2025 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management, as amended by the Environment Act 2021

Date: June, 2025

Information	Epping Forest District Council Details
Local Authority Officer	Claire Jaggard
Department	Environmental Health
Address	Civic Offices, High Street, Epping, Essex CM16 4BZ
Telephone	01992 564000
E-mail	Environmentalhealth@eppingforestdc.gov.uk
Report Reference Number	WK/202506188
Date	June 2025

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of Epping Forest District Council with the support and agreement of the following officers and departments:

- Sustainable Transport
- Climate Change
- Development Management
- Planning Policy and Implementation
- GIS officers
- Essex County Council Highways

This ASR has been approved by:

Regulatory Services Portfolio Holder: Cllr Paul Keska

Regulatory Services Manager: Mandy Thompson.

This ASR has been signed off by the Director of Public Health at Essex County Council.

Danny Showell, Public health consultant,

Signed on behalf of Sarah Muckle,

Director of Public Health, Essex County Council

If you have any comments on this ASR please send them to Environmental Health at:

environmentalhealth@eppingforestdc.gov.uk

or

Civic Offices,

High Street,

Epping,

Essex

CM16 4BZ

Telephone 01992 564237

Executive Summary: Air Quality in Our Area

Air Quality in Epping Forest District

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Low-income communities are also disproportionately impacted by poor air quality, exacerbating health and social inequalities.

Table ES 1 provides a brief explanation of the key pollutants relevant to Local Air Quality Management and the kind of activities they might arise from.

Table ES 1 - Description of Key Pollutants

Pollutant	Description
Nitrogen Dioxide (NO_2)	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO_2)	Sulphur dioxide (SO_2) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Particulate matter is everything in the air that is not a gas. Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes. PM_{10} refers to particles under 10 micrometres. Fine particulate matter or $PM_{2.5}$ are particles under 2.5 micrometres.

The main pollutant of concern in Epping Forest District is nitrogen dioxide, which is produced by road vehicles. It is monitored across the district by a network of diffusion tubes. Results for 2024 show that concentrations at the majority of the 40 monitoring locations (38) have decreased since 2023, 1 recorded a slight increase and the other location was newly erected. The results in the various towns and villages are presented in Appendix A, Figures A.1a to A.1h.

The Council retains one small Air Quality Management Area (AQMA) near the B1393 / Theydon Road junction at Bell Common, Epping. This management area is currently declared for a likely exceedance of the annual mean concentration of nitrogen dioxide. The annual mean concentration measured here during 2024 was 30.4µg/m^3. This is significantly below the annual mean objective concentration of 40µg/m^3.

Whilst the concentration currently recorded is below the annual mean objective concentration, the Council is not intending to revoke this designation at this time. A revocation will be considered once the concentration of nitrogen dioxide measured is below 90% of the objective (36µg/m^3) for 3 consecutive years. This will offer confidence that the concentrations measured are as a result of a real improvement of air quality as opposed to a fluctuation resulting from other factors, such as meteorological conditions.

In early 2025 Epping Forest District Council revoked AQMA Epping Forest District Council (No.2) in respect of the exceedance of the hourly objective. Concentrations of nitrogen dioxide recorded at this location had measured significantly below the hourly objective concentration for 6 years which demonstrated that this objective was being met.

Details of AQMA, Epping Forest District Council (No.2) can be found at: https://www.essexair.org.uk/local-authorities/epping-forest , alternatively a map showing its location can be found in Appendix D of this report. This AQMA includes 2 properties, which according to council records currently each have 2 adult occupants who therefore could potentially be exposed to elevated concentrations of nitrogen dioxide.

Following a review of nitrogen dioxide diffusion tube monitoring locations, it was considered that some were no longer necessary. Information obtained at these locations over recent years has demonstrated concentrations are consistently well under the objective, and the locations are therefore not exposing residents to an exceedance of the objective for nitrogen dioxide.

Monitoring at the following locations ceased at the end of 2024:

Tube ID 6, 1 Canes Cottages, Canes Lane A414, Hastingwood

Tube ID 7, 1 Church Hill, Loughton

Tube ID 12, 66 Tempest Mead, North Weald

Tube ID 34, 414 Fencepiece Road, Chigwell (Sherrell House)

Two new locations were set up to start measuring at the start of January 2025. These were at:

12 High Road, Thornwood

61 High Road, North Weald

These new locations are considered appropriate as they will measure nitrogen dioxide concentrations at the façade of receptor properties along the busiest roads in these two villages. Results for these will be available in the 2026 ASR.

The Council did not receive any new complaints from residents regarding poor air quality in the vicinity of their homes. No additional diffusion tube monitoring locations were therefore set up in respect of complaints.

Where the Councils Development Management Service refer planning applications to Environmental Health, they are screened to determine if there is potential for the proposed development to have a negative impact on human health due to poor air quality. Such applications are both those that are likely to increase pollution in an area as well as those that bring additional people to an area of existing pollution, and include applications for new residential properties, schools, commercial and industrial activities. Where it is considered likely that negative impacts may result, applicants are required to undertake an air quality assessment of the proposed development and the associated likely change in emissions. Assessments include measures to be implemented which will mitigate all negative air quality impacts resulting from the development. Measures such as providing electric vehicle charge points, filtration systems and the use of sustainable power sources may be included as part of a mitigation package. If insufficient mitigation is included in the application, Environmental Health would recommend that the development control team refuse the application. All referred to Environmental Health during 2024 were assessed in respect of air quality where it was considered that there was potential for a development to have a negative impact, and comments were provided to the Development Control team in order to obtain appropriate mitigation against these impacts.

The Council continues to work with our partners including Essex County Council and the Environment Agency on environmental protection and air quality matters. In particular, we are working together in respect of an effective permanent solution to further the reduction of nitrogen dioxide concentrations within AQMA Epping Forest District Council (No.2).

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

We consider the migration to electric vehicles is crucial to the reduction of nitrogen dioxide in our district. In addition to this, newer cleaner engines with start stop technology will help to minimise pollution in congested streets or at traffic lights. We continue to actively encourage road users to turn their engines off whilst stationary rather than allowing them to idle. We have produced a number of banners which continue to be rotated around various hotspots in the district to provide a visual reminder to drivers.

Traffic congestion on the B1393 is responsible for the main source nitrogen dioxide at the AQMA Epping Forest District Council (No.2). Figure 3.1 provides a chart illustrating traffic flows on Epping High Road. It shows that traffic volumes and fluctuations are broadly similar to those in 2019 before the pandemic. Traffic patterns seen since 2021 have been relatively consistent and it is therefore reasonable to assume that they may remain similar in the future. Whilst volumes may have returned to approximately pre-pandemic levels, the way in which people work, continuing to work from home at least part of the week, and being more flexible on the days that they use their cars, has reduced congestion at peak traffic periods.

The Council continues to encourage its own officers to work from home for much of the week, providing a limited number of desks at the Civic Offices which are available to be booked as required. This reduced capacity office has enabled a reduction in the number of parking spaces at the Civic Offices, which further encourages those attending the offices to utilise local sustainable transport options. Staff have also been encouraged to sign up to the Councils car share scheme for those attending the offices.

The Council has 8 electric vehicle charge points located across 3 sites for its fleet and staff use. This includes vehicle to grid charging. There are plans to add further charge points in 2025 to meet staff changing needs and enable effective charging of the growing fleet of electric vehicles. In addition to this, staff have access to 10 charge points in the Car Park used by staff who attend the Civic Offices.

The Councils Air Quality Action Plan was revised in 2023. The Action Plan includes a range of new measures focussing on reducing concentrations of nitrogen dioxide in the AQMA Epping Forest District Council (No.2) at Bell Common as well as across the district.

We are continuing in discussions with partners with a view to exploring the possibilities of taking steps that will directly improve traffic flow through the AQMA at Bell Common.

In addition, measures are aimed at developing appropriate infrastructure to support the anticipated increased uptake in electric and plug-in hybrid vehicles, as well as promoting sustainable transport choices for use by both local businesses and residents. One such project was the introduction of real time bus information at bus stops in Epping. The provision of accurate information should encourage greater use of the transport service.

Photo of recently installed real time bus information on Epping High Street:

The measures identified in the new Air Quality Action Plan are reported in Table 2.2 of this document with updates on progress provided.

The Council continues to employ a Sustainable Transport Officer and a Climate Change Officer whose actions feed into this report.

Conclusions and Priorities

The results from diffusion tube monitoring undertaken show that the annual mean concentration of nitrogen dioxide in the district decreased at 38 out of 40 of the locations during 2024 compared to the concentrations measured during 2023.

Travel patterns appear to have permanently changed since the pandemic as many people no longer travel to their place of work five days a week and when they do travel, they tend to have a more flexible working pattern which allows them to avoid peak traffic periods. Information provided by the Highways Authority supports this as they confirm that whilst traffic levels are roughly equal to those pre-pandemic, fewer cars have been using the roads during peak traffic periods, which should help to reduce congestion and associated pollution.

The annual mean concentration of nitrogen dioxide at '(3) Epping Bell Vue' which is representative of AQMA Epping Forest District Council (No.2), decreased dramatically from 47.6µg/m^3 in 2019 to 32.5µg/m^3 in 2020 as a direct result of the national lockdown imposed during the height of the COVID-19 pandemic. Whilst concentrations rebounded to 41µg/m^3 in 2021, they have shown a steady decline year on year since. (see Appendix A, Figure A.1a). The annual mean concentration recorded in 2024 (30.4µg/m^3) is lower than the previous lowest concentration recorded in 2020 at the height of the pandemic. This decreasing trend is likely to be due to both the uptake of cleaner vehicles and the long-term shift in travel behaviours.

No exceedances were identified in the district, either inside or outside of the AQMA, and therefore the Council does not propose to declare any further AQMAs at this time.

The Council has recently revoked the declaration of the AQMA in respect of the hourly mean concentration of nitrogen dioxide. This revocation was necessary following 6 consecutive years during which the annual mean concentration of nitrogen dioxide was measured below 60µg/m^3, the concentration considered by Defra (Local Air Quality Management Technical Guidance TG22 Chapter 7, 7.97) to represent an exceedance of the hourly objective.

Planning applications that had the potential to have a likely significant effect on the Epping Forest Special Area of Conservation were also assessed in accordance with the Habitats Regulations and advice provided by Natural England.

The main priorities for EFDC in 2025 are:

- Continue to work with colleagues and partners to ensure future annual mean concentrations of nitrogen dioxide do not exceed the objective despite the anticipated development of sites identified in the Local Plan, which are likely to increase traffic levels using the B1393 / Theydon Road junction at Bell Common, Epping.
- Continue work to increase electric vehicle charging points in the district. This will involve collaboration with the Councils Fleet Manager, the Sustainable Transport officer, Parking and Estates teams, as well as Essex County Council.
- Consider and review the Smoke Control Area designations in the district to ensure residents are offered the same level of protection.

The challenges that EFDC anticipate are in respect of implementing effective actions that directly target air quality in the AQMA. The approach to date has been to promote measures that improve air quality district wide, which may only have a limited impact on concentrations at the AQMA. However concentration have continued to fall at the AQMA, which suggests that appropriate measures are being taken to improve air quality here. Despite the improvements that have already been made, Epping Forest District Council will continue to work towards a further reduction in concentrations to ensure ongoing compliance and a long-term improvement in nitrogen dioxide concentrations, especially in the vicinity of the AQMA at Bell Common, Epping.

The Epping Forest District Council Air Quality Action Plan 2023 continues to be relevant at this time. This document will be replaced with an Air Quality Strategy in the event that the designation of AQMA Epping Forest District Council (No.2) is revoked in the future.

How to get Involved

With an increased awareness of environmental matters in recent years, has come an increase in interest from residents as to what is being done to minimise the effects of pollution in the local area.

The Council plays a pivotal role in addressing air quality issues, but the effectiveness of measures will be determined by the level of their adoption through behaviour change.

There are many ways in which members of the public can act to reduce their impact on local air quality:

- Riding bicycles, walking or scooting to work and school.
- Use public transport rather than a private vehicle or taxi,
- Turning your vehicles engine off when you are stationary. Not only does idling use fuel and cost money, it pollutes the environment, and is illegal.
- Consider changing to an electric vehicle. There may be grants available to assist with the cost of doing so.
- Compost your garden waste rather than burning it. Using compost in your garden brings other benefits to your environment too.
- Use central heating to heat your home rather than relying on a log burner.
- Ensure your gas boiler is serviced annually in order to ensure effective operation.
- If you must use a log burner make sure it is serviced regularly and always use the appropriate fuel for your appliance. Make sure that all fuel is fully dry (less than 20% moisture content) before burning it as this will improve combustion, increase the heat produced and reduce pollution.
- Reduce household energy bills and reduce pollution by turning down the thermostat in your home by one or two degrees when the outside temperature allows.
- Improving your home's insulation may help to reduce heating bills. You may be eligible for a grant to improve insulation.
- Consider installing solar panels or a heat pump to your property. This will reduce your contribution to air pollution as well as your ongoing fuel bills.

The Essex Air Web site provides useful information with regards to air quality in the various district and unitary authorities in Essex: http://www.essexair.org.uk/

Table of Contents

Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality in Epping Forest District during 2024. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Epping Forest District Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 18 months. The AQAP should specify how air quality targets will be achieved and maintained and provide dates by which measures will be carried out.

A summary of AQMAs declared by Epping Forest District Council can be found in Table 2.1. The table presents a description of the one AQMA that is currently designated within Epping Forest District.

Appendix D: Maps of Monitoring Locations and AQMAs provides maps of the AQMA and the other air quality monitoring locations in relation to it. The air quality objective pertinent to the current AQMA designation is as follows:

- NO_2 annual mean

Another AQMA (Epping Forest AQMA) had previously been declared in 2008, in respect of the nitrogen dioxide annual mean concentration affecting 7 residential properties on the High Street, Epping. It was subsequently revoked in 2011 following a Detailed Assessment which demonstrated that it was not required. Details of both the current and previous AQMAs can be found at: https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=99.

We have recently revoked the AQMA Epping Forest District Council (No.2) in respect of the hourly mean objective only. As the annual mean concentration at this location has been below 60 µg/m^3 for 6 years, this provided us with confidence that the hourly objective is unlikely to be exceeded in the future (Defra (2022) Local Air Quality Management Technical Guidance (TG22) Chapter 7, 7.97)

The designation in respect of the annual mean objective at AQMA Epping Forest District Council (No.2) remains in place at this time.

No other declarations or revocations are required at present.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
AQMA Epping Forest District Council (No. 2)	Declared 1st August 2010	NO2 Annual Mean	An area encompassing 2 properties at the junction of Epping High Road and Theydon Road	NO	68 µg/m^3	No Exceedance (30.4 µg/m^3)	3 years	Epping Forest District Council Air Quality Action Plan March 2023	https://www.eppingforestdc.gov.uk/environment/aqap/

☒ **Epping Forest District Council confirm the information on UK-Air regarding their AQMA is up to date.**

☒ **Epping Forest District Council confirm that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in Epping Forest District

Defra's appraisal of last year's ASR concluded:

The report is well structured, detailed, and provides the information specified in the Guidance. The following comments are designed to help inform future reports:

1. The trends are presented clearly and there is comparison with the air quality objectives
2. The maps provide are detailed and illustrate the location of diffusion tube sites and the location of the AQMA, this is welcomed.
3. The Council have included a justification, for the review of their monitoring strategy in Section 3.2.1, responded to comments made in last years appraisal. This is good practice and the council should continue to address comments in future ASRs
4. The ASR has been approved by the relevant Public Health Director; this is commended.
5. The AQAP measures should have the top 3 main priorities highlighted and The Council should take care to ensure the numbering of measures should be in line with the template.
6. The Epping Forest District Council AQMA No. 2 for NO_2 1-hour mean, included in the report but not on the Defra portal. Council states they are in the process of revoking the designation in line with guidance from TG.22.
7. The Council selected the national bias adjustment factor, it is good practice to include a screenshot of the document into the report to illustrated how the factor was calculated. The Council should consider this in future reports.
8. There are some of the formatting errors throughout the report. In table 2.1, NO_2 should be subscripted. The Council should ensure future reports are checked thoroughly prior to submission.

Epping Forest District Council has taken forward a number of direct measures during the current reporting year of 2024 in pursuit of improving local air quality. Details of all measures completed, in progress or ongoing are set out in Table 2.2. 37 measures are included within Table 2.2, with the type of measure and the progress Epping Forest District Council have made during the reporting year of 2024 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in the Epping Forest District Council Air Quality Action Plan at https://www.eppingforestdc.gov.uk/environment/aqap/

The following documents produced by Epping Forest District Council also address measures relating to air quality in the district:

- Epping Forest District Local Plan 2011 to 2033 (Adopted March 2023) https://www.eppingforestdc.gov.uk/planning-and-building/planning-policy/adopted-local-plan-march-2023/
- Interim Epping Forest Air Pollution Mitigation Strategy https://www.eppingforestdc.gov.uk/planning-and-building/efsac-guidance-for-applicants/
- Epping Forest District Council Climate Change Action Plan 2021 https://www.eppingforestdc.gov.uk/wp-content/uploads/2023/02/Climate-Change-Action-Plan-Final.pdf

Key completed measures are:

- Air Quality is taken into consideration as a material consideration in planning decision making. All large developments are referred to Environmental Health for consideration with regards to Air Quality issues as part of the planning process. This is a requirement of Local Plan policy DM22 which was adopted in 2023. This is an ongoing requirement which we shall continue to meet.
- The Councils adopted Local Plan includes a policy requiring submission and implementation of Routing Management Plans to manage the sustainable delivery of goods and materials in applicable developments. This measure is a requirement of Local Plan policy T1(c) which was adopted in 2023.
- Where relevant, planning consents include conditions that require developments to have and follow a construction management plan. Whilst this is an ongoing measure, an improvement has been made to the Councils standard construction management plan conditions, and its effectiveness is demonstrated by the fact that no complaints

have been received since implementation.

- Council utilities continue to be on a 100% renewable electricity tariff. There are no plans to change this in the future.

Epping Forest District Council expects the following measures to be completed over the course of the next reporting year:

- The assessment of the feasibility of introducing non road mobile machinery (NRMM) emissions planning guidance for large developments has been completed and we are now progressing to writing and rolling out this guidance. By requiring developers to only use non road machinery that meets certain standards, pollution from large developments is reduced.

Epping Forest District Council's priorities for the coming year are:

- Continue to work with colleagues and partners to ensure future annual mean concentrations of nitrogen dioxide do not exceed the objective despite the development of sites identified in the Local Plan, which is likely to increase traffic using the B1393 / Theydon Road junction at Bell Common, Epping.
- Continue work to increase the number of electric vehicle charging points in the district. This will involve collaboration with the Councils Fleet Manager, the Sustainable Transport officer, Parking and Estates teams, and the County Council.
- Consider and review the Smoke Control Area designations in the district to ensure residents are offered the same level of protection.

Epping Forest District Council worked to implement these measures in partnership with the following stakeholders during 2024:

- Essex County Council
- Qualis Property Management
- City of London, Epping Forest Conservators
- Local Bus and Taxi Companies
- Local Housing Associations
- Freight Operators

The principal challenges and barriers to implementation that Epping Forest District Council anticipates facing are:

- The processes and timescales for bringing forward adjustments to the road network in association with Local Plan development and therefore improve traffic flow

through the Bell Common area. Whilst the concentration of nitrogen dioxide recorded at this location has reduced below the objective in recent years, we are keen to ensure that this improvement is maximised and permanent.

- Effective partnership working where interests and required outcomes differ.
- Financial costs of implementing preferred options for measures to reduce pollution concentrations.
- Resources in many areas of local government are stretched at present, and it has not been possible to progress some of actions outlined in this plan as quickly as we would have liked due to lack of sufficient staff.
- A site has been allocated in the adopted Local Plan for residential development of approximately 450 homes located 0.5km to the south-east of the AQMA. This is likely to result in an increase in traffic using the local road network in the vicinity of the AQMA. Epping Forest Councils Environmental Health Team will liaise with the Councils Planning Service to mitigate the impacts of development however it will not be possible to remove all new sources of pollution.
- Whilst Essex County Council have now adopted their Electric Vehicle Strategy and have been successful in bids for money (ORCS and LEVI) which will go towards improving the electric vehicle charging network Essex wide, such infrastructure projects take time to complete, and the level of resource allocated to Epping Forest District is currently uncertain.
- Whilst Epping Forest was highly effective at encouraging applications for grant funding to improve energy efficiency measures in low income, low efficiency homes, 96% of these applications were cancelled as they did not meet the qualifying criteria. A new funding programme (HUG2) will hopefully improve this situation for our residents in 2025 as the qualifying criteria are less restrictive.
- The assessment of the feasibility of introducing an air quality neutral planning guidance document has been completed. On further consideration it was concluded that air quality neutral cannot be implemented outside of London at this time. We will review this action and implement it when it is considered proceedable in EFDC.

Progress on the following measures has been slower than expected due to:

- The measure to “review and consult on Hackney Carriage/Private Hire policy to

include transitional requirement for minimum euro 6 emission vehicles and encourage low/zero emission vehicles" has made progress, although this has been slower than initially anticipated. Following a review of tariffs, an increase was implemented to bring them into line with those in neighbouring districts. It is considered with additional income generation taxi operators will be in a better position to upgrade their vehicles in the future. The next stage is to review the licensing policy, which is due in 2025, and its anticipated implementation date of this is likely to be early 2026.

- Public Health resourcing levels to not currently facilitate officers chasing schools that are not proactive in providing their travel plans. The number of schools that have a relevant Travel Plan in place remains low.
- Air Quality Audits of schools will be starting in the coming months. Resourcing within Environmental Health has meant that this project has been delayed a little as officers have been required to undertake other priorities.
- Working with colleagues in Trading Standards to ensure the Domestic Solid Fuel Regulations are complied with has been limited during 2024 as time spent on this area of work has been focussed on a review of the Smoke Control Areas.

Epping Forest District Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in AQMA Epping Forest District Council No 2.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
A01	Continue providing a demand responsive transport service (DRT)	Alternatives to private vehicle use	Bus based Park & Ride	2023	2024	Epping Forest District Council Epping Forest Community Transport Essex County Council	Epping Forest District Council (subsidized) and fare revenue	Not Funded	< £10k	Implementation	Reduced private vehicle usage Reduced tailpipe and brake wear emissions Reduced traffic congestion	Passenger numbers	Ongoing: No further funding sources were identified in 2024, and the DRT service remains dormant. ECC continue to subsidise the 31 bus for at least two years. This bus covers most of the route served by the DRT service.	Lack of funding. Essex County Council are not in a position to subsidise bus services due to ongoing budget and cost pressures. The government-funded £2 capped single bus fare enabled bus usage to recover somewhat.
A02	Promote Essex Car Share Scheme (Liftshare)	Alternatives to private vehicle use	Car & lift sharing schemes	2022	2028	Epping Forest District Council Essex County Council	Essex County Council Epping Forest District Council	Funded	< £10k	Implementation	Reduced private vehicle usage Reduced tailpipe and brake wear emissions Reduced traffic congestion	No of members in scheme	Ongoing: The Lift share Scheme is operational across Essex. It has been promoted in particular for large events where car parking is minimal to encourage over 50% car sharing.	The day-to-day effectiveness of the EFDC staff scheme is limited as most employees work from home for a significant part of the week and hybrid working rarely means journey times are convenient for others to share.
A03	Review the Council's grey fleet and where feasible reduce its usage	Alternatives to private vehicle use	Other	2023	2024	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Planning	Reduced grey vehicle usage, associated emissions to air & traffic congestion	Review completed by 2024 with summary of possible options	Ongoing: EFDC have a new salary sacrifice car scheme launched late 2024 that only leases EV and PHEV cars, which will hopefully help grey fleet emissions. Looking to increase the number of staff EV chargers at EFDC Civic Centre car park. Discussions ongoing with Hiya car share operator to explore shared public sector (including NHS) car club across West Essex.	EFDC Management decided it was not viable to operate a pool car scheme for business travel as staff would often have to travel long distances just ot pick up the vehicle.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
A04	Review the Council fleet and move towards cleaner vehicles when possible	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2023	2024	Epping Forest District Council Qualis Group	Epping Forest District Council Qualis Group	Funded	< £10k	Planning	Cleaner vehicles, fewer emissions to air	No of cleaner fuel vehicles in fleet	Ongoing: Target for 100% fleet to be electric by 2030. As of May 2025, the fleet make up was: 35% Diesel; 4% Hybrid; 61% Electric	The Electric Vehicle percentage in the Council fleet has increased from 50% in 2024.Currently the market does not provide suitable alternatives for some specialist vehicles.
A05	Work with ECC to ensure schools have travel plans and encourage the use of Modeshift STARS programme	Alternatives to private vehicle use	Other	2023	2028	Essex County Council Epping Forest District Council	Essex County Council Epping Forest District Council	Funded	< £10k	Implementation	Fewer vehicles driving children to school Reduced air pollution around schools and surrounding areas Reduced Road congestion	No of Schools Signed up to the scheme	Ongoing: Three EFDC schools actively engaging with ECC Schools Travel Plan team in 2024. Three others have active road safety and other campaigns but no formal Travel Plan.	ECC team do not have resources to actively expand the Travel Plan activity outside of those showing willingness to engage.
A06	Support and influence Essex County Council's Epping Forest District Cycling Action Plan	Alternatives to private vehicle use	Other	2023	2028	Essex County Council Epping Forest District Council	Essex County Council Epping Forest District Council	Funded	< £10k	Implementation	Increased modal shift to cycling will remove motor vehicles from the roads	None	Ongoing: UK Shared Prosperity Funding facilitated Local Walking & Cycling Infrastructure Plans (LCWIP) for Waltham Abbey, Chigwell, Buckhurst Hill and Loughton, all completed in 2024. LCWIP is mandatory to secure Active Travel England funding for infrastructure building. The EFDC LCWIPS will feed into ECC's countywide/inter-settlement LCWIP process, with multi-district workshops. The final report is due mid-2025.	Time between LCWIP and physical infrastructure likely to be a number of years. Ride London took place in 2024, but the event is not taking place in 2025

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
A07	Improve experiences of EFDC staff working remotely to reduce the need to commute and travel for business	Alternatives to private vehicle use	Other	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Implementation	Reduced vehicles on roads as employees working from home	none	Ongoing: No issues in staff surveys regarding ease/viability of staff working from home.	Staff able to access up to 8 half day free parking sessions per month to facilitate working at the office where public transport is not convenient.
A08	Work with ECC and developers to ensure the provision of infrastructure to support walking, cycling and public transport use	Alternatives to private vehicle use	Other	2023	2024	Essex County Council Epping Forest District Council	Essex County Council Epping Forest District Council	Funded	< £10k	Planning	Encourage a reduction of vehicle usage	None	Ongoing: (1) Local Cycling & Walking Infrastructure Plans (LCWIP) have been completed for Waltham Abbey, Chigwell, Buckhurst Hill and Loughton. (2) The provision of walking, cycling and public transport use continues to be sought from development proposals where relevant in accordance with Policy T1 and site-specific policies of the adopted Local Plan. EG The provision of live bus information on digital displays at certain bus stops to encourage confidence and use of bus services. (3) Improvements to bus fleet stopping at Epping Underground station (Euro 6) may be responsible for a significant reduction in concentrations of NO2 as measured by diffusion tubes,	(1) ECC financial constraints impact upon the Provision of subsidised bus services. (2) There can, on occasion be site specific characteristics that preclude the provision of such infrastructure e.g. physical constraints preclude the safe provision of walking and/or cycling infrastructure.
A09	Promote car free days	Alternatives to private vehicle use	Other	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Planning	Encourage a reduction of vehicle usage	One car free day event delivered per year	Ongoing: World car free day is 22nd Sept each year. In addition to this, parents and children are encouraged to walk to school, especially as part of Clean Air Day.	The themes of Clean Air Day in 2024 were considered to be too political to promote at that time due to Purdah as the General Election was taking place.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
B01	Continuing environmental permitting activities throughout the District	Environmental Permits	Other	2023	2040	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Implementation	Reduction in emissions to air	All permitted activities inspected in line with risk assessment timetable	Ongoing: All permitted activities inspected by the dates required (as calculated by the risk assessment score determined at the previous inspection)	
B02	Continue to promote and enforce anti idling	Public Information	Other	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Implementation	Reduction of tailpipe emissions	Minimum 1 anti-idling event per year	Ongoing; Promotional work continued via social media.	Resources do not allow for extensive work regarding this action. A decision was taken not to actively undertake Clean Air Day in 2024 as it was considered too political to do during Purdah as a result of the General Election taking place.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
B03	Review and consult on Hackney Carriage/Private Hire policy to include a transitional requirement for minimum euro 6 emission vehicles and encourage low/zero emission vehicles.	Promoting Low Emission Transport	Taxi Licensing conditions	2023	2026	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Planning	Reduction of tailpipe emissions	Review with conclusions and recommendations completed by 2024	In progress: Following the recent fare tariff increase and extension of the area covered by the London ULEZ, the fleet has continued to grow and become lower emission overall, with large decreases in ULEZ non-compliant vehicles. The are still small numbers of fully Electric Vehicles and a preference for 'mild hybrids' over plug-in hybrids.	The majority of ULEZ non-compliant vehicles are 7 seat minivan/people carrier models that are extremely expensive in EV format or do not have EV equivalents yet. In taxi mode plug in hybrid vehicles have slow charging speeds and poor mpg when running with zero electric charge. Cost and doubts about public charging is the biggest barrier to EV adoption. However the County Council have announced 15 low cost on-street charger locations in Loughton, Buckhurst Hill and Chigwell. EFDC yet to require EURO 6 / ULEZ compliance.
B04	Ensure Smoke Control areas are promoted within the District and enforce when necessary	Public Information	Other	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded		Planning	Reduced smoke from chimneys in Smoke Control Areas	At least 2 social media campaigns per year	In Progress: Up to date information regarding legislation around Smoke Control Areas and the areas designated within EFDC is available on the Councils website at https://www.eppingforestdc.gov.uk/environment/smoke-control-areas/	Environmental Health has obtained agreement from Council that they can consult regarding the potential expansion of Smoke Control Areas in the district. Proposals will provide greater clarity or areas included and protection across a wider area in the event that they are adopted.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
B05	Work with colleagues in Trading Standards to ensure the Domestic Solid Fuels Regulations are complied with	Promoting Low Emission Plant	Regulations for fuel quality for low emission fuels for stationary and mobile sources	2023	2028	Essex County Council, Epping Forest District Council	Essex County Council, Epping Forest District Council	Funded	< £10k	Planning	Reduced emissions from chimneys in Smoke Control Areas	Pass intelligence of any premises suspected of supplying non-compliant fuel to Trading Standards	Ongoing: No intelligence received to date regarding illegal sales.	Further awareness campaign to be undertaken following changes to Smoke Control Area.
C01	Introduce a Local Plan policy requiring submission and implementation of Routing Management Plans (for construction and operational phases) to manage the sustainable delivery of goods and materials	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	2023	2024	Essex County Council, Epping Forest District Council	Essex County Council, Epping Forest District Council	Funded	< £10k	Planning	Reduced HGVs on smaller roads in closer proximity to residential properties	Routing Management plan submitted as part of planning application for large developments	Completed: Route Management Strategies are required under Policy T1 Part C of the Council's adopted Local Plan. Construction Management Statements are required under Policy DM 21 Part D of the Council's adopted Local Plan.	These policies are part of the Council's decision-making framework for planning applications.
C02	Work with ECC to lower bus emissions	Promoting Low Emission Transport	Other	2023	2028	Essex County Council DfT	Essex County Council DfT			Planning	Cleaner vehicles, fewer emissions to air	Bus fleet at least euro 6 compliant by 2028	In Progress: Central Connect became the largest bus operator in EFDC area in 2024 by mileage and routes. The emissions profile of their fleet improved significantly in 2024, with major investment in new and upgraded vehicles. NB These are all commercial routes and decisions independent of any ECC policy.	ECC policy on subsidised buses omits emissions as a part of any tender decisions

