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

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Local Responsibilities and Commitment

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Executive Summary: Air Quality in Our Area

Air Quality in Slough

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.
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.

This Annual Status Report (ASR) presents data collected from the last calendar year (2024), comparing this with air quality objectives (AQOs), national data and data collected in Slough over previous years, to identify trends in pollutant concentrations, potential areas where improvement is necessary, and to quantitatively evaluate the progress and efficacy of Slough Borough Council’s actions to improve air quality.

The trend analysis focuses on a five year timescale, as required by Defra. Consideration has also been given to a longer term trend of 10 years where data is available, to give a broader understanding of how air quality in Slough has changed over time.

In 2020, the Covid-19 pandemic brought widespread reductions in traffic levels and improvements in air quality, which resulted in anomalously low concentrations of NO_2 across the borough. This persisted into 2021 for the majority of monitoring locations. In 2022, the trend across the borough indicated that NO_2 concentrations were recovering to concentrations prior to the pandemic, with some hotspot areas continuing to persist. Data collected in 2023 however saw a reverse of this trend, and in many cases, concentrations had improved beyond that which was seen in 2020 and 2021, suggesting that the environmental benefits of the pandemic on air quality were being sustained. It was questioned in ASR 2024 whether 2023 presented another year of anomalously low concentrations, possibly due to meteorological impacts, however data collected from 2024 suggests that this is not the case. With the exception of five monitoring sites, concentrations recorded in 2024 represent the lowest concentrations seen to date, with the exception sites seeing very marginal increases (+0.3µg/m^3 on average). This therefore indicates that measures employed by Slough, in conjunction with national measures to improve air quality, are resulting in sustained compliance with AQOs.

It is important that despite these positive results, Slough Borough Council continues to work hard to reduce concentrations as much as possible, as air pollution remains a significant environmental and public health concern. Good air quality is not only important to improve the health outcomes of our residents, but also for enhancing the natural and built environment and for attracting residents, visitors and businesses to Slough.

The wellbeing of those living in Slough is the highest priority and continued implementation of strategies such as the Low Emission Strategy 2018-2025 (LES) and new Air Quality Action Plan 2024-2028 (AQAP), over the next few years will improve air quality and therefore health for all of those living and working in the borough.

Since the implementation of the LES in 2018, the Carbon and Sustainability team alongside its partnerships with stakeholders have made progress in developing and implementing the LES Programme and more recently, the new AQAP, however in recent years, progress has been hindered by the pandemic, followed by the Council issuing a Section 114 Notice. This has resulted in significant reductions in officer capacity and resource to deliver projects, leading to delays in delivery. The new AQAP took these issues into consideration when determining the viability of measures, resulting in a refined short list of measures to be delivered by 2028, focusing on three key themes of environment (reducing emissions at source), transport (management and infrastructure to support people to choose more sustainable travel methods over private vehicle use) and health education and awareness (focusing on improving the air quality knowledge base across the borough). The AQAP also introduced two key aims: to achieve a boroughwide nitrogen dioxide (NO_2) target concentration of <35µg/m^3 by 2028, and to revoke all of Slough Borough Council's Air Quality Management Areas (AQMAs) by 2030.

Modelling undertaken to support these measures during the development of the AQAP indicated that compliance with the NO_2 AQO can be met across the borough through implementation of the AQAP. Significant progress has already been made against some of these measures, which brings Slough Borough Council closer to meeting these aims.

Air quality cannot be tackled alone by the Council. The public, businesses and other public and third party sectors need to also play a significant role; either through changes of lifestyle to reduce dependency on the car (modal shift away from the car), increased walking and cycling, adoption of sustainable travel plans, and adoption of electric vehicle (EV) infrastructure and operation of lower emission vehicles. The Council is continuing to rebuild its operations following the Section 114 notice, which brings opportunities to integrate environmentally supportive recovery measures and aims. The Corporate Plan (2024-2027) places further emphasis on the importance of air quality and health, and includes the aim to create a cleaner, healthier and more prosperous Slough, by improving air quality, promoting active travel and sustainable forms of transport.

Sources of Poor Air Quality

The principal source of poor air quality within Slough relates to road traffic emissions, but local construction activities (particularly heavy goods vehicle (HGV) transport), diesel trains operating on the Great Western Mainline, local industrial processes, larger combustion processes (Energy from Waste incinerators), airport emissions, and back-up diesel generators associated with data centres, as well as transboundary pollutants (i.e. pollutants outside Slough) also contribute to the background pollution levels, and will continue to do so. The Council has declared a 'smoke controlled area' across Slough's wards, and have acknowledged that further initiatives are required to reduce $PM_{2.5}$ due to the health impacts associated with exposure.

Air quality modelling undertaken as part of the AQAP development indicates that on average across monitoring sites, road traffic vehicles contribute to almost half of the borough's total concentrations of NO_2 (46%), 24.2% of which is attributable to diesel cars specifically. This is followed by rural background, domestic background, and light goods vehicles, contributing 18.0%, 8.0%, and 7.5%, respectively.

In regards to PM_{10}, the majority of this pollutant originates from background sources, at 89%. Just under 40% of this background portion is attributable to secondary PM, which arises from power plants and industrial processes, including oil refining. Residual (33.3%), and domestic heating (9.6%) are also key contributors to PM concentrations in the borough, whereas road sources contribute to a smaller portion of concentrations at 10.6%.

Similarly, for $PM_{2.5}$, the key emissions sources are secondary PM (47.9%), residual (22.7%), domestic heating (13.9%), and road sources (9.3%). Secondary PM concentrations are exacerbated by emissions of primary gaseous pollutants including ammonia, oxides of nitrogen and sulphur dioxide from sources in the UK and Europe, which act as precursor species to $PM_{2.5}$, as they contribute to the formation of secondary PM through chemical reactions in the atmosphere. As with PM_{10}, contributions from background emissions are significantly greater than road sources of $PM_{2.5}$.

Air Quality Monitoring in Slough

The Council has monitored air quality for over 20 years and operates both passive (diffusion tubes) and continuous air quality monitoring stations in the borough. An overview of both the continuous monitoring network and passive diffusion tube network is provided below.

Continuous

During 2024, Slough Borough Council continuously monitored air quality at five locations. Five monitoring stations monitored NO_2 concentrations, and three monitoring stations monitored PM_{10} concentrations using established reference methods (Beta Attenuation Mass (BAM)). The network has not changed significantly since 2023, however a new Fine Dust Aerosol Spectrometer (FIDAS), monitoring both PM_{10} and $PM_{2.5}$ alongside the existing NO_2 monitor at Windmill (SLH 12), was installed in December 2024. The existing BAM measuring PM_{10} was subsequently relocated to the Station Road Langley site (SLH 13). As these changes occurred late in the calendar year, no reportable data was collected. As such, the first full year of data collection will be 2025 and will be reviewed in ASR 2026.

Passive

Slough Borough Council undertook passive (i.e. diffusion tube) monitoring of NO_2 at 88 sites (118 diffusion tubes) during 2024. Changes from 2023 to 2024 include 16 additional sites (SLO 132 – SLO 147), deployed on Farnham Road and surrounding roads in May

2024, to monitor the impact of the Destination Farnham Road scheme. At the time of writing, the scheme has not yet started construction, therefore data collected from these monitoring points during 2024 will represent the baseline NO_2 concentrations in the area before scheme initiation, and will be used to determine whether the scheme has resulted in air quality benefits.

No diffusion tube sites have been removed in 2024. Each year the data from diffusion tube sites is reviewed to determine which sites should be retained, and which should be decommissioned, typically based on how close concentrations are to the AQO. The revised European Air Quality Directive came into force in mid-December 2024, which introduces stricter limits and target values including a reduction in the NO_2 annual average limit from the current 40 to 20µg/m³ and the $PM_{2.5}$ particulate matter limit from 25 to 10µg/m³, to be achieved by 2030. Whilst not applicable to the UK, the evidence supporting this revision, in conjunction with evidence from the World Health Organisation (WHO), suggests that this limit will result in reduced health impacts. As a precaution, all diffusion tube sites which show concentrations above this new 20µg/m³ limit shall be retained until sustained compliance is evident in the data.

In addition, diffusion tubes that were deployed as part of the M4 Smart Motorway programme are in their final year of monitoring. As part of the monitoring agreement with National Highways (formerly Highways England), if compliance with the AQO was achieved at receptors adjacent to the scheme for a minimum of three years post scheme completion, the monitoring would cease. Data collected to date indicates that compliance has been achieved each year of monitoring, therefore it is likely that many of these sites will be decommissioned in 2025. Details of this will be presented in ASR 2026.

Air Quality Management Areas (AQMAs)

Air Quality Management Areas (AQMAs) are defined geographical areas where air pollution levels are, or are likely to, exceed national AQOs at relevant locations (where the public may be exposed to harmful air pollution over a period of time e.g. residential homes, schools etc.).

Five AQMAs have been declared within Slough due to breaches of the annual mean concentrations for NO_2 (40µg/m^3). In 2025, GIS data suggested that there are 2,188 residential properties within our AQMAs. Slough Borough Council's AQMAs and their extents are as follows:

AQMA 1: including land adjacent to the M4 along the north bound carriageway (junctions 5-7) and southbound carriageway (junction 5 – Brands Hill) up to a distance of approximately 100m from the central carriageway. As of June 2025, there are 556 residential properties within AQMA 1.

AQMA 2: incorporates A4 London Road east of junction 5 M4, 300m past Sutton Lane along the Colnbrook by-pass and covers the entire gyratory system on the A4 and both sides of the A4 carriageway. A residential development (Rogans) opposite the A4 gyratory is now occupied and is expected to double the number of residential properties exposed in this location. As of June 2025, there are 71 residential properties within AQMA 2.

AQMA 3: incorporates the A355 Tuns Lane from junction 6 of the M4 motorway in a northerly direction to just past its junction with the A4 Bath Road approximately 200m north along A355 Farnham Road, the area is known as the "Three Tuns". As of June 2025, there are 352 residential properties within AQMA 3.

AQMA 4: incorporates the A4 Bath Road from the junction with Ledgers Road/Stoke Poges Lane, in an easterly direction, along Wellington Street, up to the Sussex Place junction. As of June 2025, there are 970 residential properties within AQMA 4.

AQMA 3 Extension: The Council declared the new extended AQMA 3 on 10th May 2018 and formally submitted this to Defra. This is a 360m eastern extension to AQMA 3 on Bath Road. As of June 2025, there are 239 residential properties within AQMA 3 Extension.

There are no schools located within Slough's AQMAs. The playing grounds of Foxborough Primary School just skirts the edge of the AQMA 1 (M4).

National Air Quality Trends

Across the UK, NO_2 pollution has reduced both in the long-term and in recent years. Between 2006 and 2019 inclusive, the annual mean NO_2 concentration at urban background and roadside sites reduced each year by an average of -0.9µg/m^3 and -1.8µg/m^3, respectively. The greatest reduction in NO_2 occurred in 2020 at roadside sites by -8.2µg/m^3 (26%), with urban background sites dropping by -4.5µg/m^3 (23%), due to a reduction in traffic as a result of the pandemic. Concentrations recovered slightly in 2021 at both urban background and roadside sites, followed by a decrease from 2021 to 2022. Concentrations continued to decrease in 2023, with an average annual mean NO_2 concentration at roadside sites of 22.0µg/m^3, and a further decline in 2024 to 20.7µg/m^3.

In regards to PM, PM_{10} pollution has reduced in the long-term despite a period of relative stability between 2015 to 2019, until a notable decrease in 2020 at urban background sites by 12% to 13.2µg/m^3, and roadside sites by 8% to 6.3µg/m^3. There was further decrease (2%) to 13.0µg/m^3 in 2021 at urban background sites and, followed by an increase in concentrations by 8% to 13.9µg/m^3 in 2022. At roadside sites, concentrations in 2022 increased by 6% to 16.9µg/m^3, however concentrations in 2023 fell to 15.3µg/m^3, and further in 2024 to 14.7µg/m^3, representing the lowest concentrations recorded to date. A similar trend was seen in urban background sites, with concentrations in 2023 decreasing to 12.3µg/m^3, and -0.5µg/m^3 further in 2024 to 11.8µg/m^3.

When comparing to national trends of $PM_{2.5}$, urban background concentrations have seen stability between 2015 and 2019, with a notable decrease from 2019 to 2020 from 9.9µg/m^3 to 7.9µg/m^3 (20%). Roadside sites showed a similar pattern, with concentrations progressively dropping from 12.8µg/m^3 in 2009, to 7.7µg/m^3 in 2022, with a marginal decrease in 2024 to 7.5µg/m^3. Urban background sites saw a similar pattern, falling in 2023 to 7.2µg/m^3 (similar to data from Slough Borough Council), and remaining unchanged in 2024.

Air Quality Trends in Slough

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. In the following discussion, increases are indicated by a '+' symbol preceding the concentration, and decreases are indicated by a '-' symbol preceding the concentration.

Nitrogen Dioxide (NO_2)

From 2023 to 2024, diffusion tube NO_2 concentrations have improved by -1.8µg/m^3 on average. All sites have seen an improvement in the last year with the exception of five locations, which have increased marginally (+0.3µg/m^3 on average). The site that has seen the biggest improvement is Ledgers Road (SLO 120) by -4.8µg/m^3, whilst the site with the largest increase in NO_2 is Park Street (SLO 128) by +0.7µg/m^3.

In 2023, the highest concentration was recorded at Yew Tree Road (SLO 29) at 34.6µg/m^3. Whilst this site remains the highest concentration in 2024, the concentration is lower at 32.5µg/m^3. 2024 represents the second year in which there are no exceedances of the AQO, nor are any concentrations within 10% of the AQO.

In regards to the trends observed over the last five years, concentrations of NO_2 have reduced by -4.5μg/m^3 (18%) on average. The smallest reduction in NO_2 is observed at Yew Tree Road (SLO 29) by -1.4μg/m^3, whereas the largest reduction is observed at Brands Hill (SLO 18) by -17.8μg/m^3, relative to data from 2020.

Particulate Matter (PM_{10})

In 2024, concentrations of PM_{10} were recorded at five locations. When comparing with data from 2023, all but one site has seen a reduction in concentrations (-0.4μg/m^3 on average), however the increase is small at +0.2μg/m^3. The reduction in concentrations over the last five years has not been linear, with highest concentrations mostly occurring during 2022. Relative to data from 2020, Brands Hill (SLH 11) has seen the greatest reduction from 25.4μg/m^3 to 20.6μg/m^3, which represents the highest PM_{10} measurement in 2024.
Although all sites have remained far below the AQO over the last five years, two sites continue to be higher than the WHO AQG of 15μg/m^3 (Brands Hill SLH 11 and Windmill SLH 12). Two sites have dropped below the WHO AQG since 2022 however, and data from Spackmans Way (SLH 13) indicates that compliance with the AQG is also met at this site.

Particulate Matter ($PM_{2.5}$)

$PM_{2.5}$ is the pollutant which has the biggest impact on public health and on which the Public Health Outcomes Framework (PHOF) indicator is based. In 2024, $PM_{2.5}$ was monitored at one location in Slough (Osiris at Lakeside 2 (SLH 9)) (a number of Slough operated Osiris units were discontinued after 2019). Concentrations of $PM_{2.5}$ have improved from 2020 to 2024 by -0.5μg/m^3, although this improvement has not been linear, with concentrations peaking in 2022 at 7.6μg/m^3, before falling to 5.0μg/m^3 in 2024.

In the absense of more monitored data, $PM_{2.5}$ concentrations have been calculated based on PM_{10} data. Calculated concentrations of $PM_{2.5}$ in 2020 were highest at Brands Hill (SLH 11) at 17.8μg/m^3, and remain highest in 2024 but at a lower concentration of 14.6μg/m^3. Concentrations at Spackmans Way to date indicates the lowest of the three sites, remaining below 10μg/m^3 over the last four years of available data.
All sites are above the WHO 2021 AQG level and only Spackmans Way (SLH 13) falls below the WHO 2005 AQG level, with Windmill (SLH 12) close to compliance in 2024 at 10.5μg/m^3.

Air Quality Management Area Status Review

A review of the status of AQMAs in Slough has been completed. Defra have clarified that due to the effects of COVID-19 on traffic levels and local pollutant concentrations, monitoring data from 2020 and 2021 should be excluded when a local authority is considering compliant years for AQMA revocation. However, it is advised that 2020 and 2021 datasets can be considered as compliant years with respect to AQMA revocation if compliance was achieved in 2019 or earlier. TG(22) guidance also states "*The revocation of an AQMA should be considered following three consecutive years of compliance with the relevant objective as evidenced through monitoring. Where NO_2 monitoring is completed using diffusion tubes, to account for the inherent uncertainty associated with the monitoring method, it is recommended that revocation of an AQMA should be considered following three consecutive years of annual mean NO_2 concentrations being lower than 36µg/m^3 (i.e. within 10% of the annual mean NO_2 objective)*".

Each AQMA and recently collected data has been reviewed in light of this. In summary:

- **AQMA1: Long Term Compliance – Revoke**

No diffusion tube sites have shown an exceedance of 40µg/m^3 since 2017 and concentrations have been below 36µg/m^3 from 2018 onwards. Continuous monitoring data from sites in Chalvey (originally located within the waste depot and now based on Spackmans Way) last showed exceedance of the AQO in 2016. As such, revocation of this AQMA commenced in 2024 and is due to be concluded in Summer 2025.

- **AQMA2: Approaching Compliance – Retain**

The first year that all sites in AQMA 2 complied with the AQO for NO_2 was 2020. Excluding COVID-19 years of 2020 and 2021, the first year of compliance was 2022, which has been maintained in 2023 and 2024. As the highest concentration recorded in AQMA 2 in 2022 was 36.8µg/m^3 (Wellington Street Triplicate, SLO 63 – 65), it is recommended that one further year of data is collected to allow the Council to have confidence that revocation of AQMA 2 is the correct decision and avoid potential re-declaration in future.

- **AQMA 3 + Extension: Long Term Compliance – Revoke**

With the exclusion of years 2020 and 2021, the first year of compliance was achieved in 2022, with the highest concentration within AQMA 3 being Tuns Lane (SLO 50) at 32.9µg/m^3, and the highest concentration within the AQMA 3 Extension being the Windmill triplicate (SLO 57, SLO 58 and SLO 59) at 28.8µg/m^3. Compliance has been sustained since then, with no sites within 10% of the AQO, the closest being Tuns Lane (SLO 50) at 32.9µg/m^3 in 2022. This is supported by continuous monitoring data recorded at Windmill

(SLH 12) which has showed sustained concentrations below 30µg/m^3. As such, it is recommended that both the AQMA 3 and AQMA 3 Extension are revoked.

- **AQMA 4: Non-Compliant - Retain**

The pandemic brought widespread compliance with the AQO within AQMA 4, with Yew Tree Road (SLO 29) dropping by -14.7µg/m^3 from 2019 to 2020, resulting in all sites falling below 10% of the AQO. Yew Tree Road however recovered after the pandemic by +5.1µg/m^3 (15%) to just under the AQO at 39µg/m^3 in 2021. 2022 saw a further increase to 44.2µg/m^3, however once distance corrected, this falls to 36.6µg/m^3. As this is within 10% of the AQO, 2022 could not be considered a year of compliance. In 2023 and 2024 however, all concentrations within AQMA 4 fell below 10% of the AQO. It is recommended that an additional year of data is collected before revocation of AQMA 4 can be considered.

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.

In the last ASR (2024), the Council reported progress against 46 measures to Defra. In the process of developing the new AQAP, all of the measures previously presented were reviewed and reconsidered.

The identification of measures to be included in the core AQAP underwent a rigorous process. The steps taken are outlined below:

1. Review of all existing plans, policies and strategies which may have an influence on air quality, for inclusion in a long list of potential measures
2. Focused one to one meetings with steering group members to ascertain which of those measures were outdated, or no longer valid or relevant (as some strategies and plans are old and have not been replaced) and to raise any existing measures not currently represented within existing strategies and plans

3. Review of the Air Quality Hub[1] resources, to include measures for consideration that other local authorities are delivering but have not been considered by Slough Borough Council.
4. Application of a matrix / rating system of the measures list in collaboration with steering group members, based on potential for reduction in pollution, technical feasibility of delivery, implementation timeframe, cost and funding. This resulted in a 'viability score' which determined how viable it would be to deliver the measures.
5. Initial measure scoping, to prioritise measures which had the highest rated positive impact on air quality (rated 1). Measures which focused on schools were consolidated, as collectively they have a more significant air quality impact than if delivered individually.
6. Final measure scoping, based on the final viability score, to form the 'core' AQAP measures list.

The final list of measures included within the AQAP is 26 in total. These measures are supported by a short list of measures which is presented in the AQAP appendix. Progress against these 26 measures shall be reported to Defra via the ASR each year from 2025 onwards.

Despite strains on resource as a result of the Council's financial situation (following Section 114 notice issued in July 2021) and knock on impact to officer capacity, a number of schemes are already progressing, including successful rollout of the eScooter scheme, completion of the Foxborough cycle lane scheme, and mobilisation of the local electric vehicle infrastructure scheme.

It is clear that improving air quality requires a multi-disciplinary approach across all Council services and its partners, and across the wider residential and business community. A new Director of Public Health joined Slough Borough Council in April 2024, which has enabled collaborative working and knowledge sharing across environmental disciplines and public health. For example, synergies have been identified in partnership work with the NHS and programme work on decreasing levels of physical inactivity. At the time of writing, an implementation plan to support delivery of the AQAP is being developed, which will outline which departments will be responsible for which measures, and the order in which they

[1] Air Quality Hub

shall be delivered, to ensure a consistent approach to delivery. Details of such shall be presented within ASR 2026.

Conclusions and Priorities

Improvements in air quality were initiated by the pandemic, which brought low concentrations across the borough in 2020 and 2021. Although increases in NO_2 were observed in 2022, this increase was short lived, with approximately 80% of passive monitoring sites in 2023 recording lower concentrations than recorded during the pandemic. This trend has been sustained in 2024, with no reported exceedances of the AQO, nor any sites within 10% of the AQO. For the majority of sites, 2024 represents the lowest concentrations recorded to date, which indicates that Slough Borough Council are on track to achieving its aim of revoking its AQMAs by 2030, and in fact, is likely to achieve this before the anticipated date.

The priority for the forthcoming year will be to ensure this trend is retained, by continuing to collaboratively deliver and implement the measures outlined within this report.

How to get Involved

Slough residents can find out more about air quality by visiting the Councils Webpages[2], which have copies of the AQAPs and maps of the AQMAs.

Slough residents have access to the free app, AirTEXT, which provides air quality alerts and health advice for at-risk groups and the general population[3].

A new AQAP is available on the Council website (see Item 10)[4]. A draft form of the AQAP was consulted upon in April 2024, which provided members of the public the opportunity to raise their views on the measures that Slough Borough Council intended to introduce to help tackle air quality issues in Slough. All feedback that was received had been considered in the development of the AQAP, with a summary of the feedback presented as a supporting report to the AQAP.

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[2] Air quality – Slough Borough Council

[3] airText - Air pollution forecasts

[4] Slough Borough Council - Air Quality Action Plan (2024-2028)

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1. Local Air Quality Management

This report provides an overview of air quality in Slough 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 AQOs 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 Slough Borough Council to improve air quality and any progress that has been made.

The statutory AQOs 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 AQO. After declaration, the authority should prepare an 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 Slough Borough Council can be found in Table 2.1. The table presents a description of the five AQMAs that are currently designated within Slough Borough Council. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The AQO pertinent to the current AQMA designations is the NO_2 annual mean.

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
Slough AQMA 1	Declared 23/06/2005	NO_2 Annual Mean	An area encompassing land adjacent to the M4 motorway along the north carriageway between junctions 5 and 7 and along the south carriageway between junction 5 and Sutton Lane.	YES	44	22.0	7	Air Quality Action Plan (2024-2028)	https://democracy.slough.gov.uk/ieListDocuments.aspx?CId=107&MId=8636&Ver=4 (Item 10)
Slough AQMA 2	Declared 23/06/2005	NO_2 Annual Mean	An area encompassing the A4 London Road east of junction 5 of the M4 motorway as far as Sutton Lane	NO	62	26.5	3	Air Quality Action Plan (2024-2028)	https://democracy.slough.gov.uk/ieListDocuments.aspx?CId=107&MId=8636&Ver=4 (Item 10)
Slough AQMA 3	Declared 24/01/2011	NO_2 Annual Mean	The Designated Area incorporates the A355 Tuns Lane from junction 6 of the M4 motorway in a northerly direction to just past its junction with the A4 Bath Road and A355 Farnham Road, known as the Three Tuns.	NO	51	25.1	3	Air Quality Action Plan (2024-2028)	https://democracy.slough.gov.uk/ieListDocuments.aspx?CId=107&MId=8636&Ver=4 (Item 10)

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
Slough AQMA 4	Declared 24/01/2011	NO_2 Annual Mean	The Designated Area incorporates the A4 Bath Road from the junction with Ledgers Road/Stoke Poges Lane, in an easterly direction, along Wellington Street, up to Sussex Place junction.	NO	63	32.5	1	Air Quality Action Plan (2024-2028)	https://democracy.slough.gov.uk/ieListDocuments.aspx?CId=107&MId=8636&Ver=4 (Item 10)
Slough AQMA Extended 3	Declared 10/05/2018	NO_2 Annual Mean	The designated area incorporates a stretch of road between Tuns Lane Junction known as the "Three Tuns" and 30 Bath Road and also includes Quadrivium Point.	NO	42	22.7	2	Air Quality Action Plan (2024-2028)	https://democracy.slough.gov.uk/ieListDocuments.aspx?CId=107&MId=8636&Ver=4 (Item 10)

☒ **Slough Borough Council confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **Slough Borough Council confirm that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in Slough

Defra's appraisal of last year's ASR was widely positive. Defra's feedback has been included below:

1. The Council has stated its intention on revoking one of its AQMAs. There is clear discussion explain how the other AQMA's are not yet compliant and should remain in place. This is commended.
2. The Council has included extensive information on $PM_{2.5}$ in the borough and provided detailed discussion of trends and comparisons with the PHOF D01 indicator. Several measures the council are taking forward to address $PM_{2.5}$ were also listed. This level of detailed is welcomed.
3. The Council has robust QAQC procedures and clear justification for calculations has been included.
4. Clear maps showing AQMA boundaries and monitoring locations are included, which is commended.
5. There is an error in the title of section 2.2.1 in the ASR 2024. This should be changed before the submission of the ASR.
6. The Council provide a detailed analysis of air pollution concentration trends, which are presented and discussed clearly and extensively. The inclusion of Table A.4.1 is very useful in showing trends in monitoring data.
7. It is recognised that despite funding and capacity issues the council have remained focused on improving air quality in the borough and progressing measures. This is good to see.

As such, no changes to the ASR 2023 were required prior to publication.

2.2.1 Challenges in 2024

Slough Health Challenges

Slough's population in the 2021 Census was approximately 158,500. This is an increase of 13.0% from 2011, compared to increases of 7.5% in the South East and 6.6% in England (Census 2021 and 2011) and is the largest population growth relative to other neighbouring authorities. Slough is the third most densely populated local authority in the South East (following Portsmouth and Southampton), and the fifth most densely populated local authority outside of London, with 4,871 usual residents per square kilometre (48.7 per hectare compared to 45.8 in 2011, South East: 4.87, England: 4.34) (Census 2021 and 2011). Slough has high levels of overcrowding and the largest average household size in England of three people per household (2.4 in England and Wales).

In terms of age distribution, Slough's average age is 34, compared to 41 for the South East and 40 for England. This is primarily driven by a high proportion of Slough's residents being aged 0-15 years old (25%), making Slough have the second largest proportion of children aged 15 or under in England and Wales, second to Barking and Dagenham (26.1%).

Slough has a diverse ethnic background. 56% of Slough's population were born in the UK, whilst 24.3% were born in the Middle East and Asia, and 12.0% were born in the EU. 46.7% of Slough's population are from Asian ethnic groups and 36.0% are from White ethnic groups.

Slough is more deprived than the England average of the 2019 Index of Multiple Deprivation (IMD), with 57.7% deprived in one or more dimensions. 71% of Slough's Lower-tier Super Output Areas (LSOAs) fall below the national average of the IMD in 2021. Slough has a number of wards with high deprivation, with Chalvey considered one of the most deprived areas in the borough, and particularly severe areas of deprivation exist in Britwell, Herschel Park, Elliman, Wexham Court and Colnbrook with Poyle wards.

Slough also has high rates of physical inactivity. Being 'physically active' is defined as undertaking a minimum of 150 moderate intensity equivalent minutes (2.5 hours) of physical activity per week, or 75 minutes of vigorous physical activity per week or an equivalent combination of the two, in bouts of 10 minutes or more in the previous 28 days. Data on this metric is obtained from the Active Lives Adult survey[5], conducted annually by Sport England. The percentage of physically active adults in Slough is 51.6%, which is the lowest out of all England authorities (the next lowest after Slough is Blackburn with Darwen at 53.7%) and the average for the South (70.5%).

Life expectancy in Slough is lower than the average for the rest of the South East and cardiovascular disease, obesity and diabetes are high. Slough also has high-rates of preventable ill health amongst children including obesity, tooth decay and higher levels of hospital admissions for long-term conditions such as asthma.

As a result, life expectancy for both men and women in Slough is below the England average.

[5] Active Lives | Sport England

There are inequalities in health, primarily between different areas of the borough and between different groups. In the context of air quality specifically, different groups can be disproportionately affected by exposure to pollutants:

- Children are particularly susceptible to poor air quality, as their lungs are underdeveloped, and they inhale more air per body weight than adults.
- Elderly people are also susceptible, as poor air quality can contribute towards an accelerated decline in lung function and increase risk of developing heart diseases.
- During a woman's pregnancy, exposure to poor air quality increases the risk of term low birth weight and there is a growing evidence base between prenatal, early-life and childhood exposure to particulate matter and lung function during childhood.
- People in lower socio-economic groups are more likely to have existing health conditions that can be exacerbated by poor air quality, and are more likely to live in an area with high deprivation, and high traffic and industrial activity due to affordability.

Air pollution can have a significant impact on an individual's health throughout their life, starting from before birth, into adulthood and in later stages of life. There is clear evidence that exposure to poor air quality can initiate and contribute towards the development of cardiovascular and respiratory diseases, including lung cancer. In children, exposure to poor air quality can result in slower development of lung functions, asthma and initiate atherosclerosis. In adulthood, these conditions can worsen, leading to coronary heart disease, chronic obstructive pulmonary disease and diabetes. Health impacts to elderly people can include issues with heart function including heart failure, heart attacks and strokes. $PM_{2.5}$ specifically can directly cross the olfactory nerve and cause damage to the blood-brain barrier, affecting cognitive performance and increasing the risk of developing dementia.[6]

In 2020, the first person in the world had air pollution listed as a cause of death on their death certificate and was a high profile case in air quality management. Matters of concern raised in the coroner's report[7] include existing concentrations of particulate matter being much higher than recommended WHO standards, which if reduced, would reduce the number of deaths from air pollution in the UK; low awareness of sources of information to allow individuals to reduce their personal exposure to poor air quality; and insufficient

[6] Chief Medical Officer's Annual Report 2022 (publishing.service.gov.uk)

[7] Ella Kissi-Debrah - Courts and Tribunals Judiciary

communication of the adverse effects of air pollution on health by medical and nursing professionals.

Transport Challenges

Slough's strategic location in proximity to London and Heathrow, and the number of headquarters located in Slough, makes it an attractive employment location, however due to low skilled workers being based on Slough, this results in a high proportion of workers commuting to Slough from elsewhere. This contributes towards high levels of congestion and worsens air quality for Slough's residents.

Slough is also well connected via the Strategic Road Network (SRN), therefore the mode of choice for those travelling to and from Slough is more likely to be by private vehicle. High costs, accessibility issues and poor reliability associated with public transport discourages its use in favour of private vehicle use, which is typically seen as a more affordable and convenient travel option.

Attitudes and Perception Challenges

In addition to the challenges outlined in this section, there are certain behaviours and attitudes that are prominent in Slough that contribute towards a worsening of air quality and subsequently poor health. A review of previous consultations undertaken regarding health, transport etc. in conjunction with the AQAP consultation undertaken in April 2024, has identified the following:

Vehicle use and ownership

- Residents support having a high quantity of private vehicles in Slough and public transport schemes have received little public support (Slough 2040 Vision Engagement Survey, 2020)
- Slough has a high proportion of households with one or more vehicles relative to its population density (79.7%) when compared with other high density areas including Reading (71.6%), Portsmouth (69.7%) and Southampton (72.6%). Likewise Slough has a lower proportion of households without access to a car or van (20.3%), compared to Reading (28.4%), Portsmouth (30.3%) and Southampton (27.4%) (ONS, 2021).
- Of respondents who engaged in the A4 cycle lane scheme consultation, 87% use private car to travel on the A4 compared to 14.7% by bus, for trips to shops (79.3%), social / leisure activities (58.7%) and work (54.3%). 71% of respondents said that the

scheme would not encourage them to change to a different mode of travel (A4 Cycle Scheme Consultation, 2023).

- For school travel from 2018/19 to 2022/23, car sharing was the second most popular usual mode choice until 2021/22, when this was overtaken by the single child car mode. Single child car mode remains the second most popular usual mode choice, peaking at 38% in 2022/23 (Hands Up Survey, 2018-2023)
- Of residents who travel to work, the majority (71%) travel in a car or van, and often travel using this mode for short journeys under 10km (68%) (ONS, 2021).

Understanding and awareness

- There is a lack of understanding and awareness of the resources available to residents on healthy choices and how to access them, and the subsequent impact of behaviours on health, due to a lack of information promotion and engagement (Healthy Behaviours Survey, 2022).
- In regards to awareness of air quality information, 62% of Slough respondents in the Thinks report (2023) were not aware of Heathrow’s Airwatch website and of that 62%, 44% voted that they would not be likely to visit it.
- Within schools, a strong link between sustainable travel and health is not apparent, with some schools not actively promoting active travel and others only participating in initiatives for one week of the year. The link between active travel and air quality was only apparent to one participating school in the School Engagement Survey (2024).
- In schools, 3 out of 9 who engaged in the school engagement survey said that they would not like to be kept informed of air quality trends and data, whilst 2 said that they would not like to be kept informed of active travel projects. Barriers to a lack of involvement in active travel initiatives include lack of resources and capacity, poor communication, and negative perceptions of active travel.
- Out of possible air pollutant sources, fireplaces (i.e. solid fuel burning) was not seen as a significant contributor towards poor air quality (selected by 2% of participants), which suggests much more engagement is needed to raise awareness of the dangers of wood burning (Thinks Report, 2023).

However, this engagement has also highlighted the following positive outcomes:

- Improving children's health is an important value for schools in Slough (School Engagement survey, 2024) and children are motivated to travel sustainably (Hands Up Survey, 2018-2022).
- When asked about contributors to poor air quality, the majority of respondents (52%) voted that vehicle traffic contributes towards poor air quality, which suggests that Slough residents have a good understanding that road traffic is the dominant pollutant source in the borough.
- Slough residents have concerns about their weight (67.3%) and activity levels (65.8%), with a willingness to get active (77.8%), suggesting that there is appetite for active travel related schemes and projects (Healthy Behaviours Survey, 2022).
- Residents voted that cheaper sustainable travel (e.g. discounted public transport), wider public transport links and better public transport infrastructure (70% in total) would encourage them to travel more sustainably (Thinks Report, 2023).
- The community would like to be more involved in community engagement activities, with 72% agreeing, and suggested useful engagement ideas including community meetings, newsletters and surveys, showing an interest in involvement (Thinks Report, 2023).

2.2.2 Progress against Measures in 2024

Slough Borough 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 planned are set out in Table 2.2. In total, 26 measures are included within Table 2.2, with the type of measure and the progress Slough Borough 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. These measures are fully detailed within the Slough AQAP (2024-2028). Please note, the measures presented in Table 2.2 form the core measures of the action plan which scored highest for positive air quality impact, and are further supported by smaller scale measures which are outlined within the Appendix C of the AQAP. The measure number shown in Table 2.2 is followed by a reference code, which links with the measures listed in Section 5.2 of the AQAP.

Key completed measures are:

- Approval of the Slough AQAP (2024-2028) was given by the Council Licensing Committee on 30th October 2024, and subsequently approved by Full Council on 28th November 2024. Following amendments, the AQAP was submitted to Defra on 3rd December 2024 and has been approved.
- Implementation of Slough eScooter hire scheme commenced in December 2024. Scooters started rolling out on 9th December (120 scooters), and additional sites were being identified to provide an additional 60 scooters. The Council has permission to implement up to 300 eScooters, however a demand based, phased approach is being taken to avoid overwhelming the network.
- The Foxborough Cycle Lane between Langley High Street and Junction 5 Footbridge was completed in Summer 2024. This segment is part of the A4 East / West Spine, a key route that provides a direct path from the western to the eastern boundary of the borough which was identified within the Slough Local Walking and Cycling Infrastructure Strategy[8] (LCWIP) as high priority. The Foxborough Cycle Lane section provides a safe, high quality and fully segregated route to encourage sustainable travel.

Slough Borough Council worked to implement these measures in partnership with Council officers and members during 2024.

Slough Borough Council expects the following measures to be completed over the course of the next reporting year:

- Continued roll out of eScooters, to be added in a future stage after evaluation of market and demand. This will be followed by eBikes, which will require a full procurement exercise for implementation, however due to staff limitations, eScooters were prioritised.
- Initiation of the contract with a charge point operator for the delivery of the Local Electric Vehicle Infrastructure (LEVI) scheme, to support the growth of electric vehicles (EVs) in the borough.
- As part of the Electric Vehicle Charging Infrastructure Strategy[9], work is commencing on setting up a residential EV charging trial, focusing on gully charging. This allows

[8] Local Cycling and Walking Infrastructure Plan

[9] Microsoft Word - SBC Electric Vehicle Charging Infrastructure Strategy 2023_Draft 5

residents to charge at home and further supports EV uptake in Slough (listed as a priority within Slough's EVCI Strategy).

- Mobilisation of the Warm Homes Local Grant (WHLG) scheme is currently underway, with the scheme expecting to start in Spring 2026. This scheme will help to reduce emissions from residential dwellings and therefore assist in reducing background concentrations of air pollutants.
- An update to the Slough LES is currently being prepared, which will bring tighter controls in regards to new developments. This is intended to be complete by December 2025.
- Currently the Council is in receipt of S106 funding to support the development of the Slough car club scheme, however due to resource constraints, developing the programme has been delayed. Developing the business case for the implementation of the Slough Car Club scheme is however due to commence in 2025.
- In December 2024, a consultation was launched for the Poyle Road experimental bus gate, which includes a width restriction to stop HGVs travelling north towards Bath Road. Public views are currently being taken on board to revise the scheme.
- The rollout of school streets is in progress. Currently there is one at Holy Family, and another in Penn Wood. Enforcement challenges are currently being resolved to allow automatic number plate recognition (ANPR) monitoring at further locations.

Slough Borough Council's priorities for the coming year are establish greater links between council departments, such as public health, transport and planning, to deliver measures outlined within Table 2.2. Air quality measures are interlinked with many operations within the council, for example, any measures that involve active travel have the primary impact of increasing walking and cycle numbers, however this also results in reduced vehicle use and improved physical activity.

The principal challenges and barriers to implementation that Slough Borough Council anticipates facing relates to the Council's financial position, which has caused delay to projects across the Council, pressure on services and a reduction in staff. This has also had an impact on the pace in which measures are being delivered.

In July 2021, the Council's S151 officer issued a Notice under Section 114 of the Local Government Finance Act (1988), that available resources are unlikely to meet planned budgetary demands in the financial year 2021/22. The council has since remained in an 'intervention' phase, and as a consequence, officer resource and capacity has significantly reduced, with an environmental officer remaining in a seconded role to support another service since 2022, which has contributed towards a delay to projects shown in Table 2.2. In addition, a number of roles which support the delivery of these projects have become vacant (lead transport roles) and a senior level restructure is currently in progress. On balance however, new roles are being developed and recruited for within other council departments (e.g. Public Health) which may support the delivery of the AQAP measures. As such, it is expected that projects listed in Table 2.2 will still progress however this will be more certain once the restructure has concluded.

In addition to the financial situation, delays have also been experienced due to other factors. The measures that are delayed include:

- Cycle scheme from Burnham Station to A4 via Station Road - objections had been received from local residents which are being reviewed and used to revise the scheme. Delivery is anticipated to commence in Summer 2025.
- Delay to Destination Farnham Road and A4 cycle highway schemes due to complex procurement processes.

Slough Borough Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in all of Slough's AQMAs.

In AQMA 1, the majority of emissions originate from the M4 which is managed by National Highways. In 2018, National Highways introduced the M4 Smart Motorway scheme (completed December 2021), and commissioned diffusion tube monitoring to evaluate the success of the scheme. Evidence from this network and Slough Borough Council's monitoring data suggests that air quality in the vicinity of the motorway has continually improved and the Smart Motorway scheme may have contributed towards this. It should be noted however that this cannot be concluded for definite as there are a multitude of factors that can result in air quality improvements, although there is sufficient evidence to suggest that the scheme is not worsening air quality at nearby receptors. As such, AQMA 1 will be revoked by Summer 2025.

A new road layout within AQMA 2 was designed and implemented in 2022/23. Despite high volumes of HGVs travelling via Brands Hill and expected increases in traffic as a result of major infrastructure projects in the area, monitoring results suggest that concentrations of NO_2 have greatly reduced since the scheme's introduction, particularly at Brands Hill (A) (SLO 18). Data collected in 2024 suggests that this scheme has continued to improve air quality close to receptors in the area.

