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2024 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 2024

Draft

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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. In the UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year[1].

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, people living in less affluent areas are most exposed to dangerous levels of air pollution[2].

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

Table ES 1 – Description of Key Pollutants

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

This Annual Status Report (ASR) is the second year of data collected post pandemic, which resulted in widespread reductions in traffic levels and improvements in air quality in 2020 and 2021. In 2022, the trend across the borough indicated that NO_2 concentrations

[1] UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

[2] Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

were recovering to concentrations prior to the pandemic, with some hotspot areas continuing to persist. Data collected in 2023 however has seen a reverse of this trend, and in many cases, concentrations have improved beyond that which was seen in 2020 and 2021. It is not clear from the data whether 2022 was anomalously high and overall air quality is improving, or whether concentrations in 2023 have been anomalously low and will be followed by a year of higher concentrations. It is important that despite the positive results seen in 2023, 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 its programmes, and emerging strategies such as the new Air Quality Action Plan (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, however in recent years, progress has been hindered by the pandemic, followed by the Council issuing a Section 114 Notice. This resulted in significant reductions in officer capacity and resource to deliver projects, with members of the Carbon and Sustainability team seconded to support other service areas during 2021 and 2022. In 2023 however, some resource was returned to the team, alongside recruitment of new officers supported by external funding. As a result, the Council's AQAP development recommenced in 2023 and the public consultation was successfully launched in March 2024.

Despite the challenges faced by the Council, work is continuing on the implementation of carbon reduction measures and transport improvements, and progress on the Access / Capability Fund programme by the Sustainable Transport team has continued, all of which have a positive impact on air quality. In addition, the development of the AQAP in 2023 has resulted to the creation of a public health led steering group, which focuses on linking together technical specialists involved in air quality, transport and public health. It is intended that this group will oversee the implementation of the AQAP and will review progress against measures annually, which will be integrated into the ASR reporting process. This will ensure that the key priority of improving the health of Slough's remains at the forefront of the group and ensures that a strong link is maintained between environment and health professionals.

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, including an aim to revoke all of Slough's Air Quality Management Areas (AQMAs) by 2030. The new 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 transport), diesel trains operating on the Great Western Mainline, the town centre bus station, 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 $PM_{2.5}$ further due to the health impacts associated with exposure.

Air quality modelling has been commissioned as part of the AQAP development, which includes source apportionment and scenario modelling for a baseline year of 2022. Results from the modelling exercise indicates that on average across monitoring sites, diesel cars represent the greatest proportion of NO_X emissions from road transport,at 24.2%. This is followed by rural background, domestic background, and light goods vehicles, contributing 18.0%, 8.1%, and 7.7%, respectively. Contributions from road emissions represent an average of 46.0% of total emissions, compared to the background contribution of 54.0%.

In regards to 2022 Baseline PM_{10} source apportionment, the results indicate that secondary PM represents the greatest proportion of PM_{10} emissions, an average of 37.1% of total PM_{10}. 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. This is followed by residual salt, and domestic, contributing 33.5%, and 9.6%, respectively. Unlike NOx, contributions from background emissions of PM_{10} are greater than from road sources and represent 89.0% of total emissions, compared to the road contribution of 11.0%.

In regards to $PM_{2.5}$ sources, the results show that secondary PM represents, on average, makes up 47.6% of the total $PM_{2.5}$ emissions. This is followed by residual salt, and the domestic sector, contributing 22.6%, and 13.9%, respectively. Contributions from background emissions are again significantly greater than road sources of $PM_{2.5}$, representing 90.4% of total emissions compared to 9.6% for road transport.

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 2023, the Council continuously monitored air quality at five locations. Five monitoring stations monitor NO_2 concentrations and three monitoring stations monitor PM_{10} concentrations using established reference methods (Beta Attenuation Mass (BAM)).

The most recent changes to the continuous monitoring network include the commissioning of two additional stations in 2020, which were installed on Spackmans Way, Chalvey (SLH 13) and Station Road, Langley (SLH 14). Chalvey (SLH 13) was relocated from the waste depot (SLH 7), to be more representative of residential exposure to emissions arising from the M4, and Langley (SLH 14) was newly installed to monitor the impact of increasing transport infrastructure and development in the local area. These monitoring stations commenced monitoring in September 2021 and December 2022, respectively. In addition, a monitoring station that was located at Pippins Colnbrook (SLH 3) was discontinued in March 2022 due to a lack of funding, however there may be opportunities to recommence monitoring once funding is secured, primarily to monitor the impact of major infrastructure projects such as the Heathrow Expansion on background air quality.

Passive

Slough Borough Council undertook passive (i.e. diffusion tube) monitoring of NO_2 at 74 sites (102 diffusion tubes) during 2023. Changes from 2022 to 2023 include:

- Triplicate monitoring co-located with the Station Road Langley continuous monitoring station (SLH14), installed in February 2023 – SLO 124, SLO 125 and SLO 126.
- Five monitoring locations installed within Colnbrook to monitor the impact of the ULEZ implementation (from September 2023) – SLO 127, SLO 128, SLO 129, SLO 130 and SLO 131.

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 June 2019, there were 1988 residential properties located within our AQMAs. In 2022, GIS data suggests that there are now 1961 residential properties within our AQMAs. This reduction may have resulted from change of use (for example, Class C residential to Class E retail use) and improved data quality.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.

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.

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".

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.

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.

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

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.

Nitrogen dioxide (NO_2)

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 represents the lowest average concentration since 1990.

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 (-8.21µg/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 21.8µg/m^3. The reason for this decrease is primarily due to declining NO_2 emissions from road transport and power generation.

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 however similarities in the reductions seen in 2023, with both local and national trends showing 2023 to be the lowest NO_2 average recorded to date.

Particulate Matter (PM_{10} and $PM_{2.5}$)

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 have decreased to 12.3μg/m^3, the lowest on record.

Similarly to urban background sites, roadside PM_{10} concentrations have remained relatively stable over the last 8 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 have fallen to 15.2μg/m^3, representing the lowest recorded PM_{10} concentrations in the series. This is also reflected in the majority of Slough Borough Council's PM_{10} data.

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 has recovered slightly in 2022 to 8.3μg/m^3 (5%), but falls again in 2023 to 7.2μg/m^3, with similar reductions seen in Slough Borough Council's data.

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 have reduced from 12.8μg/m^3 to 7.7μg/m^3 in 2023.

Across the UK, $PM_{2.5}$ locations tend to be highest in urban environments, particularly in the southern and eastern areas of the UK. This is likely due to population density, weather conditions and a greater exposure to pollution sources from mainland Europe. In 2023, four of the top five sites in urban environments (three roadside and two background) with the greatest annual mean concentration of $PM_{2.5}$ were located in the South or East (including London).

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)

NO_2 diffusion tube concentrations in 2023 have improved on average by -3.6µg/m^3 since 2022, with 83% of sites seeing a reduction in NO_2 relative to pandemic levels in 2020 and 2021. The biggest improvement is seen at the Brands Hill Triplicate (SLO 63, SLO 64, SLO 65) by -9.8µg/m^3, whilst the smallest improvement is observed at Shaggy Calf Lane (b) (SLO 116) by -0.9µg/m^3.

In 2019, the average NO_2 concentration was 32.9µg/m^3. In 2023, the average NO_2 concentration was 22.0µg/m^3.

Where five years of continuous data exists, NO_2 concentrations have reduced by -12.3µg/m^3. The biggest reduction relative to 2019 data is observed at Brands Hill (A) (SLO 18), with a reduction of -24.8µg/m^3 (50%), whereas the smallest improvement is observed at Horton Road (SLO 17) by -7.7µg/m^3. In 2019, the highest concentration was 49.4µg/m^3 recorded at Brands Hill (A) (SLO 18). In comparison, the highest recorded concentration in 2023 is 34.6µg/m^3 at Yew Tree Road (SLO 29).

