

Clean Air Plan 2023-26

Produced in partnership by:

Guy's and St Thomas' NHS Foundation Trust

King's College Hospital NHS Foundation Trust



Foreword

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Lawrence Tallon



Lorcan Woods

At Guy's and St Thomas' and King's NHS Foundation Trusts, we are committed to providing sustainable healthcare, and protecting our planet which is the challenge of our age.

Clean air is essential for our health and the health of the planet. However, every single hospital, medical centre and care home in London is located in an area that exceeds the World Health Organisation's guidelines for the concentration of air pollutants.ⁱ

Why clean air matters

Local air quality and illness are closely interlinked. We recognise that our own operations contribute to air pollution. And that, as healthcare providers, we treat the people whose health is affected by air pollution.

Improving air quality has significant benefits including preventing illnesses, reduced health inequity, and improving the environment we live and work in.

What are we doing

With this plan, we are defining the ways in which we will address air pollution and ensure the health of our patients, staff and local communities.

We will reduce our own contribution to air pollution and will raise awareness amongst those who are most susceptible to the effects of air pollution.

Our Clean Air Plan aligns with the Guy's and St Thomas' Sustainability Strategy and King's Green Plan and will also help us achieve net zero carbon by 2040 for our direct emissions and 2045 for indirect emissions.






We all have a role to play

Air pollution does not recognise boundaries. As neighbouring NHS Trusts, we are joining forces to address this issue, learning from one another and working with local partners.

We ask our staff, patients, visitors, suppliers, partners and members of the local community to read this Clean Air Plan and join us in our work to implement its commitments and actions.

Together, we can make the air around us cleaner and healthier to breathe for all, now and for future generations.

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Contact us

For more information about this Clean Air Plan and our commitment to providing sustainable healthcare, please email:

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1. Background

1.1. About Us

Guy's and St Thomas' NHS Foundation Trust (Guy's and St Thomas') and King's College Hospital NHS Foundation Trust (King's) are two of the biggest and busiest trusts in the country with approximately 37,000 staff members and four million annual patient contacts between them.

Guy's and St Thomas' sites are St Thomas' Hospital, Royal Brompton Hospital, Evelina London Children's Hospital, Guy's Hospital, Harefield Hospital and community services in Lambeth and Southwark. King's provides services from King's College Hospital Denmark Hill, Princess Royal University Hospital, Orpington Hospital, Queen Mary's Hospital Sidcup and Beckenham Beacon.

In November 2022, Guy's and St Thomas' and King's joined forces in delivering on their commitments to provide sustainable healthcare with a shared sustainability team working across both trusts. Like many other environmental sustainability issues, air pollution has no organisational or geographical boundaries and requires partnerships working to address it. This Clean Air Plan therefore spans both trusts and the communities they serve.

As part of the Guy's & St Thomas' Foundation, Impact on Urban Health has established a ten-year programme to address the health effects of poor air quality on those most impacted: children, older people and those with heart and lung conditions. In 2020, Impact on Urban Health and Guy's and St Thomas' established an Air Quality Partnership. This partnership has enabled an increased focus on air quality work at the Trust, including the development of this Clean Air Plan support for its future implementation until June 2025.

1.2. Why write a Clean Air Plan?

Over time, many of us have become increasingly conscious of the quality of the water we drink and the food we eat, but less so of the air we breathe. Yet, globally 99% of people breathe in air that is harmful to their health, contributing to over eight million deaths per year or one in five of all deaths. . This is more than double the number of people dying from malaria, tuberculosis and HIV/AIDS combined and more than accumulated global COVID-19 deaths up to May 2023.ⁱⁱⁱ

Air pollution in London, where Guy's and St Thomas' and King's operate and serve their local communities, has improved over recent years but remains at unhealthy levels. It is estimated that up to 4,000 Londoners die prematurely each year due to air pollution and the city has the highest proportion of deaths attributable to particulate air pollution of all English regions.^{iv}

Further analysis based on 2019 data shows that every single hospital, medical centre or care home in London is located in an area that exceeds the World Health Organization's (WHO) guideline values for the concentration of air pollutants. This will include the majority of sites of Guy's and St Thomas' and King's.

In addition to improving our understanding of the levels and locations of air pollution, we are also much clearer about its effects on human health. Well beyond effects on the respiratory system only, we now understand that air pollution affects all organs in our bodies, and our mental as well as our physical health. In London, there are two main pollutants of concern based on their effect on human health: nitrogen dioxide (NO₂), particulate matter (PM₁₀) and fine particulate matter (PM_{2.5}).^{vi}

