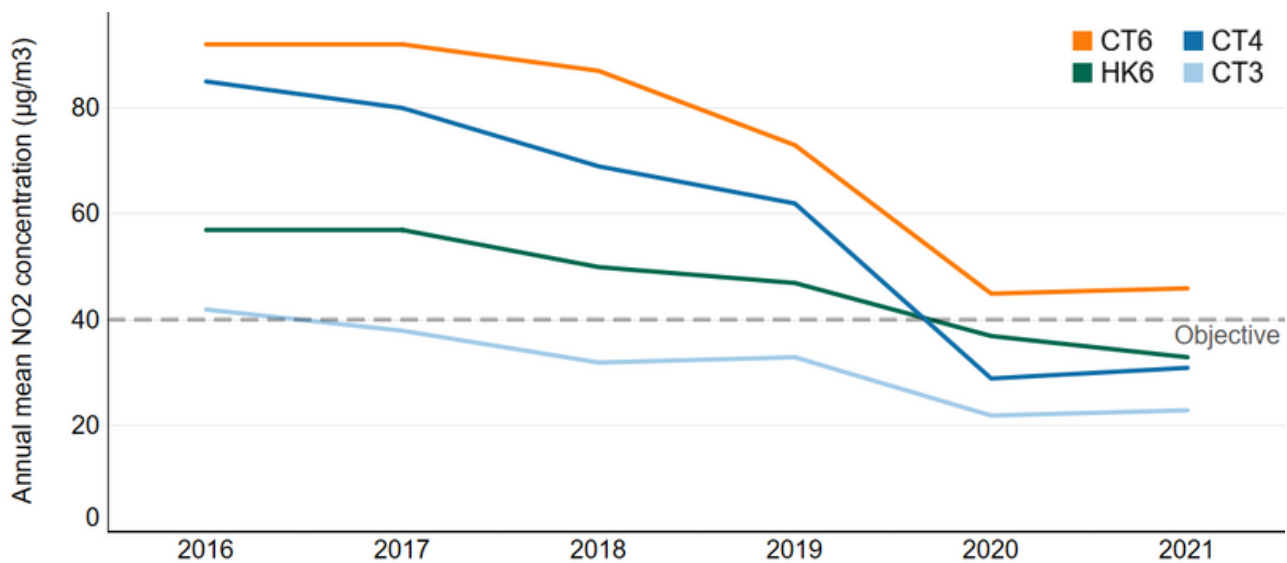
## CHANGE OVER TIME

Since 2016, the amount of **NO<sub>2</sub>** recorded in the City and Hackney has **decreased** substantially. Almost all of this drop is due to reductions in emissions from **road traffic**. This has happened because better **emission standards** have been set, **polluting vehicles** have been **removed** from London's roads, and more people have started using **electric vehicles**. However, on the busiest roads and the most congested intersections, the levels of NO<sub>2</sub> are still too high, and continue to exceed national standards and objectives. The GLA has found that **global majority residents** and the **most deprived communities** are more likely to live in these areas. Since these populations already experience poorer health on average, these patterns act to **exacerbate existing health inequalities**. (3)

Concentrations of NO<sub>2</sub> in the City actually increased slightly at many sites between 2021 and 2022. This is thought to be because traffic substantially reduced during the COVID-19 pandemic and then increased again afterwards.

The graph below shows how annual mean NO<sub>2</sub> concentrations have changed at the long term automatic monitoring sites in the City of London (The Aldgate School (CT3), Beech Street (CT4) and Walbrook Wharf (CT6)) and at Old Street in Hackney (HK6) between 2016 and 2022. City and Hackney also monitor NO<sub>2</sub> across a wider number of locations using a network of diffusion tubes, to complement the automatic monitors and increase coverage. Many long term NO<sub>2</sub> diffusion tubes demonstrate a similar level of reduction in NO<sub>2</sub> to the automatic monitors.

