Camden

CAMDEN JSNA: FOCUS ON

AIR QUALITY ▪ AUGUST 2019

Poor air quality is detrimental to human health and harmful to ecosystems. Exposure to outdoor air pollution has a range of both short- and long-term adverse effects on human health, and those with pre-existing conditions are at heightened risk. Fine particulate matter and oxides of nitrogen (particularly nitrogen dioxide) in particular cause increased mortality and reduced life expectancy.

Air pollution is caused by the release of gases or solid particles into the air in large enough quantities to harm the health of people, animals, or plants. The main sources of air pollution in Camden are road traffic, particle resuspension, commercial and domestic gas, and construction.

Particulate matter in Camden meets national air quality objectives but not the more stringent World Health Organization guideline values; however, oxides of nitrogen remain problematic, with both annual and hourly mean objectives being breached.

Facts and figures

- 9,400 estimated premature deaths in London per year are attributable to air pollution $_{(2010)}$[(1)]
- An estimated 91 attributable deaths in Camden due to small particles ($PM_{2.5}$)[(1)] and an estimated 173 attributable deaths due to nitrogen dioxide (NO_2),[(1)] giving a total of 264 attributable deaths across the borough each year.

Measures for reducing inequalities

- Reducing air pollution around schools will reduce exposure among children, particularly in the most polluted areas.
- The 20% most deprived areas in London had 8.6% more PM_{10} and 8.1% more NO_x compared to the 20% least deprived areas.[(3)] Reducing air pollution in the most polluted areas will help close this gap.

Population groups

- Children are more susceptible to air pollution because their organs are still developing and they breathe more air more quickly. Pollution can also reduce birth weight and result in premature birth.
- People with long-term respiratory or circulatory conditions are more susceptible to the health impacts of air pollution.
- Older people are more vulnerable to air pollution, because they are more likely to have long-term conditions and because of the cumulative impact of air pollution over a lifetime.

National & local strategies

- Camden Clean Air Action Plan 2019-2022
- DEFRA Clean Air Strategy 2018
- The Mayor of London's London Environment Strategy (2018) integrates air quality with green infrastructure, noise, climate change and waste.
- The Environment Act 1995
- Clean Air Strategy 2019

SETTING THE SCENE: THE CAMDEN PICTURE

Camden is amongst the most densely populated boroughs in London. Densely populated and built-up areas with heavy traffic experience higher pollution levels than less densely populated areas. A key source of pollution is from road traffic as Camden contains several major thoroughfares.

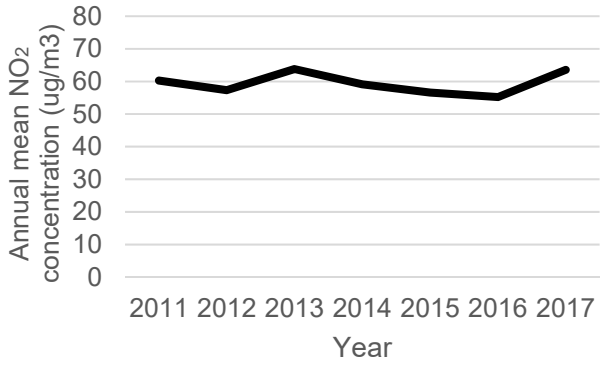
Camden has 3 automatic monitoring stations monitoring nitrogen dioxide (NO_2) and particulate matter ($PM_{2.5}$ and PM_{10}): 1 urban background monitor in Bloomsbury (which also monitors sulphur dioxide (SO_2) and ozone (O_3)), a kerbside monitor at Swiss Cottage and a roadside monitor at Euston Road. A roadside monitor at Coopers Lane monitors PM_{10}, $PM_{2.5}$ and PM_1. 14 other non-automatic sites measuring NO_2 (9 roadside, 2 kerbside, 3 urban background). Camden's monitoring network is growing; see the Camden air quality site (https://www.camden.gov.uk/air-quality) for monitoring data.

Nitrogen dioxide levels

Camden has **not achieved the annual mean objective of 40µg/m³ or less** for background NO_2, except at the urban background side in Bloomsbury; **the objective was exceeded at all operating roadside and kerbside NO_2 monitoring sites**. The Euston Rd site experienced exceedances of the hourly mean objective whilst the other monitoring sites complied in 2017.

Roadside and background annual mean NO_2 show a downward trend at all automated monitoring sites (figure, right); however a clear trend is not seen at non-automatic NO_2 monitoring sites across Camden (figure below).

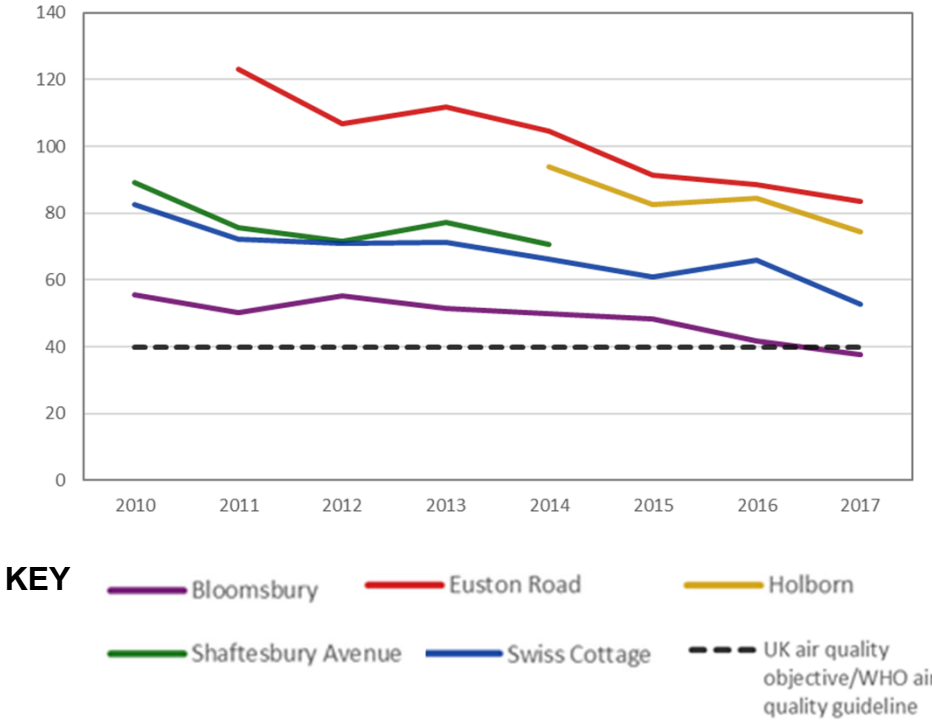
Camden has not met the objective for hourly mean NO_2 of 200µg/m³ not to be exceeded more than 18 times per year, with 25 exceedances at the Euston Road site in 2017.