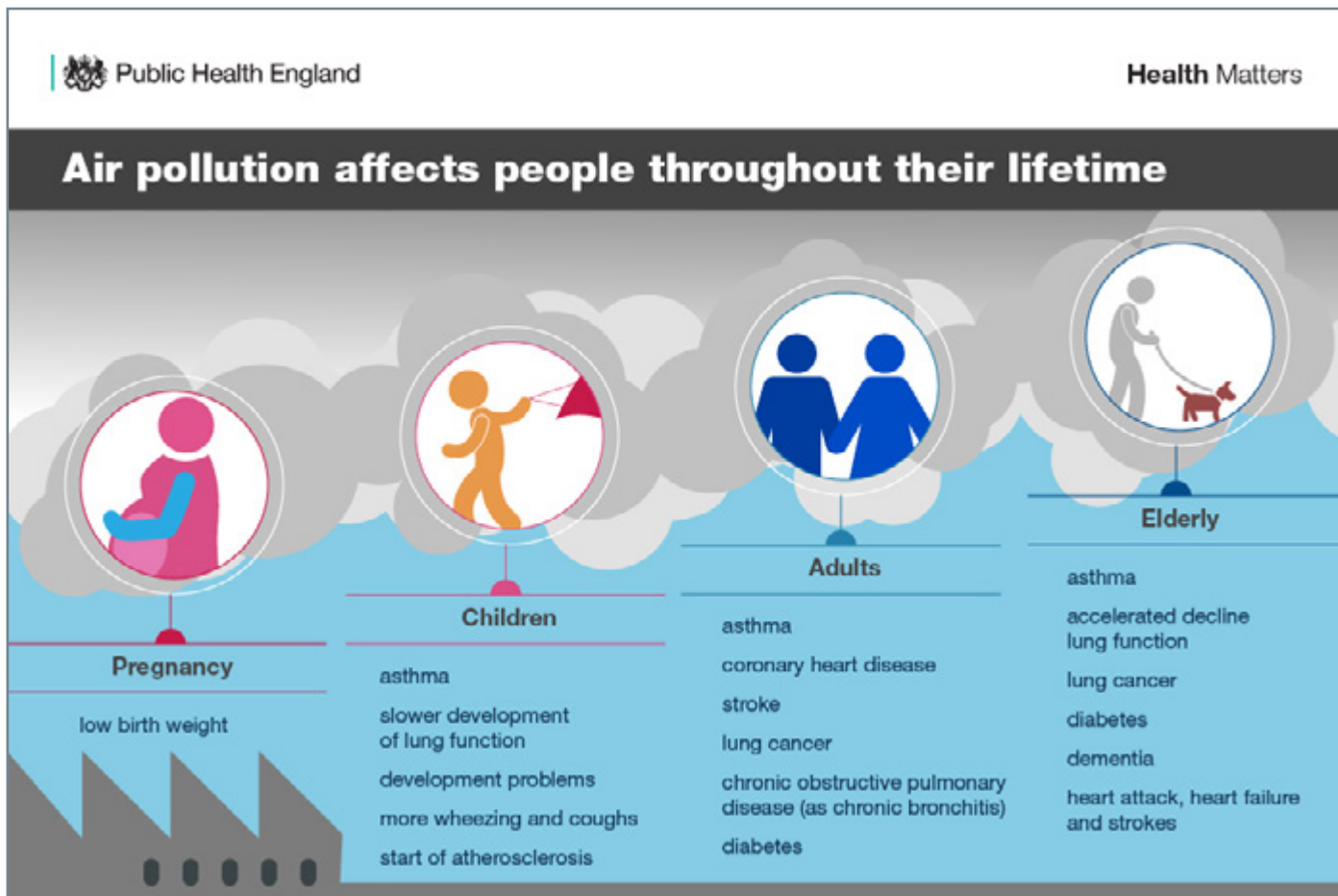


Figure 1: Health effects of air pollution throughout life

Considering the devastating effect air pollution has on health, it's clear the healthcare sector has a role to play in protecting people from poor air quality. As large organisations with a significant number of staff and patients, our operations have a substantial air pollution footprint. In return, we are directly affected as we treat people whose health is harmed by air pollution.

Addressing air pollution also co-benefits a number of other areas outlined within the Guy's and St Thomas' Sustainability strategy and King's Green Plan, with a particularly close link to carbon reduction. Many initiatives included in this Clean Air Plan, such as fleet electrification, will reduce local air pollution and carbon emissions simultaneously. Unlike the effects of carbon on climate change, the effects of local air pollution on health can often be felt immediately and locally, close to its source.

Guy's and St Thomas' and King's are committed to acting as anchor institutions for the benefit of local populations, which are amongst the most diverse in the country. This means we recognise that our long-term sustainability as healthcare institutions is tied to the wellbeing of the populations we serve.

Air pollution has devastating effects on everyone's health, but it disproportionately affects children, older people, and people with health conditions. Communities with higher levels of deprivation, or a higher proportion of people from minoritised communities, are also more likely to be exposed to higher levels of air pollution in cities like London. At the same time, these communities are less likely to contribute to local pollution levels. For example, those most affected by air pollution from traffic are often the same people who can't afford to drive. Air pollution and its health effects is therefore not only an environmental health issue but also a social justice issue.

We are publishing this Clean Air Plan in recognition of the clear links between air pollution, population health, and our responsibilities as anchor institutions.

2. Our Clean Air Plan 2023-2026

Both trusts have published their commitments to sustainable healthcare: Guy's and St Thomas' in its Sustainability strategy and King's in its Green Plan. This Clean Air Plan directly supports the implementation of both.

The approach to local air pollution is two-fold:

- 1) To raise awareness of the issue, its effects on human health, while empowering staff and patients to take action.
- 2) To reduce our own contribution to local air pollution

Based on potential impact as well as feasibility, we have identified five focus areas to address air pollution:

Clean Air Plan focus areas

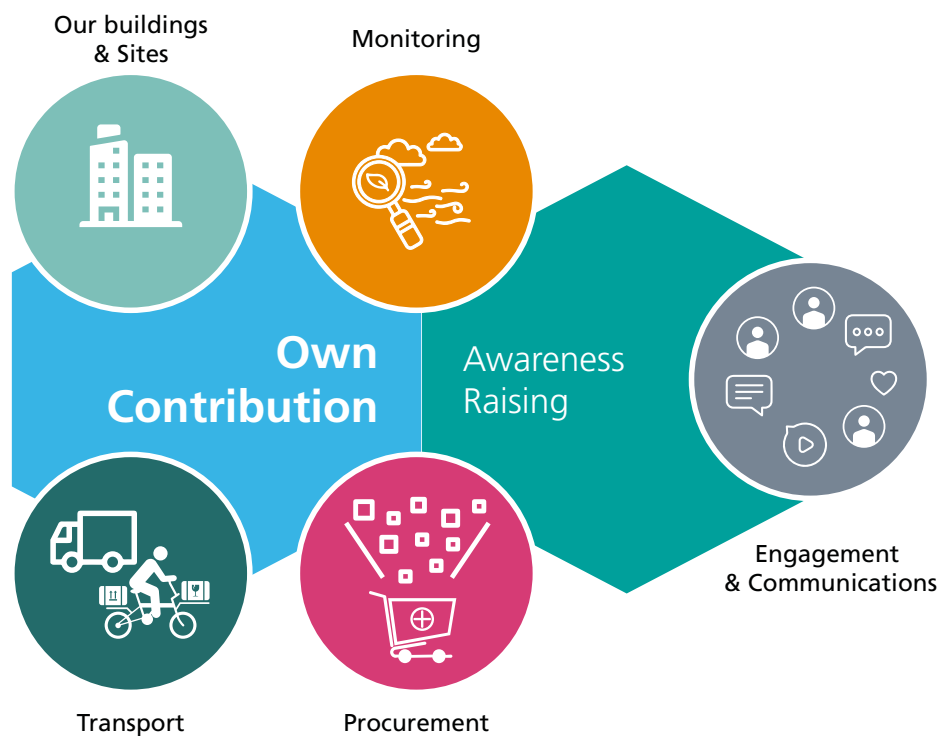


Figure 2: Clean Air Plan focus areas

For each focus area, this plan outlines our commitments to 2026 (where we want to get to) as well as our priorities for the first year of implementation 2023/24 (how we plan to get there). This plan will be complemented annually with addendums including new priorities for the coming year and be revised in its entirety in 2026.

Table 1 in Appendix 3.1 provides an overview of all commitments and priorities.



2.1 Monitoring

Air quality monitoring allows us to measure air pollution levels at our sites. The data gathered contributes to building up a London-wide picture of air pollution levels around hospitals and other healthcare settings; helps us identify and address specific areas of our own contribution to the problem; and allows us to track progress over time.

2.1.1. Ambient air quality

Guy's and St Thomas' and King's have been early adopters of monitoring outdoor (ambient) air quality on our sites. This includes monitoring at pedestrian entrances, where footfall is highest, as well as loading bays where vehicles are likely to contribute significantly to poor air quality.

As of January 2023, we have air quality monitoring sensors installed at the following locations:

Guy's and St Thomas' NHS Foundation Trust

Guy's Hospital main entrance

Guy's Hospital loading bay

Royal Brompton Hospital Fulham Wing entrance

St Thomas' Hospital A&E drop-off

St Thomas' Hospital loading bay

St Thomas' Hospital main entrance

King's College London NHS Foundation Trust

King's College Hospital Denmark Hill Caldecot Rd near main entrance

Orpington Hospital main entrance

Princess Royal Hospital main entrance

Breathe London sensors provide hourly averages for fine particulate matter and nitrogen dioxide and form an important part in building a picture of air pollution levels around hospital settings in London. All data from the Breathe London sensors is publicly available on the Breathe London website.

In addition, **Emsol** air quality monitoring sensors have been installed on Guy's and St Thomas' biggest and busiest loading bays. These focus on short-term spikes in air pollution and their causes. The installation includes a reference sensor on the same site, which allows for differentiation between local background pollution and that likely to be caused by operations on our loading bays.

Loading bays

We are working on further understanding our own contribution to local air pollution on our loading bays versus local reference levels.

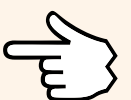
The monitoring data from our loading bays will also feed into our procurement work— see section 2.3.

Constructions sites and public realm projects

We will also monitor air pollution to achieve our commitments around major construction works and improvements of our publicly accessible external spaces (public realm) (see section 2.2.2).

2.1.2. Indoor air quality

Awareness of poor outdoor air quality has increased significantly over the last few years. However, most of us spend the majority of our time indoors and some of the most vulnerable to poor air quality such as children, those with respiratory and cardiovascular conditions, and older people, are likely to spend their time indoors when on Trust premises. Yet, our indoor air quality is less well understood than that outdoors.



Click to visit

Monitoring and evaluation

In 2022/23 Guy's and St Thomas' undertook work to improve our understanding of indoor air quality at six locations where we expected the most vulnerable patients to spend time and/or we expected high levels of air pollution due to the activities on site.

We took air quality measurements in each of these locations during hot weather in summer and cold weather in winter to also understand the effect differences in outdoor air quality, heating and changes in ventilation might have on indoor air quality.



Pedestrian entrances

We are committed to the continued monitoring of ambient air pollution at the pedestrian entrances of our acute sites. The objectives of this work are to contribute to a complete picture of pollution levels at hospital sites across London, identify air pollution hotspots, and enable the data-driven design of solutions.

Priority actions 2023/24:

- Installation of a Breathe London air quality sensor at Harefield Hospital
- Installation of signage at each pedestrian entrance air quality monitoring sensor explaining what we are monitoring, why we are monitoring, and how the publicly available data can be accessed.
- Make data available to staff via Clean Air Network (Guy's and St Thomas') and the Air Quality Action Group (King's) to raise awareness, harness local staff knowledge to improve the understanding of potential patterns in pollution spikes, and facilitate the joint design and implementation of Trust-level air quality initiatives.



Loading bays

On this basis **we are committed to** reducing the air pollution emissions on our loading bays versus local reference levels by 2026. We will set quantified reduction targets for 2024/25 determined by baselining work in 2023/24.