**Figure 1: Annual mean NO<sub>2</sub> concentration in µg/m<sup>3</sup> by long term automatic monitoring site, City and Hackney (4)**



Concentrations of **PM<sub>10</sub>** and **PM<sub>2.5</sub>** have **also reduced** over the past 10 years, but the **rate of decline** is **slowing down**. (4) This is believed to be because, even though emissions from road traffic tailpipes have decreased, there's been an increase in pollution from **domestic wood burning, construction**, and the wear and tear of **brakes and tires**. (2)

Both City and Hackney have **committed to supporting** the achievement of the **2005 World Health Organization guideline** values for PM<sub>10</sub> and PM<sub>2.5</sub> by 2030, in line with the Mayor of London's commitment. In addition, City and Hackney have also **committed to expanding** their PM<sub>10</sub> and PM<sub>2.5</sub> **monitoring networks** as the evidence of health effects of these pollutants becomes clearer.

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# CLIMATE CHANGE

Air quality and climate change are **strongly connected**. Activities that worsen air quality, such as burning fossil fuels, are also key contributors to climate change. The reverse is true as well. For example, warmer, drier summers can increase ozone and particulate matter, because of dry, dusty conditions and long periods of still, hot weather. Additionally, heatwaves driven by climate change can spark wildfires, releasing particles, smoke, and greenhouse gases into the atmosphere. More information can be found in the UK Health Security Agency's recent report on the [Health Effects of Climate Change \(HECC\)](#).

Unfortunately, similarly to how we see that **people in more deprived areas** are more likely to live in areas with poor air quality, these individuals are also more likely to be the **most vulnerable to climate change**. For example, people living near busy roads tend to have limited access to cooler green spaces, which increases their risk of heat stress.

Many of the actions taken to reduce climate change will reduce air pollution, such as reducing the use of fossil fuels (for energy, transport and cooking) and increasing active travel. Hackney has adopted a [Climate Action Plan](#) and the City of London has adopted a [Climate Action Strategy](#) to reduce emissions and reach net zero goals.