Mean annual NO2 concentrations at 14 Camden non-automated (diffusion) monitoring sites 2011-17

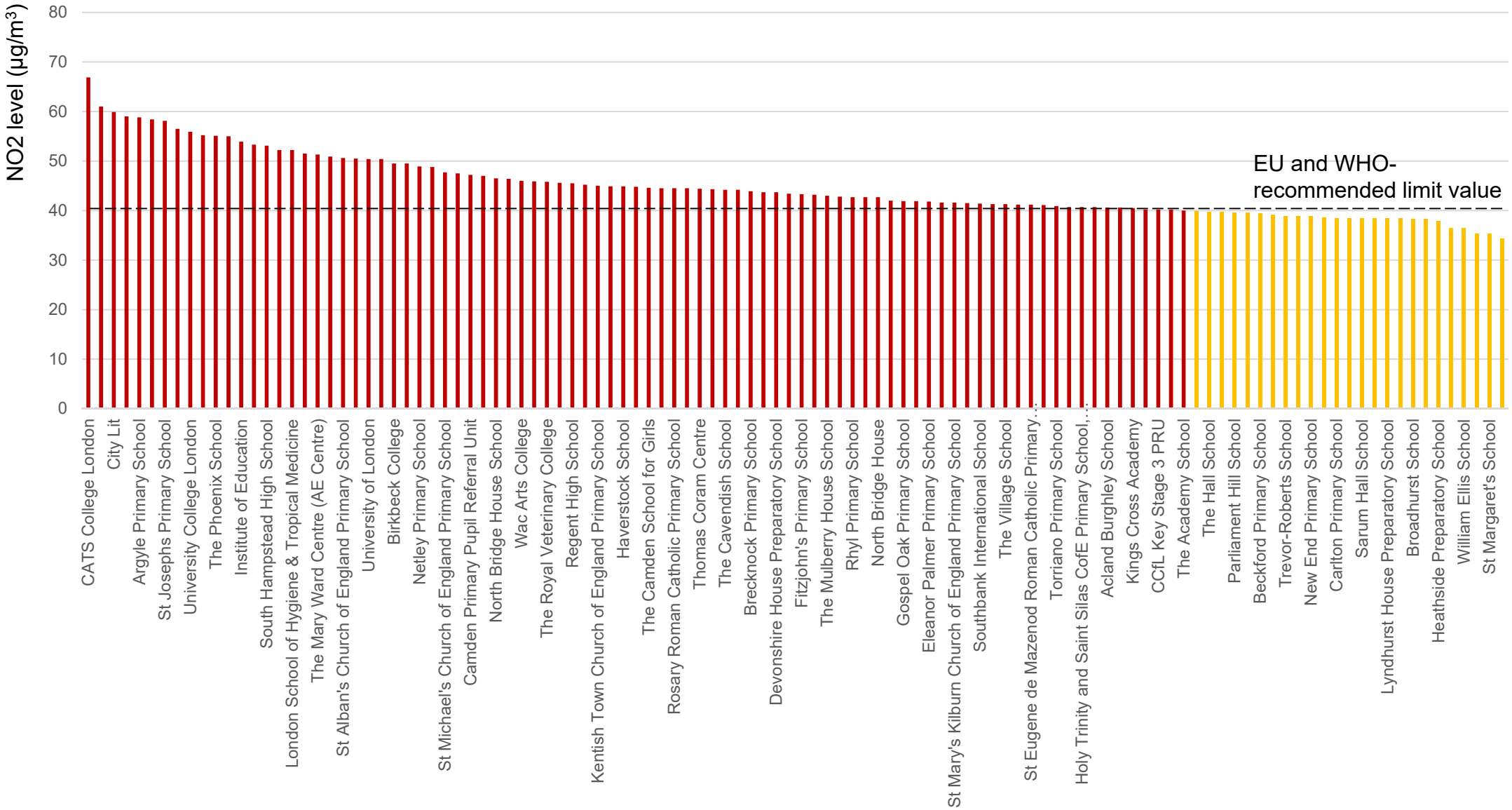
Nitrogen dioxide (NO_2)

Annual mean NO2 concentration at Camden automated monitoring sites (µg/m³)



Graph: Camden Clean Air Action Plan 2019-2022

SETTING THE SCENE: NITROGEN DIOXIDE LEVELS AROUND CAMDEN SCHOOLS



Data source: Greater London Authority: https://data.london.gov.uk/dataset/analysing-air-pollution-exposure-in-london

SETTING THE SCENE: MAPPING CAMDEN'S NO_2 AIR POLLUTION

This modelled map of annual mean NO2 concentrations (LAEI 2013, updated in 2016 by GLA) shows that mean nitrogen dioxide levels in Camden are closely associated with roads with heavy traffic flow.

The dispersion effect means that if pollution is reduced on major roads it will fall in surrounding areas as a result.

NO_2 levels are generally higher in the south of Camden, around Bloomsbury and Euston, than the north of the borough around Hampstead and Dartmouth Park, even away from main roads. This is broadly a similar pattern to the differences seen between central and surrounding areas in the rest of London.