Priority actions 2023/24:

- Continued monitoring at the loading bays of both Guy's and St Thomas' hospitals.
- Sensor installation at the King's loading bay at Denmark Hill.
- Quantify difference in air pollution levels between loading bays and hyperlocal reference sensors; number and types of alerts; key contributors (own fleet and suppliers).
- Based on the above: set reduction targets for 2024/25.



Monitoring and evaluation

We are committed to analysing these findings and identifying mitigation measures where necessary. We will also support health and safety teams in conducting similar work across indoor areas of particular relevance to staff members.

Priority actions 2023/24:

- Analysis of indoor air quality data gathered across six locations in 2022/23; identification of mitigation measures where relevant; recommendations communicated to Estates and Facilities, Health and Safety, as well as our Clean Air Network and Air Quality Action Group.
- Monitoring of nitrous oxide levels at maternity wards



Constructions sites and public realm projects

We are committed to monitoring the particulate matter 10 (PM10) from our major construction projects, by putting an alert and recording system in place, identifying mitigation measures and taking actions when necessary.

Priority actions 2023/24:

- Installation of additional air quality monitors at King's Denmark Hill site to establish a baseline prior to major public realm work commencing.





2.2. Transport

Transport plays a key role in the overall operation of the trusts' daily activities, whether that is through directly operated fleets (for example, large parts of patient transport, pool cars and staff-owned vehicles (grey fleet) for community teams, community estates and engineering) or third-party fleets (for example, supplier delivery fleets, outsourced patient transport and courier services). Indeed, the number of vehicles on the overall NHS fleet is second only to that of the Royal Mail nationally.^{ix}

Recognising the significant impact of this fleet not only on carbon emissions but on local air pollution too, the NHS Long Term Plan commits to cut business mileages and fleet air pollutant emissions by 20% by 2023/24.^x

Guy's and St Thomas' and King's College Hospital trusts operate just under 300 vehicles as part of their core fleet, enable the leasing of 500 vehicles through salary sacrifice schemes, and reimburse staff members for grey fleet vehicle miles where private vehicles are used for work purposes.

2.2.1. Modal shift

Following a sustainable travel and transport hierarchy approach, the biggest reduction to local air pollution from transport would be achieved by a shift from vehicles to a more sustainable form of transport such as cycles.

This is because even a shift from diesel and petrol vehicles to electric eliminates tailpipe emissions, it still leaves particulate emissions associated with brakes, tyres and resuspension. Electric vehicles also still contribute to congestion and road traffic accidents, both of which worsen the lived experiences of our local communities.

A group of vehicles particularly suitable to modal shift is that of low mileage vehicles. We define these as vehicles that, on average throughout the year, are driven less than 15 miles per day. Providing

these vehicles do not transport patients or the load carried is small, there may be viable transport alternatives to vehicles for these trips.

E-bikes (bicycles with an integrated electric motor to assist the rider) and e-cargo bikes (e-bikes designed to carry larger loads) are suitable alternatives to vehicles, particularly in urban environments on routes of comparatively low mileage with frequent stops throughout the day. Benefits go beyond a reduction in carbon emissions and local air pollution and include reduced journey times and journey time reliability, improved health and wellbeing of staff members using the bikes, fewer parking restrictions, reduced fuel costs as well as reduced noise and congestion on our roads.

Guy's and St Thomas' and King's have teams operating in our local communities (for example, neighbourhood nurses) and between acute and community sites, where the potential to replace vehicles by e-bikes and/or e-cargo bikes is high.

In 2022, nurses from Guy's and St Thomas' NHS Foundation Trust successfully piloted two electric bikes to visit their patients as part of an initiative to reduce pollution, improve staff health and wellbeing and reduce travel time between appointments.



2.2.2. Fleet electrification

Where no suitable alternatives to vehicles exist, fleet electrification will lead to a significant reduction in local air pollution from vehicles as there are no tailpipe emissions. Going beyond the NHS England Long Term Plan commitment of reaching 90% of the NHS fleet using low, ultra-low and zero-emissions vehicles by 2028, Guy's and St Thomas' and King's have committed to net zero fleets.



Modal shift

We now commit to introducing e-bikes or e-cargo bikes at six additional locations across both trusts subject to demand from community/satellite teams compared to 2022/23. All staff using these bikes will be trained to Bikeability Level 3, which equips cyclists with the skills they need to stay safe in more challenging urban situations. We also commit to reducing the number of Trust vehicles on our roads by addressing low mileage vehicles where possible. By 2026 low mileage vehicles that, on average, do less than 15 miles per day will make up less than 5% of our total vehicle fleet.

Priority actions 2023/24:

- A minimum of two additional e-cargo bikes implemented and staff using these bikes trained to Bikeability Level 3.
- A 10% reduction in low mileage vehicles (average of less than 15 miles per day) compared to 2022/23.



Fleet electrification

We are committed to switch 40% of our fleet cars and 20% of our commercial fleet vehicles to zero tailpipe emissions by 2026 and for the required charging infrastructure to be in place and available. In addition, all new salary sacrifice vehicles are to be zero tailpipe emission.

The electrification of salary sacrifice vehicles does not depend on charging infrastructure provision on often power-constrained sites, which means these vehicles can be electrified faster than the trusts' core fleets.

Priority actions 2023/24:

- Ensure monthly fleet data on mileage and fuel is available for over 90% of Trust fleet vehicles.
- Finalise fleet electrification and charging infrastructure plans including community/satellite sites where relevant.