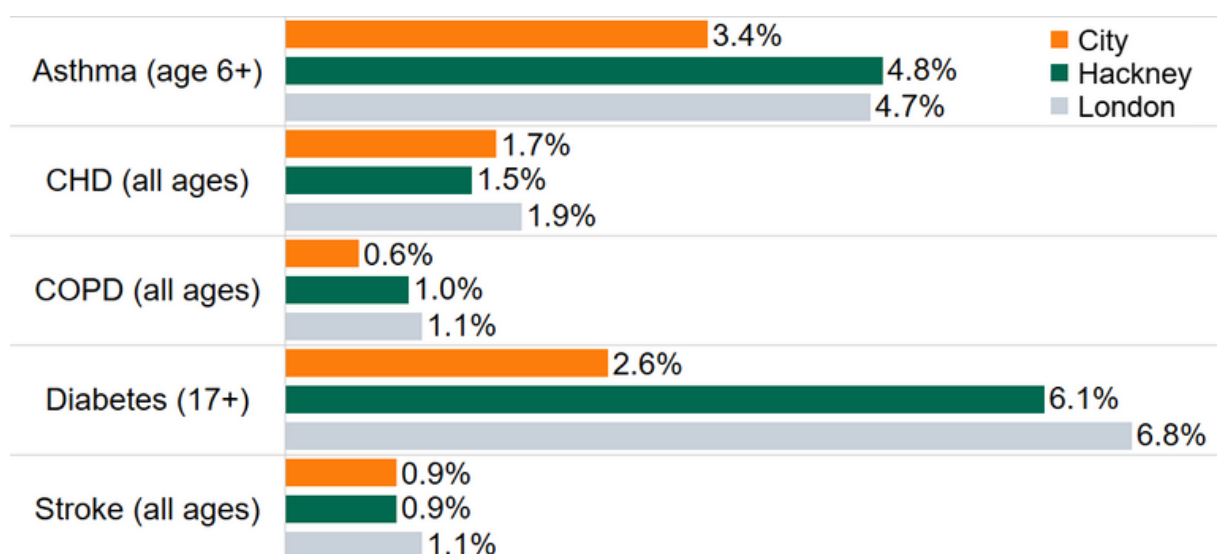
# HEALTH IMPACT IN CITY AND HACKNEY

Air pollution is closely linked to a range of serious health conditions, including **asthma**, chronic heart disease (**CHD**), chronic obstructive pulmonary disease (**COPD**), **diabetes**, **lung cancer**, and **stroke**. These health conditions, when not well-managed, can negatively impact a person's quality of life and, in some cases, lead to early death. Therefore, reducing air pollution is crucial to improving the health and well-being of our population.

## HEALTH CONDITIONS ASSOCIATED WITH POOR AIR QUALITY

City and Hackney have reported **lower prevalence** rates than the London average for **most health conditions** associated with air quality in the latest available data. Additionally, the City of London has recorded the lowest rates in London for both COPD and diabetes. (5) However, since these rates are not age-standardised, some of these differences are likely to reflect variations in the population profiles of the three areas.

**Figure 2: Percentage of the population\* with each health condition by area (5)**



Note: \*Asthma and COPD data refer to 2022/23, while CHD, Diabetes, and Stroke data refer to 2021/22. London data for CHD, COPD, and Stroke are from 2019/20.



The proportion of the local **population diagnosed** with **asthma, CHD, COPD,** and **stroke** has either **decreased** in recent years or **remained stable**. However, in Hackney, as well as in London and England, the proportion of the population diagnosed with **diabetes** has **increased**. (5)

Please note that this section presents data on health conditions known to be associated with inadequate air quality, rather than cases directly linked to poor air quality. This means that besides air quality, the prevalence of these health conditions could also have been influenced by other relevant external factors. For this reason, data on lung cancer has been excluded; smoking is thought to be responsible for 70% of lung cancer cases, and therefore trends in smoking rates will significantly affect the trends in lung cancer. (6)

The following section presents insight into deaths **directly caused** by poor air quality.

## DEATHS CAUSED BY POOR AIR QUALITY

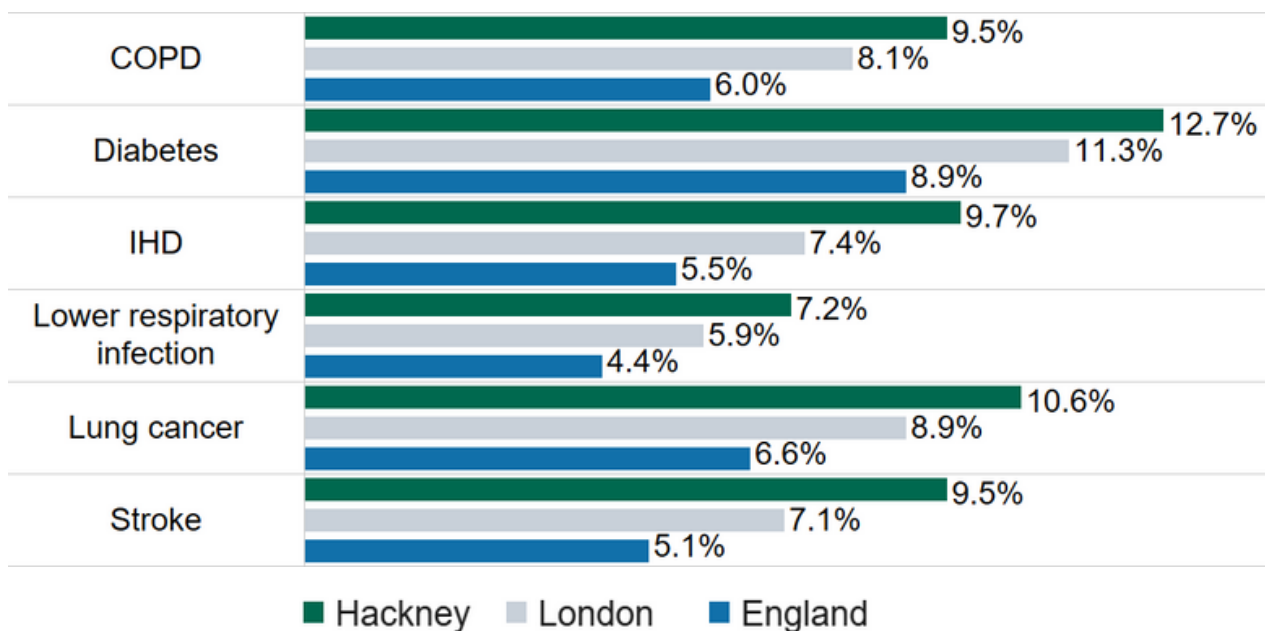
In 2021/22, a **higher proportion** of adults in City and Hackney **died** because of **exposure to PM2.5** compared with the regional and national average. (5)