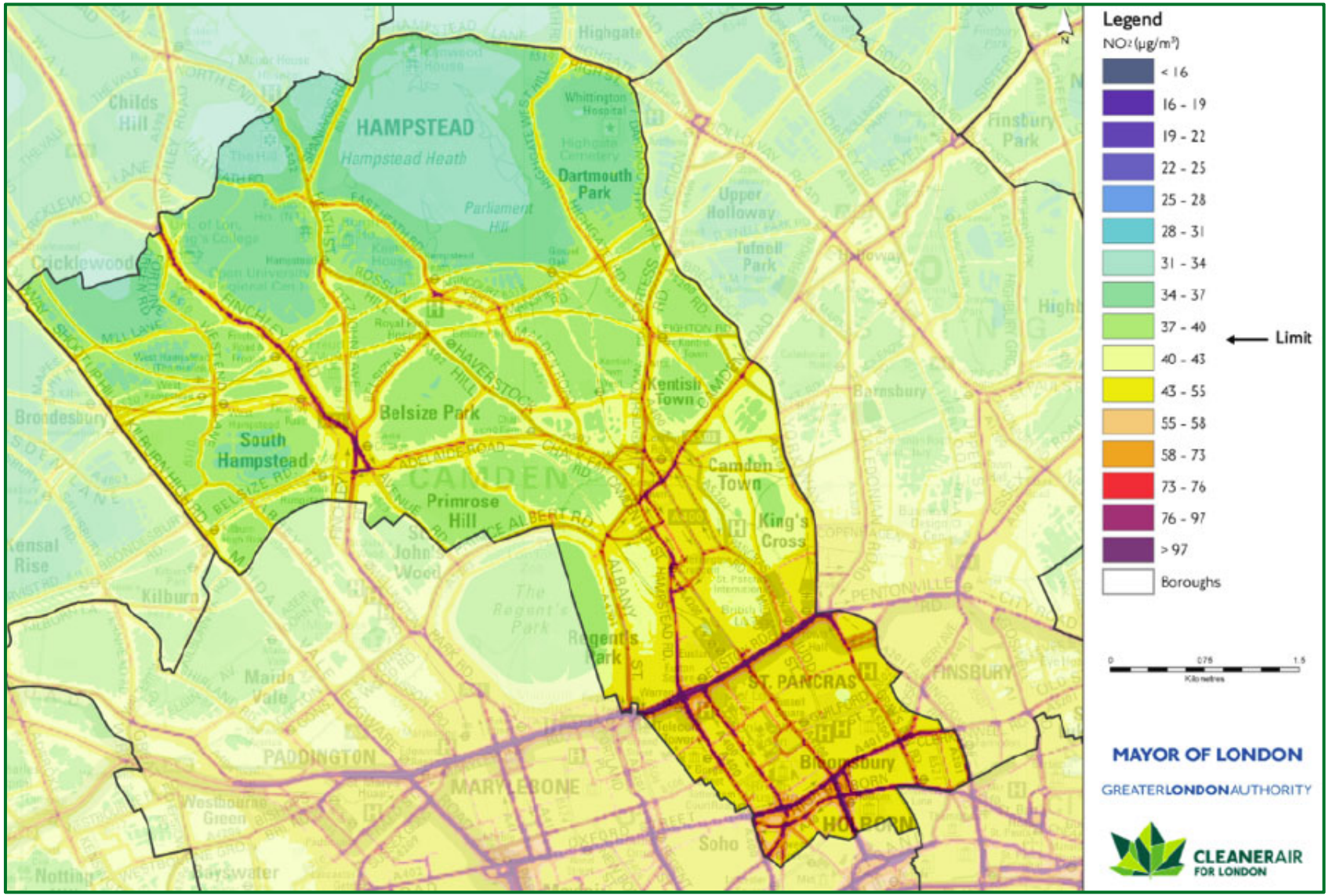


Image source: Camden Clean Air Action Plan 2019-2022

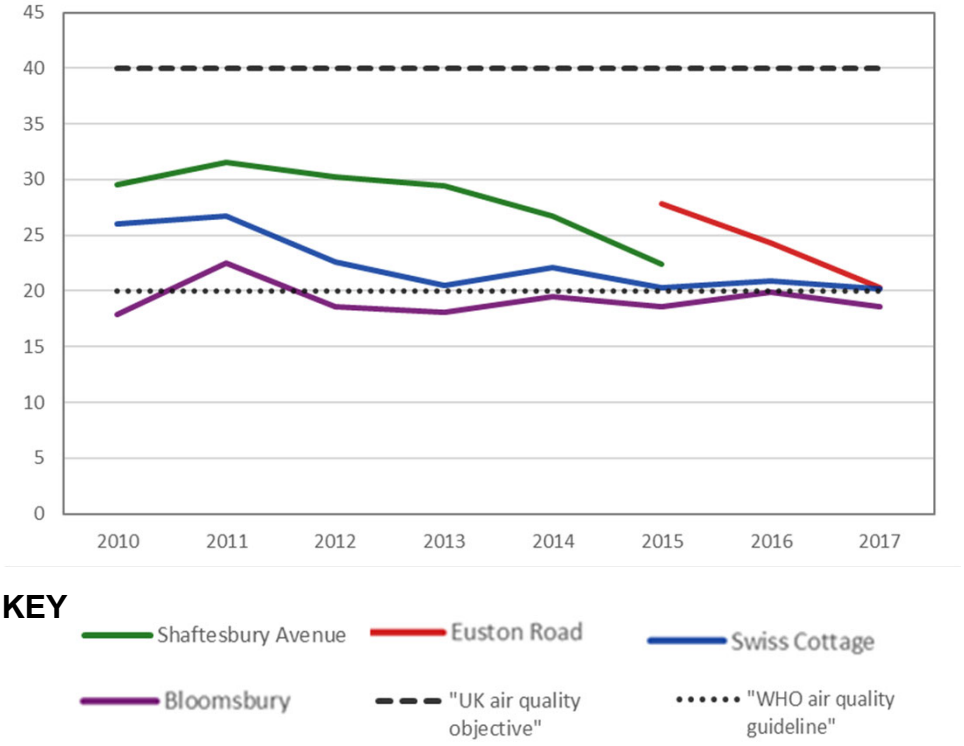
SETTING THE SCENE: THE CAMDEN PICTURE (PARTICULATE MATTER)

Camden has achieved the AQS objective of an annual mean of 40µg/m^3 or less for both background and roadside PM_{10}, and the objective of annual mean PM2.5 levels below 25µg/m^3, but as the graphs below illustrate, annual mean $PM_{2.5}$ nevertheless remains above the WHO-recommended limit of 10µg/m^3 adopted by Camden Council in January 2018.