2.3. Procurement

Guy's and St Thomas' and King's experience a large number of supplier deliveries to support clinical and non-clinical activities. Given the urban environment of most of the acute sites, with significant levels of traffic congestion and low travel speeds, local air pollution linked to these deliveries is high. These areas are also densely populated, which means that high pollution levels translate into high exposure levels with associated health effects.

Guy's and St Thomas' opened their off-site consolidation centre in Dartford in August 2019 and King's have managed a consolidation centre in Croydon since 2020, which reduced the number of direct truck deliveries to site but has not eliminated them.

The most effective way of addressing air pollution from our supplier fleets is through procurement and, more specifically, tender criteria and contract management. For both, the focus will be on criteria and clauses that are complementary to those relating to carbon emissions.

2.3.1. Air quality criteria in tenders

In tender documents, air quality should be highlighted as a sustainability issue linked to but separate from carbon emissions. Specific criteria can relate to engine idling, vehicle emissions profiles and load consolidation

2.3.2. Contract performance management

Once a supplier has been appointed, the requirement to meet air quality criteria needs to be included in contract clauses and monitored as part of standard contract performance management.

Air quality monitoring on our loading bays (see section 2.1.1) will support performance management. In particular, the number of air pollution alerts raised can trigger engagement with suppliers and support requests for analysis and changes in supplier fleet movement and idling behaviour.



Air quality criteria

We are committed to including separate air quality criteria in our tender documentation for any supplier contracts with significant transport elements (for example, waste or laundry contracts).

Priority actions 2023/24:

- Work with procurement teams on standard air quality criteria to be included in contracts with significant transport element.



Contract performance management

We are committed to integrating air quality considerations in supplier contract clauses and performance management.

Priority actions 2023/24:

- Integrate air quality considerations into the Guy's and St Thomas' waste contract and performance management based on air quality monitoring on the loading bays. For King's this will follow once such an air quality monitoring baseline has been established (see section 2.1.1).



2.4. Our buildings and sites

According to research conducted by Impact on Urban Health, the built environment accounts for 72% of particulate matter 10, 74% of particulate matter 2.5 and 40% of nitrogen oxide in Lambeth and Southwark. Guy's and St Thomas' and King's contribute to these local pollution levels by operating from seven acute hospital sites and over 100 community sites.

The sites and buildings we operate from need to be heated, cooled and ventilated, cleaned and serviced – all activities that cause indoor and outdoor pollution. The buildings also need to be periodically refurbished to bring the existing estate up to standard and new facilities need to be invested in and built.

In addition, vehicle movements and idling elevate hyper-local pollution levels at our sites. Considering design and landscaping to keep vehicles away from pedestrian entrances and open windows can play an important role in reducing local impacts.

2.4.1. Existing buildings

For our existing building stock we consider energy generation and consumption to be the largest contributors to local air pollution.

Emissions from combined heat and power (CHP) plants and gas boilers

Guy's and St Thomas' served as a case study in Ricardo's Energy and Environment scoping study on business air quality footprints in 2022. This showed that the Trust's CHPs produced more than 70 times the amount of nitrogen dioxide than its vehicle fleet and over 30 times the amount of particulate matter 2.5. However, emissions from vehicles cause more local pollution because chimney heights and dispersion of air are likely to carry exhaust plumes of CHP and boilers outside the immediate surroundings of our Trust sites.

Migration away from CHP and replacing them with zero carbon and lower air pollution alternatives will therefore be key to reducing our Trust contributions to air pollution.

In addition, emissions from gas boilers are a major source of local pollution with boilers and cookers accounting for approximately 21% of total nitrogen oxide emissions across Greater London.^{xiii}

These are long-term measures, but ongoing Trust decarbonisation planning will need to address both the migration away from CHP as well as the replacement of gas boilers.

2.4.2. Construction

The share of the construction industry's contribution to air pollution has increased in recent decades and now accounts for approximately 30% of particulate matter 10 pollution in London.^{xiv}

Awareness of the issue has improved with 97% of people within the construction sector surveyed for a 2022 study by the Centre for Low Emission Construction and Impact on Urban Health stating that "air quality is an extremely or very important environmental health concern"; and "over 60 of survey respondents recognise the construction sector significantly contributes to air pollution."

Within the industry, key contributors to local air pollution are machine and vehicle emissions that have, to date, been predominantly diesel powered, as well as dust from construction.

At Guy's and St Thomas' and King's, estate maintenance and expansion to accommodate patients leads to a constant stream of construction projects and hence a significant opportunity to reduce our contribution to local air pollution. According to the London Plan 2021 Policy SI 1, development should not lead to further

deterioration in existing poor local air quality; it should not create any new areas that exceed air quality limits; or create unacceptable risk to high levels of exposure to poor air quality.^{xv}

Air Quality Neutral guidance applies to all developments in London; Air Quality Assessments are required for major developments or those in areas of poor air quality; and Air Quality Positive Guidance applies to masterplans and development.

briefs for all large-scale development proposals subject to an Environmental Impact Assessment. All three of these approaches will apply to our trusts' estate development.



Existing buildings

We commit to integrating air quality considerations in all energy and decarbonisation planning.



Construction

We are committed to further integrating air quality considerations into our major construction projects as well as improvements of our publicly accessible external spaces (public realm works). We will ensure existing air quality standards in construction are met on our sites and air quality monitoring (see section 2.1) will be deployed to achieve both these commitments.

Priority actions 2023/24:

- Learning and development: two 'air quality and emissions in construction' workshops with capital projects and estates planning teams (one at each Trust).



2.5. Awareness raising, engagement and communications

People do not have much control over the air pollution they are exposed to. However, it is important that people are informed about air pollution. With more than 37,000 staff members and four million patient contacts per year between the two trusts, the opportunity to raise awareness of air pollution and its health effects among these direct stakeholder groups is significant.