Particulate Matter (PM_{10})

Over the last five years, Brands Hill (SLH 11) has seen the largest reduction in PM_{10} concentrations (-7.6µg/m^3) from 28.0µg/m^3 to 20.4µg/m^3, whilst Lakeside 2 (B) (SLH9) has seen the smallest reduction (0.2µg/m^3) recording 13.8µg/m^3 in 2023. Brands Hill (SLH 11) is the only site that has seen a gradual decrease in PM_{10} concentrations over the five year period, whilst other sites have seen greater fluctuation. Windmill Bath Road (SLH 12) for example recorded 23.4µg/m^3 in 2019, before dropping to 18.9µg/m^3 in 2020. A small decrease of 0.2µg/m^3 occurred in 2021 before increasing to 19.8µg/m^3 in 2022. As with the Brands Hill site, the concentration recorded in 2023 is the lowest in the series, at 17.0µg/m^3.

Although all sites have remained far below the AQO over the last five years, two sites continue to be higher than the World Health Organisation (WHO) Air Quality Guideline

(AQG) of 15µg/m^3 (Brands Hill SLH 11 and Windmill SLH 12). Two sites have dropped below the WHO AQG since 2022.

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. $PM_{2.5}$ is monitored at one location in Slough (Osiris at Lakeside 2 EfW – SLO 9) (a number of Slough operated Osiris units were discontinued after 2019). Figure A.12 indicates that concentrations of $PM_{2.5}$ have improved from 2022 to 2023, from 7.6µg/m^3 to 5.9µg/m^3.

As monitored $PM_{2.5}$ data is limited in Slough, an exercise has been completed whereby $PM_{2.5}$ concentrations are estimated from PM_{10} concentrations, shown in Figure A.13. The data indicates that all calculated $PM_{2.5}$ results are below the annual objective, however one site in 2023 shows an exceedance of the interim 2028 target level of 12µg/m^3 (Brands Hill (SLH 11)) at 14.5µg/m^3, however this is a reduction from 2022 by -2.2µg/m^3. Although the trend at Brands Hill shows improvement from 2019 to 2023, falling by -5.1µg/m^3 over the time series, it is likely that further intervention is required to bring this concentration below to 12µg/m^3 by the target date of 2028.

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 therefore 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. 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/m3 since 2017 and concentrations have been below 36µg/m3 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 there have been no exceedances of the AQO within AQMA 1 since 2017, the Council will prepare to revoke this AQMA in 2024.

- **AQMA 2: Approaching Compliance - Retain**

The first year that all sites in AQMA 2 complied with the AQO for NO_2 was 2020. Prior to this, concentrations were high, particularly on London Road in 2019 (49.4µg/m^3 at SLO 18). Excluding COVID-19 years of 2020 and 2021, the first year of compliance was therefore 2022, which has been maintained in 2023. As such, revocation of AQMA 2 can only be considered in 2025, if the subsequent years of data show concentrations below 36µg/m^3.

- **AQMA 3 + Extension: Approaching Compliance - Retain**
  Some monitoring sites, such as Tuns Lane (SLO 23), have fallen below 10% of the AQO for over five years, whereas others such as Tuns Lane (B) (SLO 50) have only reached compliance as a result of the pandemic. The first year of compliance is therefore 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. As 2023 represents the second year of compliance, the earliest year that revocation can be considered is 2025.
- **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 cannot be considered a year of compliance for AQMA 4. The earliest that AQMA 4 can be considered for revocation is therefore 2026.

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.

The Environmental Improvement Plan[3] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter ($PM_{2.5}$), the pollutant of most harmful to human health. The Air

[3] Defra. Environmental Improvement Plan 2023, January 2023

Quality Strategy[4] provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero[5] details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

The Council reported to Defra in 2023 on 46 measures that are aimed at directly or indirectly improving air quality in Slough. A number of these measures are still ongoing, some have yet to start or are on hold due to the Council's financial position, and others are in the planning stage. Whilst these measures may have had some positive effects on air pollution concentrations and contribute towards the downward trend, there is a need for more robust measures to be co-ordinated through a live strategy. The emerging AQAP aims to achieve this, and will be supported by the upcoming transport strategy. 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. It is anticipated that the recently formed steering group will ensure that this is achieved.

During the last reporting year, a number of transport schemes were initiated or implemented, which aimed to improve sustainable and active travel uptake. A number of measures within Table 2.2 however have seen little progress due to strains on officer resource and capacity resulting from the Section 114 notice (issued in July 2021).

Although the Council's financial position will continue to have a negative impact on project delivery, securing additional resource via grant funding is beginning to alleviate pressure on the service and projects are recommencing.Additional resource will also allow the initiatives within the Climate Change Strategy to be progressed and continued implementation of the Access / Capability Fund programme, both of which will have a positive impact on air quality.

A barrier to air quality improvements is public education and awareness of air quality issues. As such, it is imperative that a focus on air quality campaigns is reintroduced. A

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

[5] DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

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. The Carbon and Sustainability team will work collaboratively with Public Health and the Council's Communications team to agree a consistent approach to air quality campaigns such as Clean Air Day, for implementation in 2025, following approval of the new AQAP. This shall be reported in more detail within the next ASR.

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 has been short lived, with approximately 80% of passive monitoring sites in 2023 recording lower concentrations than recorded during the pandemic. In this ASR, there are no reported exceedances of the AQO, nor are any sites within 10% of the AQO. This is a very positive step towards long term improvement in air quality in Slough and implementation of the AQAP aims to retain this improvement.

Due to the disruption of air quality trends as a result of the pandemic, Defra have advised that only one AQMA can be considered for revocation at this time (AQMA 1 – M4). The process of revoking this AQMA has begun in 2024 and will therefore be reported in ASR 2025.

Local Engagement and How to get Involved

Slough residents can find out more about air quality by visiting the Councils Webpages[6], 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[7].

A new AQAP is in development and was published for public consultation in March 2024. This provides members of the public the opportunity to raise their views on the measures that Slough Borough Council intend to introduce to help tackle air quality issues in Slough. All feedback has been considered in the development of the AQAP.

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[6] Air quality – Slough Borough Council

[7] airText - Air pollution forecasts

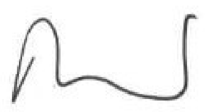
Local Responsibilities and Commitment

This ASR was prepared by the Carbon and Sustainability team of Slough Borough Council with the support and agreement of the following officers and departments:

- Sustainable Transport Officer
- Public Transport Officer
- Public Health Programme Officer
- Project Manager Major Infrastructure Projects

This ASR has been approved by:

Tessa Lindfield
Director of Public Health



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Figures

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1. Local Air Quality Management

This report provides an overview of air quality in Slough during 2023. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

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

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

2. Actions to Improve Air Quality

2.1. Air Quality Management Areas

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

A summary of AQMAs declared by Slough Borough Council can be found in Table 0.1. The table presents a description of the five AQMAs that are currently designated within Slough. 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 air quality objectives pertinent to the current AQMA designations is the NO_2 annual mean.

Slough Borough Council propose to initiate the process to revoke AQMA 1 (M4) in 2024 (see Appendix C.3).

Table 0.1 – 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	22.5	6	Annex C of the Local Transport Plan - 2006	https://uk-air.defra.gov.uk/assets/documents/no2ten/Local_zone31_Slough_AQActionplan_1.pdf
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	27.0	2	Annex C of the Local Transport Plan - 2006	https://uk-air.defra.gov.uk/assets/documents/no2ten/Local_zone31_Slough_AQActionplan_1.pdf
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	27.2	2	Action Plan for Slough Air Quality Management Areas Nos. 3 and 4 (19/11/2012)	http://aqma.defra.gov.uk/action-plans/action-plan-for-slough-aqma-nos-3-and-4-cabinet-no.pdf

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	34.6	1	Action Plan for Slough Air Quality Management Areas Nos. 3 and 4 (19/11/2012)	http://aqma.defra.gov.uk/action-plans/action-plan-for-slough-aqma-nos-3-and-4-cabinet-no.pdf
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	27.0	2	Slough Low Emission Strategy (2018)	https://democracy.slough.gov.uk/documents/s52744/Appendix%201%20-%20Summary%20LES%20final%20draft.pdf

☒ **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. The two main comments from Defra and Slough Borough Council's responses are outlined below.