Camden has consistently met the objective for a daily mean of 50µg/m^3 of PM_{10} not to be exceeded more than 35 times year, with exceedances showing a downward trend to 6, 8 and 3 exceedances in 2017 at Bloomsbury, Swiss Cottage and Euston Road respectively.

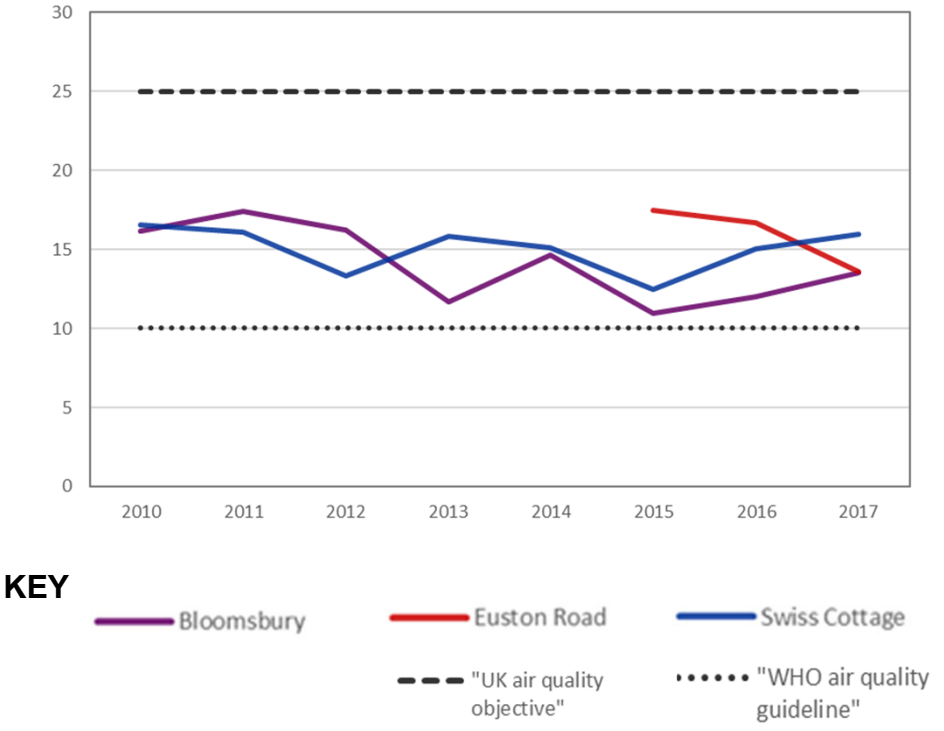
Particulate matter (PM_{10})

Annual mean PM10 concentration at Camden monitoring sites (µg/m^3)



Fine particulate matter ($PM_{2.5}$)

Annual mean PM2.5 concentration at Camden monitoring sites (µg/m^3)



Graphs: Camden Clean Air Action Plan 2019-2022

Camden

HEALTH AND HEALTHCARE IMPACTS

Air pollution adversely affects many aspects of physical health – particularly cardiovascular and respiratory health - over both the long- and short-term.

In adults, the greatest health risks from air pollution exposure are heart disease (including heart attacks and heart failure), stroke, and both chronic and acute respiratory diseases, including asthma, chronic obstructive pulmonary disease and lung cancer. There is also emerging evidence of impacts on cognitive function, dementia risk and emotional responses.[5]

Exposure to air pollution during pregnancy has also been linked with an increased risk of low birth weight, intrauterine growth retardation (IUGR), and an increased risk of chronic diseases in later life for the foetus.[5] In children, risks include an increased risk of asthma and hospitalisation due to asthma – with approximately 10% of children's asthma admissions estimated to be caused by air pollution.[6]

Children are at particularly high risk because their exposure to polluted air is higher relative to their body size, and they are more vulnerable as their lungs and other organs are still growing and developing.

By reducing air pollution levels, local authorities can reduce the burden of disease from many common diseases - particularly respiratory and cardiovascular diseases and stroke.