This information will focus on how people can protect themselves - and their families - from air pollution, while reducing their own contribution to poor air quality.

Information shared will therefore go beyond air pollution measures relevant at Trust level and include those that apply at home, for example, advice to avoid wood burning.

2.5.1. Staff engagement

Guy's and St Thomas' and King's staff members are a hard-working, dedicated and diverse group of people focussing on delivering the best possible care for our patients.

This large staff body of 37,000 members also represents an opportunity to raise awareness of and address the social injustice aspect of air pollution (see section 1.2). At Guy's and St Thomas' approximately 41% of the workforce identifies as coming from a Black, Asian or minority ethnic (BAME) background and 72% are female, while for King's these figures are 50% and 75% respectively. We know that BAME communities are more likely to be exposed to, and affected by, air pollution compared to other communities in London.^{xviii}

Engaging with our diverse staff body on this important issue will allow those most exposed to and affected by high air pollution levels to become more informed and engaged in shaping air quality action at the Trusts.

Clean Air Network and Air Quality Action Group

Both trusts run their own staff engagement groups with a special focus on air quality: the Clean Air Network at Guy's and St Thomas' and the Air Quality Action Group at King's. These groups are voluntary and open to all staff members. They aim to raise awareness, educate, encourage behaviour change, create ideas for change in people's personal lives and at work, and support the implementation of air quality initiatives on our sites.

Air pollution alerts

During high and very high pollution episodes that are linked to an increase in respiratory and cardiovascular hospital admissions, it is important to

- 1) alert staff to actions they can take to reduce their own contribution to air pollution, for example by leaving polluting vehicles at home, where possible, or avoid engine idling, and
- 2) for staff to identify vulnerable patients and provide them with recommended actions and health advice from the Department for Environment, Food & Rural Affairs (Defra).

Defra's daily air quality index (DAQI) is numbered 1-10 and divided into four bands for each key pollutant, low (1) to very high (10). Air pollution alerts are to be sent at 'high' (levels 7-9) and 'very high' (level 10), which in London over the last ten years have occurred between one and seven times per year.

Communications materials and events

Communication materials and events are important ways of supporting our staff engagement efforts on either a general awareness-raising or project specific level.

2.5.2. Patient engagement

Air pollution affects the respiratory system, every organ in our bodies, and affects people's mental health. For now, we will focus on the following patient groups that we consider most vulnerable to air pollution: cardiovascular, endocrine, neurology, obstetrics and gynaecology, oncology, paediatric and respiratory.

Clinicians' training

To effectively enable patient engagement, we need to ensure clinicians understand the links between air pollution and health. While this link is fairly well understood and communicated by respiratory clinicians, it is less well established for links between other health conditions and air pollution.

In his Annual Report 2022, the Chief Medical Officer makes a recommendation specific to training of healthcare staff, which "[...] should include the health effects of air pollution and how to minimise these, including communication with patients."^{xix}

Medical specialty fact sheets

Clinicians can be informed about the links between air quality and a clinician's area of speciality using medical fact sheets.

Engagement with external stakeholders and knowledge sharing

We are not the only healthcare organisations who recognise the need to reduce their contribution to local air pollution and/or raise awareness of the issue. Indeed, many trusts have included air quality in their Green Plans, which is replicated by regional plans produced by Integrated Care Systems (ICSs).

However, experience in addressing air quality at Trust or ICS level remains limited and sharing of knowledge and experience will be essential to enable a system-wide implementation of effective measures.

As such, continued work with external stakeholders is essential. More specifically, these include, but are not limited to, our local authorities and business improvement districts, the Greater London Authority (GLA) and Transport for London (TfL), other NHS Trust and primary care settings, the South East London Integrated Care System (SEL ICS), the Greener NHS and the Department for the Environment, Food and Rural Affairs (Defra).

We commit to ongoing engagement on air quality with key external stakeholders, our local communities, and to sharing learning and knowledge with other NHS trusts and healthcare organisations. For example, this will include case studies, webinars, and air-quality focussed sessions with other ICS trusts.



Clean Air Network and Air Quality Action Group

We commit to the continued enabling and facilitation of our air quality staff engagement groups and aim for clinical as well as non-clinical representation.

Priority actions 2023/24:

- Promotion of our air quality staff engagement groups through wider sustainability groups, staff health and wellbeing teams, as well as through other relevant groups and events. Clinical representation from at least three medical specialties (respiratory, cardiology and paediatrics) with proactive involvement in the implementation of this Clean Air Plan.
- Hold regular (at least quarterly) meetings for our air quality staff engagement groups with the opportunity for staff members to take action and actively support the implementation of air quality initiatives.



Air pollution alerts

We commit to sending alerts to all staff members on days of high and very high pollution levels including both a call to staff to reduce their own contribution to air pollution and advice for vulnerable staff members and patients.

Priority actions 2023/24:

- Implementation of an air pollution alert system at King's including clear activation processes and responsibilities. Alerts to go out on every day of high or very high air pollution.
- Review of existing Air Pollution Alerts Plan at Guy's and St Thomas' including clear activation processes and responsibilities. Alerts to go out on every day of high or very high air pollution.
- Collaborate with local partners such as London Borough of Lambeth and London Borough of Southwark by feeding into the revision of the air pollution alert system AirText.



Communications materials and events

We commit to communicating to staff members about air quality, its health effects and actions they can take through the use of communications materials and the organisation of engagement events.