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
1 (EM7)	Creation of a strategic Slough public charge point network (residential)	Promoting low emission transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2024	2027	Carbon & Sustainability Team, commercial delivery partner	Local Electric Vehicle Infrastructure (LEVI) fund	Funded	£1m-£10m	Planning	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61μg/m^3 PM_{10}: 0.19μg/m^3 $PM_{2.5}$: 0.12μg/m^3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Number of charging points installed, number of charges per charging point	Strategy currently in development, due to be published April 2024. Procurement of delivery partner in progress.	Delays have resulted from an ongoing tender process, with delivery partner likely to be procured late 2025
2 (TM6)	Introduce segregated A4 cycle highway (including provision of cycle docking)	Transport Planning and Infrastructure	Cycle network	2024	2026	Sustainable Transport and Transport Planning teams	Active Travel England	Funded	>£10m	Implementation	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61μg/m^3 PM_{10}: 0.19μg/m^3 $PM_{2.5}$: 0.12μg/m^3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Number of cyclists, number of accidents	Consultation complete in September 2023, planning phase underway. Due to commence Summer 2025.	Delays due to resource constraints
3 (TM1)	Implement Slough Electric Cycle and Scooter Infrastructure and Hire programme	Transport Planning and Infrastructure	Public cycle hire scheme	2024	Ongoing	Sustainable Transport and Transport Planning and commercial partner	Commercially led	Not Funded	£1m-£10m	Implementation	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61μg/m^3 PM_{10}: 0.19μg/m^3 $PM_{2.5}$: 0.12μg/m^3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Number of hire events and distance travelled	In progress. Secured delivery partner (Voi)	Delivery will be phased, starting with train stations, and look to expand following evaluation
4 (EM3)	Set minimum emission standards for all major contracts	Promoting low emission transport	Company vehicle procurement - prioritising uptake of low emission vehicles	2025	Ongoing	Carbon & Sustainability Team	General fund	Funded	<£10k	Planning	Reduced concentrations from HGVs and LGVs. Measures contribute to 0.5μg/m^3 reduction in NO_2 (see AQAP 2024-2028)	Number of contractor vehicles with improved emissions	Implemented for repairs and maintenance contracts for Housing and operational buildings, but not yet implemented for council owned fleet	Requirement of LES. For Council operations, barriers include cost of low emission vehicles, and operability barriers (e.g. for RCVs, EVs tested and consulted other local authorities, range is lower, therefore raises risk to service delivery). Contracts with third parties more likely to be feasible.
5 (EM6)	Update to the Slough Low Emission Strategy	Policy guidance and development control	Low Emissions Strategy	2025	2025	Carbon & Sustainability Team	General fund	Funded	<£10k	Implementation	Reduced concentrations from HGVs and LGVs. Measures contributes to 0.5μg/m^3 reduction in NO_2 (see AQAP 2024-2028)	Number of new developments with strengthened mitigation	In progress. Research piece has been initiated to inform new standards	Potential conflicts with Planning regarding development viability, otherwise none
6 (EM8)	Implement EV (rapid and fast) off-street and car park programme	Promoting low emission transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2024	2027	Carbon & Sustainability Team, commercial delivery partner	Local Electric Vehicle Infrastructure (LEVI) fund	Partially Funded	£1m-£10m	Planning	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61μg/m^3 PM_{10}: 0.19μg/m^3 $PM_{2.5}$: 0.12μg/m^3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Number of charging points installed, number of charges per charging point	Strategy developed. Scheme will follow resident charge point network project	No expected barriers

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
7 (EM9)	Implement EV (rapid and fast) on-street programme	Promoting low emission transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2024	2027	Carbon & Sustainability Team, commercial delivery partner	Local Electric Vehicle Infrastructure (LEVI) fund	Funded	£1m-£10m	Planning	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61µg/m^3 PM_{10}: 0.19µg/m^3 $PM_{2.5}$: 0.12µg/m^3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Number of charging points installed, number of charges per charging point	Strategy developed. Scheme will follow resident charge point network project	No expected barriers
8 (EM10)	Develop and implement an electric car club across the borough	Alternatives to private vehicle use	Car clubs	2025	2026	Carbon & Sustainability Team, commercial delivery partner	Section 106	Funded	£500k-£1m	Planning	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61µg/m^3 PM_{10}: 0.19µg/m^3 $PM_{2.5}$: 0.12µg/m3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Number of journeys undertaken by car club vehicle	Officer for programme delivery in place, due to be developed after EV Strategy.	Barriers may include location availability, development conflicts
9 (EM11)	Deliver Defra funded taxi demo project	Promoting low emission transport	Taxi emission incentives	2024	2026	Carbon & Sustainability Team, Taxi Licensing Team, taxi trade	Defra	Funded	£100k-£500k	Planning	Reduced emissions from taxis. Measure contributes to the following pollutant reductions: NO_2: 2.61µg/m^3 PM_{10}: 0.21µg/m^3 $PM_{2.5}$: 0.18µg/m^3 CO_2: 143 Kt (18.7%) (see AQAP 2024-2028)	Number of electric vehicle taxi registrations	No progress to date. Intending to recommence project planning in 2025	Significant resource constraints to deliver. Potential barrier may be low interest / uptake due to perceived costs of electric vehicles
10 (EM12)	Install a network of rapid charging facilities to support plug-in taxis	Promoting low emission transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2025	2027	Carbon & Sustainability Team, commercial delivery partner	Office for Zero Emission Vehicles (OZEV), Section 106	Funded	£1m-£10m	Planning	Reduced emissions from taxis. Measure contributes to the following pollutant reductions: NO_2: 2.61µg/m^3 PM_{10}: 0.21µg/m^3 $PM_{2.5}$: 0.18µg/m^3 CO_2: 143 Kt (18.7%) (see AQAP 2024-2028)	Number of charging points installed, number of charges per charging point	Not started but has been included in Slough EVCI Strategy and will be delivered by delivery partner	Delay to securing delivery partner due to ongoing procurement exercise
11 (EM14)	Support delivery of government funded retrofit projects (e.g. HUG2)	Policy guidance and development control	Other	2024	2025	Carbon & Sustainability, Community Engagement and Housing Teams, GSENZH, Agility ECO	Department for Energy Security and Net Zero (DESNZ)	Funded	£500k-£1m	Implementation	Reduced emissions from buildings due to better heat retention (not modelled)	Number of referrals made and installs completed	Mobilisation of the WHLG scheme is in progress, with an aim to commence delivery in Spring 2026	Resource constraints, however funding support options are available and are being explored
12 (EM15)	Support implementation of District Heating plans	Promoting low emission plant	Other	2024	2028	Development Management, Planning Policy and Carbon & Sustainability teams, developers, commercial delivery partner	Commercially led	Not Funded	£1m-£10m	Planning	Reduced emissions from buildings as removes need for gas boilers (not modelled)	Developer engagement, business cases produced	Proposals being developed, will need developer support to implement	Options being explored to link in with data centres, although at very early stage currently
13 (EM19)	Re-introduce minimum emission standards for taxis	Promoting low emission transport	Taxi licensing conditions	2026	2027	Carbon & Sustainability and Taxi Licensing teams, taxi trade	General fund	Not Funded	£10k-£50k	Planning	Reduced emissions from taxis. Measure contributes to the following pollutant reductions: NO_2: 2.61µg/m^3	Number of low emission taxi registrations	No progress to date. Re-introduction will be considered after successful delivery	Without further schemes coming forward first, it is unlikely that this will be supported –

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
											PM_{10}: 0.21μg/m^3 $PM_{2.5}$: 0.18μg/m^3 CO_2: 143 Kt (18.7%) (see AQAP 2024-2028)		of Defra funded taxi project	must be delivered in correct order for maximum support
14 (TM4)	Cycle scheme from Burnham Station to A4 via Station Road	Transport Planning and Infrastructure	Cycle network	2025	2025	Sustainable Transport and Transport Planning teams	Active Travel England	Funded	£1m-£10m	Implementation	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61μg/m^3 PM_{10}: 0.19μg/m^3 $PM_{2.5}$: 0.12μg/m^3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Number of cyclists	Scheme is being revised following consultation feedback from residents	Includes full segregated cycle lane and traffic signals for cyclists
15 (TM5)	Foxborough Cycle Lane between Langley High Street and Junction 5 Footbridge	Transport Planning and Infrastructure	Cycle network	2024	2024	Sustainable Transport and Transport Planning teams	Berkshire Local Transport Body	Funded	£1m-£10m	Completed	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61μg/m^3 PM_{10}: 0.19μg/m^3 $PM_{2.5}$: 0.12μg/m^3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Number of cyclists	Completed Summer 2024	No expected barriers
16 (TM7)	Implement Destination Farnham Road scheme	Promoting travel alternatives	Intensive active travel campaign & infrastructure	2024	2026	Sustainable Transport and Transport Planning teams	Department for Levelling Up, Housing and Communities	Funded	>£10m	Implementation	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61μg/m^3 PM_{10}: 0.19μg/m^3 $PM_{2.5}$: 0.12μg/m^3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Number of cyclists	Cabinet report complete in 2024, due for delivery in 2025.	Consultation concluded Feb 2024 - over 400 responses received. Changes following consultation currently being considered.
17 (TM9)	Review parking controls and policies in regards to new developments	Policy guidance and development control	Other policy	2024	2025	Parking team	General fund	Funded	<£10k	Planning	Reduces number of vehicles, may assist in modal shift (measure not modelled specifically)	Number of parking spaces, PCNs for parking enforcement	Not started	Potential barrier may be capacity issues with parking, conflicts between need to reduce parking and issues with pavement parking due to lack of provision
18 (TM10)	Investigate the feasibility of introducing anti-idling controls in hotspot areas	Traffic management	Anti-idling enforcement	2025	2026	Parking team	General fund	Not Funded	£50k-£100k	Planning	Reduces emissions from idling vehicles, may be particularly effective at taxi ranks and schools (measure not modelled specifically)	Discussions held with relevant stakeholders; decision made on measure implementation	Not started	Local authorities outside of London have limited enforcement powers, so may be difficult to enforce
19 (TM11)	Investigate the feasibility of implementing charging or banding levels for car parking, parking permits (residents, businesses etc) and season tickets based	Traffic management	Emission based parking or permit charges	2025	2026	Parking team	General fund	Not Funded	<£10k	Planning	Reduces emissions from private vehicles (not modelled)	Discussions held with relevant stakeholders; decision made on measure implementation	Not started	Currently being considered by the Parking team

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
	on CO_2 emissions from vehicles													
20 (TM15)	Explore use of traffic calming measures within Air Quality Management Areas	Traffic management	Reduction of speed limits, 20mph zones / other	2024	2028	Carbon & Sustainability, Transport Planning teams	Not currently funded. Requires grant support	Not Funded	£10k-£50k	Planning	Reduces emissions from vehicles travelling on major roads (not modelled specifically)	Measured impact on NO_2 concentrations	Some traffic calming (speed reduction) is being introduced on the A4 as part of Safer A4 scheme. Exploration of traffic calming measures for other AQMAs not started	Some AQMAS (AQMA 3 for example) already have 30mph speed limit imposed, so limited options to reduce further. Enforcement challenges exist
21 (HEA1a)	Redevelop and relaunch Smarter Travel Programme	Promoting travel alternatives	Other	2025	2025	Carbon & Sustainability, Transport, Sustainable Transport and Public Health teams	Active Travel England, General fund	Funded	£10k-£50k	Planning	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61µg/m^3 PM_{10}: 0.19µg/m^3 $PM_{2.5}$: 0.12µg/m^3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Number of participants	Not started	Programme existed under the Access Fund / Capability Fund, however lack of officer resource has affected delivery. Partnership working across departments has been initiated to support this programme
22 (HEA1b)	Develop travel plan toolkit for businesses, schools, healthcare establishments and local communities	Promoting travel alternatives	Personalised travel planning	2025	2025	Carbon & Sustainability, Transport, Sustainable Transport and Public Health teams	Active Travel England, General fund	Funded	£10k-£50k	Planning	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61µg/m^3 PM_{10}: 0.19µg/m^3 $PM_{2.5}$: 0.12µg/m^3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Number of website hits, number of plans developed	Not started	Potential barrier may be capacity issues - will be addressed by joint steering group
23 (HEA1c)	Launch a road safety education and training programme for businesses, schools, healthcare establishments and local communities	Promoting travel alternatives	Other	2025	Ongoing	Carbon & Sustainability, Transport, Sustainable Transport and Public Health teams	Active Travel England, General fund	Funded	£10k-£50k	Planning	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61µg/m^3 PM_{10}: 0.19µg/m^3 $PM_{2.5}$: 0.12µg/m^3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Number of participants, number of cyclists on main cycle routes	Not started	Potential barrier may be capacity issues - will be addressed by joint steering group
24 (HEA1d)	Develop an events delivery plan for businesses, schools, healthcare and communities	Promoting travel alternatives	Other	2025	Ongoing	Carbon & Sustainability, Transport, Sustainable Transport and Public Health teams	Active Travel England, General fund	Funded	<£10k	Planning	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61µg/m^3 PM_{10}: 0.19µg/m^3 $PM_{2.5}$: 0.12µg/m^3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Number of participants engaging and taking part in events	Not started	No barriers expected as measure focuses on partnership working
25 (HEA1e)	Establish a school partnership to increase physical activity through active travel initiatives and raising air quality	Promoting travel alternatives	Other	2025	Ongoing	Carbon & Sustainability, Transport, Sustainable Transport and Public Health	Active Travel England, General fund	Funded	<£10k	Planning	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61µg/m^3 PM_{10}: 0.19µg/m^3 $PM_{2.5}$: 0.12µg/m^3	Number of participants in school active travel initiatives	Not started	Potential barrier may be capacity issues, and lack of school interest

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
	awareness through the school system					teams and schools					CO_2: 102 kt (12.6%) (see AQAP 2024-2028)			
26 (HEA1f)	Deliver a campaign focusing on roadside emissions including emission and exposure reduction solutions	Promoting travel alternatives	Intensive active travel campaign & infrastructure	2025	2026	Carbon & Sustainability, Transport, Sustainable Transport and Public Health teams and schools	Active Travel England, General fund	Not Funded	<£10k	Planning	Reduced emissions from private vehicles. Measure contributes to following pollutant reductions: NO_2: 1.61µg/m^3 PM_{10}: 0.19µg/m^3 $PM_{2.5}$: 0.12µg/m^3 CO_2: 102 kt (12.6%) (see AQAP 2024-2028)	Hands up survey monitoring travel mode change	Not started	Delivery is dependent on funding availability

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[10], 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 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

2.3.1 Public Health Data

Work carried out by Public Health England as part of the Public Health Outcomes Framework (PHOF) shows that the fraction of mortality associated with particulate air pollution in 2023 within Slough is 5.8% (1.3% lower than 2022).

The fraction of mortality has been calculated using two different methodologies. From 2010 to 2019, concentrations of anthropogenic, rather than total $PM_{2.5}$, were used as the basis for the indicator, as there was concern that burden estimates based on total $PM_{2.5}$ may give a misleading impression of the scale of the potential influence of policy interventions (COMEAP, 2012). The methodology applied to data from 2018 onwards considers concentrations of total $PM_{2.5}$ in estimating the mortality burden attributable to particulate air pollution (COMEAP, 2022). In both cases, the background annual average $PM_{2.5}$ concentrations for the year are modelled on a 1km x 1km grid using an air dispersion model, and calibrated using measured concentrations taken from background sites in Defra's Automatic Urban and Rural Network[11]. By approximating local authority boundaries to the 1km by 1km grid, and using census population data, population weighted background $PM_{2.5}$ concentrations for each lower tier local authority have been calculated.

Figure 2.1 shows the fraction of mortality attributable to particulate air pollution calculated for Slough from 2018 to 2023, compared with the South East and England averages.

The mortality fraction attributable to particulate matter is consistently higher in Slough when compared to the South East and England averages. Overall there has been a

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

[11] Interactive monitoring networks map - Defra, UK

continuous downward trend in mortality attributable to particulate matter up until 2022, where there was an increase across the dataset, however the increase was smaller in the South East and England averages (0.3%) when compared to Slough (0.8%). In 2018, the fraction of mortality attributable to particulate matter in Slough was 1.2% and 1.8% higher than the South East and England, respectively. This gap has progressively narrowed (with the exception of 2022), with the gap between the Slough and England rates sitting at 0.6% in 2023.

Figure 2.1 - Fraction of Mortality Attributable to Particulate Air Pollution for Slough (2018-2023)

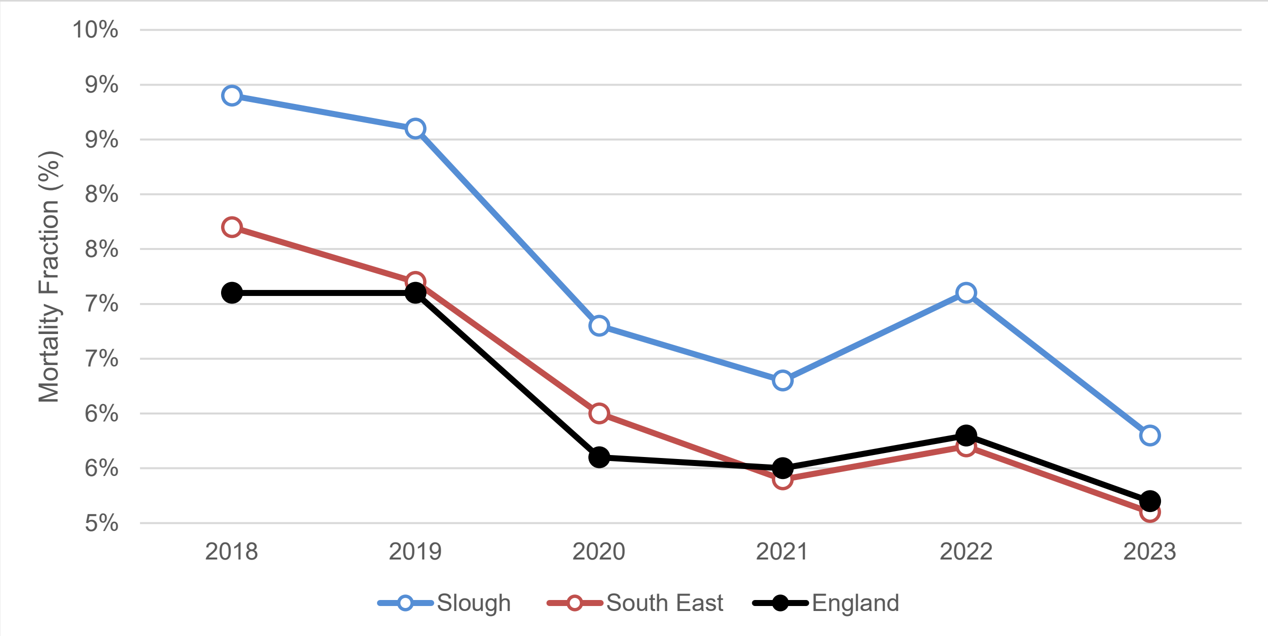
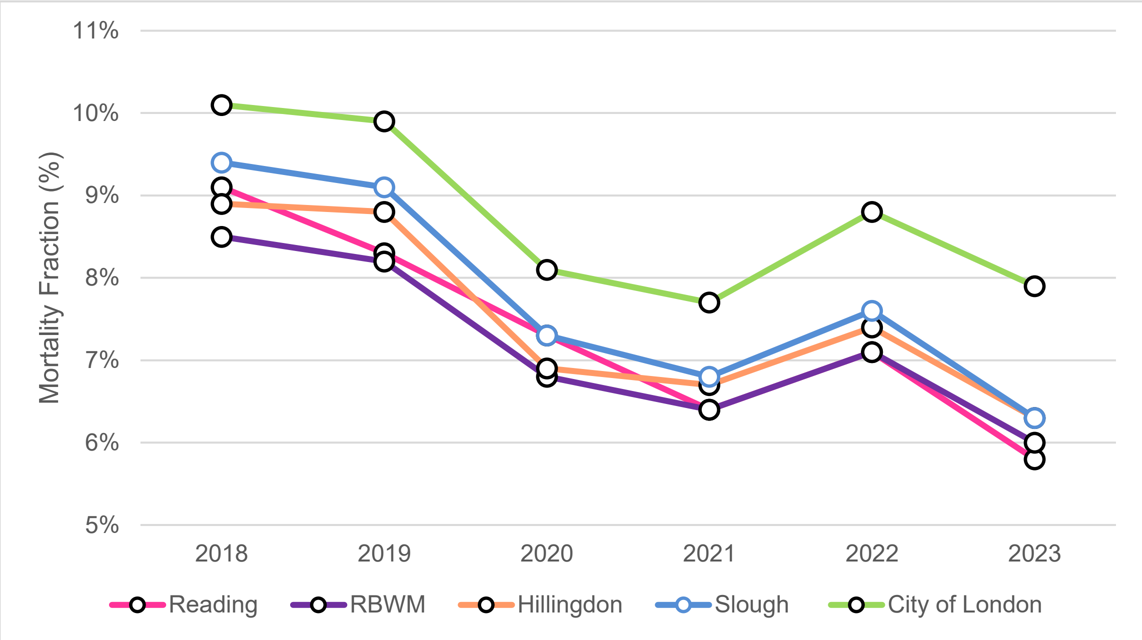


Figure 2.2 below shows Slough mortality rates due to particulate pollution compared with other nearby districts and unitary authorities. These areas all show a similar trend and concentrations to Slough. Similarly to Figure 2.1, all sites have been progressively declining until 2022 which showed an increase, before dropping again in 2023. For all sites excluding the City of London, 2023 represents the lowest value in the series.

Figure 2.2 - Fraction of Mortality Attributable to Particulate Air Pollution for Slough and Nearby Districts / Unitary Authorities (2018-2023)



2.3.2 Mapped Data

Figure 2.3 shows a map of $PM_{2.5}$ concentrations obtained from the UK Emissions Interactive Map[12], based on data from the 2022 UK National Atmospheric Emissions Inventory (NAEI). The NAEI compiles emissions for several individual sectors, producing detailed estimates of emissions across the UK. For each sector, a national total estimate is produced from a combination of emissions defined by reported activity data and emission estimates based on modelling[13].

[12] UK Emissions Interactive Map

[13] UK Spatial Emissions Methodology for NAEI 2022

Figure 2.3 – Emissions Map Data for $PM_{2.5}$ in 2022

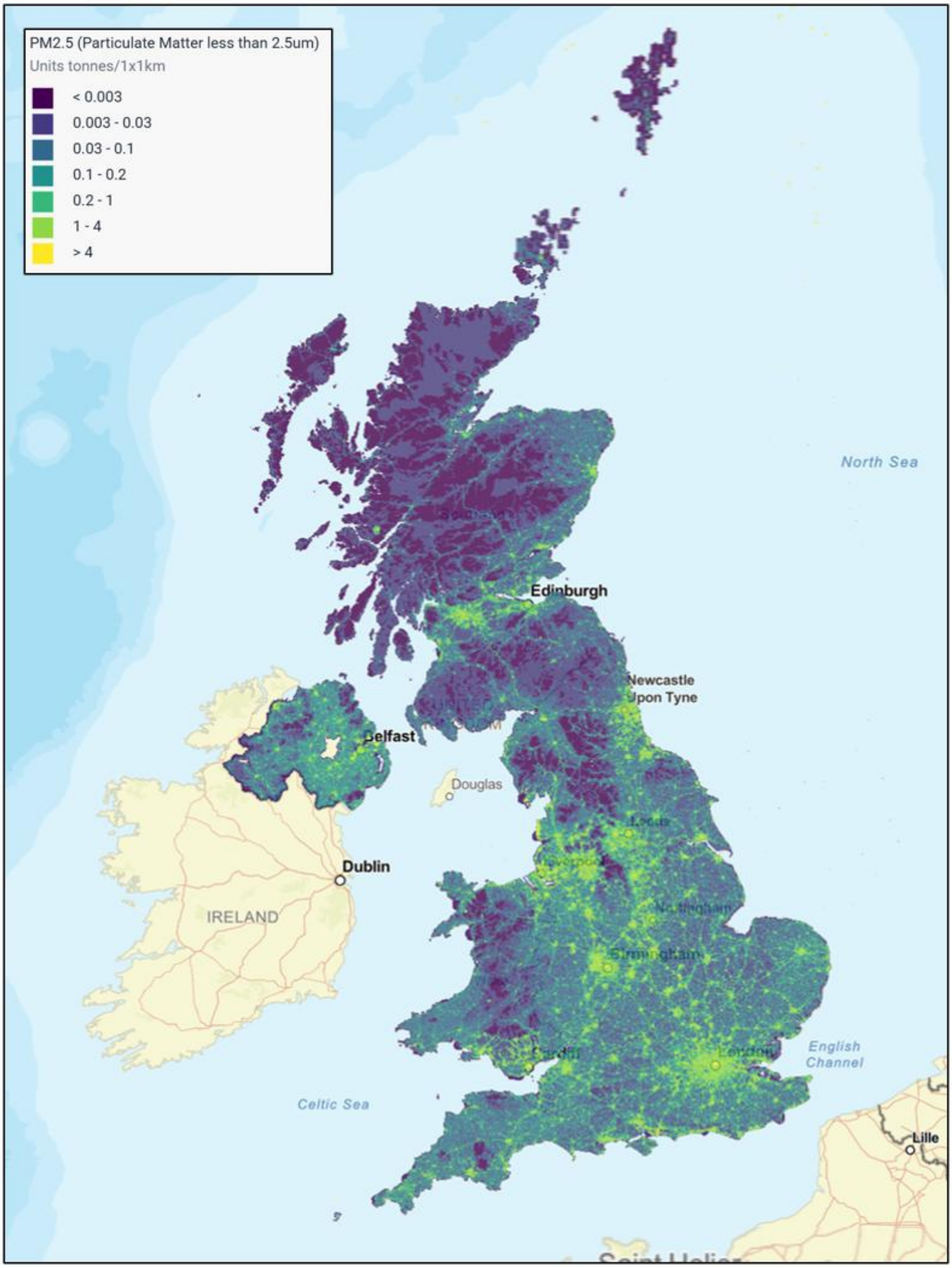


Figure 2.4 – Emissions Data for $PM_{2.5}$ from 1990 to 2022

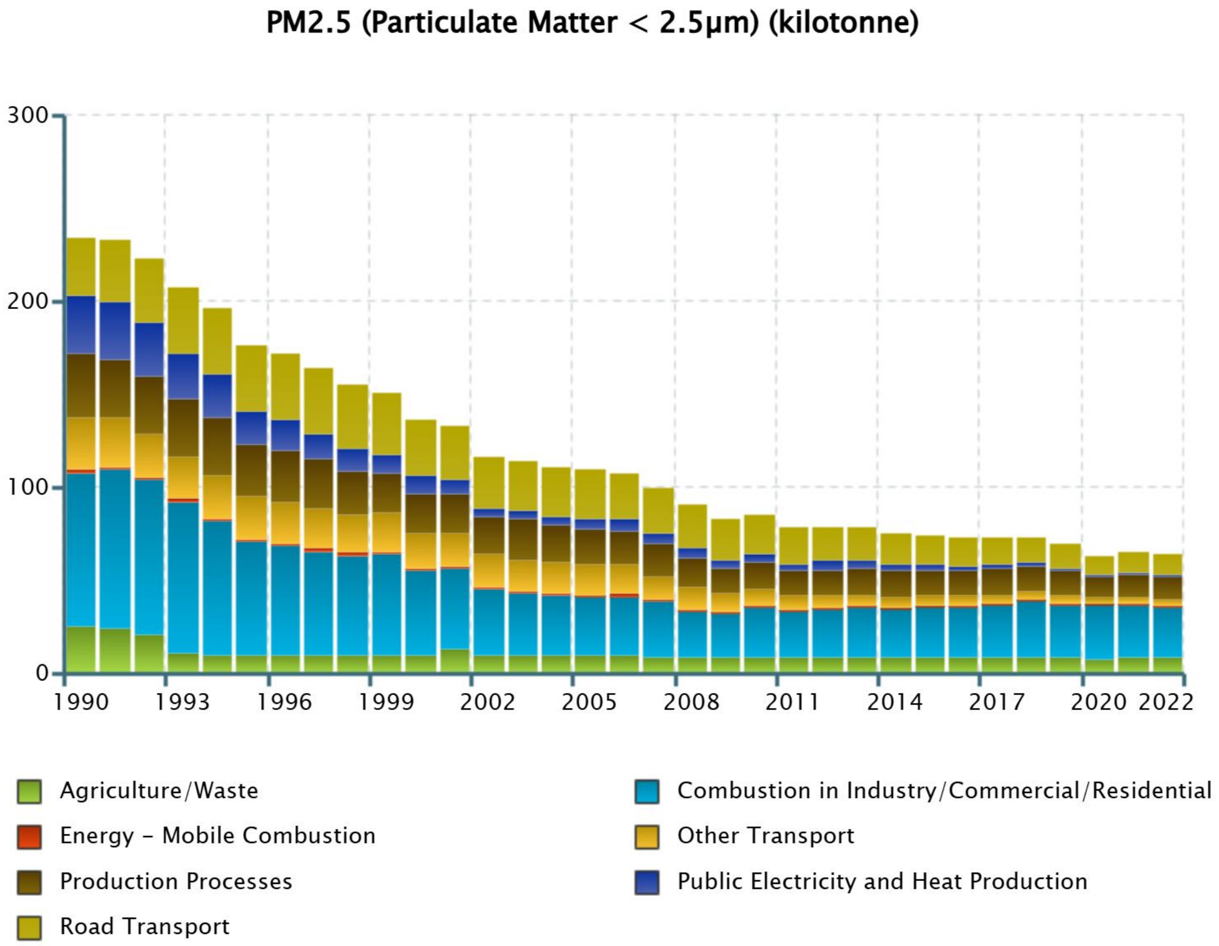


Figure 2.4 above has been obtained from he NAEI website[14]. Since 1990, $PM_{2.5}$ emissions in the UK have declined by 66%, primarily due to a reduction in coal use and the banning of crop residue burning in 1993. Additionally, emissions from coal-fired power stations have reduced by 99.9%. Emissions from the residential sector have fallen from 1990 to 2002 by 27kt (from 47kt to 20kt), due to the decline in coal use. As biomass fuel for industrial use has increased, this source has become a larger contributor to UK emissions, accounting for 18% of total UK emissions of $PM_{2.5}$ in 2021.

Slough Specific

Figure 2.5 below shows a zoomed in section of the interactive map[15], focusing on Slough. The map shows that emissions of particulate matter primarily range from 1 – 4 tonnes per 1x1km grid square, with three areas showing emissions above this range. A number of

[14] $PM_{2.5}$ | National Atmospheric Emissions Inventory

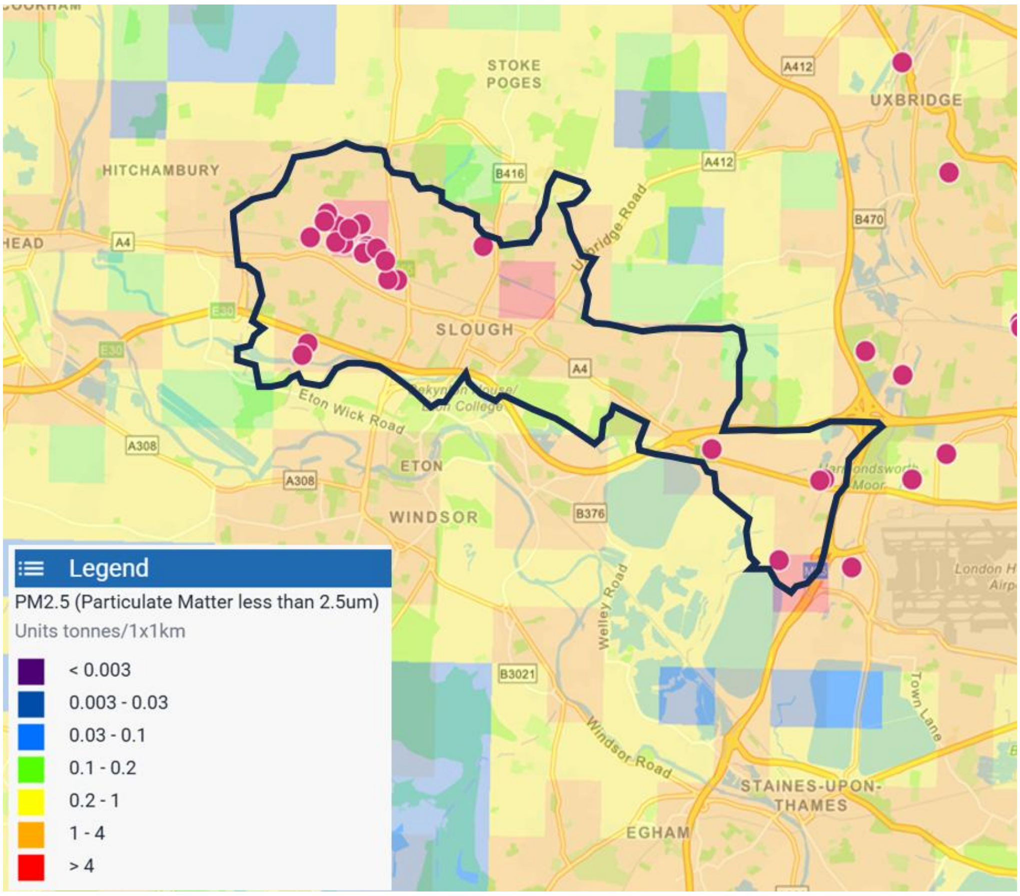
[15] UK Emissions Interactive Map

point sources are located in Slough, most of which are located within industrial areas such as the Slough Trading Estate, which helps to explain the higher $PM_{2.5}$ emissions identified here. The presence of these industrial areas may contribute to the high levels of mortality attributable to particulate matter in Slough.

Other areas with similar concentrations outside of Slough tend to be located in densely populated areas such as central London, and large scale road infrastructure such as motorway junctions.

When considering the data presented in the previous ASR (ASR 2024), the number of grid squares above 4 tonnes has reduced from eight to three, which suggests that emissions of $PM_{2.5}$ in the borough are decreasing.

Figure 2.5 – Emissions Data for $PM_{2.5}$ in 2022



2.3.3 Background Data

In 2024, the new Slough AQAP was published and approved by Defra. The AQAP included a review of existing air quality in Slough, including a source apportionment exercise for a baseline year of 2022. In terms of $PM_{2.5}$ concentrations across Slough, concentrations range from approximately 10.4µg/m^3 – 13.1µg/m^3, averaging at 12.1µg/m^3. Table 2.3 below shows the different sources which were considered in the model and the percentage contribution towards total $PM_{2.5}$ concentrations. Concentrations of $PM_{2.5}$ are primarily driven by residual and secondary PM which forms part of the background concentration. Secondary particulate matter arises from power plants and industrial processes, including oil refining. Emissions of the primary gaseous pollutants ammonia, oxides of nitrogen and sulphur dioxide from sources in the UK and Europe act as precursor species to $PM_{2.5}$, as they contribute to the formation of secondary PM through chemical reactions in the atmosphere.

Table 2.3 – $PM_{2.5}$ Source Apportionment by AQMA and Non-AQMA Areas

$PM_{2.5}$ Sources	AQMA 1	AQMA 2	AQMA 3	AQMA 4	Industrial	Kerbside	Roadside
Petrol cars	4.3%	2.6%	3.0%	3.7%	1.6%	3.2%	2.6%
Diesel cars	4.4%	2.1%	2.4%	3.1%	1.3%	2.6%	2.1%
Hybrid Petrol Cars	0.4%	0.3%	0.3%	0.4%	0.2%	0.3%	0.2%
Hybrid Diesel Cars	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Buses	0.0%	0.5%	0.3%	0.5%	0.0%	0.1%	0.3%
LGVs	1.4%	0.9%	0.9%	0.9%	0.4%	0.6%	0.6%
Rigid HGVs	0.9%	1.5%	0.7%	0.5%	0.4%	0.2%	0.2%
Artic HGVs	1.3%	0.9%	0.4%	0.3%	0.2%	0.1%	0.1%
Taxis	0.3%	0.2%	0.3%	0.6%	0.1%	0.4%	0.3%
Minor Rd + Cold Start	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Industry	2.6%	2.8%	2.8%	3.3%	2.4%	2.9%	5.9%
Domestic	12.8%	11.7%	14.4%	15.1%	8.4%	14.3%	15.3%
Rail	0.1%	0.1%	0.3%	0.2%	0.0%	0.1%	0.2%
Other	1.3%	1.1%	1.6%	1.5%	2.3%	1.4%	1.7%
PM Secondary	45.5%	48.9%	50.1%	48.5%	52.9%	47.9%	48.2%
Residual	23.7%	25.5%	21.5%	20.4%	27.6%	24.9%	21.2%
Point sources	0.7%	0.8%	0.8%	0.6%	1.9%	0.7%	0.8%

*high percentages shown in red, medium range percentages shown in yellow and low percentages shown in green

The Environment Act 2021 required long-term targets to be defined for fine particulate matter, which were set through the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 as:

- 10μg/m^3 annual mean concentration $PM_{2.5}$ across England by 2040, with an interim target of 12μg/m^3 by January 2028.
- 35% reduction in average population exposure by 2040, with an interim target of a 22% reduction by January 2028, both compared to a 2018 baseline.

The background modelling projections produced by Defra were updated in November 2024 using a base year of 2021 (previously 2018). This has resulted in a reduction in previously modelled concentrations, for example data for 2021 (using the 2021 base year map) results in grid square concentrations 1.3µg/m^3 – 4.4µg/m^3 (2.8µg/m^3 on average) lower than the same year when using the 2018 base year map. Using a base year of 2021, the highest modelled concentration in Slough during 2024 is 9.2µg/m^3 (within the Slough Trading Estate), with an average concentration across the borough of 8.1µg/m^3. Previously the highest concentrations were modelled for Langley using 2018 reference data, with a high contribution from industry sources (13%) however this grid square now has a low contribution from industry (0.8%). The updated projection modelling data suggests that Slough Borough Council is compliant with the $PM_{2.5}$ 2040 target.

It should be noted, however, that modelling concentrations of $PM_{2.5}$ from emissions data is complicated by the fact that it requires inventories for a range of pollutants, including direct emissions of $PM_{2.5}$ itself as well as its precursor gases SO_2, NOx, NH_3 and NMVOCs. These pollutants are emitted in varying amounts from different sources and exhibit different spatial and temporal behaviour. To understand $PM_{2.5}$ concentrations in Slough, continuous monitoring using accredited monitors is recommended.

Particulate matter is a transboundary pollutant and can travel long distances, therefore the portion of secondary particulate matter in Slough is unlikely to have been created within the borough, therefore national initiatives are required to reduce this concentration. There are, however, sources of $PM_{2.5}$ that can be controlled further by Slough Borough Council. Changes to Smoke Control Area (SCA) enforcement under the Environment Act 2021 came into effect on 1st May 2022 which has brought about the following changes to help reduce PM emissions associated with combustion:

- A financial penalty can be issued to those emitting substantial amounts of smoke from their chimney in a SCA, applicable to individuals and businesses. The financial penalties range from a minimum of £175 to a maximum of £300.
- An abatement notice can be issued for smoke emissions that are harmful to human health or a nuisance in a SCA.
- Solid fuel retailers must notify potential customers that it is illegal to buy unauthorised fuel for use in a SCA unless used in an exempt appliance. A local authority can prosecute a retailer if they break this rule. The court will decide on the amount of the fine.

Slough Borough Council's source apportionment study indicated that domestic burning accounts for 14% of Slough's total $PM_{2.5}$ therefore it is expected that the enforcement actions described above will help to reduce emissions from this source. It is noted however that is this only applicable to chimney emissions and there are limited enforcement options to address garden bonfires. Bonfires are currently acceptable in SCAs under the condition that certain rules are adhered to regarding the type of waste burnt. Complaints are dealt with under statutory nuisance covered by the Environmental Protection Act 1990.

A review of Slough's monitored data and calculated $PM_{2.5}$ concentrations from PM_{10} data is presented within Section 3.2.3, which shows higher calculated concentrations than presented within Defra's background modelling projections, particularly for busy roadside monitoring locations such as Brands Hill (14.6µg/m^3). This may be due to monitor proximity to primary emissions such as road traffic vehicles (especially those with diesel engines); wood burning; cooking fumes; dust from roads and construction, and agricultural operations.

Slough Borough Council is taking the following measures to address $PM_{2.5}$:

- All of the Slough area is covered by Smoke Control Orders. These were made to reduce air pollution in the town, mainly arising from the use of coal for heating purposes.
- The primary aim of the Corporate Plan 2023 – 2027 is improving the health of Slough's residents, focusing on children, by creating a cleaner, healthier and more prosperous Slough. A specific action within the plan is improving air quality, promoting active travel and sustainable forms of transport. Raising the profile of air quality within the corporate plan ensures that a collaborative approach is taken to resolving air quality issues.
- The new AQAP (2024-2028) contains a long list of measures that are intended to be delivered over the next five years, which includes measures to improve education and awareness of air quality to promote healthy choices in relation to physical activity, transport, energy efficiency, smoke control and indoor air quality.
- The LES is aimed at enabling and accelerating the uptake of ULEVs through the installation of more EV chargers, setting up of a town centre EV car club, and promoting electric taxis. This in turn will reduce NOx and some PM emissions.
- The LES is also aimed at promoting best practice dust controls on construction sites including adoption of Non Road Mobile Machinery (NRMM) emission standards;

construction machinery above net power rating of 37kW will be required to meet stage BIII, enforced as a requirement of the planning permission on the development, normally through a S106.

- The LES requires planning controls on major developments that all HGVs travelling through the AQMAs will use best endeavours to operate to Euro VI standards.
- The Slough Wellbeing Board takes a lead on promoting a healthier Slough. The Health and Wellbeing Strategy (2020-2025) outlines plans to improve the health and wellbeing of its residents over the lifetime of the plan. The strategy highlights how the densely populated urban nature of Slough with high levels of personal car use result in high levels of congestion and poor air quality, and aims to address air quality as part of the SMART neighbourhood plans.
- Defra are extending their $PM_{2.5}$ monitoring network and have recently installed a new FIDAS monitor recording $PM_{2.5}$ and PM_{10}, co-located with the Windmill site (SLH 12). As this was installed in December 2024, data from this site shall be reported in ASR 2026. In addition to this site, a background $PM_{2.5}$ monitoring location is also due to be installed in Britwell later in 2025. Progress on its installation shall be reported in ASR 2026.

Slough Borough Council will be taking the following additional measures to address $PM_{2.5}$:

- Tightening planning guidance via an updated LES, for example increasing the quantity of EV charging provision required for new developments, and further NRMM controls during construction, will assist in reducing emissions from development sites.
- Continued collaboration with transport and public health colleagues to deliver the AQAP and improve public awareness of air quality.
- Revision of Slough's Smoke Control policy to determine whether stricter controls on burning can be implemented, such as an outright ban on burning fuels outdoors.
- To aid awareness of $PM_{2.5}$, Slough Borough Council require a means of gathering live data on $PM_{2.5}$ concentrations across the borough and to begin seeking funding to support introduction of $PM_{2.5}$ monitors in key hotspot areas (for example, introducing a $PM_{2.5}$ monitor at Pippins Colnbrook, to monitor the impact of increased aviation at Heathrow airport).

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

This section sets out the monitoring undertaken within 2024 by Slough Borough Council and how it compares with the relevant AQOs. 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

Slough Borough Council undertook automatic (continuous) monitoring at five sites during 2024, which includes:

- Slough Town Centre (Wellington Street) SLH 10 (AQMA 4)
- Slough Brands Hill (London Road) SLH 11 (AQMA 2)
- Slough Windmill (Bath Road) SLH 12 (AQMA 3)
- Slough Spackmans Way, Chalvey SLH 13 (AQMA 1)
- Slough Station Road, Langley SLH 14 (Non-AQMA)

Additionally, Lakeside EfW Ltd have operated an Energy from Waste (EfW) plant in Colnbrook since 2010. The plant processes over 480,000 tonnes of residual waste per year, generating up to 50MW of power. The operator of the site as well as undertaking continuous stack monitoring as part of their Permit, operates ambient air quality monitoring as part of their planning consent, and the data is released to Slough to report on an annual basis. The monitoring includes NOx, PM_{10} and $PM_{2.5}$ monitoring.

- Slough-Lakeside-2 (Lakeside Road) SLH 8 & SLH 9

In December 2024, Defra's $PM_{2.5}$ network was extended to include a site that is co-located with Slough Borough Council's existing monitoring station at Windmill (SLH 12). The monitor that has been installed is a FIDAS, which monitors $PM_{2.5}$ and PM_{10}. The existing BAM that was monitoring PM_{10} was no longer needed at the Windmill site, and has therefore been relocated to the Langley monitoring site (SLH 14).

- Slough Windmill (Bath Road) SLOW (AQMA 3)

It is anticipated that a new $PM_{2.5}$ site will be installed in Britwell as part of the Defra $PM_{2.5}$ network. This is due to be installed during 2025.

Table A.1 in Appendix A shows the details of the automatic monitoring sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. The Air Quality England[16] page presents automatic monitoring results for Slough Borough Council, with automatic monitoring results also available through the UK-Air website.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Slough Borough Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 88 sites (118 diffusion tubes) during 2024.

[16] Slough Borough Council - Air Quality monitoring service

Table A.2 in Appendix A presents the details of the non-automatic sites.

In 2024, 16 additional diffusion tubes were introduced to the network:

- SLO 132 – SLO 147 – monitoring sites installed on Farnham Road and surrounding roads in May 2024, to monitor the impact of the Destination Farnham Road scheme. At the time of writing, the scheme has not yet started construction, therefore the additional diffusion tube monitoring will allow a before and after picture to be recorded.

No diffusion tube sites have been removed in 2024. Each year the data from diffusion tube sites is reviewed to determine which sites should be retained, and which should be decommissioned, typically based on how close concentrations are to the AQO. The revised European Air Quality Directive came into force in mid-December 2024, which introduces stricter limits and target values including a reduction in the NO_2 annual average limit from the current 40 to 20µg/m³ and the $PM_{2.5}$ particulate matter limit from 25 to 10µg/m³, to be achieved by 2030. Whilst not applicable to the UK, the evidence supporting this revision, in conjunction with evidence from WHO suggests that this limit will result in reduced health impacts. As a precaution, all diffusion tube sites which show concentrations above this new 20µg/m³ limit shall be retained until sustained compliance below this level is evident in the data.

In anticipation of the A4 cycle lane scheme starting, the council are currently looking into whether air quality sensors can be deployed to monitor the air quality impact during the construction and operational phases of scheme implementation. Details of such monitoring, if installed, will be presented within ASR 2026.

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.

During 2024, these tubes were collected on a four or five weekly basis and analysed at a UKAS accredited laboratory (SOCOTEC Didcot). Sites that have been included for distance correction include all sites that are within 10% or above the AQO and locations where the receptors are closer to the road than the monitoring location.

Due to the introduction of diffusion tube monitoring sites deployed for Destination Farnham Road mid-year, all of these sites had to be annualised, with the exception of SLO 144 which had insufficient data capture (<25%).

The following Highways England Receptor sites were also annualised due to diffusion tubes being regularly missing resulting in data capture below 75%: SLO 81, SLO 82, SLO 83, SLO 90, and SLO 92.

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. In the following discussion, any increase in a pollutant is indicated by a '+' symbol preceding the concentration, and any decrease in a pollutant is indicated by a '-' symbol preceding the concentration.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the AQO 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.