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
C03	Register fleet with FORS (Fleet Operators Recognition Scheme)	Freight and Delivery Management	Other	2023	2024	Qualis Group	Qualis Group	Funded	< £10k	Implementation		Number of drivers who use the system	In Progress: A recent reconsideration of the FORS Scheme has highlighted that it may not be appropriate for the business Qualis is undertaking. A full review is currently being carried out to include fleet, monitoring, driver behaviour and insurance. Once completed a decision on the most appropriate accreditation scheme will be made.	FORS was considered inappropriate to this business as it is felt that it is more aligned with vehicles that drive into central London
D01	Ensure air quality is taken into account as a material consideration in planning decision making	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Implementation	Reduced Exposure due to reduced emissions & location of receptors	Planning Guidance on air quality produced The number of Air Quality Assessments submitted in accordance with the Planning Application Local Validation Checklist	Ongoing: All Large developments referred to environmental health have been assessed in respect of Air Quality as required by Policy DM22 of the Councils adopted Local Plan.	Workshops have taken place with Development Control Officers to emphasize importance of consultation for a range of scenarios.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
D02	Assess the feasibility of introducing air quality neutral planning guidance for developments	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Planning		Planning Guidance on air quality produced The number of Air Quality Assessments submitted in accordance with the Planning Application Local Validation Checklist	Completed: This measure cannot be fully implemented at this time.	Air Quality Neutral is only operational in London currently. As an alternative we are requesting damage costs for appropriate developments. Mixed success at present. This is a work in progress.
D03	Ensure large developments have and follow a construction management plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Implementation	Minimise Dust from Construction sites	Fewer resident complaints 100% of developments having a CMP when required	Ongoing: Construction Management Plan conditions are placed on all appropriate developments. Since April 2024 100% appropriate applications have been conditioned, and 0 complaints have been received regarding these sites.	Enforcement resources do not always allow for matters to be addressed in an effective / timely manner.
D04	Assess the feasibility of introducing a non road mobile machinery (NRMM) emissions planning guidance for large developments	Policy Guidance and Development Control	Other policy	2023	2023	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Planning		Feasibility exercise completed by end of 2023	In Progress: A draft document has been approved by the Planning Department. This should be finalised in 2025.	Implementation will follow publication of this document.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
D05	Limit parking spaces for new developments in sustainable locations, ensure that provision of EV charge points is maximised, cycle storage and associated facilities are provided in accordance with ECC standards	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2023	2028	Epping Forest District Council, Essex County Council	Epping Forest District Council, Essex County Council	Funded	< £10k	Planning	Reduction of polution associated with road traffic	Production of an electric vehicle charging point strategy	Ongoing: Whilst we generally use the revised Essex CC parking standards as a guide, they have not been formally adopted by the Council. EFDC does however actively seek reduced vehicle parking allocation or car free developments at sustainable locations.	Some parts of the district have their own parking plans which require a greater level of parking. The Council is considering producing its own parking standards in the future. Some logistical issues faced regarding EVCP in new Housing Developments, where some developers see EV Bays as void space.
D06	Encourage the uptake of zero emission / net zero carbon technology in new developments	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Planning	Reduced emissions from petrol and diesel vehicle usage	Number of planning applications where the submitted Sustainability Checklist states that a Medium or High-Quality rating will be achieved	Ongoing: Latton Priory is a large scheme with a bespoke Design Code requiring the use of net zero carbon technology. These principles have helped guide conversations on other masterplan schemes. Where applicants have high aspirations for sustainable design / technology, we work proactively with them to address challenges and highlight high quality design.	The EFDC Design Code for Latton Priory is not as strong as an adopted policy and therefore is subject to pushback and/or viability argument from developers. Design codes produced by applicants are often less holistic and can be weaker in their approach to net-zero. We do not have the resource to produce Design Codes for all our Masterplan sites. We are currently only able to encourage the uptake of ECCs Net zero policy. Enforcement of the Sustainability Guide and checklist is difficult due to lack of resource and expertise in evaluating schemes against it.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
D07	Support the measures within the Council's Interim Air Pollution Mitigation Strategy	Policy Guidance and Development Control	Other policy	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Implementation	Minimise air pollution in the Epping Forest SAC area	Monitoring around the EFSAC shows decreased pollution levels	Ongoing: The Council undertook 9 months on-site monitoring of Nitrogen oxides and Ammonia within the Epping Forest Special Area of Conservation (EFSAC) The results show significant improvement in the concentrations of pollutants of concern when compared with both previous concentrations and those anticipated by modelling. .	Natural England has acknowledged the improvement in Air Quality to date.
D08	Support the measures within the Council's Climate Change Action Plan as well as the Essex Climate Action Plan	Policy Guidance and Development Control	Other policy	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Implementation	Work to minimise the impact of climate change on Epping Forest District	Calculation of emission reductions	Ongoing: EFDC Emissions calculations: Baseline (2018-19) 2067 tCO2e Latest financial Year (2023-24) 1491 tCO2e (27.9% reduction). Data for 2024-25 will be available in August 2025.	
D09	Secure the provision and implementation of Travel Plans in accordance with Local Plan policy	Policy Guidance and Development Control	Other policy	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Planning	Reduction in pollution from transport as modal shift to sustainable transport methods is facilitated	Increase in number of trips by means other than private vehicle	Ongoing: Under Local Plan Policy T1 (C), Transport Assessments / Statements are required where significant vehicle movements are anticipated because of a development. These will normally also require a Travel Plan to be submitted. Routing Management Plans are required where proposals suggest a significant number of Heavy Goods Vehicle movements will be generated.	During 2024 there was 1 major application that met the threshold for requiring a travel plan.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
E01	Increase the amount of public EV charge points in the District	Promoting Low Emission Plant	Other Policy	2023	2028	Essex County Council Epping Forest District Council	Essex County Council Epping Forest District Council	Funded	< £10k	Implementation	Reduction in pollution from transport as more people convert to electric vehicles	Adoption of Epping Forest District Electric Vehicle Charging Strategy DfT EV public charger statistics figure to increase annually	Ongoing: By the end of 2024, the number of public EV charging points increased to 73 (47 in 2023). EFDC's contribution to the increase: 17 fast chargers went live in EFDC's Cottis Yard multi-storey and four rapid chargers also went live in an EFDC-owned car park in Waltham Abbey.	The main demand within the district is for lower cost local 'fast' chargers 7-22 kW and this could be seen as a barrier to adoption to those living in homes with no chance of off-street parking and EV charging. Rapid chargers suit business users and those needing urgent/pre-motorway trip charging but are very expensive as the only day-to-day charging option.
E02	Assess the suitability of installing cleaner energy and heating technology on council owned sites	Promoting Low Emission Plant	Other Policy	2023	2030	Epping Forest District Council Qualis Group	Epping Forest District Council Qualis Group	Funded	> £10 million	Planning	Reduction in air pollution as houses move away from fossil fuels	Number of properties with improved SAP score	Ongoing: Programme of retrofitting Council homes from Solid fuel and gas to Air Source Heat Pumps. Properties are being upgraded as funds allow. Successful application was made for Social Housing Decarbonisation Fund Wave 3. Work started or completed on 68 Properties to date.	All properties are to achieve EPC band C (minimum SAP score 69) or above by 2030. No fossil fuel heating will be used by 2050. Asset Management Strategy is being commissioned to ensure Council operational sites work towards cleaner energy and technology. Recently appointed a consultant to deliver the project on behalf of the Council, who will be responsible for overcoming any logistical barriers and challenges.
E03	Maintain council utilities under renewable energy tariffs	Promoting Low Emission Plant	Other Policy	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Implementation	Reduced emissions / increased investment in sustainable methods	Reviewed every year to confirm renewable energy tariffs	Ongoing: EFDC has a 100% renewable electricity tariff, and this will be the case for the foreseeable future	

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
E04	Work with local residents associations, businesses, schools, and housing associations to bid for zero emission technology	Promoting Low Emission Plant	Other Policy	2023	2028	Epping Forest District Council, Qualis Group, Essex County Council	Epping Forest District Council, Qualis Group, Essex County Council	Funded	< £10k	Planning	Reduced emissions from sustainable technology usage	Min 1 bid per year (where bids are available)	Ongoing: Advice for businesses and residents was promoted online through the Essex Climate Action Commissions advice packs.	EFDCs Housing Retrofit Strategy was approved by cabinet with the aim to get all homes to EPC C by 2030.
E05	Installation of energy efficiency measures in low income, low efficiency homes using grant funding	Promoting Low Emission Plant	Other Policy	2023	2028	Epping Forest District Council, Great South East Net Zero Hub, Qualis Group	Department for Energy Security & Net Zero (DESNZ), Great South East Net Zero Hub	Funded	£1 million - £10 million	Planning	Reduced energy requirements resulting in less emissions	Number of measures installed per year	Ongoing: (1) Home Upgrade Grant 2 (HUG2) has now come to an end. Whilst we exceeded our referral quota, most referrals did not meet the qualifying criteria. Only 9 properties met the criteria, 4 of these have been completed and 5 are still in progress. (2) We have joined a pan-Essex consortium for the delivery of Energy Companies Obligation 4 (ECO4) flexible eligibility scheme and have signposted a number if interested installers to ECC to help with the supply/installer chain. (3) Warm Homes Local Grant replaces HUG2. This goes live in September 2025. We hope for a better outcome as scheme criteria are less restrictive.	With a cancellation rate of almost 96% for the HUG2 scheme, there were clearly significant barriers for success in this authority. The scheme criteria of only being available for off-gas properties made this difficult for us. We would have liked to have planned some schemes for our residential mobile home sites but were not permitted to do so because we had done this previously and there was a cap on the number or mobile homes that could be included (we had to allow some other Essex LA's to run mobile home schemes instead). Also, the income cap of £36K per household was prohibitive in our area. Another factor that affected delivery in Essex generally, was the supply chain with the installers struggling to meet demand.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
E06	Assess if procurement policies can include a preference for zero/low emission suppliers/products	Promoting Low Emission Plant	Other Policy	2023	2023	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Planning	Reduced Emissions from EFDC activities	Assessment completed by end of 2023, if feasible procurement document updated by 2028	Completed: EFDC's Procurement Strategy 2021 – 2026 and the Essex Procurement Partnership Procurement Strategy (used for goods >£50k) both include a requirement to consider Sustainability and Climate Change. Social Value can be used as an evaluation criterion when procuring, which can give a higher score to bidders who are using more sustainable & environmentally friendly means of providing their services.	Electric alternatives for some vehicles required for specific tasks within the Council are not currently available.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
F01	Work with our Public Health colleagues to increase awareness of air quality around our District	Public Information	Other	2023	2028	Epping Forest District Council, Essex County Council	Epping Forest District Council, Essex County Council	Funded	< £10k	Planning	Reduced Emissions due to behaviour change	At least one public awareness campaign per year	Ongoing: The has been significant collaboration with Public Health colleagues: Local Walking & Cycling Infrastructure Plans (LCWIP) have been completed for Waltham Abbey, Loughton, Buckhurst Hill, Chigwell. The plans will form part of a wider Essex LCWIP currently undergoing consultation. UK Shared Prosperity Fund (UKSPF) investment into the Harlow & Gilston Garden Town (HGGT) active travel programme engaged 3208 residents. The programme included 8 Air quality sessions engaging 1,000 young people.	Engagement on the sustainable travel programme for HGGT could have been better as it was not undertaken in EFDC (this is a joint project with Harlow). Funding for cycling and walking infrastructure is limited and routes towards Epping and within EFDC are not seen as a priority.
F02	Ensure the Director of Public Health signs off on Annual Status Reports and Air Quality Action Plans	Public Information	Other	2023	2028	Epping Forest District Council Essex County Council	Epping Forest District Council Essex County Council	Funded	< £10k	Implementation	Transparency and information sharing assisting joined up working	Reports signed off when needed	In Progress: The Director of Public Health will have sight of this document prior to its submission to Defra	
F03	Conduct air quality audits at schools around our District	Other	Other	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Planning	Reduced emissions from schools	No of schools audited	In Progress: A template for School air quality audits has been completed. Audits will follow	Hope to start audits in 2025. Limited resources have lead to delays with this action.
F04	Ensure air quality is included in the JSNA	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2023	2028	Essex County Council Epping Forest District Council	Essex County Council Epping Forest District Council	Funded	< £10k	Implementation	Reduced emissions from improved targeting of resources	inclusion in JSNA	Completed: Air Quality has been considered as part of the Essex JSNA.	

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
F05	Continue to monitor air quality throughout the District for both human health and the EFSAC	Other	Other	2023	2028	Epping Forest District Council	Epping Forest District Council	Funded	< £10k	Implementation	Identification of problem areas will ensure continued focus	monitoring undertaken in line with programme	Ongoing: Air Quality is monitored throughout the district via a network of nitrogen dioxide tubes. The programme follows the national exposure calendar issued by Defra.	Additional monitoring is undertaken using low-cost analysers in order to assess specific projects e.g. in 2024 we assessed the potential for hydrogen sulphide emissions to impact human health of residents living in the vicinity of an illegal landfill site.

2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy[1], local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter ($PM_{2.5}$)). There is clear evidence that $PM_{2.5}$ (particulate matter smaller than 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Epping Forest District Council is taking the following measures to address $PM_{2.5}$:

- Authorisation of officers to issue fixed penalty notices in respect of idling vehicles on the public highway,
- Effective regulation of Part B and Part A2 regulated activities including solvent emission activities.
- Investigation of complaints regarding, and regular reviews to search for unpermitted industrial activities.
- Investigation of complaints in relation to commercial activities that produce particulate matter, and work with operators to reduce their impact on the environment.
- Investigation of complaints and effective regulation in respect of industrial and domestic bonfires.
- Investigation of complaints, provision of information and effective regulation of smoke control areas (currently covering Loughton and Waltham Abbey).
- Participation in ‘Clean Air Day’ anti-idling promotion initiatives. 2024 Clean Air Day campaign was undertaken via a review and distribution of selective

[1] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

electronic promotional material as it was considered a political issue during the pre-election purdah period in 2024.

- Consideration of planning applications to ensure that appropriate air quality mitigation measures have been identified in the application, and will be incorporated into the development to minimise the impact of the development on air quality
- Consideration of planning applications in respect of dust creation from demolition and construction activities on building sites and ensuring the appropriate mitigation strategies are employed.
- Update the Council's website, improving information for both residents and local businesses to enable them to make better informed decisions with regards to air quality, in particular the burning of solid fuels and the changes to enforcement in respect of Smoke Control Areas.
- The measures listed above in section 2.2 and Table 2.2 will have co-benefits on $PM_{2.5}$ concentrations as they impact sources of particulate pollution.
- Attendance of the Essex Pollution Group and North London Cluster Group meetings where issues such as air quality are discussed with other local authorities, Essex County Council and the Environment Agency.
- Attendance at County wide focus group meetings working to produce an Essex Air Quality Strategy.

The above measures will link to the Public Health Outcomes Framework Indicator 'D01: Fraction of mortality attributable to particulate air pollution' and help to bring about a reduction in particulate air pollution ($PM_{2.5}$).

The latest Public Health Outcomes Framework Indicator for Epping Forest shows that the district has a higher percentage of mortality attributed to particulate air pollution than both the East of England and England. The percentage has been tracking above the regional and national percentages in recent years all of which have been slowly falling om recent years.

The percentages for 2023 are as follows:

Epping Forest District	5.6%
East of England	5.4%
England	5.2%

No information for 2024 is available at the time of writing this report. The above information was accessed online on 29.5.25. Further information regarding this indicator can be found at: https://fingertips.phe.org.uk/profile/public-health-outcomes-framework

Epping Forest District Council did not monitor particulate matter during 2024. We have therefore used Defra's background maps to provide modelled $PM_{2.5}$ background concentrations for each 1km grid square. These maps, which can be found at https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

show a maximum modelled $PM_{2.5}$ background for Epping Forest District of 8.41µg/m^3 in 2024. The location of this concentration (grid reference 547500 204500) is a change to the previous location identified by this modelling, which has changed following an update of the modelling tool. This 1km grid square covers part of Thornwood Common, to the north of Epping, and is centred on an area to the east of Duck Lane. It covers 306 residential properties in Thornwood Common, some light industrial units and several fields between these and the M11 motorway (to the east). This area has not previously been considered as likely to be affected by elevated air pollution, however we did start monitoring nitrogen dioxide along the High Road Thornwood Common (within this grid square) in January 2025. Whilst we are not monitoring PM2.5 concentrations, monitoring nitrogen dioxide will give us an indication of the overall level of pollution in the vicinity. Recent years at this location (grid square 547500 204500) have shown an improvement in concentration of PM2.5 according to the revised version of the modelling tool:

2021: 8.73µg/m^3

2022: 8.62µg/m^3

2023: 8.51µg/m^3

2024: 8.41µg/m^3

It is anticipated that the measures already being taken in respect of other pollutants will assist in the reduction of both primary $PM_{2.5}$ and secondary $PM_{2.5}$.

As the District comprises of a mainly urban south and mainly rural north, the approaches to reduce $PM_{2.5}$ will differ according to the sources present in the local area. As much $PM_{2.5}$ within the district will have originated outside of the district, we will continue to work with neighbouring authorities to achieve a consistent approach to air quality improvement.

The district has a number of historical Smoke Control Areas that cover much of the densely populated parts of Waltham Abbey and Loughton. Maps showing the locations of the smoke control areas together with a list of roads that have been designated as such, can be found on the District Councils website at https://www.eppingforestdc.gov.uk/environment/smoke-control-areas/ . Information and advice is targeted at the residents of these areas as well as encouraging others who enquire with regards to best practice. Permission has recently been sought from Councillors to go out to consultation with regards to the review of Smoke Control Areas. Various options will be included in the consultation, and it is anticipated that any changes made will increase consistency and the protection of human health.

The Environment Act 2021 addresses the sale of fuels that are burnt within a Smoke Control Area. As these fuels are required to meet criteria aimed at minimising pollution, it is hoped that this will have a positive impact upon particulate $PM_{2.5}$ concentrations in Epping Forest District. Following amendments to the Smoke Control Areas, the Council will be undertaking a further promotion of these changes to legislation and assisting Trading Standards colleagues with enforcement where necessary.

During 2024 the Council did not receive any complaints regarding smoke from the chimneys of domestic premises.

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within 2024 by Epping Forest District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2020 and 2024 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Epping Forest District Council did not undertake automatic (continuous) monitoring of nitrogen dioxide or particulate matter during 2024.

A short-term project was undertaken in the vicinity of Abridge to identify if an odour emanating from an illegal landfill was detrimental to health. This project, to monitor sulphur dioxide concentrations, was undertaken by Ricardo AEA Limited. Due to the lack of hydrogen sulphide reference monitors, it was not possible to undertake validation of the data through the normal QA/QC process. The results can therefore only be considered indicative. A summary of the project and its findings is presented in Appendix C and Appendix F of this document.

3.1.2 Non-Automatic Monitoring Sites

Epping Forest District Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 40 sites during 2024. Table A.2 in Appendix A presents the details of the non-automatic sites.

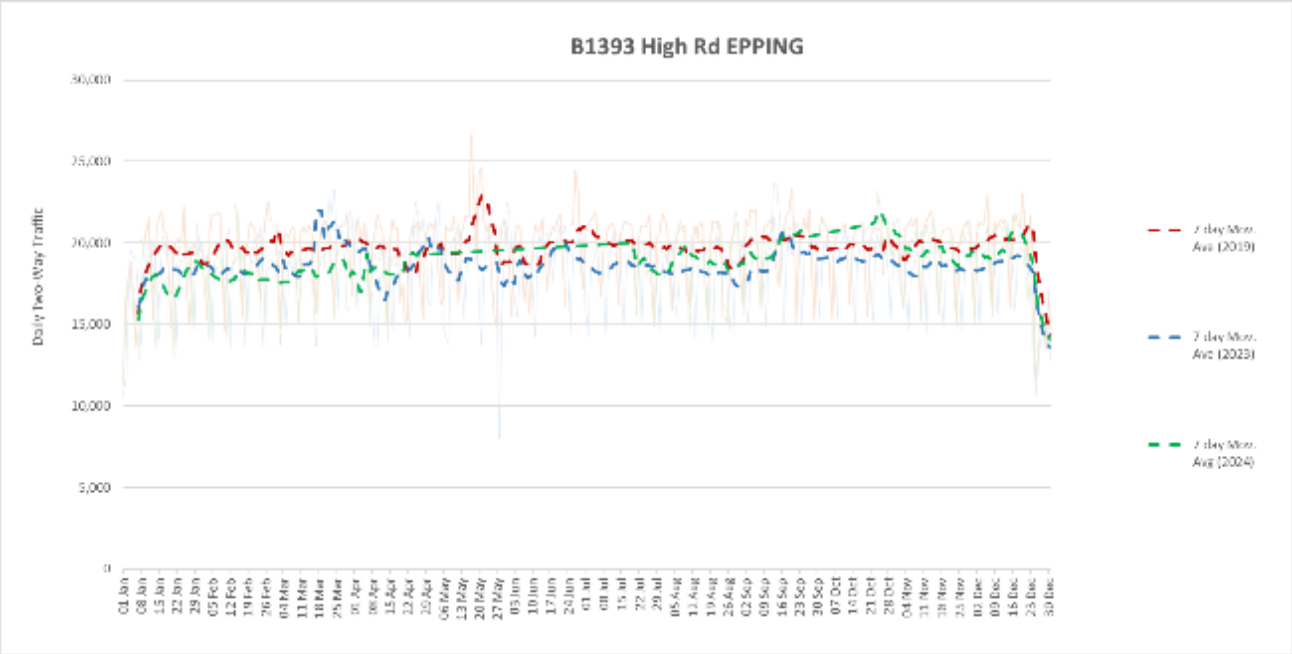
Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

The graphs in Appendix A (Figures A.1a to A.1h) show the trends of annual mean nitrogen dioxide concentrations over the last 5 years (where available) at all sites. It can be seen from these graphs that concentrations at 38 out of the 40 locations decreased (from that measured in 2023) in 2024, with 1 location (ID 35: 120 Manor Road, Chigwell) showing a slight increase (+0.1µg/m^3) from the concentration recorded in 2023. The remaining site (ID 24: Mayfield Bakery, Sheering Road, Sheering) was a returned site that had not been used since 2020 due to construction of a major road improvement scheme. The concentration recorded here had increased since 2020 however it is not of particular concern as the concentration measured was 20.46µg/m^3 and the site is not representative of relevant exposure.

The 2024 annual mean concentration of nitrogen dioxide at the AQMA Epping Forest District Council (No.2) decreased from 33.1µg/m^3 in 2023 to 30.4µg/m^3 in 2024. This is 9.4µg/m^3 below the annual mean objective of 40µg/m^3. Assuming that the concentration in 2020 was an outlier due to the impact of the COVID-19 pandemic, and traffic has now returned to the new normal, there has been a steady reduction in the annual average nitrogen dioxide concentrations over the last 5 years. This is illustrated on Figure A.1a in Appendix A. Epping Forest District Council will continue to monitor concentrations at this location to obtain sufficient evidence for a revocation of the AQMA designation in respect of the annual mean objection in the future.

The Highways Department at Essex County Council have provided the following chart which illustrates traffic flow along the Epping High Road (which passes through the AQMA at Bell Common), comparing 2019, 2023 and 2024.

Figure 3.1 – Traffic Flows on Epping High Road



The green dashed line represents the 2024 seven-day average traffic and shows that traffic numbers although slightly lower overall, roughly tracked those in 2019 before the pandemic (shown by the red dashed line). Traffic shown in blue is that recorded in 2023.

As the annual mean concentration of nitrogen dioxide at (3) Bell Vue, High Road, Bell Common, Epping (the AQMA) has been consistently below 60µg/m^3, the designation of the AQMA in relation to the hourly mean objective has now been revoked. It is considered highly unlikely that concentrations will increase to such a level that will lead to a breach of the hourly objective in the future.

These comments are made with the assumption that further development in the area is required to incorporate effective mitigation measures to ensure that they do not have a negative impact on the local environment. Environmental Health officers will provide comment to Development Control officers in respect of this when the application is submitted.

Whilst the annual mean nitrogen dioxide concentration was below the objective during 2024, we require further evidence that this objective will not be exceeded in the future before a revocation for this objective will be considered.

A separate project measured sulphur dioxide concentrations in the vicinity of Abridge following numerous complaints of odour which it was assumed emanated from an illegal

landfilling operation. As part of this project, diffusion tubes were sited at 6 locations in and around Abridge to record monthly mean concentrations in areas where complaints had been received. The tubes were sited during 2023 and 2024. Whilst they did not indicate elevated concentrations were likely, 2 continuous analysers were subsequently used to obtain trend data which would enable a clearer understanding of the situation. Information regarding results of both parts of this project is provided in Appendix F.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

All monitoring data presented in this report has been properly ratified and corrected for bias where applicable.

Error! Reference source not found. in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2024 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

All results obtained during 2024 were below both the hourly objective and the annual mean objective for nitrogen dioxide. In addition, as all results were below 36µg/m^3, being10% of the annual mean objective, it was not necessary to undertake a distance correction calculation.

The majority of sites (38 out of 40) measured a decrease in concentrations from those recorded in 2023. Only 1 site recorded an increase in annual mean concentrations from that recorded in 2023. This was the tube at 120 Manor Road Chigwell (ID 35) which recorded an annual mean 0.1µg/m^3 above that recorded in 2023. We will continue to monitor at this location to ensure that concentrations at this site do not continue to rise in the future.

We continue to use the national bias adjustment factor as we do not have the ability to calculate a figure locally. This figure enables us to account for the inherent uncertainty involved in diffusion tube monitoring and report an adjusted concentration in line with Defra guidance (TG16, paragraph 7.78). Appendix C provides further detail on this bias adjustment calculation. The version of this table used (3/25) was the most recent version publish at the time calculations were undertaken.

Data capture during 2024 was greater than 75% at all of our monitoring locations. As a result, we were not required to undertake annualisation calculations in line with Technical Guidance Note LAQM TG20, box 7.9.

As the 2024 monitoring data shows that no locations measured concentrations of nitrogen dioxide greater than the objective, no further designations are required at this time.

Following a review of monitoring locations at the end of 2024, two additional locations were set up and four were removed. Additional monitoring tubes were also added to those locations that have been monitored using duplicate tubes to provide for triplicate tubes at all sites. This should improve the accuracy of the results obtained. It was considered that the following locations could be removed from the monitoring network:

Tube ID	Location Name	Justification
ID 06	1 Canes Cottages, Canes Lane A414, Hastingwood	Highest concentration over the last 5 years was 20.1µg/m^3
ID07	1 Church Hill, Loughton	Highest concentration over the last 5 years was 22.4µg/m^3

ID12	66 Tempest Mead, North Weald	Highest concentration over the last 5 years was 15.1µg/m^3
ID34	414 Fencepiece Road, Chigwell (Sherrell House)	Highest concentration over the last 5 years was 21.6µg/m^3

The results obtained at these locations demonstrate that they are well within the objective concentration set out in the Air Quality Regulations.

The two new locations set up at the start of 2025 are in North Weald and Thornwood Common. They are located on the façade of residential buildings along the main road through the village.

We will report the results from these monitoring locations in the ASR Report due in 2026.

The results obtained during 2024 have enabled Epping Forest District Council to conclude that the AQMA designation in respect of the annual mean concentration of nitrogen dioxide should remain at the current time. This will be reviewed annually.

3.2.2 Particulate Matter (PM_{10})

Particulate matter (PM10) monitoring was not undertaken in the district in 2024.

3.2.3 Particulate Matter ($PM_{2.5}$)

Particulate matter (PM2.5) monitoring was not undertaken in the district in 2024.

3.2.4 Sulphur Dioxide (SO_2)

Sulphur dioxide (SO2) monitoring was undertaken during 2024. This was in respect of emissions from an illegal landfill site that was affecting the local community of Abridge. Monitoring was undertaken by 2 low-cost analysers following an initial assessment using diffusion tubes. Due to the lack of reference data for hydrogen sulphide monitors, the data obtained could not be validated through the normal QA/QC process. The results should therefore be treated with caution and only used to provide an indication of the trend in concentrations. Whilst the odour being created was causing distress to residents, the results obtained from monitoring did not indicate that these emissions were likely to lead to negative health impacts. Further information is provided in Appendix F.