Priority actions 2023/24:

- Create and distribute an accessible air quality fact sheets for all staff members. This will include both digital and printed versions for staff-facing notice boards with links to dedicated air quality pages on the intranet. The number of visits to these pages will be a performance indicator to measure impact.
- Create anti-idling signage for Trust ambulance waiting areas and loading bays. These will include clear and simple messaging and a visible display. At St Thomas' Hospital, data from air quality sensors at the pedestrian entrance as well as the ambulance waiting area will provide an indication of any impact this signage can have in any given area (see 2.1.1 for more information on ambient air quality monitoring).
- Organise Clean Air Day activities led by our air quality staff engagement groups and designed based on their air quality priorities.



Clinicians' training

We commit to providing clinicians with post code air quality data for their patients as well as targeted and specific air quality training, either in-house or through a third-party training provider.

Priority actions 2023/24:

- Identify air quality training for clinicians and make it available to a minimum of three medical specialties. We will assess the impact of this work based on attendance and feedback forms.
- Integrate post code air quality data into patient electronic health records (EPIC) to make clinicians aware whether patients live in areas exceeding WHO guidelines for PM2.5 and NOx. We will include links to further information, training and advice. Where possible, we will measure the number of visits to patients' postcode air quality data in EPIC and links to additional information.



Medical speciality fact sheets

We commit to developing fact sheets for medical specialties with the most well-established links between health conditions and poor air quality: cardiovascular, endocrine, neurology, obstetrics and gynaecology, oncology, paediatric and respiratory.

Priority actions 2023/24:

- Develop targeted fact sheets for a minimum of three medical specialties. These will be both digital and printed for staff-facing events, workshops and team meetings.

3. Appendices

3.1. Overview of commitments and priorities

Area	Commitment to 2026	Priority 2023-24 #		Feasibility + to +++	Cost £ - £££*	Prioritisation + to +++
Monitoring						
Ambient air quality						
Pedestrian entrances	Continued ambient air quality monitoring at our pedestrian entrances of acute sites with the objective to contribute to a London-wide picture of air pollution levels at hospital sites; to identify air pollution hotspots and to enable the data-driven design of air quality initiatives and projects.	1	Installation of Breathe London air quality sensor at Harefield Hospital	+++	£	++
		2	Installation of explanatory signage at each pedestrian entrance air quality monitoring sensor	+++	£	++
		3	Make data available to staff via Clean Air Network (Guy's and St Thomas') and the Air Quality Action Group (King's)	+++	n/a	++
Loading bays	Reducing the additional pollution load on our loading bays by 2026 with quantified reduction targets to be set for 2024/25 determined by baselining work in 2023/24.	4	Continued monitoring at Guy's loading bay and St Thomas' loading bay	++	££	+++
		5	Sensor installation at the King's loading bay at Denmark Hill	++	££	+++
		6	Quantify difference in air pollution levels between loading bays and hyperlocal reference sensors; number and types of alerts; key contributors (own fleet and suppliers)	++	n/a	+++
		7	Based on the above: set reduction targets for 2024/25	+++	n/a	++
Construction sites and public realm	Ambient monitoring of particulate matter 10 (PM10) for major construction projects with an alert and recording system in place, mitigation measures identified and taken where required.	8	Installation of additional air quality monitors at King's Denmark Hill site to establish a baseline prior to major public realm work commencing.	+++	££	++

Indoor air quality						
Monitoring and evaluation	Analysing findings from 2021/22 indoor air quality monitoring work; identify mitigation measures where necessary.	9	Analysis of indoor air quality data gathered across six locations in 2022/23; identification of mitigation measures where relevant; recommendations communicated	++	n/a	++
	We will also support health & safety teams in conducting similar work across indoor areas of particular relevance to staff members.	10	Monitoring of nitrous oxide levels at maternity wards	++	££	+
Transport						
Modal shift						
E/cargo bikes	Introducing e/cargo bikes at six additional locations across both trusts subject to demand from community / satellite teams compared to 2022/23. All staff using these bikes will be trained to Bikeability Level 3.	11	A minimum of two additional e/cargo bikes implemented and staff using these bikes trained to Bikeability Level 3.	++	££	+++
	Reducing the number of Trust vehicles on our roads by addressing low mileage vehicles where possible. By 2026 low mileage vehicles that, on average, do less than 15 miles per day, will make up less than 5% of our total vehicle fleet.	12	A 10% reduction in low mileage vehicles (average of less than 15 miles per day) compared to 2022/23.	++	£	++
Fleet electrification						
Commercial vehicles, cars and salary sacrifice fleet	20% of our commercial vehicle fleet, 40% of our fleet cars and 100% of new salary sacrifice vehicles to be zero tailpipe emission. The required charging infrastructure to support the electric commercial and car fleet will be in place and available.	13	Ensure fleet data on mileage and fuel is available for over 90% of Trust fleet vehicles on a monthly basis	++	££	++
		14	Finalise fleet electrification and charging infrastructure plans including community/satellite sites where relevant	++	n/a	+++