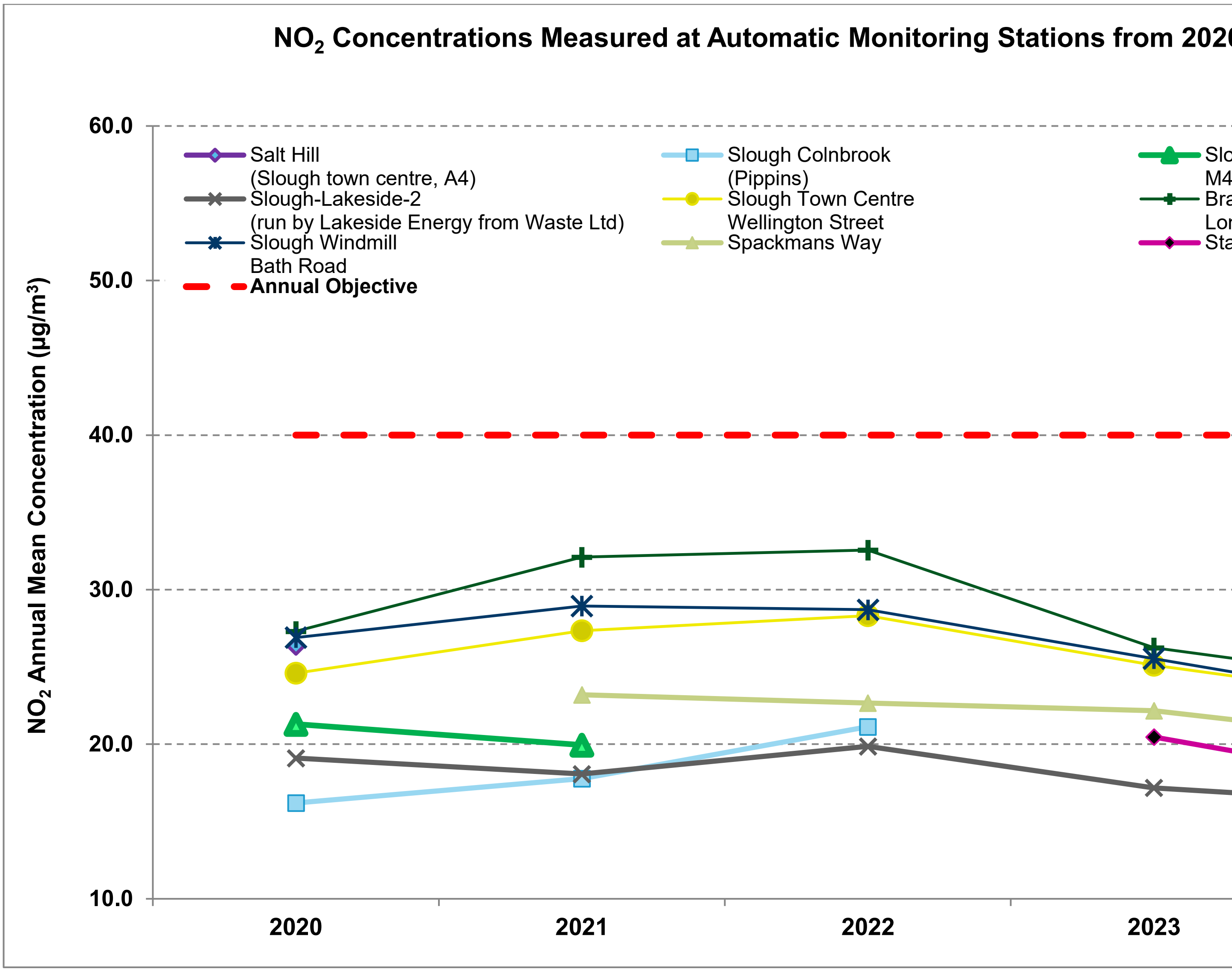


Figure A.2 – Trends in Annual Mean NO_2 Concentrations

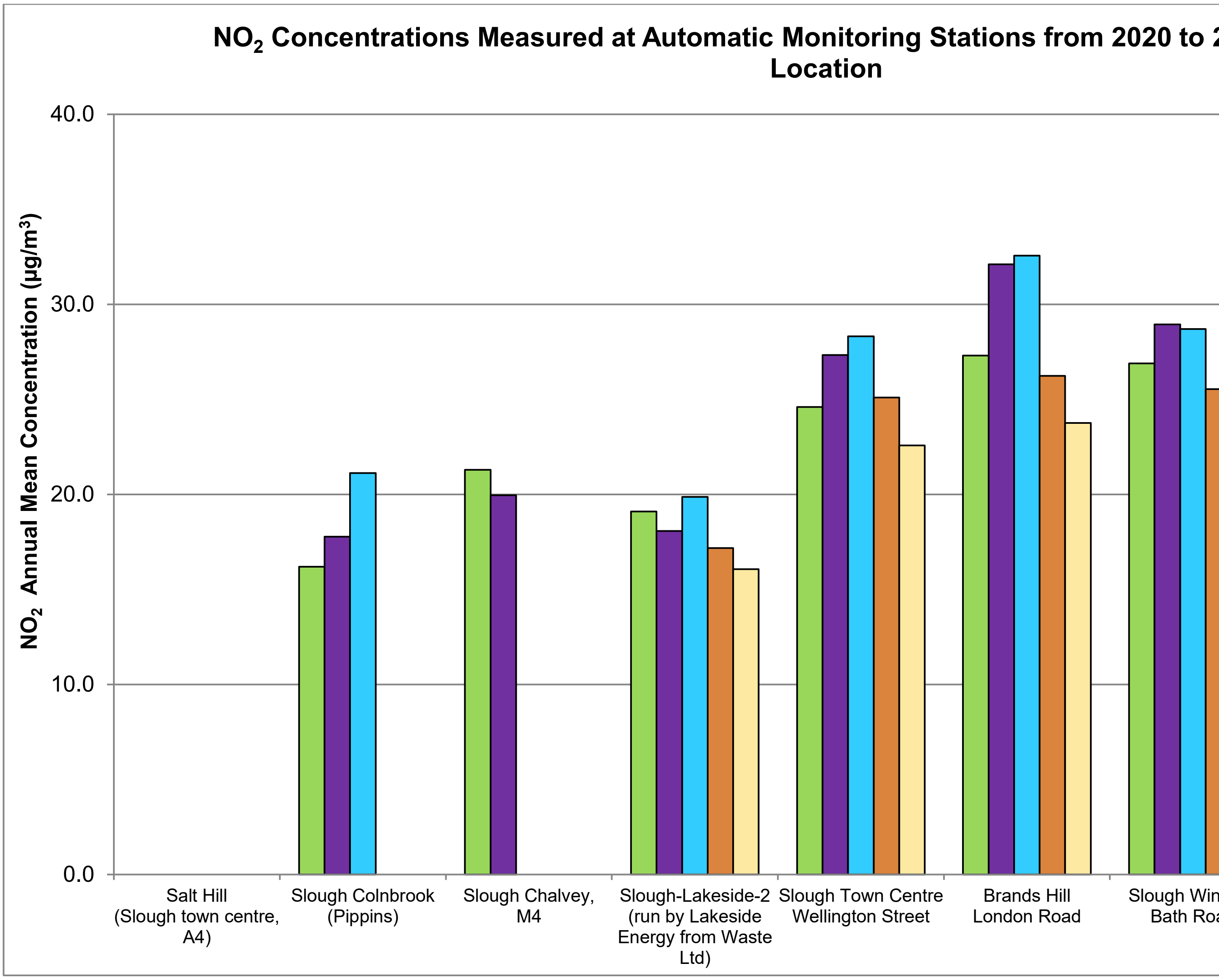


Figure A.3 – 10 Year Trend in Annual Mean NO_2 Concentrations

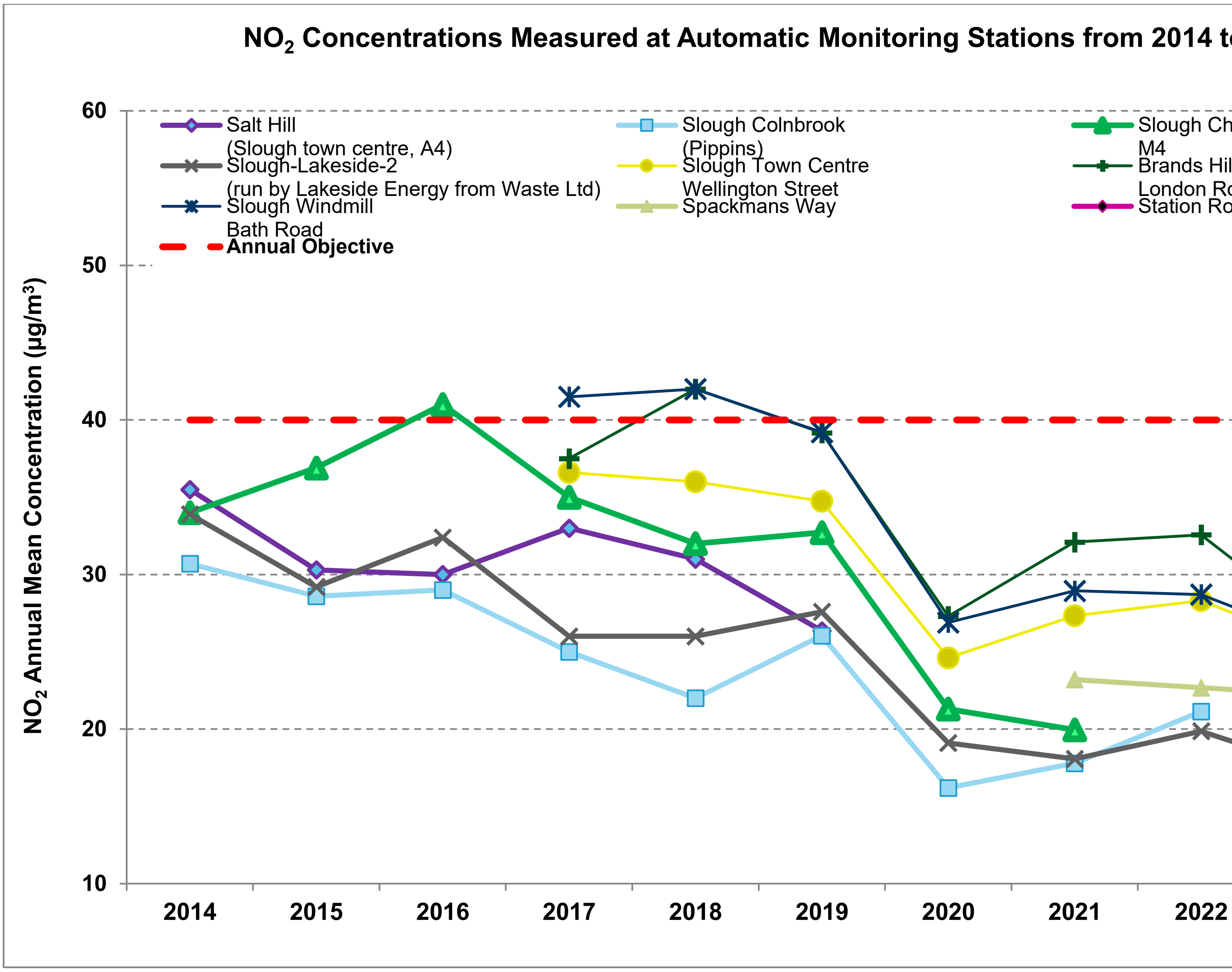


Figure A.4 – Trends in Annual Mean Diffusion Tube NO$_2$ Concentrations at AQMA 1

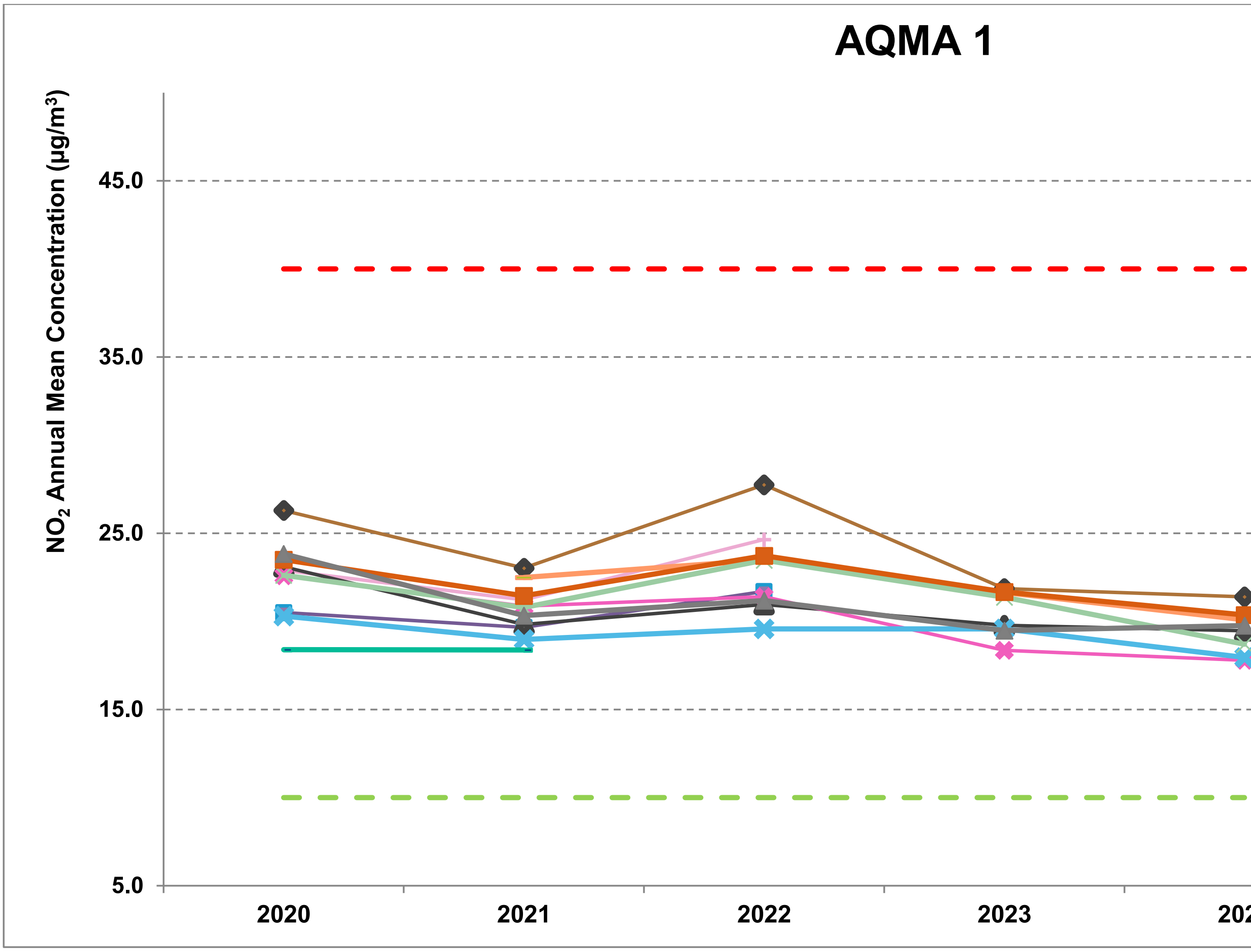


Figure A.5 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at AQMA 2

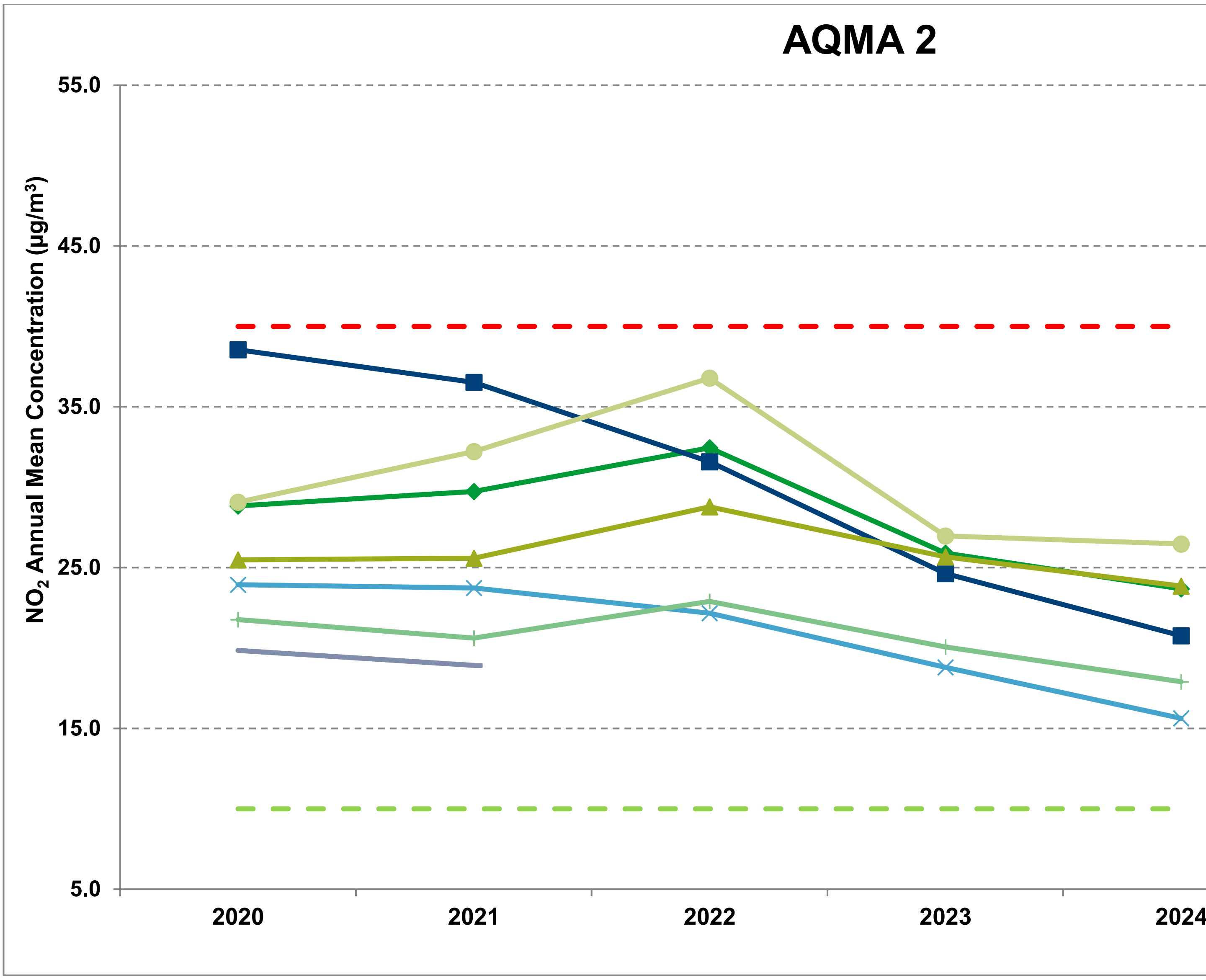


Figure A.6 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at AQMA 3 and AQMA 3 Extension

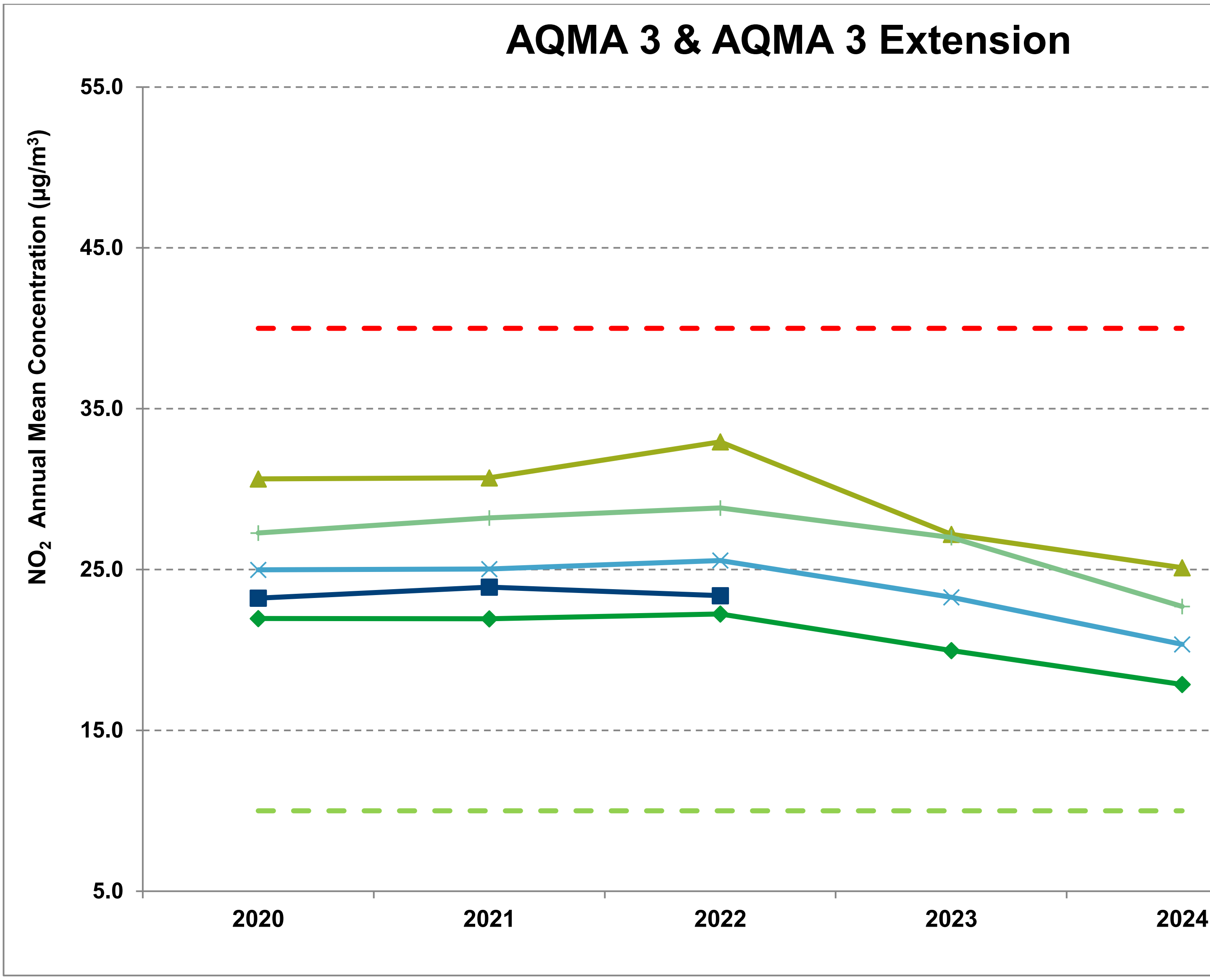


Figure A.7 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at AQMA 4

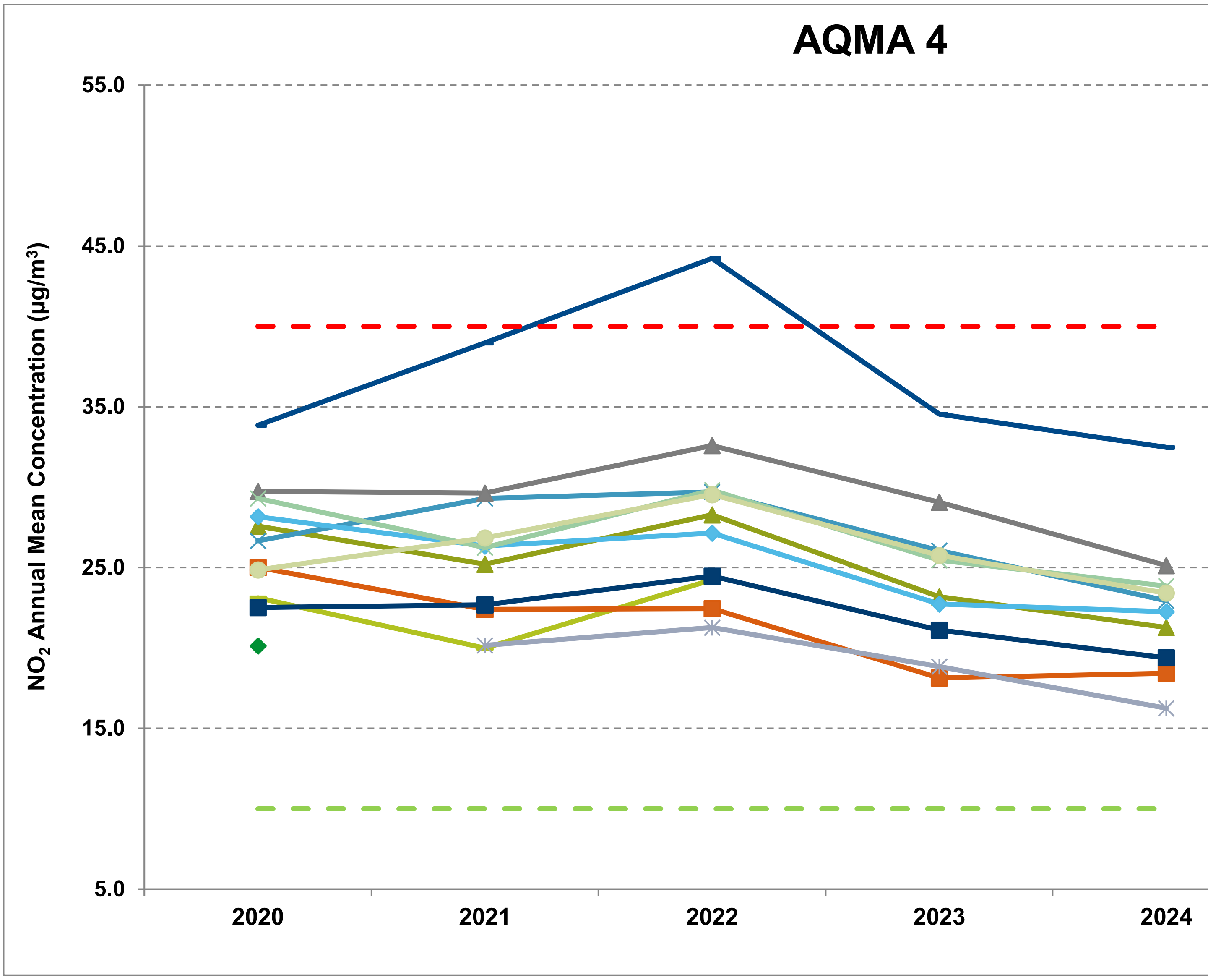


Figure A.8 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at Non AQMA: Roadside and Kerbside Sites

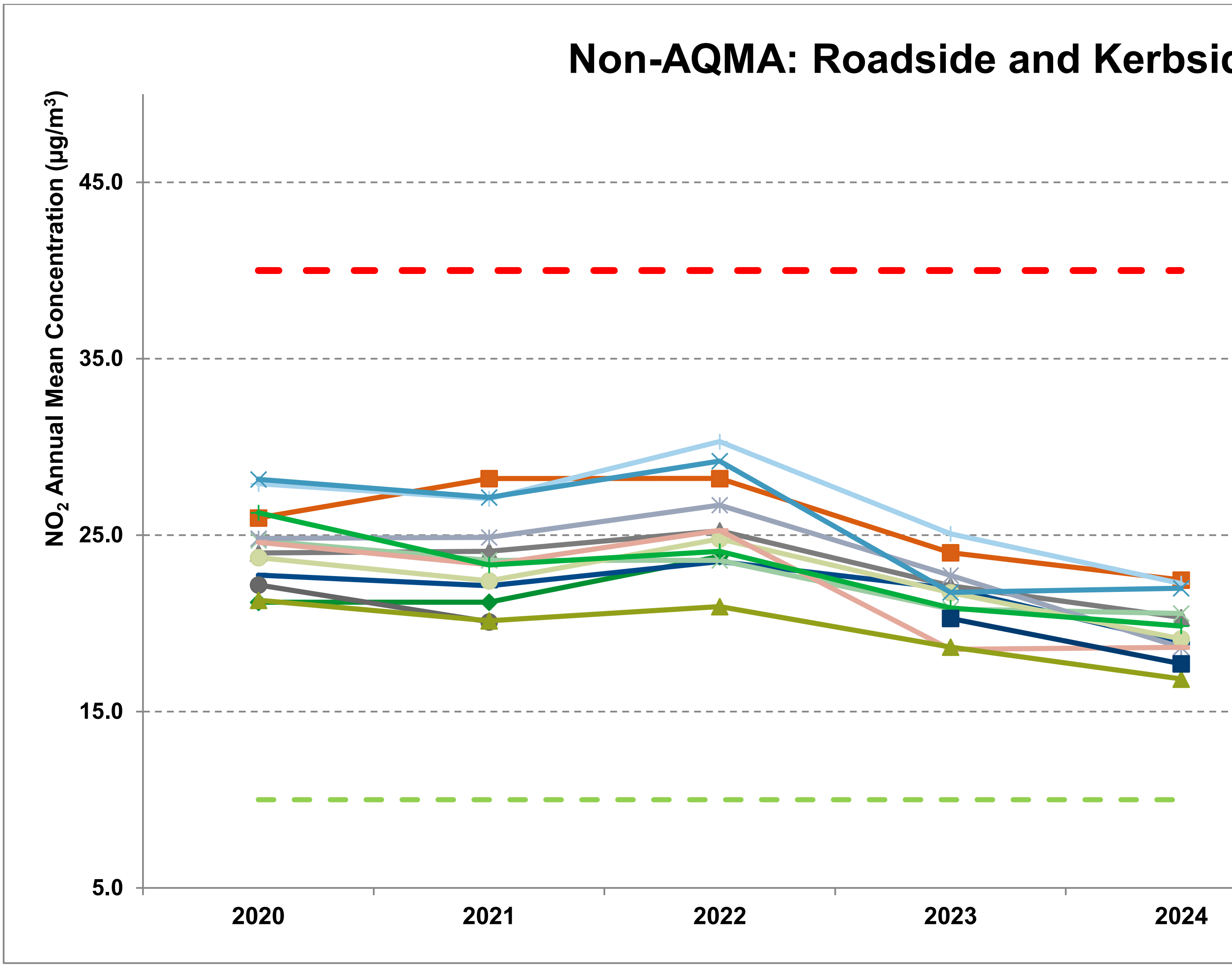


Figure A.9 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at Non AQMA: Suburban and Urban Background Sites

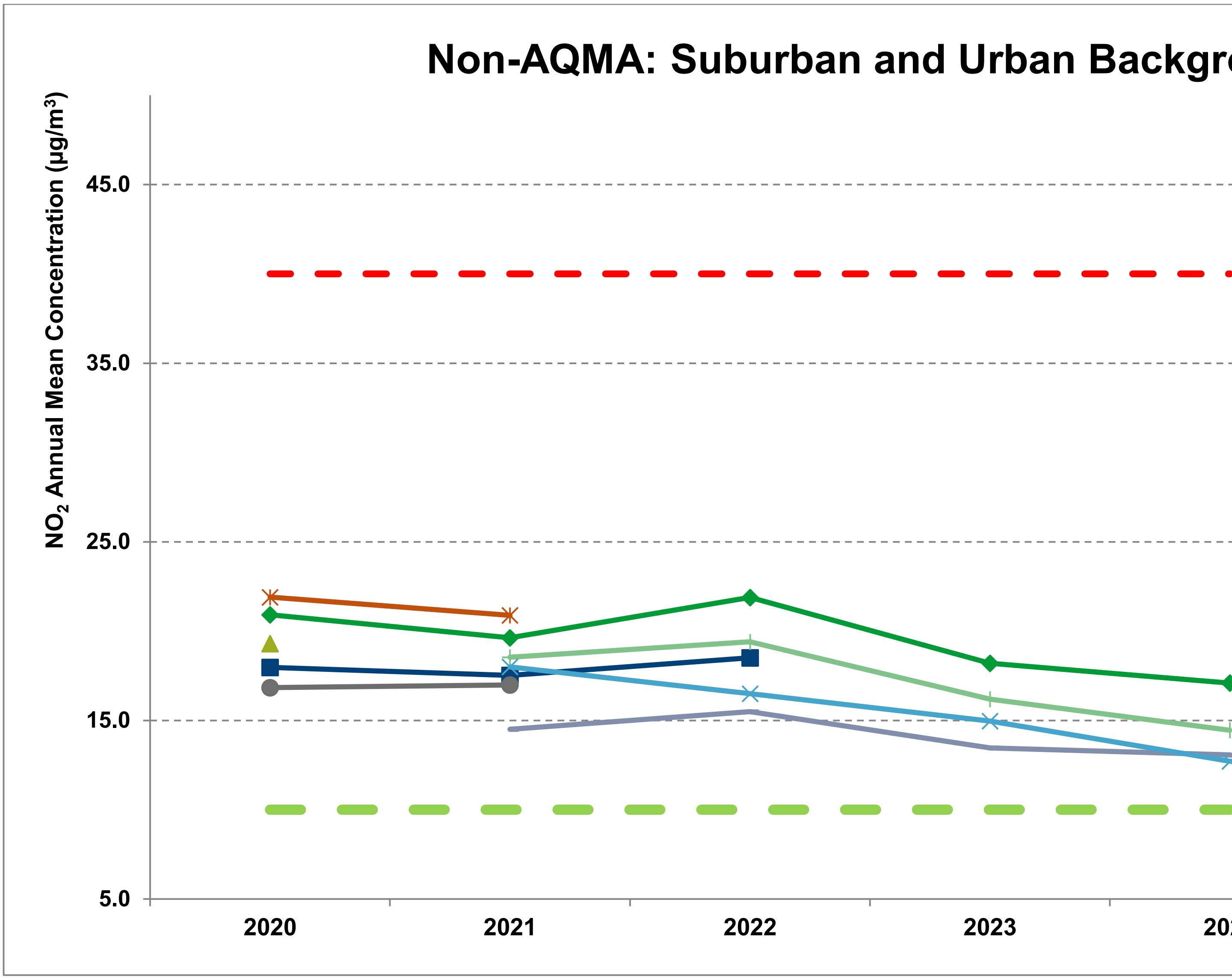


Figure A.10 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at Non AQMA: Rail and Industrial Sites

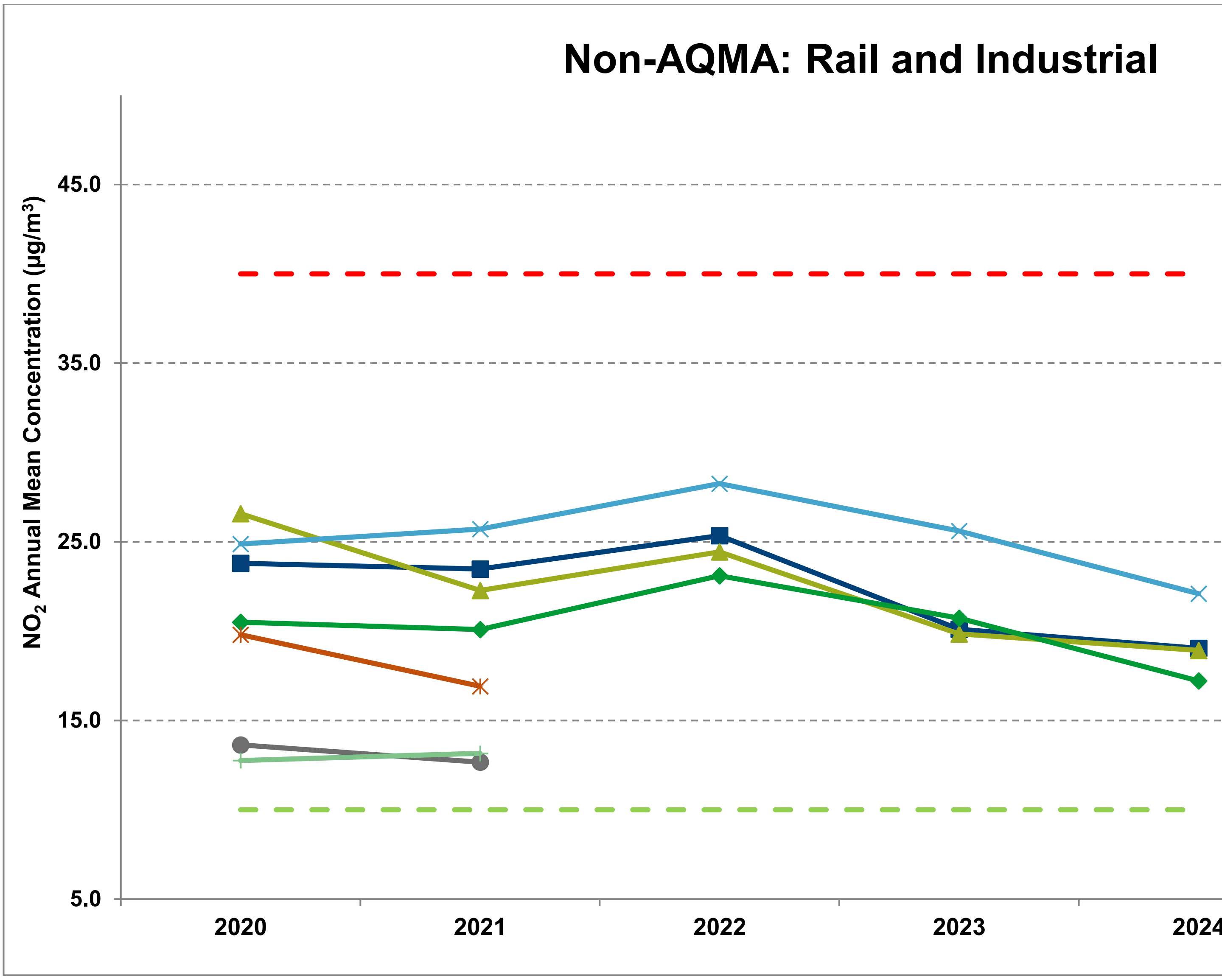


Figure A.11 – Highest NO_2 Concentration Recorded within AQMAs

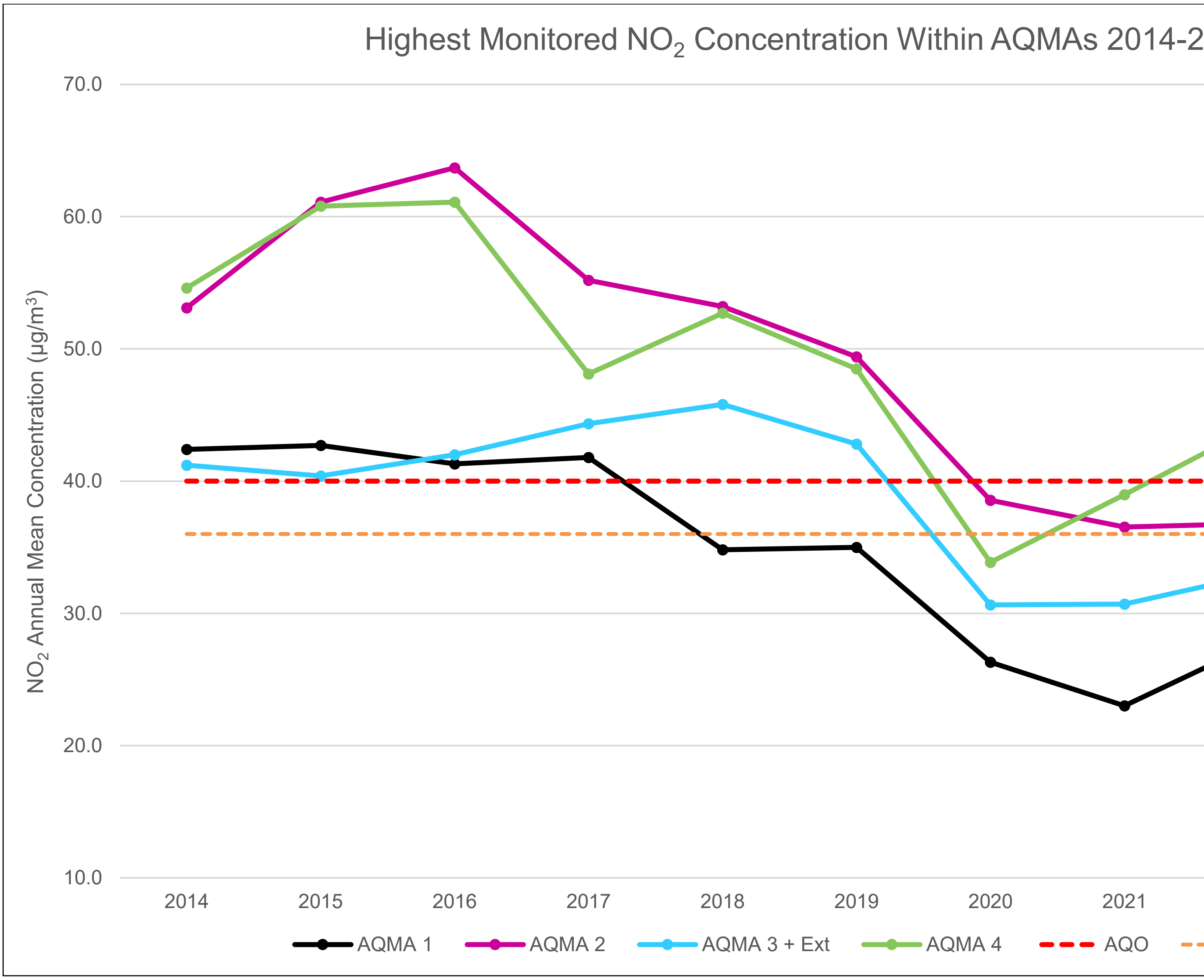


Figure A.12 – Highest NO_2 Concentration Recorded Outside of AQMAs

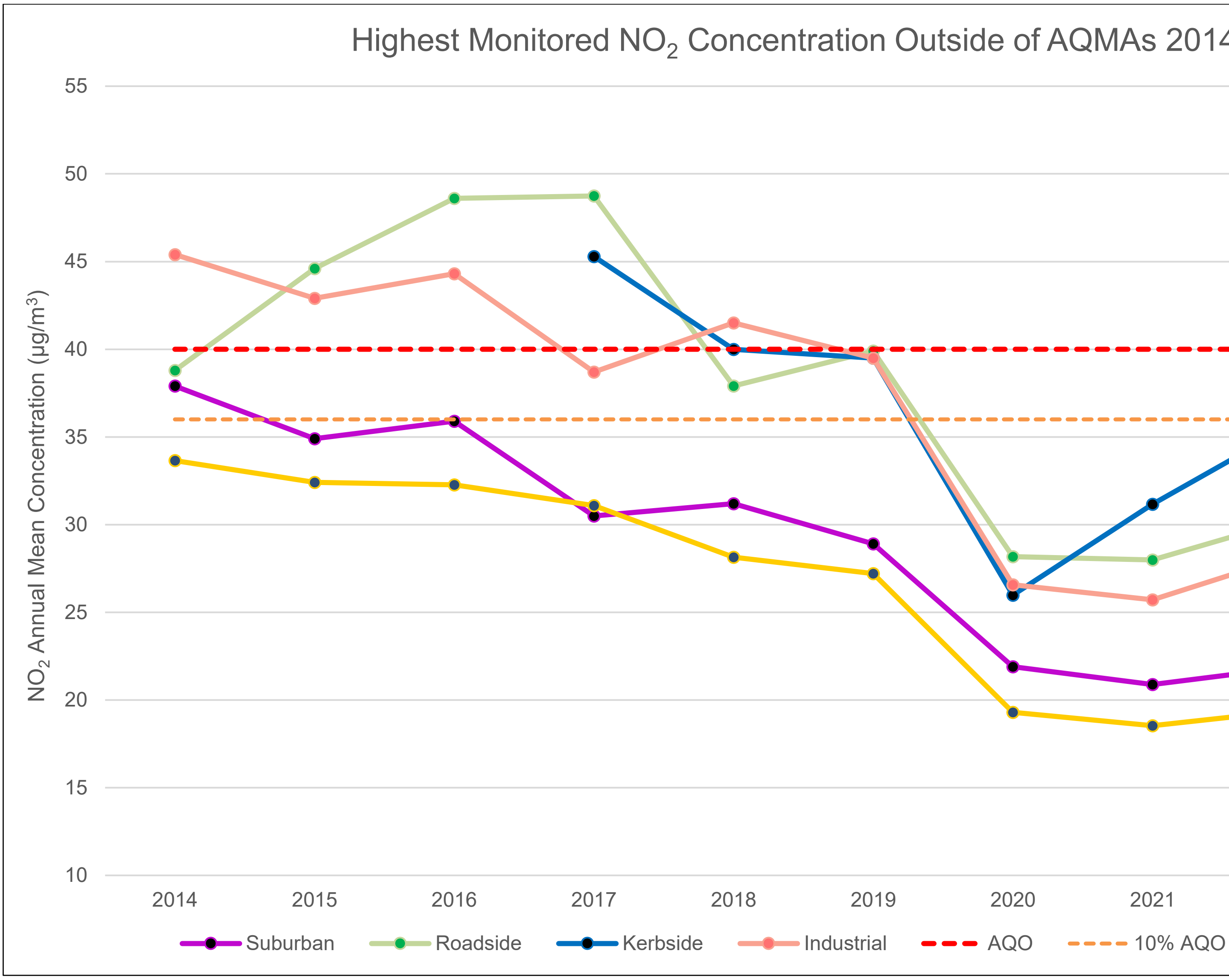


Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the AQO of 200µg/m^3, not to be exceeded more than 18 times per year.

The distance correction concentration to the nearest site for relevant exposure (normally a residential property unless otherwise indicated) is shown in Appendix C. The 2021 national background modelled concentrations (projected to the monitoring year 2024 for Slough) were used within the Defra tool. The distance to relevant exposure and nearest main road was obtained through a combination of on-site measurements and GIS map measurements.

3.2.1.1 Diffusion Tube Trend Analysis 2020-2024

All monitoring data presented in this section has been corrected for bias. Corresponding trend graphs are presented in Appendix A (Figure A.4 – Figure A.9).

In the previous report (ASR 2024), it was reported that 2023 saw widespread reductions in NO_2, with the majority of sites showing lower NO_2 concentrations than recorded during the pandemic, which had seen national lockdowns resulting in significantly reduced traffic and therefore anomalously low pollutant concentrations when compared with data from previous years.

For the majority of diffusion tube sites, this decreasing trend has continued into 2024. Of the 72 sites that monitored NO_2 in 2023, only five showed an increase in concentrations in 2024 (7%), and even so, the greatest increase was +0.7µg/m^3 at Park Street, Colnbrook (SLO 128). In contrast, the greatest improvement from 2023 is observed at Ledgers Road (a) (SLO 120) by -4.8µg/m^3, with sites on Bath Road, Langley Road and Shaggy Calf Lane also showing improvements in NO_2 greater than -4µg/m^3. When considering the change in concentrations relative to five years ago, all sites have seen a reduction in NO_2, although it has not been linear for many sites. Relative to 2020, the smallest reduction in NO_2 is observed at Yew Tree Road (SLO 29) by -1.4µg/m^3, whereas the largest reduction is observed at Brands Hill (SLO 18) by -17.8µg/m^3.

In 2023, the highest concentration was recorded at Yew Tree Road (SLO 29) at 34.6µg/m^3. Whilst this site remains the highest concentration in 2024, the concentration is lower at 32.5µg/m^3. 2024 represents the second year in which there are no exceedances of the AQO, nor are any concentrations within 10% of the AQO.

Table A.4.1 presented in Appendix A shows the year by year change in concentrations at each diffusion tube site where five years of data from 2020 to 2024 exists. The average change from one year to the next has been calculated and across all sites for each AQMA and non-AQMA category. This is discussed for each AQMA in detail below.

AQMA 1

Over the last five years, NO_2 concentrations have improved by -3.3µg/m^3 on average (14%), with an average year on year improvement of -0.8µg/m^3 (3%). The greatest improvement is observed at Grampian Way (SLO 8) by -4.9µg/m^3, whereas the smallest improvement is observed Highways England Receptors 5 and 6 (SLO 78 – SLO 82), both by -2.1µg/m^3. This improvement was not linear however, as concentrations peaked from 2021 to 2022 (the highest concentration across all sites over the last five years is

27.8µg/m^3 recorded in 2022 at Grampian Way (SLO 8)), as recovery post-pandemic led to a temporary worsening of air quality. Concentrations have however continued to decline since 2022. Highways England Receptor 10 (SLO 93 – 95) is the only location that has shown a worsening of air quality from 2023 to 2024, however the increase is marginal (+0.3µg/m^3) and concentrations are far below the AQO at this site at 19.8µg/m^3. The highest concentration in 2024 is 22.0µg/m^3 at Highways England Receptors 5 and 6 (SLO 78 – SLO 82).

AQMA 2

In AQMA 2, concentrations have improved by -6.6µg/m^3 (22%) from 2020 to 2024, with an average year on year improvement of -1.6µg/m^3 (6%). In 2020, the highest concentration was recorded at Brands Hill (SLO 18) at 38.5µg/m^3. By 2021, some sites had seen reductions in NO_2 (greatest at Brands Hill (SLO 18) by -2.0µg/m^3 whereas others had seen an increase (greatest at Brands Hill Triplicate (SLO 63- 65) by +3.2µg/m^3). Brands Hill (SLO 18) saw a further drop in 2022 by -4.9µg/m^3 to 31.6µg/m^3, whereas the opposite was observed at Brands Hill Triplicate which increased by +4.6µg/m^3 to 36.8µg/m^3. From 2022 to 2023 however, all sites saw a reduction in NO_2 by -5.4µg/m^3 on average across sites, and a further reduction in 2024 by -2.3µg/m^3 on average. Brands Hill (SLO 18) has seen the greatest improvement in NO_2 relative to 2020, by -17.8µg/m^3 (46%), whereas the smallest improvement is seen at Colnbrook Bypass (SLO 28) by -1.6µg/m^3 (6%). In 2024, the highest concentration was recorded at the Brands Hill triplicate site (SLO 63 – 65) at 26.5µg/m^3.

AQMA 3 and AQMA 3 Extension

Over the last five years, NO_2 concentrations have reduced by -4.7µg/m^3 (18%) on average. In 2020, the highest concentration recorded within these AQMAs was at Tuns Lane (SLO 50) at 30.6µg/m^3. The Windmill Triplicate site on Bath Road (SLO 57 – 59) saw an increase into 2021 by +0.9µg/m^3, whereas all other sites saw very little change. By 2022, all sites had seen an increase in NO_2, the greatest being at Tuns Lane (SLO 50) by +2.2µg/m^3, however concentrations remained below 10% of the AQO at 32.9µg/m^3. In 2023, there were large reductions in NO_2 across all sites, the greatest being at Tuns Lane (SLO 50) by -5.7µg/m^3, which also had the highest concentration at 27.2µg/m^3. Moving into 2024, even further reductions in NO_2 have occurred, by a maximum of -4.3µg/m^3 at the Windmill Triplicate site (SLO 57 – 59). Relative to 2020 data, Tuns Lane (SLO 50) has seen the greatest improvement in concentrations by -5.5µg/m^3 (18%). The highest concentration recorded within these AQMAs during 2024 was 25.1µg/m^3 at Tuns Lane (SLO 50).

AQMA 4

In AQMA 4, concentrations of NO_2 have reduced by -4.3µg/m^3 (16%) on average since 2020. The highest concentration in 2020 was recorded at Yew Tree Road (SLO 29) at 33.8µg/m^3. In 2021, some sites saw improvements in NO_2 for example concentrations at Cornwall House (SLO 46) reduced by -3.0µg/m^3, whereas other sites saw increases in NO_2 for example at Yew Tree Road (SLO 29) by +5.1µg/m^3, at a concentration of 39.0µg/m^3. All sites saw increases in NO_2 in 2022, the greatest again being at Yew Tree Road (SLO 29) by +5.3µg/m^3, reaching 44.2µg/m^3. By 2023 however, significant reductions in NO_2 occurred by -4.7µg/m^3 on average, with concentrations at Yew Tree Road (SLO 29) dropping the most by -9.7µg/m^3. Continued reductions have occurred in 2024 with the exception of Wellesley Road (SLO 4) which has seen a small increase of +0.3µg/m^3, whilst the greatest reduction in NO_2 has occurred at Wexham Road (SLO 4) by -3.9µg/m^3. Yew Tree Road (SLO 29) continues to have the highest concentrations in AQMA 4 in 2024, however they remain below 10% of the AQO at 32.5µg/m^3.

Non-AQMA Sites

In 2024, Slough Borough Council monitored at 49 sites outside of AQMAs. This is often to monitor the impact of local pollution sources to determine whether further action is required. This section splits these sites into the following location categories: Roadside and Kerbside sites; Suburban and Urban Background; and Rail and Industrial sites. The A4 Bus Lane scheme and recently deployed Destination Farnham Road monitoring results have not been included in the trend analysis as five years of data has not yet been collected. Monitoring for these specific transport schemes, plus results from monitoring of the ULEZ impacts and the M4 Smart Motorway scheme, have been discussed separately within Appendix C.

Industrial sites

There are four diffusion tubes located at industrial sites. At these sites, concentrations of NO_2 have remained below 30µg/m^3 over the last five years, falling by -4.6µg/m^3 (19%) from 2020 to 2024. In 2020, the highest concentration was recorded at Lakeside Road (SLO 12), at 26.6µg/m^3. This site saw the biggest reduction in NO_2 concentrations in 2021, by -4.3µg/m^3, resulting in a concentration of 22.3µg/m^3. At this time, Horton Road (SLO 17) recorded the highest concentrations at 25.7µg/m^3. In 2022, NO_2 increased across all industrial sites by +2.4μg/m^3 on average, with the greatest increase seen at Poyle Road (SLO 96) by +3.0μg/m^3, however concentrations remained far below the AQO at 23.1μg/m^3. In 2023, all sites saw reductions in NO_2 by -3.7 μg/m^3 on average (15%), the greatest being at Colnbrook Bypass (SLO 7) by -5.2μg/m^3. 2023 was also the first year that concentrations fell below 20μg/m^3 for industrial sites (Lakeside Road, SLO 12, at 19.8μg/m^3), a trend that has continued into 2024. The highest concentration recorded at industrial sites in 2024 is 22.1μg/m^3 recorded at Horton Road (SLO 17).

Roadside and kerbside sites

Ten roadside and one kerbside diffusion tube location have five years of data to consider. Over the last five years, concentrations of NO_2 have improved by -5.0μg/m^3 (20%) on average across these sites. The highest concentration in 2020 was recorded at Albert Street / Upton Court Road (SLO 97) at 28.2μg/m^3. In 2021, both decreases and increases in NO_2 were observed at roadside and kerbside sites, with the greatest improvement at Sutton Lane (SLO 56) by -0.3μg/m^3, and the greatest increase at Windsor Road (SLO 49) by +2.2μg/m^3. 2022 brought increases in NO_2 across all sites, with an average increase in NO_2 by +1.4μg/m^3, although concentrations still remained fairly low, with the highest concentration recorded at 35.7μg/m^3 at Ledgers Road (SLO 121). By 2023, all sites had a reduction in NO_2 concentrations, the greatest being at Albert Street / Upton Court Road (SLO 97) by -7.4μg/m^3 (25%). The highest concentration at this time was recorded at Ledgers Road (SLO 121) at 29.8μg/m^3. Further reductions in NO_2 occurred in 2024 for the majority of sites, with two locations having a marginal increase in concentrations (0.1–0.2μg/m^3). The highest concentration recorded at roadside and kerbside sites in 2024 is at the newly deployed Farnham Road site (SLO 136), however this site has been annualised therefore should be treated with caution.