**Figure 3: Proportion of deaths (%) attributed to particulate matter (PM) by area of residence, populations aged 30+, 2021/22 (5)**



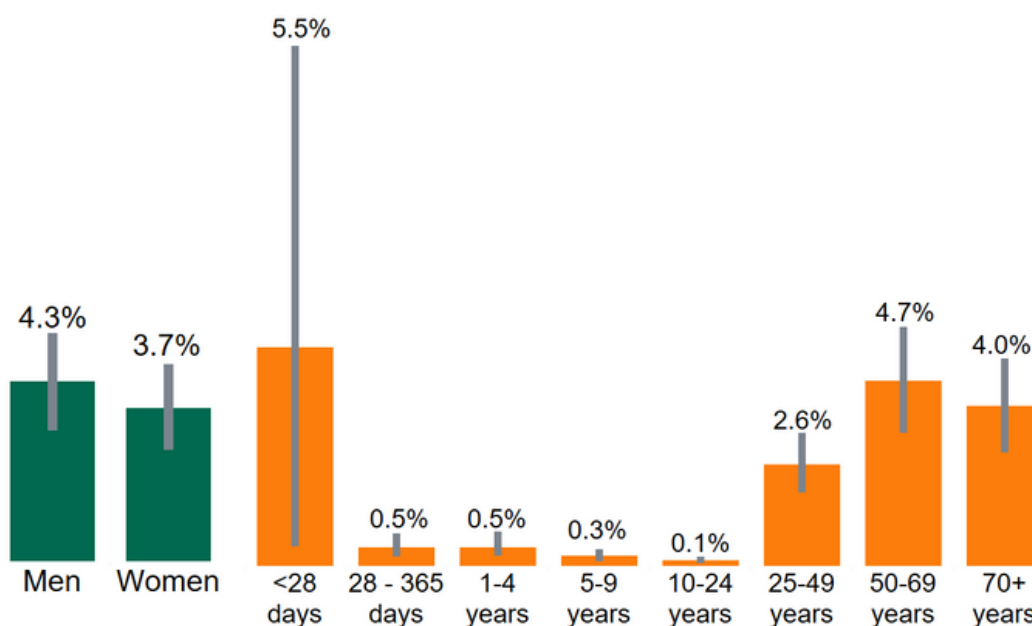
The most recent data indicate that Hackney had a **higher proportion of deaths** related to **particulate matter** compared to the overall rates in London and England **for all major causes of death associated with air quality**. For example, among Hackney residents, around 11% of recorded lung cancer deaths were attributed to particulate matter, compared with 9% in London and 7% in England. (7)

**Figure 4: Proportion of deaths (%) attributed to particulate matter pollution by cause of death and area of residence\*, 2019 (7)**



The proportion of deaths associated with particulate matter varies by **age group** and **sex**. However, it's important to note that statistically significant differences were not seen between most groups, mostly thought to be due to small numbers. This means that the differences seen might be caused by random chance.