- *The council has 5 AQMAs, all of which have been compliant with air quality objectives for a minimum of 3 years. The councils have stated into intention its aim to revoke its AQMAs in the future. This is encouraging to hear. It is suggested that the Council prioritises reviewing the status of its AQMAs.*

  An updated review of the number of years the AQMAs have been compliant with AQOs was undertaken in January 2024, with support with the LAQM Helpdesk (reference #9226). Due to the impact of the COVID-19 pandemic on air quality concentrations, Defra have advised that 2020 and 2021 cannot be used when considering continuous years of compliance, unless compliance was achieved prior to the pandemic in 2019. As such, only AQMA 1 can be considered for revocation. This process was initiated in 2024 and will be reported in the next ASR. A full status review of Slough Borough Council's AQMAs is presented in Appendix C.3.

- *The Council has robust QAQC procedures. However, it is noted the Council did not confirm whether they used SOCOTEC Didcot or Glasgow. This should be clarified in the next report.*

  This has been noted and has been clarified in this ASR.

2.2.1 Progress and Challenges in 2023

Slough Borough Council has taken forward a number of direct measures during the current reporting year of 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 0.2. 46 measures are included within Table 0.2, with the type of measure and the progress Slough Borough Council have made during the reporting year of 2023 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 0.2. More detail on these measures can be found in their respective Action Plans and within the LES (2018-2025).

The key measures completed in 2023 focused on behavioural change and active travel. A summary of the key measures implemented in 2023 are provided below:

- The e-scooter scheme was extended to May 2023. The scheme has been particularly successful with young adults and assists in reducing the number of short journeys undertaken via private cars (the majority of which in Slough are diesel).
- Development of the Destination Farnham Road scheme proposals, with an element focusing on improved public realm and cycling facilities to increase active travel rates. The public consultation detailing the scheme designs was launched in December 2023.
- Development of the A4 cycle route and road safety improvements, to improve cycle uptake on a key route through the centre of the borough. The cycle lane is intended to be fully segregated and suitable for all ages. Part of the proposal also includes speed limit reductions from 40mph to 30mph and junction improvements, to help to address issues of poor air quality, congestion, collisions and physical inactivity in the borough. The consultation was launched in September 2023 and received a large number of responses.
- A number of adjustments to bus services were introduced in 2023, including an increase in frequency and service hours, introduction of night services, and new double deck buses on a number of routes. These measures are intended to increase use of bus as a means of transport in place of private cars.
- Organisational travel planning and engagement delivered via the Capability Fund. During 2023, Theatre in Education were commissioned to engage with Slough schools, providing sessions which focused on road safety for under 16 year olds. This intends to address concerns with cycle safety and support an increase in cycling in children. Overall, approximately 900 pupils participated in these events in 2023.
- To encourage bicycle use, a bike security marking event was held between June and September 2023, alongside cycle demonstrations, maintenance and training, available to all ages. The event had approximately 250 participants.

Slough Borough Council worked to implement these measures in partnership with Council officers and members during 2023.

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

- Completion of the Slough Air Quality Action Plan (2024-2028). The draft has been consulted upon and received approval from Defra in April 2024. Following incorporating feedback received during public consultation and internal governance processes, the final AQAP is due to be submitted to Defra in December 2024. The plan focuses on three key areas: environment, transport, and health education and awareness. The new AQAP will be followed by an implementation plan which will detail how the measures will be delivered, informed by the public's priorities raised during the consultation.

- Rollout of the Slough Electric Vehicle Charging Infrastructure Strategy (EVCIS). The strategy was presented to Cabinet in March 2024 and the recommendations within the report were approved. As such, procurement is due to commence in Autumn 2024 for a charging infrastructure provider to commence installation.
- Delivery of cycle schemes including Foxborough / Langley cycle lane, Burnham Station cycle lane and initiation of A4 cycle scheme.
- Initiation of Destination Farnham Road works.
- Launch of the electric cycle and e-scooter hire scheme.

Slough Borough Council's priorities for the coming year are primarily around improving coordination and joint delivery of measures. Many measures that involve active travel for example have the primary impact of increasing cycle numbers, however this also results in reduced vehicle use and improved physical activity (Slough has the lowest physical activity levels in the South East as of 2023). The AQAP development in 2023 to 2024 has resulted in the initiation of a steering group that will oversee the delivery of the AQAP, led by the Public Health department. This ensures better integration of environmental measures with other Council services, with a shared ambition to improve the health of Slough's residents.

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. This has continued into 2023/24 and it is expected that it will take a few more years to achieve a balanced budget alongside required annual savings targets. As a consequence, officer resource and capacity has significantly reduced, with two environmental officers seconded to different roles, causing a delay to projects shown in Table 2.2 during 2023. 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 the Public Health team, for example officers which will be working specifically on sustainability and school engagement. 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.

Slough Borough Council anticipates that the measures stated above and in Table 0.2 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, although there is sufficient evidence to suggest that the scheme is not worsening air quality at nearby receptors. As such, Slough Borough Council have begun the process of revoking AQMA 1.

A new road layout within AQMA 2 was redesigned and implemented in 2022/23. Despite high volumes of HGVs using the Brands Hill gyratory 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), however the impact is less pronounced at the Brands Hill Triplicate site (SLO 63, SLO 64, and SLO 65).

Whilst the measures stated above and in Table 0.2 will help to contribute towards compliance, Slough Borough Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of AQMA 3, AQMA 3 Extension and AQMA 4. These areas require further transport related interventions to result in long term compliance with the NO_2 AQO. It is evident that the pandemic had a positive impact on air pollution due to reduced traffic flows, which if sustained, would likely have resulted in widespread compliance. As such, measures which reduce private car use are most likely to be effective and is a focus of the new AQAP. A revised suite of measures has been developed as part of the AQAP development and will be presented within ASR 2025.