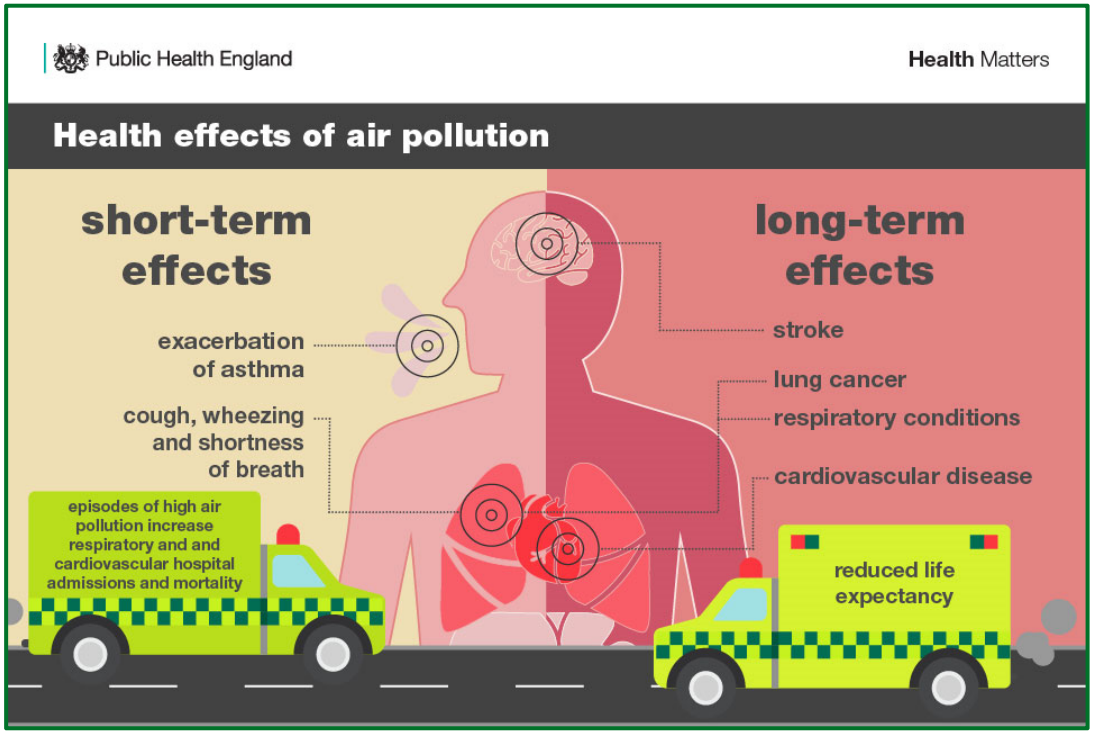


Image source: Public Health England (from https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution)

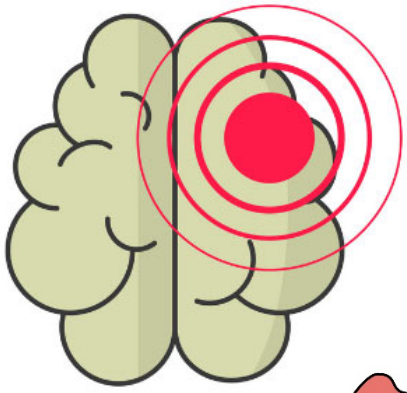
HEALTH AND HEALTHCARE IMPACTS

We have used a tool developed by the UK Health Forum[7] to model the approximate long-term health and economic savings which could result from a significant reduction in air pollution, equivalent to immediately reducing 100% of the Camden population's PM2.5 exposure to a 'low' level (<12.3μg/m3). By 2030, relative to a business-as-usual scenario, such action could reduce the prevalence of the following diseases (in 2030) by:

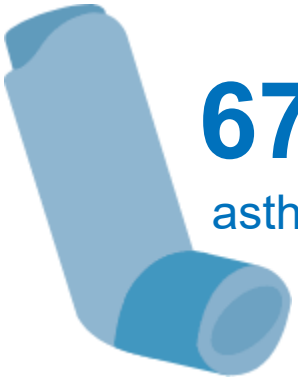
433 people with COPD

743 people living with Coronary Heart Disease

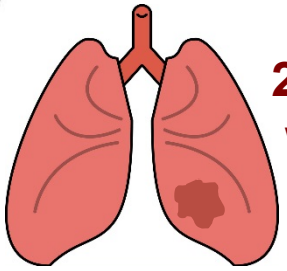
180 people who have had a stroke



1810 people living with diabetes



675 people with asthma *(**63%** of whom are children)*



22 people with lung cancer

& could prevent **600** deaths (2020-30)

Air pollution is a major environmental risk to health. There is no evidence for a safe level of exposure to fine particulate matter ($PM_{2.5}$), and adverse health effects are felt well below the legal EU limits that apply to England.[C]

This is why Camden chose to become the first council in London to adopt the more ambitious WHO standards for $PM_{2.5}$ pollution in order to drive progress towards radically cleaner air in January 2018.

Certain groups are more vulnerable to air pollution, such as older people. Camden's population is ageing, with a projected 28% increase in the number over 65 and a 43% increase in residents aged ≥85 by 2029, relative to 2019.[8]

Camden therefore needs to continue reducing pollution in the borough. This includes the following objectives:

- Reducing nitrogen dioxide levels to at the least meet the 40µg/m^3 objective across the borough and continuing to decrease particulate matter levels
- Reducing particulate concentrations to below 10µg/m^3 by 2030
- Meeting any new standards/policies; for example, the Mayor's London Environment Strategy commits to meet WHO guidelines by 2030 e.g. 20µg/m^3 a year for PM10 and 10µg/m^3 a year for $PM_{2.5}$
- Monitor and reduce other pollutants as appropriate e.g. ozone

The London Local Air Quality Management framework requires the local authority to regularly review air quality in Camden and compare the results against the national air quality objectives.

In August 2000, Camden Council completed a review showing that despite a steady improvement of air quality, the objectives for two pollutants - nitrogen dioxide (NO_2) and particulate matter of 10 microns diameter (PM_{10}) - were not likely to be achieved, and as a result, Camden declared an Air Quality Management Area across the borough. As such, Camden has a Clean Air Action Plan in place outlining the steps we will be taking to meet air quality objectives and we report on our progress annually.

Local authorities have a central role to play in improving air quality. They have a wealth of knowledge about the communities they serve as well as responsibility for a number of key levers such as parking, planning and local roads. However, local authorities can't improve air quality single-handedly. Other influential factors and policy actors include:

- International level e.g. legal pollution objectives, vehicle standards
- National level e.g. national policies and schemes, vehicle standards
- Regional level e.g. local policies and schemes such as healthy streets, congestion charging, the introduction of the London ultra low emission zone (ULEZ) and investment in public transport
- Other local authorities (particularly in neighbouring boroughs)

Camden continues to work with and lobby these groups to improve air quality. For example, encouraging changes to vehicle and fuel tax, local authority powers and earlier introduction of the ULEZ. We are also updating our own air quality strategy, looking for new opportunities with teams across the Council and will continue to bid for funding.