Appendix A: Monitoring Results

Table A.1 Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
1a, 1b, 1c	105 Hainault Road (junction with Fencepiece Road), Chigwell	Kerbside	544234	192236	NO2	No	8.5	1.0	No	2.0
2a, 2b, 2c	15 High Street, Epping	Urban Background	545555	201732	NO2	No	0.0	13.7	No	2.0
3a, 3b, 3c	Bell Vue, High Road, Bell Common, Epping	Roadside	544928	201281	NO2	Yes, AQMA Epping Forest District Council No.2	0.0	1.8	No	2.0
4a, 4b, 4c	254 High Street, Epping (Ladbrokes)	Roadside	546196	202355	NO2	No	0.0	5.6	No	2.5
5a, 5b, 5c	202 High Street, Epping (Superdrug)	Roadside	546058	202193	NO2	No	0.0	4.0	No	2.5
6a, 6b, 6c	1 Canes Cottages, Canes Lane A414, Hastingwood	Urban Background	547838	206819	NO2	No	0.0	15.6	No	2.0
7a, 7b	1 Church Hill, Loughton	Roadside	542505	196668	NO2	No	2.5	4.2	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
8a, 8b	72 Church Hill, Loughton	Roadside	542664	196868	NO2	No	0.0	12.7	No	2.0
9a, 9b, 9c	249 High Road,Loughton (Timpson)	Roadside	542339	196360	NO2	No	0.0	6.4	No	2.5
10a, 10b	252 High Road, Loughton (Love Brownies)	Roadside	542373	196478	NO2	No	0.0	5.7	No	2.5
11a, 11b	5 Goldings Hill, Loughton	Roadside	543091	197316	NO2	No	4.8	1.0	No	2.5
12a, 12b, 12c	66 Tempest Mead, North Weald	Urban Background	549648	203671	NO2	No	4.2	1.0	No	2.0
15a, 15b	Albion Terrace, Sewardstone Road, Sewardstone	Roadside	537727	196187	NO2	No	3.1	4.6	No	2.0
17a, 17b, 17c	14 The Elms, Waltham Abbey	Urban Background	541320	200020	NO2	No	0.0	55.8	No	2.0
18a, 18b	4 Leaview, Waltham Abbey (Abbeyview)	Roadside	537808	200644	NO2	No	6.1	1.5	No	2.0
19a, 19b	34 Hayden Road, Waltham Abbey	Roadside	538386	199557	NO2	No	0.0	12.0	No	2.0
20a, 20b, 20c	2 Lodge Lane, Waltham Abbey	Roadside	538710	199860	NO2	No	7.3	0.5	No	2.0
21a, 21b	110 Roundhills, Waltham Abbey	Urban Background	538954	199973	NO2	No	6.7	1.0	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
22a, 22b	26 Victoria Road, Buckhurst Hill (opposite Underground Station)	Roadside	541719	193979	NO2	No	7.0	1.6	No	2.0
23a, 23b, 23c	St Johns Sch, High Road, Buckhurst Hill	Roadside	540902	194240	NO2	No	11.0	2.5	No	2.0
24a, 24b, 24c	Mayfield Bakery, Sheering Road, Sheering	Roadside	548842	212102	NO2	No	30.0	2.0	No	2.0
25a, 25b, 25c	Regency Lodge, Roding Lane, Buckhurst Hill	Roadside	541913	194020	NO2	No	5.0	2.0	No	2.0
26a, 26b, 26c	131 High Street, Ongar (at Bottleneck)	Roadside	555253	202921	NO2	No	0.0	1.0	No	2.0
27a, 27b, 27c	3 Queens Terrace, Epping Road A414, Ongar	Roadside	555125	203944	NO2	No	0.0	7.0	No	2.0
31a, 31b, 31c	Station House, Station Approach, Epping Underground Station, Epping	Other	546196	201563	NO2	No	0.0	1.5	No	2.5
32a, 32b, 32c	Copped Hall, High Road, Bell Common, Epping	Roadside	544709	201139	NO2	No	4.5	3.0	No	2.0
33a, 33b, 33c	281 Fencepiece Road, Chigwell	Roadside	544238	192212	NO2	No	0.0	10.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
34a, 34b, 34c	414 Fencepiece Road, Chigwell (Sherrell House)	Roadside	544268	192247	NO2	No	0.0	12.5	No	2.0
35a, 35b, 35c	120 Manor Road, Chigwell	Roadside	544183	192231	NO2	No	5.5	2.0	No	2.5
36a, 36b, 36c	107 High Street, Ongar (Anchor)	Roadside	555231	202875	NO2	No	0.0	2.0	No	2.5
37a, 37b, 37c	149 High Street, Ongar (Queen Bee)	Roadside	555253	202964	NO2	No	0.0	5.5	No	2.5
38a, 38b, 38c	204 High Street, Ongar (Watsons)	Roadside	555265	203108	NO2	No	0.0	2.5	No	2.0
39a, 39b, 39c	224 High Street, Epping (Church's Butchers)	Roadside	546107	202254	NO2	No	0.0	4.0	No	2.0
41a, 41b, 41c	259 High Street, Epping (Holland & Barrett)	Roadside	546075	202253	NO2	No	0.0	10.0	No	2.5
42a, 42b, 42c	Laurels, 2 Nazeing Road, Nazeing	Roadside	539015	205995	NO2	No	15.0	2.0	No	2.5
43a, 43b, 43c	4 North Street, Nazeing	Roadside	539084	206058	NO2	No	12.0	1.5	No	2.5
44a, 44b, 44c	Parsonage Court, Rectory Lane, Loughton	Roadside	543989	196472	NO2	No	0.0	9.8	No	2.0
45a, 45b, 45c	18 Chigwell Lane, Loughton (off Colson Road)	Roadside	544119	196133	NO2	No	3.5	2.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
46a, 46b, 46c	The Woodbine Public House, Honey Lane, Waltham Abbey	Roadside	541301	199731	NO2	No	0.0	5.0	No	2.0
48a, 48b, 48c	50 Chigwell Lane, Loughton	Roadside	544255	195792	NO2	No	7.5	2.0	No	2.0

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

Table A.2 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
1a, 1b, 1c	544234	192236	Kerbside	100.0	100.0	30.0	29.6	25.5	24.5	21.7
2a, 2b, 2c	545555	201732	Urban Background	100.0	100.0	18.1	17.9	16.8	15.8	13.7
3a, 3b, 3c	544928	201281	Roadside	100.0	100.0	32.5	**41.0**	38.0	33.1	30.4
4a, 4b, 4c	546196	202355	Roadside	100.0	75.0	21.3	20.0	19.8	18.6	16.1
5a, 5b, 5c	546058	202193	Roadside	100.0	100.0	24.0	24.8	24.3	22.3	18.7
6a, 6b, 6c	547838	206819	Urban Background	100.0	100.0	16.1	16.9	15.9	13.9	12.6
7a, 7b	542505	196668	Roadside	100.0	100.0	17.4	17.9	16.3	16.1	13.9
8a, 8b	542664	196868	Roadside	100.0	100.0	16.8	17.9	16.5	15.9	13.7
9a, 9b, 9c	542339	196360	Roadside	100.0	90.5	21.2	20.4	19.2	16.9	16.4
10a, 10b	542373	196478	Roadside	100.0	90.5	21.7	22.3	20.0	18.7	17.2

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
11a, 11b	543091	197316	Roadside	100.0	82.7	28.0	28.8	28.0	24.3	21.6
12a, 12b, 12c	549648	203671	Urban Background	100.0	100.0	11.5	12.1	11.9	11.2	9.9
15a, 15b	537727	196187	Roadside	100.0	100.0	22.6	23.2	23.0	19.7	17.9
17a, 17b, 17c	541320	200020	Urban Background	100.0	100.0	17.0	21.4	19.1	18.2	16.2
18a, 18b	537808	200644	Roadside	100.0	100.0	18.9	19.6	17.2	16.9	15.7
19a, 19b	538386	199557	Roadside	100.0	100.0	20.4	22.2	21.5	17.6	16.7
20a, 20b, 20c	538710	199860	Roadside	100.0	100.0	22.5	24.6	22.9	21.1	18.5
21a, 21b	538954	199973	Urban Background	100.0	100.0	21.0	20.8	17.8	19.3	17.2
22a, 22b	541719	193979	Roadside	100.0	92.2	19.4	21.5	18.3	18.2	15.4
23a, 23b, 23c	540902	194240	Roadside	100.0	100.0	20.1	20.6	17.9	16.3	15.2
24a, 24b, 24c	548842	212102	Roadside	100.0	100.0	18.3				20.8
25a, 25b, 25c	541913	194020	Roadside	100.0	100.0	26.1	27.1	23.5	21.5	20.7
26a, 26b, 26c	555253	202921	Roadside	100.0	100.0	27.8	31.3	25.6	26.4	25.0

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
27a, 27b, 27c	555125	203944	Roadside	100.0	100.0	18.3	18.7	19.9	17.1	15.6
31a, 31b, 31c	546196	201563	Other	100.0	100.0	25.3	28.2	26.1	26.4	18.1
32a, 32b, 32c	544709	201139	Roadside	100.0	100.0	23.2	22.2	20.5	19.8	16.7
33a, 33b, 33c	544238	192212	Roadside	100.0	100.0	25.0	23.9	21.8	20.1	18.4
34a, 34b, 34c	544268	192247	Roadside	100.0	100.0	16.9	17.5	16.6	14.3	12.8
35a, 35b, 35c	544183	192231	Roadside	100.0	93.0	24.3	25.5	21.8	19.3	19.4
36a, 36b, 36c	555231	202875	Roadside	100.0	84.9	24.7	26.1	23.6	22.2	20.4
37a, 37b, 37c	555253	202964	Roadside	100.0	100.0	19.8	21.3	20.2	18.3	17.5
38a, 38b, 38c	555265	203108	Roadside	100.0	100.0	19.5	21.6	21.4	19.0	16.9
39a, 39b, 39c	546107	202254	Roadside	100.0	100.0	22.6	22.6	23.4	20.5	18.2
41a, 41b, 41c	546075	202253	Roadside	100.0	100.0	22.7	23.9	21.7	20.9	18.3
42a, 42b, 42c	539015	205995	Roadside	100.0	100.0	23.0	22.3	22.3	18.4	18.0
43a, 43b, 43c	539084	206058	Roadside	100.0	100.0	21.0	21.7	20.0	18.7	16.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
44a, 44b, 44c	543989	196472	Roadside	100.0	100.0	16.9	17.0	16.5	15.5	13.6
45a, 45b, 45c	544119	196133	Roadside	100.0	100.0	17.9	18.6	18.4	17.0	14.9
46a, 46b, 46c	541301	199731	Roadside	100.0	100.0		28.1	27.0	25.1	23.3
48a, 48b, 48c	544255	195792	Roadside	100.0	92.4					23.9

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22 .**

☒ **Diffusion tube data has been bias adjusted.**

☒ **Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction.**

Notes:

The annual mean concentrations are presented as µg/m^3.

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

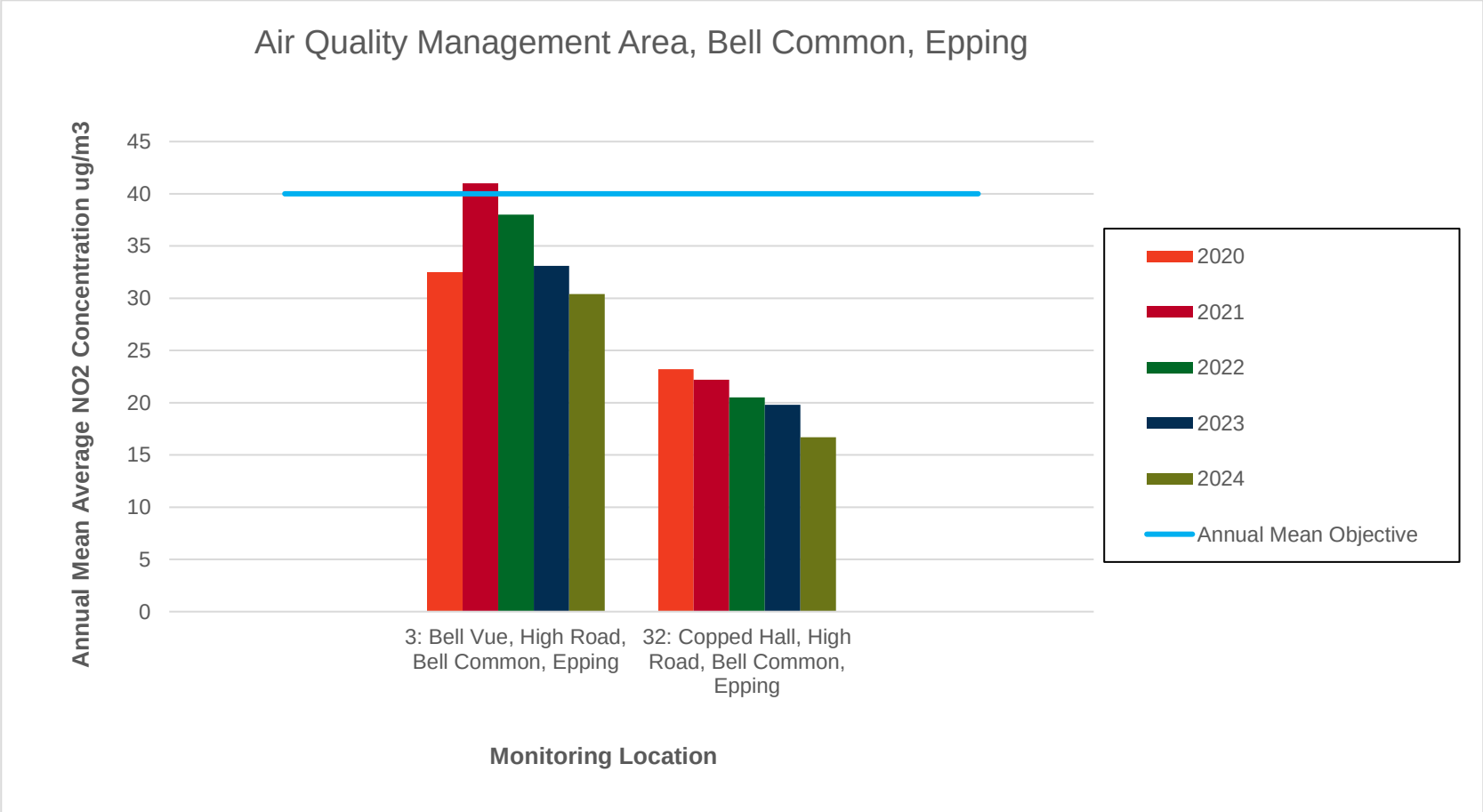
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

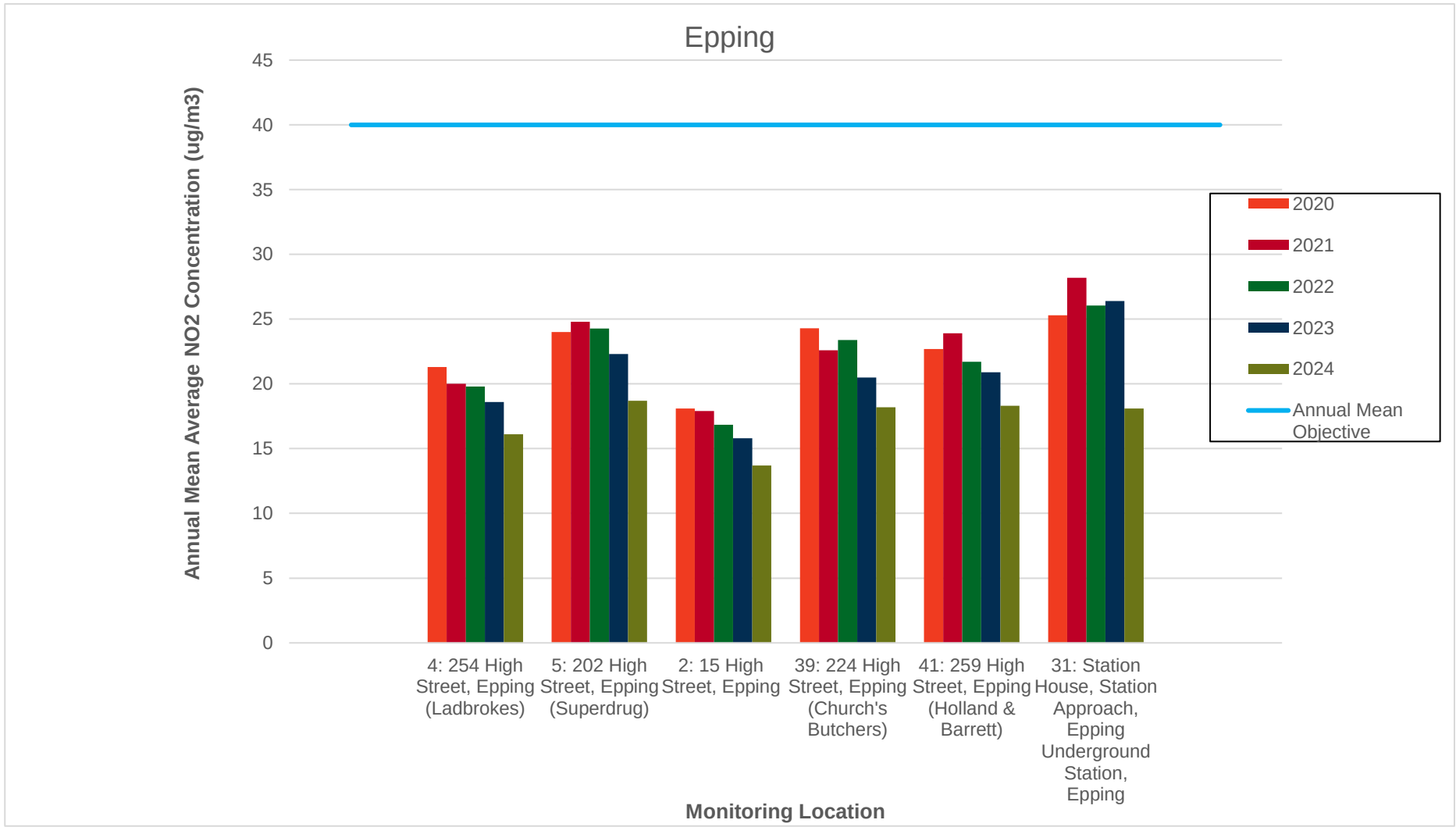
Figure A.1 – Trends in Annual Mean NO_2 Concentrations

Figure A.1a



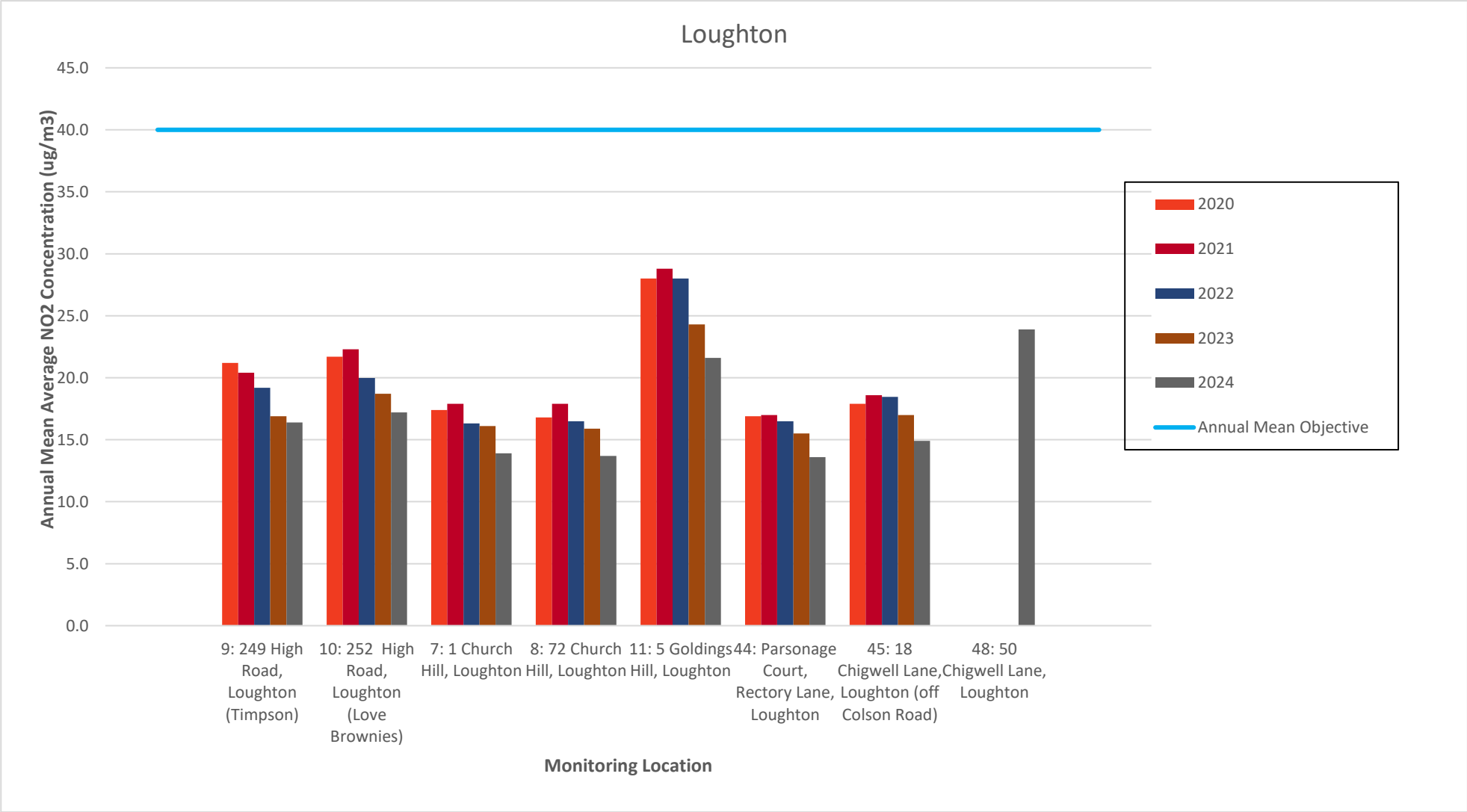
This graph shows a consistent decline in concentrations of nitrogen dioxide across the two monitoring locations in Bell Common.

Figure A.1b



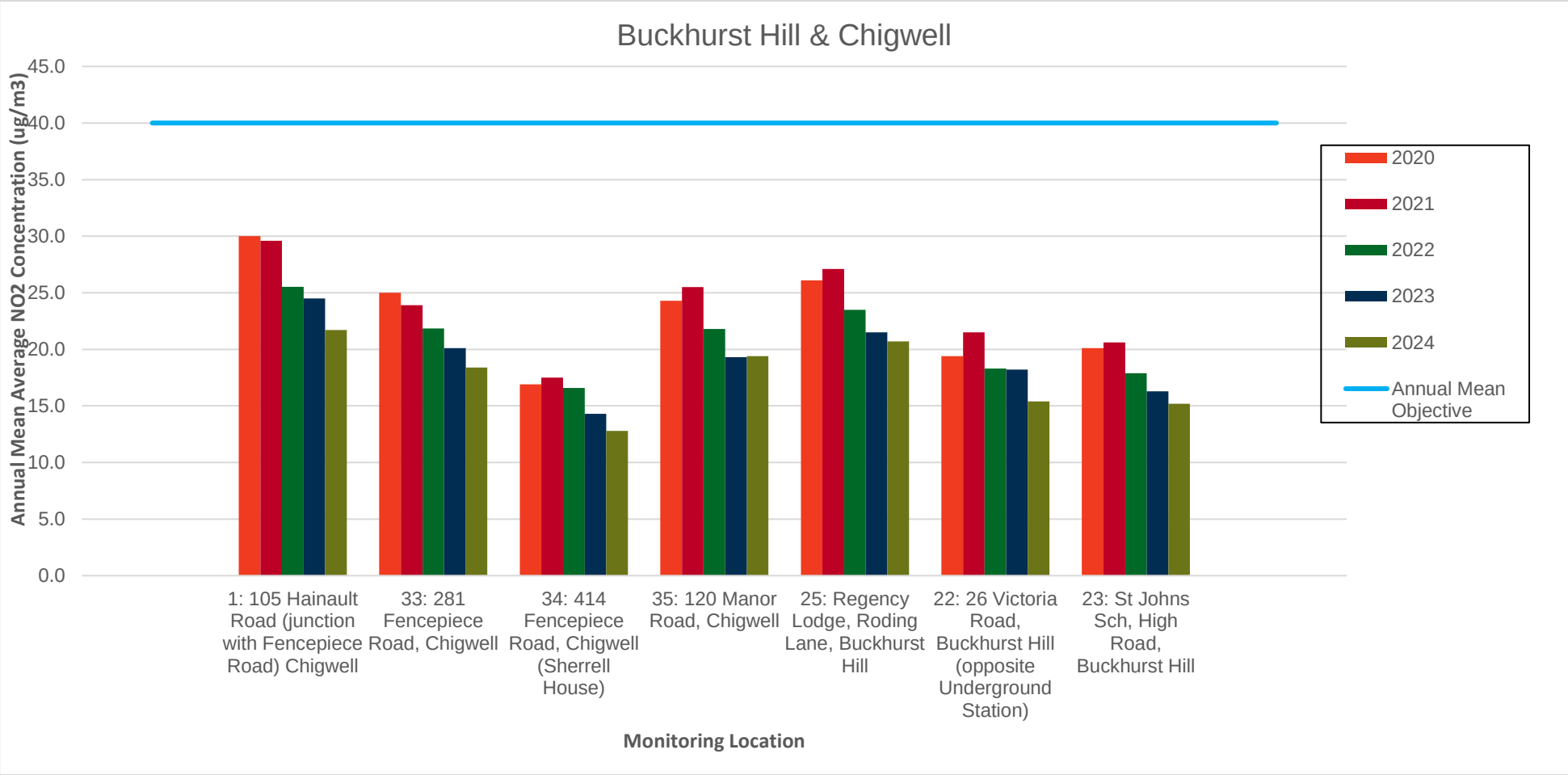
This graph shows a decline in the annual mean concentrations of nitrogen dioxide measured at all sites in Epping in 2024

Figure A.1c



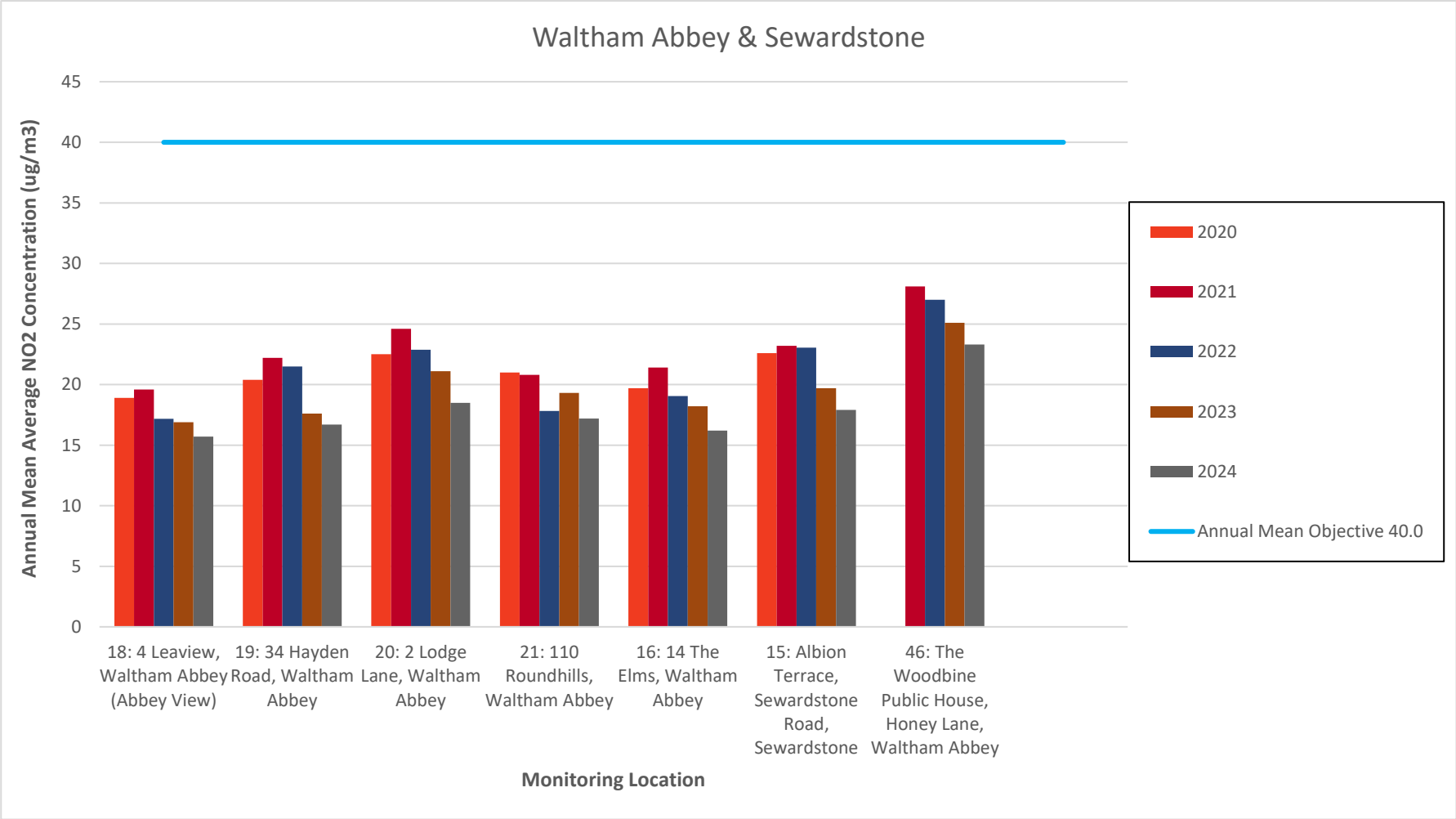
This graph shows a decline in the annual mean concentrations of nitrogen dioxide measured at all sites in Loughton in 2024

Figure A.1d



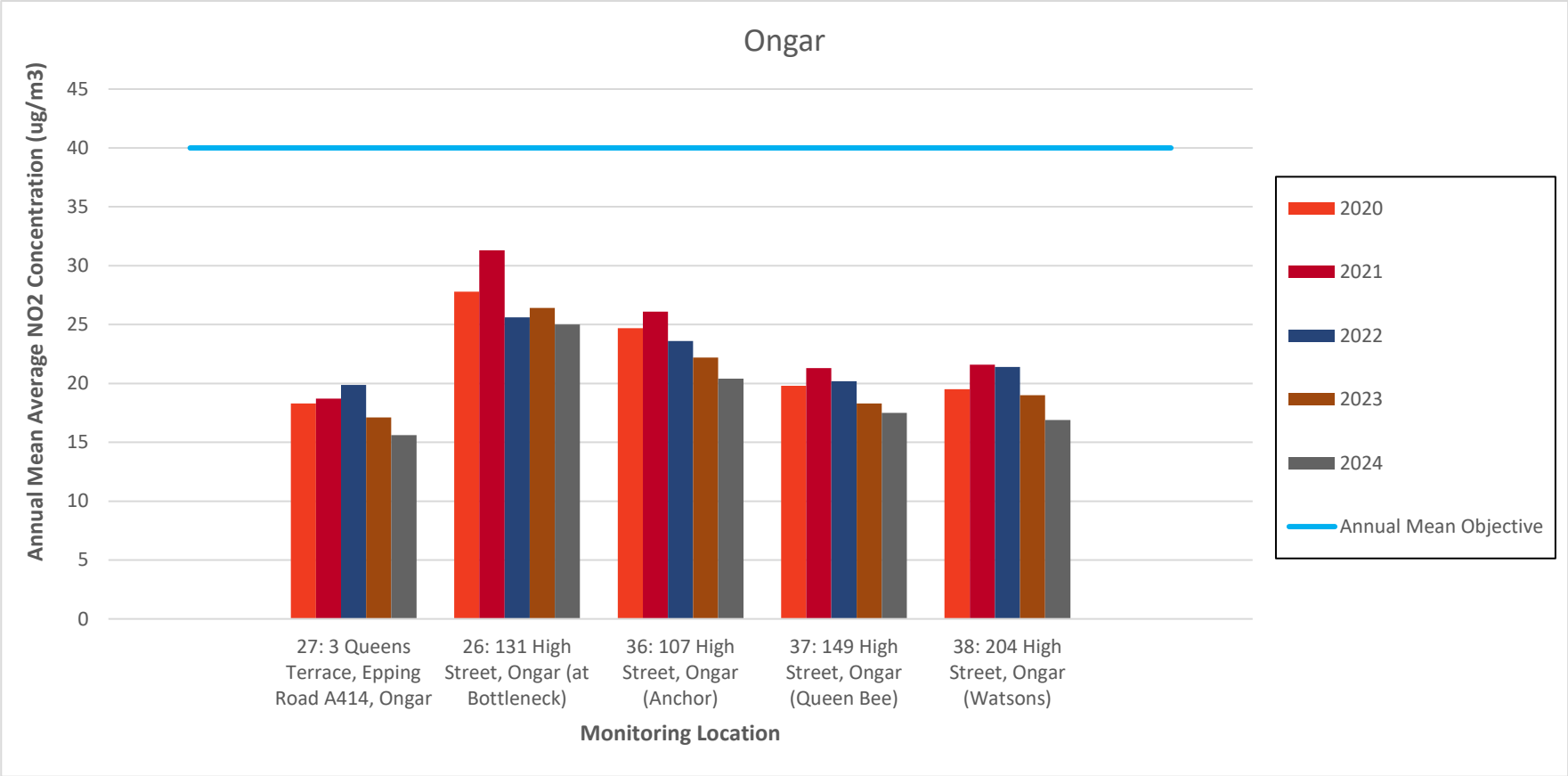
This graph shows a decline in the annual mean concentrations of nitrogen dioxide measured at most of the sites in Buckhurst Hill & Chigwell in 2024. The exception to this was 120 Manor Road, which increased by 1 µg/m$^{3.}$