Table 0.2 – 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	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
36	New Air Quality Action Plan	Other	Other	2023	2024	SBC	SBC	NO	Funded	< £10k	Planning	Borough Wide	N/A	The AQAP development commenced in 2023 and the draft was approved by Defra in April 2024. Final submission is due December 2024.	The Council's financial situation continues to be a barrier to AQAP development and will likely impact the speed of AQAP delivery
40	A4 Bus Lane scheme	Transport Planning and Infrastructure	Bus route improvements	2020	2028	SBC	DfT	NO	Partially funded	£500k - £1 million	Implementation	A4 from Huntercombe roundabout to Uxbridge Road roundabout	Journey time, volume, flow, plus a raft of related metrics	Scheme has been in place since 2020. Some changes to operational times are being discussed and the scheme is planned to be expanded to include cycle lanes and safety measures, due to be implemented from 2024 onwards	The scheme was approved by Cabinet and made permanent in February 2022. Bus frequencies along the bus lane continuing to return to those in place pre-pandemic or better, with funding from Heathrow.
24	EV infrastructure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging	2018	2028	SBC	SBC, S.106, OLEV	NO	Funded	£500k - £1 million	Implementation	All AQMAs and Wider Borough	Number of EV chargers in Borough. Number of EV charge events	Funding has been provided by LEVI to increase EV charging in the borough. A project specific to this has been initiated in 2024	Ongoing since 2018. S106/OZEV/Capital funding
1	Access Fund Smarter Travel for Slough Business Programme	Promoting Travel Alternatives	Workplace Travel Planning	2017	2028	SBC, Slough Workplaces	DfT	NO	Funded	£1 million - £10 million	Implementation	Borough Wide	% mode share	No formal metrics to indicate modal shift. Active Travel and Behavioural change / modal shift remain a Council priority. Little progress has been made in the last year due to officer resource constraints	Introduced April 2017, funded by DfT. In 2022, all businesses were offered a business grant to promote active travel.2 businesses expressed an interest and of the two, one business accepted the grant of £2500.No further updates.
2	Access Fund Smarter Travel for Slough Schools Programme	Promoting Travel Alternatives	School Travel Plans	2017	2028	SBC, Slough Schools	DfT	NO	Funded	£1 million - £10 million	Implementation	Borough Wide	% mode share	Schools are encouraged to participate in Modeshift STARS . In 2023, there is one with good (bronze) and one very good (silver) accreditation. Annual hands up surveys are undertaken to monitor progress with active travel uptake	Introduced April 2017. Funded via the Active Travel Capability Fund.
3	Access Fund Smarter Travel for Slough residents Programme	Promoting Travel Alternatives	Other	2017	2028	SBC, charities, voluntary groups	DfT	NO	Funded	£1 million - £10 million	Implementation	Borough Wide	% mode share	No formal metrics to indicate modal shift. Active Travel and Behavioural change / modal shift remain a Council priority.	Introduced April 2017. Funded by DfT and Capability Fund.
4	Marketing and Promotion of Sustainable travel options in Slough	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2017	2028	SBC	DfT	NO	Funded	£1 million - £10 million	Implementation	Borough Wide	% mode share	No formal metrics to indicate modal shift. Active Travel and Behavioural change / modal shift remain a Council priority.	Introduced April 2017. Sustainable travel promotion is undertaken alongside new scheme developments (e.g. A4 cycle scheme). Regular newsletters are sent to schools to promote active travel options
5	Promote use of rail SBC staff	Promoting Travel Alternatives	Promote use of rail and inland waterways	2011	2028	SBC	SBC / LEP	NO	Partially funded	£10k - 50k	Implementation	Borough Wide and Outside Borough	% mode share rail travel, % increase of travel warrants	No formal metrics to indicate modal shift. Data requested from GWR	Introduced January 2011. Increased partnership work with GWR recommended to further promote rail travel. LEP funded MIP Project for Stoke Road Regeneration ongoing. This includes joint working with Network Rail / GWR with the northern forecourt enhancements to enable easier access.
6	Access Fund: Personalise Travel Planning	Promoting Travel Alternatives	Personalised Travel Planning	2017	2028	SBC, Slough schools and businesses	DfT	NO	Funded	£1 million - £10 million	Implementation	Borough Wide and Outside Borough	Numbers of personalised travel plans	No formal metrics to indicate modal shift. Active Travel and Behavioural change / modal shift remain a Council priority.	Introduced April 2017. Uptake has historically been low and limited progress has been made due to officer resource constraints
7	Home Working	Promoting Travel Alternatives	Encourage / Facilitate home-working	2019	2028	SBC	SBC	NO	Not funded	< £10k	Implementation	Borough Wide and Outside Borough	% take up of staff	No formal metrics to indicate modal shift. Data likely to be available vis SBC HR	Ongoing since April 2019. Flexible / agile working arrangements have been incorporated into Council policy, with majority of officers in the office twice per week.

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8	Promotion of cycling	Promoting Travel Alternatives	Promotion of cycling	2017	2028	SBC	SBC	NO	Not funded		Implementation	N/A	cycling counts	Limited cycle count data across the borough. Some indications of increased cycling levels	Ongoing, first introduced April 2017. LCWIP SD signed off in May 2020. Subsequently, the plan has been amended to include new scheme proposals, including the A4 cycle route (from Huntercombe to Uxbridge Road – major West to East route). New A4 Cycle Highway scheme is being developed; to include monitoring and reporting. The A4 scheme drawings presented to Cabinet in July 2023 with the scheme due to commence in 2024
9	Promotion of walking	Promoting Travel Alternatives	Promotion of walking	2017	2028	SBC	SBC	NO	Not funded	£100k - £500k	Implementation	N/A	walking counts	No formal metrics to indicate walking levels	Ongoing, first introduced in April 2017. LCWIP SD signed off in May 2020. Currently no major schemes proposed specifically for walking improvements however improving the public realm is included in planning schemes (e.g. Destination Farnham Road)
10	Freight Partnerships	Freight and Delivery Management	Freight Partnerships for town centre deliveries	2021	2028	SBC	SBC	NO	Not funded	£10k - 50k	Planning	AQMA2 & AQMA 4	Reduction in emissions of freight deliveries		Not yet introduced. Freight sub-strategy (SSD) still to be prepared as part of the overall LTP4 project (not yet started). Freight strategy also being reviewed at regional level by TFSE. No progress has been made in 2023.
11	Slough Cycle Hire Scheme	Transport Planning and Infrastructure	Public cycle hire scheme	2013	2028	SBC	SBC	NO	Partially funded	£50k - £100k	Implementation	Borough Wide	cycle usage	Expanded via community funds. 17 docking stations.	Ongoing, first introduced October 2013. The current scheme has been closed and a new combined cycle hire / eScooter hire scheme and service was originally due to be introduced later in 2024.
12	Pedestrian Wayfinding System	Transport Planning and Infrastructure	Other	2017	2028	SBC	S.106	NO	Partially funded	£50k - £100k	Completed	Borough Wide	% mode share	No formal metrics to indicate level of success	Introduced April 2017. Funded by S106 funding. Slough was awarded the Levelling Up grant to deliver the Destination Farnham Road. The scheme will include an urban realm, cycling and walking facilities and wayfinding totems.
13	Local safety and accessibility schemes to schools and businesses	Transport Planning and Infrastructure	Cycle network	2017	2028	SBC	SBC & DfT	NO	Partially funded	£50k - £100k	Implementation	Borough Wide	% mode share	Ongoing. 20mph policy introduced around schools in Slough – measures being implemented as resources allow. Policy now in place for response to requests for speed management.	First introduced April 2017. Addressed via the Access fund programme.
14	Bus route improvements	Transport Planning and Infrastructure	Bus route improvements	2010	2028	SBC	SBC, DfT, Bus Operators	NO	Not Funded	£100k	Implementation	Borough Wide	Bus patronage	Ongoing, first introduced 2001. The main focus has been on the Slough response to the National Bus Strategy. SBC has developed a Bus Service Improvement Plan (BSIP) in partnership with the local bus operators, in an Enhanced Partnership (EP) arrangement. A review is due in 2024.	All BSIP / EP measures are subject to feasibility, funding and consultation outcomes. In April 2023 most of the existing supported services at risk were retained / enhanced with funding from Heathrow, Buckinghamshire Council and bus operators, and funds of up to approx. £500k were received from DfT during 2022 and 2023 which will be spent (as planned by the EP) on bus service improvements identified in the BSIP
15	Public transport improvements-interchanges stations and services	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2011	2028	SBC	LEP	NO	Partially Funded	£1 million - £10 million	Implementation	Borough Wide	Bus patronage	Improved central transport interchange and out of town station facilities. Bus station completed in 2011 but badly damaged in Oct 2022, and remains closed. Langley station access scheme complete, also LEP funded. Stoke Road Regeneration including enhancements to northern forecourt of Slough railway station (complete in 22/23).	Scheme proposals developed for redevelopment of the town centre transport interchange, but no funding currently available. Strategic Transport Infrastructure Plan approved in principle by cabinet in February 2021. No major schemes currently planned. Possible improvements via the BSIP / EP, but as above, all subject to feasibility and funding.