Pollutant	Health impacts	Sources
Particulate matter (PM_{10} and $PM_{2.5}$)	Long-term exposure to particulates contributes to the risk of developing cardiovascular and multiple respiratory diseases, as well as lung cancer, dementia, low birthweight and impaired lung development. The majority of particulate matter's health impact is associated with long-term exposure, although exposure to high concentrations during short-term pollution episodes can also exacerbate many lung and heart conditions, significantly affecting quality of life, and increase visits to general practitioners, hospital admissions, and deaths. $PM_{2.5}$ is understood to have greater health impacts than PM_{10} because the smaller size of these particles (≤2.5μm as compared to ≤2.5μm) means that they can travel deeper into the lungs and enter the bloodstream.	The greatest source of particulate matter (PM_{10}) produced within Camden comes from road traffic, which accounts for 26% of PM_{10} emissions locally. PM emitted from road sources includes brake and tyre wear as well as particulates in exhaust gases.(9) Of note, 41.5% of PM_{10} emissions in Camden are attributable to commercial cooking, and construction work contributes 23% of PM_{10} emissions in Camden. Domestic and commercial gas boilers each contribute around 2% and 5% of local PM_{10} emissions respectively.(9)
Oxides of nitrogen (NO_X) made up of nitrogen oxide (NO) and nitrogen dioxide (NO_2)	NO_2 is an irritant gas, which, at high concentrations, causes inflammation of the airways. Studies have shown significant links between long term exposure to NO2 with adverse effects on health, including decreased lung function, increased respiratory symptoms such as coughing, bronchitis, increased incidence and prevalence of asthma, increased cancer incidence, reduced life expectancy and deaths.	The greatest sources of NO_2 originating in Camden are from road traffic (47%), commercial heat/power generation (37%) and domestic heat/power generation (5%).(9) For commercial and domestic, this includes gas, liquid and solid fuel combustion.
Ozone	Ozone is a respiratory irritant and short-term exposure to high ambient concentrations can cause inflammation of the respiratory tract and irritation of the eyes, nose, and throat. High levels may exacerbate asthma or trigger asthma attacks in susceptible people	Ozone is a secondary pollutant produced by the effect of sunlight on NOx and VOCs from vehicles and industry. Ozone concentrations are greatest in the summer on hot, sunny, windless days.

Camden

THE POLICY CONTEXT

Level	Policy	Description
National and internation-al	European Union air quality Directive (2008/50/EC)	This directive sets legal standards for a variety of pollutants considered harmful to health and the environment. They include both legally binding limit values and target values (which should be attained where possible without excessive costs).
	The 2010 Air Quality Standards Regulations	The 2008 ambient air quality directive sets legally binding limits for major outdoor air pollutants that impact public health. It entered English law through the Air Quality Standards Regulations 2010.
	The National Planning Policy Framework	This sets the national planning policy framework, which requires that developers need to take local authority Air Quality Management Areas (AQMA), Air Quality Action Plans (AQAPs) and Low Emission Strategies into account.
London	The London Plan	The Mayor of London is required to produce a spatial development strategy - known as 'the London Plan' - and keep it under review; boroughs' local development documents have to be in 'general conformity' with the London Plan. Policy 7.14 within the current London plan addresses air quality.
	The Mayor's London Environment Strategy	This strategy, published in 2018, sets out an integrated approach to reducing London's air and noise pollution, including the aim that London will have the best air quality of any major world city by 2050, alongside protecting green spaces and reducing climate vulnerability.
Camden	2019-2022 Air Quality Action Plan	The overarching priorities of the plan are to reduce transport, building and construction emissions as well as those from delivery, servicing and freight, support communities and schools, raise public awareness and lobby regional and national bodies. The Plan's overall aims are to meet the EU NO2 Objective, to continue to meet the EU objectives for pollutants where these are currently met; to continue to reduce PM10 and PM2.5 levels, and to drive compliance with WHO Guidelines by 2030.
	Our Camden Plan	Our Camden Plan is Camden council's response to the Camden 2025 vision, setting out a plan for how the ambitions in Camden 2025 will be achieved. It includes commitments to: • use all the resources at our disposal to play our part in improving air quality and • to make it easier for people to travel more by foot or by bike.
	Camden 2025	Camden 2025 sets out a vision for Camden's future, and its fourth call to action is that in 2025, Camden should be a clean, vibrant and sustainable place. Underpinning this is a vision that by 2025 no one in Camden should experience poor health as a result of the air they breathe, and that walking, cycling and public transport will be the best way to get around Camden.

What works?

While overarching regulations like vehicle emissions standards are controlled by governments and the EU and new vehicle designs by industry, local authorities have many powers that have been shown to contribute to reducing air pollution. The following are recommended in the Mayor of London's Air Quality Action Matrix*:

- Emissions from developments and buildings:
  - Reducing emissions from construction sites and enforcing relevant policies e.g. around non-road mobile machinery (NRMM)
  - Planning policies relevant to air quality e.g. air quality neutral, green space in design
  - Smoke control zones that are appropriately identified, promoted and enforced
  - Energy efficiency schemes in place
- Public Health and awareness raising
  - Public health involvement in the air quality agenda e.g. in JSNA
  - Transport team briefed on air quality and their responsibilities
  - School involvement e.g. through TfL STARS and air quality school plans
  - Promotion of availability of *air*TEXT to help protect the health of vulnerable individuals
- Delivery servicing and freight
  - Air quality taken into account in procurement process
- Borough fleet actions
  - Cleaning of Councils own fleet
  - drivers training
- Localised solutions
  - Green infrastructure
  - LENs
- Cleaner transport
  - Infrastructure and schemes for low emission vehicles e.g. loading bays, charging points
  - Anti idling campaigns
  - Pedestrianisation of roads permanently or for set days
  - Variation of parking fees to incentivise cleaner vehicles
  - Provision of infrastructure to support walking and cycling

* Accurate as of 03/5/19, https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/working-london-boroughs