Figure A.1e



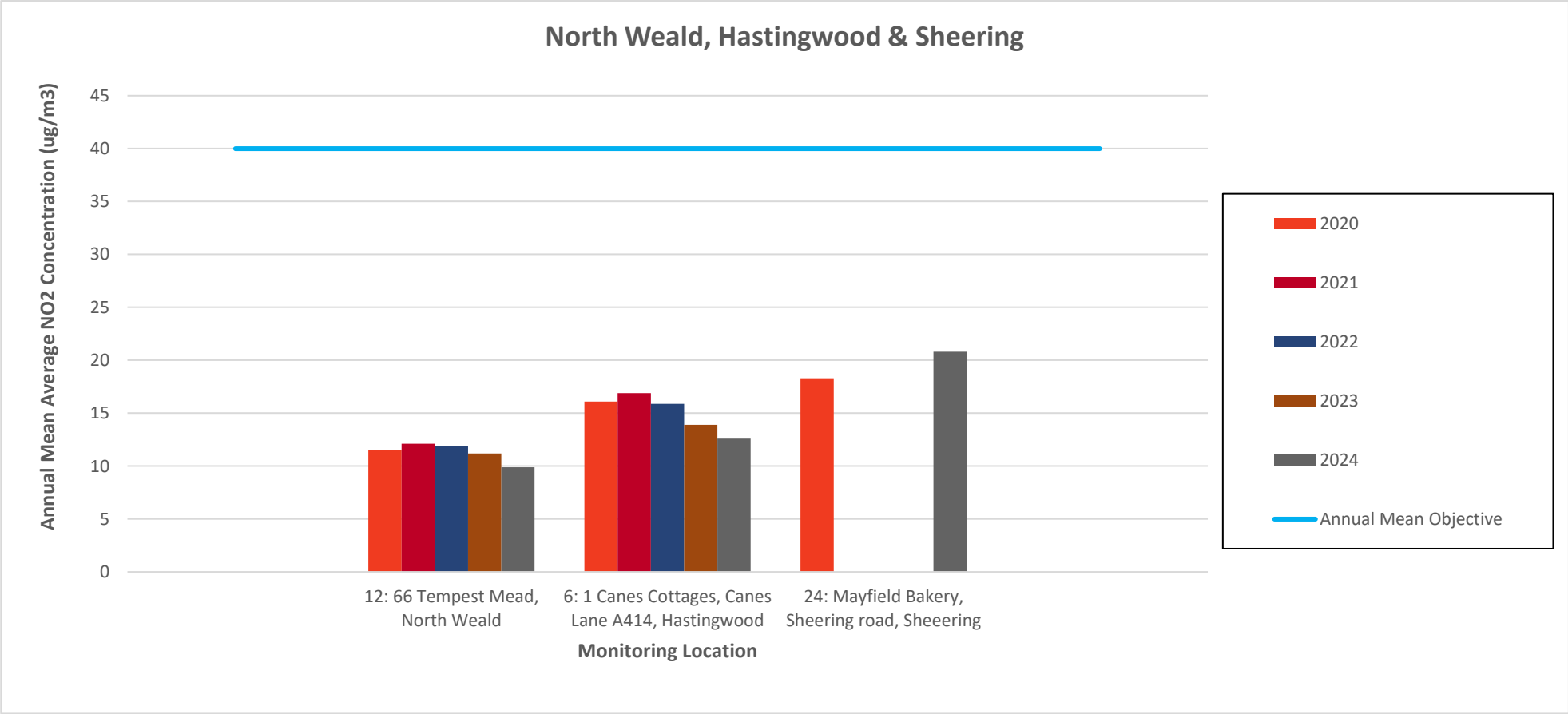
This graph shows a decline in the annual mean concentrations of nitrogen dioxide measured at all sites in Waltham Abbey & Sewardstone in 2024

Figure A.1f



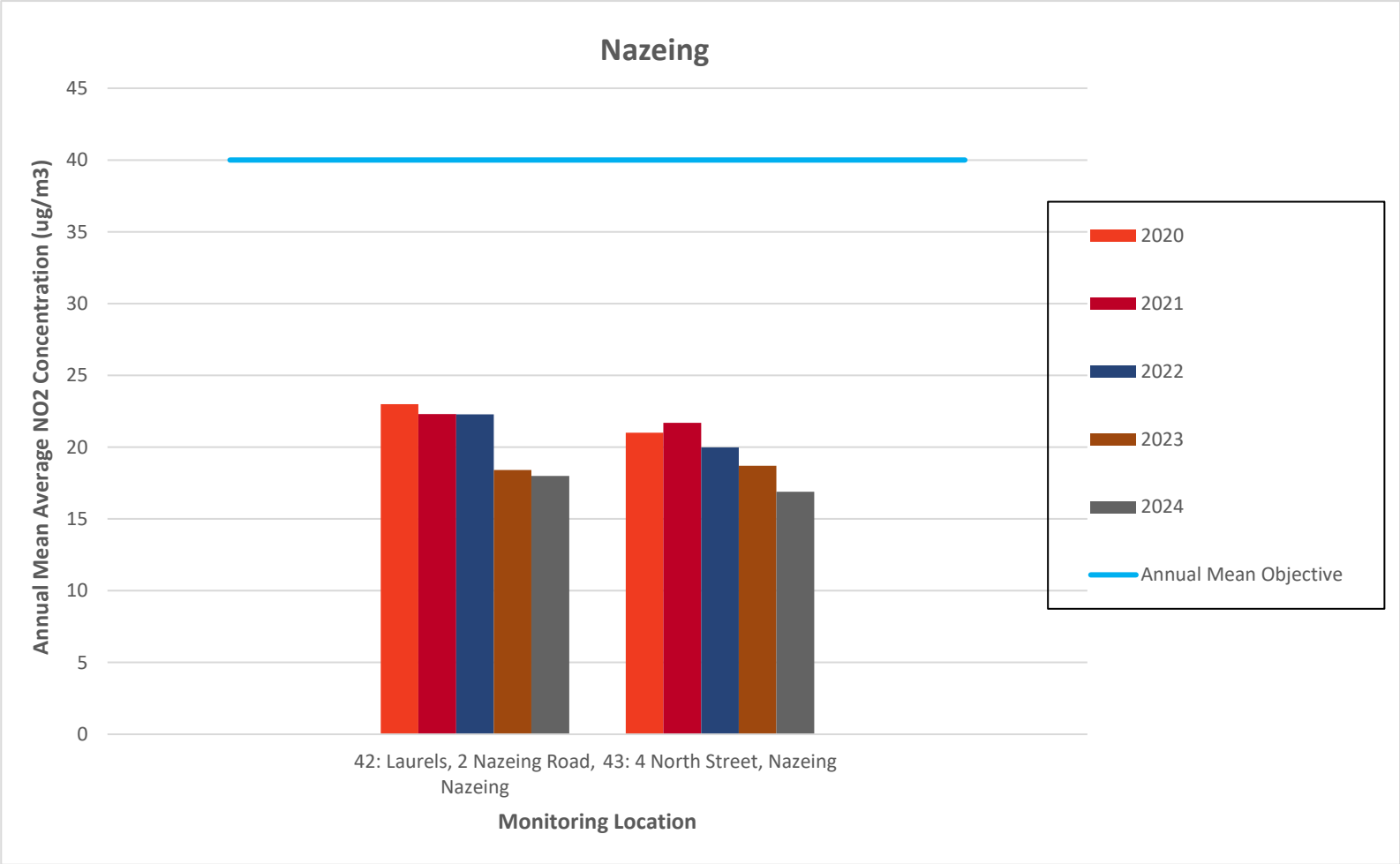
This graph shows a decline in the annual mean concentrations of nitrogen dioxide measured at all sites in Ongar in 2024

Figure A.1g



This graph shows a decline in the annual mean concentrations of nitrogen dioxide measured at sites in North Weald & Hastingwood in 2024.

Figure A.1h



This graph shows a decline in the annual mean concentrations of nitrogen dioxide measured at sites in Nazeing in 2024.

Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO_2 2024 Diffusion Tube Results ($\mu g/m^3$)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
1a	544234	192236	38.5		30.1	21.1	24.8	22.5	22.8	20.0	27.2	31.8	25.1	26.4	-	-	-	Triplicate Site with 1a, 1b and 1c - Annual data provided for 1c only
1b	544234	192236	35.5		30.9	19.5	26.7	21.3	23.4	19.8	25.4	31.0	33.4		-	-	-	Triplicate Site with 1a, 1b and 1c - Annual data provided for 1c only
1c	544234	192236	41.1	32.4	30.6	19.5	24.4	21.4	24.1	20.0	24.6	27.3	35.2		27.1	21.7	-	Triplicate Site with 1a, 1b and 1c - Annual data provided for 1c only
2a	545555	201732	24.4	20.6	21.4	13.4	15.2	12.9	14.8	12.6	16.0	19.5	18.5		-	-	-	Triplicate Site with 2a, 2b and 2c - Annual data provided for 2c only
2b	545555	201732	24.0	20.7	20.2	10.7	15.8	11.8	15.4	12.8		20.9		17.5	-	-	-	Triplicate Site with 2a, 2b and 2c - Annual data provided for 2c only
2c	545555	201732	25.1	22.6	19.3	13.6	14.5	13.2	15.4	14.4	16.4	15.5	17.7	16.5	17.1	13.7	-	Triplicate Site with 2a, 2b and 2c - Annual data provided for 2c only
3a	544928	201281	35.8	41.2	44.0	34.1	39.6	41.6	36.7		33.2	42.5	42.0		-	-	-	Triplicate Site with 3a, 3b and 3c - Annual data provided for 3c only
3b	544928	201281	44.7	30.2	43.6	34.9	34.8	39.7	37.6	38.4	34.0	35.8	41.2	35.1	-	-	-	Triplicate Site with 3a, 3b and 3c - Annual data provided for 3c only
3c	544928	201281	44.3	43.7	33.6	32.5	35.8	42.2	37.7	37.0	35.2		39.4	35.4	38.0	30.4	-	Triplicate Site with 3a, 3b and 3c - Annual data provided for 3c only
4a	546196	202355	27.8	23.7	23.6			12.4	18.3	17.8	17.2	22.2	23.7	19.5	-	-	-	Triplicate Site with 4a, 4b and 4c - Annual data provided for 4c only
4b	546196	202355	25.3	27.4	24.5				15.3	18.2	15.9	20.1	23.6	16.7	-	-	-	Triplicate Site with 4a, 4b and 4c - Annual data provided for 4c only
4c	546196	202355	27.3	27.0	23.4		16.5		17.6	17.7	17.4	21.7		21.3	20.1	16.1	-	Triplicate Site with 4a, 4b and 4c - Annual data provided for 4c only
5a	546058	202193	29.9	26.7	27.3	17.7	25.5	19.4	19.5	16.8	22.9	27.2	24.4	20.9	-	-	-	Triplicate Site with 5a, 5b and 5c - Annual data provided for 5c only
5b	546058	202193	30.2	26.8	30.0	18.2	23.0	19.4	20.0		23.4	26.8	25.5	19.2	-	-	-	Triplicate Site with 5a, 5b and 5c - Annual data provided for 5c only
5c	546058	202193	29.5	30.2	26.3	17.1	25.1	20.0	21.3	15.9	23.9	29.2	27.0	20.6	23.4	18.7	-	Triplicate Site with 5a, 5b and 5c - Annual data provided for 5c only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
6a	547838	206819	21.6	19.7	14.4	13.3	13.0	11.6	13.3	11.5	13.6	19.6	21.1	14.6	-	-	-	Triplicate Site with 6a, 6b and 6c - Annual data provided for 6c only
6b	547838	206819	22.9	19.1	15.0	12.7	14.8	11.9	12.1	8.8	14.1	19.6	22.0	14.2	-	-	-	Triplicate Site with 6a, 6b and 6c - Annual data provided for 6c only
6c	547838	206819	23.2	17.2	16.7	13.8	14.8	11.9	13.1	12.6	14.6	18.1	21.6		15.7	12.6	-	Triplicate Site with 6a, 6b and 6c - Annual data provided for 6c only
7a	542505	196668	24.0	17.6	19.0	11.8	14.6	12.5	18.3	13.6	16.1	17.4	25.1	20.5	-	-	-	Duplicate Site with 7a and 7b - Annual data provided for 7b only
7b	542505	196668	26.8	17.3	19.0	12.5	15.2	12.2	15.3	12.3	14.7	20.4	22.4	17.6	17.3	13.9	-	Duplicate Site with 7a and 7b - Annual data provided for 7b only
8a	542664	196868	21.2	20.6	20.1	13.1	15.1	11.8	17.6	12.9	14.8	20.2	25.2	12.0	-	-	-	Duplicate Site with 8a and 8b - Annual data provided for 8b only
8b	542664	196868	24.5	16.8	19.8	11.8	13.8	12.8	19.5		15.2	20.5		13.4	17.1	13.7	-	Duplicate Site with 8a and 8b - Annual data provided for 8b only
9a	542339	196360	28.9	21.9	23.5		20.2	15.6	20.0	12.2	18.4	23.9	26.8		-	-	-	Triplicate Site with 9a, 9b and 9c - Annual data provided for 9c only
9b	542339	196360	25.9		23.2	14.1		15.7	21.3	15.2	18.7	24.3			-	-	-	Triplicate Site with 9a, 9b and 9c - Annual data provided for 9c only
9c	542339	196360	27.2	19.4		15.1		13.9		17.5		22.8			20.5	16.4	-	Triplicate Site with 9a, 9b and 9c - Annual data provided for 9c only
10a	542373	196478	26.7	25.4	24.1	18.1	20.2	18.8	12.1		21.5	21.4		20.8	-	-	-	Duplicate Site with 10a and 10b - Annual data provided for 10b only
10b	542373	196478	26.4	24.6	23.7	19.8	20.5	19.6	13.1		21.3		25.6	23.0	21.5	17.2	-	Duplicate Site with 10a and 10b - Annual data provided for 10b only
11a	543091	197316				20.3	28.9	25.8	19.8	25.0	30.1	30.3	32.7	22.0	-	-	-	Duplicate Site with 11a and 11b - Annual data provided for 11b only
11b	543091	197316	35.8			20.9	22.8		25.0	24.7	28.1	31.1	32.7		27.0	21.6	-	Duplicate Site with 11a and 11b - Annual data provided for 11b only
12a	549648	203671	17.2	14.2	12.6	8.7	8.8	8.5	11.1	10.6	11.7	13.4	18.5	15.7	-	-	-	Triplicate Site with 12a, 12b and 12c - Annual data provided for 12c only
12b	549648	203671	18.4			9.0	8.4	7.9	10.9	9.9	10.7	12.6	17.2	14.8	-	-	-	Triplicate Site with 12a, 12b and 12c - Annual data provided for 12c only
12c	549648	203671	16.7	13.1	12.5	9.6	9.1	8.3	11.2	9.4		13.5	17.8	15.4	12.4	9.9	-	Triplicate Site with 12a, 12b and 12c - Annual data provided for 12c only
15a	537727	196187	32.4	25.4	24.2	13.5	20.1	16.7	18.6		22.1	25.4	30.4	25.0	-	-	-	Duplicate Site with 15a and 15b - Annual data provided for 15b only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
15b	537727	196187	27.3	25.5	22.5	16.2	20.5	13.8	19.0	16.3	22.8	27.1	29.8	26.1	22.4	17.9	-	Duplicate Site with 15a and 15b - Annual data provided for 15b only
17a	541320	200020	30.6	21.7	20.1	20.7	19.4	17.1	16.5	14.8	18.7	20.2	25.7		-	-	-	Triplicate Site with 17a, 17b and 17c - Annual data provided for 17c only
17b	541320	200020	27.5	23.9	17.8	20.5	17.8	16.7	16.8	14.7	19.5	20.4	24.4	20.7	-	-	-	Triplicate Site with 17a, 17b and 17c - Annual data provided for 17c only
17c	541320	200020	30.6	21.4	18.9	19.0	19.0	16.9	19.8	14.0	20.3	19.5	25.8	19.5	20.3	16.2	-	Triplicate Site with 17a, 17b and 17c - Annual data provided for 17c only
18a	537808	200644	26.2	24.6	22.5	13.0	15.6	11.2	25.0	15.3	16.8	22.0	23.2		-	-	-	Duplicate Site with 18a and 18b - Annual data provided for 18b only
18b	537808	200644	27.4	24.9	23.3	15.4	16.7	12.4		12.2	17.5	22.5	24.8	16.4	19.6	15.7	-	Duplicate Site with 18a and 18b - Annual data provided for 18b only
19a	538386	199557	29.1	17.6	21.4	18.4	21.5	17.0	10.9		24.7	19.5	29.7	19.4	-	-	-	Duplicate Site with 19a and 19b - Annual data provided for 19b only
19b	538386	199557	31.8	22.5	22.5	18.4	22.9	15.3	11.2	17.0	24.6	23.8	29.9	16.2	20.9	16.7	-	Duplicate Site with 19a and 19b - Annual data provided for 19b only
20a	538710	199860	33.9	28.9	24.6	16.7	20.9	18.7	18.6		18.3	25.1	27.9	25.2	-	-	-	Triplicate Site with 20a, 20b and 20c - Annual data provided for 20c only
20b	538710	199860	29.8	28.0	21.6	17.9		19.0	19.0	21.8	23.7	22.8	27.4		-	-	-	Triplicate Site with 20a, 20b and 20c - Annual data provided for 20c only
20c	538710	199860	33.1	25.7	23.4	19.5	20.6	18.7	16.5	21.4	22.7	24.8	30.0	21.2	23.1	18.5	-	Triplicate Site with 20a, 20b and 20c - Annual data provided for 20c only
21a	538954	199973	30.8	28.8	22.9	15.8	17.4	15.4	16.8	17.5	17.6	25.6	26.8	19.3	-	-	-	Duplicate Site with 21a and 21b - Annual data provided for 21b only
21b	538954	199973	34.2	26.8	25.2	14.4	16.1	15.6	18.0	18.6	19.7	23.7	29.1	20.1	21.5	17.2	-	Duplicate Site with 21a and 21b - Annual data provided for 21b only
22a	541719	193979	29.4	23.9	21.6	14.2	15.6	15.5	16.7	16.1	19.3	26.4		11.5	-	-	-	Duplicate Site with 22a and 22b - Annual data provided for 22b only
22b	541719	193979	31.6	23.7	22.2	13.3	16.3	13.2	16.2	15.8	20.4	25.3		14.0	19.2	15.4	-	Duplicate Site with 22a and 22b - Annual data provided for 22b only
23a	540902	194240	21.1	22.5	21.7	13.3	14.0	14.0	17.3	12.2	15.6	21.9	26.4	20.1	-	-	-	Triplicate Site with 23a, 23b and 23c - Annual data provided for 23c only
23b	540902	194240	25.2	24.7	20.4	13.7	16.2	14.7	16.8	15.2	17.3	23.5	27.0	22.4	-	-	-	Triplicate Site with 23a, 23b and 23c - Annual data provided for 23c only
23c	540902	194240	27.6	22.0	22.4	12.7	14.8	13.2	16.8	14.2	15.7	21.1	26.8	17.7	19.0	15.2	-	Triplicate Site with 23a, 23b and 23c - Annual data provided for 23c only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
24a	548842	212102	31.3	29.4	29.5	19.2	24.5	21.1	20.1	20.6	26.6	29.1	35.2		-	-	-	Triplicate Site with 24a, 24b and 24c - Annual data provided for 24c only
24b	548842	212102		28.8	28.2	18.2	20.3	23.2	19.6	21.3	26.7	29.9	34.8	24.7	-	-	-	Triplicate Site with 24a, 24b and 24c - Annual data provided for 24c only
24c	548842	212102	36.2	28.1	25.1	22.5	26.6	21.3		19.9	26.4	30.4	33.6	24.5	26.0	20.8	-	Triplicate Site with 24a, 24b and 24c - Annual data provided for 24c only
25a	541913	194020		30.0	23.7	15.7	20.9	21.6	21.6	23.7	26.6	29.5	33.0	26.0	-	-	-	Triplicate Site with 25a, 25b and 25c - Annual data provided for 25c only
25b	541913	194020		30.2	27.7	19.6	22.1	21.7	23.8	22.2	24.8	29.8	33.4	25.3	-	-	-	Triplicate Site with 25a, 25b and 25c - Annual data provided for 25c only
25c	541913	194020	35.5	31.9	27.1	20.6	21.0	21.8	20.6	17.4	21.9	29.6	34.4	26.6	25.9	20.7	-	Triplicate Site with 25a, 25b and 25c - Annual data provided for 25c only
26a	555253	202921	43.0	33.5	31.4	27.5	30.9	28.7	27.1	26.1	31.4	31.9	36.7	29.8	-	-	-	Triplicate Site with 26a, 26b and 26c - Annual data provided for 26c only
26b	555253	202921	41.3	31.2	28.9	25.8	29.7	31.8	27.8	25.4	33.0	25.8	32.3	30.8	-	-	-	Triplicate Site with 26a, 26b and 26c - Annual data provided for 26c only
26c	555253	202921	44.1	34.2	31.3	29.5	28.4	30.1	27.0	28.0		32.3	35.1	29.8	31.2	25.0	-	Triplicate Site with 26a, 26b and 26c - Annual data provided for 26c only
27a	555125	203944	27.2	23.3	22.4	15.0	18.1	15.4	16.3	17.1	19.6	22.2	23.1	18.0	-	-	-	Triplicate Site with 27a, 27b and 27c - Annual data provided for 27c only
27b	555125	203944	24.8	22.2	20.0	15.2	18.4	16.3	19.1	18.1	18.4	20.5	24.0	17.0	-	-	-	Triplicate Site with 27a, 27b and 27c - Annual data provided for 27c only
27c	555125	203944	24.4	24.2	22.7	14.2	21.3	16.4	17.2	14.1	19.0	19.9	22.7	13.6	19.5	15.6	-	Triplicate Site with 27a, 27b and 27c - Annual data provided for 27c only
31a	546196	201563	31.5	28.2	32.2	17.6	23.7	21.2	16.8		18.0	26.5	24.6	19.0	-	-	-	Triplicate Site with 31a, 31b and 31c - Annual data provided for 31c only
31b	546196	201563	29.4	29.7	32.1	17.2	24.7	20.8	16.0	16.3	18.8	26.2	21.7		-	-	-	Triplicate Site with 31a, 31b and 31c - Annual data provided for 31c only
31c	546196	201563	30.5	28.1	29.6	18.6	21.0	21.9	17.0	16.0	14.6	25.0	26.1		22.6	18.1	-	Triplicate Site with 31a, 31b and 31c - Annual data provided for 31c only
32a	544709	201139	25.5	28.2	22.3	14.6	14.7	19.1	17.7	14.2	18.8	23.0			-	-	-	Triplicate Site with 32a, 32b and 32c - Annual data provided for 32c only
32b	544709	201139	27.4	27.6	23.9	13.4	18.1	19.7	17.0	19.2	14.7	21.1	24.6	22.5	-	-	-	Triplicate Site with 32a, 32b and 32c - Annual data provided for 32c only
32c	544709	201139	28.6	28.6	21.7	16.3	19.8	18.7	19.4	19.6	17.0	23.5	22.3		20.9	16.7	-	Triplicate Site with 32a, 32b and 32c - Annual data provided for 32c only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
33a	544238	192212	34.0	27.8	20.8	19.3	17.5	20.1	20.2	17.0	22.7	26.1	25.0	19.0	-	-	-	Triplicate Site with 33a, 33b and 33c - Annual data provided for 33c only
33b	544238	192212	32.5		22.1	19.4	20.6	20.4	19.1	18.0	22.4		22.7	25.0	-	-	-	Triplicate Site with 33a, 33b and 33c - Annual data provided for 33c only
33c	544238	192212	31.1	27.2	23.1	18.5	20.8	19.7	21.4	19.8	20.3	28.2	29.0		23.0	18.4	-	Triplicate Site with 33a, 33b and 33c - Annual data provided for 33c only
34a	544268	192247		19.3	18.5	12.0	15.1	12.1	13.9	12.5	15.5	18.1	19.7	15.9	-	-	-	Triplicate Site with 34a, 34b and 34c - Annual data provided for 34c only
34b	544268	192247	24.9	17.3	18.1	11.9	14.5	12.0	13.5	11.8	14.6	14.9	19.6	16.9	-	-	-	Triplicate Site with 34a, 34b and 34c - Annual data provided for 34c only
34c	544268	192247	24.0	17.9	17.5	10.9	14.8	12.0	13.7	12.6	13.2	20.4	19.6	14.0	16.0	12.8	-	Triplicate Site with 34a, 34b and 34c - Annual data provided for 34c only
35a	544183	192231		29.0	23.7	20.9	16.5	21.3	23.3	19.4	24.0	30.3	35.0	27.5	-	-	-	Triplicate Site with 35a, 35b and 35c - Annual data provided for 35c only
35b	544183	192231		28.1		18.7	22.2	21.6	22.0	19.3	23.3	29.3	26.9		-	-	-	Triplicate Site with 35a, 35b and 35c - Annual data provided for 35c only
35c	544183	192231		30.0	25.0	17.2	21.5	21.3	20.5	20.0	22.2	30.8	28.1		24.2	19.4	-	Triplicate Site with 35a, 35b and 35c - Annual data provided for 35c only
36a	555231	202875	37.7	28.6	20.6	23.7	23.6			22.2	20.4	29.3	30.7	15.5	-	-	-	Triplicate Site with 36a, 36b and 36c - Annual data provided for 36c only
36b	555231	202875	36.6	28.0	24.7	22.7	22.6			17.8	25.9	26.9	29.1		-	-	-	Triplicate Site with 36a, 36b and 36c - Annual data provided for 36c only
36c	555231	202875	36.4	26.2	27.1	21.8	25.0			21.4	26.8	27.9	30.7	18.6	25.5	20.4	-	Triplicate Site with 36a, 36b and 36c - Annual data provided for 36c only
37a	555253	202964		23.3	22.8	16.1	18.7	22.3	20.5	17.7	22.7	24.7	26.0	18.1	-	-	-	Triplicate Site with 37a, 37b and 37c - Annual data provided for 37c only
37b	555253	202964	34.3		21.8	20.9	20.4	17.9	20.6	16.0	17.9	33.2	26.5	17.9	-	-	-	Triplicate Site with 37a, 37b and 37c - Annual data provided for 37c only
37c	555253	202964	30.3	24.7		19.1	20.9	21.2	17.7	17.6	18.0	26.2	22.5	12.6	21.9	17.5	-	Triplicate Site with 37a, 37b and 37c - Annual data provided for 37c only
38a	555265	203108	31.5	24.6	24.4	13.4	21.5	17.6	18.4	19.4	21.7	16.1	25.9	20.5	-	-	-	Triplicate Site with 38a, 38b and 38c - Annual data provided for 38c only
38b	555265	203108	36.4	24.5	25.0	14.7	19.4	16.7	18.1	17.7	16.6	22.7	24.4		-	-	-	Triplicate Site with 38a, 38b and 38c - Annual data provided for 38c only
38c	555265	203108	31.0	27.3	26.2	17.5	22.2	16.0	14.8	19.6	17.0	22.2	17.6	18.2	21.1	16.9	-	Triplicate Site with 38a, 38b and 38c - Annual data provided for 38c only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
39a	546107	202254	29.8	27.3	26.0	17.3	21.7	20.1	19.5	22.5	17.5	23.7	24.6		-	-	-	Triplicate Site with 39a, 39b and 39c - Annual data provided for 39c only
39b	546107	202254	28.6	25.8	25.8	16.8	23.2	20.9	18.9		19.9	24.6	26.2	20.8	-	-	-	Triplicate Site with 39a, 39b and 39c - Annual data provided for 39c only
39c	546107	202254	30.1	27.1	26.7	15.5	22.2	20.0	19.9	21.6	20.6	27.9	22.2		22.7	18.2	-	Triplicate Site with 39a, 39b and 39c - Annual data provided for 39c only
41a	546075	202253	27.4	23.3	23.8	19.7	21.6	20.8	20.2		23.9	26.0	28.3	23.6	-	-	-	Triplicate Site with 41a, 41b and 41c - Annual data provided for 41c only
41b	546075	202253	31.6	25.6	25.3	16.5	22.9	20.6	18.9	19.5	19.7		17.8	21.1	-	-	-	Triplicate Site with 41a, 41b and 41c - Annual data provided for 41c only
41c	546075	202253	30.0	28.0	23.8	16.5	22.1	21.6	19.8	19.3	22.6		27.6		22.9	18.3	-	Triplicate Site with 41a, 41b and 41c - Annual data provided for 41c only
42a	539015	205995	29.8	27.0	27.3	16.4	21.6	20.7	19.8	19.5	22.0	21.7	27.6	16.3	-	-	-	Triplicate Site with 42a, 42b and 42c - Annual data provided for 42c only
42b	539015	205995	31.4	28.8	24.1		21.4	20.8	19.8	20.9	21.6	26.5			-	-	-	Triplicate Site with 42a, 42b and 42c - Annual data provided for 42c only
42c	539015	205995	26.8	26.5	24.7	18.1	20.3	19.0	19.2	20.7	16.9	26.0			22.5	18.0	-	Triplicate Site with 42a, 42b and 42c - Annual data provided for 42c only
43a	539084	206058	27.3	22.3	23.5	16.4	19.5	15.4	17.8	18.2	20.2	23.4	25.7	19.7	-	-	-	Triplicate Site with 43a, 43b and 43c - Annual data provided for 43c only
43b	539084	206058	28.4	24.0	24.9	12.8	18.2	14.8	18.0	19.1	21.6	26.3	27.5	19.6	-	-	-	Triplicate Site with 43a, 43b and 43c - Annual data provided for 43c only
43c	539084	206058	29.8	24.4	23.2	17.4	19.3	14.6	18.7	16.1	21.3	25.2	27.1	18.0	21.1	16.9	-	Triplicate Site with 43a, 43b and 43c - Annual data provided for 43c only
44a	543989	196472	27.9	17.1	18.6	11.0	14.0	14.4	11.2		16.2	20.2	21.8	18.5	-	-	-	Triplicate Site with 44a, 44b and 44c - Annual data provided for 44c only
44b	543989	196472	22.6	21.3	19.2	12.8	14.8	13.2	15.7	11.5	15.5	19.3	18.5	18.3	-	-	-	Triplicate Site with 44a, 44b and 44c - Annual data provided for 44c only
44c	543989	196472	23.3	21.3	19.6	13.0	14.4	11.2	15.4	12.5	15.4	19.3	21.3		17.0	13.6	-	Triplicate Site with 44a, 44b and 44c - Annual data provided for 44c only
45a	544119	196133	29.0	19.4	20.3	12.3	17.9	14.4	14.7	13.1	17.9	22.3	24.1	11.3	-	-	-	Triplicate Site with 45a, 45b and 45c - Annual data provided for 45c only
45b	544119	196133	30.2	21.8	19.8	12.8	17.1		14.8	13.8	18.9	22.0	28.2	14.6	-	-	-	Triplicate Site with 45a, 45b and 45c - Annual data provided for 45c only
45c	544119	196133	29.9	20.7	21.2	12.8	16.0	14.4	15.2		19.8	21.8	25.4	<0.5	18.6	14.9	-	Triplicate Site with 45a, 45b and 45c - Annual data provided for 45c only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
46a	541301	199731	36.0	29.6	24.2	24.5	28.8	30.6	28.2	27.6	31.7	29.5	32.6	22.6	-	-	-	Triplicate Site with 46a, 46b and 46c - Annual data provided for 46c only
46b	541301	199731	36.8	31.5	28.7	25.9	29.3	28.1	29.2		31.0	32.6	31.9	22.0	-	-	-	Triplicate Site with 46a, 46b and 46c - Annual data provided for 46c only
46c	541301	199731	36.8	30.7	30.0	22.7	29.8	29.4	27.1	24.9	29.5	32.1	30.9	25.8	29.1	23.3	-	Triplicate Site with 46a, 46b and 46c - Annual data provided for 46c only
48a	544255	195792	40.9	34.8	30.6	24.0	26.6	24.1		23.6	26.1	32.5	32.7	24.5	-	-	-	Triplicate Site with 48a, 48b and 48c - Annual data provided for 48c only
48b	544255	195792	40.3	30.4	31.2	23.2	27.9	27.6			31.6	34.1	35.3	27.9	-	-	-	Triplicate Site with 48a, 48b and 48c - Annual data provided for 48c only
48c	544255	195792	40.7	29.4	31.3	22.6	30.2	26.9		24.4	28.6	30.8	36.7	29.1	29.8	23.9	-	Triplicate Site with 48a, 48b and 48c - Annual data provided for 48c only

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1.**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **National bias adjustment factor used.**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☒ **Epping Forest District Council confirm that all 2024 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

New or Changed Sources Identified Within Epping Forest District During 2024

Epping Forest District Council has not identified any new sources relating to air quality with the reporting year of 2024.