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16	Slough Mass Rapid Transit	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, bus priority (dedicated bus lane). Includes Park and Ride in phase 2	2018	2022	SBC	LEP, bus operators, utility companies, developers, HE	NO	Funded	> £10 million	Implementation	AQMA 2, AQMA 3, AQMA 4	Bus usage & NO_2 concentrations	SMaRT 1 infrastructure completed early 2018. All buses on current network comply with Euro VI emissions standard. Western section of MRT (Stewarts) continues in operation. Eastern section of MRT (various operators and routes) in use. Reports from Stewarts (the service operator) report a high level of patronage by business users, but limited patronage by the public.	Phase 2 for the P&R was withdrawn and was to become adecarbonisation hub, however the decarbonisation hub was not approved by the LEP andthe Park and Ride grant was returned to the LEP. No further update in 2022.
17	Reduction of speed limits, 20mph zones	Traffic Management	Reduction of speed limits, 20mph zones	2010	2028	SBC	SBC, residents, schools	NO	Partially funded	£50k - £100k	Implementation	Borough Wide	Number of Zones	Reduction in accident levels to be assessed. New 20mph zones will be declared. Additionally, some 40mph roads are being reduced to 30mph along the A4. Additional road safety mitigation measures are to be introduced as part of the Safer Roads scheme in 2023 - 2024. These measures will support the implementation of the 30mph speed limit.	Ongoing, first introduced 2010. No AQMA declared in areas with 20 mph zone.
18	Parking Enforcement on highway	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	2018	2028	SBC	SBC, DfT	NO	Partially funded	£50k - £100k	Implementation	Borough Wide	Congestion	Ongoing. Parking contract commenced with Saba, June 2018. Bus lane enforcement in place since 2019. Enforcement currently in place for the EATF experimental bus lane scheme which was made permanent in February 2022.	Limited data is available on parking enforcement so monitoring progress is challenging
19	Emissions based parking charges	Traffic Management	Emission based parking or permit charges	2021	2026	SBC	SBC	NO	Funded	£10k - 50k	Planning	Borough Wide	Number of spaces	This measure has been incorporated into the AQAP but is not due to commence until 2025 therefore there is no progress to report at this stage	Changes to parking provision in Slough has received push back, so it is expected that emissions based charging will be challenging to implement
20	EV Parking Provision – New Developments	Policy Guidance and Development Control	Low Emission Strategy	2018	2028	SBC	SBC	NO	Not Funded		Implementation	Borough Wide	Number of new EV Parking spaces	Ongoing, first introduced September 2018. New Parking must include at least 10% EV provision all new parking. This is expected to increase to allow for progressive increase in EV charging provision with new developments	Increases to EV charging provision are expected with the upcoming ban on petrol and diesel vehicles, so barriers to implementation are likely to be limited as this change is policy driven
21	Air Quality Assessments for new developments in AQMAs and all Major Developments	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance (Low Emission Strategy)	2018	2028	SBC	SBC	NO	Not funded		Implementation	All AQMAs	Negligible Air Quality Impacts (following mitigation and offsetting)	Ongoing, first introduced in 2018. Included in the PlannersDevelopers Guide	No barriers expected
22	Securing developer air quality contributions for low emission infrastructure and EV car clubs	Policy Guidance and Development Control	Low Emission Strategy	2018	2028	SBC, Developers	S.106	NO	Not funded		Implementation	All AQMAs	Financial Contributions amount (£s)	Ongoing.	Funding is continually being collected to support the Low Emission Strategy programme, however implementation is challenging due to officer resource constraints
23	Ceiling figure on long stay car parking in town centre (5000 spaces)	Policy Guidance and Development Control	Other	2020	2028	SBC	SBC	NO	Not funded		Implementation	AQMA 4	Number of spaces	Ongoing - likely to be a permanent cap on parking but review is expected as part of the new Local Plan development.	Introduced October 2020. Possible MIP bid submission for LEP funding for MSCP projects. TBA
25	Taxi emission incentives	Promoting Low Emission Transport	Taxi emission incentives – free charging and licensing for early adopters	2018	2026	SBC	SBC, S.106, OLEV	NO	Funded	£10k - 50k	Implementation	AQMA 4, and Borough Wide	Number of Taxi Rapid Chargers	No progress to report	Funding for 7 Rapid Chargers awarded but not yet been actioned due to capacity issues. This is ongoing in 2023

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26	Taxi Licensing	Promoting Low Emission Transport	Taxi Licensing conditions	2018	2028	SBC	SBC, Taxi Operators	NO	Not Funded		Implementation	AQMA 4, and Borough Wide	Number of ULEV taxi/PHVs licenses	Due to taxi trade retention issues, requirement to meet ULEV standard has been revised in new taxi licensing policy, however this measure is intended to be revisited following delivery of taxi infrastructure and demo projects	Main barriers for taxi trade include financing purchase of cleaner vehicles and a lack of suitable infrastructure to sustain their use
27	Council Electric Pool Car and Bike Scheme	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2018	2028	SBC	SBC	NO	Not Funded		Implementation	Borough Wide	Number of electric business miles travelled. Reduction in CO_2 (tonnes). Reduction in NO_2 and PM (Kg and grams)	Pool vehicles are frequently used by staff, however funding is limited to expand the scheme. The fleet of Council Electric Bikes were stolen with one left which can be used by staff. No plans currently to replace stolen bikes.	Objective is to reduce 90% CO2 and 85% NOx emissions from grey fleet. Officers are now mostly working from home so it is likely that emissions from grey fleet have reduced. This is being reviewed as part of the Carbon Management Plan baseline review
28	Council – ULEV staff company salary sacrifice car scheme	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2018	2026	SBC	SBC	NO	Funded	£50k - £100k	Implementation	Borough Wide	Number of ULEV Company cars	Aim was 50 ULEV company lease cars by Dec 2020 in the Councils grey fleet.	Initially postponed due to pandemic. On hold due to council financial situation.
29	Council – Low Emission Hire Car Scheme	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	-	-	SBC	SBC	NO	Funded	£50k - £100k	Planning	Outer Borough	Number of miles in Low Emission - EURO 6 hire case and Car club car	Not yet introduced. Funding is available however officer constraints are a current barrier.	Objective is to reduce 90% CO2 and 85% NOx emissions from grey fleet and operational cost
30	Clean Air Zone Feasibility Study	Promoting Low Emission Transport	Ultra Low Emission Zone (ULEZ)	2020	Ongoing	SBC	SBC	NO	Not Funded	£500k - £1 million	Planning	AQMA 2, AQMA3 and AQMA 4 to be modelled	Successful feasibility study	No progress to report	On hold due to council financial situation.
31	SBC Car & lift sharing schemes	Alternatives to private vehicle use	Car and Lift Sharing Schemes	2019	Ongoing	SBC	SBC	NO	Not Funded	£50k - £100k	Planning	Borough Wide	Car share %	No progress to report	First introduced June 2019. Car sharing still promoted, but in limited use.Faxi app trialled 2019 but limited take-up so not continued. Move to Observatory House HQ has prompted changes in staff commuting habits. To be analysed. Parking options very limited at OH.
32	Town Centre E car club	Alternatives to private vehicle use	Car Clubs	-	-	SBC	S.106, SBC	NO	Funded	£1 million - £10 million	Planning	AQMA 4	Number of Electric Cars operating and number of E-Car clubs users	Not yet implemented due to officer resource constraints	S106 funding being secured.but not yet implemented. Funding to support officers to deliver the scheme was announced in 2023.
33	Bus park and ride	Alternatives to private vehicle use	Bus based Park & Ride	2018	2022	SBC	LEP, Heathrow PTL, bus operators, utility companies, private land owners, HE	NO	Partially funded	£1 million - £10 million	Planning	Borough Wide	Number of journeys	Plans were withdrawn for the P&R plans for the west of the borough. New transport plan is due to be developed which will revisit P&R provision.	Previous issue with west P&R plans was land restraints - proposal was for use of green belt land.
34	Promoting Low Emission Public Transport	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	2018		SBC	DfT	NO	Not Funded	£500k - £1 million	Planning	AQMA 4 and Borough Wide	Euro Fleet Emissions	No progress to report	Introduced July 2018. Funding will be explored for the retrofit of Euro V bus.
35	Air Quality Communication Plan	Public Information	Via all Media	2021	2022	SBC	SBC	NO	Not funded	£50k - £100k	Planning	Borough Wide	Number of re-tweets	No progress to report	Communication plans are being developed as part of the AQAP refresh. Progress expected to be reported in ASR 2025
37	Clean Air Campaigns	Public Information	Signed up	2020	-	SBC, GAP	SBC	NO	Not funded	£50k - £100k	Planning	Borough Wide	Various media sources	No progress to report	On hold due to council financial situation. New opportunities are becoming available within Public Health team which is better resourced
38	AirText Service	Public Information	Via the Internet and text (smart phones	2017	2021	SBC	SBC	NO	Funded	< £10k	Aborted	Borough Wide	Number of subscribers	No progress to report	Due to insufficient funding, the services were aborted in June 2021. This may recommence if funding becomes available.
39	Stoke Road Sustainable Transport Infrastructure and Highways Works (regeneration)	Transport Planning and Infrastructure	Public Transport and Infrastructure	2020	2022	SBC	LEP, bus operators, utility companies, developers, Network Rail, Canal and Rivers Trust, Slough Urban Renewal	NO	Funded	> £10 million	Implementation	Town Centre	Number of journeys (via sustainable modes)	Limited progress. Latest works have been on improving traffic signaling which is intended to improve congestion and subsequently air quality	Initiated February 2020. Total cost £10.9m. Part of the wider town centre regeneration.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
41	eScooter trial	Alternatives to private vehicle use	Other	2020	2030	SBC	DfT	NO	Funded	£50k - £100k	Implementation	Borough wide	Number of users	Trial was extended to May 2023. Plans are being developed to reinstate the e-scooter scheme to maintain high participation rates.	E-Scooter and cycle scheme is planned to be delivered in stages, starting with train stations
42	A4 cycle way scheme	Transport Planning and Infrastructure	Other	2023	2028	SBC	SBC	NO	Partially funded	£500k - £1 million	Planning	A4 from Huntercombe roundabout to Uxbridge Road roundabout	Volume of cyclists (plus any available modal shift metric)	£10.9m funding awarded by the DfT. Preliminary drawings were developed for the scheme and were presented to the July 2023 Cabinet meeting. Construction is expected to commence 2024	Expected to be delivered by end of 2026.
43	Strategic Transport Infrastructure Plan (STIP)	Transport Planning and Infrastructure	Other	2020	ongoing	SBC	SBC, likely to include British Land, GWR and others	NO	Not funded	£100k - £500k	Planning	Borough wide, with a focus on the town centre	Various metrics re modal shift	Adopted in principle February 2021. No further progress has been made in 2023, however restructure plans indicate that this function will sit with Development Management and will recommence once the restructure is complete.	Original STIP includes plans for town centre redevelopment, plus infrastructure developments in key out of town locations. Currently on hold awaiting restructure.
44	Local Transport Plan revision	Transport Planning	Other	2020	2022	SBC	SBC	NO	Funded	£100k - £500k	Planning	Borough wide	Various metrics	Initial reviews of LTP3 complete.LTP4 still to follow (currently on hold, awaiting restructure to be finalised).	As the AQAP will be developed before the LPT4, a focus will be ensuring that environmental plans including the Climate Change Strategy and emerging transport plans align and support each other.
45	Electric Bus Trial	Transport Planning and Infrastructure	Bus route improvements	2020	2020	SBC, Thames Valley Buses, BYD UK.	SBC	NO	Funded	£50k - £100k	Completed	Cippenham to Uxbridge Road	Number of passengers	13 week trial, ended December 2020, and was free to customers, ran from Cippenham to Uxbridge Road roundabout and back again on a variation of route 4 known as 4a. This has not developed further in 2023.	This measure will be revisited in the development of Slough's AQAP.
46	School Street	Promoting Travel Alternatives	Reduction of car use at schools	2020	2020	SBC	SBC	NO	Funded	£10k - 50k	Implementation	Boroughwide	No of School Streets	One School Street is in operation. We are consulting with the community in the view for it to be made permanent.	No further school streets are planned until moving traffic offences powers have been granted.