Suburban sites

There is only one suburban site that has five years of data, which is Elbow Meadows (SLO 13). One additional year of data is required to have a full five year dataset for urban background sites in Salt Hill Park, and three further years are needed for the Colnbrook suburban sites.

Concentrations at Elbow Meadows have reduced by -3.8μg/m^3 (18%) since 2020. After an initial drop in concentrations in 2021 (by -1.3μg/m^3) concentrations increased in 2022 by +2.2 μg/m^3, although total concentrations remained low at 21.9μg/m^3. Drops in concentration occurred in 2023 and 2024 by -3.7μg/m^3 and -1.1μg/m^3, respectively, resulting in a final concentration of 17.1μg/m^3 in 2024.

Long term trends

The above summary highlights how concentrations have changed over the last five years, since the pandemic occurred in 2020. It is useful however to acknowledge how the concentrations have changed over the last 10 years, so a broader view of progress can be observed. Figure A.11 presents the highest monitored NO_2 concentrations recorded each year within AQMAs from 2014 to 2024. The graph shows that all AQMAs had diffusion tube concentrations that exceeded the AQO from 2014 to 2017, which supported the declaration of the AQMAs. From 2017 onwards, concentrations at AQMA 1 fell below 10% of the AQO. Whilst concentrations within the other AQMAs also reduced, the reduction was not enough to fall below the AQO. AQMA 3 in comparison had continued high concentrations until 2018. Concentrations in AQMAs 2, 3 and 4 fell further in 2019, before significant reductions occurred across all AQMAs in 2020 as a result of the pandemic. Further reductions in 2021 were seen at AQMA 1 and 2, whilst a slight increased occurred at AQMA 3, and significant increases occurred at AQMA 4. 2022 saw an increase across all AQMAs, before all dropping in 2023 and 2024. The graph clearly demonstrates the impact that the pandemic has had on concentrations, but also the sustained compliance achieved particularly after 2022.

A more varied trend can be observed with the sites outside of AQMAs (Figure A.12). Roadside sites exceeded the AQO from 2015 to 2027, before falling in 2018. Suburban and industrial sites saw the opposite trend, with increases in concentrations from 2017 to 2018. As with AQMA sites, all locations saw a significant drop in concentrations in 2020 as a result of the pandemic. A small reduction is seen in 2021, with the exception of kerbside sites which climbed steeply until 2022. All locations with the exception of suburban sites fell from 2022 to 2023, with a further drop in 2024 with the exception of roadside sites. This graph demonstrates the impact of road traffic on concentrations, as roadside, kerbside, and industrial sites are all influenced by vehicle flows.

3.2.1.2 Continuous monitoring NO2 results 2020 – 2024

Annual Mean

All continuous NO_2 monitoring data has been properly ratified and is illustrated in Figure A.1 and Figure A.2.

Only four continuous sites have data from the last five years and have been reviewed in detail below. Spackmans Way (SLH 13) and Station Road Langley (SLH 14) require data collection for a further one and three years, respectively, before a five year analysis can be undertaken at these sites.

Lakeside 2 (SLH 8) has had concentrations below 20µg/m^3 from 2020 to 2024, with concentrations of 19.1µg/m^3 in 2020, peaking in 2022 at 19.9µg/m^3. Since 2020, concentrations have dropped by -3.0 µg/m^3, with 2024 having the lowest concentrations to date at 16.1µg/m^3.

Wellington Street (SLH 10) shows a similar trend, with concentrations in 2020 at 24.6µg/m^3, rising to 28.3µg/m^3 in 2022. Following this, concentrations have continued to drop before reaching 22.6µg/m^3 in 2024, the lowest concentration recorded to date.

Brands Hill (SLH 11) recorded the highest concentrations out of all automatic monitoring sites across the last five years. In 2020, NO_2 was measured at 27.3µg/m^3, which increased to 32.6µg/m^3 by 2022. Concentrations then dropped by -6.3µg/m^3 and -2.5µg/m^3 in 2023, and 2024, respectively, to 23.8µg/m^3, representing the lowest concentrations recorded over the last five years.

In 2020, concentrations at Windmill (SLH 12) were 26.9µg/m^3. Unlike the other sites, concentrations peaked in 2021 at 28.9µg/m^3, before steadily decreasing each year before reaching 22.4µg/m^3 in 2024. This pattern is also observed at Spackmans Way (SLH 13) which has been operational since 2021, but at lower levels (20.1µg/m^3 in 2024).

For all sites with five years of data, 2024 represents the lowest concentrations recorded to date, and lower than pandemic levels, despite national lockdowns restricting movements at the time.

Figure A.3 presents the NO_2 concentrations measured at automatic monitoring sites across a 10 year period. An overall gradual declining trend can be seen from 2014 to 2019 for most sites, with the exception of increases observed in 2016, before all sites showing a significant drop in NO_2 concentrations in 2020. Some sites showed initial recovery after the pandemic, however decreases in concentrations have been observed at all sites from 2022 onwards.

1-hour mean

The NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) has historically not been exceeded across Slough's automatic monitoring sites, with the exception of Windmill Bath Road (SLH 12) which had shown one exceedance of 200µg/m^3 in 2021. This historic trend of having no exceedances continued from 2022 to 2024, therefore exceedance of the NO_2 1-hour mean objective is not of concern.

Comparison with national trends

Across the UK, urban background NO_2 pollution has reduced both in the long-term and in recent years. Between 2006 and 2019 inclusive, the annual mean NO_2 concentration at urban background sites reduced by an average of -0.9µg/m^3 each year and fell by -4.5µg/m^3 (23%) in 2020 due to a reduction in traffic as a result of the pandemic. Concentrations recovered slightly in 2021 by 5% and decreased by 1% from 2021 to 2022. In 2023, the annual mean concentration of NO_2 at urban background sites across the UK was 14.2µg/m^3, 9% less than 2022. This has fallen further in 2024, to 13.1µg/m^3, the lowest point in the time series.

Similarly, roadside sites had seen an average reduction of NO_2 concentrations by -1.8µg/m^3 each year between 2006 and 2019, falling from 54.2µg/m^3 to 31.1µg/m^3. The pandemic brought a 26% reduction (-8.2µg/m^3) in 2020, which recovered by 8% in 2021 by +1.8µg/m^3. On average, the annual mean concentration of roadside NO_2 had decreased by 5% (-1.2µg/m^3) from 2021 to 2022, whilst remaining 24% lower than concentrations in 2019. By 2023, the annual mean concentration of NO_2 at roadside sites had fallen to 22.0µg/m^3. The reason for this decrease is primarily due to declining NO_2 emissions from road transport and power generation. In 2024, the concentrations fell further to 20.7µg/m^3, representing the lowest average concentration measured to date.

When comparing to data collected in Slough, the downward trend also occurs, however Slough experiences further decreases in concentrations in 2021 following the pandemic, and an increase in 2022 which is not seen in national trends. There are similarities in the reductions seen in 2023 and 2024, with both local and national trends both showing an overall downward trend from 2022 onwards.

3.2.1.3 Conclusion

Relative to 2020, both passive and automatic monitoring sites have shown improvements in NO_2 concentrations across the borough. Following the pandemic, many sites showed an initial recovery period, peaking in 2022, before declining to 2024 (with the exception of five diffusion tube sites which have shown very little change (<1.0µg/m^3)), to levels lower than those recorded during the pandemic at all sites.

The biggest improvement overall has been seen at AQMA 2 at -6.6µg/m^3 (22%) on average, with Brands Hill (SLO 18) showing the largest drop in concentrations by -17.8µg/m^3 (46%). Comparatively, the smallest change in concentration is observed at Yew Tree Road (SLO 29) and Wellington Street Triplicate (SLO 60 – 62), both by

-1.4μg/m^3. When considering a trend over 10 years however, it is evident that all sites have significantly improved NO_2 concentrations relative to those recorded prior to 2018. In 2020, the average NO_2 concentration recorded at diffusion tube sites was 22.7μg/m^3. In 2024, the average NO_2 concentration is now 20.5μg/m^3.

3.2.2 Particulate Matter (PM_{10})

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the AQO of 40μg/m^3.

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the AQO of 50μg/m^3, not to be exceeded more than 35 times per year.

All continuous PM_{10} monitoring data has been properly ratified and is illustrated in Figure A.13 and Figure A.14.

Local trends

In 2024, PM_{10} was monitored at five locations, however Spackmans Way (SLH 13) has only recorded data for four years and is therefore not included in this five year analysis. Lakeside 2 (A) (SLH 8) has recorded low concentrations from 2020 to 2024. Concentrations started low in 2020 at 14.0μg/m^3, falling by -1.6μg/m^3 in 2021, before recovering to 14.5μg/m^3 in 2022. Concentrations dropped again in 2023 by -1.9μg/m^3 to 12.6μg/m^3, with a smaller drop in 2024 to 12.5μg/m^3. A similar pattern is observed at Lakeside 2 (B) (SLH 9) but with slightly higher concentrations, ending at 12.7μg/m^3 in 2024.

Brands Hill (SLH 11) presents the highest PM_{10} concentrations recorded at automatic monitoring sites over the last five years. Unlike the other sites however, a steady decline has been observed from 2020 to 2023 by -1.7μg/m^3 on average, with a small increase from 2023 to 2024 (+0.2 μg/m^3). Concentrations however remain below the AQO at 20.6μg/m^3.

Concentrations at Windmill (SLH 12) saw little variation from 2020 to 2023 (+0.5μg/m^3 on average), before dropping in 2023 from 19.8μg/m^3 to 17.0μg/m^3. In 2024, concentrations dropped further to 16.5μg/m^3.

To date, Spackmans Way (SLH 13), which was installed in 2021, shows the lowest PM_{10} concentrations recorded across all sites, at 11.3μg/m^3 in 2024.

Although all sites have remained far below the AQO over the last five years, two sites continue to be higher than the WHO AQG of 15μg/m^3 (Brands Hill SLH 11 and Windmill

SLH 12). Two sites have dropped below the WHO AQG since 2022 however, and data from Spackmans Way (SLH 13) indicates that compliance with the AQG is also met at this site.

In regards to the 24 hour mean, the number of exceedances above 50µg/m^3 has progressively dropped from 2020 to 2024 at both Brands Hill (SLH 11) and Windmill (SLH 12). In 2020, Brands Hill (SLH 11) saw the greatest number of exceedances at 19, with Windmill (SLH 12) following behind at 7 exceedances and Lakeside 2 (B) (SLH 9) with 4. By 2021, the number of exceedances had dropped to 14 at Brands Hill (SLH 11), 4 at Windmill (SLH 12) and 2 Lakeside 2 (B) (SLH 9). All sites saw an increase in the number of exceedances in 2022 which the exception of Brands Hill (SLH 11) which remained at 14. By 2023 however, the number of exceedances dropped, with Brands Hill (SLH 11) having the greatest amount at 3. This was maintained in 2024.

When considering the WHO 2021 AQGs for PM_{10} (45µg/m^3), comparison has been made to Slough Borough Council's highest reporting monitoring station (Brands Hill, SLO 11). Reducing the limit to 45µg/m^3 results in 5 exceedances in total (2 more than the 50µg/m^3 limit), therefore Slough Borough Council are compliant with the WHO 2021 AQG for the PM_{10} 24 hour mean.

National trends

In regards to national trends, urban background PM_{10} pollution has reduced in the long-term despite a period of relative stability between 2015 to 2019, until a notable decrease in 2020 by -1.8µg/m^3 (12%) to 13.2µg/m^3. There was further decrease (2%) to 13.0µg/m^3 in 2021, followed by an increase in concentrations by 8% to 13.9µg/m^3 in 2022. In 2023 however, concentrations decreased to 12.3µg/m^3, and -0.5µg/m^3 further in 2024 to 11.8µg/m^3.

Similarly to urban background sites, roadside PM_{10} concentrations have remained relatively stable over the last eight years, with an 8% reduction in 2020 to 16.3µg/m^3, dropping by a further 2.7% in 2021 to 15.9µg/m^3. Concentrations in 2022 increased by 6% to 16.9µg/m^3, however concentrations in 2023 fell to 15.3µg/m^3, and further in 2024 to 14.7µg/m^3, representing the lowest concentrations recorded to date.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.8 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years.

Local trends

$PM_{2.5}$ is the pollutant which has the biggest impact on public health and on which the Public Health Outcomes Framework (PHOF) indicator is based. In 2024, $PM_{2.5}$ was monitored at one location in Slough (Osiris at Lakeside 2 (SLH 9)) (a number of Slough operated Osiris units were discontinued after 2019). Figure A.15 indicates that concentrations of $PM_{2.5}$ have improved from 2020 to 2024 by -0.5μg/m^3, although this improvement had not been linear, with concentrations peaking in 2022 at 7.6μg/m^3.

As Slough only has one location monitoring $PM_{2.5}$, an exercise has been completed to estimate $PM_{2.5}$ from PM_{10} monitoring data, to provide further insight into likely $PM_{2.5}$ concentrations across Slough.

TG(22) indciates that a locally derived ratio can be calculated and applied to PM_{10} data to obtain an estimate of $PM_{2.5}$ where a site measures both PM_{10} and $PM_{2.5}$. Slough Borough Council had no automatic monitors (beside the Lakeside Osiris) that recorded both of these pollutants in 2024.

Prior to 2021, a national derived correction ratio of 0.7 (i.e. PM_{10} concentration x 0.7) could be used to calculate $PM_{2.5}$ from PM_{10} concentrations where no appropriate local sites measuring both PM_{10} and $PM_{2.5}$ were available, which is based on the average of all ratios of $PM_{2.5}$/ PM_{10} found for years 2010 to 2014. Post 2021, two separate factors were calculated on an annual basis for Background and Roadside sites by analysing hourly data for all AURN sites which measure both PM_{10} and $PM_{2.5}$ concentrations for years 2010 to current day. PMCoarse is calculated by subtracting the PM_{10} concentration by the $PM_{2.5}$ concentration for the hours when both size fractions are measured. The calculated average PMCoarse split is then used to estimate $PM_{2.5}$ concentrations by subtracting the PM_{10} concentration by the calculated average PMCoarse split. In 2024, the national factor for background and roadside sites was 4.5 and 6.0, respectively.

Figure A.16 shows the estimated $PM_{2.5}$ concentrations based on the PM_{10} data. Data from 2020 has been corrected based on TG16 guidance (multiplying by 0.7) whereas the data from 2021 to 2024 has been corrected based on TG22 guidance (subtracting the nationally derived factors for background and roadside sites, where appropriate).

Calculated concentrations of $PM_{2.5}$ in 2020 were highest at Brands Hill (SLH 11) at 17.8μg/m^3, increasing further by +0.9μg/m^3 in 2021. Concentrations fell in 2022 to 16.7μg/m^3, and further still in 2023 to 14.5μg/m^3. In 2024, a very small increase occurred (+0.1μg/m^3). Comparatively, Windmill (SLH 12) saw a small fluctuation from 2020 to 2022

(+0.1µg/m^3 on average), before falling to 10.5µg/m^3 in 2024. Concentrations at Spackmans Way to date are the lowest of the three sites, remaining below 10µg/m^3 over the last four years of available data.
All sites are above the WHO 2021 AQG level and only Spackmans Way (SLH 13) falls below the WHO 2005 AQG level, with Windmill (SLH 12) close to compliance in 2024 at 10.5µg/m^3.

National trends

When comparing to national trends of $PM_{2.5}$, urban background concentrations have seen stability between 2015 and 2019, with a notable decrease from 2019 to 2020 from 9.9µg/m^3 to 7.9µg/m^3 (20%). This recovered slightly in 2022 to 8.3µg/m^3 (5%), but fell again in 2023 to 7.2µg/m^3 (similar to data from Slough Borough Council). In 2024, concentrations remain unchanged at 7.2µg/m^3.

National roadside concentrations of $PM_{2.5}$ show a similar pattern to urban background trends in recent years, primarily due to a reduction in road transport emission sources. Since 2009, concentrations reduced from 12.8µg/m^3, to 7.7µg/m^3 in 202, with a marginal decrease in 2024 to 7.5µg/m^3.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Which AQMA? (1)	Monitoring Technique	Distance to Relevant Exposure (m) (2)	Distance to kerb of nearest road (m) (1)	Inlet Height (m)
SLH 8	Slough Lakeside 2	Industrial	503569	177385	NO_2, PM_{10}	No		Chemiluminescence BAM (PM_{10})	>200m	10m	4m
SLH 9	Slough Lakeside 2	Industrial	503569	177385	PM_{10}, $PM_{2.5}$	No		Co-located Osiris (PM_{10}, $PM_{2.5}$ and PM_1)	>200m	10m	4m
SLH 10	Slough Town Centre Wellington Street	Roadside	498413	179804	NO_2	Yes	AQMA 4	Chemiluminescence	8m	5m	1.5m
SLH 11	Brands Hill London Road	Roadside	501643	177753	NO_2, PM_{10}	Yes	AQMA 2	Chemiluminescence and BAM	12.5m	4m	1.5m
SLH 12	Slough Windmill Bath Road	Roadside	496528	180171	NO_2, PM_{10}	Yes	AQMA 3 Extension	Chemiluminescence and BAM	12m	7.5m	1.5m
SLH 13	Spackmans Way	Other	496447	179117	NO_2, PM_{10}	Yes	AQMA 1	Chemiluminescence and BAM	9.5m	2.9m	1.5m
SLH 14	Station Road Langley	Roadside	501150	179502	NO_2	No		Chemiluminescence	5.5m	2.5m	1.5m

Notes:

(1) N/A if not applicable

(2) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

Table A.2 – 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)
SLO 1 Relocated	Salt Hill Park tennis courts	Urban Background	496904	180187	NO_2	No	N/A	N/A	No	2.5
SLO 2 Relocated	Salt Hill Park footbridge	Urban Background	496785	180336	NO_2	No	N/A	N/A	No	2.5
SLO 3 Relocated	Salt Hill Park footpath	Urban Background	496665	180236	NO_2	No	N/A	N/A	No	2.0
SLO 4 Relocated	Lansdowne Avenue - new location	Roadside	497185	180050	NO_2	Yes - AQMA 4	0.0	11.0	No	2.0
SLO 5	Princess Street	Roadside	498541	179815	NO_2	Yes - AQMA 4	N/A	N/A	No	2.0
SLO 6	Sussex Place	Roadside	498784	179560	NO_2	No	-5.1	9.6	No	2.0
SLO 7	Colnbrook By-pass	Industrial	503196	177349	NO_2	No	33.0	5.0	No	2.0
SLO 8	Grampian Way	Other	501382	178101	NO_2	Yes - AQMA 1	-15.0	35.0	No	2.0
SLO 9	Tweed Road (B) Moved 2012	Other	501501	177879	NO_2	Yes - AQMA 1	-10.2	23.1	No	2.0
SLO 10	London Road (A)	Roadside	501733	177725	NO_2	Yes - AQMA 2	7.1	3.5	No	2.0
SLO 11	Torridge Road	Suburban	501637	177999	NO_2	Yes - AQMA 1	N/A	N/A	No	3.0
SLO 12	Lakeside Road	Industrial	503877	177459	NO_2	No	100.0	0.5	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)
SLO 13	Elbow Meadows	Suburban	503856	176538	NO_2	No	15.0	45.0	No	2.0
SLO 17	Horton Road (Caravan Park)	Suburban	503136	175654	NO_2	No	28.0	0.5	No	2.0
SLO 18	Brands Hill (A)	Roadside	501798	177659	NO_2	Yes - AQMA 2	3.0	4.8	No	2.5
SLO 19	Ditton Road	Roadside	500851	177890	NO_2	No	19.2	1.8	No	2.0
SLO 20	Hencroft Street	Urban Background	497925	179450	NO_2	No	5.0	>100	No	2.0
SLO 21	Windsor Road	Roadside	497457	179566	NO_2	No	8.0	2.5	No	2.5
SLO 22	Winvale	Other	497488	179090	NO_2	Yes - AQMA 1	N/A	N/A	No	2.0
SLO 23	Tuns Lane	Urban Background	496416	180126	NO_2	Yes - AQMA 3	1.8	18.0	No	2.5
SLO 24	Spackmans Way	Other	496272	179187	NO_2	Yes - AQMA 1	N/A	N/A	No	2.5
SLO 25	Paxton Avenue	Other	496050	179258	NO_2	Yes - AQMA 1	6.8	27.7	No	2.0
SLO 26	Yew Tree Rd (Ux Rd) (B)	Roadside	498473	179706	NO_2	Yes- AQMA 4	0.0	6.5	No	2.0
SLO 27	India Road	Other	498681	179972	NO_2	No	0.0	13.0	No	2.0
SLO 28	Rogans (Colnbrook by pass)	Roadside	501941	177633	NO_2	Yes - AQMA 2	-0.4	1.3	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)
SLO 29	Yew Tree Road (Uxbridge Rd)	Kerbside	498483	179707	NO_2	Yes - AQMA 4	4.5	1.5	No	2.0
SLO 30	Farnham Road (2)	Roadside	496397	180341	NO_2	Yes - AQMA 3	-2.6	10.8	No	2.0
SLO 31	Essex Avenue	Suburban	496200	181900	NO_2	No	3.0	1.4	No	2.0
SLO 32	Brands Hill (B)	Roadside	501853	177620	NO_2	Yes - AQMA 2	0.0	10.0	No	2.0
SLO 33	Wellington Street - Stratfield	Roadside	498168	179907	NO_2	Yes - AQMA 4	-5.4	14.7	No	2.5
SLO 34, SLO 35, SLO 36	Chalvey (CAS) *	Other	496562	179109	NO_2	Yes - AQMA 1	> 50	74.0	Yes	1.5
SLO 34 Relocated, SLO 35 Relocated, SLO 36 Relocated	Spackmans Way	Other	496447	179117	NO_2	Yes - AQMA 1	6.9	33.1	Yes	1.5
SLO 37	Blair Road-Victoria Court	Roadside	497105	180081	NO_2	Yes - AQMA 4	-1.7	10.8	No	2.0
SLO 38	Wellesley Road	Roadside	498071	179949	NO_2	Yes - AQMA 4	7.2	11.5	No	2.5
SLO 39	London Rd (B)	Roadside	501734	177733	NO_2	Yes - AQMA 2	0.0	10.5	No	2.5
SLO 40	Wexham Road	Roadside	498394	179849	NO_2	Yes - AQMA 4	2.8	2.5	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)
SLO 41	Sandringham Court	Other	493960	181355	NO_2	No	0.0	10.5	No	2.5
SLO 42	Walpole Rd	Other	493493	181378	NO_2	No	0.0	16.0	No	2.5
SLO 43	Windmill (Bath Rd)	Roadside	496533	180175	NO_2	Yes - AQMA 3 Extension	0.0	12.0	No	2.0
SLO 44	Goodman Park (Ux Rd)	Roadside	498961	180113	NO_2	No	2.0	8.5	No	2.5
SLO 45	London Rd (C)	Roadside	501658	177781	NO_2	Yes - AQMA 2	0.0	14.0	No	2.0
SLO 46	Cornwall House, Bath Rd	Roadside	497467	179971	NO_2	Yes - AQMA 4	4.8	5.0	No	2.0
SLO 47	Princes House, Bath Road	Roadside	497326	180003	NO_2	Yes - AQMA 4	0.0	4.4	No	2.0
SLO 48	Castle Street	Roadside	497960	179243	NO_2	No	15.5	14.0	No	2.0
SLO 49	Windsor Road (B)	Kerbside	497397	179471	NO_2	No	4.5	1.5	No	2.0
SLO 50	Tuns Lane (B)	Kerbside	496377	179929	NO_2	Yes - AQMA 3	9.0	3.0	No	2.0
SLO 51	Langley Road	Roadside	501014	179316	NO_2	No	5.3	2.0	No	2.5
SLO 52	Station Road	Roadside	501161	179538	NO_2	No	6.5	3.5	No	2.5
SLO 53	High Street Langley (A)	Roadside	501208	178799	NO_2	No	4.6	1.6	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)
SLO 54	High Street Langley (B)	Roadside	501256	179067	NO_2	No	1.5	5.2	No	2.5
SLO 55	Parlaunt Road	Roadside	501891	178954	NO_2	No	4.7	4.8	No	2.5
SLO 56	Sutton lane	Roadside	502241	178679	NO_2	No	3.5	4.0	No	2.5
SLO 57, SLO 58, SLO 59	Windmill	Kerbside	469528	180171	NO_2	Yes - AQMA 3 Extension	2.9	7.5	Yes	1.5
SLO 60, SLO 61, SLO 62	Wellington Street	Kerbside	498413	179804	NO_2	Yes - AQMA 4	1.7	5.2	Yes	1.5
SLO 63, SLO 64, SLO 65	Brands Hill	Kerbside	501643	177753	NO_2	Yes - AQMA 2	8.4	5.8	Yes	1.5
SLO 66, SLO 67, SLO 68	Paxton Avenue HE Receptor 1	Other	496146	179259	NO_2	Yes - AQMA 1	2.5	19.6	No	2.0
SLO 69, SLO 70, SLO 71	Spackmans Way HE Receptor 2	Other	496223	179217	NO_2	Yes - AQMA 1	0.0	32.5	No	1.5
SLO 72, SLO 73, SLO 74	Spackmans Way HE Receptor 3	Other	496225	179213	NO_2	Yes - AQMA 1	0.0	34.2	No	1.5
SLO 75, SLO 76, SLO 77	Spackmans Way HE Receptor 4	Other	496227	179207	NO_2	Yes - AQMA 1	0.0	34.7	No	1.5
SLO 78, SLO 79, SLO 80	Spackmans Way HE Receptor 5	Other	496229	179204	NO_2	Yes - AQMA 1	0.0	34.3	No	1.5

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)
SLO 81, SLO 82, SLO 83	Spackmans Way HE Receptor 6	Other	496232	179199	NO_2	Yes - AQMA 1	0.0	34.1	No	1.5
SLO 84, SLO 85, SLO 86	Spackmans Way HE Receptor 7	Other	496234	179195	NO_2	Yes - AQMA 1	0.0	33.9	No	1.5
SLO 87, SLO 88, SLO 89	Spackmans Way HE Receptor 8	Other	496236	179191	NO_2	Yes - AQMA 1	0.0	33.7	No	1.5
SLO 90, SLO 91, SLO 92	Spackmans Way HE Receptor 9	Other	496238	179186	NO_2	Yes - AQMA 1	0.0	33.8	No	1.5
SLO 93, SLO 94, SLO 95	Winvale HE Receptor 10	Other	497433	179092	NO_2	Yes - AQMA 1	N/A	N/A	No	2.0
SLO 96	Poyle Rd	Roadside	503272	176597	NO_2	No	0.0	7.0	No	1.5
SLO 97	Albert Street/Upton Court Park Road	Roadside	497725	179360	NO_2	No	13.2	2.9	No	1.5
SLO 98	The Hawthorns - Pippins (2)	Suburban	503527	176823	NO_2	No	14.6	1.2	No	2.5
SLO 99	The Hawthorns - Pippins (3)	Suburban	503510	176806	NO_2	No	8.9	2.2	No	2.5
SLO 100	The Hawthorns - Pippins (4)	Suburban	503613	176912	NO_2	No	2.0	28.4	No	1.5
SLO 101	Bower Way - Cippenham (5)	Kerbside	494101	180708	NO_2	No	2.0	1.0	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)
SLO 102	Erica Close - Cippenham (6)	Urban Background	494199	180637	NO_2	No	7.2	0.7	No	2.5
SLO 103	St Andrews Way - Cippenham (7)	Kerbside	493784	180662	NO_2	No	3.8	0.6	No	2.5
SLO 104	Dennis Way - Cippenham (8)	Suburban	493812	180572	NO_2	No	5.1	1.9	No	2.5
SLO 105	Francis Way - Cippenham (9)	Urban Background	493592	180737	NO_2	No	19.1	1.3	No	2.5
SLO 106	Monksfield Way - Claycots (10)	Kerbside	495488	182538	NO_2	No	35.1	0.7	No	2.5
SLO 107	Monksfield Way - Claycots (11)	Roadside	495457	182550	NO_2	No	6.1	2.0	No	2.0
SLO 108	Brighton Spur - Claycots (12)	Urban Background	495668	182430	NO_2	No	6.2	0.7	No	2.5
SLO 109	Hatton Avenue - Penn Wood (13)	Suburban	496526	182276	NO_2	No	5.1	1.1	No	2.5
SLO 110	Hatton Avenue - Penn Wood (14)	Suburban	496529	182243	NO_2	No	5.9	0.7	No	2.5
SLO 111	Cumberland Av. Footpath - Penn Wood (15)	Urban Background	496489	182270	NO_2	No	61.5	4.0	No	2.5
SLO 112	Oatlands Drive (a)	Roadside	497070	181108	NO_2	No	10.8	2.4	No	1.5
SLO 113	Oatlands Drive (b)	Roadside	497079	181088	NO_2	No	10.5	2.8	No	1.5
SLO 114	Elliman Avenue (a)	Roadside	497677	180876	NO_2	No	6.3	1.8	No	1.5

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)
SLO 115	Elliman Avenue (b)	Roadside	497671	180866	NO_2	No	5.0	1.8	No	1.5
SLO 116	Shaggy Calf Lane (a)	Roadside	498103	180842	NO_2	No	12.9	2.3	No	1.5
SLO 117	Shaggy Calf Lane (b)	Roadside	498112	180857	NO_2	No	11.8	1.8	No	1.5
SLO 118	Chalvey Road East (a)	Kerbside	497097	179521	NO_2	No	4.6	0.6	No	1.5
SLO 119	Chalvey Road East (b)	Roadside	497104	179511	NO_2	No	2.1	3.3	No	1.5
SLO 120	Ledgers Road (a)	Kerbside	497013	179870	NO_2	No	1.2	0.4	No	1.5
SLO 121	Ledgers Road (b)	Kerbside	497004	179874	NO_2	No	3.4	1.1	No	1.5
SLO 122	Cippenham Lane (a)	Kerbside	496167	179975	NO_2	No	7.8	0.9	No	1.5
SLO 123	Cippenham Lane (b)	Roadside	496184	179950	NO_2	No	8.0	8.3	No	1.5
SLO 124, SLO 125, SLO 126	Station Road, Langley	Roadside	501150	179502	NO_2	No	5.5	2.5	Yes	1.5
SLO 127	King John's Palace, Park Street	Roadside	502828	176996	NO_2	No	1.5	3.5	Yes	1.5
SLO 128	Park Street (north)	Roadside	502884	176967	NO_2	No	1.0	1.0	Yes	1.5

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)
SLO 129	Park Street (south)	Roadside	502884	176954	NO_2	No	13.5	1.5	No	1.5
SLO 130	Bath Road (a)	Roadside	503291	176709	NO_2	No	10.0	2.8	No	1.5
SLO 131	Bath Road (b)	Roadside	503522	176671	NO_2	No	14.0	2.8	No	1.5
SLO 132	Texaco Roundabout	Roadside	496035	182122	NO_2	No	4.8	3.0	No	1.5
SLO 133	Northborough Road	Kerbside	495961	182081	NO_2	No	10.0	0.5	No	1.5
SLO 134	Kingfisher Court	Kerbside	496003	182064	NO_2	No	2.9	0.5	No	1.5
SLO 135	Broad Oak	Kerbside	496063	182006	NO_2	No	0.0	0.0	No	1.5
SLO 136	Farnham Road (1)	Roadside	496049	181961	NO_2	No	10.5	2.9	No	1.5
SLO 137	Furnival Avenue	Kerbside	496007	181875	NO_2	No	10.8	0.5	No	1.5
SLO 138	Essex Avenue	Roadside	496146	181885	NO_2	No	5.8	2.0	No	1.5
SLO 139	Farnham Road (9)	Roadside	496360	180223	NO_2	Yes - AQMA 3	3.6	5.8	No	1.5
SLO 140	Farnham Road (2)	Roadside	496147	181621	NO_2	No	3.2	7.8	No	1.5
SLO 141	Farnham Road (3)	Roadside	496116	181586	NO_2	No	0.0	13.1	No	1.5

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)
SLO 142	Tuns Lane Café	Roadside	496361	180159	NO_2	Yes - AQMA 3	1.8	10.9	No	1.5
SLO 143	Farnham Road (4)	Roadside	496195	181195	NO_2	No	3.7	13.4	No	1.5
SLO 144	Farnham Road (5)	Roadside	496205	180888	NO_2	No	8.3	3.2	No	1.5
SLO 145	Farnham Road (6)	Roadside	496388	180469	NO_2	No	9.1	3.5	No	1.5
SLO 146	Farnham Road (7)	Roadside	496364	180376	NO_2	Yes - AQMA 3	10.7	4.9	No	1.5
SLO 147	Farnham Road (8)	Roadside	496380	180341	NO_2	Yes - AQMA 3	7.5	9.1	No	1.5

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.3 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m³)

Site 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
SLH 3	503542	176827	Suburban	-	-	16.2	17.8	21.1	-	-
SLH 4	496599	180156	Urban Background	-	-	-	-	-	-	-
SLH 7	496562	179109	Other	-	-	21.3	20	-	-	-
SLH 8	503569	77385	Industrial	97.2	97.2	19.1	18.1	19.9	17.2	16.1
SLH 10	498413	179804	Roadside	97.8	97.8	24.6	27.3	28.3	25.1	22.6
SLH 11	501643	177753	Roadside	99.8	99.8	27.3	32.1	32.6	26.2	23.8
SLH 12	496528	180171	Roadside	99.9	99.9	26.9	28.9	28.7	25.5	22.4
SLH 13	496447	179117	Other	99.4	99.4	-	23.2	22.7	22.2	20.1
SLH 14	501150	179502	Roadside	98.9	98.9	-	-	-	20.5	17.2

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

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

☒ **Where exceedances of the NO_2 annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2024.**

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the NO_2 annual mean objective of 40µg/m³ are shown in **bold**.

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%).

Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring ($\mu g/m^3$)

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
SLO 1 Relocated	496904	180187	Urban Background	100.0	100.0	19.7	18.5	19.4	16.2	14.4
SLO 2 Relocated	496785	180336	Urban Background	90.8	90.8	15.4	14.5	15.5	13.5	13.1
SLO 3 Relocated	496665	180236	Urban Background	100.0	100.0	17.6	18.0	16.5	15.0	12.7
SLO 4 Relocated	497185	180050	Roadside	100.0	100.0	19.4	20.2	21.3	18.8	16.3
SLO 5	498541	179815	Roadside	82.5	82.5	27.6	25.2	28.3	23.2	21.3
SLO 6	498784	179560	Roadside	0.0	0.0	21.2	21.2	23.8	-	-
SLO 7	503196	177349	Industrial	100.0	100.0	23.8	23.5	25.3	20.1	19.0
SLO 8	501382	178101	Other	100.0	100.0	26.3	23.0	27.8	21.9	21.4
SLO 9	501501	177879	Other	0.0	0.0	22.9	21.2	24.6	-	-
SLO 10	501733	177725	Roadside	100.0	100.0	28.8	29.7	32.5	25.9	23.7
SLO 11	501637	177999	Suburban	0.0	0.0	20.5	19.7	21.7	-	-
SLO 12	503877	177459	Industrial	100.0	100.0	26.6	22.3	24.4	19.8	18.9

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
SLO 13	503856	176538	Suburban	100.0	100.0	20.9	19.6	21.9	18.2	17.1
SLO 17	503136	175654	Suburban	90.6	90.6	24.9	25.7	28.3	25.6	22.1
SLO 18	501798	177659	Roadside	93.0	93.0	38.5	36.5	31.6	24.6	20.8
SLO 19	500851	177890	Roadside	100.0	100.0	22.7	22.1	23.5	22.0	18.9
SLO 20	497925	179450	Urban Background	0.0	0.0	16.8	17.0	-	-	-
SLO 21	497457	179566	Roadside	92.7	92.7	24.0	24.1	25.2	22.1	20.3
SLO 22	497488	179090	Other	100.0	100.0	23.1	19.8	21.0	19.8	19.5
SLO 23	496416	180126	Urban Background	90.6	90.6	22.0	21.9	22.2	20.0	17.9
SLO 24	496272	179187	Other	100.0	100.0	22.6	20.9	21.4	18.4	17.8
SLO 25	496050	179258	Other	100.0	100.0	20.3	19.0	19.6	19.6	18.0
SLO 26	498473	179706	Roadside	84.9	84.9	26.7	29.3	29.7	26.1	22.9
SLO 27	498681	179972	Other	0.0	0.0	19.8	16.9	-	-	-
SLO 28	501941	177633	Roadside	100.0	100.0	25.5	25.6	28.8	25.7	23.9

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
SLO 29	498483	179707	Kerbside	100.0	100.0	33.8	39.0	**44.2**	34.6	32.5
SLO 30	496397	180341	Roadside	0.0	0.0	23.2	23.9	23.4	-	-
SLO 31	496200	181900	Suburban	0.0	0.0	21.9	20.9	-	-	-
SLO 32	501853	177620	Roadside	100.0	100.0	23.9	23.7	22.2	18.8	15.6
SLO 33	498168	179907	Roadside	0.0	0.0	23.1	20.0	24.2	-	-
SLO 34, SLO 35, SLO 36	496562	179109	Other	0.0	0.0	18.4	18.4	-	-	-
SLO 34 Relocated, SLO 35 Relocated, SLO 36 Relocated	496447	179117	Other	100.0	100.0	-	22.5	23.5	21.6	20.1
SLO 37	497105	180081	Roadside	100.0	100.0	28.2	26.3	27.1	22.7	22.3
SLO 38	498071	179949	Roadside	100.0	100.0	25.0	22.4	22.4	18.1	18.4
SLO 39	501734	177733	Roadside	93.0	93.0	21.8	20.6	22.9	20.1	17.9
SLO 40	498394	179849	Roadside	100.0	100.0	29.7	29.6	32.6	29.1	25.1

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
SLO 41	493960	181355	Other	0.0	0.0	13.6	12.7	-	-	-
SLO 42	493493	181378	Other	0.0	0.0	12.8	13.2	-	-	-
SLO 43	496533	180175	Roadside	100.0	100.0	25.0	25.0	25.6	23.3	20.4
SLO 44	498961	180113	Roadside	100.0	100.0	24.7	23.6	23.6	20.8	20.6
SLO 45	501658	177781	Roadside	0.0	0.0	19.8	18.9	-	-	-
SLO 46	497467	179971	Roadside	100.0	100.0	29.3	26.3	29.8	25.5	23.9
SLO 47	497326	180003	Roadside	92.7	92.7	22.5	22.7	24.5	21.1	19.4
SLO 48	497960	179243	Roadside	0.0	0.0	22.2	20.1	-	-	-
SLO 49	497397	179471	Kerbside	90.6	90.6	26.0	28.2	28.2	24.0	22.5
SLO 50	496377	179929	Kerbside	100.0	100.0	30.6	30.7	32.9	27.2	25.1
SLO 51	501014	179316	Roadside	100.0	100.0	24.8	24.9	26.7	22.7	18.6
SLO 52	501161	179538	Roadside	100.0	100.0	23.7	22.4	24.8	21.7	19.1
SLO 53	501208	178799	Roadside	100.0	100.0	27.9	27.1	30.3	25.1	22.3

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
SLO 54	501256	179067	Roadside	90.8	90.8	24.6	23.3	25.3	18.5	18.6
SLO 55	501891	178954	Roadside	100.0	100.0	21.3	20.1	21.0	18.7	16.8
SLO 56	502241	178679	Roadside	100.0	100.0	26.3	23.3	24.1	20.9	19.8
SLO 57, SLO 58, SLO 59	469528	180171	Kerbside	100.0	100.0	27.3	28.2	28.8	27.0	22.7
SLO 60, SLO 61, SLO 62	498413	179804	Kerbside	100.0	100.0	24.9	26.8	29.5	25.8	23.4
SLO 63, SLO 64, SLO 65	501643	177753	Kerbside	100.0	100.0	29.1	32.2	36.8	27.0	26.5
SLO 66, SLO 67, SLO 68	496146	179259	Other	100.0	100.0	22.6	20.8	23.5	21.4	18.7
SLO 69, SLO 70, SLO 71	496223	179217	Other	100.0	100.0	23.1	21.6	23.6	22.5	20.4
SLO 72, SLO 73, SLO 74	496225	179213	Other	82.5	82.5	24.7	21.1	23.9	21.9	20.4
SLO 75, SLO 76, SLO 77	496227	179207	Other	100.0	100.0	22.6	20.3	22.6	20.0	19.1
SLO 78, SLO 79, SLO 80	496229	179204	Other	75.0	75.0	24.1	22.2	24.0	22.1	22.0

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
SLO 81, SLO 82, SLO 83	496232	179199	Other	65.5	65.5	24.1	21.1	24.0	22.1	22.0
SLO 84, SLO 85, SLO 86	496234	179195	Other	90.6	90.6	23.3	22.0	24.6	22.4	20.9
SLO 87, SLO 88, SLO 89	496236	179191	Other	100.0	100.0	23.1	21.8	23.5	20.9	19.5
SLO 90, SLO 91, SLO 92	496238	179186	Other	74.9	74.9	23.1	21.5	23.8	21.5	20.9
SLO 93, SLO 94, SLO 95	497433	179092	Other	100.0	100.0	23.8	20.3	21.2	19.5	19.8
SLO 96	503272	176597	Roadside	100.0	100.0	20.5	20.1	23.1	20.7	17.2
SLO 97	497725	179360	Roadside	100.0	100.0	28.2	27.1	29.2	21.8	22.0
SLO 98	503527	176823	Suburban	0.0	0.0	17.1	18.1	-	-	-
SLO 99	503510	176806	Suburban	0.0	0.0	18.0	18.1	-	-	-
SLO 100	503613	176912	Suburban	0.0	0.0	16.7	15.4	-	-	-
SLO 101	494101	180708	Kerbside	0.0	0.0	20.4	20.0	-	-	-
SLO 102	494199	180637	Urban Background	0.0	0.0	14.4	13.9	-	-	-

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
SLO 103	493784	180662	Kerbside	0.0	0.0	18.8	17.7	-	-	-
SLO 104	493812	180572	Suburban	0.0	0.0	17.7	16.4	-	-	-
SLO 105	493592	180737	Urban Background	0.0	0.0	16.4	13.7	-	-	-
SLO 106	495488	182538	Kerbside	0.0	0.0	17.1	16.1	-	-	-
SLO 107	495457	182550	Roadside	0.0	0.0	17.8	17.2	-	-	-
SLO 108	495668	182430	Urban Background	0.0	0.0	14.3	13.2	-	-	-
SLO 109	496526	182276	Suburban	0.0	0.0	14.7	12.8	-	-	-
SLO 110	496529	182243	Suburban	0.0	0.0	19.3	16.4	-	-	-
SLO 111	496489	182270	Urban Background	0.0	0.0	14.8	12.8	-	-	-
SLO 112	497070	181108	Roadside	90.8	90.8	-	24.5	26.8	23.4	20.2
SLO 113	497079	181088	Roadside	100.0	100.0	-	23.3	25.2	19.6	19.1
SLO 114	497677	180876	Roadside	100.0	100.0	-	28.0	27.3	21.3	20.4
SLO 115	497671	180866	Roadside	75.0	75.0	-	25.7	28.0	21.1	19.6

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
SLO 116	498103	180842	Roadside	100.0	100.0	-	24.5	23.8	22.8	18.8
SLO 117	498112	180857	Roadside	100.0	100.0	-	21.5	24.5	20.1	17.9
SLO 118	497097	179521	Kerbside	100.0	100.0	-	25.4	26.4	22.1	21.1
SLO 119	497104	179511	Roadside	90.6	90.6	-	26.1	25.8	20.8	20.5
SLO 120	497013	179870	Kerbside	83.0	83.0	-	23.5	25.1	22.9	18.1
SLO 121	497004	179874	Kerbside	82.5	82.5	-	31.2	35.7	29.8	26.6
SLO 122	496167	179975	Kerbside	100.0	100.0	-	25.0	28.0	23.5	20.6
SLO 123	496184	179950	Roadside	100.0	100.0	-	21.5	20.8	18.4	16.9
SLO 124, SLO 125, SLO 126	501150	179502	Roadside	100.0	100.0	-	-	-	20.3	17.7
SLO 127	502828	176996	Roadside	100.0	100.0	-	-	-	24.1	23.5
SLO 128	502884	176967	Roadside	90.8	90.8	-	-	-	23.0	23.7
SLO 129	502884	176954	Roadside	90.8	90.8	-	-	-	17.9	17.5
SLO 130	503291	176709	Roadside	100.0	100.0	-	-	-	24.6	20.7

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
SLO 131	503522	176671	Roadside	92.2	92.2	-	-	-	-	23.6
SLO 132	496035	182122	Roadside	37.5	25.0	-	-	-	-	19.6
SLO 133	495961	182081	Kerbside	100.0	67.9	-	-	-	-	25.7
SLO 134	496003	182064	Kerbside	100.0	67.9	-	-	-	-	25.0
SLO 135	496063	182006	Kerbside	75.0	52.8	-	-	-	-	18.7
SLO 136	496049	181961	Roadside	87.5	58.5	-	-	-	-	26.3
SLO 137	496007	181875	Kerbside	62.5	42.6	-	-	-	-	14.6
SLO 138	496146	181885	Roadside	87.5	58.8	-	-	-	-	17.9
SLO 139	496360	180223	Roadside	100.0	67.9	-	-	-	-	22.2
SLO 140	496147	181621	Roadside	62.5	42.6	-	-	-	-	23.8
SLO 141	496116	181586	Roadside	100.0	67.9	-	-	-	-	21.5
SLO 142	496361	180159	Roadside	75.0	49.3	-	-	-	-	23.1
SLO 143	496195	181195	Roadside	100.0	67.9	-	-	-	-	17.3

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
SLO 144	496205	180888	Roadside	25.0	17.5	-	-	-	-	25.5
SLO 145	496388	180469	Roadside	62.5	42.9	-	-	-	-	23.5
SLO 146	496364	180376	Roadside	100.0	67.9	-	-	-	-	21.0
SLO 147	496380	180341	Roadside	75.0	50.7	-	-	-	-	21.2

☒ **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 **<u>bold and underlined</u>**.

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%).