Additional Air Quality Works Undertaken by Epping Forest District Council During 2024

Epping Forest Council has completed the formal revocation of Epping Forest AQMA (No.2) in relation to the hourly mean objective only. This was completed on 31st January 2025. : https://uk-air.defra.gov.uk/aqma/local- authorities?la_id=99. The declaration in respect of the annual mean objective remains for this location at the current time. It is hoped that this too can be revoked in the near future, following a third year of compliance being below 90% of the objective concentration (below 36µg/m^3).

Epping Forest Council undertook a project during 2024 to measure the concentration of sulphur dioxide at 2 locations in the vicinity of an illegal landfill site in Abridge. This project was initiated following numerous complaints from residents who were concerned that concentrations of sulphur dioxide were having a negative impact on their health.

Following an initial assessment using diffusion tubes, a decision was made to instal two low-cost analysers to obtain information regarding the real-time concentration of sulphur dioxide. The project did not record any concentrations that indicated negative health impacts were likely.

Since monitoring ceased, a new landowner has started the removal of the waste which once completed will remove the source of the odour. At the time of writing this report, all waste above the original ground level of the site has been removed, with just the waste remaining that was placed in a historical pond / lake on site. Once this has been removed, the source of the sulphur dioxide will no longer be present.

Further details of this project and the results obtained are provided in Appendix F.

QA/QC of Diffusion Tube Monitoring

The supplier used for diffusion tubes was SOCOTEC Didcot and the method of preparation was 50% TEA in acetone.

SOCOTEC participates in the AIR NO_2PT laboratory performance scheme. Rounds AIR PT AR062 and AIR PT AR063 relate to January / February 2024 and May / June 2024 respectively. SOCOTEC prescribes 2 sets of tests (2 x 4 test samples on each round). The results for these rounds were good, with 100% performance recorded. No results have been published for subsequent dates.

Epping Forest District Council undertook its monitoring programme in adherence with the 2024 Diffusion tube monitoring calendar.

Precision and Accuracy of Diffusion Tube Data

The monthly diffusion tube results have been checked for precision and accuracy using the tool provided by Defra for this purpose. This is in line with Chapter 7 of Technical Guidance LAQM.TG22, NO_X and NO_2 Monitoring, NO_2 by diffusion tubes. Where the tool identifies that the results are poor, data has been removed from the Annual NO_2 2024 Diffusion Tube Results (ug/m3) in Table B.1.

The precision and accuracy calculations for each site are provided on the following pages:

Tube ID 1: 105 Hainault Road, Chigwell (junction with Fencepiece Road)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	38.5	35.5	41.1	38.4	2.80	7.30	6.96	Good
2	29/01/2024	04/03/2024	23.9	17.1	32.4	24.5	7.67	31.33	19.04	Poor Precision
3	04/03/2024	02/04/2024	30.1	30.9	30.6	30.5	0.40	1.32	1.00	Good
4	02/04/2024	29/04/2024	21.1	19.5	19.5	20.0	0.92	4.61	2.29	Good
5	29/04/2024	03/06/2024	24.8	26.7	24.4	25.3	1.23	4.86	3.05	Good
6	03/06/2024	01/07/2024	22.5	21.3	21.4	21.7	0.67	3.06	1.65	Good
7	01/07/2024	29/07/2024	22.8	23.4	24.1	23.4	0.65	2.78	1.62	Good
8	29/07/2024	02/09/2024	20	19.8	20	19.9	0.12	0.58	0.29	Good
9	02/09/2024	30/09/2024	27.2	25.4	24.6	25.7	1.33	5.17	3.31	Good
10	30/09/2024	04/11/2024	31.8	31	27.3	30.0	2.40	7.99	5.96	Good
11	04/11/2024	03/12/2024	25.1	33.4	35.2	31.2	5.39	17.25	13.38	Good
12	03/12/2024	07/01/2025	26.4	10.4	11.6	16.1	8.91	55.24	22.14	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	105 Hainault Road, Chigwell

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 27 µgm^{-3}
Average Precision (CV): 5
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 26 µgm^{-3}
Average Precision (CV): 12
Adjusted Tube average: µgm^{-3}

Tube ID 2: 15 High Street, Epping

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	24.4	24	25.1	24.5	0.56	2.27	1.38	Good
2	29/01/2024	04/03/2024	20.6	20.7	22.6	21.3	1.13	5.29	2.80	Good
3	04/03/2024	02/04/2024	21.4	20.2	19.3	20.3	1.05	5.19	2.62	Good
4	02/04/2024	29/04/2024	13.4	10.7	13.6	12.6	1.62	12.89	4.02	Good
5	29/04/2024	03/06/2024	15.2	15.8	14.5	15.2	0.65	4.29	1.62	Good
6	03/06/2024	01/07/2024	12.9	11.8	13.2	12.6	0.74	5.83	1.83	Good
7	01/07/2024	29/07/2024	14.8	15.4	15.4	15.2	0.35	2.28	0.86	Good
8	29/07/2024	02/09/2024	12.6	12.8	14.4	13.3	0.99	7.44	2.45	Good
9	02/09/2024	30/09/2024	16	8.6	16.4	13.7	4.39	32.14	10.91	Poor Precision
10	30/09/2024	04/11/2024	19.5	20.9	15.5	18.6	2.80	15.04	6.96	Good
11	04/11/2024	03/12/2024	18.5	28.2	17.7	21.5	5.84	27.23	14.52	Poor Precision
12	03/12/2024	07/01/2025	3.6	17.5	16.5	12.5	7.75	61.86	19.26	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	15 High Street Epping

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	17 µgm^{-3}
Average Precision (CV):	7
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	17 µgm^{-3}
Average Precision (CV):	15
Adjusted Tube average:	µgm^{-3}

Tube ID 3: Bell Vue, High Road, Bell Common, Epping

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	35.8	44.7	44.3	41.6	5.03	12.08	12.49	Good
2	29/01/2024	04/03/2024	41.2	30.2	43.7	38.4	7.18	18.72	17.84	Good
3	04/03/2024	02/04/2024	44	43.6	33.6	40.4	5.89	14.59	14.64	Good
4	02/04/2024	29/04/2024	34.1	34.9	32.5	33.8	1.22	3.61	3.04	Good
5	29/04/2024	03/06/2024	39.6	34.8	35.8	36.7	2.53	6.89	6.29	Good
6	03/06/2024	01/07/2024	41.6	39.7	42.2	41.2	1.31	3.17	3.24	Good
7	01/07/2024	29/07/2024	36.7	37.6	37.7	37.3	0.55	1.48	1.37	Good
8	29/07/2024	02/09/2024	6.7	38.4	37	27.4	17.91	65.45	44.49	Poor Precision
9	02/09/2024	30/09/2024	33.2	34	35.2	34.1	1.01	2.95	2.50	Good
10	30/09/2024	04/11/2024	42.5	35.8	26.9	35.1	7.83	22.32	19.44	Poor Precision
11	04/11/2024	03/12/2024	42	41.2	39.4	40.9	1.33	3.26	3.31	Good
12	03/12/2024	07/01/2025	21.3	35.1	35.4	30.6	8.06	26.32	20.01	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	Bell Vue, Epping

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 38 µgm^{-3}
Average Precision (CV): 7
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 36 µgm^{-3}
Average Precision (CV): 15
Adjusted Tube average: µgm^{-3}

Tube ID 4: 254 High Street, Epping (Ladbrokes)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	27.8	25.3	27.3	26.8	1.32	4.94	3.29	Good
2	29/01/2024	04/03/2024	23.7	27.4	27	26.0	2.03	7.80	5.04	Good
3	04/03/2024	02/04/2024	23.6	24.5	23.4	23.8	0.59	2.46	1.46	Good
4	02/04/2024	29/04/2024								
5	29/04/2024	03/06/2024			16.5					
6	03/06/2024	01/07/2024	12.4	7.4		9.9	3.54	35.71	31.77	Poor Precision
7	01/07/2024	29/07/2024	18.3	15.3	17.6	17.1	1.57	9.20	3.90	Good
8	29/07/2024	02/09/2024	17.8	18.2	17.7	17.9	0.26	1.48	0.66	Good
9	02/09/2024	30/09/2024	17.2	15.9	17.4	16.8	0.81	4.84	2.02	Good
10	30/09/2024	04/11/2024	22.2	20.1	21.7	21.3	1.10	5.14	2.73	Good
11	04/11/2024	03/12/2024	23.7	23.6	12	19.8	6.73	34.03	16.71	Poor Precision
12	03/12/2024	07/01/2025	19.5	16.7	21.3	19.2	2.32	12.09	5.76	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	254 High Street Epping Ladbrokes

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	21 µgm^{-3}
Average Precision (CV):	6
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	20 µgm^{-3}
Average Precision (CV):	12
Adjusted Tube average:	µgm^{-3}

Tube ID 5: 202 High Street, Epping (Superdrug)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	29.9	30.2	29.5	29.9	0.35	1.18	0.87	Good
2	29/01/2024	04/03/2024	26.7	26.8	30.2	27.9	1.99	7.14	4.95	Good
3	04/03/2024	02/04/2024	27.3	30	26.3	27.9	1.91	6.87	4.75	Good
4	02/04/2024	29/04/2024	17.7	18.2	17.1	17.7	0.55	3.12	1.37	Good
5	29/04/2024	03/06/2024	25.5	23	25.1	24.5	1.34	5.47	3.34	Good
6	03/06/2024	01/07/2024	19.4	19.4	20	19.6	0.35	1.77	0.86	Good
7	01/07/2024	29/07/2024	19.5	20	21.3	20.3	0.93	4.58	2.31	Good
8	29/07/2024	02/09/2024	16.8	4.1	15.9	12.3	7.09	57.77	17.60	Poor Precision
9	02/09/2024	30/09/2024	22.9	23.4	23.9	23.4	0.50	2.14	1.24	Good
10	30/09/2024	04/11/2024	27.2	26.8	29.2	27.7	1.29	4.64	3.19	Good
11	04/11/2024	03/12/2024	24.4	25.5	27	25.6	1.31	5.09	3.24	Good
12	03/12/2024	07/01/2025	20.9	19.2	20.6	20.2	0.91	4.48	2.25	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	202 High Street, Epping (Superdrug)

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 24 µgm^{-3}
Average Precision (CV): 4
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 23 µgm^{-3}
Average Precision (CV): 9
Adjusted Tube average: µgm^{-3}

Tube ID 6: 1 Canes Cottages, Hastingwood

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	21.6	22.9	23.2	22.6	0.85	3.77	2.11	Good
2	29/01/2024	04/03/2024	19.7	19.1	17.2	18.7	1.31	6.99	3.24	Good
3	04/03/2024	02/04/2024	14.4	15	16.7	15.4	1.19	7.76	2.96	Good
4	02/04/2024	29/04/2024	13.3	12.7	13.8	13.3	0.55	4.15	1.37	Good
5	29/04/2024	03/06/2024	13	14.8	14.8	14.2	1.04	7.32	2.58	Good
6	03/06/2024	01/07/2024	11.6	11.9	11.9	11.8	0.17	1.47	0.43	Good
7	01/07/2024	29/07/2024	13.3	12.1	13.1	12.8	0.64	5.01	1.60	Good
8	29/07/2024	02/09/2024	11.5	8.8	12.6	11.0	1.96	17.83	4.86	Good
9	02/09/2024	30/09/2024	13.6	14.1	14.6	14.1	0.50	3.55	1.24	Good
10	30/09/2024	04/11/2024	19.6	19.6	18.1	19.1	0.87	4.53	2.15	Good
11	04/11/2024	03/12/2024	21.1	22	21.6	21.6	0.45	2.09	1.12	Good
12	03/12/2024	07/01/2025	14.6	14.2	6.3	11.7	4.68	40.01	11.63	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	1 Canes Cottages, Canes Lane, Hastingwood

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	16 µgm^{-3}
Average Precision (CV):	6
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	16 µgm^{-3}
Average Precision (CV):	9
Adjusted Tube average:	µgm^{-3}

Tube ID 7: 1 Church Hill, Loughton

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	24	26.8		25.4	1.98	7.79	17.79	Good
2	29/01/2024	04/03/2024	17.6	17.3		17.5	0.21	1.22	1.91	Good
3	04/03/2024	02/04/2024	19	19		19.0	0.00	0.00	0.00	Good
4	02/04/2024	29/04/2024	11.8	12.5		12.2	0.49	4.07	4.45	Good
5	29/04/2024	03/06/2024	14.6	15.2		14.9	0.42	2.85	3.81	Good
6	03/06/2024	01/07/2024	12.5	12.2		12.4	0.21	1.72	1.91	Good
7	01/07/2024	29/07/2024	18.3	15.3		16.8	2.12	12.63	19.06	Good
8	29/07/2024	02/09/2024	13.6	12.3		13.0	0.92	7.10	8.26	Good
9	02/09/2024	30/09/2024	16.1	14.7		15.4	0.99	6.43	8.89	Good
10	30/09/2024	04/11/2024	17.4	20.4		18.9	2.12	11.22	19.06	Good
11	04/11/2024	03/12/2024	25.1	22.4		23.8	1.91	8.04	17.15	Good
12	03/12/2024	07/01/2025	20.5	17.6		19.1	2.05	10.76	18.42	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Site Name/ ID:	1 Church Hill, Loughton

Version 04 - February 2011

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	17 µgm^{-3}
Average Precision (CV):	6
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	17 µgm^{-3}
Average Precision (CV):	6
Adjusted Tube average:	µgm^{-3}

Tube ID 8: 72 Church Hill, Loughton

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	21.2	24.5		22.9	2.33	10.21	20.97	Good
2	29/01/2024	04/03/2024	20.6	16.8		18.7	2.69	14.37	24.14	Good
3	04/03/2024	02/04/2024	20.1	19.8		20.0	0.21	1.06	1.91	Good
4	02/04/2024	29/04/2024	13.1	11.8		12.5	0.92	7.38	8.26	Good
5	29/04/2024	03/06/2024	15.1	13.8		14.5	0.92	6.36	8.26	Good
6	03/06/2024	01/07/2024	11.8	12.8		12.3	0.71	5.75	6.35	Good
7	01/07/2024	29/07/2024	17.6	19.5		18.6	1.34	7.24	12.07	Good
8	29/07/2024	02/09/2024	12.9	7.3		10.1	3.96	39.21	35.58	Poor Precision
9	02/09/2024	30/09/2024	14.8	15.2		15.0	0.28	1.89	2.54	Good
10	30/09/2024	04/11/2024	20.2	20.5		20.4	0.21	1.04	1.91	Good
11	04/11/2024	03/12/2024	25.2							
12	03/12/2024	07/01/2025	12	13.4		12.7	0.99	7.79	8.89	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	72 Church Hill, Loughton

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 17 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 16 µgm^{-3}
Average Precision (CV): 9
Adjusted Tube average: µgm^{-3}

Tube ID 9: 249 High Road, Loughton (Timpson)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	28.9	25.9	27.2	27.3	1.50	5.50	3.74	Good
2	29/01/2024	04/03/2024	21.9		19.4	20.7	1.77	8.56	15.88	Good
3	04/03/2024	02/04/2024	23.5	23.2		23.4	0.21	0.91	1.91	Good
4	02/04/2024	29/04/2024		14.1	15.1	14.6	0.71	4.84	6.35	Good
5	29/04/2024	03/06/2024	20.2							
6	03/06/2024	01/07/2024	15.6	15.7	13.9	15.1	1.01	6.71	2.51	Good
7	01/07/2024	29/07/2024	20	21.3	13.3	18.2	4.29	23.59	10.66	Poor Precision
8	29/07/2024	02/09/2024	12.2	15.2	17.5	15.0	2.66	17.76	6.60	Good
9	02/09/2024	30/09/2024	18.4	18.7		18.6	0.21	1.14	1.91	Good
10	30/09/2024	04/11/2024	23.9	24.3	22.8	23.7	0.78	3.28	1.93	Good
11	04/11/2024	03/12/2024	26.8							
12	03/12/2024	07/01/2025								
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	249 High Road, Loughton

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 20 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 20 µgm^{-3}
Average Precision (CV): 8
Adjusted Tube average: µgm^{-3}

Tube ID 10: 252 High Road, Loughton (Love Brownies)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	26.7	26.4		26.6	0.21	0.80	1.91	Good
2	29/01/2024	04/03/2024	25.4	24.6		25.0	0.57	2.26	5.08	Good
3	04/03/2024	02/04/2024	24.1	23.7		23.9	0.28	1.18	2.54	Good
4	02/04/2024	29/04/2024	18.1	19.8		19.0	1.20	6.34	10.80	Good
5	29/04/2024	03/06/2024	20.2	20.5		20.4	0.21	1.04	1.91	Good
6	03/06/2024	01/07/2024	18.8	19.6		19.2	0.57	2.95	5.08	Good
7	01/07/2024	29/07/2024	12.1	13.1		12.6	0.71	5.61	6.35	Good
8	29/07/2024	02/09/2024								
9	02/09/2024	30/09/2024	21.5	21.3		21.4	0.14	0.66	1.27	Good
10	30/09/2024	04/11/2024	21.4							
11	04/11/2024	03/12/2024		25.6						
12	03/12/2024	07/01/2025	20.8	23		21.9	1.56	7.10	13.98	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Site Name/ ID:	252 High Road, Loughton

Version 04 - February 2011

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	21 µgm^{-3}
Average Precision (CV):	3
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	21 µgm^{-3}
Average Precision (CV):	3
Adjusted Tube average:	µgm^{-3}

Tube ID 11: 5 Goldings Hill, Loughton

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	24.8	35.8		30.3	7.78	25.67	69.88	Poor Precision
2	29/01/2024	04/03/2024								
3	04/03/2024	02/04/2024								
4	02/04/2024	29/04/2024	20.3	20.9		20.6	0.42	2.06	3.81	Good
5	29/04/2024	03/06/2024	28.9	22.8		25.9	4.31	16.69	38.75	Good
6	03/06/2024	01/07/2024	25.8	17.6		21.7	5.80	26.72	52.10	Poor Precision
7	01/07/2024	29/07/2024	19.8	25		22.4	3.68	16.41	33.04	Good
8	29/07/2024	02/09/2024	25	24.7		24.9	0.21	0.85	1.91	Good
9	02/09/2024	30/09/2024	30.1	28.1		29.1	1.41	4.86	12.71	Good
10	30/09/2024	04/11/2024	30.3	31.1		30.7	0.57	1.84	5.08	Good
11	04/11/2024	03/12/2024	32.7	32.7		32.7	0.00	0.00	0.00	Good
12	03/12/2024	07/01/2025	22	14		18.0	5.66	31.43	50.82	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	5 Goldings Hill, Loughton

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	27 µgm^{-3}
Average Precision (CV):	6
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	26 µgm^{-3}
Average Precision (CV):	13
Adjusted Tube average:	µgm^{-3}

Tube ID 12: 66 Tempest Mead, North Weald

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean
1	23/01/2024	29/01/2024	17.2	18.4	16.7	17.4	0.87	5.01	2.17
2	29/01/2024	04/03/2024	14.2	7	13.1	11.4	3.88	33.92	9.63
3	04/03/2024	02/04/2024	12.6	26.8	12.5	17.3	8.23	47.56	20.44
4	02/04/2024	29/04/2024	8.7	9	9.6	9.1	0.46	5.04	1.14
5	29/04/2024	03/06/2024	8.8	8.4	9.1	8.8	0.35	4.01	0.87
6	03/06/2024	01/07/2024	8.5	7.9	8.3	8.2	0.31	3.71	0.76
7	01/07/2024	29/07/2024	11.1	10.9	11.2	11.1	0.15	1.38	0.38
8	29/07/2024	02/09/2024	10.6	9.9	9.4	10.0	0.60	6.05	1.50
9	02/09/2024	30/09/2024	11.7	10.7	26.6	16.3	8.91	54.52	22.12
10	30/09/2024	04/11/2024	13.4	12.6	13.5	13.2	0.49	3.75	1.23
11	04/11/2024	03/12/2024	18.5	17.2	17.8	17.8	0.65	3.65	1.62
12	03/12/2024	07/01/2025	15.7	14.8	15.4	15.3	0.46	3.00	1.14
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Data Quality Check

Diffusion Tubes Precision Check
Good
Poor Precision
Poor Precision
Good
Good
Good
Good
Good
Poor Precision
Good
Good
Good

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID: 66 Tempest Mead, North Weald

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 12 µgm^{-3}
Average Precision (CV): 4
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 13 µgm^{-3}
Average Precision (CV): 14
Adjusted Tube average: µgm^{-3}

Tube ID 15: Albion Terrace, Sewardstone Road, Sewardstone

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	32.4	27.3		29.9	3.61	12.08	32.40	Good
2	29/01/2024	04/03/2024	25.4	25.5		25.5	0.07	0.28	0.64	Good
3	04/03/2024	02/04/2024	24.2	22.5		23.4	1.20	5.15	10.80	Good
4	02/04/2024	29/04/2024	13.5	16.2		14.9	1.91	12.86	17.15	Good
5	29/04/2024	03/06/2024	20.1	20.5		20.3	0.28	1.39	2.54	Good
6	03/06/2024	01/07/2024	16.7	13.8		15.3	2.05	13.45	18.42	Good
7	01/07/2024	29/07/2024	18.6	19		18.8	0.28	1.50	2.54	Good
8	29/07/2024	02/09/2024	5.8	16.3		11.1	7.42	67.19	66.71	Poor Precision
9	02/09/2024	30/09/2024	22.1	22.8		22.5	0.49	2.20	4.45	Good
10	30/09/2024	04/11/2024	25.4	27.1		26.3	1.20	4.58	10.80	Good
11	04/11/2024	03/12/2024	30.4	29.8		30.1	0.42	1.41	3.81	Good
12	03/12/2024	07/01/2025	25	26.1		25.6	0.78	3.04	6.99	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	Albion Terrace, Sewardstone

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	23 µgm^{-3}
Average Precision (CV):	5
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	22 µgm^{-3}
Average Precision (CV):	10
Adjusted Tube average:	µgm^{-3}

Tube ID 17: 14 The Elms, Waltham Abbey

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean
1	23/01/2024	29/01/2024	30.6	27.5	30.6	29.6	1.79	6.05	4.45
2	29/01/2024	04/03/2024	21.7	23.9	21.4	22.3	1.37	6.11	3.39
3	04/03/2024	02/04/2024	20.1	17.8	18.9	18.9	1.15	6.08	2.86
4	02/04/2024	29/04/2024	20.7	20.5	19	20.1	0.93	4.63	2.31
5	29/04/2024	03/06/2024	19.4	17.8	19	18.7	0.83	4.44	2.07
6	03/06/2024	01/07/2024	17.1	16.7	16.9	16.9	0.20	1.18	0.50
7	01/07/2024	29/07/2024	16.5	16.8	19.8	17.7	1.82	10.31	4.53
8	29/07/2024	02/09/2024	14.8	14.7	14	14.5	0.44	3.01	1.08
9	02/09/2024	30/09/2024	18.7	19.5	20.3	19.5	0.80	4.10	1.99
10	30/09/2024	04/11/2024	20.2	20.4	19.5	20.0	0.47	2.36	1.17
11	04/11/2024	03/12/2024	25.7	24.4	25.8	25.3	0.78	3.09	1.94
12	03/12/2024	07/01/2025	13.6	20.7	19.5	17.9	3.80	21.19	9.44
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Data Quality Check
Diffusion Tubes Precision Check
Good
Good
Good
Good
Good
Good
Good
Good
Good
Good
Good
Poor Precision

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	14 The Elms, Waltham Abbey

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 20 µgm^{-3}
Average Precision (CV): 5
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 20 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Tube ID 18: 4 Leaview, Waltham Abbey (Abbeyview)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Data Quality Check: Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	26.2	27.4		26.8	0.85	3.17	7.62	Good
2	29/01/2024	04/03/2024	24.6	24.9		24.8	0.21	0.86	1.91	Good
3	04/03/2024	02/04/2024	22.5	23.3		22.9	0.57	2.47	5.08	Good
4	02/04/2024	29/04/2024	13	15.4		14.2	1.70	11.95	15.25	Good
5	29/04/2024	03/06/2024	15.6	16.7		16.2	0.78	4.82	6.99	Good
6	03/06/2024	01/07/2024	11.2	12.4		11.8	0.85	7.19	7.62	Good
7	01/07/2024	29/07/2024	25	11.1		18.1	9.83	54.45	88.31	Poor Precision
8	29/07/2024	02/09/2024	15.3	12.2		13.8	2.19	15.94	19.69	Good
9	02/09/2024	30/09/2024	16.8	17.5		17.2	0.49	2.89	4.45	Good
10	30/09/2024	04/11/2024	22	22.5		22.3	0.35	1.59	3.18	Good
11	04/11/2024	03/12/2024	23.2	24.8		24.0	1.13	4.71	10.16	Good
12	03/12/2024	07/01/2025	9.5	16.4		13.0	4.88	37.68	43.84	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID: 4 Leaview, Waltham Abbey

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 19 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 19 µgm^{-3}
Average Precision (CV): 12
Adjusted Tube average: µgm^{-3}

Tube ID 19: 34 Hayden Road, Waltham Abbey

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	29.1	31.8		30.5	1.91	6.27	17.15	Good
2	29/01/2024	04/03/2024	17.6	22.5		20.1	3.46	17.28	31.13	Good
3	04/03/2024	02/04/2024	21.4	22.5		22.0	0.78	3.54	6.99	Good
4	02/04/2024	29/04/2024	18.4	18.4		18.4	0.00	0.00	0.00	Good
5	29/04/2024	03/06/2024	21.5	22.9		22.2	0.99	4.46	8.89	Good
6	03/06/2024	01/07/2024	17	15.3		16.2	1.20	7.44	10.80	Good
7	01/07/2024	29/07/2024	10.9	11.2		11.1	0.21	1.92	1.91	Good
8	29/07/2024	02/09/2024	11.6	17		14.3	3.82	26.70	34.31	Poor Precision
9	02/09/2024	30/09/2024	24.7	24.6		24.7	0.07	0.29	0.64	Good
10	30/09/2024	04/11/2024	19.5	23.8		21.7	3.04	14.04	27.32	Good
11	04/11/2024	03/12/2024	29.7	29.9		29.8	0.14	0.47	1.27	Good
12	03/12/2024	07/01/2025	19.4	16.2		17.8	2.26	12.71	20.33	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	34 Hayden Road, Waltham Abbey

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	21 µgm^{-3}
Average Precision (CV):	6
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	21 µgm^{-3}
Average Precision (CV):	8
Adjusted Tube average:	µgm^{-3}