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[8], 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 2022 within Slough Borough Council is 7.1% (0.8% higher than 2021).

The fraction of mortality is 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 new 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[9]. 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 are calculated. This work is completed under contract to Defra, as a small extension of its obligations under the Ambient Air Quality Directive (2008/50/EC) (COMEAP, 2022).

Figure 2.1 and Figure 2.2 below show the fraction of mortality attributable to particulate air pollution calculated for Slough from 2010 to 2019 using the old methodology, and from 2018 to 2022 using the new methodology, compared with the South East and England averages.

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

[9] Interactive monitoring networks map - Defra, UK

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 continuous downward trend in mortality attributable to particulate matter up until 2022, where there has been an increase across the dataset, however the increase is smaller in the South East and England averages (0.3%) when compared to Slough (0.8%). The gap between the Slough and England rates had been slowly reducing, however the 2022 data shows this gap widening again by 0.5%.

Figure 2.1 – Fraction of Mortality Attributable to Particulate Air Pollution for Slough (2010-2019, Old Methodology)

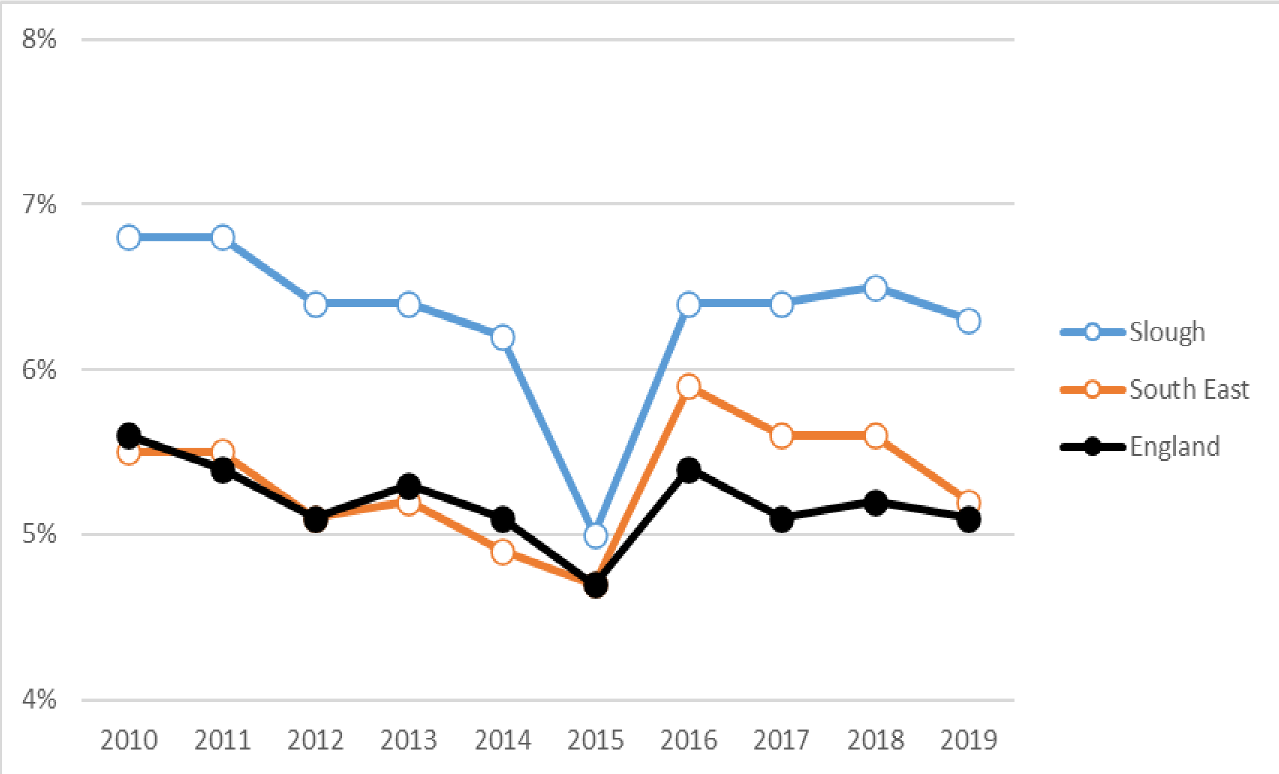


Figure 2.2 - Fraction of Mortality Attributable to Particulate Air Pollution for Slough (2018-2022, New Methodology)