ASSETS & SERVICES

Examples of current or recent schemes	
Camden Clean Air Partnership	A partnership of key representatives from various pollution sectors and residents from Camden who have come together to co-design new solutions to air pollution in Camden in the development of the 2019-2022 Action Plan.
National Clean Air Day	These events along with others such as walk to school and cycle to work weeks are used as promotional vehicles and to focus attention on air pollution and actions such as active travel options that reduce pollution. Events have included road closures, anti-idling events, low pollution walking routes and promoting Clean Air Day in Camden pharmacies. Camden have also been awarded LEN MAQF3 money to trial closing Camden High Street during specific events including national clean air day.
airText	This is a London-wide pollution alert system designed to help the public prepare for high pollution, which people are signposted to by Camden Council. It provides alerts to vulnerable people, informing them of what action to take to be less exposed on high pollution days.
Anti-idling actions	A number of anti-idling events have been conducted across Camden. These events encourage drivers to turn off their engines when they are parked up to help improve local air pollution. Camden has adopted anti-idling regulations, has enforcement teams and engage with idling drivers.
Camden Climate Fund	The Camden Climate Fund provides grants of up to 50% of costs to install renewable energy systems and make energy efficiency improvements to homes, businesses and community spaces.
Camden Smoke Control Area	Camden is a Smoke Control Area. This means only approved fuels and exempt appliances can be used, and that people can be fined up to £1000 for producing smoke from chimneys, fixed boilers or non-exempt appliances. Across England, 38% of particulates are from the usage of these yet only 2% of people use them for heating purposes. As part of the Clean Air Plan (2019-2022), communication and enforcement of these regulations will be improved. Camden is also lobbying national government to ban the use of these in areas that have good access to cleaner heat sources.
Energy Efficiency Grants and Services (e.g. WISH+, Warmer Cheaper Greener, RE:FIT)	A helpline, referral hub, home energy advice service and a range of grants for homeowners and landlords to provide advice and financial support to improve home energy efficiency and thermal insulation. Camden is also promoting and delivering energy efficiency and retrofitting projects in homes and workplaces through the GLA RE:NEW and RE:FIT programmes and the Camden Climate Fund.
Air quality monitoring	The council conducts routine air quality monitoring at locations across the borough. In addition to an urban background monitor in Bloomsbury, a kerbside monitor at Swiss Cottage and 1 roadside monitor at Euston Road there are 14 non-automatic monitors across Camden which measure NO2 levels. As part of the 2019-2022 Plan, Camden plans to improve access to local air quality data through OpenAir.
Play Streets and Healthy School Streets	The council has instigated a programme of closing or restricting access to roads outside schools at pick up and drop off times – this is being rolled out across the borough.
School Air Quality Audits	Following on from the Mayor of London funded audit of 3 Camden schools and 1 nursery and the implementation of the audit recommendations, the council is embarking on a project to deliver further air quality audits at all primary schools in the borough.
NW3 Green School Run Project	This project aims to reduce pollution from the independent school run in and around the NW3 area, including through a trial of a coach system with app-based booking serving private schools in the NW3 area
Clean Air Hospitals	Great Ormond Street Hospital and Global Action Plan launched the Clean Air Hospitals Framework in March 2019. This looks at seven key areas trusts can address including travel, procurement and supply chain, local air quality, and communication and training. It is funded by the Mayor's Air Quality Fund and aims to take a whole-organisation approach to reducing air pollution and raising awareness of it amongst staff and patients.

Camden

Although the EU has set legally binding limits of air pollution across member states, evidence has emerged that the burden of air pollution on health is significant at relatively low concentrations, there is no safe lower limit and health benefits will result from any reduction in air pollution. This evidence has led Camden Council to adopt the target of meeting the more stringent World Health Organization-recommended limit values by 2030.

EU limit values and World Health Organization guidelines, and achievement in Camden

Pollutant	Period	EU Limit	WHO	Achievement (EU Limits)	Achievement (WHO Limits)
PM_{10}	Annual mean	40µg/m^3	20µg/m3		
PM_{10}	Daily mean (exceedances)	50µg/m^3 (35)	50µg/m^3 (3)		
$PM_{2.5}$	Annual mean	25µg/m^3	10µg/m^3		
$PM_{2.5}$	Daily mean (exceedances)	N/A	25µg/m^3 (3)		
NO_2	Annual mean	40µg/m^3	40µg/m^3		
NO_2	1-hour mean (exceedances)	200µg/m^3 (3)	200µg/m^3 (-)		
O_3	8 hr daily max (exceedances*)	120 µg/m^3(25)	100µg/m^3		
* days/year, calculated over 3-year mean					

- London wide air quality polling in 2018 found:
  - 91% were aware of air quality as an issue (up from 83% in 2017 and 88% in 2017)
  - 82% agreed tackling air quality should be a priority
  - 53% felt their health had been impacted by air pollution (up from 47% in 2017)
  - Improved tax incentives (21%), environmental considerations (22%), better charging infrastructure (17%) and government grants (17%) were stated as what would incentivise people to buy electric vehicles
  - There was an increase in cycling from 29% in 2016 to 35% in 2018, over a third felt if there were less cars on the road they would cycle (or cycle more)
  - 49% thought you were least exposed to pollution in a car
  - https://www.londoncouncils.gov.uk/our-key-themes/environment/air-quality-london/air-quality-public-polling/2018-air-quality-polling

- People living and working in Camden were invited to comment on the draft Clean Air Action Plan in January-February 2019 (https://cleanaircamden.commonplace.is/overview). In total, 356 responses were submitted via the online consultation and 21 responses via mail and email; 109 of these comments related to transport, 29 to delivery, servicing and freight, 50 to communities and schools, 36 to construction and development emissions, and 22 to public health and awareness raising. This engagement is in addition to the approximately 750 residents and groups that contributed as part of design day engagement in September to October 2018. Overall, the Clean Air Action Plan and the specific actions appear to have been well received with on average 72% of the respondents supporting the proposed actions. A detailed breakdown of responses to specific proposed actions for each theme can be accessed at http://democracy.camden.gov.uk/documents/s79087/Appendix%20A%20-%20Consultee%20responses%20to%20specific%20proposed%20actions.pdf