Tube ID 20: 2 Lodge Lane, Waltham Abbey

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	33.9	29.8	33.1	32.3	2.17	6.74	5.40	Good
2	29/01/2024	04/03/2024	28.9	28	25.7	27.5	1.65	5.99	4.10	Good
3	04/03/2024	02/04/2024	24.6	21.6	23.4	23.2	1.51	6.51	3.75	Good
4	02/04/2024	29/04/2024	16.7	17.9	19.5	18.0	1.40	7.79	3.49	Good
5	29/04/2024	03/06/2024	20.9		20.6	20.8	0.21	1.02	1.91	Good
6	03/06/2024	01/07/2024	18.7	19	18.7	18.8	0.17	0.92	0.43	Good
7	01/07/2024	29/07/2024	18.6	19	16.5	18.0	1.34	7.45	3.34	Good
8	29/07/2024	02/09/2024	3.1	21.8	21.4	15.4	10.68	69.22	26.54	Poor Precision
9	02/09/2024	30/09/2024	18.3	23.7	22.7	21.6	2.87	13.32	7.14	Good
10	30/09/2024	04/11/2024	25.1	22.8	24.8	24.2	1.25	5.16	3.11	Good
11	04/11/2024	03/12/2024	27.9	27.4	30	28.4	1.38	4.85	3.43	Good
12	03/12/2024	07/01/2025	25.2	13.4	21.2	19.9	6.00	30.11	14.91	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	2 Lodge Lane, Waltham Abbey

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 23 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 22 µgm^{-3}
Average Precision (CV): 13
Adjusted Tube average: µgm^{-3}

Tube ID 21: 110 Roundhills, Waltham Abbey

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean
1	23/01/2024	29/01/2024	30.8	34.2		32.5	2.40	7.40	21.60
2	29/01/2024	04/03/2024	28.8	26.8		27.8	1.41	5.09	12.71
3	04/03/2024	02/04/2024	22.9	25.2		24.1	1.63	6.76	14.61
4	02/04/2024	29/04/2024	15.8	14.4		15.1	0.99	6.56	8.89
5	29/04/2024	03/06/2024	17.4	16.1		16.8	0.92	5.49	8.26
6	03/06/2024	01/07/2024	15.4	15.6		15.5	0.14	0.91	1.27
7	01/07/2024	29/07/2024	16.8	18		17.4	0.85	4.88	7.62
8	29/07/2024	02/09/2024	17.5	18.6		18.1	0.78	4.31	6.99
9	02/09/2024	30/09/2024	17.6	19.7		18.7	1.48	7.96	13.34
10	30/09/2024	04/11/2024	25.6	23.7		24.7	1.34	5.45	12.07
11	04/11/2024	03/12/2024	26.8	29.1		28.0	1.63	5.82	14.61
12	03/12/2024	07/01/2025	19.3	20.1		19.7	0.57	2.87	5.08
13									

Data Quality Check

Diffusion Tubes Precision Check
Good
Good
Good
Good
Good
Good
Good
Good
Good
Good
Good
Good

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID: 110 Roundhills, Waltham Abbey

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 22 µgm^{-3}
Average Precision (CV): 5
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 22 µgm^{-3}
Average Precision (CV): 5
Adjusted Tube average: µgm^{-3}

Tube ID 22: 26 Victoria Road, Buckhurst Hill (opposite Underground Station)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	29.4	31.6		30.5	1.56	5.10	13.98	Good
2	29/01/2024	04/03/2024	23.9	23.7		23.8	0.14	0.59	1.27	Good
3	04/03/2024	02/04/2024	21.6	22.2		21.9	0.42	1.94	3.81	Good
4	02/04/2024	29/04/2024	14.2	13.3		13.8	0.64	4.63	5.72	Good
5	29/04/2024	03/06/2024	15.6	16.3		16.0	0.49	3.10	4.45	Good
6	03/06/2024	01/07/2024	15.5	13.2		14.4	1.63	11.33	14.61	Good
7	01/07/2024	29/07/2024	16.7	16.2		16.5	0.35	2.15	3.18	Good
8	29/07/2024	02/09/2024	16.1	15.8		16.0	0.21	1.33	1.91	Good
9	02/09/2024	30/09/2024	19.3	20.4		19.9	0.78	3.92	6.99	Good
10	30/09/2024	04/11/2024	26.4	25.3		25.9	0.78	3.01	6.99	Good
11	04/11/2024	03/12/2024								
12	03/12/2024	07/01/2025	11.5	14		12.8	1.77	13.86	15.88	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Site Name/ ID:	26 Victoria Road, Buckhurst Hill

Version 04 - February 2011

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	19 µgm^{-3}
Average Precision (CV):	5
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	19 µgm^{-3}
Average Precision (CV):	5
Adjusted Tube average:	µgm^{-3}

Tube ID 23: St Johns School, High Road, Buckhurst Hill

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	21.1	25.2	27.6	24.6	3.29	13.34	8.16	Good
2	29/01/2024	04/03/2024	22.5	24.7	22	23.1	1.44	6.23	3.57	Good
3	04/03/2024	02/04/2024	21.7	20.4	22.4	21.5	1.01	4.72	2.52	Good
4	02/04/2024	29/04/2024	13.3	13.7	12.7	13.2	0.50	3.80	1.25	Good
5	29/04/2024	03/06/2024	14	16.2	14.8	15.0	1.11	7.42	2.77	Good
6	03/06/2024	01/07/2024	14	14.7	13.2	14.0	0.75	5.37	1.86	Good
7	01/07/2024	29/07/2024	17.3	16.8	16.8	17.0	0.29	1.70	0.72	Good
8	29/07/2024	02/09/2024	12.2	15.2	14.2	13.9	1.53	11.02	3.79	Good
9	02/09/2024	30/09/2024	15.6	17.3	15.7	16.2	0.95	5.89	2.37	Good
10	30/09/2024	04/11/2024	21.9	23.5	21.1	22.2	1.22	5.51	3.04	Good
11	04/11/2024	03/12/2024	26.4	27	26.8	26.7	0.31	1.14	0.76	Good
12	03/12/2024	07/01/2025	20.1	22.4	17.7	20.1	2.35	11.71	5.84	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	St Johns School, High Road, Buckhurst Hill

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 19 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 19 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Tube ID 24: Mayfield Bakery, Sheering Lane, Sheering

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	31.3		36.2	33.8	3.46	10.27	31.13	Good
2	29/01/2024	04/03/2024	29.4	28.8	28.1	28.8	0.65	2.26	1.62	Good
3	04/03/2024	02/04/2024	29.5	28.2	25.1	27.6	2.26	8.19	5.62	Good
4	02/04/2024	29/04/2024	19.2	18.2	22.5	20.0	2.25	11.27	5.59	Good
5	29/04/2024	03/06/2024	24.5	20.3	26.6	23.8	3.21	13.48	7.97	Good
6	03/06/2024	01/07/2024	21.1	23.2	21.3	21.9	1.16	5.30	2.88	Good
7	01/07/2024	29/07/2024	20.1	19.6		19.9	0.35	1.78	3.18	Good
8	29/07/2024	02/09/2024	20.6	21.3	19.9	20.6	0.70	3.40	1.74	Good
9	02/09/2024	30/09/2024	26.6	26.7	26.4	26.6	0.15	0.57	0.38	Good
10	30/09/2024	04/11/2024	29.1	29.9	30.4	29.8	0.66	2.20	1.63	Good
11	04/11/2024	03/12/2024	35.2	34.8	33.6	34.5	0.83	2.41	2.07	Good
12	03/12/2024	07/01/2025	12.1	24.7	24.5	20.4	7.22	35.32	17.93	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID: Mayfield Bakery, Sheering Lane, Sheering

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 26 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 26 µgm^{-3}
Average Precision (CV): 8
Adjusted Tube average: µgm^{-3}

Tube ID 25: Regency Lodge, Roding Lane, Buckhurst Hill

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024			35.5					
2	29/01/2024	04/03/2024	30	30.2	31.9	30.7	1.04	3.40	2.59	Good
3	04/03/2024	02/04/2024	23.7	27.7	27.1	26.2	2.16	8.24	5.36	Good
4	02/04/2024	29/04/2024	15.7	19.6	20.6	18.6	2.59	13.89	6.43	Good
5	29/04/2024	03/06/2024	20.9	22.1	21	21.3	0.67	3.12	1.65	Good
6	03/06/2024	01/07/2024	21.6	21.7	21.8	21.7	0.10	0.46	0.25	Good
7	01/07/2024	29/07/2024	21.6	23.8	20.6	22.0	1.64	7.44	4.07	Good
8	29/07/2024	02/09/2024	23.7	22.2	17.4	21.1	3.29	15.60	8.18	Good
9	02/09/2024	30/09/2024	26.6	24.8	21.9	24.4	2.37	9.71	5.89	Good
10	30/09/2024	04/11/2024	29.5	29.8	29.6	29.6	0.15	0.52	0.38	Good
11	04/11/2024	03/12/2024	33	33.4	34.4	33.6	0.72	2.15	1.79	Good
12	03/12/2024	07/01/2025	26	25.3	26.6	26.0	0.65	2.51	1.62	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID: Regency Lodge, Roding Lane, Buckhurst Hill

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:
Information about tubes to be adjusted
Diffusion Tube average: 25 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:
Information about tubes to be adjusted
Diffusion Tube average: 25 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Tube ID 26: 131 High Street, Ongar (at bottleneck)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	43	41.3	44.1	42.8	1.41	3.30	3.50	Good
2	29/01/2024	04/03/2024	33.5	31.2	34.2	33.0	1.57	4.76	3.90	Good
3	04/03/2024	02/04/2024	31.4	28.9	31.3	30.5	1.42	4.64	3.52	Good
4	02/04/2024	29/04/2024	27.5	25.8	29.5	27.6	1.85	6.71	4.60	Good
5	29/04/2024	03/06/2024	30.9	29.7	28.4	29.7	1.25	4.21	3.11	Good
6	03/06/2024	01/07/2024	28.7	31.8	30.1	30.2	1.55	5.14	3.86	Good
7	01/07/2024	29/07/2024	27.1	27.8	27	27.3	0.44	1.60	1.08	Good
8	29/07/2024	02/09/2024	26.1	25.4	28	26.5	1.35	5.08	3.34	Good
9	02/09/2024	30/09/2024	31.4	33	18.5	27.6	7.95	28.77	19.75	Poor Precision
10	30/09/2024	04/11/2024	31.9	25.8	32.3	30.0	3.64	12.14	9.05	Good
11	04/11/2024	03/12/2024	36.7	32.3	35.1	34.7	2.23	6.42	5.53	Good
12	03/12/2024	07/01/2025	29.8	30.8	29.8	30.1	0.58	1.92	1.43	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	131 High Street Ongar

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	31 µgm^{-3}
Average Precision (CV):	5
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	31 µgm^{-3}
Average Precision (CV):	7
Adjusted Tube average:	µgm^{-3}

Tube ID 27: 3 Queens Terrace, A414, Ongar

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	27.2	24.8	24.4	25.5	1.51	5.95	3.76	Good
2	29/01/2024	04/03/2024	23.3	22.2	24.2	23.2	1.00	4.31	2.49	Good
3	04/03/2024	02/04/2024	22.4	20	22.7	21.7	1.48	6.82	3.68	Good
4	02/04/2024	29/04/2024	15	15.2	14.2	14.8	0.53	3.58	1.31	Good
5	29/04/2024	03/06/2024	18.1	18.4	21.3	19.3	1.77	9.17	4.39	Good
6	03/06/2024	01/07/2024	15.4	16.3	16.4	16.0	0.55	3.44	1.37	Good
7	01/07/2024	29/07/2024	16.3	19.1	17.2	17.5	1.43	8.15	3.55	Good
8	29/07/2024	02/09/2024	17.1	18.1	14.1	16.4	2.08	12.67	5.17	Good
9	02/09/2024	30/09/2024	19.6	18.4	19	19.0	0.60	3.16	1.49	Good
10	30/09/2024	04/11/2024	22.2	20.5	19.9	20.9	1.19	5.72	2.96	Good
11	04/11/2024	03/12/2024	23.1	24	22.7	23.3	0.67	2.86	1.65	Good
12	03/12/2024	07/01/2025	18	17	13.6	16.2	2.31	14.24	5.73	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Site Name/ ID:	3 Queens Terrace, Epping Road, Ongar

Version 04 - February 2011

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 19 µgm^{-3}
Average Precision (CV): 7
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 19 µgm^{-3}
Average Precision (CV): 7
Adjusted Tube average: µgm^{-3}

Tube ID 31: Station House, Station Approach, Epping (Epping Underground Station)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	31.5	29.4	30.5	30.5	1.05	3.45	2.61	Good
2	29/01/2024	04/03/2024	28.2	29.7	28.1	28.7	0.90	3.13	2.23	Good
3	04/03/2024	02/04/2024	32.2	32.1	29.6	31.3	1.47	4.71	3.66	Good
4	02/04/2024	29/04/2024	17.6	17.2	18.6	17.8	0.72	4.05	1.79	Good
5	29/04/2024	03/06/2024	23.7	24.7	21	23.1	1.91	8.27	4.75	Good
6	03/06/2024	01/07/2024	21.2	20.8	21.9	21.3	0.56	2.61	1.38	Good
7	01/07/2024	29/07/2024	16.8	16	17	16.6	0.53	3.19	1.31	Good
8	29/07/2024	02/09/2024	6.5	16.3	16	12.9	5.57	43.09	13.85	Poor Precision
9	02/09/2024	30/09/2024	18	18.8	14.6	17.1	2.23	13.02	5.54	Good
10	30/09/2024	04/11/2024	26.5	26.2	25	25.9	0.79	3.06	1.97	Good
11	04/11/2024	03/12/2024	24.6	21.7	26.1	24.1	2.24	9.27	5.56	Good
12	03/12/2024	07/01/2025	19							
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Site Name/ ID:	Station House, Station Approach, Epping

Version 04 - February 2011

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 24 µgm^{-3}
Average Precision (CV): 5
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 23 µgm^{-3}
Average Precision (CV): 9
Adjusted Tube average: µgm^{-3}

Tube ID 32: Copped Hall, High Road, Bell Common, Epping

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	25.5	27.4	28.6	27.2	1.56	5.75	3.88	Good
2	29/01/2024	04/03/2024	28.2	27.6	28.6	28.1	0.50	1.79	1.25	Good
3	04/03/2024	02/04/2024	22.3	23.9	21.7	22.6	1.14	5.02	2.83	Good
4	02/04/2024	29/04/2024	14.6	13.4	16.3	14.8	1.46	9.87	3.62	Good
5	29/04/2024	03/06/2024	14.7	18.1	19.8	17.5	2.60	14.81	6.45	Good
6	03/06/2024	01/07/2024	19.1	19.7	18.7	19.2	0.50	2.63	1.25	Good
7	01/07/2024	29/07/2024	17.7	17	19.4	18.0	1.23	6.84	3.07	Good
8	29/07/2024	02/09/2024	14.2	19.2	19.6	17.7	3.01	17.03	7.47	Good
9	02/09/2024	30/09/2024	18.8	14.7	17	16.8	2.06	12.21	5.11	Good
10	30/09/2024	04/11/2024	23	21.1	23.5	22.5	1.27	5.62	3.15	Good
11	04/11/2024	03/12/2024	14.4	24.6	22.3	20.4	5.35	26.18	13.29	Poor Precision
12	03/12/2024	07/01/2025	14.6	22.5	11.7	16.3	5.59	34.36	13.89	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	Copped Hall, Bell Common, Epping

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 20 µgm^{-3}
Average Precision (CV): 8
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 20 µgm^{-3}
Average Precision (CV): 12
Adjusted Tube average: µgm^{-3}

Tube ID 33: 281 Fencepiece Road, Chigwell

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	34	32.5	31.1	32.5	1.45	4.46	3.60	Good
2	29/01/2024	04/03/2024	27.8	15.6	27.2	23.5	6.88	29.22	17.08	Poor Precision
3	04/03/2024	02/04/2024	20.8	22.1	23.1	22.0	1.15	5.24	2.86	Good
4	02/04/2024	29/04/2024	19.3	19.4	18.5	19.1	0.49	2.59	1.23	Good
5	29/04/2024	03/06/2024	17.5	20.6	20.8	19.6	1.85	9.42	4.60	Good
6	03/06/2024	01/07/2024	20.1	20.4	19.7	20.1	0.35	1.75	0.87	Good
7	01/07/2024	29/07/2024	20.2	19.1	21.4	20.2	1.15	5.69	2.86	Good
8	29/07/2024	02/09/2024	17	18	19.8	18.3	1.42	7.77	3.52	Good
9	02/09/2024	30/09/2024	22.7	22.4	20.3	21.8	1.31	6.00	3.25	Good
10	30/09/2024	04/11/2024	26.1	3.9	28.2	19.4	13.46	69.40	33.45	Poor Precision
11	04/11/2024	03/12/2024	25	22.7	29	25.6	3.19	12.47	7.92	Good
12	03/12/2024	07/01/2025	19	25	15.6	19.9	4.76	23.96	11.82	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	281 Fencepiece Road, Chigwell

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 22 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 22 µgm^{-3}
Average Precision (CV): 15
Adjusted Tube average: µgm^{-3}

Tube ID 34: 414 Fencepiece Road, Chigwell (Sherrell House)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	16.1	24.9	24	21.7	4.84	22.35	12.03	Poor Precision
2	29/01/2024	04/03/2024	19.3	17.3	17.9	18.2	1.03	5.65	2.55	Good
3	04/03/2024	02/04/2024	18.5	18.1	17.5	18.0	0.50	2.79	1.25	Good
4	02/04/2024	29/04/2024	12	11.9	10.9	11.6	0.61	5.24	1.51	Good
5	29/04/2024	03/06/2024	15.1	14.5	14.8	14.8	0.30	2.03	0.75	Good
6	03/06/2024	01/07/2024	12.1	12	12	12.0	0.06	0.48	0.14	Good
7	01/07/2024	29/07/2024	13.9	13.5	13.7	13.7	0.20	1.46	0.50	Good
8	29/07/2024	02/09/2024	12.5	11.8	12.6	12.3	0.44	3.54	1.08	Good
9	02/09/2024	30/09/2024	15.5	14.6	13.2	14.4	1.16	8.03	2.88	Good
10	30/09/2024	04/11/2024	18.1	14.9	20.4	17.8	2.76	15.52	6.86	Good
11	04/11/2024	03/12/2024	19.7	19.6	19.6	19.6	0.06	0.29	0.14	Good
12	03/12/2024	07/01/2025	15.9	16.9	14	15.6	1.47	9.44	3.66	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	414 Fencepiece Road, Chigwell

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 15 µgm^{-3}
Average Precision (CV): 5
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 16 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Tube ID 35: 120 Manor Road, Chigwell

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024								
2	29/01/2024	04/03/2024	29	28.1	30	29.0	0.95	3.27	2.36	Good
3	04/03/2024	02/04/2024	23.7	15.7	25	21.5	5.04	23.46	12.51	Poor Precision
4	02/04/2024	29/04/2024	20.9	18.7	17.2	18.9	1.86	9.83	4.62	Good
5	29/04/2024	03/06/2024	16.5	22.2	21.5	20.1	3.11	15.49	7.72	Good
6	03/06/2024	01/07/2024	21.3	21.6	21.3	21.4	0.17	0.81	0.43	Good
7	01/07/2024	29/07/2024	23.3	22	20.5	21.9	1.40	6.39	3.48	Good
8	29/07/2024	02/09/2024	19.4	19.3	20	19.6	0.38	1.93	0.94	Good
9	02/09/2024	30/09/2024	24	23.3	22.2	23.2	0.91	3.92	2.25	Good
10	30/09/2024	04/11/2024	30.3	29.3	30.8	30.1	0.76	2.53	1.90	Good
11	04/11/2024	03/12/2024	35	26.9	28.1	30.0	4.37	14.57	10.86	Good
12	03/12/2024	07/01/2025	27.5	7.4	16.7	17.2	10.06	58.48	24.99	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	120 Manor Road, Chigwell

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 24 µgm^{-3}
Average Precision (CV): 7
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 23 µgm^{-3}
Average Precision (CV): 13
Adjusted Tube average: µgm^{-3}

Tube ID 36: 107 High Street, Ongar (Anchor)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	37.7	36.6	36.4	36.9	0.70	1.90	1.74	Good
2	29/01/2024	04/03/2024	28.6	28	26.2	27.6	1.25	4.53	3.10	Good
3	04/03/2024	02/04/2024	20.6	24.7	27.1	24.1	3.29	13.62	8.16	Good
4	02/04/2024	29/04/2024	23.7	22.7	21.8	22.7	0.95	4.18	2.36	Good
5	29/04/2024	03/06/2024	23.6	22.6	25	23.7	1.21	5.08	2.99	Good
6	03/06/2024	01/07/2024								
7	01/07/2024	29/07/2024								
8	29/07/2024	02/09/2024	22.2	17.8	21.4	20.5	2.34	11.45	5.82	Good
9	02/09/2024	30/09/2024	20.4	25.9	26.8	24.4	3.46	14.22	8.61	Good
10	30/09/2024	04/11/2024	29.3	26.9	27.9	28.0	1.21	4.30	2.99	Good
11	04/11/2024	03/12/2024	30.7	29.1	30.7	30.2	0.92	3.06	2.29	Good
12	03/12/2024	07/01/2025	15.5	28.2	18.6	20.8	6.62	31.88	16.45	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	107 High Street, Ongar (Anchor)

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	26 µgm^{-3}
Average Precision (CV):	7
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	26 µgm^{-3}
Average Precision (CV):	9
Adjusted Tube average:	µgm^{-3}

Tube ID 37: 149 High Street, Ongar (Queen Bee)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	21.2	34.3	30.3	28.6	6.71	23.47	16.68	Poor Precision
2	29/01/2024	04/03/2024	23.3	16.1	24.7	21.4	4.61	21.60	11.46	Poor Precision
3	04/03/2024	02/04/2024	22.8	21.8		22.3	0.71	3.17	6.35	Good
4	02/04/2024	29/04/2024	16.1	20.9	19.1	18.7	2.42	12.97	6.02	Good
5	29/04/2024	03/06/2024	18.7	20.4	20.9	20.0	1.15	5.77	2.86	Good
6	03/06/2024	01/07/2024	22.3	17.9	21.2	20.5	2.29	11.19	5.69	Good
7	01/07/2024	29/07/2024	20.5	20.6	17.7	19.6	1.65	8.40	4.09	Good
8	29/07/2024	02/09/2024	17.7	16	17.6	17.1	0.95	5.58	2.37	Good
9	02/09/2024	30/09/2024	22.7	17.9	18	19.5	2.74	14.04	6.81	Good
10	30/09/2024	04/11/2024	24.7	33.2	26.2	28.0	4.54	16.18	11.27	Good
11	04/11/2024	03/12/2024	26	26.5	22.5	25.0	2.18	8.72	5.41	Good
12	03/12/2024	07/01/2025	18.1	17.9	12.6	16.2	3.12	19.25	7.75	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	149 High Street, Ongar (Queen Bee)

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 21 µgm^{-3}
Average Precision (CV): 11
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 21 µgm^{-3}
Average Precision (CV): 13
Adjusted Tube average: µgm^{-3}

Tube ID 38: 204 High Street, Ongar (Watsons)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	31.5	36.4	31	33.0	2.98	9.05	7.41	Good
2	29/01/2024	04/03/2024	24.6	24.5	27.3	25.5	1.59	6.24	3.95	Good
3	04/03/2024	02/04/2024	24.4	25	26.2	25.2	0.92	3.64	2.28	Good
4	02/04/2024	29/04/2024	13.4	14.7	17.5	15.2	2.10	13.78	5.20	Good
5	29/04/2024	03/06/2024	21.5	19.4	22.2	21.0	1.46	6.93	3.62	Good
6	03/06/2024	01/07/2024	17.6	16.7	16	16.8	0.80	4.78	1.99	Good
7	01/07/2024	29/07/2024	18.4	18.1	14.8	17.1	2.00	11.68	4.96	Good
8	29/07/2024	02/09/2024	19.4	17.7	19.6	18.9	1.04	5.52	2.59	Good
9	02/09/2024	30/09/2024	21.7	16.6	17	18.4	2.84	15.39	7.05	Good
10	30/09/2024	04/11/2024	16.1	22.7	22.2	20.3	3.67	18.07	9.13	Good
11	04/11/2024	03/12/2024	25.9	24.4	17.6	22.6	4.42	19.54	10.99	Good
12	03/12/2024	07/01/2025	20.5	12.5	18.2	17.1	4.12	24.13	10.23	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Site Name/ ID:	204 High Street, Ongar (Watsons)

Jaume Targa, for AEA

Version 04 - February 2011

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	21 µgm^{-3}
Average Precision (CV):	10
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	21 µgm^{-3}
Average Precision (CV):	12
Adjusted Tube average:	µgm^{-3}

Tube ID 39: 224 High Street, Epping (Church's Butchers)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	29.8	28.6	30.1	29.5	0.79	2.69	1.97	Good
2	29/01/2024	04/03/2024	27.3	25.8	27.1	26.7	0.81	3.05	2.02	Good
3	04/03/2024	02/04/2024	26	25.8	26.7	26.2	0.47	1.81	1.17	Good
4	02/04/2024	29/04/2024	17.3	16.8	15.5	16.5	0.93	5.62	2.31	Good
5	29/04/2024	03/06/2024	21.7	23.2	22.2	22.4	0.76	3.41	1.90	Good
6	03/06/2024	01/07/2024	20.1	20.9	20	20.3	0.49	2.43	1.23	Good
7	01/07/2024	29/07/2024	19.5	18.9	19.9	19.4	0.50	2.59	1.25	Good
8	29/07/2024	02/09/2024	22.5	5.2	21.6	16.4	9.74	59.26	24.19	Poor Precision
9	02/09/2024	30/09/2024	17.5	19.9	20.6	19.3	1.63	8.41	4.04	Good
10	30/09/2024	04/11/2024	23.7	24.6	27.9	25.4	2.21	8.71	5.49	Good
11	04/11/2024	03/12/2024	24.6	26.2	22.2	24.3	2.01	8.27	5.00	Good
12	03/12/2024	07/01/2025	3.9	20.8	8.2	11.0	8.78	80.09	21.82	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	224 High Street Epping, (Church's Butchers)

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	23 µgm^{-3}
Average Precision (CV):	5
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	21 µgm^{-3}
Average Precision (CV):	16
Adjusted Tube average:	µgm^{-3}

Tube ID 41: 259 High Street Epping (Holland & Barrett)

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	27.4	31.6	30	29.7	2.12	7.15	5.27	Good
2	29/01/2024	04/03/2024	23.3	25.6	28	25.6	2.35	9.17	5.84	Good
3	04/03/2024	02/04/2024	23.8	25.3	23.8	24.3	0.87	3.56	2.15	Good
4	02/04/2024	29/04/2024	19.7	16.5	16.5	17.6	1.85	10.52	4.59	Good
5	29/04/2024	03/06/2024	21.6	22.9	22.1	22.2	0.66	2.95	1.63	Good
6	03/06/2024	01/07/2024	20.8	20.6	21.6	21.0	0.53	2.52	1.31	Good
7	01/07/2024	29/07/2024	20.2	18.9	19.8	19.6	0.67	3.39	1.65	Good
8	29/07/2024	02/09/2024	12.4	19.5	19.3	17.1	4.04	23.69	10.04	Poor Precision
9	02/09/2024	30/09/2024	23.9	19.7	22.6	22.1	2.15	9.74	5.34	Good
10	30/09/2024	04/11/2024	26	2.1	13.6	13.9	11.95	85.99	29.69	Poor Precision
11	04/11/2024	03/12/2024	28.3	17.8	27.6	24.6	5.87	23.90	14.58	Poor Precision
12	03/12/2024	07/01/2025	23.6	21.1	15.3	20.0	4.26	21.29	10.58	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	259 High Street Epping (Holland & Barrett)

Adjusted measurement (95% confidence level) Without periods with CV larger than 20%	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	23 µgm^{-3}
Average Precision (CV):	6
Adjusted Tube average:	µgm^{-3}

Adjusted measurement (95% confidence level) with all data	
Bias calculated using 0 periods of data	
Tube Precision:	
Bias factor A:	
Bias B:	
Information about tubes to be adjusted	
Diffusion Tube average:	21 µgm^{-3}
Average Precision (CV):	17
Adjusted Tube average:	µgm^{-3}

Tube ID 42: Laurels, 2 Nazeing Road, Nazeing

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	29.8	31.4	26.8	29.3	2.34	7.96	5.80	Good
2	29/01/2024	04/03/2024	27	28.8	26.5	27.4	1.21	4.41	3.01	Good
3	04/03/2024	02/04/2024	27.3	24.1	24.7	25.4	1.70	6.71	4.23	Good
4	02/04/2024	29/04/2024	16.4		18.1	17.3	1.20	6.97	10.80	Good
5	29/04/2024	03/06/2024	21.6	21.4	20.3	21.1	0.70	3.32	1.74	Good
6	03/06/2024	01/07/2024	20.7	20.8	19	20.2	1.01	5.02	2.51	Good
7	01/07/2024	29/07/2024	19.8	19.8	19.2	19.6	0.35	1.77	0.86	Good
8	29/07/2024	02/09/2024	19.5	20.9	20.7	20.4	0.76	3.72	1.88	Good
9	02/09/2024	30/09/2024	22	21.6	16.9	20.2	2.84	14.06	7.05	Good
10	30/09/2024	04/11/2024	21.7	26.5	26	24.7	2.64	10.67	6.56	Good
11	04/11/2024	03/12/2024	27.6							
12	03/12/2024	07/01/2025	16.3	7.3	6.4	10.0	5.47	54.74	13.60	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	Laurels, 2 Nazeing Road, Nazeing

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 23 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 21 µgm^{-3}
Average Precision (CV): 11
Adjusted Tube average: µgm^{-3}

Tube ID 43: 4 North Street, Nazeing

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	27.3	28.4	29.8	28.5	1.25	4.40	3.11	Good
2	29/01/2024	04/03/2024	22.3	24	24.4	23.6	1.12	4.73	2.77	Good
3	04/03/2024	02/04/2024	23.5	24.9	23.2	23.9	0.91	3.80	2.25	Good
4	02/04/2024	29/04/2024	16.4	12.8	17.4	15.5	2.42	15.58	6.01	Good
5	29/04/2024	03/06/2024	19.5	18.2	19.3	19.0	0.70	3.68	1.74	Good
6	03/06/2024	01/07/2024	15.4	14.8	14.6	14.9	0.42	2.79	1.03	Good
7	01/07/2024	29/07/2024	17.8	18	18.7	18.2	0.47	2.60	1.17	Good
8	29/07/2024	02/09/2024	18.2	19.1	16.1	17.8	1.54	8.65	3.82	Good
9	02/09/2024	30/09/2024	20.2	21.6	21.3	21.0	0.74	3.50	1.83	Good
10	30/09/2024	04/11/2024	23.4	26.3	25.2	25.0	1.46	5.86	3.64	Good
11	04/11/2024	03/12/2024	25.7	27.5	27.1	26.8	0.95	3.53	2.35	Good
12	03/12/2024	07/01/2025	19.7	19.6	18	19.1	0.95	4.99	2.37	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	4 North Street, Nazeing

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 21 µgm^{-3}
Average Precision (CV): 5
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 21 µgm^{-3}
Average Precision (CV): 5
Adjusted Tube average: µgm^{-3}