Table A.4.1 – Concentration Change from 2019 to 2023 (μg/m^3)

Site	Site ID	AQMA / Non-AQMA	Annual Mean NO_2 2019	Annual Mean NO_2 2020	Annual Mean NO_2 2021	Annual Mean NO_2 2022	Annual Mean NO_2 2023	5 Year Change in NO_2 2019-2023	5 Year Change in NO_2 (%)	Year on Year Change in NO_2 19-20	Year on Year Change in NO_2 20-21	Year on Year Change in NO_2 21-22	Year on Year Change in NO_2 22-23	Year on Year Change in NO_2 Average	Year on Year Change in NO_2 (%) 19-20	Year on Year Change in NO_2 (%) 20-21	Year on Year Change in NO_2 (%) 21-22	Year on Year Change in NO_2 (%) 22-23	Year on Year Change in NO_2 (%) Average
Grampian Way	8	1	26.3	23.0	27.8	21.9	21.4	-4.9	-18.7	-3.3	4.7	-5.9	-0.5	-1.2	-12%	21%	-21%	-2%	-4%
Winvale	22	1	23.1	19.8	21.0	19.8	19.5	-3.6	-15.7	-3.3	1.1	-1.2	-0.3	-0.9	-14%	6%	-6%	-2%	-4%
Spackmans Way	24	1	22.6	20.9	21.4	18.4	17.8	-4.8	-21.3	-1.7	0.5	-3.0	-0.6	-1.2	-8%	3%	-14%	-3%	-6%
Paxton Avenue	25	1	20.3	19.0	19.6	19.6	18.0	-2.3	-11.6	-1.3	0.6	0.0	-1.6	-0.6	-7%	3%	0%	-8%	-3%
HE Receptor 1	66, 67, 68	1	22.6	20.8	23.5	21.4	18.7	-3.9	-17.3	-1.8	2.7	-2.1	-2.7	-1.0	-8%	13%	-9%	-12%	-4%
HE Receptor 2	69, 70, 71	1	23.1	21.6	23.6	22.5	20.4	-2.7	-11.8	-1.5	2.0	-1.1	-2.1	-0.7	-6%	9%	-5%	-9%	-3%
HE Receptor 3	72, 73, 74	1	24.7	21.1	23.9	21.9	20.4	-4.3	-17.3	-3.6	2.8	-1.9	-1.5	-1.1	-15%	13%	-8%	-7%	-4%
HE Receptor 4	75, 76, 77	1	22.6	20.3	22.6	20.0	19.1	-3.4	-15.2	-2.2	2.2	-2.5	-0.9	-0.9	-10%	11%	-11%	-5%	-4%
HE Receptor 5	78, 79, 80	1	24.1	22.2	24.0	22.1	22.0	-2.1	-8.8	-1.9	1.8	-1.9	-0.1	-0.5	-8%	8%	-8%	-1%	-2%
HE Receptor 6	80, 81, 82	1	24.1	21.1	24.0	22.1	22.0	-2.1	-8.8	-3.0	2.9	-1.9	-0.1	-0.5	-13%	14%	-8%	-1%	-2%
HE Receptor 7	84, 85, 86	1	23.3	22.0	24.6	22.4	20.9	-2.4	-10.4	-1.3	2.6	-2.2	-1.5	-0.6	-6%	12%	-9%	-7%	-2%
HE Receptor 8	87, 88, 89	1	23.1	21.8	23.5	20.9	19.5	-3.6	-15.6	-1.3	1.6	-2.6	-1.3	-0.9	-6%	7%	-11%	-6%	-4%
HE Receptor 9	90, 91, 92	1	23.1	21.5	23.8	21.5	20.9	-2.2	-9.6	-1.5	2.2	-2.3	-0.6	-0.6	-7%	10%	-10%	-3%	-2%
HE Receptor 10	93, 94, 95	1	23.8	20.3	21.2	19.5	19.8	-4.1	-17.0	-3.5	0.9	-1.7	0.3	-1.0	-15%	4%	-8%	1%	-4%
Average								**-3.3**	**-14.2**					**-0.8**					**-3%**
London Road (A)	10	2	28.8	29.7	32.5	25.9	23.7	-5.2	-17.9	0.9	2.7	-6.5	-2.2	-1.3	3%	9%	-20%	-9%	-4%
Brands Hill (A)	18	2	38.5	36.5	31.6	24.6	20.8	-17.8	-46.1	-2.0	-4.9	-7.0	-3.9	-4.4	-5%	-14%	-22%	-16%	-14%
Rogans (Colnbrook by-pass)	28	2	25.5	25.6	28.8	25.7	23.9	-1.6	-6.4	0.1	3.2	-3.1	-1.8	-0.4	0%	12%	-11%	-7%	-1%
Brands Hill (B)	32	2	23.9	23.7	22.2	18.8	15.6	-8.3	-34.7	-0.2	-1.6	-3.4	-3.2	-2.1	-1%	-7%	-15%	-17%	-10%
London Road (B)	39	2	21.8	20.6	22.9	20.1	17.9	-3.9	-17.8	-1.2	2.3	-2.8	-2.2	-1.0	-5%	11%	-12%	-11%	-4%
Brands Hill Triplicate	63, 64, 65	2	29.1	32.2	36.8	27.0	26.5	-2.6	-8.9	3.2	4.6	-9.8	-0.5	-0.6	11%	14%	-27%	-2%	-1%
Average								**-6.6**	**-22.0**					**-1.6**					**-6%**
Tuns Lane	23	3	22.0	21.9	22.2	20.0	17.9	-4.1	-18.7	0.0	0.3	-2.3	-2.1	-1.0	0%	1%	-10%	-11%	-5%
Tuns Lane (B)	50	3	30.6	30.7	32.9	27.2	25.1	-5.5	-18.0	0.1	2.2	-5.7	-2.1	-1.4	0%	7%	-17%	-8%	-4%
Windmill Bath Road	43	Ext 3	25.0	25.0	25.6	23.3	20.4	-4.6	-18.5	0.0	0.5	-2.3	-2.9	-1.2	0%	2%	-9%	-13%	-5%
Windmill triplicate	57, 58, 59	Ext 3	27.3	28.2	28.8	27.0	22.7	-4.6	-16.8	0.9	0.6	-1.8	-4.3	-1.1	3%	2%	-6%	-16%	-4%
Average								**-4.7**	**-18.0**					**-1.2**					**-5%**
Princes Street	5	4	27.6	25.2	28.3	23.2	21.3	-6.3	-22.9	-2.4	3.1	-5.1	-1.9	-1.6	-9%	12%	-18%	-8%	-6%
Yew Tree Road (façade) New	26	4	26.7	29.3	29.7	26.1	22.9	-3.7	-14.0	2.6	0.4	-3.7	-3.1	-0.9	10%	1%	-12%	-12%	-3%
Yew Tree Road	29	4	33.8	39.0	44.2	34.6	32.5	-1.4	-4.0	5.1	5.3	-9.7	-2.1	-0.3	15%	13%	-22%	-6%	0%
Blair Road - Victoria Court	37	4	28.2	26.3	27.1	22.7	22.3	-5.9	-21.0	-1.8	0.8	-4.4	-0.5	-1.5	-6%	3%	-16%	-2%	-5%
Wellesley Road	38	4	25.0	22.4	22.4	18.1	18.4	-6.6	-26.4	-2.6	0.1	-4.3	0.3	-1.6	-10%	0%	-19%	2%	-7%
Wexham Road	40	4	29.7	29.6	32.6	29.1	25.1	-4.6	-15.5	-0.1	2.9	-3.5	-3.9	-1.2	0%	10%	-11%	-14%	-4%
Cornwall House, Bath Road	46	4	29.3	26.3	29.8	25.5	23.9	-5.4	-18.6	-3.0	3.6	-4.4	-1.6	-1.4	-10%	14%	-15%	-6%	-4%
Princess House, Bath Road	47	4	22.5	22.7	24.5	21.1	19.4	-3.1	-13.9	0.2	1.8	-3.4	-1.7	-0.8	1%	8%	-14%	-8%	-3%

Site	Site ID	AQMA / Non-AQMA	Annual Mean NO_2 2019	Annual Mean NO_2 2020	Annual Mean NO_2 2021	Annual Mean NO_2 2022	Annual Mean NO_2 2023	5 Year Change in NO_2 2019-2023	5 Year Change in NO_2 (%)	Year on Year Change in NO_2 19-20	Year on Year Change in NO_2 20-21	Year on Year Change in NO_2 21-22	Year on Year Change in NO_2 22-23	Year on Year Change in NO_2 Average	Year on Year Change in NO_2 (%) 19-20	Year on Year Change in NO_2 (%) 20-21	Year on Year Change in NO_2 (%) 21-22	Year on Year Change in NO_2 (%) 22-23	Year on Year Change in NO_2 (%) Average
Wellington Street Triplicate	60, 61, 62	4	24.9	26.8	29.5	25.8	23.4	-1.4	-5.8	2.0	2.7	-3.8	-2.3	-0.4	8%	10%	-13%	-9%	-1%
Average								**-4.3**	**-15.8**					**-1.1**					**-4%**
Colnbrook by-pass	7	I	23.8	23.5	25.3	20.1	19.0	-4.8	-20.0	-0.3	1.9	-5.2	-1.1	-1.2	-1%	8%	-21%	-5%	-5%
Lakeside Road	12	I	26.6	22.3	24.4	19.8	18.9	-7.7	-28.8	-4.3	2.2	-4.6	-0.9	-1.9	-16%	10%	-19%	-5%	-7%
Horton Road (Caravan Site)	17	I	24.9	25.7	28.3	25.6	22.1	-2.8	-11.2	0.8	2.5	-2.7	-3.5	-0.7	3%	10%	-9%	-14%	-2%
Poyle Road	96	I	20.5	20.1	23.1	20.7	17.2	-3.3	-16.0	-0.4	3.0	-2.4	-3.5	-0.8	-2%	15%	-10%	-17%	-4%
Ditton Road	19	R	22.7	22.1	23.5	22.0	18.9	-3.8	-16.9	-0.6	1.4	-1.5	-3.1	-1.0	-3%	6%	-7%	-14%	-4%
Windsor Road	21	R	24.0	24.1	25.2	22.1	20.3	-3.7	-15.2	0.1	1.2	-3.1	-1.8	-0.9	0%	5%	-12%	-8%	-4%
Goodman Park (Uxbridge Rd)	44	R	24.7	23.6	23.6	20.8	20.6	-4.1	-16.8	-1.1	0.0	-2.8	-0.2	-1.0	-5%	0%	-12%	-1%	-4%
Langley Road	51	R	24.8	24.9	26.7	22.7	18.6	-6.2	-24.9	0.1	1.8	-4.0	-4.1	-1.5	0%	7%	-15%	-18%	-6%
Station Road	52	R	23.7	22.4	24.8	21.7	19.1	-4.6	-19.4	-1.3	2.4	-3.0	-2.6	-1.2	-6%	11%	-12%	-12%	-5%
High Street Langley (A)	53	R	27.9	27.1	30.3	25.1	22.3	-5.7	-20.3	-0.9	3.2	-5.2	-2.8	-1.4	-3%	12%	-17%	-11%	-5%
High Street Langley (B)	54	R	24.6	23.3	25.3	18.5	18.6	-6.0	-24.2	-1.3	1.9	-6.7	0.1	-1.5	-5%	8%	-27%	1%	-6%
Parlaunt Road	55	R	21.3	20.1	21.0	18.7	16.8	-4.5	-20.9	-1.2	0.8	-2.3	-1.8	-1.1	-5%	4%	-11%	-10%	-6%
Sutton Lane	56	R	26.3	23.3	24.1	20.9	19.8	-6.4	-24.5	-3.0	0.8	-3.2	-1.0	-1.6	-11%	3%	-13%	-5%	-7%
Albert Street/Upton Court Road	97	R	28.2	27.1	29.2	21.8	22.0	-6.2	-21.9	-1.0	2.1	-7.4	0.2	-1.5	-4%	8%	-25%	1%	-5%
Windsor Road (B)	49	K	26.0	28.2	28.2	24.0	22.5	-3.5	-13.6	2.2	0.0	-4.2	-1.5	-0.9	9%	0%	-15%	-6%	-3%
Elbow Meadows	13	S	20.9	19.6	21.9	18.2	17.1	-3.8	-18.3	-1.3	2.3	-3.7	-1.1	-1.0	-6%	12%	-17%	-6%	-4%
Average								-4.8	-19.6					-1.2					-5%

Non-AQMA sites = Industrial (I), Roadside (R), Kerbside (K), and Suburban (S).

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

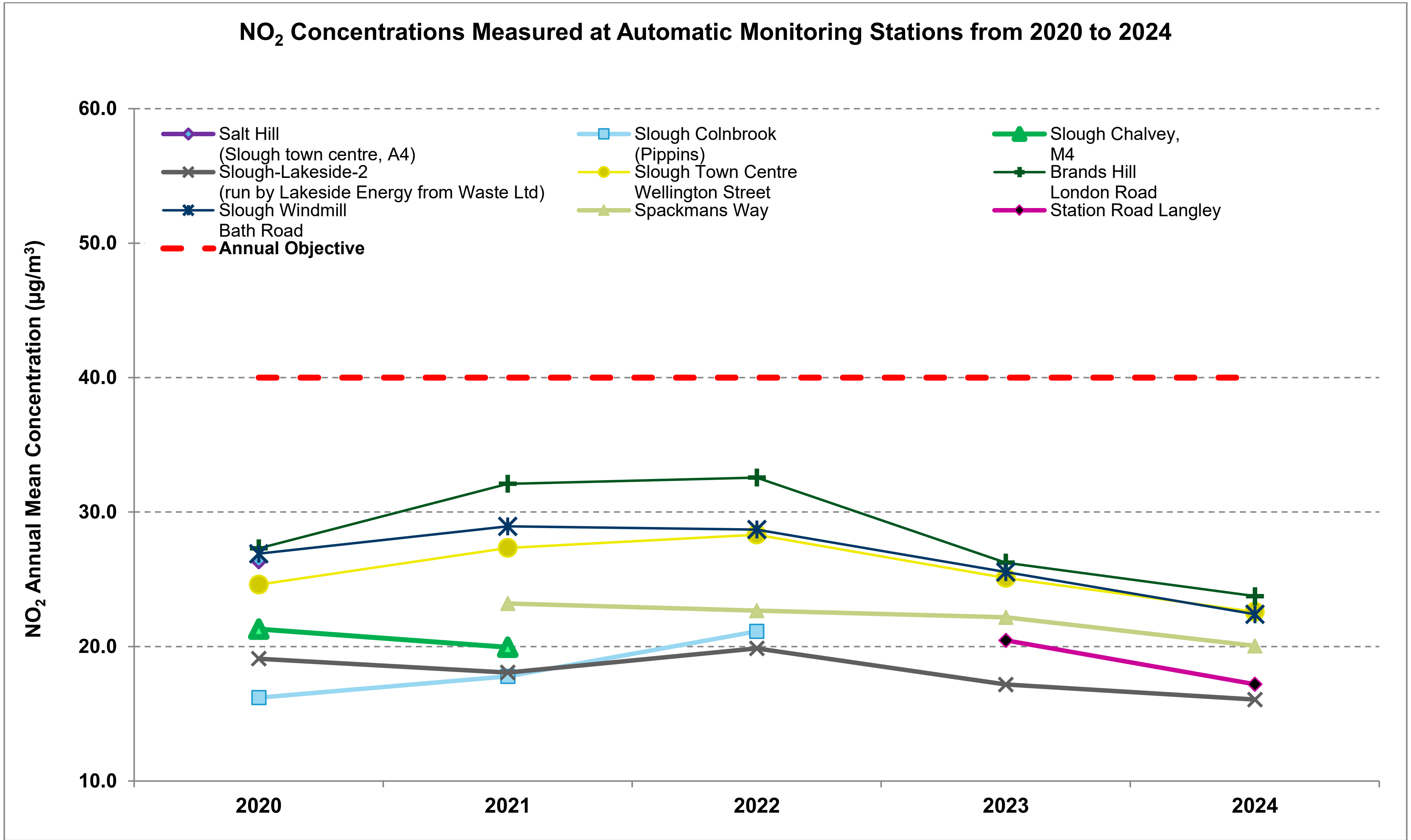


Figure A.2 – Trends in Annual Mean NO_2 Concentrations

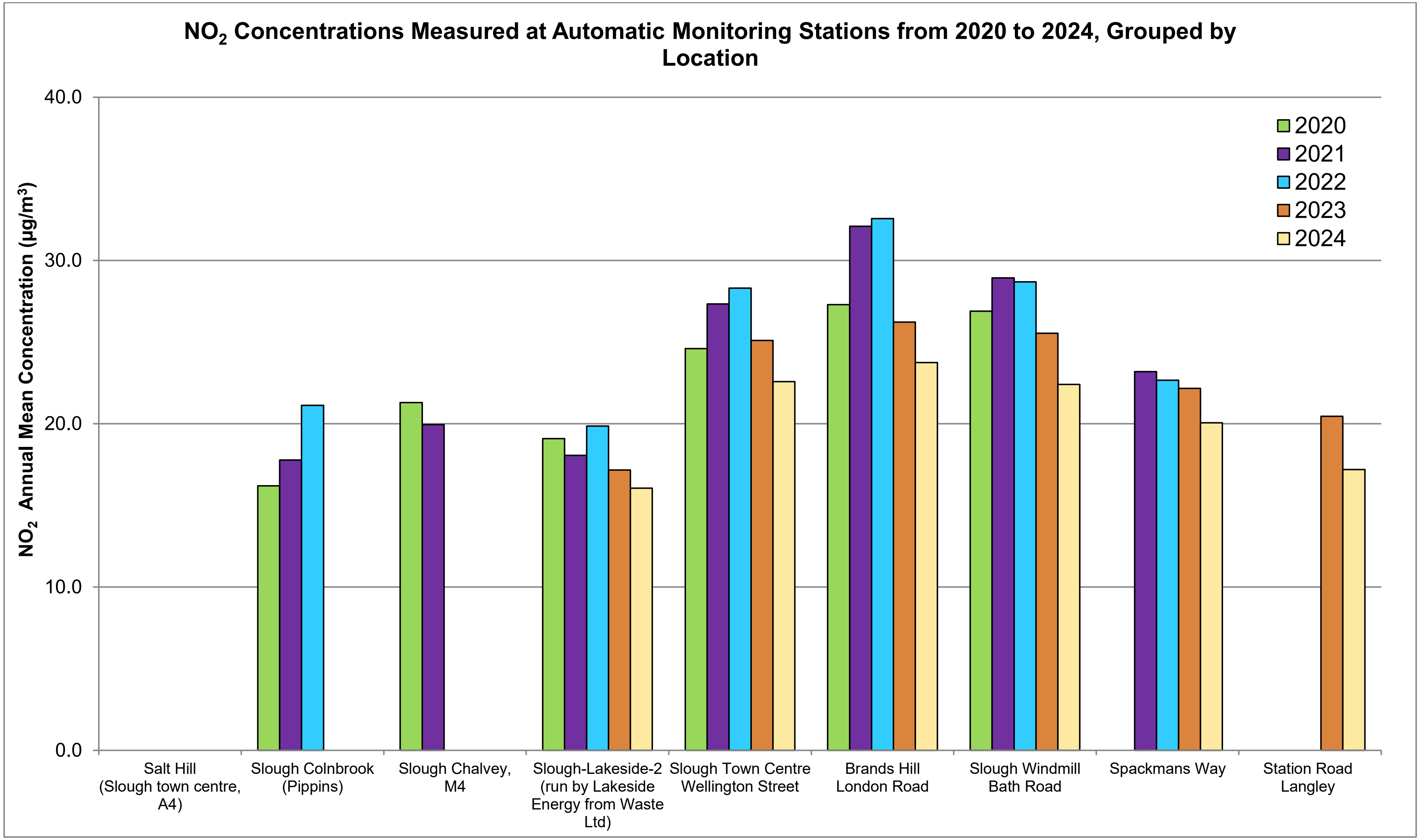


Figure A.3 – 10 Year Trend in Annual Mean NO_2 Concentrations

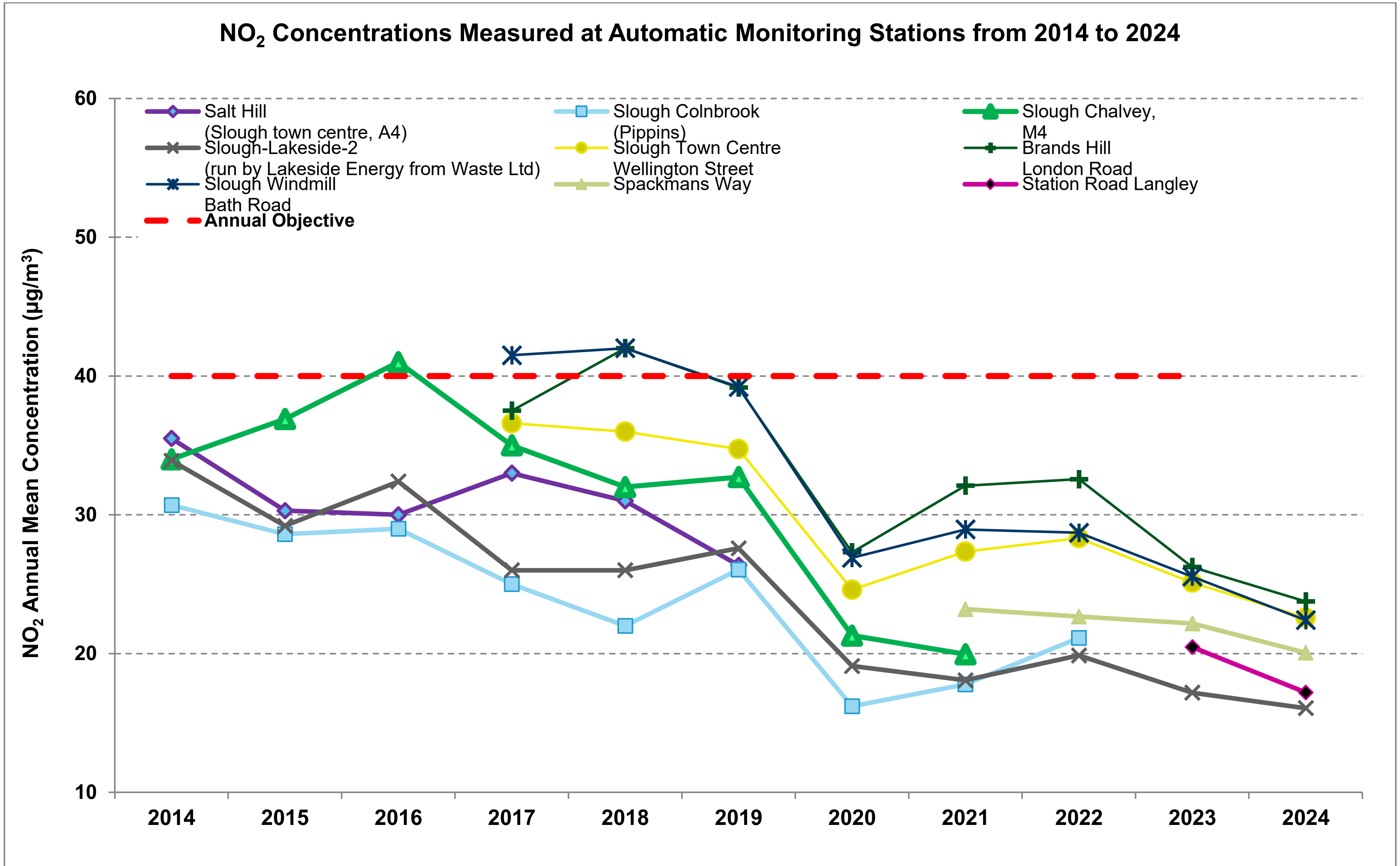


Figure A.4 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at AQMA 1

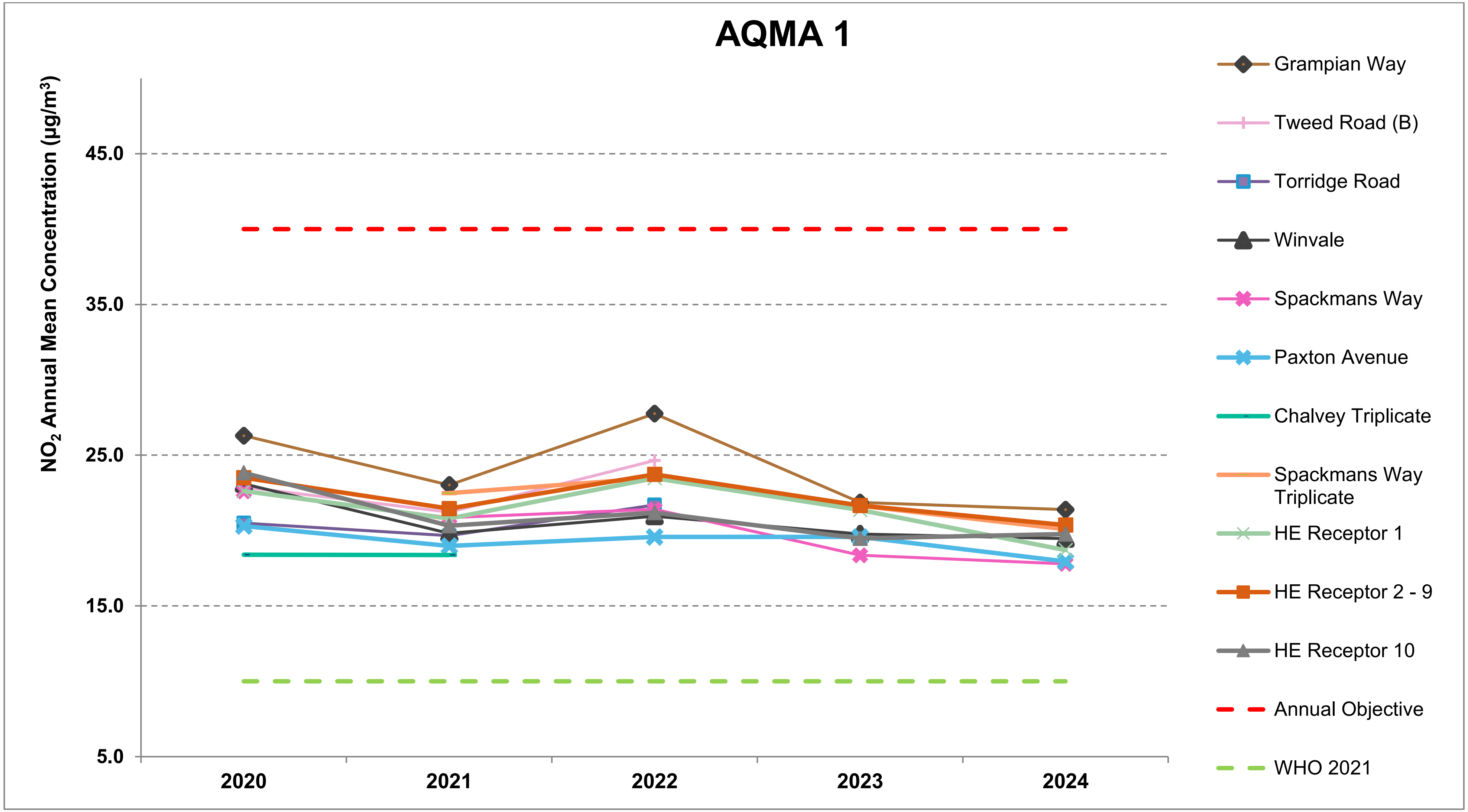


Figure A.5 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at AQMA 2

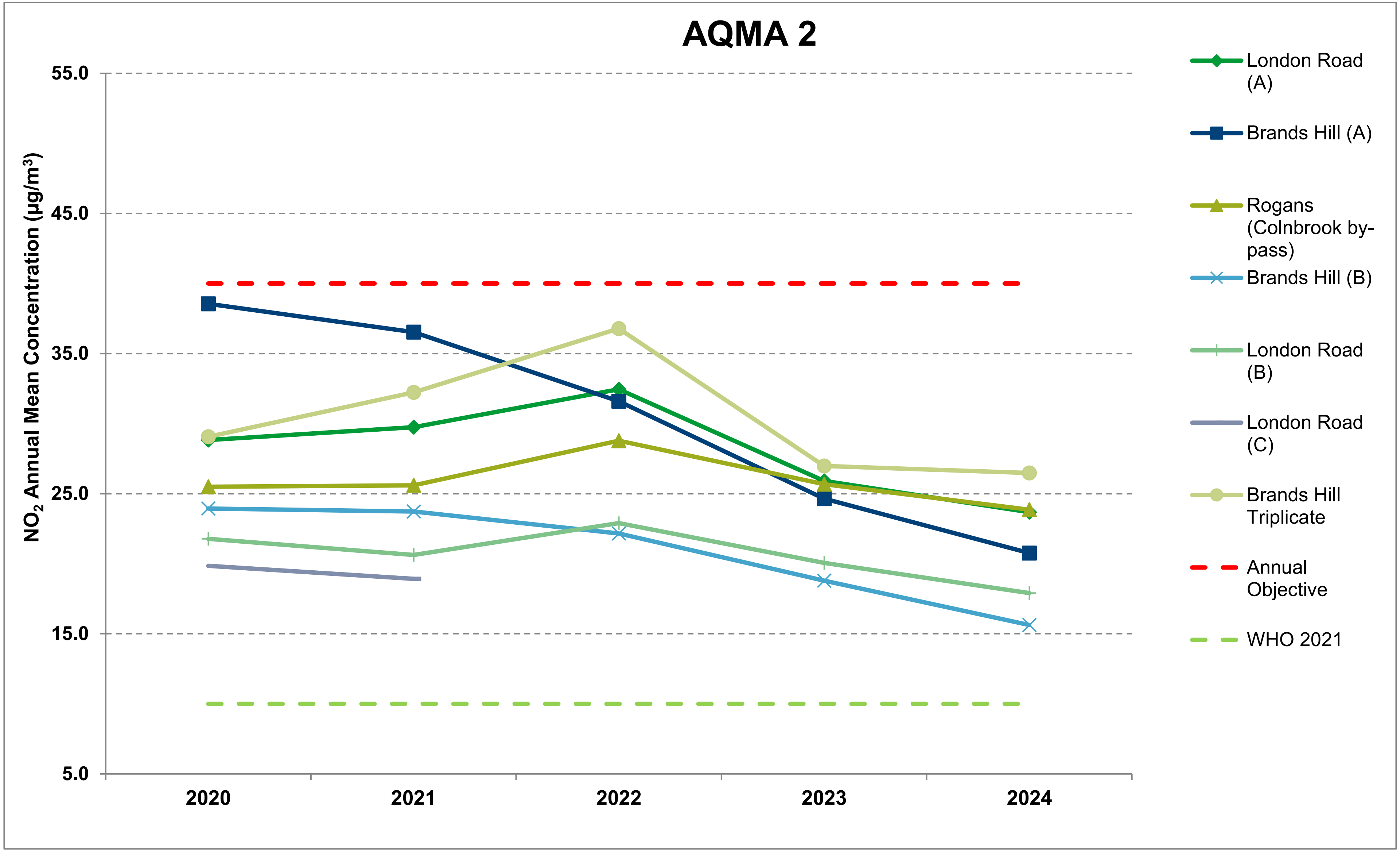


Figure A.6 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at AQMA 3 and AQMA 3 Extension

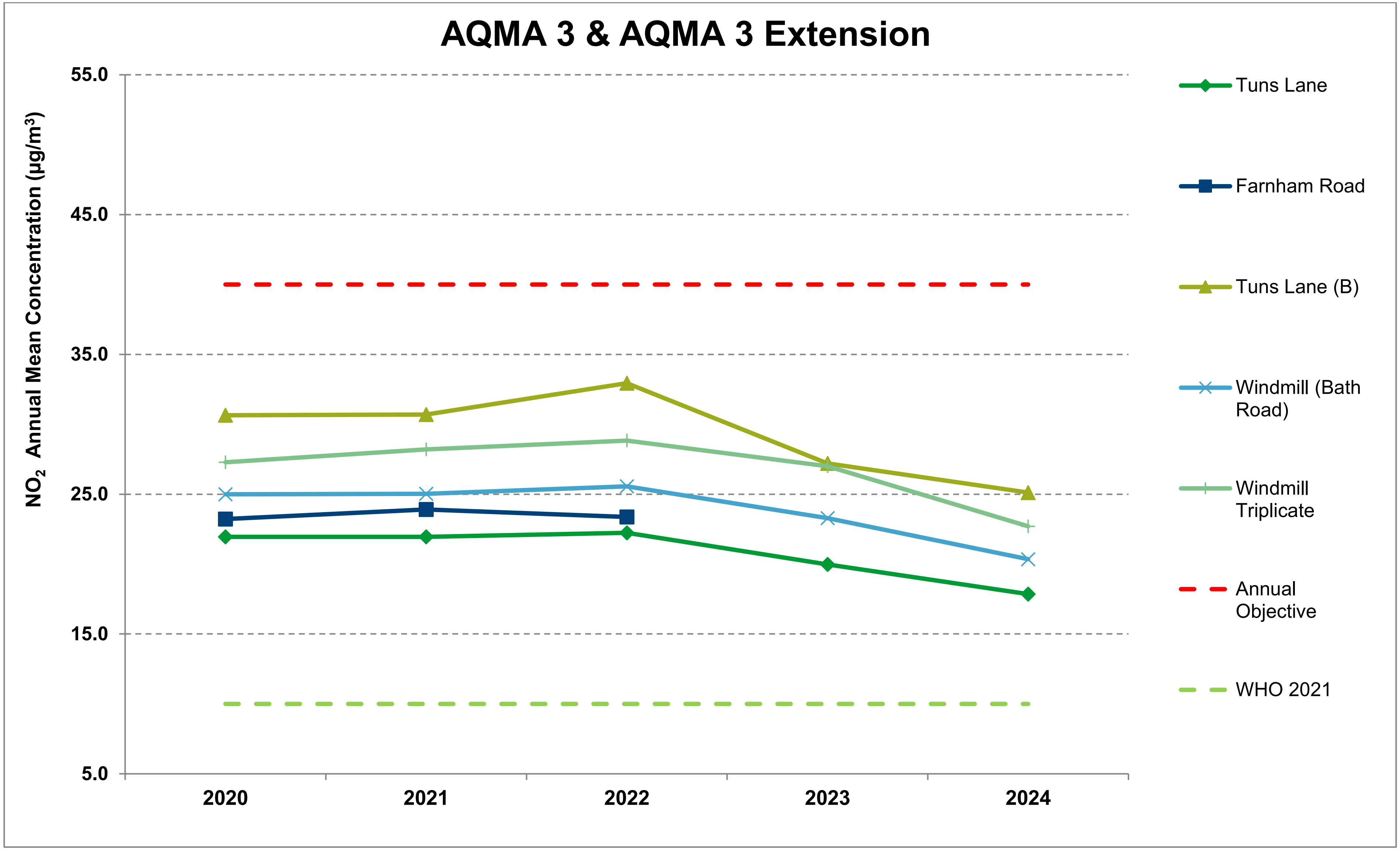


Figure A.7 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at AQMA 4

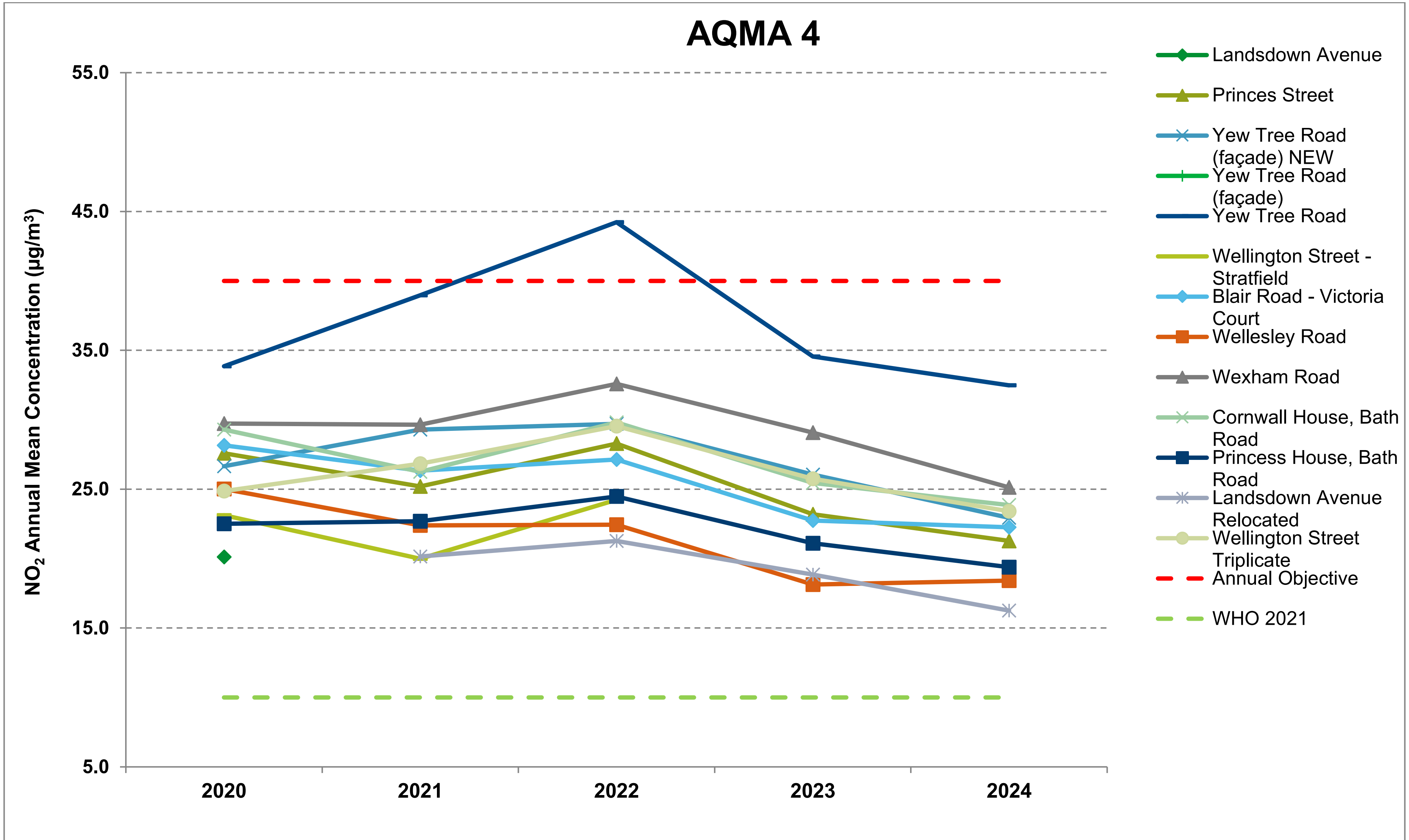


Figure A.8 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at Non AQMA: Roadside and Kerbside Sites

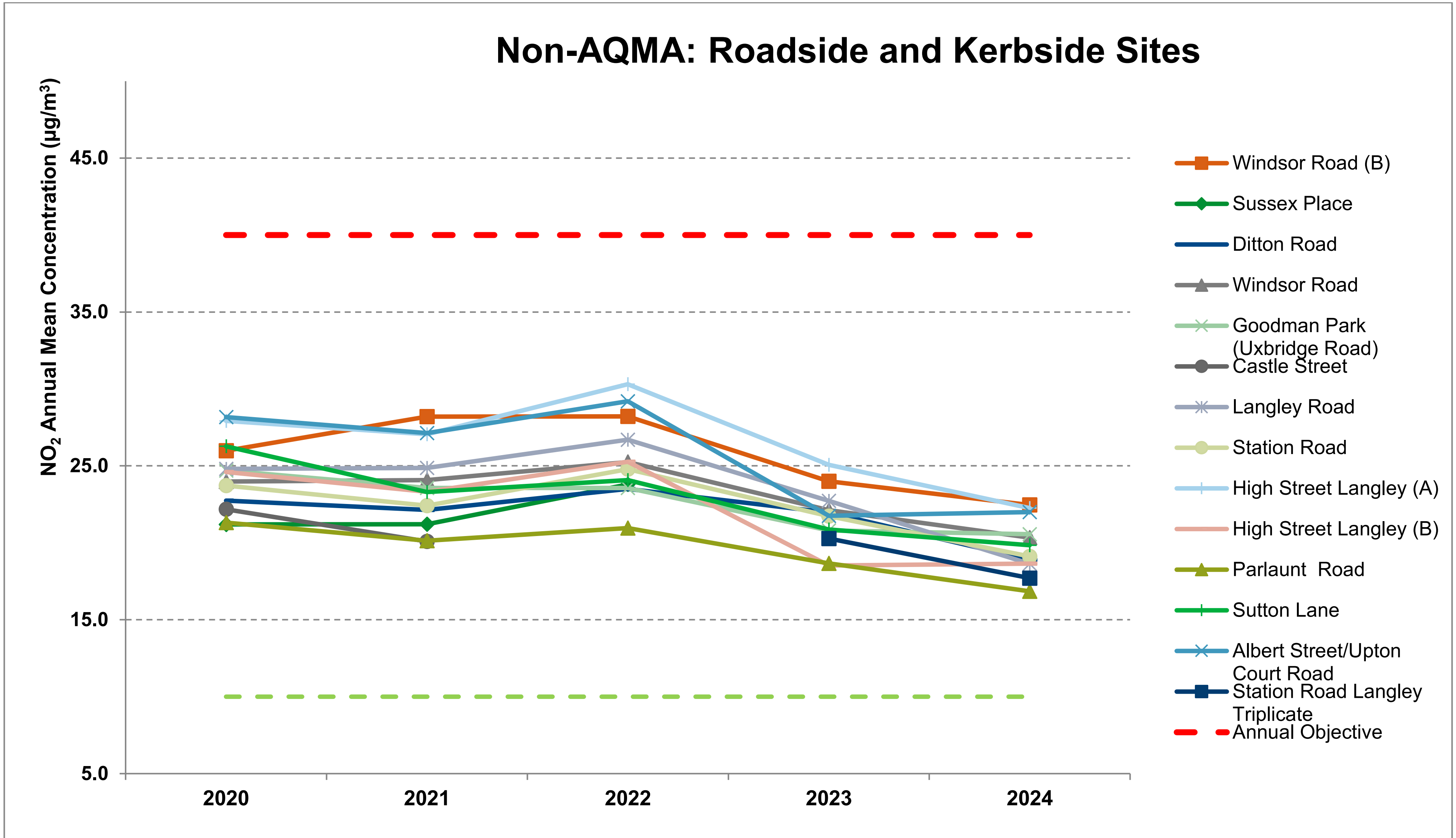


Figure A.9 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at Non AQMA: Suburban and Urban Background Sites

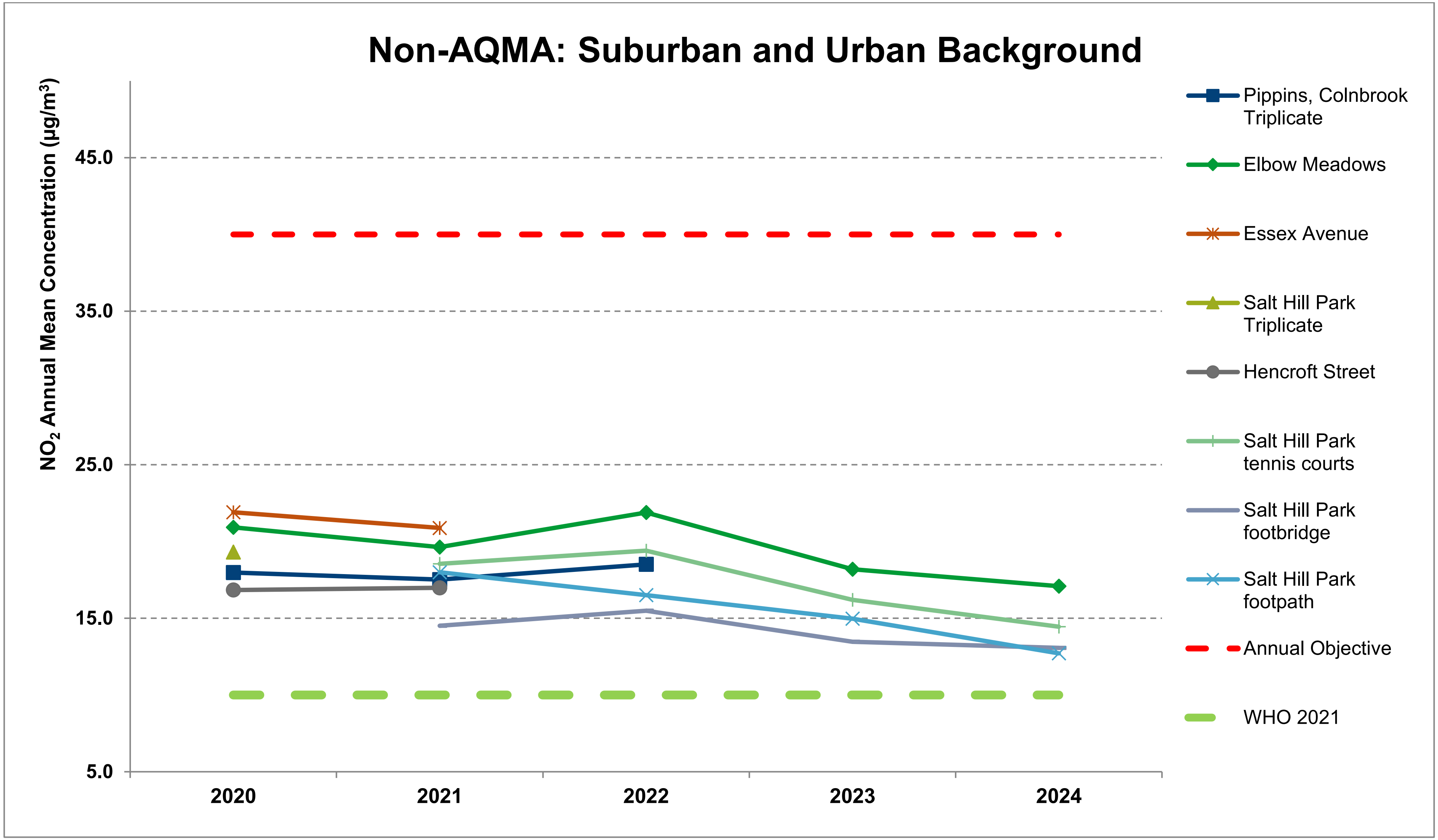


Figure A.10 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at Non AQMA: Rail and Industrial Sites