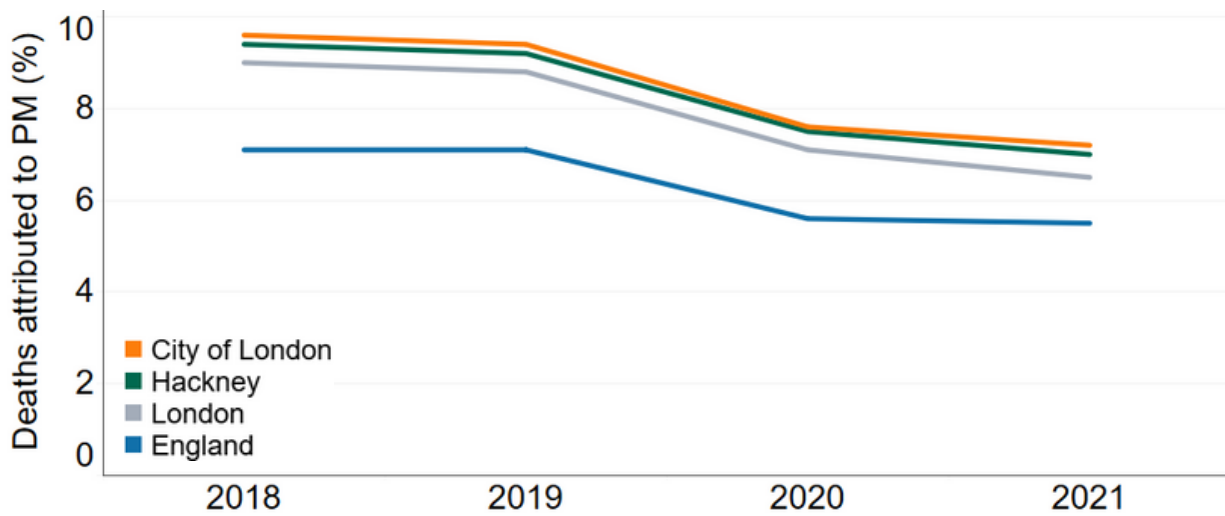
**Figure 5: Proportion of deaths (%) attributed to particulate matter pollution by sex and by age, Hackney residents\*, 2019 (7)**



Note: \*Data for the City of London was not available. Demographic data only available for 2019.

Consistent with the trend in the overall improvement in air quality (see [Air Pollution in City and Hackney](#)), deaths attributed to particulate matter have also **declined** across both the City of London and Hackney. The **proportion of adult deaths** attributed to particulate matter has **decreased each year** over the **past four years**: by 25% in the City, 26% in Hackney, 28% in London as a whole, and 23% across England. (5)

**Figure 6: Percentage of adult deaths (aged 30+) attributed to particulate matter (PM) pollution by area of residence and year of death (5)**



# ACTIONS TAKEN LOCALLY

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City and Hackney are undertaking a wide range of measures to improve air quality and reduce population exposure to air pollution. Full details of these actions are available in the [City of London's Air Quality Strategy](#) and [Hackney's Air Quality Action Plan](#). (8,9) They broadly cover:



## Monitoring

air quality monitoring



## Traffic and Transport

controlling emissions from traffic and transport



## Buildings and Construction

controlling emissions from buildings and construction, and reducing emissions through the planning process



## Leading by Example

leading by example, such as improvements to the borough fleet



## Public Health

public health monitoring and awareness raising



## Schools and Communities

actions and engagement with schools and communities



## Collaboration

collaboration with other bodies and lobbying.

For example, **Hackney Council** is undertaking work to tackle **traffic pollution hotspots**. Healthcare facilities, schools and housing along roads where NO<sub>2</sub> limits are still being exceeded have been identified and actions prioritised at these locations.