Tube ID 44: Parsonage Court, Rectory Lane, Loughton

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	27.9	22.6	23.3	24.6	2.88	11.70	7.15	Good
2	29/01/2024	04/03/2024	17.1	21.3	21.3	19.9	2.42	12.19	6.02	Good
3	04/03/2024	02/04/2024	18.6	19.2	19.6	19.1	0.50	2.63	1.25	Good
4	02/04/2024	29/04/2024	11	12.8	13	12.3	1.10	8.98	2.74	Good
5	29/04/2024	03/06/2024	14	14.8	14.4	14.4	0.40	2.78	0.99	Good
6	03/06/2024	01/07/2024	14.4	13.2	11.2	12.9	1.62	12.50	4.02	Good
7	01/07/2024	29/07/2024	11.2	15.7	15.4	14.1	2.52	17.84	6.25	Good
8	29/07/2024	02/09/2024	3	11.5	12.5	9.0	5.22	58.00	12.97	Poor Precision
9	02/09/2024	30/09/2024	16.2	15.5	15.4	15.7	0.44	2.78	1.08	Good
10	30/09/2024	04/11/2024	20.2	19.3	19.3	19.6	0.52	2.65	1.29	Good
11	04/11/2024	03/12/2024	21.8	18.5	21.3	20.5	1.78	8.66	4.42	Good
12	03/12/2024	07/01/2025	18.5	18.3	10.3	15.7	4.68	29.79	11.62	Poor Precision
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	Parsonage Court, Rectory Lane, Loughton

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 17 µgm^{-3}
Average Precision (CV): 8
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 16 µgm^{-3}
Average Precision (CV): 14
Adjusted Tube average: µgm^{-3}

Tube ID 45: 18 Chigwell Lane, Loughton

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	29	30.2	29.9	29.7	0.62	2.10	1.55	Good
2	29/01/2024	04/03/2024	19.4	21.8	20.7	20.6	1.20	5.82	2.98	Good
3	04/03/2024	02/04/2024	20.3	19.8	21.2	20.4	0.71	3.47	1.76	Good
4	02/04/2024	29/04/2024	12.3	12.8	12.8	12.6	0.29	2.29	0.72	Good
5	29/04/2024	03/06/2024	17.9	17.1	16	17.0	0.95	5.61	2.37	Good
6	03/06/2024	01/07/2024	14.4		14.4	14.4	0.00	0.00	0.00	Good
7	01/07/2024	29/07/2024	14.7	14.8	15.2	14.9	0.26	1.78	0.66	Good
8	29/07/2024	02/09/2024	13.1	13.8	7.2	11.4	3.63	31.89	9.01	Poor Precision
9	02/09/2024	30/09/2024	17.9	18.9	19.8	18.9	0.95	5.04	2.36	Good
10	30/09/2024	04/11/2024	22.3	22	21.8	22.0	0.25	1.14	0.63	Good
11	04/11/2024	03/12/2024	24.1	28.2	25.4	25.9	2.10	8.09	5.20	Good
12	03/12/2024	07/01/2025	11.3	14.6	<0.5	13.0	2.33	18.02	20.97	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	18 Chigwell Lane, Loughton

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 19 µgm^{-3}
Average Precision (CV): 5
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 18 µgm^{-3}
Average Precision (CV): 7
Adjusted Tube average: µgm^{-3}

Tube ID 46: The Woodbine Public House, Honey Lane, Waltham Abbey

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	36	36.8	36.8	36.5	0.46	1.26	1.15	Good
2	29/01/2024	04/03/2024	29.6	31.5	30.7	30.6	0.95	3.12	2.37	Good
3	04/03/2024	02/04/2024	24.2	28.7	30	27.6	3.04	11.01	7.56	Good
4	02/04/2024	29/04/2024	24.5	25.9	22.7	24.4	1.60	6.58	3.98	Good
5	29/04/2024	03/06/2024	28.8	29.3	29.8	29.3	0.50	1.71	1.24	Good
6	03/06/2024	01/07/2024	30.6	28.1	29.4	29.4	1.25	4.26	3.11	Good
7	01/07/2024	29/07/2024	28.2	29.2	27.1	28.2	1.05	3.73	2.61	Good
8	29/07/2024	02/09/2024	27.6	17.4	24.9	23.3	5.28	22.68	13.13	Poor Precision
9	02/09/2024	30/09/2024	31.7	31	29.5	30.7	1.12	3.66	2.79	Good
10	30/09/2024	04/11/2024	29.5	32.6	32.1	31.4	1.66	5.30	4.13	Good
11	04/11/2024	03/12/2024	32.6	31.9	30.9	31.8	0.85	2.69	2.12	Good
12	03/12/2024	07/01/2025	22.6	22	25.8	23.5	2.04	8.71	5.07	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Site Name/ ID:	The Woodbine Public House, Waltham Abbey

Version 04 - February 2011

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 29 µgm^{-3}
Average Precision (CV): 5
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data

Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 29 µgm^{-3}
Average Precision (CV): 6
Adjusted Tube average: µgm^{-3}

Tube ID 48: 50 Chigwell Lane, Loughton

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Data Quality Check
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Diffusion Tubes Precision Check
1	23/01/2024	29/01/2024	40.9	40.3	40.7	40.6	0.31	0.75	0.76	Good
2	29/01/2024	04/03/2024	34.8	30.4	29.4	31.5	2.87	9.11	7.14	Good
3	04/03/2024	02/04/2024	30.6	31.2	31.3	31.0	0.38	1.22	0.94	Good
4	02/04/2024	29/04/2024	24	23.2	22.6	23.3	0.70	3.02	1.74	Good
5	29/04/2024	03/06/2024	26.6	27.9	30.2	28.2	1.82	6.46	4.53	Good
6	03/06/2024	01/07/2024	24.1	27.6	26.9	26.2	1.85	7.07	4.60	Good
7	01/07/2024	29/07/2024								
8	29/07/2024	02/09/2024	23.6		24.4	24.0	0.57	2.36	5.08	Good
9	02/09/2024	30/09/2024	26.1	31.6	28.6	28.8	2.75	9.57	6.84	Good
10	30/09/2024	04/11/2024	32.5	34.1	30.8	32.5	1.65	5.08	4.10	Good
11	04/11/2024	03/12/2024	32.7	35.3	36.7	34.9	2.03	5.82	5.04	Good
12	03/12/2024	07/01/2025	24.5	27.9	29.1	27.2	2.39	8.78	5.93	Good
13										

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:	50 Chigwell Lane, Loughton

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 30 µgm^{-3}
Average Precision (CV): 5
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data
Bias calculated using 0 periods of data
Tube Precision:
Bias factor A:
Bias B:

Information about tubes to be adjusted
Diffusion Tube average: 30 µgm^{-3}
Average Precision (CV): 5
Adjusted Tube average: µgm^{-3}

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Epping Forest District recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within this ASR has been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Epping Forest District Council have applied a national bias adjustment factor of 0.8 to the 2024 monitoring data. This was the most up to date factor published at the time the calculations were undertaken. A summary of bias adjustment factors used by Epping Forest District Council over the past five years is presented in Table C.1.

The national bias adjustment factor has been used as Epping Forest Council do not undertake local co-location and are therefore unable to calculate a local bias adjustment factor. The national bias adjustment factor that has been used is the average of 33 local co-location studies undertaken by other local authorities that also use diffusion tubes supplied by SOCOTEC Didcot made using the 50% TEA in Acetone preparation. A spreadsheet showing this calculation is shown below:

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	National	03/25	0.8
2023	National	03/24	0.77
2022	National	06/23	0.76
2021	National	06/22	0.78
2020	National	09/21	0.76

National Diffusion Tube Bias Adjustment Factor Spreadsheet		Spreadsheet Version Number: 03/25
Follow the steps below **in the correct order** to show the results of **relevant** co-location studies Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.		This spreadsheet will be updated at the end of June 2025 LAQM Helpdesk Website
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.		Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	**Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.**							
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data.[2]	If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953							
Analysed By[1]	Method To undo your selection, choose (All) from the list	Year[5] To undo your selection, choose (All)	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	50% TEA in acetone	2024	R	Cambridge City Council	12	19	15	25.2%	G	0.80
SOCOTEC Didcot	50% TEA in acetone	2024	R	Cardiff Council / Shared Regulatory Services	10	34	31	11.4%	G	0.90
SOCOTEC Didcot	50% TEA in acetone	2024	R	Ipswich Borough Council	9	24	20	21.8%	G	0.82
SOCOTEC Didcot	50% TEA in acetone	2024	R	Ipswich Borough Council	12	36	26	37.6%	G	0.73
SOCOTEC Didcot	50% TEA in acetone	2024	UB	City Of York Council	12	12	11	9.5%	P	0.91
SOCOTEC Didcot	50% TEA in acetone	2024	R	City Of York Council	12	22	18	20.4%	G	0.83
SOCOTEC Didcot	50% TEA in acetone	2024	R	City Of York Council	9	20	16	21.5%	G	0.82
SOCOTEC Didcot	50% TEA in acetone	2024	R	City Of York Council	12	26	20	29.4%	G	0.77
SOCOTEC Didcot	50% TEA in acetone	2024	R	East Suffolk Council	10	26	20	31.2%	G	0.76
SOCOTEC Didcot	50% TEA in acetone	2024	KS	Marylebone Road Intercomparison	11	44	36	23.8%	P	0.81
SOCOTEC Didcot	50% TEA in acetone	2024	UB	Hull City Council	11	21	17	24.5%	P	0.80
SOCOTEC Didcot	50% TEA in acetone	2024	R	Hull City Council	10	27	20	37.8%	G	0.73
SOCOTEC Didcot	50% TEA in acetone	2024	R	Waverley Borough Council	11	20	18	10.6%	P	0.90
SOCOTEC Didcot	50% TEA in acetone	2024	R	Waverley Borough Council	11	22	16	32.3%	G	0.76
SOCOTEC Didcot	50% TEA in acetone	2024	R	Wrexham County Borough Council	11	14	13	11.6%	G	0.90
SOCOTEC Didcot	50% TEA in acetone	2024	UB	Gravesham Borough Council	12	21	19	10.8%	P	0.90
SOCOTEC Didcot	50% TEA in acetone	2024	R	Slough Borough Council	12	34	24	41.4%	G	0.71
SOCOTEC Didcot	50% TEA in acetone	2024	R	Slough Borough Council	12	26	20	30.6%	G	0.77
SOCOTEC Didcot	50% TEA in acetone	2024	R	Slough Borough Council	12	23	17	30.5%	G	0.77
SOCOTEC Didcot	50% TEA in acetone	2024	R	Slough Borough Council	11	30	22	31.5%	G	0.76
SOCOTEC Didcot	50% TEA in acetone	2024	R	Slough Borough Council	12	30	23	32.8%	G	0.75
SOCOTEC Didcot	50% TEA in acetone	2024	R	Thanet District Council	11	19	15	24.9%	G	0.80
SOCOTEC Didcot	50% TEA in acetone	2024	UB	Wirral Council	10	15	12	16.6%	G	0.86
Socotec Didcot	50% TEA in acetone	2024	R	Derry City And Strabane District Council	12	28	32	-11.4%	G	1.13
Socotec Didcot	50% TEA in acetone	2024	UB	Derry City And Strabane District Council	12	11	7	53.7%	G	0.65
Socotec Didcot	50% TEA in acetone	2024	UB	Southend-on-Sea City Council	9	13	11	18.8%	G	0.84
Socotec Didcot	50% TEA in Acetone	2024	R	Horsham District Council	12	22	17	31.8%	G	0.76
Socotec Didcot	50% TEA in Acetone	2024	R	Leeds City Council	11	35	27	29.2%	G	0.77
Socotec Didcot	50% TEA in Acetone	2024	KS	Leeds City Council	12	28	20	40.8%	G	0.71
Socotec Didcot	50% TEA in Acetone	2024	R	Leeds City Council	9	39	28	36.1%	G	0.73
Socotec Didcot	50% TEA in Acetone	2024	R	Leeds City Council	12	23	18	31.8%	G	0.76
Socotec Didcot	50% TEA in Acetone	2024	UC	Leeds City Council	11	24	19	26.7%	G	0.79
Socotec Didcot	50% TEA in Acetone	2024	R	Huntingdonshire District Council	11	28	22	21.3%	G	0.82
SOCOTEC Didcot	50% TEA in acetone	2024		Overall Factor[3] (33 studies)					Use	0.80

[1] For Casella Stanger/Bureau Veritas (NOT Bureau Veritas Labs) use Gradko 50% TEA in Acetone.
From 2021 use Staffordshire County Council instead of Staffordshire Scientific Services.
For Staffordshire CC SS/Staffordshire County Analyst use Staffordshire Scientific Services.
For Casella Seal/GMSS/Casella CRE/Bureau Veritas Labs/Eurofins use Environmental Scientific Group.
From 2011 for Environmental Scientific Group use ESG Glasgow.
From 2011 for Harwell Scientific Services use ESG Didcot.
For 2017 for SOCOTEC use ESG Didcot, as name changed mid year.
For 2018 SOCOTEC entered as Didcot and Glasgow. Glasgow analysis lab moved to Didcot mid 2018.
For Bodycote Health Sciences and Clyde Analytical Laboratories use Exova
For Rotherham MBC use South Yorkshire Labs.
For Dundee CC use Tayside SS.
For Leicester Scientific Services use Staffordshire Scientific Services.
For South Yorkshire Air Quality Samplers use South Yorkshire Labs. As of January 2010 sampler body changed. As of April 2010 sampler cap changed.
Lancashire County Analyst withdrew from the Field Intercomparison at the end of 2010. No submissions were supplied in 2011.
Walsall MBC closed in March 2011.
Bristol Scientific Services closed at the end of 2011.
Somerset County Council did not start the Marylebone road intercomparison until June 2012
Exova stopped providing diffusion tubes at the end of 2013.
Kent Scientific Services stopped providing diffusion tubes at the end of 2015.
Kildare Council stopped providing diffusion tubes in the middle of 2016.
Northampton BC stopped providing diffusion tubes in 2017

[2] In this situation it would be reasonable to use data from the nearest year.

[3] Overall factors have been calculated using orthogonal regression to allow for uncertainty in both the automatic monitor and diffusion tube. The uncertainty of the diffusion tube has been assumed to be double that of the automatic monitor.

[4] If you have your own co-location study, please send your data to us so that it can be included here. If this is not possible, but you wish to combine these factors with your own, select and copy the relevant data from this spreadsheet and paste them into a new one (otherwise your calculations will include hidden data). Then add your own data and calculate the bias. To obtain a new correction factor that includes your data, average the bias (B) values, expressed as a factor, i.e. -16% is -0.16. Next add 1 to this value, e.g. -0.16 + 1.00 = 0.84 in this example, then take the inverse to give the bias adjustment factor 1/0.84 = 1.19 (This will not be exactly the same as the correction factor calculated using orthogonal regression as used in this spreadsheet, but will be reasonably close).

To add data download a questionnaire

[5] Where an annual dataset falls into two years it has been ascribed to the year in which most of the data has fallen.

[6] Tube precision is determined as follows: G = Good precision – coefficient of variation (CV) of diffusion tube replicates is considered G when the CV of eight or more periods is less than 20%, and the average CV of all monitoring periods is less than 10%; P = Poor precision – CV of four or more periods >20% and/or average CV >10%. S = Single tube, therefore not applicable. na = not available.

NO_2 Fall-off with Distance from the Road

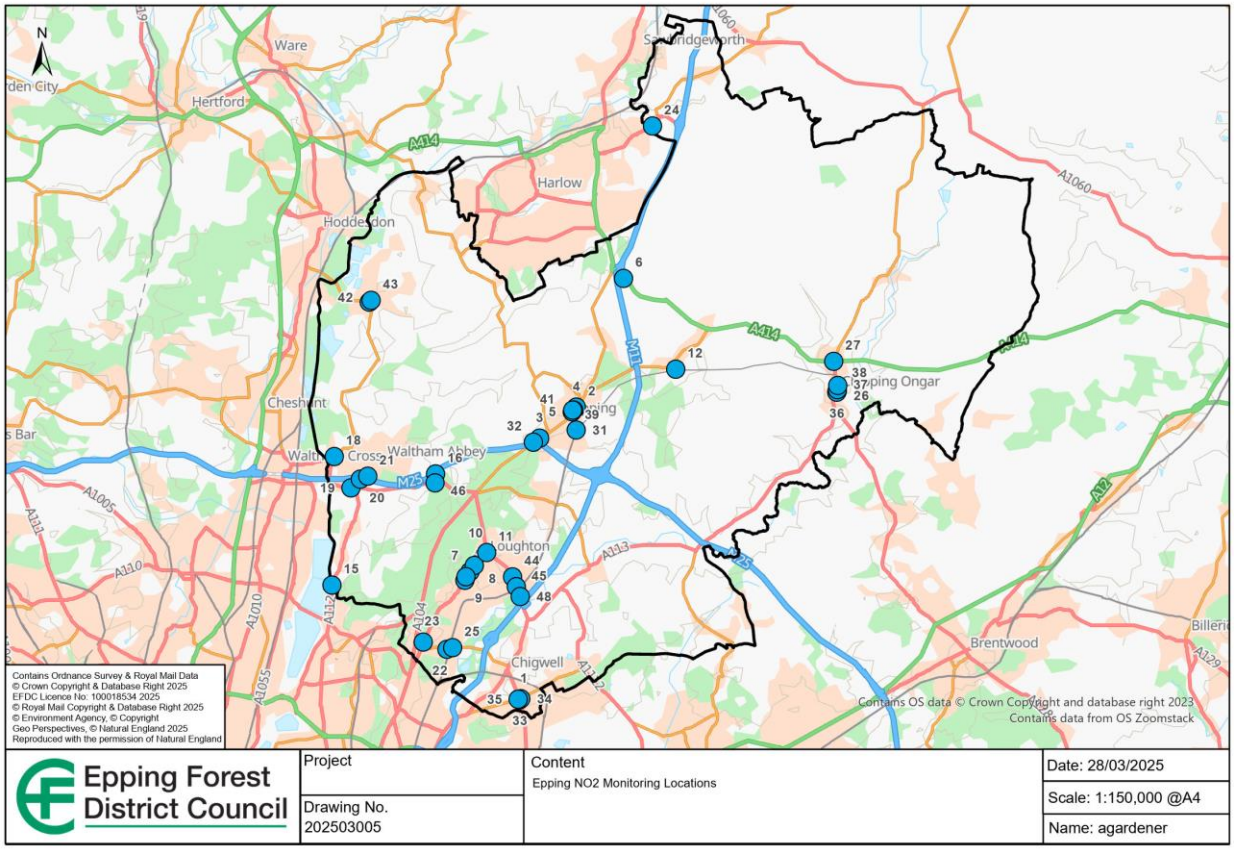
Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO_2 monitoring locations within Epping Forest District required distance correction during 2024.

Appendix D: Maps of Monitoring Locations and AQMAs

Figure D.1 – Map of Non-Automatic Monitoring Site

District Wide – All locations



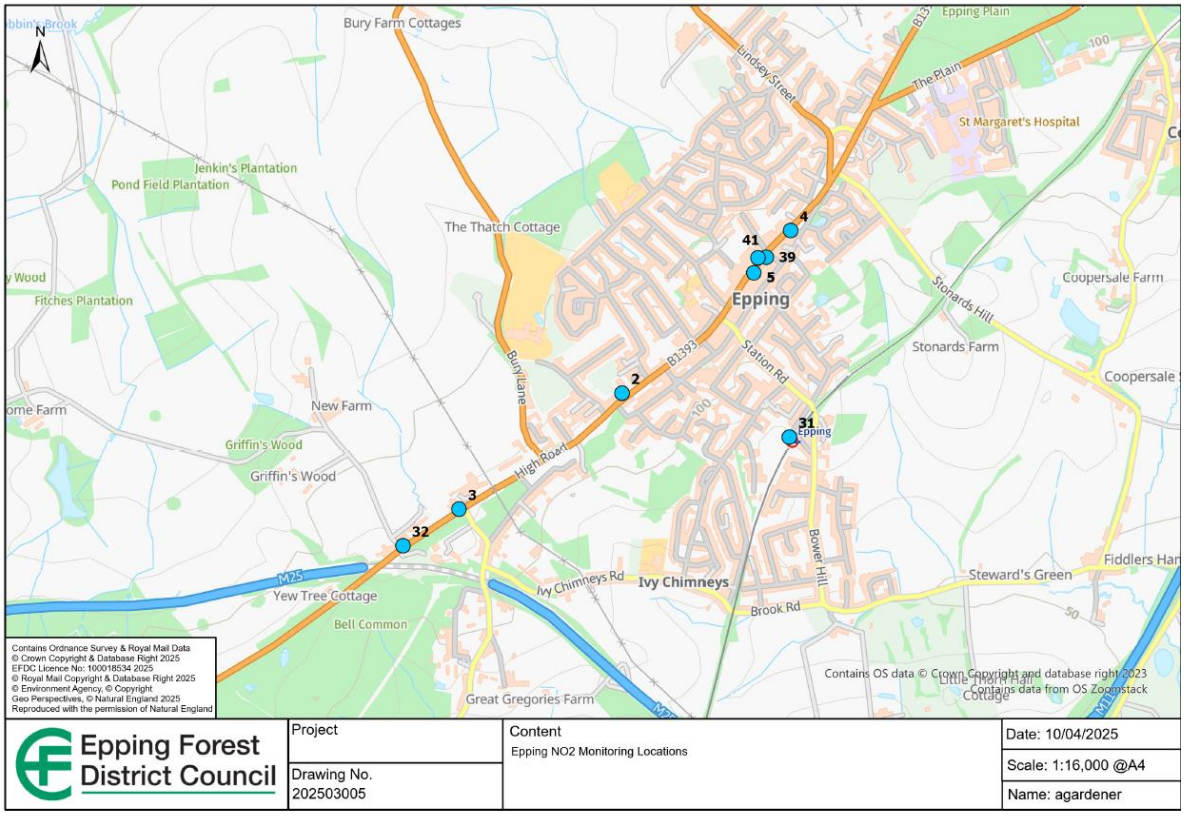
For information regarding location names, please see the following larger scale maps:

AQMA Epping Forest No2. Bell Common

3: Bell Vue, High Road, Bell Common, Epping

Red area: Air Quality Management Area

Epping



2: 15 High Street, Epping

3: Bell Vue, High Road, Bell Common, Epping

4: 254 High Street, Epping (Ladbrokes)

5: 202 High Street, Epping (Superdrug)

31: Station Road, Station Approach, Epping Underground Station, Epping

32: Copped Hall, High Road, Bell Common, Epping

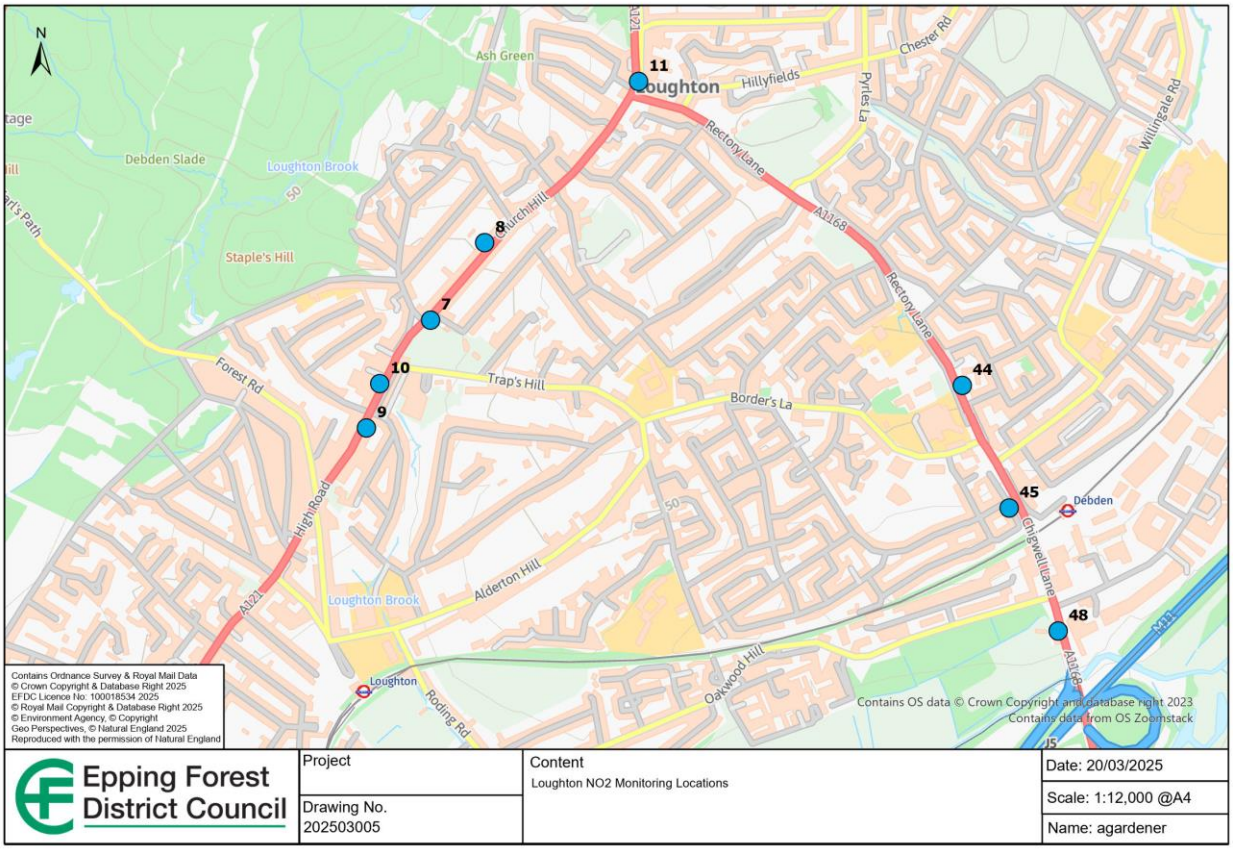
39: 224 High Street, Epping (Church's Butchers)

41: 259 High Street, Epping (Holland & Barrett)

Hastingwood

6: 1 Canes Cottages, Canes Lane A414, Hastingwood

Loughton



7: 1 Church Hill, Loughton

8: 72 Church Hill, Loughton

9: 249 High Road, Loughton (Timpson)

10: 252 High Road, Loughton (Love Brownies)

11: 5 Goldings Hill, Loughton

44: Parsonage Court, Rectory Lane, Loughton

45: 18 Chigwell Lane, Loughton, (off Colson Road)

48: 50 Chigwell Lane, Loughton

Sewardstone

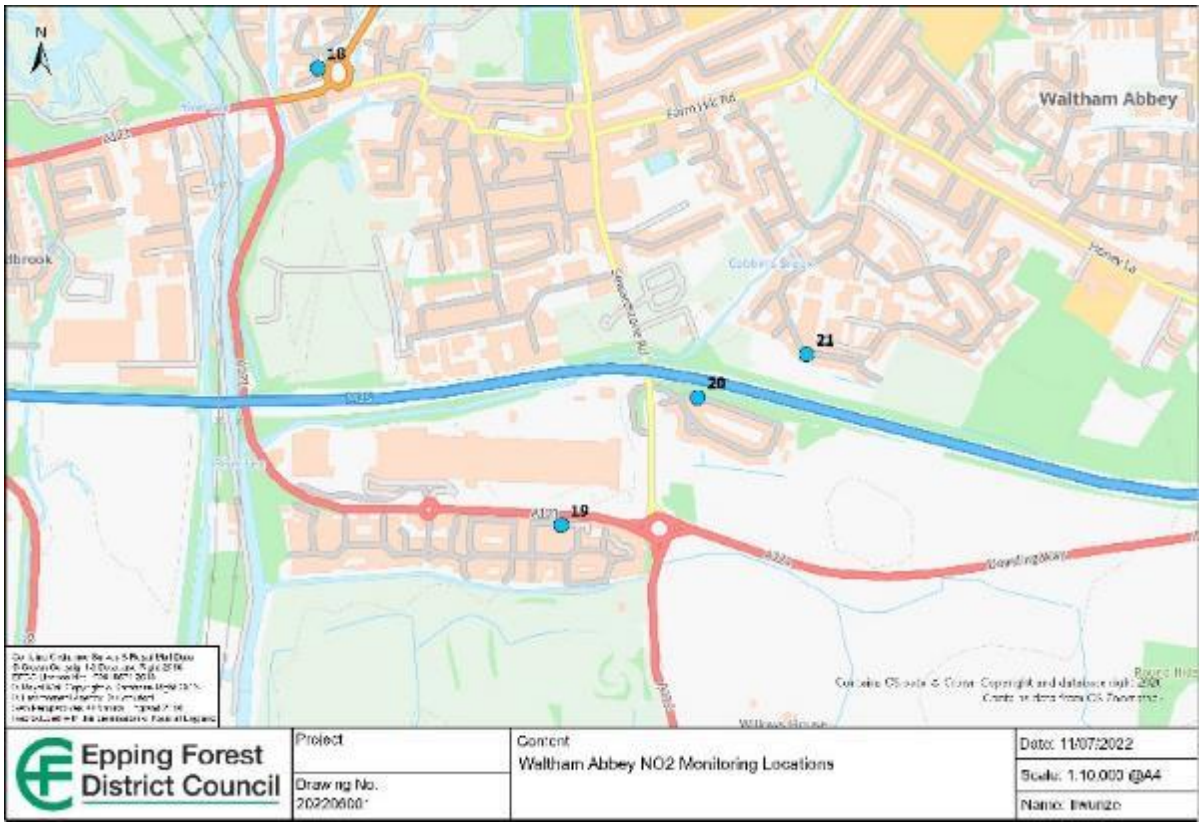
15: Albion Terrace, Sewardstone Road, Sewardstone

Waltham Abbey, Honey Lane

16: 14 The Elms, Waltham Abbey

46: The Woodbine Public House, Honey Lane, Waltham Abbey

Waltham Abbey



18: 4 Leaview, Waltham Abbey (Abbeyview)