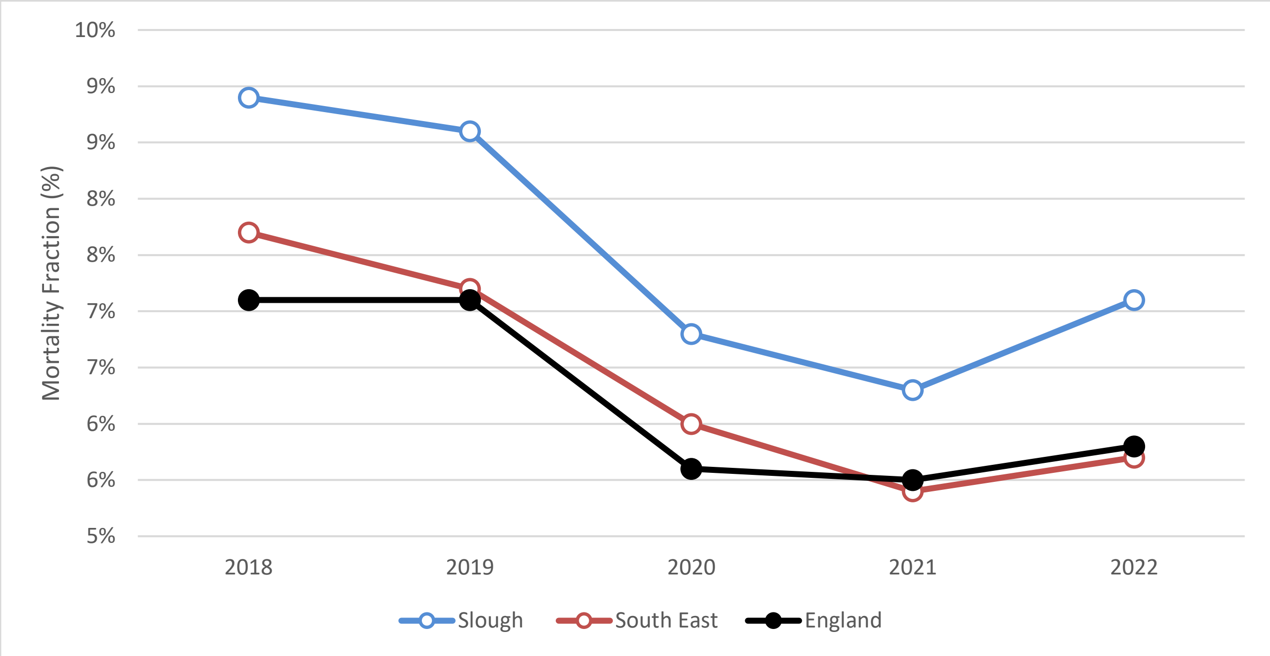
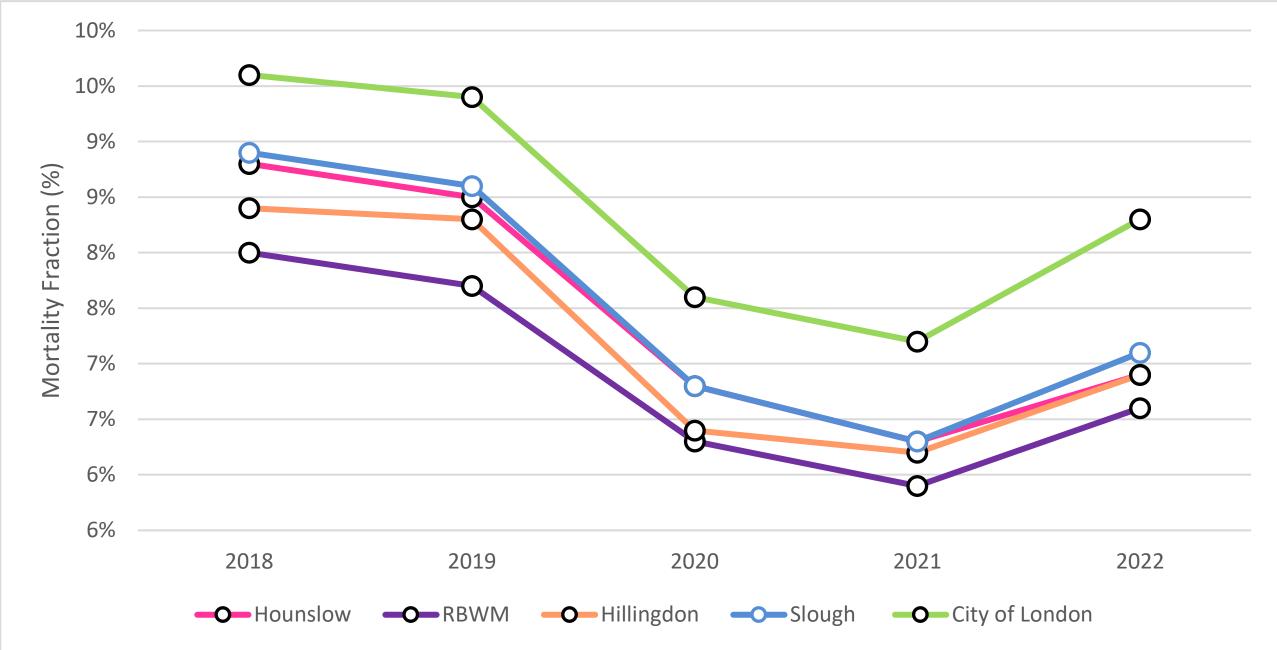


Figure 2.3 below shows Slough mortality rates due to particulate pollution compared with other nearby districts and unitary authorities. These areas all show a similar trend and concentrations to Slough. Similarly to Figure 2.2, all sites show an increase in mortality fraction in 2022, however Slough has a slightly larger increase (0.8%) relative to neighbouring authorities (0.1%-0.2%). Data for the City of London has been added as a comparison, which has the highest proportion of mortality attributed to particulate matter pollution in England at 8.3% (1.1% increase from 2021 to 2022).

Figure 2.3 - Fraction of Mortality Attributable to Particulate Air Pollution for Slough and Nearby Districts / Unitary Authorities (2018-2021, New Methodology)



2.3.2 Mapped Data

Figure 2.4 shows a map of $PM_{2.5}$ concentrations obtained from the UK Emissions Interactive Map, based on data from the 2021 UK National Atmospheric Emissions Inventory.

The map shows that the South East region overall has lower $PM_{2.5}$ concentrations relative to London and Slough. Both Slough and London are predominantly urban, whereas the South East has a much greater proportion of open space. Slough is the third most densely populated local authority in the South East (following Portsmouth and Southampton), 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). As such, the urban landscape in Slough is dense.

The comparison shown in Figure 2.3 is therefore considered to be more appropriate due to Slough's proximity to London, the density of the urban landscape and the proportion of industrial activity within the borough (SEGRO Trading Estate and proximity to Heathrow Airport).