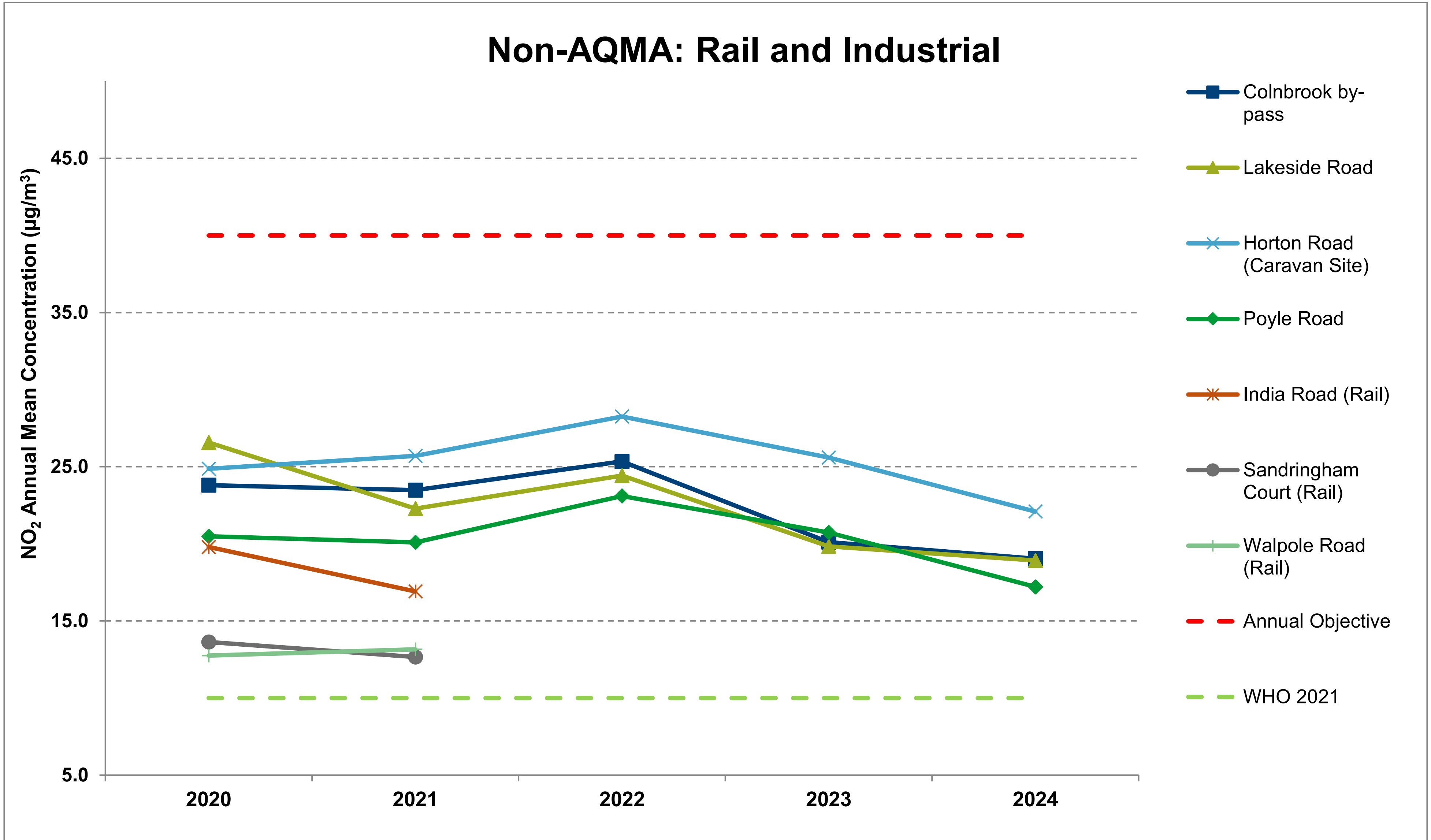


Figure A.11 – Highest NO_2 Concentration Recorded within AQMAs

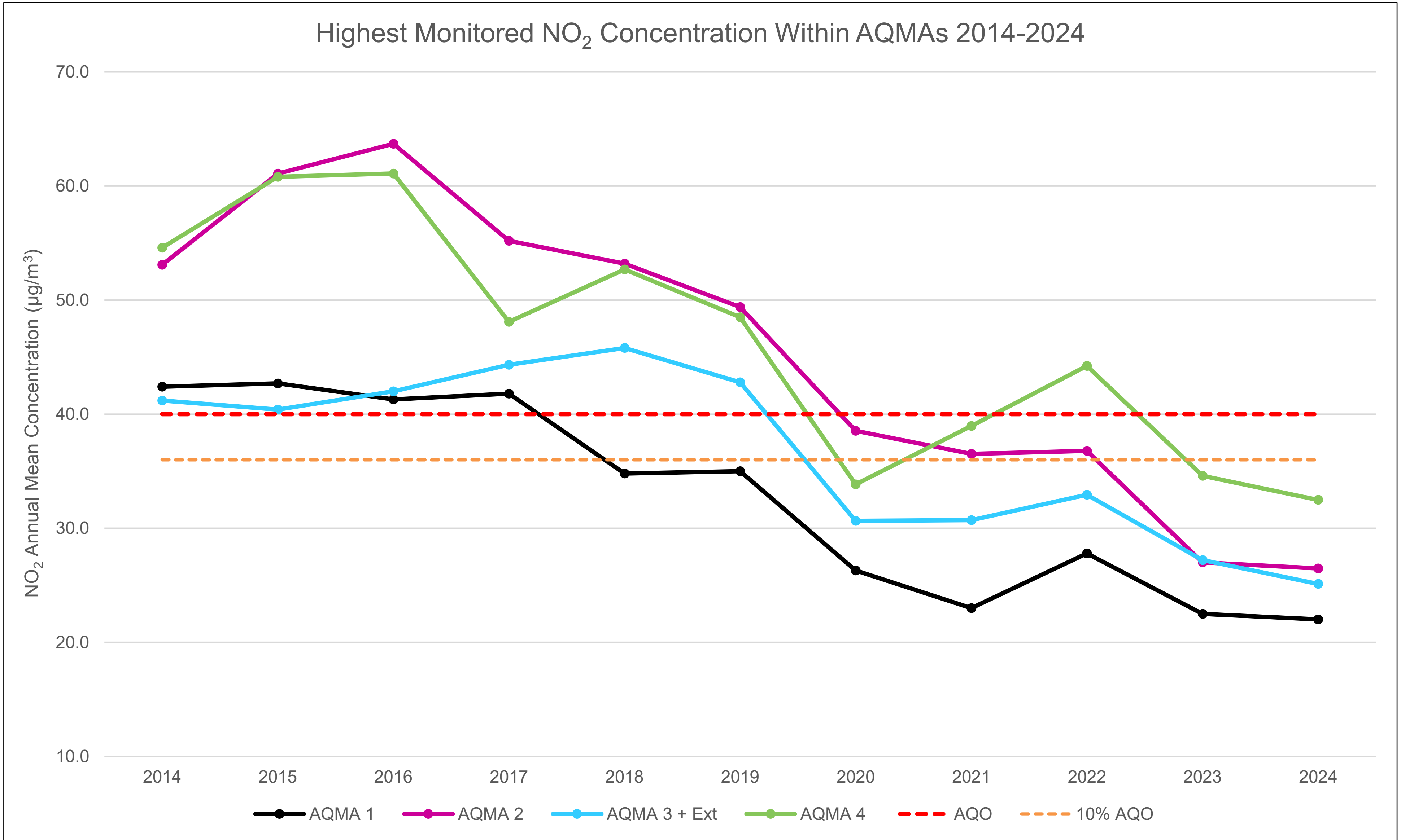


Figure A.12 – Highest NO_2 Concentration Recorded Outside of AQMAs

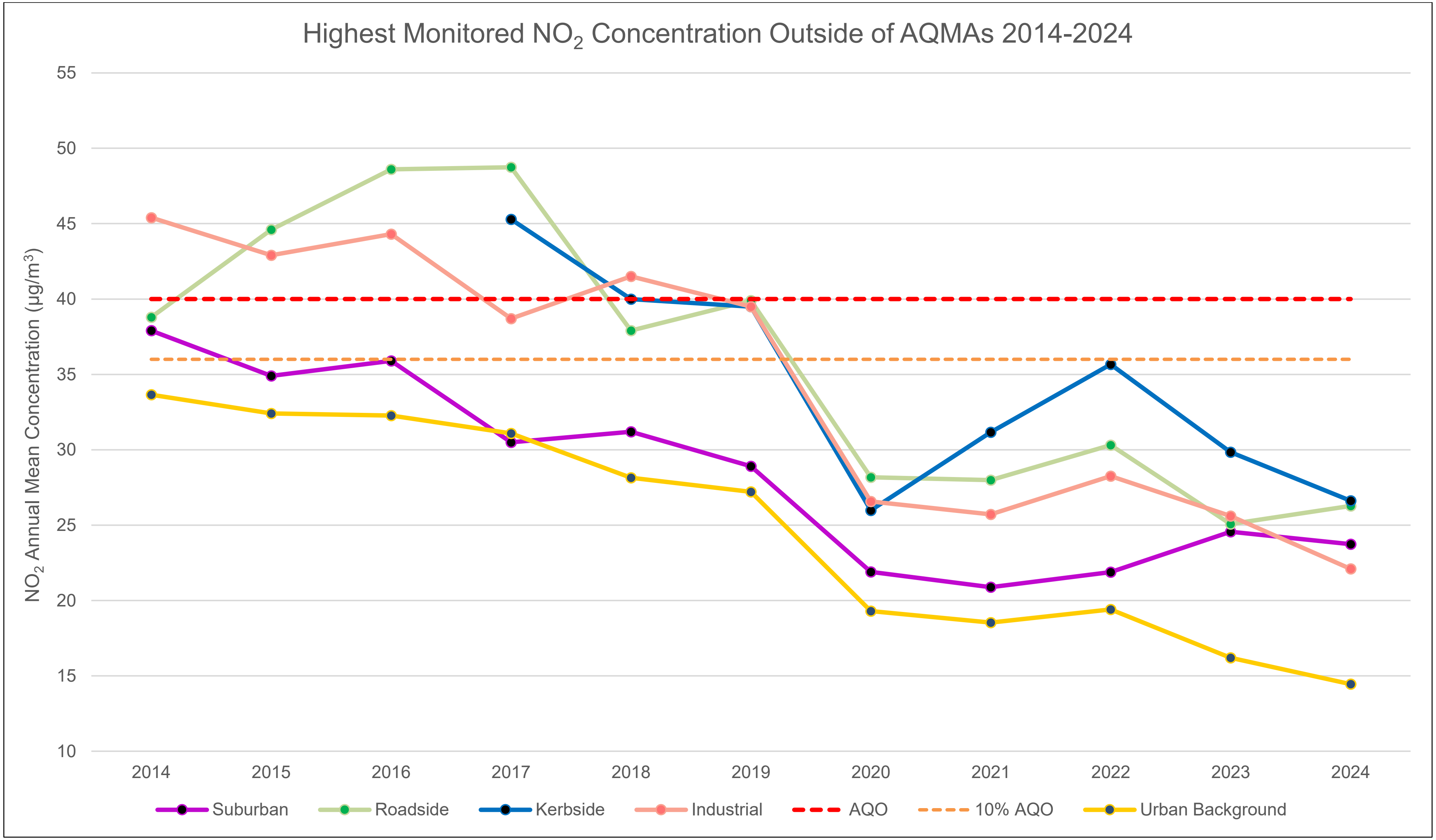


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site 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
SLH 3	503542	176827	Suburban	-	-	0	0	**0 (74.0)**	-	-
SLH 4	496599	180156	Urban Background	-	-	-	-	-	-	-
SLH 7	496562	179109	Other	-	-	0	**0 (78.6)**	-	-	-
SLH 8	503569	77385	Industrial	97.2	97.2	0	0	0	0	0
SLH 10	498413	179804	Roadside	97.8	97.8	0	0	0	0	0
SLH 11	501643	177753	Roadside	99.8	99.8	0	0	0	0	0
SLH 12	496528	180171	Roadside	99.9	99.9	0	1	0	0	0
SLH 13	496447	179117	Other	99.4	99.4	-	**0 (72.9)**	0	0	0
SLH 14	501150	179502	Roadside	98.9	98.9	-	-	-	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m^3 have been recorded.

Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(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%).

Table A.6 – Annual Mean PM_{10} Monitoring Results ($\mu g/m^3$)

Site 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
SLH 3	503542	176827	Suburban	-	-	17	15.2	17.0	-	-
SLH 4	496599	180156	Urban Background	-	-	-	-	-	-	-
SLH 5	503551	177258	Industrial	-	-	-	-	-	-	-
SLH 6	503542	176827	Urban Background	-	-	-	-	-	-	-
SLH 8	503569	77385	Industrial	99.4	99.4	14	12.4	14.5	12.6	12.5
SLH 9	503569	177385	Industrial	89.7	89.7	16.7	12.6	18.3	13.8	12.7
SLH 11	501643	177753	Roadside	98.1	98.1	25.4	24.4	23.1	20.4	20.6
SLH 12	496528	180171	Roadside	99.8	94.4	18.9	18.7	19.8	17.0	16.5
SLH 13	496447	179117	Other	96.3	96.3	-	13.3	15.2	11.9	11.3

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

Notes:

The annual mean concentrations are presented as $\mu g/m^3$.

Exceedances of the PM_{10} annual mean objective of $40\mu g/m^3$ are shown in **bold**.

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.

(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.12 – Trends in Annual Mean PM_{10} Concentrations

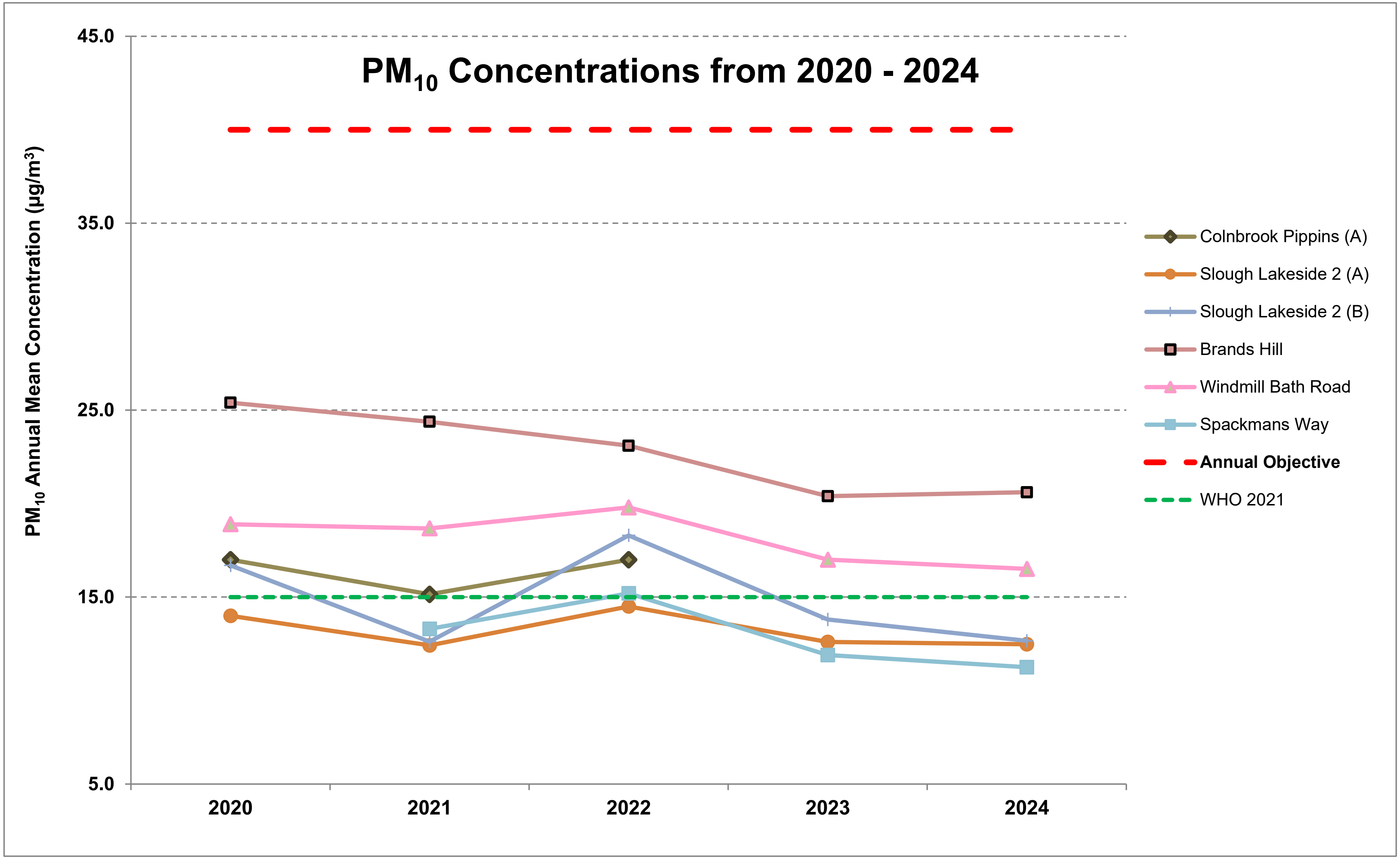


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site 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
SLH 3	503542	176827	Suburban	-	-	0	0	**0 (27.9)**	-	-
SLH 4	496599	180156	Urban Background	-	-	-	-	-	-	-
SLH 5	503551	177258	Industrial	-	-	-	-	-	-	-
SLH 6	503542	176827	Urban Background	-	-	-	-	-	-	-
SLH 8	503569	77385	Industrial	99.4	99.4	0	0	1	0	1
SLH 9	503569	177385	Industrial	89.7	89.7	4	2 (23.2)	7	1	1
SLH 11	501643	177753	Roadside	98.1	98.1	19	14	14	3	3
SLH 12	496528	180171	Roadside	99.8	94.4	7	4	5	2	0
SLH 13	496447	179117	Other	96.3	96.3	-	0 (21.3)	1	0	0

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m^3 have been recorded.

Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

(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.13 – Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m³

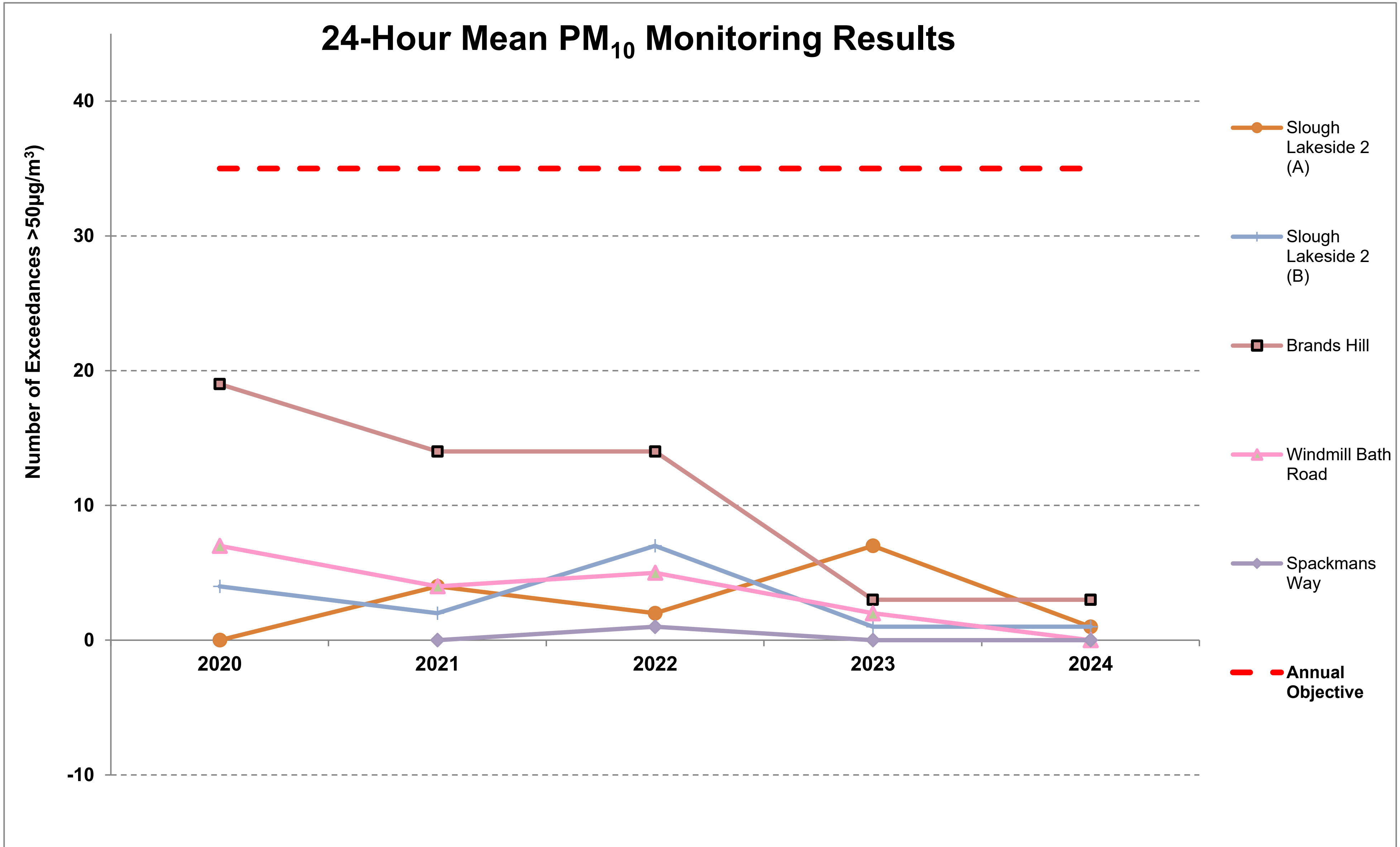


Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results ($\mu g/m^3$)

Site 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
SLH 9	503569	177385	Industrial	89.7	89.7	5.5	5.5	7.6	5.9	5.0

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

Notes:

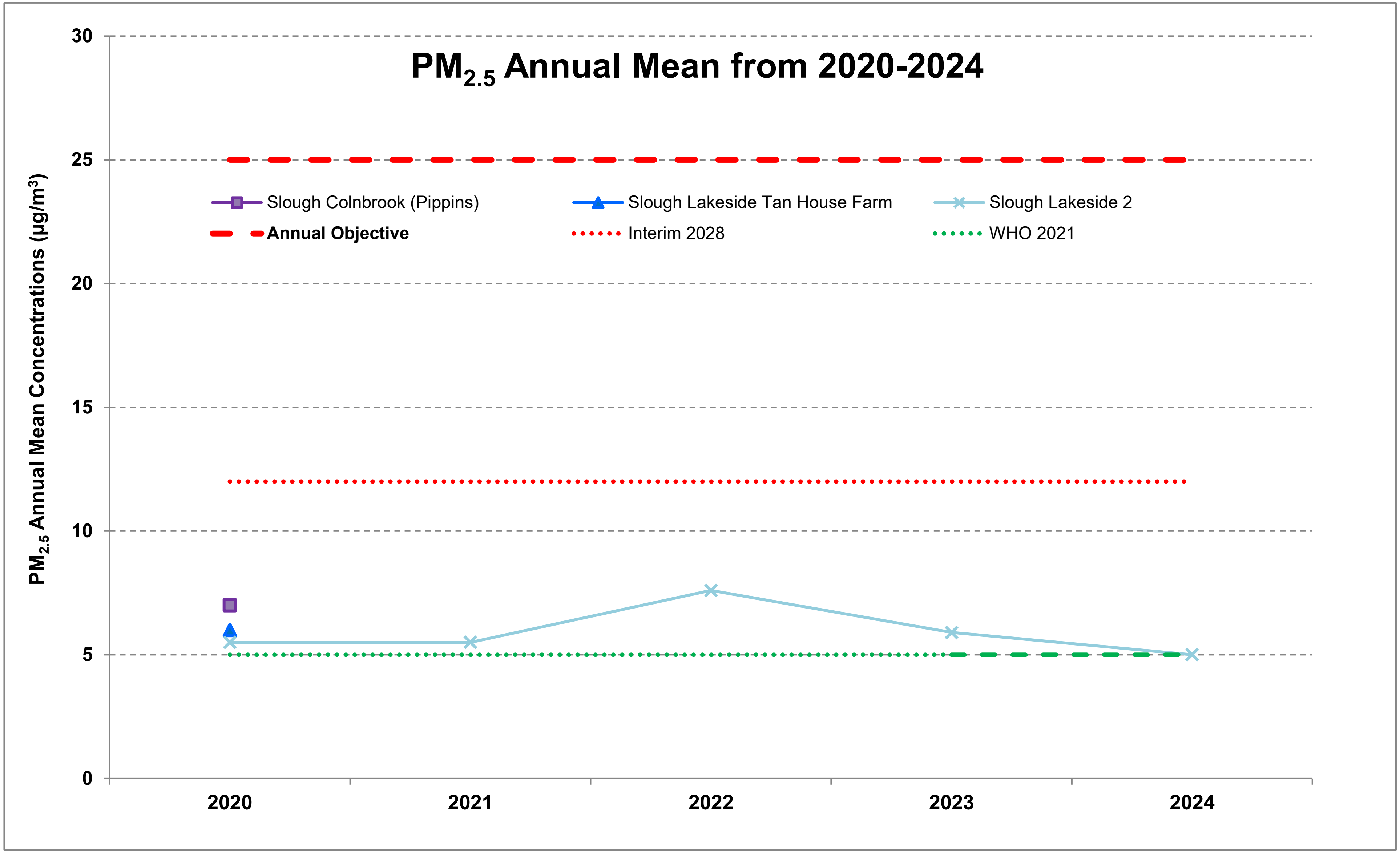
The annual mean concentrations are presented as $\mu g/m^3$.

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.

(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.14 – Trends in Annual Mean $PM_{2.5}$ Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO_2 2024 Diffusion Tube Results (µg/m³)

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 (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
SLO 1 Relocated	496904	180187	25.4	19.3	21.2	17.5	15.0	12.7	13.0	14.8	16.9	27.3	25.9	13.3	18.5	14.4		
SLO 1 Relocated	496904	180187	25.4	19.3	21.2	17.5	15.0	12.7	13.0	14.8	16.9	27.3	25.9	13.3	18.5	14.4	-	
SLO 2 Relocated	496785	180336	20.5	21.1	18.3	14.3	11.5	8.5	9.7		17.7	22.6	23.7	16.4	16.8	13.1	-	
SLO 3 Relocated	496665	180236	23.5	22.5	20.0	14.8	13.9	12.1	13.3	13.0	10.5	21.7	22.7	7.6	16.3	12.7	-	
SLO 4 Relocated	497185	180050	23.4	26.0	21.6	20.1	17.5	18.6	15.7	16.2	21.1	27.2	28.0	14.7	20.8	16.3	-	
SLO 5	498541	179815	29.6	35.6	28.7	24.2	24.7	21.2		23.4	25.5	24.4	35.5		27.3	21.3	-	
SLO 6	498784	179560														-	-	
SLO 7	503196	177349	20.7	30.1	26.3	20.0	21.9	19.1	20.4	22.1	24.1	35.4	31.4	21.4	24.4	19.0	-	
SLO 8	501382	178101	30.5	36.3	33.2	22.8	20.4	21.1	20.6	25.2	22.9	37.4	34.7	24.0	27.4	21.4	24.1	
SLO 9	501501	177879														-	-	
SLO 10	501733	177725	34.8	33.5	31.1	30.0	31.3	27.5	25.0	28.1	31.6	32.4	36.8	22.2	30.4	23.7	-	
SLO 11	501637	177999														-	-	
SLO 12	503877	177459	27.3	29.6	25.1	23.2	19.9	20.7	24.3	20.7	24.5	37.1	26.2	12.5	24.3	18.9	-	
SLO 13	503856	176538	26.7	23.4	23.2	20.7	21.2	16.3	18.6	17.9	25.4	30.8	26.0	12.7	21.9	17.1	-	
SLO 14	503542	176827													-	-	-	Triplicate Site with SLO 14, SLO 15 and SLO 16 - Annual data provided for SLO 16 only
SLO 15	503542	176827													-	-	-	Triplicate Site with SLO 14, SLO 15 and SLO 16 - Annual data provided for SLO 16 only
SLO 16	503542	176827														-	-	Triplicate Site with SLO 14, SLO 15 and SLO 16 - Annual data provided for SLO 16 only
SLO 17	503136	175654	23.7	30.1	26.1	27.9	29.2	24.0	25.0	26.0	25.6	38.8	35.2		28.3	22.1	-	
SLO 18	501798	177659	34.5	23.0	24.8	23.8	25.3		23.6	24.6	29.4	35.1	37.6	11.1	26.6	20.8	-	
SLO 19	500851	177890	26.7	27.7	27.8	23.2	23.7	18.9	20.7	18.0	23.3	33.6	30.8	16.3	24.2	18.9	-	
SLO 20	497925	179450														-	-	
SLO 21	497457	179566		33.1	28.0	24.9	22.0	22.9	21.1	23.6	27.4	36.7	32.2	14.9	26.1	20.3	-	
SLO 22	497488	179090	28.4	33.7	24.9	22.4	22.2	21.9	22.4	23.6	21.1	29.8	24.2	24.9	25.0	19.5	-	
SLO 23	496416	180126	28.5	24.7	21.0	19.7	21.5	17.8	19.0	16.8	22.3	28.5	32.0		22.9	17.9	-	
SLO 24	496272	179187	29.7	22.2	25.1	19.4	17.9	19.3	21.2	20.9	21.1	30.8	29.0	17.1	22.8	17.8	-	
SLO 25	496050	179258	28.3	25.8	24.8	20.1	19.4	17.5	20.3	21.7	18.0	32.0	29.4	18.9	23.0	18.0	-	
SLO 26	498473	179706		27.5		29.5	27.8	30.0	27.0	26.6	32.9	37.8	34.3	20.7	29.4	22.9	-	
SLO 27	498681	179972														-	-	
SLO 28	501941	177633	36.9	30.4	29.6	27.9	27.8	23.7	31.6	28.6	36.6	36.7	39.7	17.5	30.6	23.9	24.5	
SLO 29	498483	179707	49.7	30.3	38.9	41.0	42.3	45.0	31.9	36.8	49.7	51.7	45.1	37.3	41.6	32.5	-	
SLO 30	496397	180341														-	-	
SLO 31	496200	181900														-	-	
SLO 32	501853	177620	23.4	15.5	15.3	20.5	19.4	16.2	17.3	14.5	25.3	28.5	29.2	15.3	20.0	15.6	-	
SLO 33	498168	179907														-	-	
SLO 34, SLO 35, SLO 36	496562	179109														-	-	
SLO 34 Relocated	496447	179117	29.2	32.7	28.9	23.8	22.1	21.8	23.6	24.9	23.0	30.9	30.5	22.0	-	-	-	Triplicate Site with SLO 34 Relocated, SLO 35 Relocated and SLO 36 Relocated - Annual data provided for SLO 36 Relocated only

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SLO 35 Relocated	496447	179117	33.0	31.6	29.8	20.7	23.7	20.6	23.0	25.0	22.9	30.7	30.8		-	-	-	Triplicate Site with SLO 34 Relocated, SLO 35 Relocated and SLO 36 Relocated - Annual data provided for SLO 36 Relocated only
SLO 36 Relocated	496447	179117	31.4	30.7	27.7	22.6	23.5	21.7	22.6	24.8	20.5	32.1	21.7	21.1	25.8	20.1	-	Triplicate Site with SLO 34 Relocated, SLO 35 Relocated and SLO 36 Relocated - Annual data provided for SLO 36 Relocated only
SLO 37	497105	180081	31.2	31.9	29.8	25.5	26.4	21.1	27.0	27.1	26.1	34.1	36.3	25.9	28.5	22.3	22.8	
SLO 38	498071	179949	31.2	25.2	26.4	21.4	18.5	18.7	20.3	17.2	23.1	28.6	32.6	20.2	23.6	18.4	-	
SLO 39	501734	177733	26.6	22.4	24.3	18.0	21.7		18.6	20.2	22.8	28.4	29.8	19.7	23.0	17.9	-	
SLO 40	498394	179849	40.0	30.7	37.1	32.4	31.2	26.4	30.3	31.3	20.2	39.7	39.0	28.3	32.2	25.1	-	
SLO 41	493960	181355														-	-	
SLO 42	493493	181378														-	-	
SLO 43	496533	180175	34.2	27.7	25.0	25.2	26.8	20.9	21.8	20.3	27.7	26.7	32.8	24.0	26.1	20.4	-	
SLO 44	498961	180113	35.0	30.8	23.9	26.9	22.0	21.5	20.1	19.5	26.9	31.5	32.2	26.0	26.4	20.6	-	
SLO 45	501658	177781														-	-	
SLO 46	497467	179971	33.5	32.4	32.6	30.2	29.4	27.6	30.0	25.7	27.4	34.7	35.8	27.7	30.6	23.9	-	
SLO 47	497326	180003		25.6	24.2	24.1	22.0	21.6	20.3	19.6	26.9	35.6	33.9	19.6	24.9	19.4	-	
SLO 48	497960	179243														-	-	
SLO 49	497397	179471	35.3	30.5	27.8	29.2	28.0	27.8	24.9	23.5	29.1	25.7	34.9		28.8	22.5	-	
SLO 50	496377	179929	31.0	35.0	29.8	30.4	33.1	29.9	29.2	26.2	34.5	46.8	33.8	26.7	32.2	25.1	-	
SLO 51	501014	179316	31.9	29.2	22.3	25.5	24.2	20.9	2.9	19.1	27.4	33.0	31.9	18.4	23.9	18.6	-	
SLO 52	501161	179538	36.1	26.4	22.1	22.4	24.0	18.1	19.8	19.0	20.7	33.5	30.3	21.7	24.5	19.1	-	
SLO 53	501208	178799	33.9	33.7	23.5	28.7	28.4	21.5	25.5	24.2	26.4	38.8	38.1	19.7	28.5	22.3	-	
SLO 54	501256	179067	32.7	30.2	28.6	23.2	23.3	19.4	22.0	21.2	22.0		32.5	7.8	23.9	18.6	-	
SLO 55	501891	178954	29.2	23.4	22.6	20.3	16.7	15.3	16.2	13.7	19.2	30.5	29.8	22.3	21.6	16.8	-	
SLO 56	502241	178679	31.3	30.4	25.9	24.7	21.0	19.7	22.3	20.1	21.4	32.7	34.9	20.9	25.4	19.8	-	
SLO 57	469528	180171	34.9	29.5	29.0	27.3	31.5	27.8	26.4	23.4	32.3	36.2	36.5	26.1	-	-	-	Triplicate Site with SLO 57, SLO 58 and SLO 59 - Annual data provided for SLO 59 only
SLO 58	469528	180171	40.1	30.6	27.5	30.2	29.0	26.9	26.3	23.4	30.8	34.2	36.5	21.5	-	-	-	Triplicate Site with SLO 57, SLO 58 and SLO 59 - Annual data provided for SLO 59 only
SLO 59	469528	180171	38.4	30.3	27.8	26.7	28.6	26.9	19.7	22.8	17.2	37.0	33.9	20.8	29.1	22.7	-	Triplicate Site with SLO 57, SLO 58 and SLO 59 - Annual data provided for SLO 59 only
SLO 60	498413	179804	41.3	37.8	31.5	27.9	27.5	22.0	25.9	21.3	27.7	40.2	28.7	22.0	-	-	-	Triplicate Site with SLO 60, SLO 61 and SLO 62 - Annual data provided for SLO 62 only
SLO 61	498413	179804	44.1	35.6	32.4	28.3	26.7	22.8	23.9	22.6	29.1	39.4	38.3	24.0	-	-	-	Triplicate Site with SLO 60, SLO 61 and SLO 62 - Annual data provided for SLO 62 only
SLO 62	498413	179804	41.8	33.1	32.7	26.9	25.2	21.8	25.1	21.1	28.4	39.7	33.4	30.4	30.0	23.4	-	Triplicate Site with SLO 60, SLO 61 and SLO 62 - Annual data provided for SLO 62 only
SLO 63	501643	177753	39.8	33.6	36.2	33.6	30.4	32.9	32.5	30.0	34.7	44.6	30.6	16.2	-	-	-	Triplicate Site with SLO 63, SLO 64 and SLO 65 - Annual data provided for SLO 65 only
SLO 64	501643	177753	33.5	33.8	37.8	31.3	34.9	31.5	32.8	29.2	35.2	43.5	41.3	25.2	-	-	-	Triplicate Site with SLO 63, SLO 64 and SLO 65 - Annual data provided for SLO 65 only

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SLO 65	501643	177753	38.5	33.9	38.6	32.8	34.2	31.4	34.7	32.7	33.8	45.7	39.1	21.4	33.9	26.5	-	Triplicate Site with SLO 63, SLO 64 and SLO 65 - Annual data provided for SLO 65 only
SLO 66	496146	179259	31.0	31.4	20.4	23.2	24.0	18.4	22.8	21.5	19.4	33.5	22.6	10.5	-	-	-	Triplicate Site with SLO 66, SLO 67 and SLO 68 - Annual data provided for SLO 68 only
SLO 67	496146	179259	29.9	30.3	26.3	22.4	23.5	19.3	23.7	22.7	20.3	33.2	29.2	21.7	-	-	-	Triplicate Site with SLO 66, SLO 67 and SLO 68 - Annual data provided for SLO 68 only
SLO 68	496146	179259	28.1	18.7	29.4	24.7	24.5	19.0	20.7	24.4	16.2	28.8	27.6	20.0	24.0	18.7	-	Triplicate Site with SLO 66, SLO 67 and SLO 68 - Annual data provided for SLO 68 only
SLO 69	496223	179217	30.0	28.0	25.3	26.1	23.9	27.2	23.1	24.8	21.8	31.6	31.4	24.7	-	-	-	Triplicate Site with SLO 69, SLO 70 and SLO 71 - Annual data provided for SLO 71 only
SLO 70	496223	179217	31.2	18.7	26.7	25.6	23.2	26.7	23.6		22.9	33.2	26.5		-	-	-	Triplicate Site with SLO 69, SLO 70 and SLO 71 - Annual data provided for SLO 71 only
SLO 71	496223	179217	29.5	29.4	26.3	24.9	24.5	25.4		27.5	24.9	32.1	29.3	19.1	26.1	20.4	-	Triplicate Site with SLO 69, SLO 70 and SLO 71 - Annual data provided for SLO 71 only
SLO 72	496225	179213	33.2	29.1	27.2		22.4	26.4	24.4	26.4	20.0	25.7			-	-	-	Triplicate Site with SLO 72, SLO 73 and SLO 74 - Annual data provided for SLO 74 only
SLO 73	496225	179213	26.3	28.2	26.0	26.9	23.0	26.3	25.3	26.8	23.4	30.3			-	-	-	Triplicate Site with SLO 72, SLO 73 and SLO 74 - Annual data provided for SLO 74 only
SLO 74	496225	179213	24.7	27.9	25.5	27.5	24.4	25.0	23.6	24.0	24.5	32.9			26.2	20.4	-	Triplicate Site with SLO 72, SLO 73 and SLO 74 - Annual data provided for SLO 74 only
SLO 75	496227	179207	23.5	26.7	23.1	24.5	22.5	23.9	21.3	25.1	23.0	31.3	27.5	22.5	-	-	-	Triplicate Site with SLO 75, SLO 76 and SLO 77 - Annual data provided for SLO 77 only
SLO 76	496227	179207	25.5	25.9	22.6	24.0	21.9	24.1	22.3	25.6	22.4	30.1	27.6	21.1	-	-	-	Triplicate Site with SLO 75, SLO 76 and SLO 77 - Annual data provided for SLO 77 only
SLO 77	496227	179207	27.5	24.2	23.9	23.2	21.3	23.9	20.7	24.9	22.3	30.8	29.3	22.8	24.5	19.1	-	Triplicate Site with SLO 75, SLO 76 and SLO 77 - Annual data provided for SLO 77 only
SLO 78	496229	179204	32.3	31.5	27.5	26.3	25.8	26.7	25.9	25.0	25.3	35.8	32.9		-	-	-	Triplicate Site with SLO 78, SLO 79 and SLO 80 - Annual data provided for SLO 80 only
SLO 79	496229	179204	32.4	30.6	26.3	26.5	25.9	27.0	26.8	23.2		33.9			-	-	-	Triplicate Site with SLO 78, SLO 79 and SLO 80 - Annual data provided for SLO 80 only
SLO 80	496229	179204	29.7	30.6	26.6	24.9	26.3	24.7	24.5	27.5		32.4			28.2	22.0	-	Triplicate Site with SLO 78, SLO 79 and SLO 80 - Annual data provided for SLO 80 only
SLO 81	496232	179199	30.0	30.9	22.9	25.1	22.7	24.8	23.9	26.5					-	-	-	Triplicate Site with SLO 81, SLO 82 and SLO 83 - Annual data provided for SLO 83 only
SLO 82	496232	179199	27.9	30.1	22.6	25.8	25.1	25.5	24.3	27.3					-	-	-	Triplicate Site with SLO 81, SLO 82 and SLO 83 - Annual data provided for SLO 83 only
SLO 83	496232	179199		30.2	26.7	25.7	24.8	24.3	24.4	26.8					26.1	22.0	-	Triplicate Site with SLO 81, SLO 82 and SLO 83 - Annual data provided for SLO 83 only
SLO 84	496234	179195	29.8	30.1	27.7	26.3	24.8	26.4	25.2	20.8	26.1	31.8			-	-	-	Triplicate Site with SLO 84, SLO 85 and SLO 86 - Annual data provided for SLO 86 only

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SLO 85	496234	179195	25.2	29.9	27.4	28.5	24.2	25.4	26.6	23.8	21.3	32.3	27.8		-	-	-	Triplicate Site with SLO 84, SLO 85 and SLO 86 - Annual data provided for SLO 86 only
SLO 86	496234	179195		21.6	24.5	25.8	23.8	26.1	26.1	28.3	22.8	32.2	33.5		26.8	20.9	-	Triplicate Site with SLO 84, SLO 85 and SLO 86 - Annual data provided for SLO 86 only
SLO 87	496236	179191	24.3	28.3	25.0	24.5	24.0	26.0	24.8	26.3	23.4	29.9		22.7	-	-	-	Triplicate Site with SLO 87, SLO 88 and SLO 89 - Annual data provided for SLO 89 only
SLO 88	496236	179191	23.8	30.6	26.1	26.5	24.1	24.6	25.0	26.0	23.9	27.5		19.3	-	-	-	Triplicate Site with SLO 87, SLO 88 and SLO 89 - Annual data provided for SLO 89 only
SLO 89	496236	179191		30.9	24.2	22.3	22.0	25.4	24.3	25.7	24.8	29.1	25.5	15.3	25.0	19.5	-	Triplicate Site with SLO 87, SLO 88 and SLO 89 - Annual data provided for SLO 89 only
SLO 90	496238	179186	31.2	29.2			24.0	23.6	22.5	24.2	23.8	33.0	Colle cted		-	-	-	Triplicate Site with SLO 90, SLO 91 and SLO 92 - Annual data provided for SLO 92 only
SLO 91	496238	179186	29.3	27.9	24.6		22.4	21.8	22.2	26.3	15.6	34.3	next		-	-	-	Triplicate Site with SLO 90, SLO 91 and SLO 92 - Annual data provided for SLO 92 only
SLO 92	496238	179186	33.3	29.8			22.7	23.4	23.1	25.1	23.0	40.0	mont h		26.1	20.9	-	Triplicate Site with SLO 90, SLO 91 and SLO 92 - Annual data provided for SLO 92 only
SLO 93	497433	179092	30.7	31.9	27.3	23.2	23.4	21.8		25.7	21.6	29.2	26.4	18.9	-	-	-	Triplicate Site with SLO 93, SLO 94 and SLO 95 - Annual data provided for SLO 95 only
SLO 94	497433	179092	32.1	28.7	27.2	23.6	23.2	22.8		25.4	22.1	28.7	28.0	21.9	-	-	-	Triplicate Site with SLO 93, SLO 94 and SLO 95 - Annual data provided for SLO 95 only
SLO 95	497433	179092	30.1	30.5	28.7	22.7	19.3	22.0	22.9	24.5	21.6	28.6	28.5	23.4	25.3	19.8	-	Triplicate Site with SLO 93, SLO 94 and SLO 95 - Annual data provided for SLO 95 only
SLO 96	503272	176597	26.1	22.3	28.3	21.2	19.9	17.7	17.7	19.5	18.3	31.7	28.9	13.2	22.1	17.2	-	
SLO 97	497725	179360	38.2	32.2	28.2	23.4	27.0	17.1	25.7	21.5	28.1	39.1	35.8	22.1	28.2	22.0	-	
SLO 98	503527	176823														-	-	
SLO 99	503510	176806														-	-	
SLO 100	503613	176912														-	-	
SLO 101	494101	180708														-	-	
SLO 102	494199	180637														-	-	
SLO 103	493784	180662														-	-	
SLO 104	493812	180572														-	-	
SLO 105	493592	180737														-	-	
SLO 106	495488	182538														-	-	
SLO 107	495457	182550														-	-	
SLO 108	495668	182430														-	-	
SLO 109	496526	182276														-	-	
SLO 110	496529	182243														-	-	
SLO 111	496489	182270														-	-	
SLO 112	497070	181108	34.7	31.1	26.4	24.8		18.9	20.4	19.3	26.9	30.7	32.7	18.4	25.8	20.2	-	
SLO 113	497079	181088	32.8	28.3	27.8	23.3	21.3	17.8	20.6	20.4	24.4	32.8	30.3	13.5	24.4	19.1	-	
SLO 114	497677	180876	31.1	29.5	27.3	24.5	20.6	20.9	21.6	21.2	21.5	35.4	33.8	26.3	26.1	20.4	-	
SLO 115	497671	180866			29.3	23.5	22.5	18.9	20.7		25.0	35.3	28.5	22.9	25.2	19.6	-	
SLO 116	498103	180842	28.4	24.2	23.0	21.7	19.4	18.9	19.6	19.9	22.9	33.8	33.1	23.9	24.1	18.8	-	
SLO 117	498112	180857	23.4	26.6	20.6	21.1	20.1	18.1	18.5	17.1	21.5	32.2	32.0	23.7	22.9	17.9	-	

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SLO 118	497097	179521	32.0	29.2	26.8	23.7	23.7	20.7	24.2	23.4	25.9	36.6	33.8	24.3	27.0	21.1	-	
SLO 119	497104	179511	28.1		23.7	22.8	24.7	22.1	25.7	23.5	25.2	36.9	32.2	24.7	26.3	20.5	-	
SLO 120	497013	179870	33.4	27.1	27.9	22.1	22.6	17.4	20.6	20.4			23.9	16.9	23.2	18.1	-	
SLO 121	497004	179874	39.6	38.7	36.6	33.6	32.4	35.6		28.0	35.5	42.3	19.0		34.1	26.6	-	
SLO 122	496167	179975	35.6	26.5	23.2	24.6	23.7	23.3	21.2	21.9	22.2	40.7	36.5	16.8	26.4	20.6	-	
SLO 123	496184	179950	29.3	14.5	24.6	19.9	19.2	14.9	17.8	16.7	22.7	27.0	32.4	21.1	21.7	16.9	-	
SLO 124	501150	179502	30.1	28.5	21.8	21.3	22.5	18.0	18.5	18.1	29.3	30.1	31.8	15.5	-	-	-	Triplicate Site with SLO 124, SLO 125 and SLO 126 - Annual data provided for SLO 126 only
SLO 125	501150	179502	23.1	21.5	21.7	12.3	22.7	18.1	17.5	19.1	23.4	31.1	29.2	14.3	-	-	-	Triplicate Site with SLO 124, SLO 125 and SLO 126 - Annual data provided for SLO 126 only
SLO 126	501150	179502	27.4	28.7	25.2	21.4	20.6	18.5	18.9	19.3	23.5	30.5	28.9		22.7	17.7	-	Triplicate Site with SLO 124, SLO 125 and SLO 126 - Annual data provided for SLO 126 only
SLO 127	502828	176996	26.0	28.4	33.0	26.6	21.3	31.0	35.7	31.4	31.2	40.0	31.7	25.7	30.2	23.5	-	
SLO 128	502884	176967	31.2	22.8	27.9	28.7	31.2	29.0	27.6		36.6	42.2	37.6	20.0	30.4	23.7	-	
SLO 129	502884	176954	29.2	12.5	23.9	22.4	21.9	19.6	20.4	17.5	28.3		32.5	18.2	22.4	17.5	-	
SLO 130	503291	176709	17.7	27.2	31.1	27.8	26.4	23.1	25.3	26.1	23.6	43.3	34.8	12.5	26.6	20.7	-	
SLO 131	503522	176671	30.3	15.9	34.7	26.4	27.8	28.3	31.1	32.6		39.6	39.3	27.2	30.3	23.6	-	
SLO 132	496035	182122					22.7				22.1	30.8			25.2	19.6	-	
SLO 133	495961	182081					33.1	30.7	28.9	27.8	28.0	43.0	35.5	27.2	31.8	25.7	-	
SLO 134	496003	182064					29.2	30.3	31.2	32.3	29.9	39.1	26.7	29.3	31.0	25.0	-	
SLO 135	496063	182006					20.2		18.9	20.2	20.9	30.5		20.3	21.8	18.7	-	
SLO 136	496049	181961					31.2	30.0	31.8	30.0	30.9	40.7	36.2		33.0	26.3	-	
SLO 137	496007	181875					18.2	13.1		15.1		29.9	20.1		19.3	14.6	-	
SLO 138	496146	181885					19.7	19.4	17.9		21.8	28.6	29.1	23.2	22.8	17.9	-	
SLO 139	496360	180223					28.3	23.7	27.6	23.0	28.9	31.3	37.6	19.2	27.5	22.2	-	
SLO 140	496147	181621							30.4	28.8	30.0		35.6	22.6	29.5	23.8	-	
SLO 141	496116	181586					24.9	27.4	25.7	28.4	24.0	32.8	31.3	18.0	26.6	21.5	-	
SLO 142	496361	180159						22.3	25.1	22.8	29.7	39.5	37.8		29.5	23.1	-	
SLO 143	496195	181195					21.5	17.7	17.2	18.5	20.8	25.9	30.1	19.6	21.4	17.3	-	
SLO 144	496205	180888											38.7	26.6	32.7	25.5	-	
SLO 145	496388	180469					30.6	26.2		25.8			38.2	22.6	28.7	23.5	-	
SLO 146	496364	180376					27.6	21.9	23.7	20.8	26.3	35.4	28.5	24.0	26.0	21.0	-	
SLO 147	496380	180341					20.8	23.8	22.4		23.4	32.9		24.0	24.6	21.2	-	

☒ **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.**

☒ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

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

☒ **Slough Borough 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 **<u>bold and underlined</u>**.

See Appendix C for details on bias adjustment and annualisation.

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

C.1 New or Changed Sources Identified Within Slough Borough Council During 2024

Slough Borough Council has not identified any new major sources relating to air quality within the reporting year of 2024. There have however been changes that have affected the road traffic vehicle volumes and composition which may have impacted the results.