19: 34 Hayden Road, Waltham Abbey

20: 2 Lodge Lane, Waltham Abbey

21: 110 Roundhills, Waltham Abbey

Chigwell

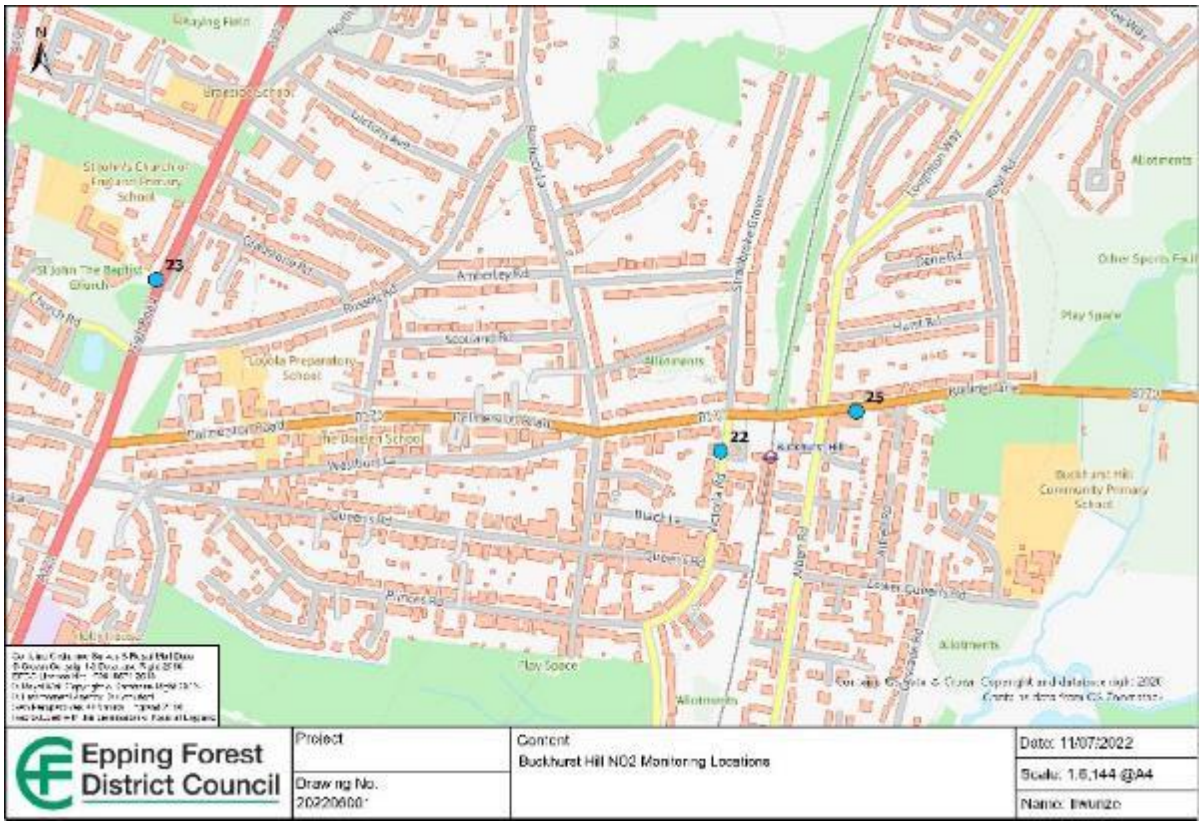
1: 105 Hainault Road, Chigwell (junction with Fencepiece Road)

33: 281 Fencepiece Road, Chigwell

34: 414 Fencepiece Road, Chigwell (Sherrell House)

35: 120 Manor Road, Chigwell

Buckhurst Hill

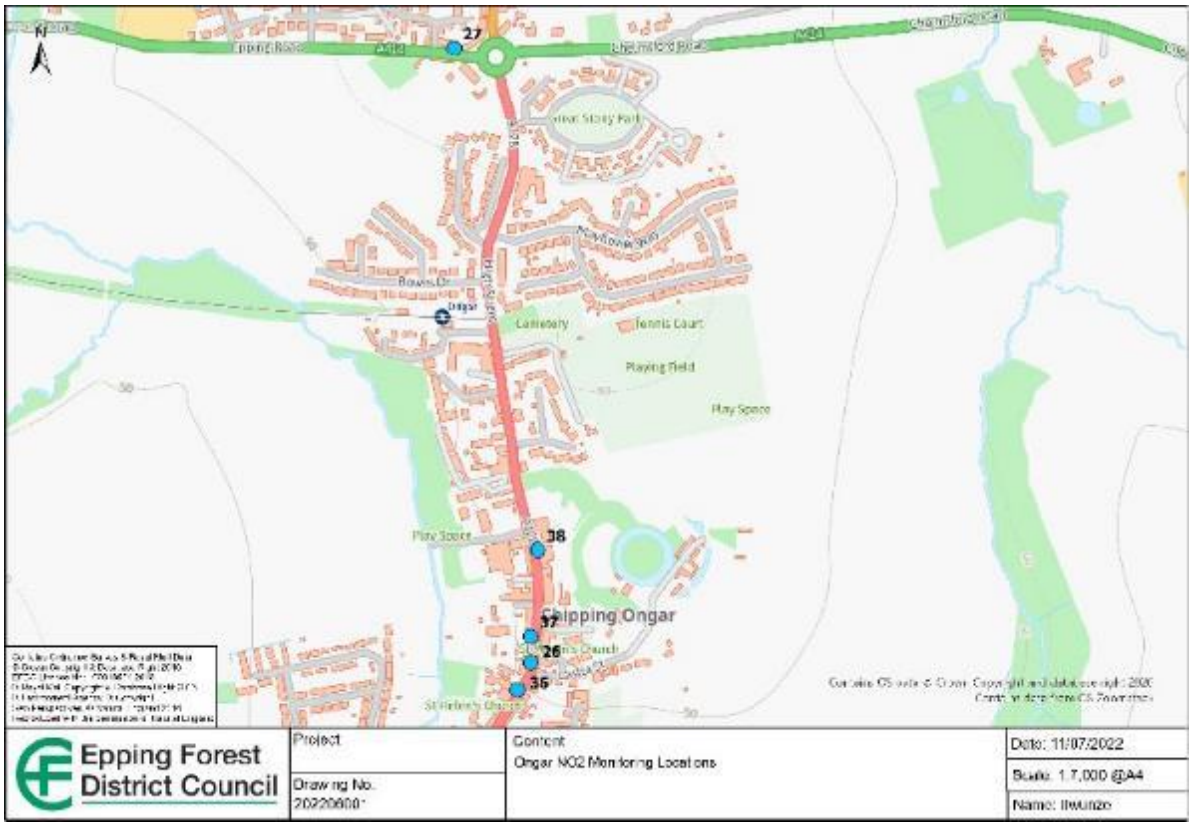


22: 26 Victoria Road, Buckhurst Hill, (opposite underground station)

23: St Johns School, Buckhurst Hill

25: Regency Lodge, Roding Lane, Buckhurst Hill

Ongar



26: 131 High Street, Ongar (at Bottleneck)

27: 3 Queens Terrace, A414, Ongar

36: 107 High Street, Ongar (Anchor)

37:149 High Street, Ongar (Queen Bee)

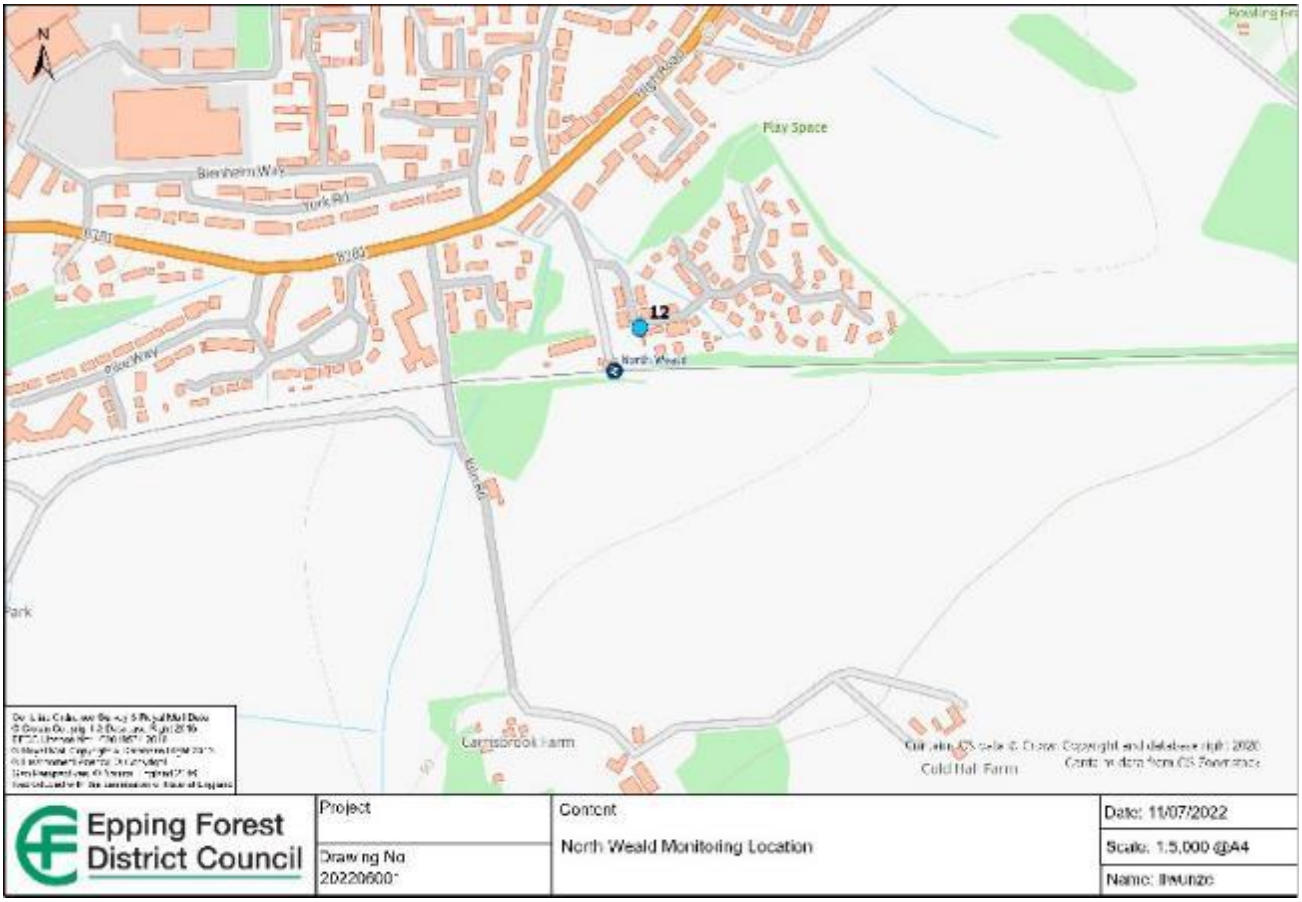
38: 204, High Street, Ongar, (Watsons)

Nazeing

42: Laurels, 2 Nazeing Road, Nazeing

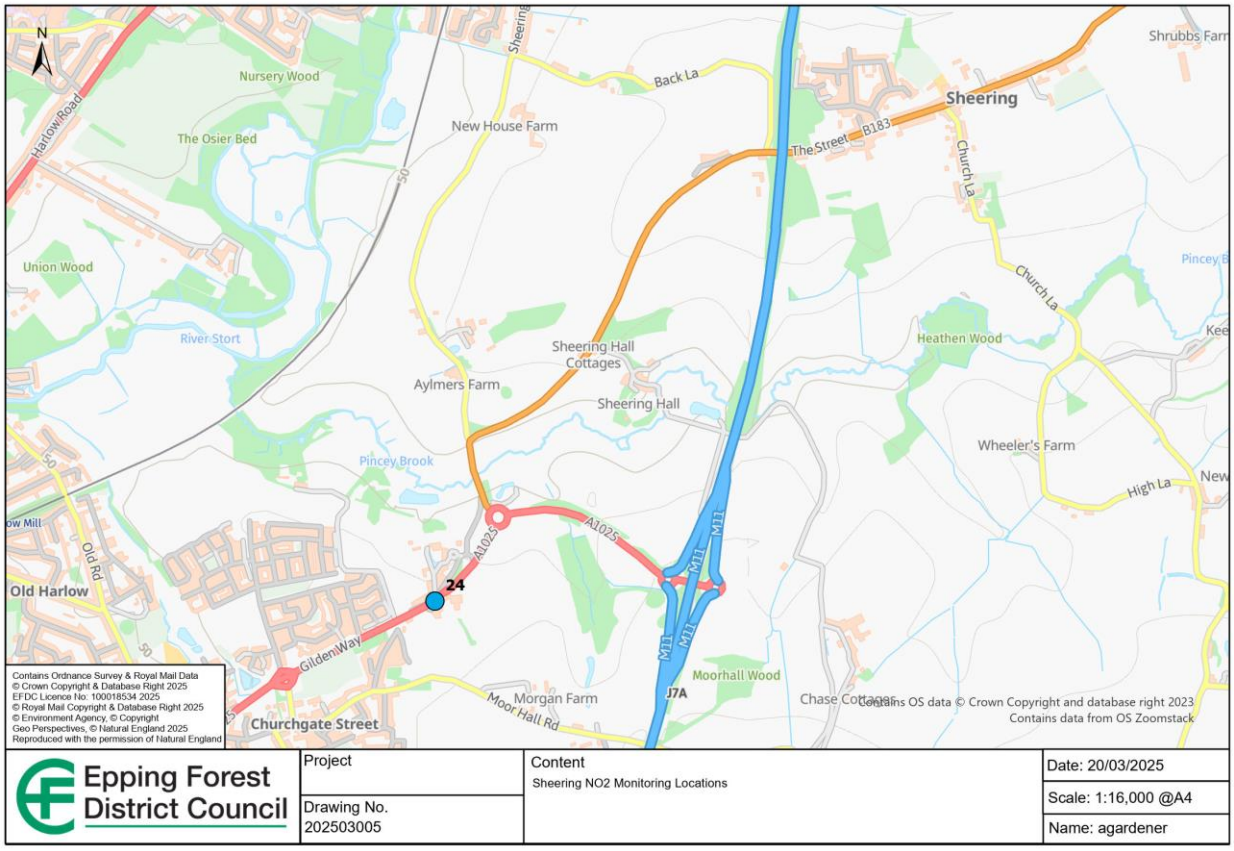
43: 4 North Street, Nazeing

North Weald



12: 66 Tempest Mead, North Weald

Sheering



24: Mayfield Bakery, Sheering Road, Sheering

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[2]

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	40µg/m^3	Annual mean
Particulate Matter (PM_{10})	50µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM_{10})	40µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO_2)	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	266µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[2] The units are in microgrammes of pollutant per cubic metre of air (µg/m^3).

Appendix F: Abridge Air Quality Monitoring Project

Following the receipt of numerous complaints from residents in Abridge that an offensive odour was present in the vicinity, a property was identified as being the potential source of the odour. It was alleged that this property had received a significant amount of waste material which had been used to raise land levels in the garden.

Residents complained that the odour was making them feel ill, and we therefore started to monitor to determine the concentration of hydrogen sulphide in the surrounding area band establish if this was likely to be leading to negative health impacts.

Diffusion tubes were placed at 6 locations outside of various residential properties in Abridge. They were changed every 4 weeks and sent to the laboratory for analysis. In total this monitoring was undertaken for 12 months.

The sulphur dioxide diffusion tubes were supplied by Gradko International and analysed by them using their “GLM 5” method. The level of detection of the tubes was <0.1 µg/m^3. The vast majority of the tubes did not pick up hydrogen sulphide above the level of detection, and those that did record it, only measured low concentrations, with the greatest concentration being 1.04µg/m^3 at Abridge Mews in July 2024. This can be compared to World Health Organisation (WHO) proposed limits for ambient hydrogen sulphide which are:

- 150µg/m^3 as a 24-hour average for the protection of human health
- 7µg/m^3 as a 30-minute average which is designed to avoid substantial complaints or odour.

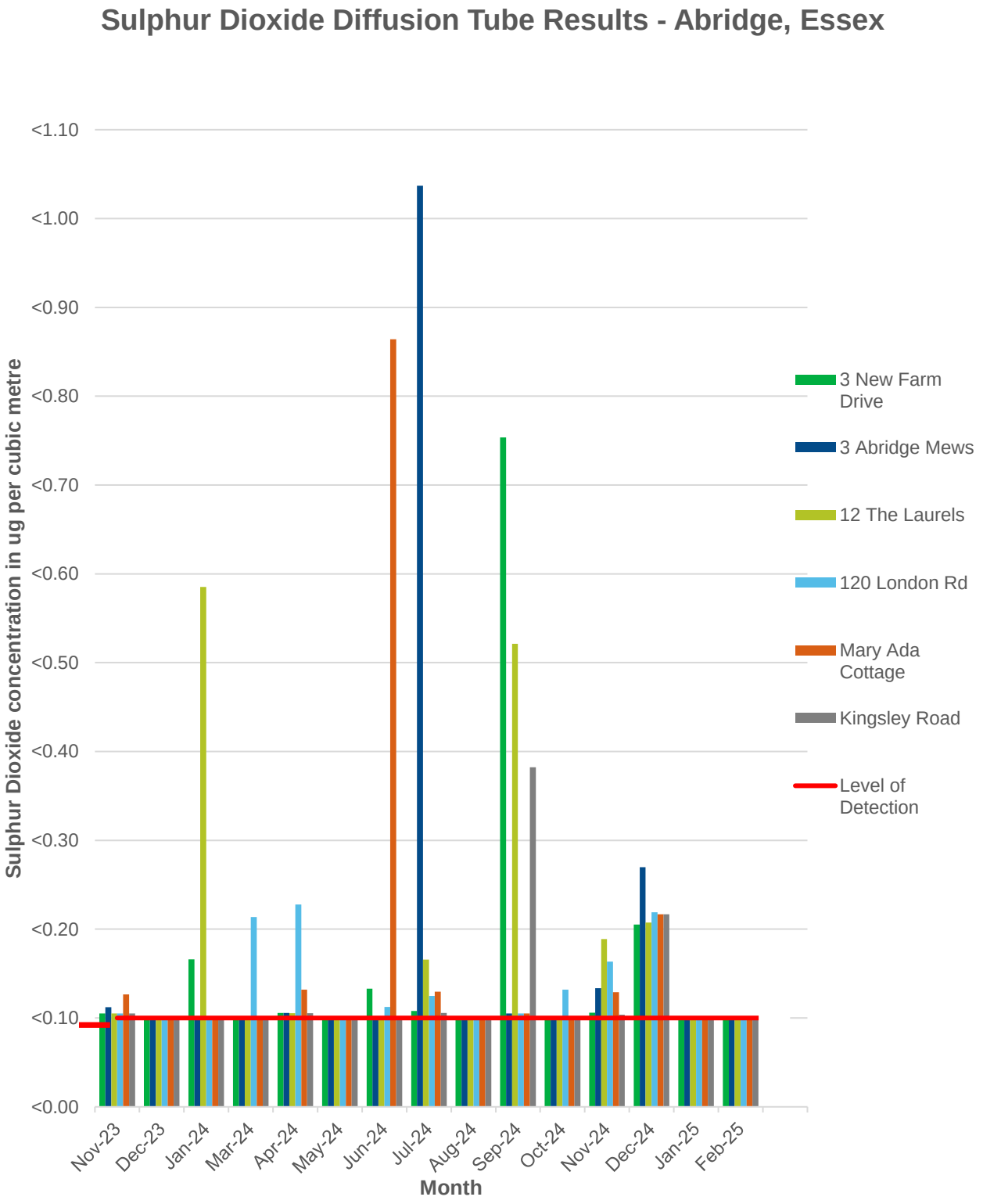
All of the results obtained from diffusion tube monitoring are shown on the chart below.

As complaints continued to be received, a decision was taken to undertake real time analysis at 2 locations in order to determine the frequency and extent of fluctuations in the concentrations over time. These analysers were set up to record concentrations over a 6 month period at 2 residential properties. One property was located in close proximity to the source location, and the other was down-wind of the prevailing wind direction, where a significant number of the complaints had originated from.

Ricardo AEA Technology were contracted to run this project on behalf of the Council. The report that they produced following the completion of this monitoring is provided below.

These monitoring projects provided us with information that indicated the odour was unlikely to lead to negative health impacts. Despite this, partnership working across

departments of the District and County Council was able to secure the removal of waste material from site. Once this has been completed, the source of the odour will no longer be present.



Air Pollution Report

Produced by Ricardo on behalf of Epping Forest District Council

Abridge H_2S Sensor Monitoring – 132 London Road & The Laurels Summary

Introduction

South Coast Science Praxis/Urban sensors were deployed at two monitoring locations for a six-month period between May and November 2024. The purpose of the monitoring was to measure if illegal waste at a property in Abridge is causing Hydrogen Sulphide (H_2S) emissions in the local area.

Two locations were selected as follows:

- 132 London Road, Abridge (51.647649, 0.108759) (Sensor ID scsbgx683)
- The Laurels, Abridge (51.65056, 0.117003) (Sensor ID scsbgx682)

Sensor measurements are an indicative measurement methodology and given ambient H_2S is not routinely measured in the UK, it was not possible to characterise the sensor response for this study. The H_2S data should only be used to identify trends. Nonetheless, measurements using sensors can still provide higher temporal resolution than, for example, diffusion tubes (which provide a monthly average) and they are more commonly used to measure ambient nitrogen dioxide and particulate matter concentrations, pollutants which can be readily characterised with reference monitors in the UK.

The World Health Organisation (WHO) has proposed the following guidelines for ambient H_2S:

- 150 µg m^{-3} as a 24-hour average for the protection of human health.
- 7 µg m^{-3} as a 30-minute average designed to avoid substantial complaints about odour annoyance.

Summary of Results

The sensor at 132 London Road experienced power outages, particularly during the final month of monitoring in November 2024 resulting in some gaps in data as shown in Figure 3. The sensor at The Laurels developed a hardware fault towards the end of the monitoring period.

The summary in Table 1 below highlights that there were nine exceedances of the 30-minute average set out above to avoid substantial complaints about odour annoyance at the 132 London Road sensor. Six of these 30-minute exceedances relate to a period of elevated H_2S on 12th August 2024 between 12:00 and 14:30. There were no exceedances at the sensor located at The Laurels.

Table 1. H_2S (µg m^{-3}) Summary Statistics May – November 2024

	Exceedances of 24-Hour Average	Exceedances of 30-Minute Average	Max. 30-Minute Conc.	Max. Hourly Conc.	Max. Daily Conc.	Max. Running 24-Hour Mean	Period Mean Conc.	Period Data Capture (%)
132 London Road	0	9	21.9	23.5	3.7	3.9	1.1	87.2
The Laurels	0	0	6.0	4.1	1.7	1.9	1.0	91.0

Polar Plots

Figures 1 and 2 are overlaid with a specific air quality data analysis graphic called a bivariate polar plot. The polar plots provide information on pollutant source identification, depending upon the wind speed and wind direction. This helps to understand the origin of air pollution sources.

The vertical and horizontal axes of the polar plots give you an indication of the wind direction, in a similar way as a wind rose or a compass would, with the cardinal points N (North), S (South), W (West) and E (East) being displayed. The circular dashed rings give you an indication of the wind speed. This starts at zero (0 m/s) at the “bullseye” central point, and slowly increases outwards in all directions.

Wind Direction – Gives you a better idea of the direction where the potential air pollution source is coming from.

Wind Speed – Gives you a better understanding of where this air pollution source is located: if very close to your monitoring location or if it comes from further way.

Polar plots also display different colours. The darker red colour of the surface corresponds to higher concentrations whereas the blue colours correspond to lower pollutant concentrations.

Figure 1: Polar Plot for all Data

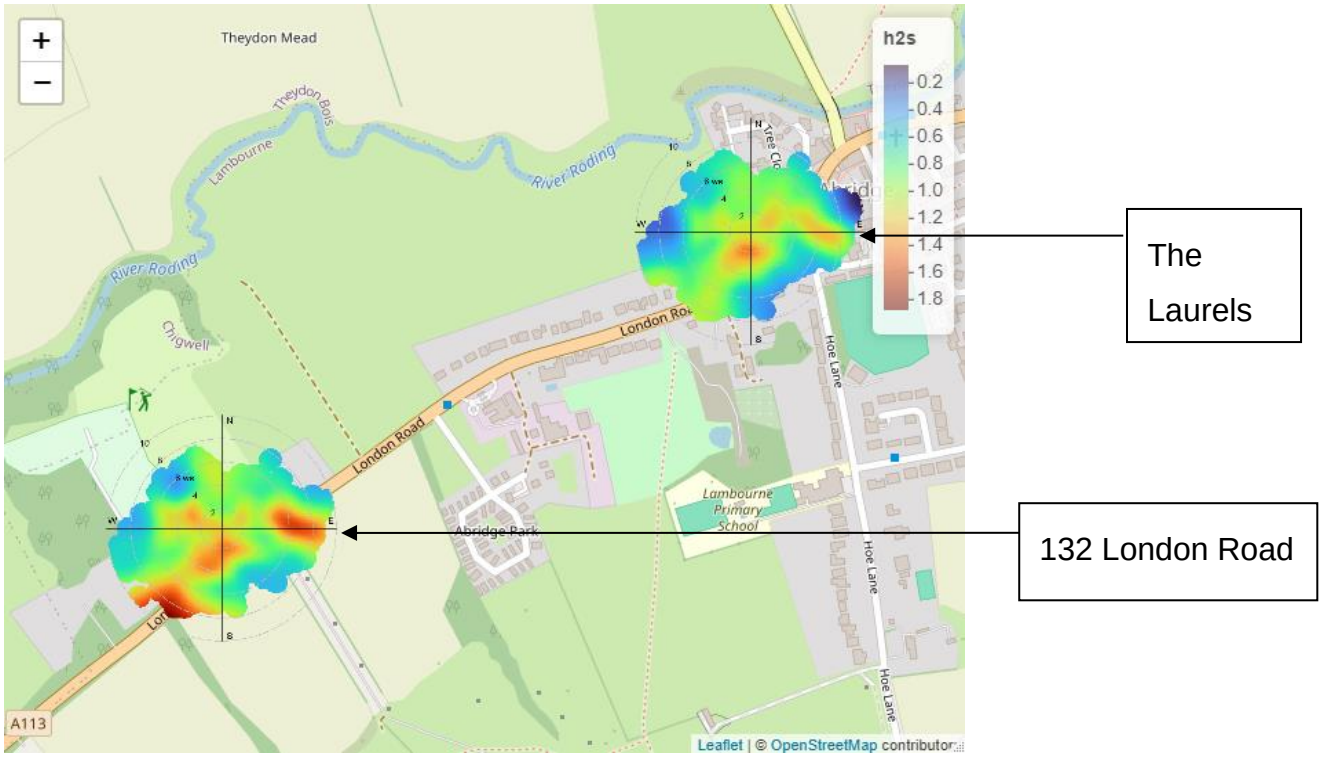


Figure 2: Polar Plot for August 2024

The landfill is located around 200m to the NNW of 132 London Road therefore it would be expected that any source of H_2S would come from this direction. The darker reds in Figure 1 for the whole of the monitoring period don't show any particularly strong directional source from the northwest for 132 London Road, with the highest H_2S periods

associated with stronger winds from the southwest and moderate winds to the east. At The Laurels, there is less of a direction signal in elevated H_2S readings indicating no obvious source.

Figure 2 shows the polar plot for August with the aim of understanding the directional component of the highest data observed on 12th August 2024 at 132 London Road. The darker red colours indicate this particular event was associated with winds from the east, rather than the north where the waste site is located.

Hourly Graphs

Figure 3 – Hourly H_2S time-series plot 132 London Road

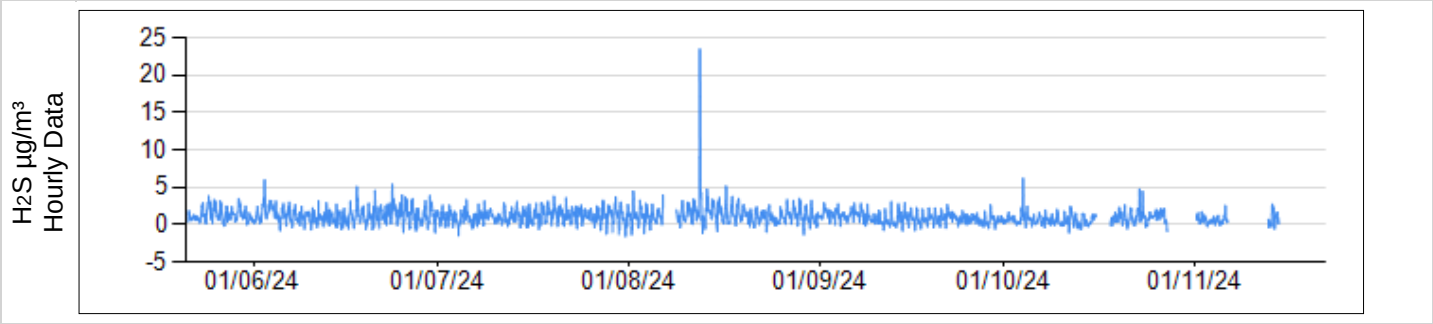


Figure 4 – Hourly H_2S time-series plot The Laurels

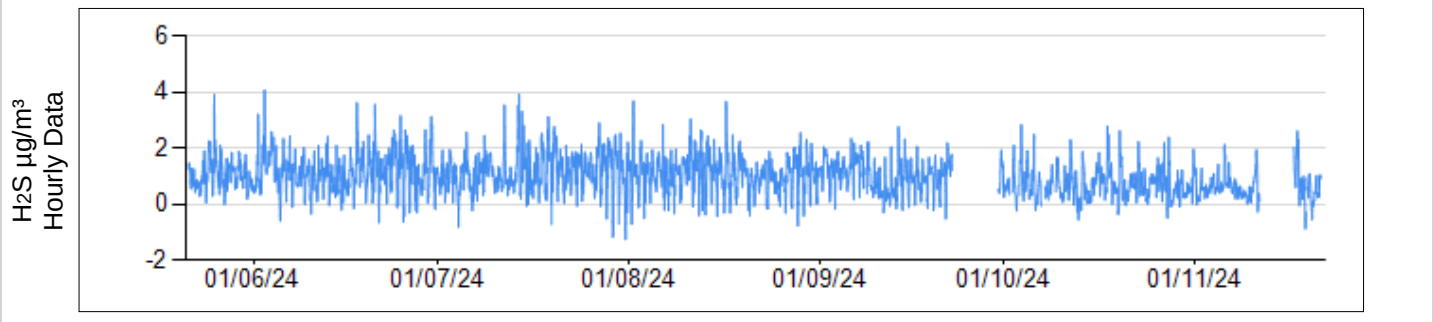


Figure 5 – Hourly comparison plot (ppb) for 132 London Road (blue line) and The Laurels (red line)

Conclusions

The results from the two monitoring locations show some increases in H_2S outside the noise of the sensors. At 132 London Road, there were exceedances of the WHO 30-minute average to avoid substantial complaints about odour annoyance. However, due to the scarcity of routine H_2S monitoring in the UK, the data could not be corrected via co-location so these results should be used to identify trends only. Further analysis using polar plots, to understand the directional component of possible H_2S sources, did not indicate a source to the north and to the west (where the illegal waste site is located) of 132 London Road and The Laurels, respectively. Although there were increases in H_2S, particularly at 132 London Road, the polars plots indicate a source from the south and east during the periods of the highest H_2S measurements. Should further monitoring be carried out around Abridge, it is recommended H_2S concentrations are measured via UV fluorescence using a H_2S analyser where the measurements can be quantified with calibrations of known gas concentration.

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Chemical hazards and poisons report: Issue 28. June 2022. Published by UK Health Security Agency
- Air Quality Strategy – Framework for Local Authority Delivery. August 2023. Published by Defra.