Schemes have also been implemented to **reduce vulnerable population's exposure** to air pollution at specific locations, such as:

- the **School Streets programme**, closing roads around schools at start and finish times to **prioritise pedestrians and cyclists** and **reduce vehicle emissions** when students are arriving and leaving
- **green screens**, using dense **vegetation** at school and playground boundaries to **reduce exposure to pollutants** within the school grounds.

In the **City of London**, the Bunhill, Barbican and Golden Lane Healthy Streets Neighbourhood, in partnership with neighbouring Islington, will **explore ways to improve air quality** in the area including for people walking and cycling on Beech Street. While the **All Change at Bank** and **Pedestrian Priority programmes** focus on improving the pedestrian and cycling environments in the City and reducing exposure to traffic emissions.

**Air Aware Tool aims to improve awareness of air quality and inform about actions the public can take to reduce their exposure to air pollution**

**City and Hackney** are working with neighbouring Tower Hamlets and Newham on an '**Air Aware**' tool to improve **air quality messaging** for vulnerable communities. The tool aims to improve **awareness** of air quality and the measures that people can take **to reduce exposure** to air pollution. It includes real-time air quality data, a library of educational resources, and an Artificial intelligence assistant to answer questions related to air pollution, with interactive digital screens available at libraries and Council offices. The project is supported by the Department for Environment Food and Rural Affairs' (Defra's) Air Quality Grant Scheme.

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# ACTIONS TAKEN IN ALIGNMENT WITH THE 2019 NICE QUALITY STATEMENTS

The following actions have also been taken in alignment with the National Institute for Health and Care Excellence's (NICE) 2019 **quality statements**:

## 1. Quality statement one:



'Local authorities identify in the Local Plan, local transport plan and other key strategies how they will address air pollution, including enabling zero- and low-emission travel and developing buildings and spaces to reduce exposure to air pollution.' (10)

City and Hackney have adopted **transport strategies** to reduce private motor vehicle use and promote walking, cycling, and public transport. These strategies include **reallocating street space**, implementing **pedestrian** and **bus priority** schemes, and installing **protected cycle infrastructure**.

## 2. Quality statement two:



'Local planning authorities assess proposals to minimise and mitigate road-traffic-related air pollution in planning applications for major developments' (10)

Both City and Hackney have **strong policies** in place to assess **planning applications** to ensure air pollution is not exacerbated due to development, such as Policy DM15.6 in the adopted City of London Local Plan, Policy LP58 in Hackney's Local Plan 2033, as well as Policy SI 1 of the London Plan 2021. These policies ensure all planning applications are **assessed for air quality impacts** and support a **reduction in emissions** from buildings and from car trips accessing new developments.



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### 3. Quality statement three:



'Public sector organisations reduce emissions from their vehicle fleets to address air pollution.' (10)

City and Hackney have committed to **reducing emissions** from their **vehicle fleets** and leading by example. Actions 25 to 28 of Hackney's Air Quality Action Plan and the '**Leading by Example**' actions of the City's Air Quality Strategy support this. Emissions reductions will be achieved across City and Hackney through increasing the proportion of **electric vehicles** in the fleets, **supporting EV charging** infrastructure and **collaborating** with other public sector bodies, e.g. the emergency services. Hackney is increasing the number of **cycles, e-bikes** and **cargo bikes** in the Council fleet for staff to use, and City is proposing **EV by default** for corporate contracts, including taxi and courier contracts.

### 4. Quality statement four:



'Children, young people and adults with chronic respiratory or cardiovascular conditions are given advice at routine health appointments on what to do when outdoor air quality is poor' (10)

When children have an unplanned attendance or admission at **Homerton Hospital** with **asthma** and/or **viral induced wheeze**, City and Hackney GP practices will **routinely follow up** these patients and liaise, as necessary, with colleagues at the hospital to ensure that their **care plans** are understood, agreed and any further review at primary care is undertaken as necessary. In addition, GP practices undertake **annual asthma reviews** with children and young people, covering an asthma control test, asthma triggers, passive smoking, inhaler technique, allergies, and links to a variety of resources.



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