Since the pandemic, traffic levels have decreased in some areas in Slough, which may originate from remote working becoming the norm. In addition, there are a large number of data centres that are being built in Slough due to the reliability of power connection and proximity to London. Data centres have low traffic generation, and typically replace previous high trip land uses such as offices. It is expected therefore that commuter traffic will reduce over time as data centres continue to be built.

Major developments however continue to be built in Slough, such as the Horlicks housing development (1,300 homes), and North West Quadrant development (1,600 homes) with significant regeneration of the town centre (1,600 homes) expected in coming years, which will increase traffic volumes in Slough during both construction and operational phases. There is potential that these developments will contribute to a worsening of air quality in Slough, unless adequately mitigated.

Since the S114 notice in 2021, maintenance of automatic traffic counters located in Slough has reduced resulting in some data gaps in the traffic data. It is anticipated however that a portion of the grant funding to support the A4 Cycle Lane scheme will be used to support ongoing maintenance of traffic counters, to fulfil monitoring requirements of the grant, therefore it is expected that this dataset will be more full in future years, to determine how traffic volumes respond to the upcoming developments.

C.2 Additional Air Quality Works Undertaken by Slough Borough Council During 2024

C.2.1 National Highways Monitoring

Figure C.1 and Figure C.2 show results of the diffusion tube monitoring at receptors closest to the M4 Smart Motorways scheme operated by National Highways (formerly Highways England) from initiation in 2020 (2019 has not been included due to monitoring starting too late in the year to be annualised) to 2024. Figure C.1 shows the trend at the three receptor areas, and Figure C.2 shows concentrations at each identified receptor.

For reference, HE Receptor 1 is located off Paxton Avenue, HE Recepors 2 – 9 are located behind a block of flats on Spackmans Way, and HE Receptor 10 is on Winvale.

Out of the three locations, Spackmans Way receptors overall have the highest concentrations of NO_2, whilst the Winvale receptor has the lowest concentrations. In 2020, concentrations were a maximum of 34.6µg/m³ at HE Receptor 1 (SLO 66 – 68). By 2021, all sites decreased to below 22.0µg/m³, before rising in 2022 by +2.2µg/m³ on average, reaching a peak of 24.6µg/m³ (HE Receptor 7, SLO 84 – 86). In 2023, concentrations reduced to a maximum of 22.5µg/m³ (HE Receptor 5), before falling further to 22.0µg/m³ in 2024 (HE Receptors 5 and 6, SLO 78 – 82). On average, concentrations have fallen by -3.1µg/m³ across HE Receptor sites, with concentrations recorded in 2024 representing the lowest in the series for the majority of sites.
The Smart Motorway M4 monitoring scheme is due to cease in December 2025. Sufficient monitoring evidence collected before and after implementation has demonstrated that the scheme has not caused a worsening of air quality at nearby receptors, with concentrations far below the AQO since monitoring began in 2019, and not exceeding 30µg/m³ since 2019. As such, it is proposed that monitoring at these locations is reduced after 2025, for example retaining one diffusion tube per location.

C.2.2 Bus Lane Monitoring

The A4 bus lane scheme started as an experimental scheme, first introduced in August 2020 between Huntercombe Roundabout and Sussex Place. The scheme was partially funded by the Emergency Active Travel Fund (EATF), with additional funding provided by Slough Borough Council. The aim of the bus lane was to encourage the public to travel actively and sustainably, to support social distancing measures for cyclists and pedestrians during the pandemic, and to prepare for the borough's recovery. The bus lane operates in peak times only and can be used by exempt vehicles including motorcycles, taxis, private hire vehicles and zero emission vehicles. The bus lane was made permanent in December 2021 after approval was granted by Cabinet.

At the request of Councillors, diffusion tubes were located on six roads surrounding the A4 to monitor potential traffic and congestion increase as a result of the scheme (SLO 112 – SLO 123) in 2021. There was no baseline monitoring at these locations prior to operation of the bus lane. The data collected to date is presented in Figure C.3.

In 2021, the highest concentration recorded was at Ledgers Road (SLO 121) at 31.2µg/m³, whilst all other sites recorded concentrations below 30µg/m³ (average concentration of 25.0µg/m³). By 2022, the average NO_2 concentration increased to 26.4µg/m³¸ the greatest increase of +4.5µg/m³ being at Ledgers Road (SLO 121) to 35.7µg/m³. Concentrations decreased however in 2023 to an average of 22.2µg/m³, with the biggest reduction recorded being -6.9µg/m³ at Elliman Avenue (SLO 115). By 2024, concentrations reduced further to 20.0µg/m³. Whilst concentrations at Ledgers Road (SLO 121) remain the highest out of all bus lane monitoring sites, the concentration in 2024 is low at 26.6µg/m³, with over 60% of sites recording concentrations ≤20.0µg/m³.

As such, there is no evidence to suggest that the bus lane scheme is resulting in poor air quality on surrounding roads. Despite the locations having low concentrations, NO_2 will continue to be monitored for a minimum of five years, and may be extended for the purpose of monitoring the impact of the A4 cycle way scheme implementation.

C.2.3 Ultra Low Emission Zone Colnbrook Sites

In September 2023, five new diffusion tube sites were deployed (SLO 127 – SLO 131), for the purpose of monitoring the impact of the London Ultra Low Emission Zone (ULEZ) that was introduced in August 2023. There were concerns that the ULEZ would result in an increase in traffic flows and on street parking in the Colnbrook area, as individuals may choose to park locally and travel by bus to enter the M25 boundary without a charge.

As monitoring began in September, data capture during 2023 for these sites was low and the data had to be annualised, however two sites had insufficient data for annualisation. As such, the dataset for 2023 was incomplete and may not be reliable due to annualisation. The highest concentration in 2023 was at Bath Road (SLO 130), however this has decreased to 20.7µg/m³ in 2024. One site has seen an increase in 2024 (Park Street – SLO 128), however the increase is small at 0.7µg/m³, resulting in a maximum concentration of 23.7µg/m³. All data collected to date is compliant with the AQO and there is no evidence to suggest that the ULEZ is resulting in poor air quality in the Colnbrook area. It is recommended however that at least five years of data is collected before a clear conclusion can be drawn.

C.2.4 Destination Farnham Road Sites

Additional monitoring was commissioned in May 2024, to monitor the impact of the Destination Farnham Road scheme. The scheme, funded by the Levelling Up Fund Round 2, aims to create an improved pedestrian orientated streetscape on Farnham Road, with a new off-road two way cycle route, plus upgraded roads and footways, signalised crossings, lighting, bus stops and parking facilities[17].

As the monitoring points were deployed part way through the year, all sites had to be annualised. The data from 2024, shown in Figure C.4, indicates that concentrations are low at an average of 21.7µg/m³. The highest concentration was recorded at Farnham Road (1) (SLO 136) at 26.3µg/m³, whilst the lowest concentration was recorded at Furnival Avenue (SLO 137) at 14.6µg/m³. Further data is needed to be able to create a baseline understanding of air quality in the area, however early data suggests that concentrations are not of concern. The scheme is due to commence Summer 2025, therefore it is expected that any negative impacts associated with the construction of the scheme shall be captured in diffusion tube data and will be reported in ASR 2026.

[17] Destination Farnham Road - Proposed Design Consultation - Slough Borough Council - Citizen Space

C.3 Air Quality Management Area Status Review

A review of the status of AQMAs in Slough has been completed. Defra have clarified that due to the effects of COVID-19 on traffic levels and local pollutant concentrations, monitoring data from 2020 and 2021 should be excluded when a local authority is considering compliant years for AQMA revocation. However, it is advised that 2020 and 2021 datasets can be considered as compliant years with respect to AQMA revocation if compliance was achieved in 2019 or earlier. TG(22) guidance also states "*The revocation of an AQMA should be considered following three consecutive years of compliance with the relevant objective as evidenced through monitoring. Where NO_2 monitoring is completed using diffusion tubes, to account for the inherent uncertainty associated with the monitoring method, it is recommended that revocation of an AQMA should be considered following three consecutive years of annual mean NO_2 concentrations being lower than 36µg/m^3 (i.e. within 10% of the annual mean NO_2 objective)*".

Each AQMA and recently collected data has been reviewed in light of this. In summary:

- **AQMA1: Long Term Compliance – Revoke**

No diffusion tube sites have shown an exceedance of 40µg/m^3 since 2017 and concentrations have been below 36µg/m^3 from 2018 onwards. Continuous monitoring data from sites in Chalvey (originally located within the waste depot and now based on Spackmans Way) last showed exceedance of the AQO in 2016. As such, revocation of this AQMA commenced in 2024 and is due to be concluded in Summer 2025.

- **AQMA2: Approaching Compliance – Retain**

The first year that all sites in AQMA 2 complied with the AQO for NO_2 was 2020. Excluding COVID-19 years of 2020 and 2021, the first year of compliance was 2022, which has been maintained in 2023 and 2024. As the highest concentration recorded in AQMA 2 in 2022 was 36.8µg/m^3 (Wellington Street Triplicate, SLO 63 – 65), it is recommended that one further year of data is collected to allow the Council to have confidence that revocation of AQMA 2 is the correct decision and avoid potential re-declaration in future.

- **AQMA 3 + Extension: Long Term Compliance – Revoke**

With the exclusion of years 2020 and 2021, the first year of compliance was achieved in 2022, with the highest concentration within AQMA 3 being Tuns Lane (SLO 50) at 32.9µg/m^3, and the highest concentration within the AQMA 3 Extension being the Windmill triplicate (SLO 57, SLO 58 and SLO 59) at 28.8µg/m^3. Compliance has been sustained since then, with no sites within 10% of the AQO, the closest being Tuns Lane (SLO 50) at 32.9µg/m^3 in 2022. This is supported by continuous monitoring data recorded at Windmill (SLH 12) which has showed sustained concentrations below 30µg/m^3. As such, it is recommended that both the AQMA 3 and AQMA 3 Extension are revoked.

- **AQMA 4: Non-Compliant - Retain**

The pandemic brought widespread compliance with the AQO within AQMA 4, with Yew Tree Road (SLO 29) dropping by -14.7µg/m^3 from 2019 to 2020, resulting in all sites falling below 10% of the AQO. Yew Tree Road however recovered after the pandemic by +5.1µg/m^3 (15%) to just under the AQO at 39µg/m^3 in 2021. 2022 saw a further increase to 44.2µg/m^3, however once distance corrected, this falls to 36.6µg/m^3. As this is within 10% of the AQO, 2022 could not be considered a year of compliance. In 2023 and 2024 however, all concentrations within AQMA 4 fell below 10% of the AQO. It is recommended that an additional year of data is collected before revocation of AQMA 4 can be considered.

C.4 Factors Influencing Air Quality During 2024

C.4.1 Traffic Flows

The Council operate a number of traffic counters along the A4, to monitor the number of vehicles which use this road. This provides invaluable data to correlate with air quality trends and can be used to assist in identifying the causes of air quality improvements or deterioration.

Figure C.5 shows traffic count data (monthly average daily traffic flows) from 2018 to 2024 (map of locations shown in Figure C.6). It should be noted that since the S114 in 2021, automatic traffic counters have not been maintained to the same degree. As such, the data quality of the traffic counters is varied and the data should be treated with caution for those where the majority of the data is absent or only partially collected, as illustrated in Table C.1. This includes traffic counters AS001, AS005 and AS012. Counters AS009, AS011 and AS022 all had high data capture until December 2024, where data was either absent or partial. Data that was clearly erroneous (e.g. <500) has been removed. The below discussion focuses on the more complete datasets only, to give more confidence in the conclusions drawn (AS009, AS011 and AS022).

The impact of the pandemic on traffic levels is evident in 2020 when the first lockdown was introduced, which is seen again in early 2021 but to a lesser extent. The traffic flows began to recover after this event, however the data suggests that traffic flows were lower than those recorded in 2019, therefore it may be possible that the pandemic had resulted in a prolonged reduction in vehicle use. Data from 2023 produced more varied results. At A4 Stowe Road (AS009), traffic volumes dropped below 20,000 in July 2023, after being consistently above this level beforehand (with the exception of pandemic impacts). This level has been sustained into 2024 at 16,769 on average, before rising to 19,714 in August 2024. This however decreased until December 2024 to 16,353. Bath Road / Walpole Road (AS022) saw a more steady trend from 2022 to 2024, staying below 25,000 movements over this time (24,212 on average). London Road west of junction 5 (AS011) has seen much more varied traffic flows, with no consistent trend over the last three years. In 2023. traffic flows were highest at the start of the year peaking at 34,015 in March 2023, before dropping over summer to sustained lows in winter (26,300 in November 2023). A similar pattern is seen in data for 2024, peaking at 33,411 in June 2024, following by a progressive reduction in traffic volumes until the end of the year to 18,711.

Traffic reductions experienced in June and December appear to coincide with school holidays, which suggests that the majority of traffic on the A4 may originate from school and work commutes. There are some traffic counters located nearby automatic analysers, for example AS005 is closest to Wellington Street (SLH 10), AS012 is closest to Brands Hill (SLH 11) and AS001 is closest to Windmill (SLH 12), however each of these traffic counters has poor data capture. The remaining counters do not have an air quality monitoring location nearby. As such, these cannot be used to draw correlations between air quality and traffic monitoring data. It is anticipated that better quality data will be achieved in the next reporting year, now that funding is being made available to support their maintenance.

C.4.2 Weather Patterns

The weather has a large impact on air quality in terms of pollution dispersion, transportation and generation of secondary pollution. Sunny conditions can create high levels of ground level ozone (O_3) which is produced via photo-chemical reactions between precursor pollutants in the lower levels of the atmosphere (troposphere), including nitrogen dioxide (NO_2), volatile organic compounds (NMVOCs), methane (CH_4) and carbon (CO), which helps to explain why NO_2 concentrations are much lower in the summer when compared to winter months. Wetter weather however can also reduce NO_2 concentrations through a ‘washout' effect. Chemical reactions between precursors such as nitrogen oxides (NO_x), sulphur dioxides (SO_2), and ammonia (NH3) also produce secondary particulate matter. A peak of $PM_{2.5}$ is typical in early spring, as elevated concentrations of nitrates are transported from agricultural operations across continental Europe.

Settled conditions and light winds associated with anticyclones can result in low ground temperatures in winter. This typically causes temperature inversions, where colder air is trapped under warmer air, which can result in increased levels of pollution at ground level due to a lack of dispersion. In addition, these conditions can indirectly produce higher concentrations of particulate matter as contributions from anthropogenic sources such as residential combustion of wood, coal in stoves and open fires increase.

This section provides a summary on weather patterns experienced during 2024 informed by statistics collected by the Met Office[18], which can help to understand the causes of pollution levels in Slough.

Overall, the weather in the UK was warm and unsettled in 2024. The year started with Storm Henk bringing high winds and rain to central and southern parts of the UK, followed by Storm Isha which came with a red warning for wind. May was particularly wet, but was however the warmest on record. Summer was cooler than average, with temperatures peaking in August (34.8°C recorded in Cambridge). September saw heavy showers for most of central UK, with unsettled weather and variable temperatures for the rest of the UK, followed by a mix of settled conditions and low-pressure systems in October. Late November, Storm Bert brought heavy rain, followed by Storm Darragh in early December which brought a red warning for wind. This wet and windy weather may have contributed towards the low concentrations experienced in Slough over 2024.

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[18] Weather and Climate summaries - Met Office

Figure C.1 – Highways England Receptor NO_2 Concentrations, Averaged by Location

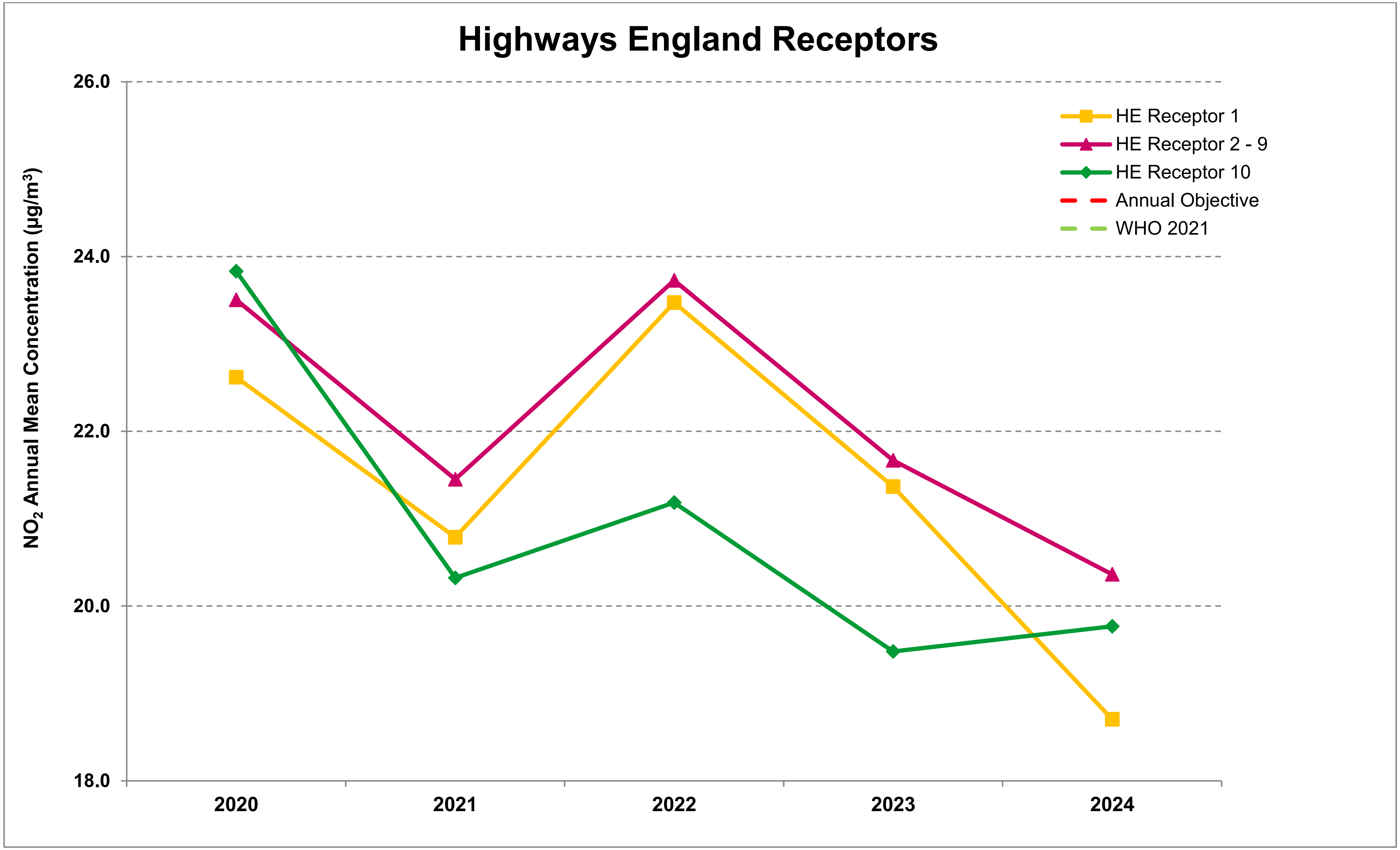


Figure C.2 – Highways England Receptor NO_2 Concentrations, by Individual Receptor

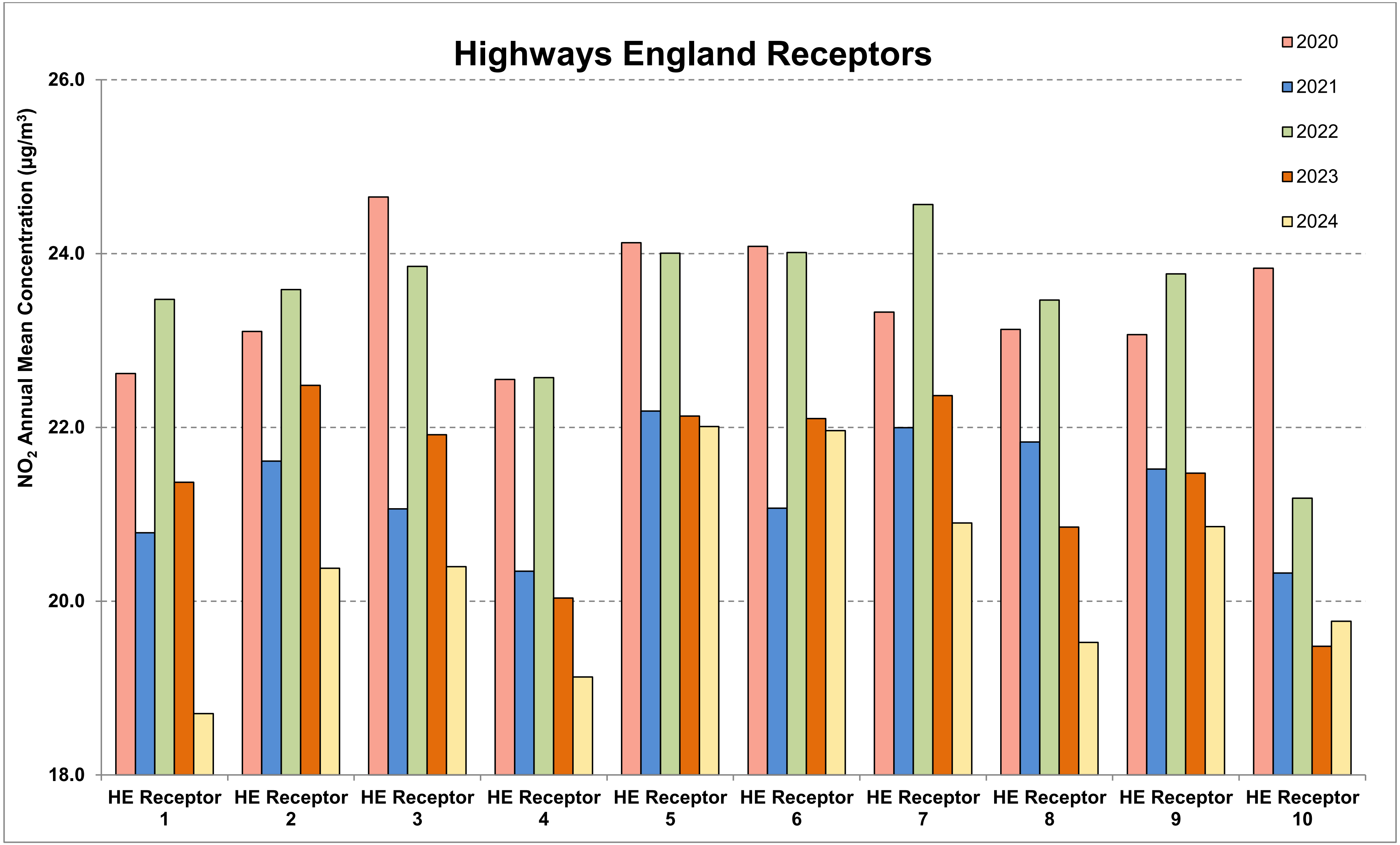


Figure C.3 – Bus Lane Monitoring

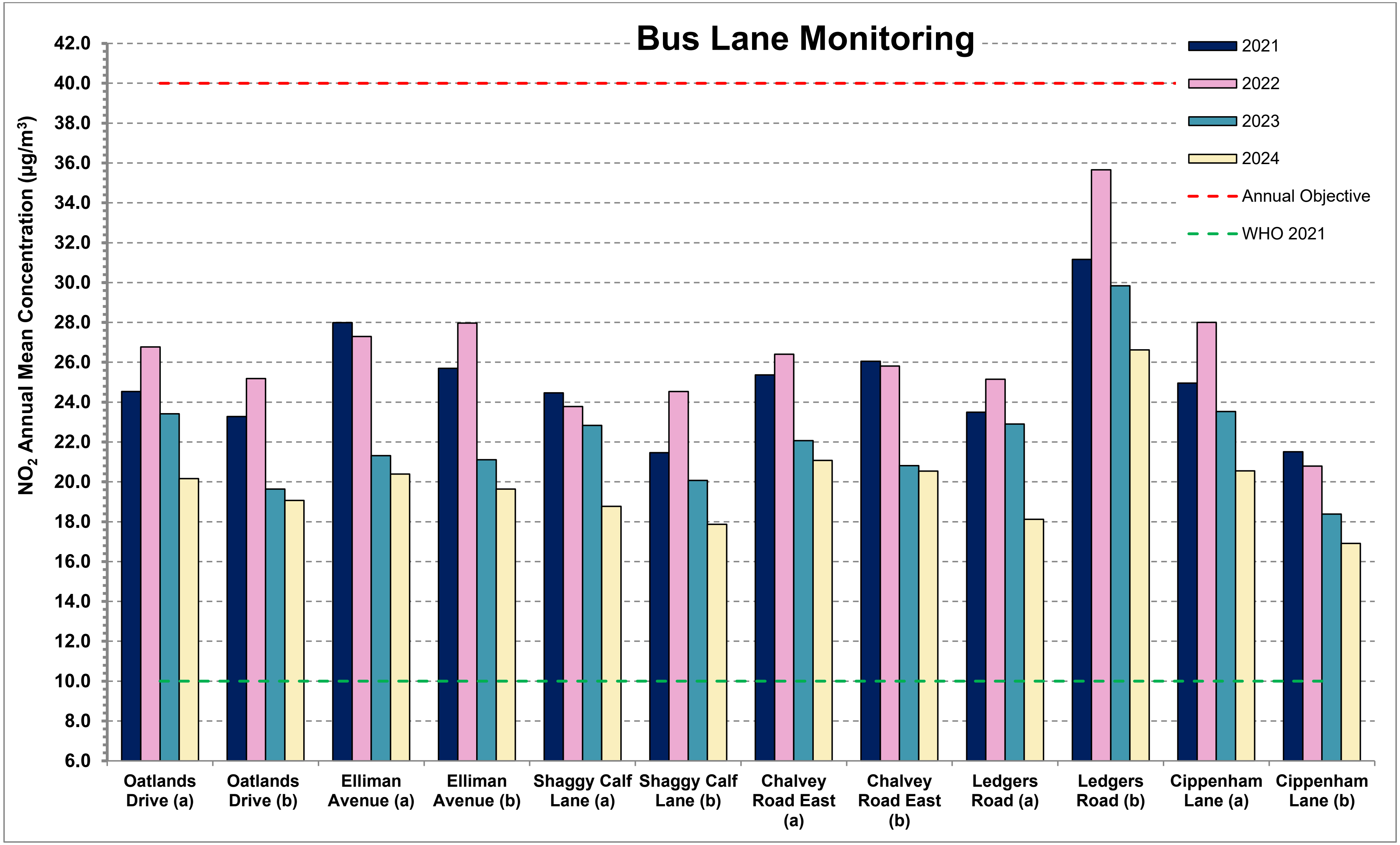


Figure C.4 – Destination Farnham Road Monitoring

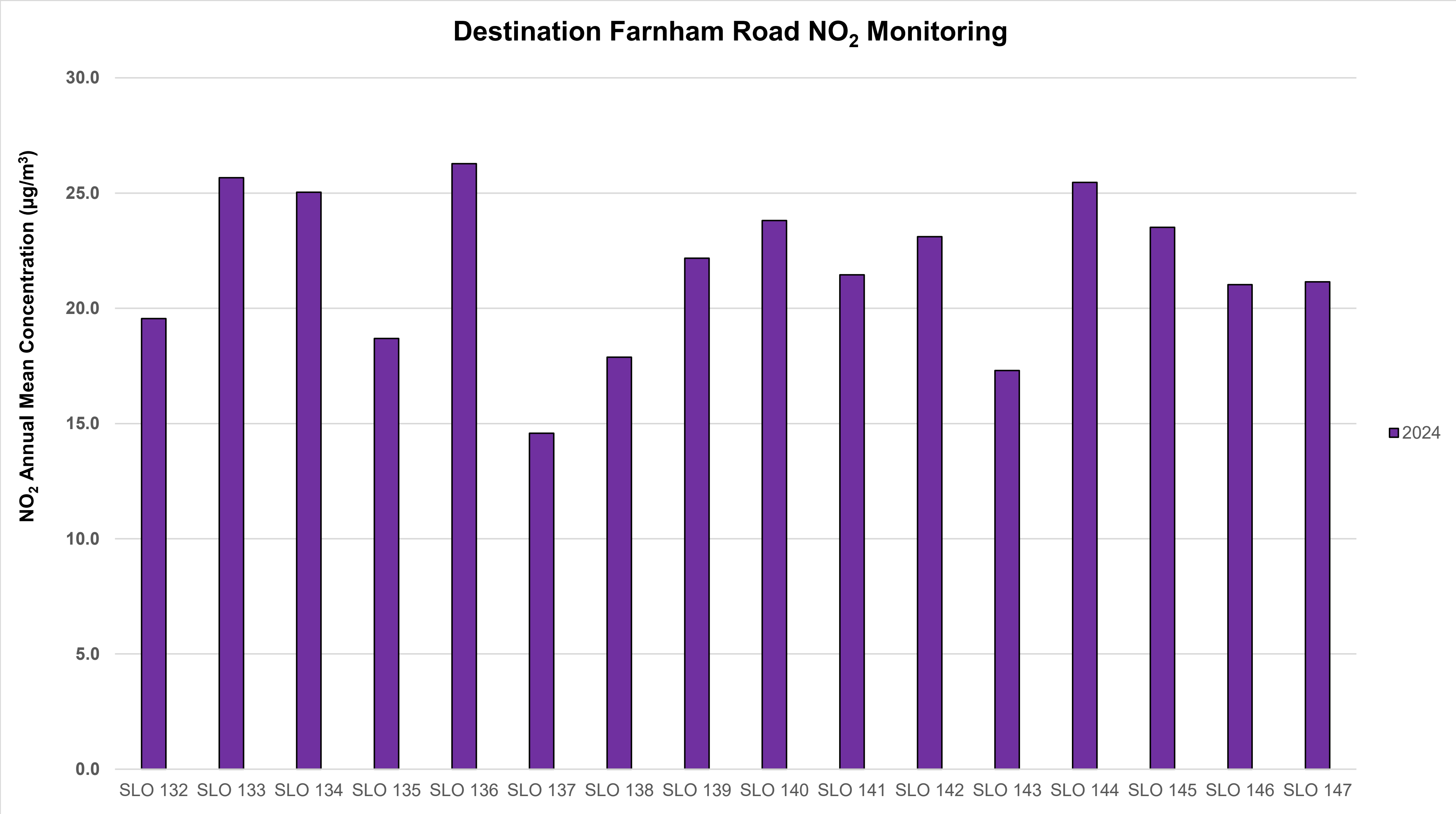


Figure C.5 – Monthly Average Daily Traffic Flows along the A4 Between Huntercombe Roundabout and Brands Hill

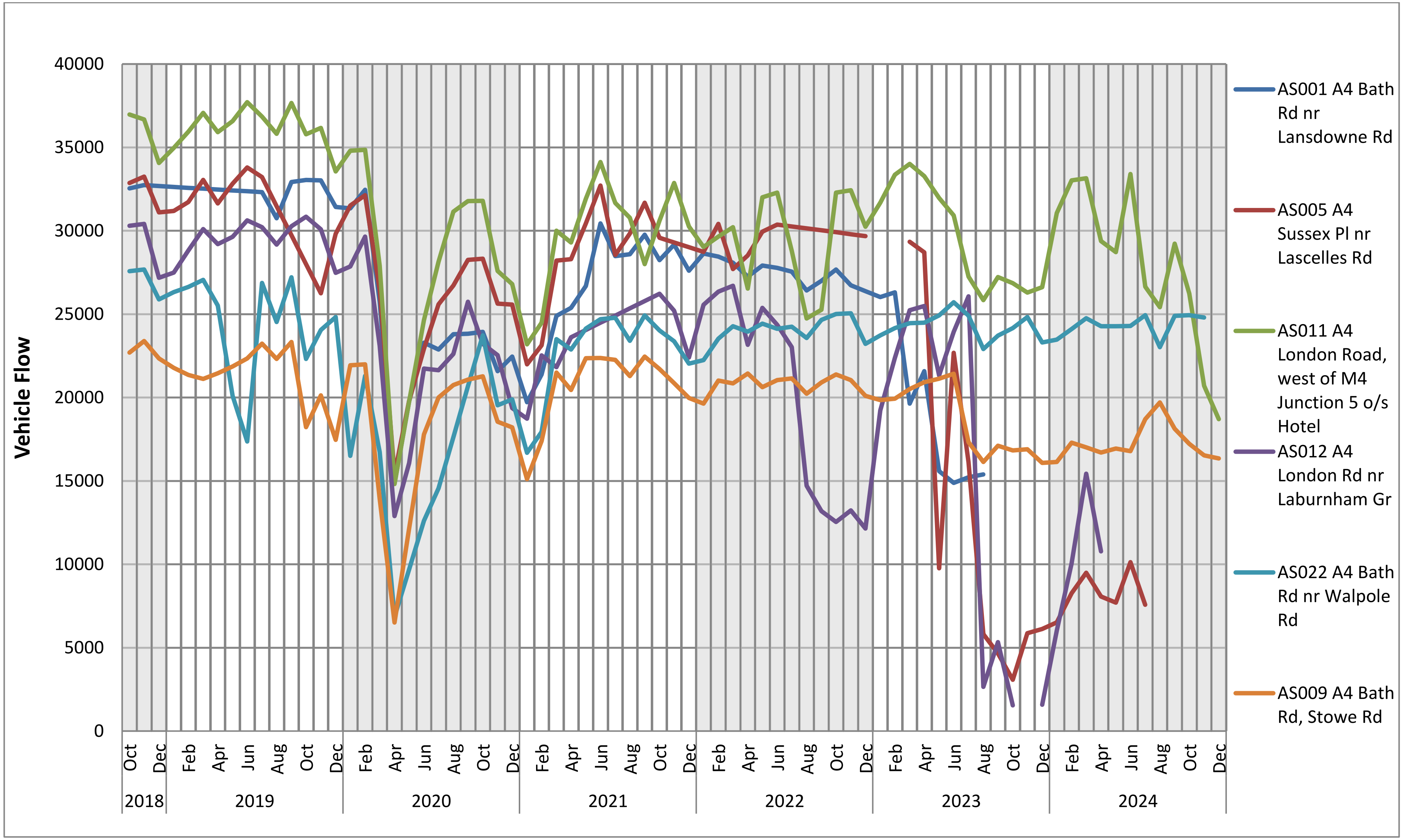


Figure C.6 – Traffic Counter Locations

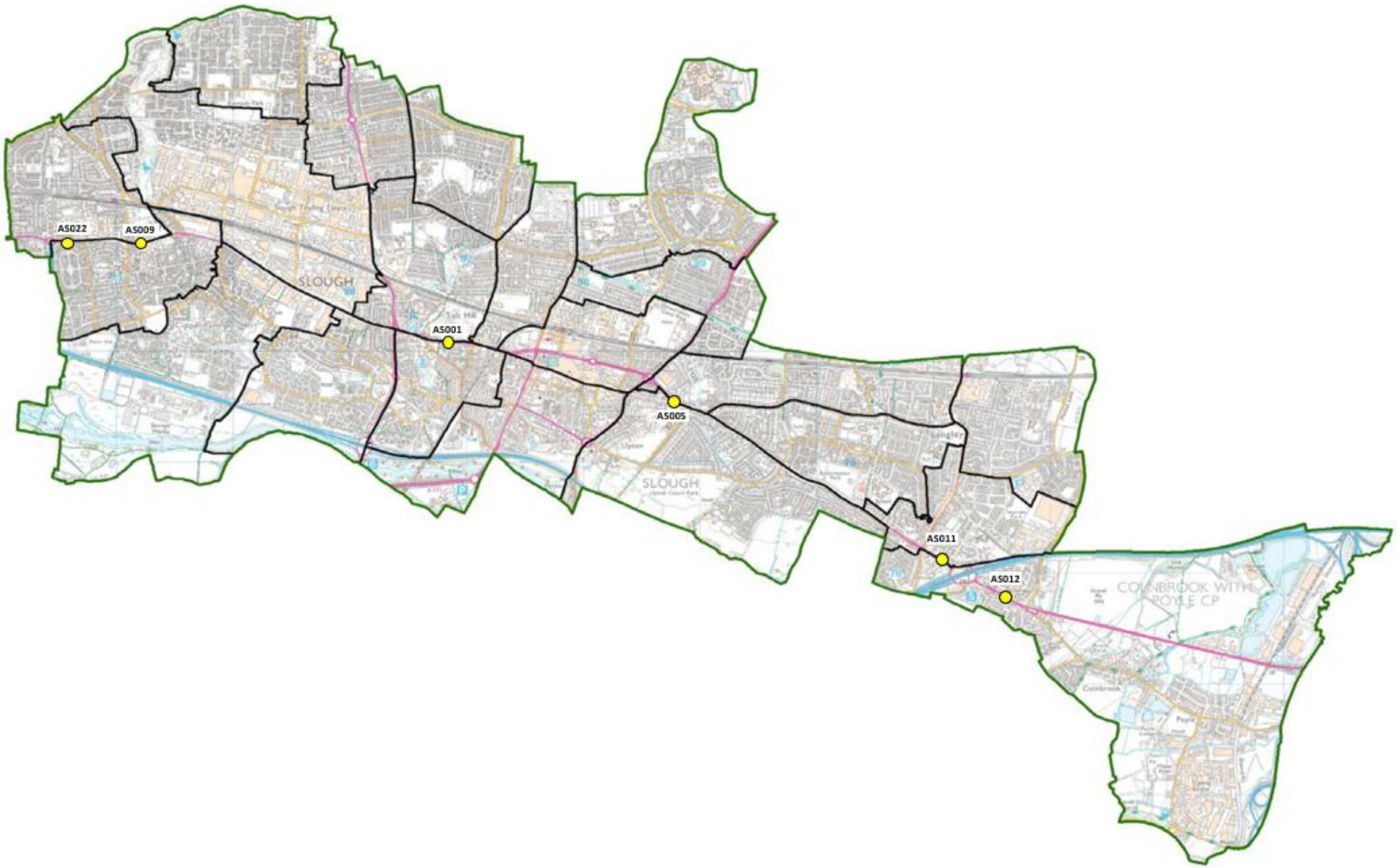


Table C.1 – Traffic Counter Data Quality Summary

Key

Full Data Capture

Partial Data Capture

No Data Capture

Code	January	February	March	April	May	June	July	August	September	October	November	December
AS001	None	None	None	None	None	None	None	None	None	None	None	None
AS005	Full	Full	Full	Partial	Partial	Partial	Partial	None	None	None	None	None
AS009	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Partial
AS011	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Partial
AS012	Partial	Full	Full	Full	None	None	Partial	Partial	Partial	Partial	None	None
AS022	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	None

C.5 QA/QC of Diffusion Tube Monitoring

During 2024, Slough Borough Council used services provided by SOCOTEC (Didcot) for the supply and analysis of diffusion tubes, who was the sole supplier during 2024. SOCOTEC have been in contract with Slough Borough Council since 2022. The contract with SOCOTEC was renewed in January 2025, therefore SOCOTEC will be providing diffusion tube supply and analysis services until December 2027, with an optional further year extension to December 2028. Prior to 2022, services were provided by Gradko International Ltd.

The preparation of the tubes was 50% Triethanolamine (TEA) in Acetone and the preparation procedures adhered to the guidance detailed within 'Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users', Issue 1a Feb.2008 (issued by AEA Energy and Environment).

Diffusion tube manufacture and analysis at SOCOTEC carries UKAS accreditation to the international standard BS EN ISO/IEC 17025 and their Environmental Management System is accredited to ISO14001:2015.

The two main analytical techniques for the determination of nitrite are ion chromatography and colorimetry. SOCOTEC conduct diffusion tube analysis using colorimetric techniques, which is considered industry standard. The instrument is calibrated daily, with the correlation coefficient (r value) checked against acceptable criteria. All calibration and QC standards are made from ISO Guide 34 certified standards and made against defined acceptance tolerances.

To supplement quality control procedures, SOCOTEC participate in the UKAS accredited proficiency testing scheme AIR-PT run by LGC (accredited) and supported by the Health and Safety Laboratory. This testing scheme is undertaken by analysing four spiked diffusion tubes on a quarterly basis to assess the analytical performance of those laboratories.

Annually, the AIR-PT and annual inter-field comparison results for diffusion tube laboratories are released. Results of the most recent eight rounds of proficiency testing under the AIR-PT scheme for laboratories which provide 50% TEA/Acetone diffusion tubes are provided in Table C.2. The table gives the percentage of samples where results returned by the laboratory were considered satisfactory – i.e. 1 out of 4 = 25%, and 4 out of 4 = 100%. The guidance directs that a single round is a snap-shot in time, and thus it is more informative to consider performance over a number of rounds. It is further stated that over a rolling five round AIR-PT window, 95% of results (i.e. 19 out of 20 samples) should be considered to be satisfactory.

All diffusion tube monitoring has been completed in adherence with the 2024 Diffusion Tube Monitoring Calendar (+- 2 days).

Table C.3 shows the rolling average from the AIR-PT scores for 50% TEA / Acetone laboratories (intervals of five). The moving average results indicate that SOCOTEC have consistently performed well in the AIR-PT test, with only one score below 100% in round AR068 resulting in a rolling average of 98%. Slough Borough Council therefore have confidence that the diffusion tubes are analysed accurately.

Table C.2 – Results of Laboratories Which Participated in the Latest AIR-PT Rounds

The following table lists those UK laboratories undertaking LAQM activities that have participated in recent AIR NO_2 PT rounds and the percentage of results submitted which were subsequently determined to be satisfactory based upon a z-score of ≤ ± 2 as defined above.

AIR PT Round	AR053	AR055	AR056	AR058	AR059	AR062	AR063	AR065	AR066	AR068
Round conducted in the period	Sept – Oct 2022	Jan - Feb 2023	May – Jun 2023	Jul - Aug 2023	Sept - Oct 2023	Jan - Feb 2024	Apr - Jun 2024	Jul - Aug 2024	Sept - Oct 2024	Jan - Feb 2025
Aberdeen Scientific Services	100%	0%	100%	100%	75%	100%	100%	100%	100%	100%
Cardiff Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Edinburgh Scientific Services	100%	100%	75%	100%	50%	100%	100%	100%	100%	100%
SOCOTEC	100% [1]	100% [1]	100% [1]	100% [1]	100% [1]	100% [1]	100% [1]	100% [1]	100% [1]	87.5 [1]
Exova (formerly Clyde Analytical)	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Glasgow Scientific Services	100%	100%	100%	100%	100%	75%	100%	100%	100%	100%
Gradko International	100%	100%	100%	100%	100%	100%	100%	100%	100%	50%
Kent Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Kirklees MBC	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Lambeth Scientific Services	50%	0%	75%	50%	0%	50%	50%	50%	50%	100%
Milton Keynes Council	100%	50%	75%	100%	100%	100%	NR [2]	50%	100%	100%
Northampton Borough Council	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Somerset Scientific Services	100%	100%	75%	100%	100%	100%	100%	100%	100%	100%
South Yorkshire Air Quality Samplers	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]
Staffordshire County Council, Scientific Services	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Tayside Scientific Services (formerly Dundee CC)	100%	NR [2]	100%	NR [2]	NR [2]	NR [2]	NR [2]	100%	NR [2]	NR [2]
West Yorkshire Analytical Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]

[1] Participant subscribed to two sets of test results (2 x 4 test samples) in each AIR PT round.
[2] NR, no results reported.

[3] No longer carry out NO_2 diffusion tube monitoring and therefore did not submit results.

Table C.3 – Rolling Average AIR-PT Scores for 50% TEA/Acetone Laboratories

Laboratory	AIR PT AR046	AIR PT AR049	AIR PT AR050	AIR PT AR052	AIR PT AR053	AIR PT AR055	AIR PT AR056	AIR PT AR058	AIR PT AR059	AIR PT AR062	AIR PT AR063	AIR PT AR065	AIR PT AR066	AIR PT AR068
Edinburgh Scientific Services	#N/A	#N/A	#N/A	#N/A	81%	88%	85%	95%	85%	85%	85%	90%	90%	100%
Gradko	#N/A	#N/A	#N/A	#N/A	100%	100%	100%	100%	100%	100%	100%	100%	100%	90%
Lambeth Scientific Services	#N/A	#N/A	#N/A	#N/A	70%	55%	60%	55%	35%	35%	45%	40%	40%	60%
SOCOTEC	#N/A	#N/A	#N/A	#N/A	100%	100%	100%	100%	100%	100%	100%	100%	100%	98%

C.5.1 Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. In 2024, 20 diffusion tube sites were annualised by producing an annualisation factor using three nearby, long-term, continuous monitoring sites which are part of the national network (London Hillingdon (HIL), Reading New Town (REA1) and Oxford St Ebbes (OX8)). The sites chosen are Urban Background sites, have a data capture above 85%, and lie within a radius of <50 miles of the annualised sites.

The sites to be annualised included:

- Spackmans Way HE Receptor 6 (SLO 81 – 83): In September 2024, maintenance work on the block resulted in the diffusion tube deployment equipment being removed. Unfortunately the pipework that the diffusion tubes were attached to was not replaced, and no other viable location at this receptor location has been identified. As less than 75% data capture was achieved, data for these diffusion tubes has been annualised.
- Spackmans Way HE Receptor 9 (SLO 90 and SLO 92): These diffusion tube sites were missing or were found on the floor, resulting in data capture below 75%.
- Destination Farnham Road sites (SLO 132 – SLO 147): As these diffusion tube sites were deployed mid year (May 2024), data capture fell below 75%. One site fell below 25% due to being regularly missing, therefore data capture was insufficient for annualisation. It is expected a full dataset will be presented in ASR 2026.

Table C.4 – Annualisation Summary (concentrations presented in μg/m^3)

Site ID	Annualisation Factor London Hillingdon (HIL)	Annualisation Factor Reading New Town (REA1)	Annualisation Factor Oxford St Ebbes (OX8)	Average Annualisation Factor	Raw Data Simple Annual Mean (μg/m^3)	Annualised Data Simple Annual Mean (μg/m3)
SLO 81	1.0265	1.0942	1.1115	1.0774	-	-
SLO 82	1.0265	1.0942	1.1115	1.0774	-	-
SLO 83	1.0265	1.0942	1.1115	1.0774	26.1	28.2
SLO 90	0.9904	1.0272	1.0525	1.0234	-	-
SLO 92	0.9904	1.0272	1.0525	1.0234	26.1	26.7
SLO 132	0.9940	1.0134	0.9769	0.9948	25.2	25.1
SLO 133	1.0300	1.0447	1.0321	1.0356	31.8	32.9

Site ID	Annualisation Factor London Hillingdon (HIL)	Annualisation Factor Reading New Town (REA1)	Annualisation Factor Oxford St Ebbes (OX8)	Average Annualisation Factor	Raw Data Simple Annual Mean (µg/m³)	Annualised Data Simple Annual Mean (µg/m3)
SLO 134	1.0300	1.0447	1.0321	1.0356	31.0	32.1
SLO 135	1.0530	1.1299	1.1101	1.0977	21.8	24.0
SLO 136	1.0131	1.0322	1.0203	1.0219	33.0	33.7
SLO 137	0.9658	0.9808	0.9618	0.9695	19.3	18.7
SLO 138	1.0192	1.0054	0.9886	1.0044	22.8	22.9
SLO 139	1.0300	1.0447	1.0321	1.0356	27.5	28.4
SLO 140	1.0598	1.0158	1.0302	1.0353	29.5	30.5
SLO 141	1.0300	1.0447	1.0321	1.0356	26.6	27.5
SLO 142	1.0013	1.0084	0.9990	1.0029	29.5	29.6
SLO 143	1.0300	1.0447	1.0321	1.0356	21.4	22.2
SLO 145	1.0539	1.0493	1.0499	1.0510	28.7	30.1
SLO 146	1.0300	1.0447	1.0321	1.0356	26.0	27.0
SLO 147	1.0672	1.1372	1.1093	1.1045	24.6	27.1

C.5.2 Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within ASR 2025 have 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.