- **Examples of some of the consultation responses received:**

  "I feel there could be 'clean air zones' around all schools. There should be a 'limited car scheme' for parents and zero tolerance for car idling. Walking and public transport should be encouraged." (Written consultation response)

  "More attention needs to be given to mitigating the effects of air pollution - for example by planting, screening, and by paying more attention to indoor air quality - and to ensuring information on air pollution reaches a wider range of homes and communities in Camden. Health services have a vital role in this, with clinics, health centres and GP surgeries as front line locations for providing and displaying information on actions we can take to protect ourselves from pollution, and ways we can reduce the pollution that we generate." (Written consultation response)

Air quality is a cross-cutting issue which impacts on multiple and diverse policy areas across the council. It requires:

- Funding and resources for initiatives and enforcement
- Stronger collaboration with local businesses, communities and institutions (e.g. schools and hospitals)
- Improving/targeting public awareness and changing attitudes

Furthermore, pollution has sources outside of local authority control. For example:

- Pollution is "transboundary"- meaning it has international, national and regional sources all of which will impact pollution in a borough
- Through traffic- a large percentage of traffic in Camden is from outside the borough and/or is just passing through. The main roads are also under TfL control.
- Diesel sources (freight, buses, taxis) - vehicles are not controlled by Camden policies but are influenced by factors such as vehicle emissions standards and bus policies. Diesel emissions are likely to be affected by the implementation of the London ULEZ, and whether this is accompanied by other supporting measures such as a scrappage scheme for older or non-compliant diesel vehicles.

Moving forward, these provide a challenge for local authorities and require involvement and/or new policies from wider organisations. Camden must continue to work with these organisations - for example by responding to National Government and Mayoral consultations, attending local authority air quality partnership meetings, working with community groups, educational institutes, businesses and other professional bodies.

The Clean Air Partnership is a strong springboard for (delivering ambition and coordination). However, the Council will need to ensure that air pollution remains a key priority for all partners and maintain high levels of engagement and action going forwards. In order to reduce air pollution levels to below the World Health Organization-recommended levels, rapid and sustained action on a range of fronts and across sectors will be required.

- Camden Council — https://www.camden.gov.uk/air-quality?inheritRedirect=true#ymdu
- Our Camden Plan — http://iamcamden.camden.gov.uk/files/Our-Camden-Plan.pdf
- Camden's 2019-2022 Air Quality Action Plan — https://www.camden.gov.uk/documents/20142/0/CAMDEN+CLEAN+AIR+ACTION+PLAN+2019-2022.pdf/d372ac97-fca6-f5bd-f8c7-ea9222331381
- OpenData Camden - https://opendata.camden.gov.uk/
- *air*TEXT pollution forecast — www.airtext.info
- London Air Quality Network — www.londonair.org.uk
- The Mayor's Environment Strategy — https://www.london.gov.uk/what-we-do/environment/london-environment-strategy
- The Mayor of London's air quality pages — https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality
- TfL Healthy Streets for London - http://content.tfl.gov.uk/healthy-streets-for-london.pdf
- Department for Environment Food and Rural Affairs, About Air Pollution — www.uk-air.defra.gov.uk/air-pollution
- World Health Organization, Air Quality and Health — www.who.int/mediacentre/factsheets/fs313/en/index.html
- Committee on the Medical Effects of Air Pollutants — www.comeap.org.uk

About Camden's JSNA

OpenData Camden brings together information held across the organisation into one accessible place. It provides access to evidence, intelligence and data on the current and anticipated needs of Camden's population and is designed to be used by a broad range of audiences including practitioners, researchers, commissioners, policy makers, Councillors, students and the general public.

This factsheet was produced by Isobel Braithwaite, Public Health Registrar and Ian Sandford, Public Health Strategist. It was reviewed by Ana Ventura, Senior Air Quality Officer and Tom Parkes, Senior Air Quality Officer. The figure in Slide 4 (NO_2 in Camden schools) was produced by Tom Callender, Public Health Registrar. It was approved for publication by Harold Garner, Head of Sustainability, in June 2020>. Contact: JSNA@camden.gov.uk

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References

1. Walton H. Dajnak D. Beevers S. et al. King's College London Understanding the Health Impacts of Air Pollution in London. 2015
2. NICE guidance NG70 Air pollution: outdoor air quality and health. 2017
3. Fecht D. Fischer P. Fortunato L. et al. Associations between air pollution and socioeconomic characteristics, ethnicity and age profile of neighbourhoods in England and the Netherlands. Environmental Pollution 2015;198:201-210
4. Di Q. Dai L. Wang Y. et al. Association of Short-term Exposure to Air Pollution with Mortality in Older Adults. JAMA. 2017;318(24):2446–2456. doi:10.1001/jama.2017.17923
5. Every breath we take: the lifelong impact of air pollution; report by the RCP and RCPCH. https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution
6. Mudway IS, Dundas I, Wood HE, Marlin N, Jamaludin JB, Bremner SA, Cross L, Grieve A, Nanzer A, Barratt BM, Beevers S. Impact of London's low emission zone on air quality and children's respiratory health: a sequential annual cross-sectional study. The Lancet Public Health. 2019 Jan 1;4(1):e28-40.
7. UK Health Forum (2018) Air pollution: a tool to estimate healthcare costs https://www.gov.uk/government/publications/air-pollution-a-tool-to-estimate-healthcare-costs
8. GLA Population projections (Jul 2017) - 2016-based population projections using a central trend-based projection. https://data.london.gov.uk/dataset/gla-population-projections-custom-age-tables
9. London Atmospheric Emissions Inventory (LAEI) 2016 GLA and TfL Air Quality. Borough Air Quality Data for LLAQM https://data.london.gov.uk/dataset/laei-2016---borough-air-quality-data-for-llaqm
10. London Councils, 2018 Air quality polling. Available at https://www.londoncouncils.gov.uk/our-key-themes/environment/air-quality-london/air-quality-public-polling/2018-air-quality-polling