Procurement						
Air quality criteria in tenders						
Tender documentation	Including separate air quality criteria in our tender documentation for supplier contracts with a significant transport element, e.g. waste or laundry.	15	Work with procurement teams on standard air quality criteria to be included in contracts with significant transport element. Agreed definition of 'significant transport element'	++	£	+++
Contract performance management						
Contracts	Integrating air quality considerations in supplier contract clauses and performance management.	16	Integrate air quality considerations into the Guy's and St Thomas' waste contract and performance management based on air quality monitoring on the loading bays. For King's this will follow once such an air quality monitoring baseline has been established (see section 2.5.1)	++	n/a	+++
Our buildings and sites						
Existing buildings						
Emissions from CHP plants and gas boilers	Integrating air quality considerations in all energy and decarbonisation planning.	-		++	££	++
Construction						
Major construction and public realm works	Further integrating air quality considerations into our major construction as well as public realm works and to ensure existing air quality standards in construction are met on our sites. Air quality monitoring will be deployed to achieve both these commitments.	17	Learning and development: two 'air quality and emissions in construction' workshops with capital projects and estates planning teams (one at each Trust).	++	££	+
Awareness raising, engagement and communications						
Staff engagement						
Clean Air Network and Air Quality Action Group	Continued enabling and facilitation of our air quality staff engagement groups and aim for clinical as well as non-clinical representation.	18	Promotion of our air quality staff engagement groups through wider sustainability groups, staff health & wellbeing teams, as well as through other relevant groups and events. Clinical representation from at least three medical specialties (respiratory, cardiology and paediatrics) with proactive involvement in the implementation of this Clean Air Plan.	+++	£	++

		19	Hold regular (at least quarterly) meetings for our air quality staff engagement groups with the opportunity for staff members to take action and actively support the implementation of air quality initiatives.	+++	n/a	++
Air pollution alerts	Email alerts to all staff members on days of high and very high pollution levels including health advice to communicate to vulnerable staff members and patients.	20	Implementation of an air pollution alert system at King's including clear activation processes and responsibilities. Alerts to go out on every day of high or very high air pollution.	+++	n/a	+++
		21	Review of existing Air Pollution Alerts Plan at Guy's and St Thomas' including clear activation processes and responsibilities. Alerts to go out on every day of high or very high air pollution.	+++	n/a	++
		22	Collaborate with local partners such as London Borough of Lambeth and London Borough of Southwark by feeding into the revision of the air pollution alert system AirText.	+++	n/a	++
Communications materials and events	We commit to communicating to staff members about air quality, its health effects and actions they can take through the use of communications materials and the organisation of engagement events.	23	Create and distribute a general, non-medical specialty specific, air quality factsheet for all staff members. Digital and printed for staff-facing notice boards with links to dedicated air quality pages on the intranet. The number of visits to these pages will be a performance indicator to measure impact.	+++	£	++
		24	Create anti-idling signage for Trust ambulance waiting areas and loading bays. Clear and simple messaging and a visible display. At St Thomas' Hospital, data from air quality sensors at the pedestrian entrance as well as the ambulance waiting area will provide an indication of any impact this signage can have in any given area (see 2.1.1 for more information on ambient air quality monitoring).	+++	£	+++
		25	Organise Clean Air Day activities led by our air quality staff engagement groups and designed based on their air quality priorities.	+++	£	++

Patient engagement						
Clinicians training	We commit to providing targeted and specific air quality training to clinicians, either in-house or through a third-party training provider.	26	Identify air quality training for clinicians and make it available to a minimum of three medical specialties. Assess relevance and impact based on sign-up and feedback forms.	+++	££	+++
		27	Integrate post code air quality data into patient electronic health records to highlight if patients live in areas exceeding WHO guidelines for particulate matter 2.5 and nitrogen dioxide. Include links to further information, training and advice. Where possible, please the number of visits to air quality data and additional information.			+++
Medical specialty factsheets	Developing factsheets for medical specialties with the most well established links between health conditions and poor air quality, i.e. cardiovascular, endocrine, neurology, obstetrics & gynaecology, oncology, paediatric and respiratory.	28	Develop targeted factsheets for a minimum of three medical specialties. Digital and printed for staff-facing events, workshops and team meetings.	+++	£	++
Engagement with external stakeholders and knowledge sharing	Ongoing engagement on air quality with key external stakeholders and to sharing learning and knowledge with other NHS trusts and healthcare organisations.	-		+++	£	++

Table 1: Overview of Clean Air Plan commitments and priorities

4. References

- I Mayor of London (2022), All London hospitals in areas which exceed WHO toxic pollution limits
- i World Health Organization (2023), Air quality and health. Last accessed 6th June 2023; Harvard T.H. Chan School of Public Health (2021), Fossil fuel air pollution responsible for 1 in 5 deaths worldwide.
- ii Clean Air Fund (2023), Why Clean Air?
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- iv NHS England (2022), Every London NHS Trust to contribute to NHS green savings equivalent to half a million fewer cars on the road
- v Greater London Authority (2022), All London hospitals in areas which exceed WHO toxic pollution limits
- vi Chief Medical Officer's Annual Report 2022 – Air Pollution
- vii Chief Medical Officer's Annual Report 2022 – Air Pollution
- viii Logica Group for the Greater London Authority (2021), Air Pollution and Inequalities in London: 2019 Update
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- x NHS England (2019), The NHS Long Term Plan
- xi Impact on Urban Health (2020), What are the causes of air pollution in inner cities – and how bad is it?
- xii Ricardo Energy & Environment (2022), Company reporting of air-pollutant emissions – Case Studies – Technical Note
- xiii Energy and Climate Intelligence Unit (2020), Gas boilers and NOx: the hidden emitter
- xiv Daniel Marsh and David Green (2022), Air quality and emissions in construction, Centre for Low Emission Construction (CLEC) for Impact on Urban Health
- xv Greater London Authority (2021), The London Plan – The Spatial Development Strategy for Greater London
- xvi Guy's and St Thomas' NHS Foundation Trust Annual Report 2021/22
- xvii King's College Hospital NHS Foundation Trust Annual Report 2021/22
- xviii Air Pollution and Inequalities in London: 2019 Update (2021), Logika Noise and Air Quality Consultants for the Greater London Authority
- xix Chief Medical Officer's Annual Report 2022 – Air Pollution