Slough Borough Council have applied a national bias adjustment factor of 0.78 to the 2024 monitoring data, as it resulted in a higher adjusted concentration and is therefore a conservative approach. The national bias adjustment factor is taken from the version dated June 2025, with 37 studies in total. Slough Borough Council’s own local bias adjusted data was combined with the national factor to produce the national factor used to adjust Slough Borough Council’s data, as prescribed in the national diffusion tube bias adjustment factor spreadsheet.

It should be noted that the national bias adjustment factor excludes data from December obtained from SOCOTEC. The National Physical Laboratory (NPL) advised that in December 2024, many of the SOCOTEC 50% TEA in acetone diffusion tubes across the country read equal to or lower concentrations than the automatic analyser. It would generally be expected that diffusion tube results over-read compared to the analyser. As such, the December results for all submissions were removed when calculating the national annual bias adjustment figure for SOCOTEC 50% TEA in acetone.

A review was undertaken of Slough Borough Council's diffusion tube data for December 2024, to ascertain whether it should be considered erroneous based on the findings of NPL. Whilst some of the results for December 2024 did appear to be lower than usual, there was not a significant difference between this and the lows recorded during the summer. This may have been caused by meteorological influences such as high winds and rain. In addition, data from the continuous analysers suggested that data from December 2024 was lower than usual, for example NO_2 data from Brands Hill (SLH 11) recorded its lowest concentrations in December (17.8µg/m^3 in 2024, after recording 33.6µg/m^3 in November 2024). This site had 100% data capture therefore it is likely that this result is accurate. Furthermore, removing the December 2024 diffusion tube data from the annual average results in an increase in concentrations by -0.5µg/m^3 on average, with approximately 50% showing little change (<0.4µg/m^3) and no concentrations increasing to any significant level – the highest concentration rises from 32.5µg/m^3 to 32.8µg/m^3 (Yew Tree Road, SLO 29). As such, the decision was made to retain the December 2024 data, on the basis of insufficient evidence to exclude it.

A summary of bias adjustment factors used by Slough Borough Council over the past five years is presented in Table C.5.

Table C.5 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	National	06/25	0.78
2023	National	03/24	0.78
2022	Local	-	0.78
2021	National	06/22	0.83
2020	Local	-	0.86

Slough Borough Council undertook co-location of diffusion tubes with a continuous analyser at five sites during 2024. The sites and their bias factors are presented below (Table C.6). It should be noted however that a combined national and local factor of 0.78 was applied to the results as per instructions provided within the national bias adjustment spreadsheet, as shown in Table C.7.

Table C.6 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	10	11	10	11	10
Bias Factor A	0.75 (0.71 - 0.8)	0.7 (0.65 - 0.75)	0.76 (0.72 - 0.8)	0.78 (0.74 - 0.82)	0.75 (0.69 - 0.82)
Bias Factor B	33% (26% - 41%)	44% (34% - 53%)	32% (25% - 39%)	29% (22% - 36%)	34% (22% - 46%)
Diffusion Tube Mean (µg/m^3)	31.0	35.1	30.0	26.1	23.9
Mean CV (Precision)	4.3%	5.0%	5.1%	5.2%	7.2%
Automatic Mean (µg/m^3)	23.2	24.5	22.8	20.3	17.9
Data Capture	100%	100%	100%	99%	99%
Adjusted Tube Mean (µg/m^3)	23 (22 - 25)	25 (23 - 26)	23 (22 - 24)	20 (19 - 21)	18 (17 - 20)

Notes:

A combined local bias adjustment factor of 0.78 has been used to bias adjust the 2024 diffusion tube results.

Table C.7 – Combined Local and National Bias Adjustment

Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m^3)	Automatic Monitor Mean Conc. (Cm) (µg/m^3)	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)
Cambridge City Council	11	20	15	31.0%	G	**0.76**
Cardiff Council / Shared Regulatory Services	9	35	31	14.2%	G	**0.88**
Ipswich Borough Council	9	24	20	21.0%	G	**0.83**
Ipswich Borough Council	11	36	26	37.9%	G	**0.73**
City Of York Council	11	13	11	16.0%	P	**0.86**
City Of York Council	11	22	18	22.9%	G	**0.81**
City Of York Council	11	26	20	31.0%	G	**0.76**
East Suffolk Council	9	26	20	32.8%	G	**0.75**

Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (μg/m³)	Automatic Monitor Mean Conc. (Cm) (μg/m³)	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)
Marylebone Road Intercomparison	10	47	36	30.5%	G	**0.77**
Hull City Council	10	21	16	25.4%	P	**0.80**
Hull City Council	9	27	20	35.3%	G	**0.74**
Waverley Borough Council	10	21	18	13.7%	G	**0.88**
Waverley Borough Council	11	22	16	32.3%	G	**0.76**
Wrexham County Borough Council	10	15	13	17.0%	G	**0.85**
Gravesham Borough Council	11	21	19	9.7%	P	**0.91**
Slough Borough Council	11	35	24	43.5%	G	**0.70**
Slough Borough Council	11	26	20	32.6%	G	**0.75**
Slough Borough Council	11	23	17	34.0%	G	**0.75**
Slough Borough Council	10	31	23	33.4%	G	**0.75**
Slough Borough Council	11	30	23	33.7%	G	**0.75**
Thanet District Council	10	19	15	24.3%	G	**0.80**
Wirral Council	9	14	12	19.9%	G	**0.83**
Derry City And Strabane District Council	11	28	32	-11.8%	G	**1.13**
Derry City And Strabane District Council	11	11	7	58.1%	G	**0.63**
Horsham District Council	11	22	17	31.1%	G	**0.76**
Leeds City Council	10	36	28	32.5%	G	**0.75**
Leeds City Council	11	29	20	42.7%	G	**0.70**
Leeds City Council	11	24	18	36.4%	G	**0.73**
Leeds City Council	10	25	19	31.2%	G	**0.76**
Huntingdonshire District Council	10	28	23	21.1%	G	**0.83**
North East Lincolnshire Council	11	39	21	84.1%	G	**0.54**
North East Lincolnshire Council	10	12	10	20.0%	G	**0.83**
North East Lincolnshire Council	11	21	18	15.7%	G	**0.86**
North Lincolnshire Council	11	13	11	17.3%	P	**0.85**
Horsham District Council	10	20	16	26.6%	G	**0.79**
Horsham District Council	11	21	16	27.0%	G	**0.79**
Vale Of White Horse District Council	11	19	13	44.9%	G	**0.69**
Overall Factor (37 studies)						**0.78**

C.5.3 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. Fall off with distance was automatically populated using the diffusion tube processing tool where the annual mean concentration is greater than 36µg/m^3 and where the monitoring site is not located at a point of relevant exposure (taking the limitations of the calculator into account). No diffusion tubes recorded concentrations within 10% of the AQO, therefore the three diffusion tubes that were corrected for distance were due to the receptor being closer to the road than the monitoring site. All concentrations predicted at the receptor are far below 10% of the AQO (see Table C.XX).

Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

Table C.8 – Non-Automatic NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
SLO 8	35.0	20.0	21.4	14.5	24.1	*Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.*
SLO 28	1.3	0.9	23.9	15.2	24.5	
SLO 37	10.8	9.1	22.3	13.6	22.8	*Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.*

C.6 QA/QC of Automatic Monitoring

Prior to 2022, Slough Borough Council's automatic sites were managed to the same procedures and standards as AURN sites by Ricardo Energy and Environment. However, due to the Council's financial situation, the calibration regime conducted by Ricardo's Local Site Operators (LSOs) was reduced from bi-weekly to monthly, to reduce costs.

The six-monthly auditing procedure, whereby independent ISO 17025 UKAS accredited audits of all air quality monitoring stations and six monthly service and maintenance of each air quality monitoring station within four weeks of the UKAS accredited audits takes place, remains unchanged from previous years.

Both live and historic raw data collected by the monitoring stations is collated on the Air Quality England website. This data is provisional and later ratified. This ratification process occurs quarterly. All data presented in this ASR has been through this ratification process.

C.6.1 PM_{10} and $PM_{2.5}$ Monitoring Adjustment

In historic data, daily mean TEOM measurements were adjusted to account for the volatile fraction of particulate matter using data downloaded from the Kings College VCM Portal Website. As Pippins was the last monitoring station that contained a TEOM and was discontinued in 2022, this adjustment is no longer undertaken. The BAM instruments utilised by Slough Borough Council do not require the application of a correction factor.

C.6.2 Automatic Monitoring Annualisation

All automatic monitoring locations within Slough Borough Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data.

C.6.3 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 are estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website.

No automatic NO_2 monitoring locations within Slough Borough Council required distance correction during 2023.

Appendix D: Map(s) of Monitoring Locations and AQMAs

Figure D.1 – Map of Non-Automatic Monitoring Sites in AQMA 1a

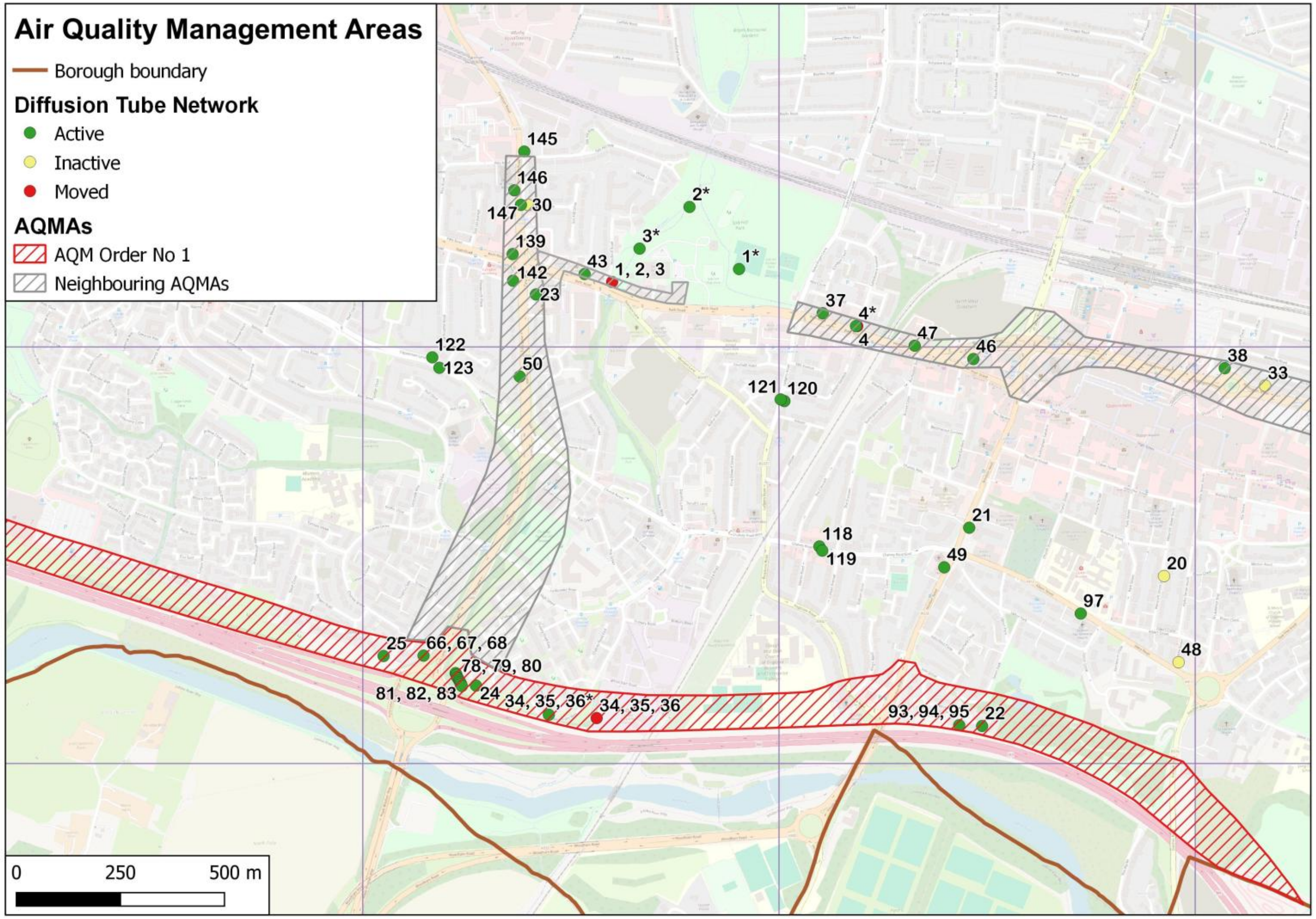


Figure D.2 – Map of Non-Automatic Monitoring Sites in AQMA 1b

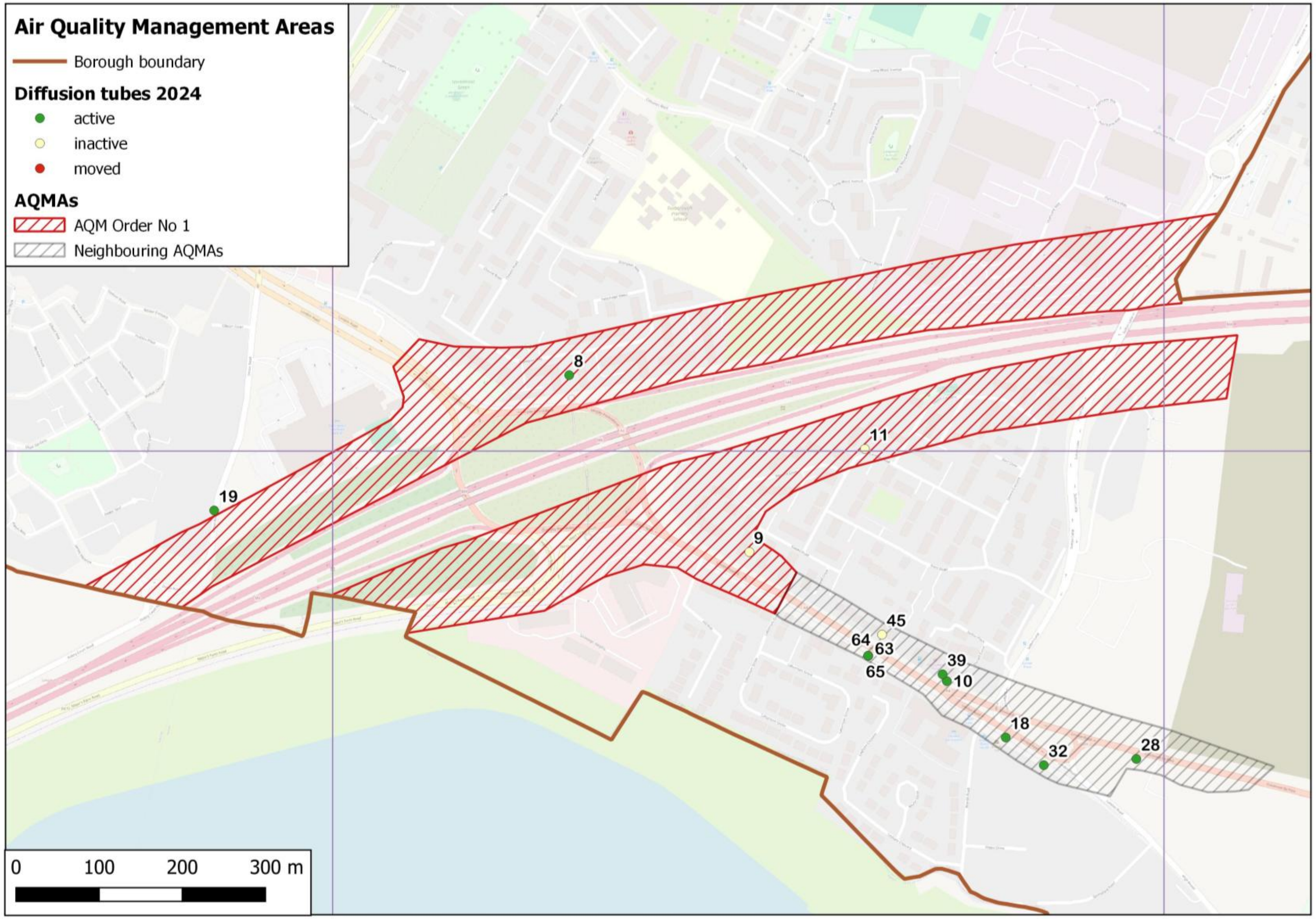


Figure D.3 – Map of Non-Automatic Monitoring Sites in AQMA 2

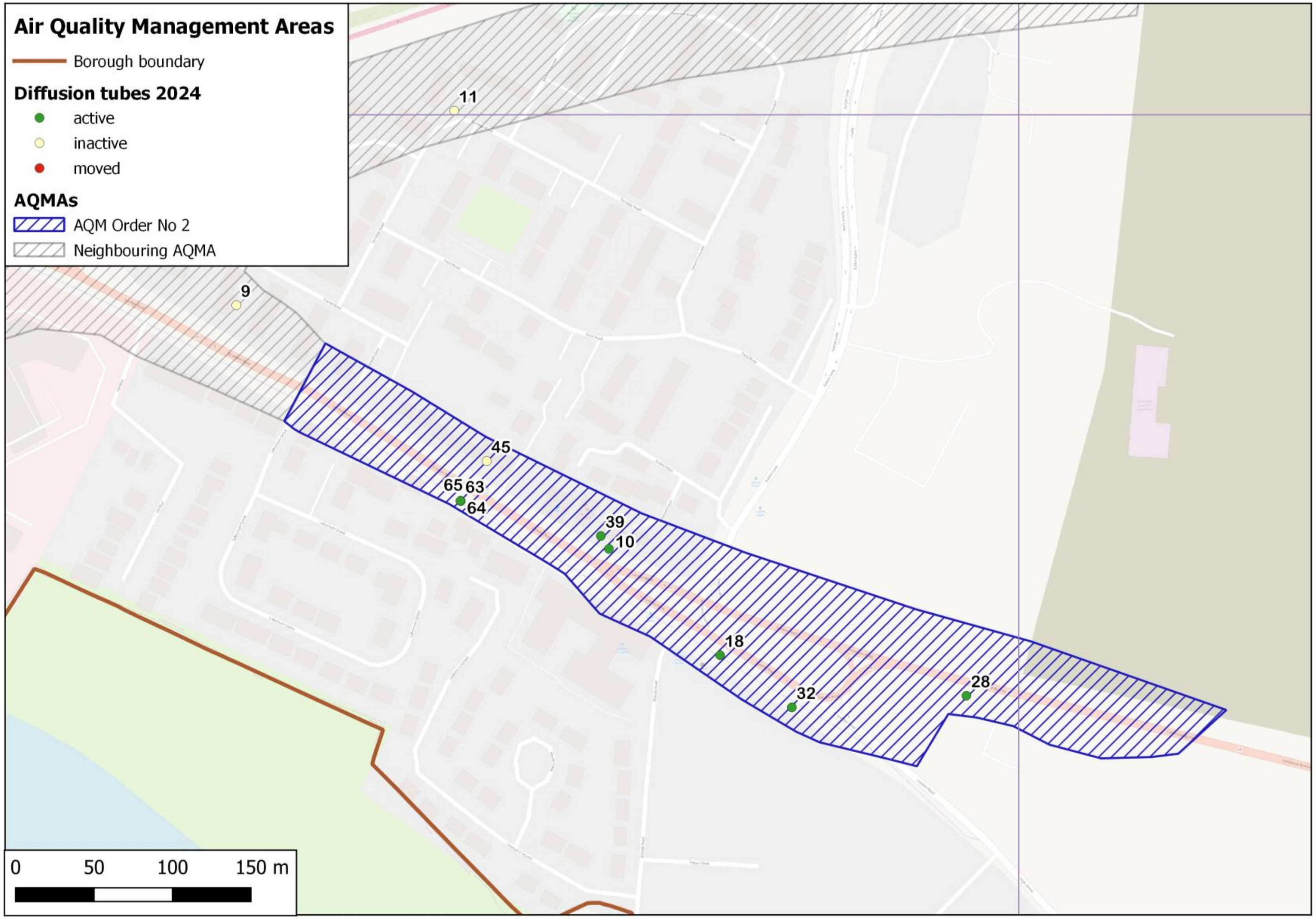


Figure D.4 – Map of Non-Automatic Monitoring Sites in AQMA 3

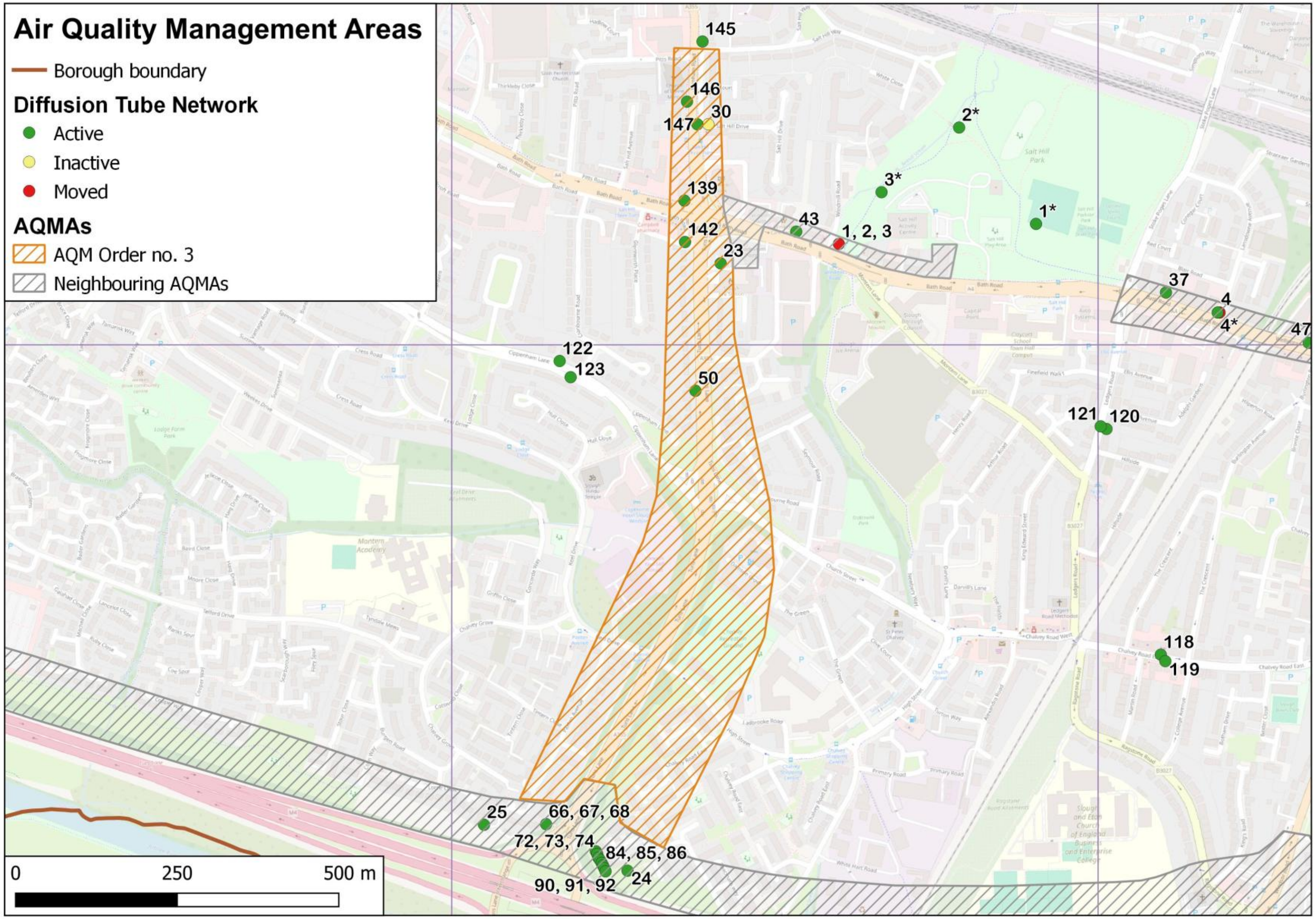


Figure D.5 – Map of Non-Automatic Monitoring Sites in AQMA 3 Extension

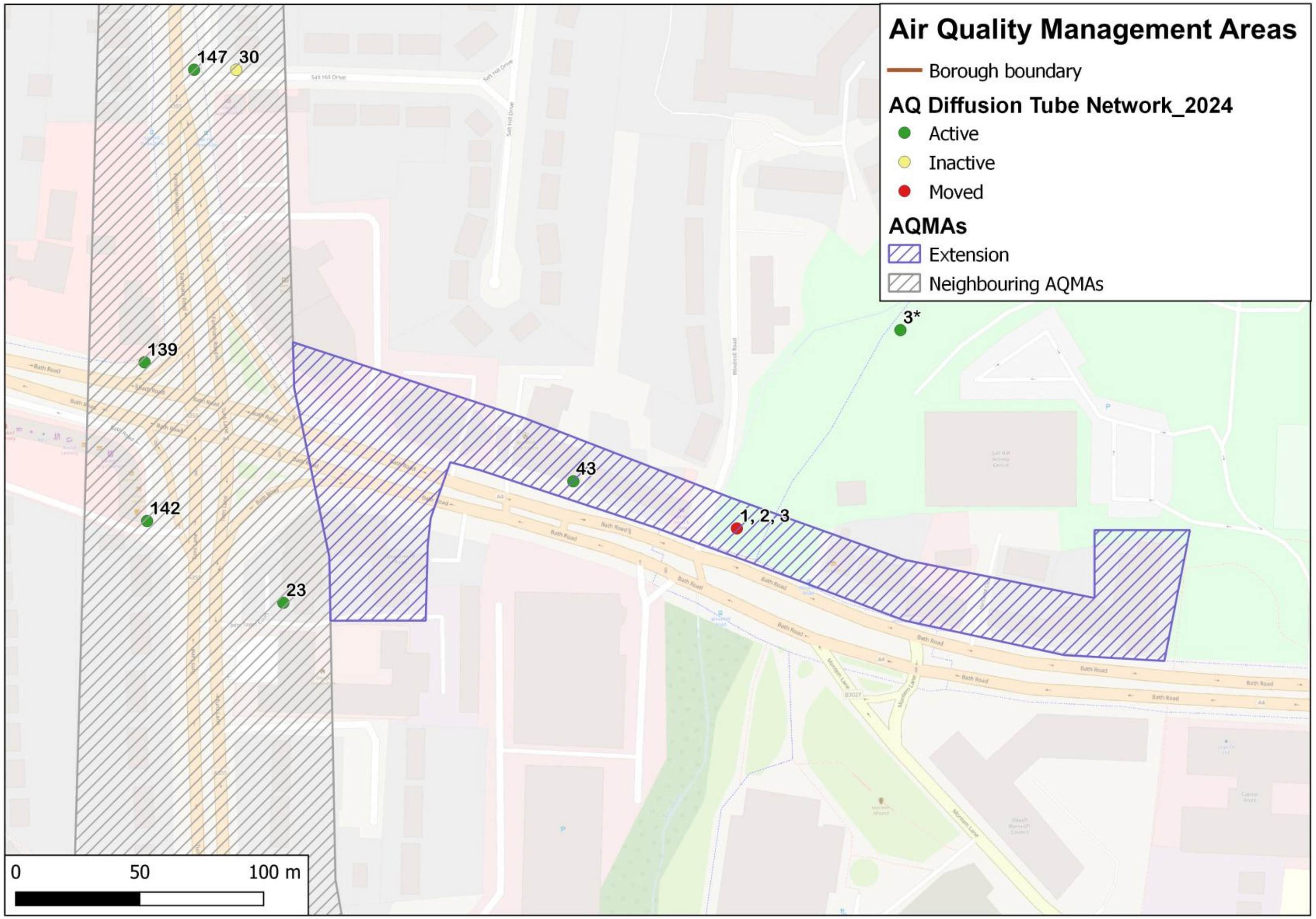


Figure D.6 – Map of Non-Automatic Monitoring Sites in AQMA 4

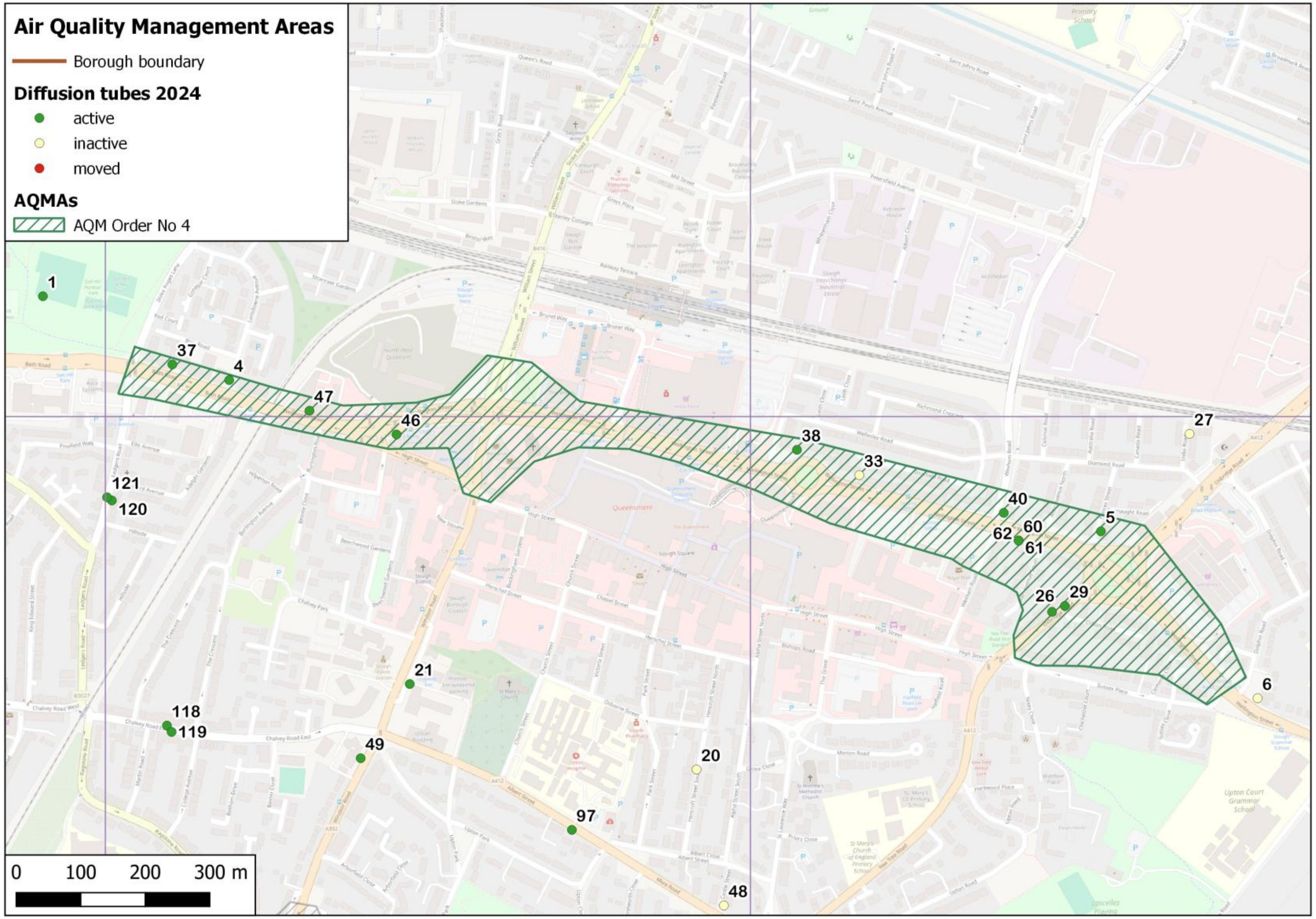


Figure D.7– Map of All Non-Automatic Monitoring Sites

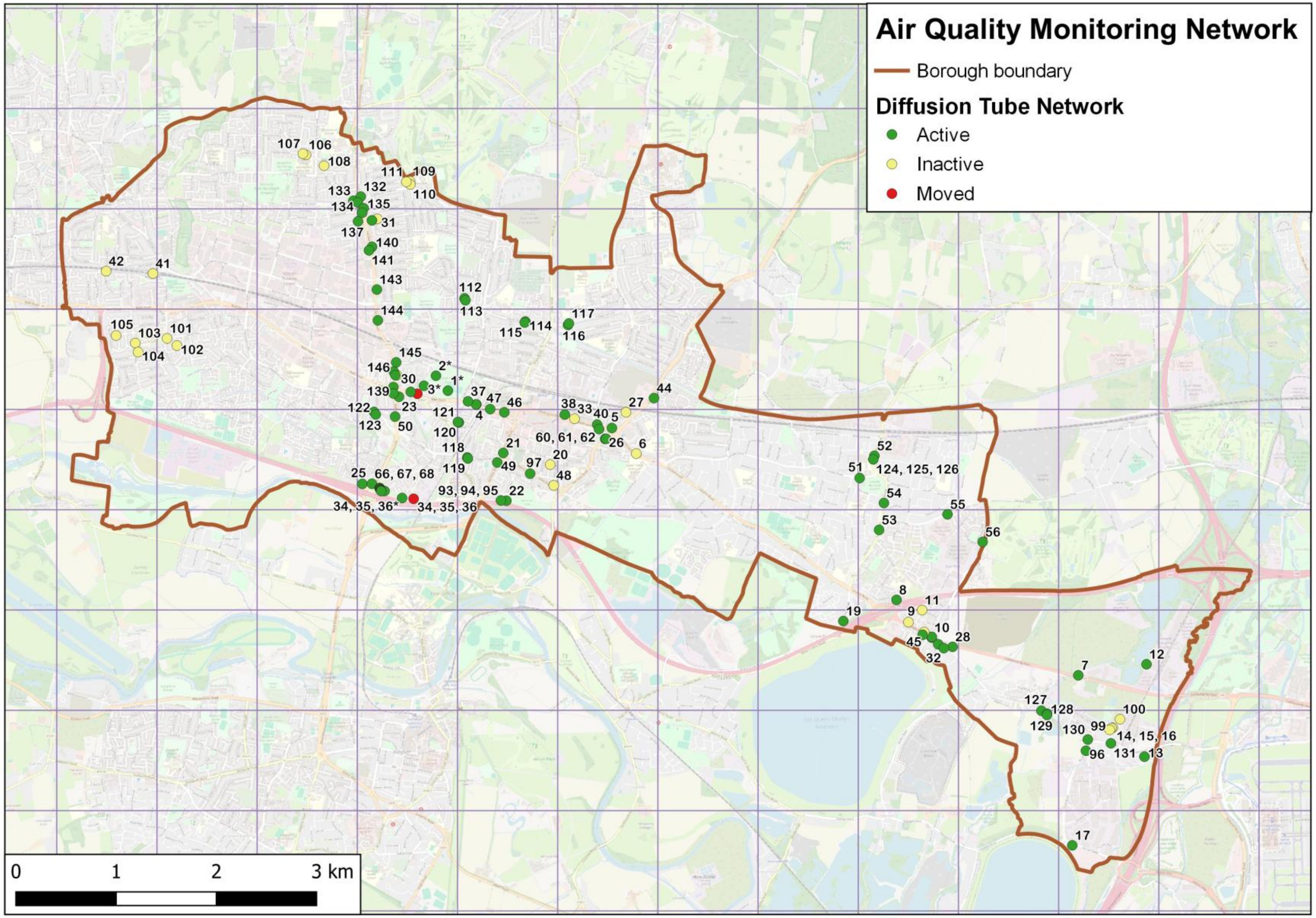


Figure D.8 – Map of All Automatic Continuous Monitors in Slough

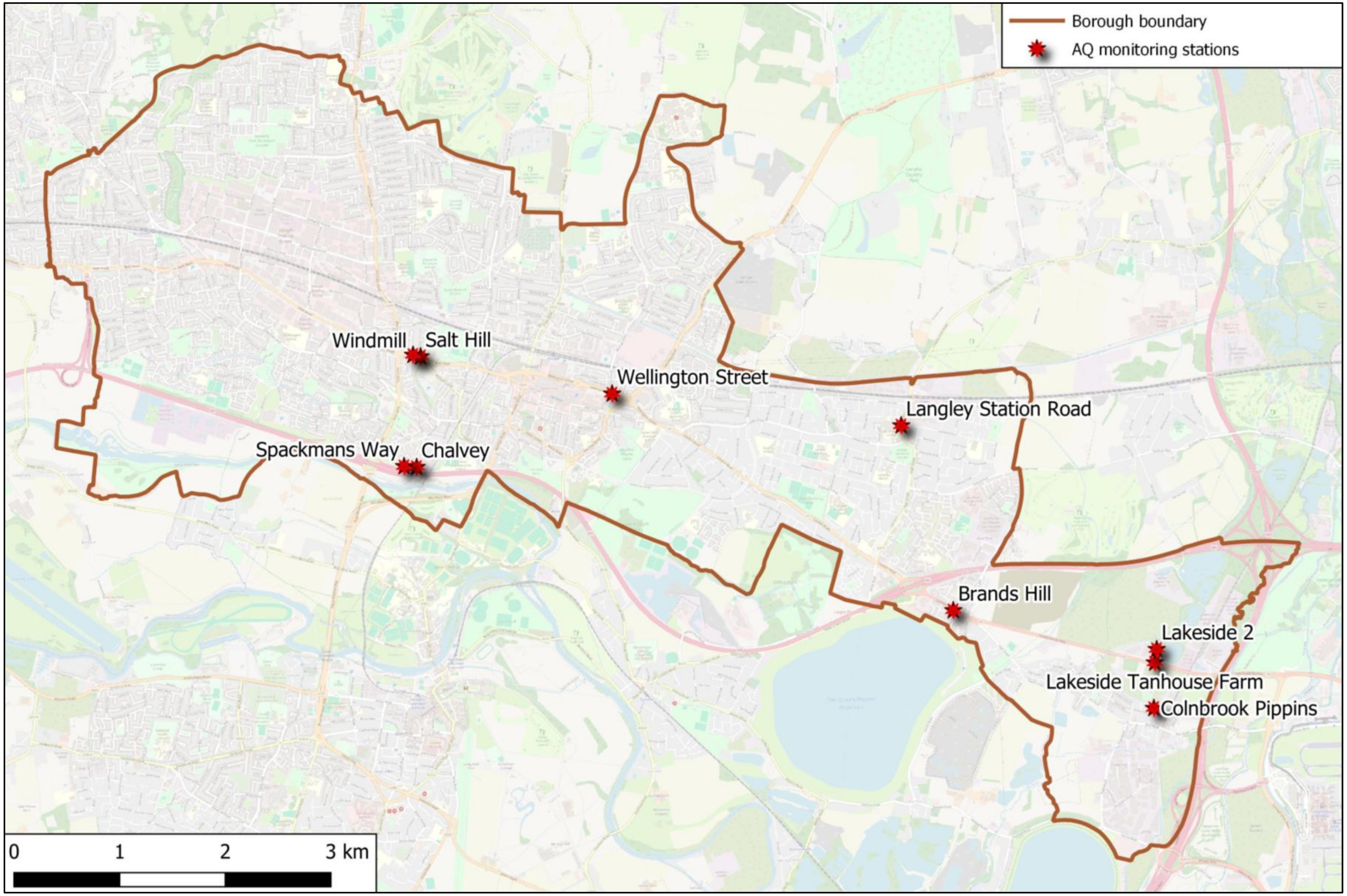


Figure D.9 – Map of All AQMAs in Slough

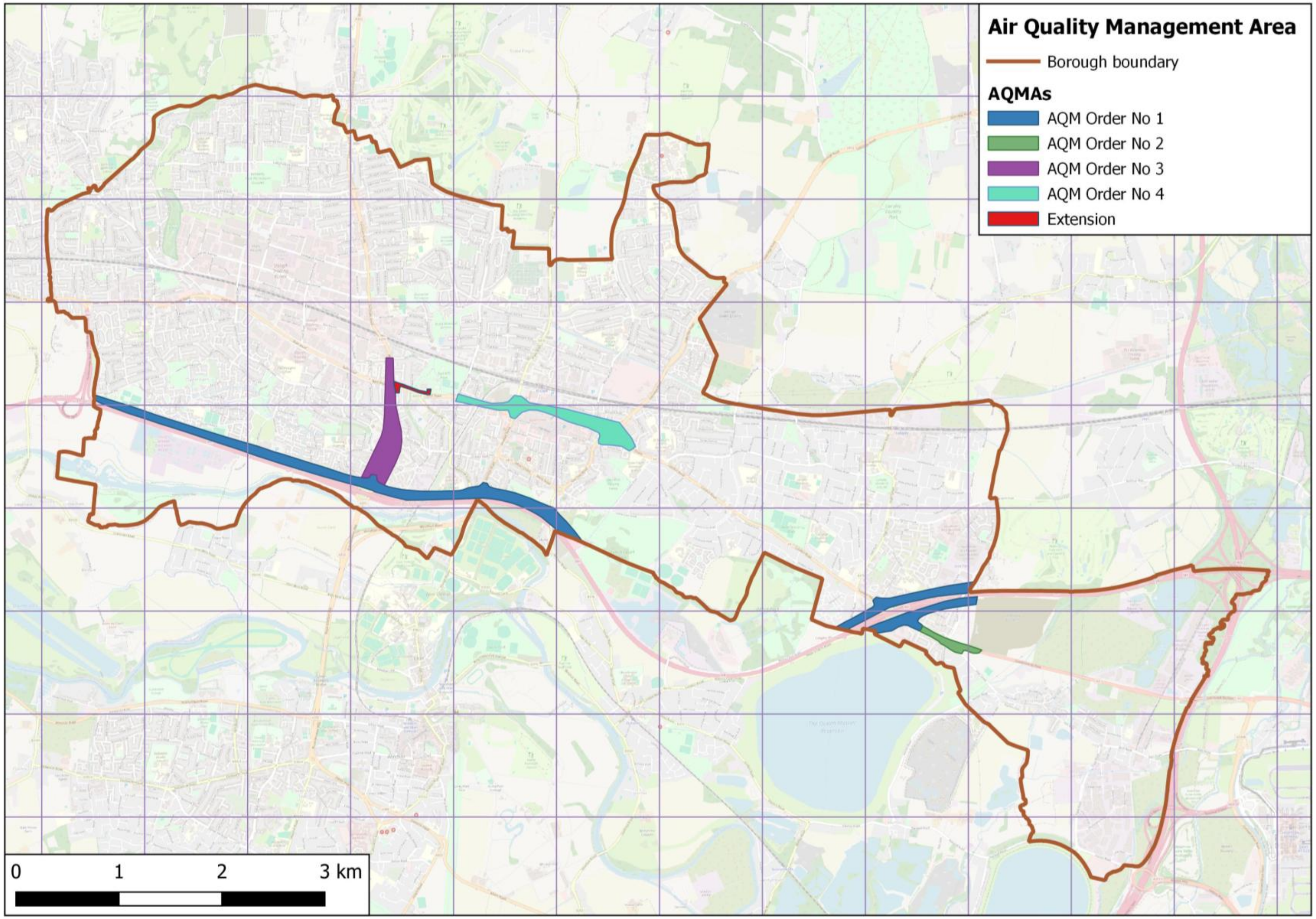
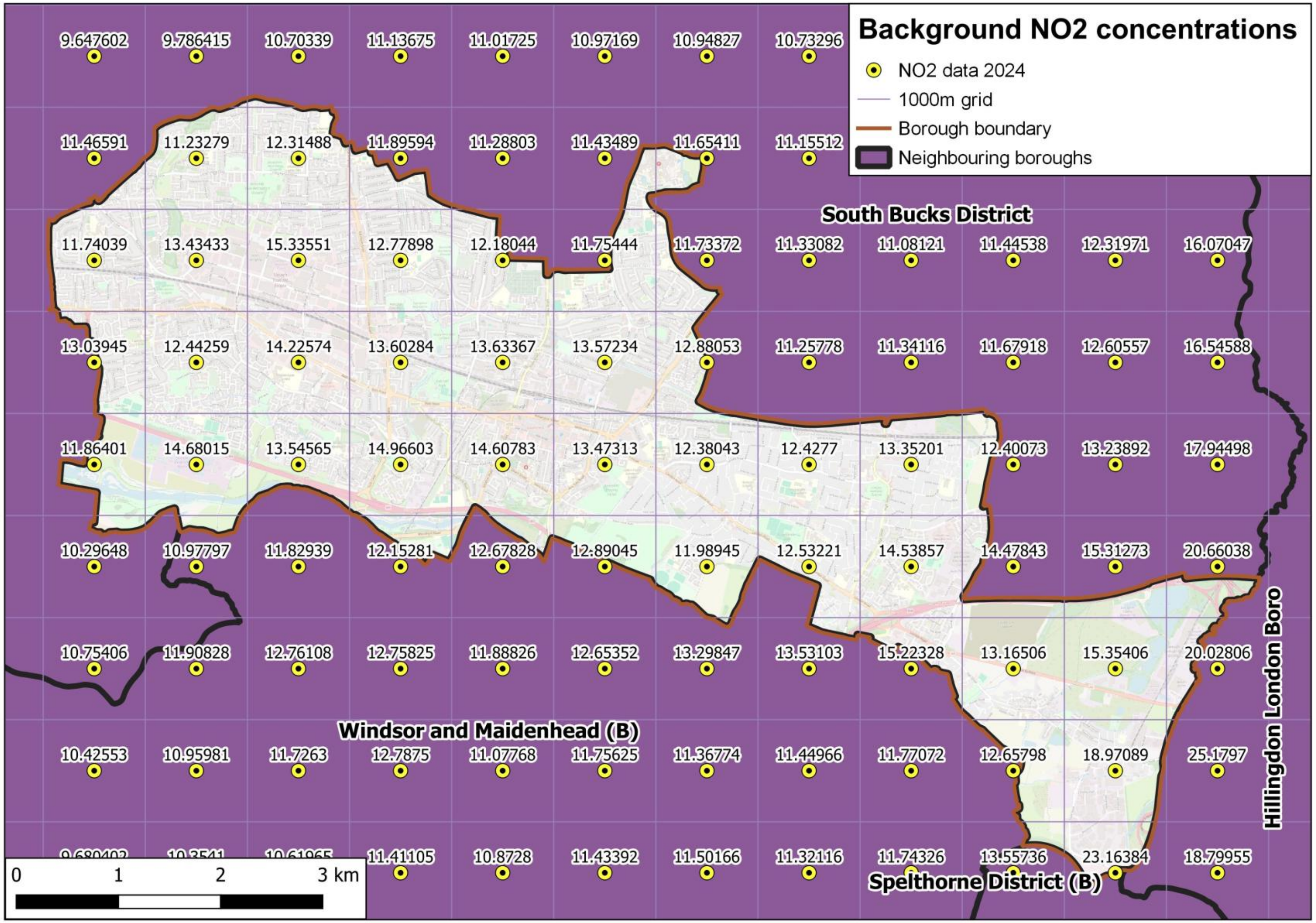


Figure D.10 – Map of Defra Background NO_2 Concentrations



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[19]

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

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

Glossary of Terms

Abbreviation	Description
ANPR	Automatic Number Plate Recognition
ASR	Annual Status Report
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
AQO	Air Quality Objective
ASR	Annual Status Report
BAM	Beta Attenuation Mass – particulate matter air quality monitor
CO	Carbon
COMEAP	Committee on the Medical Effects of Air Pollutants
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EATF	England Active Travel Fund
EfW	Energy from Waste
EV	Electric Vehicle
FIDAS	Fine Dust Aerosol Spectrometer – particulate matter air quality monitor
HGV	Heavy Goods Vehicle
IMD	Indices of Multiple Deprivation
LAQM	Local Air Quality Management
LCWIP	Local Walking and Cycling Infrastructure Plan
LEVI	Local Electric Vehicle Infrastructure
LSOA	Lower Super Output Area
NAEI	National Atmospheric Emissions Inventory
NH_3	Ammonia
NMVOC	Non-methane volatile organic compounds

Abbreviation	Description
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPL	National Physical Laboratory
NRMM	Non Road Mobile Machinery
O_3	Ozone
PG	Policy Guidance
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
SCA	Smoke Controlled Area
SO_2	Sulphur Dioxide
TEOM	Tapered Element Oscillating Microbalance – particulate matter air quality monitor
TG	Technical Guidance
UKAS	United Kingdom Accreditation Service
ULEZ	Ultra Low Emission Zone
WHLG	Warm Homes Local Grant
WHO	World Health Organisation

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