Figure 2.4 - Emission Map Data for $PM_{2.5}$ (Particulate Matter < 2.5µm) in 2021

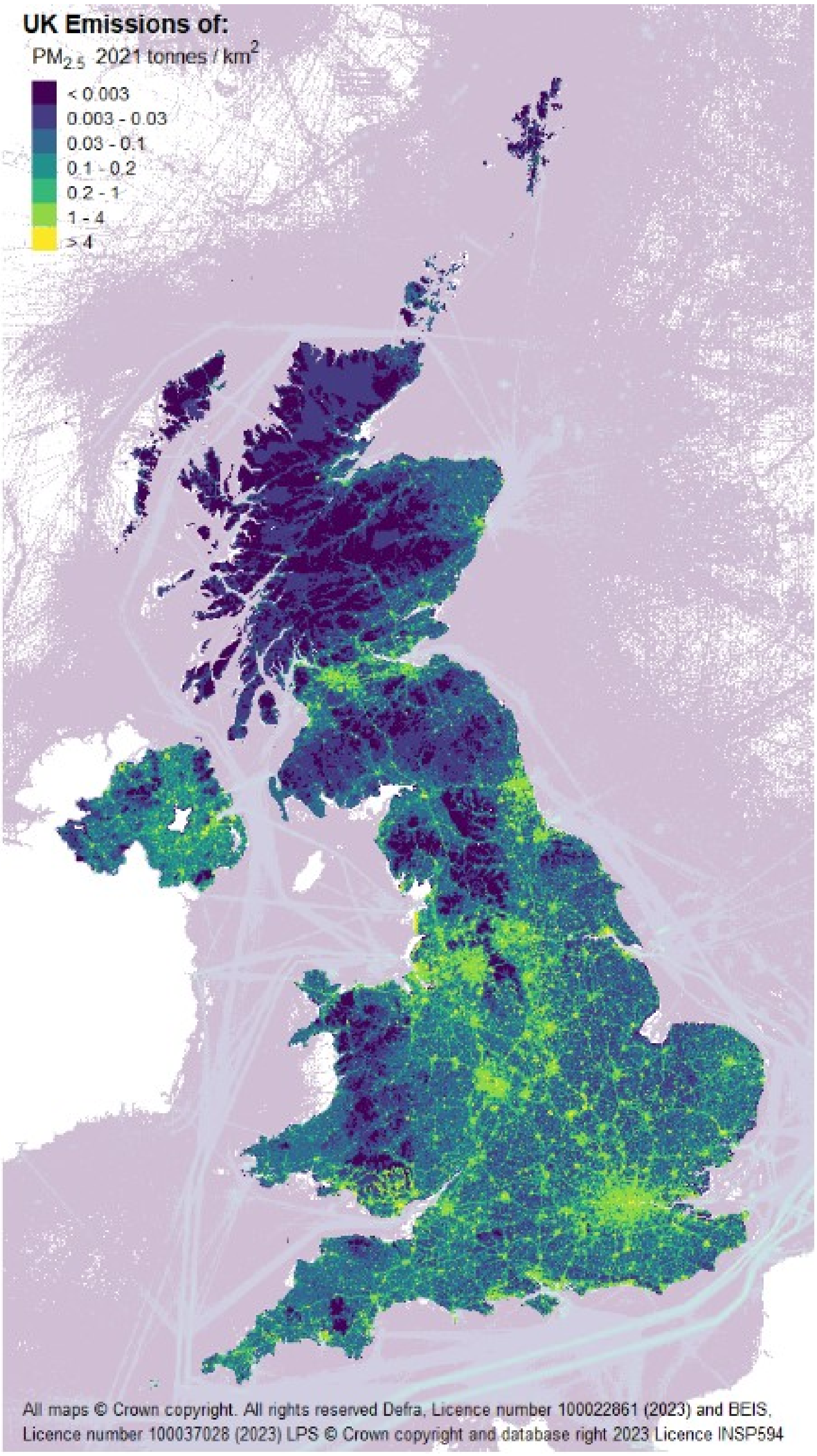
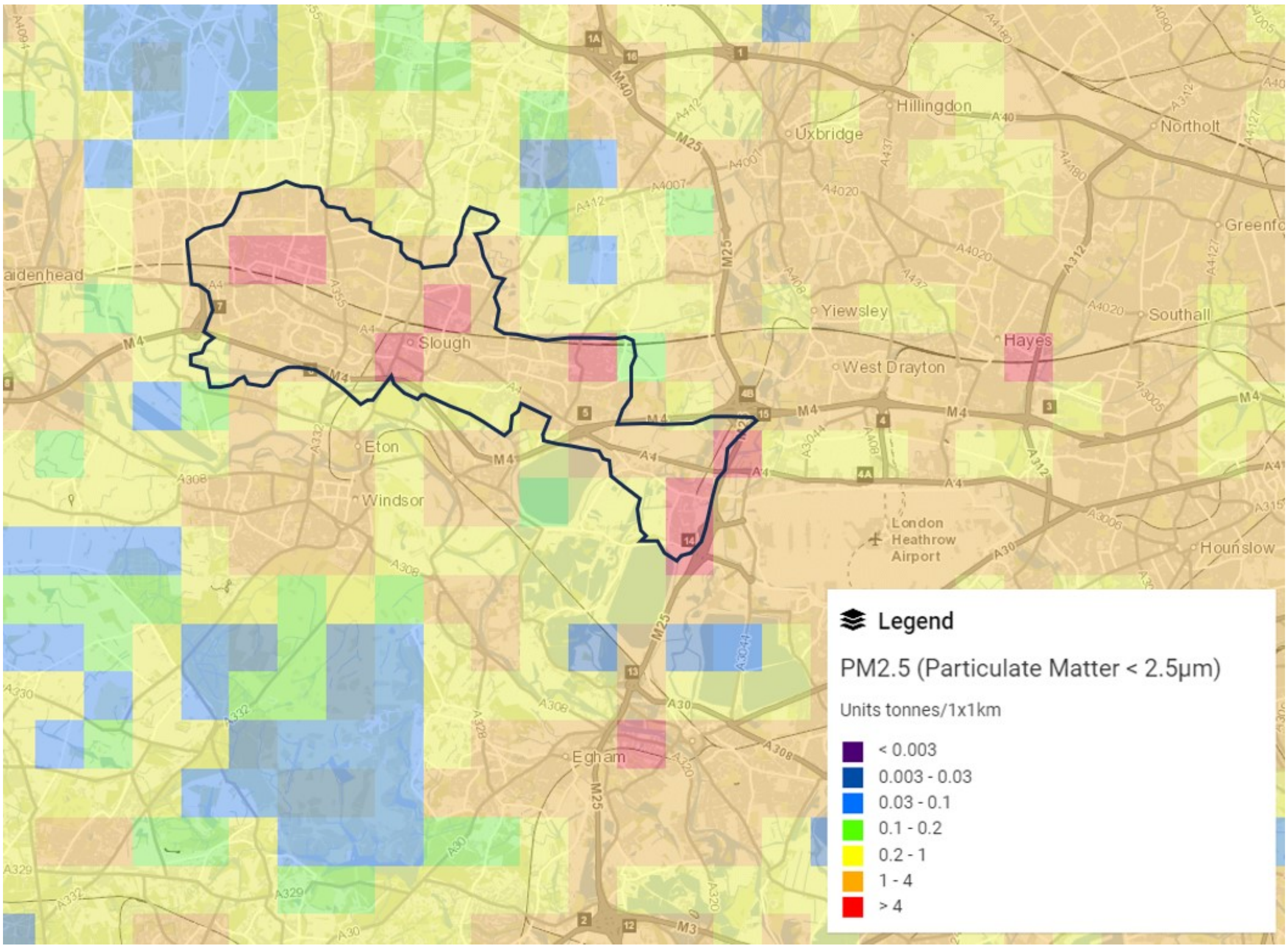


Figure 2.5 below shows a zoomed in section of the interactive map, focusing on Slough. The map shows five key areas where concentrations of particulate matter are above four tonnes per 1x1km grid. Other areas with similar concentrations outside of Slough tend to be located in densely populated areas such as central London, and large scale road infrastructure such as motorway junctions. It is noted that the four areas indicated within

Slough are primarily industrial areas. The presence of these areas may contribute to the high levels of mortality attributable to particulate matter in Slough.

Figure 2.5 – Slough Specific Emission Map Data for $PM_{2.5}$ (Particulate Matter <2.5µm) in 2021



2.3.3. Background Data

In 2023, the AQAP refresh was initiated. Air quality modelling was commissioned as part of the AQAP including source apportionment and scenario modelling for a baseline year of 2022. Across Slough, concentrations range from approximately 10.4µg/m^3 – 13.1µg/m^3, averaging at 12.1µg/m^3. Table 2.1 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 was passed into UK law in November 2021, approximately three years after a bill was first proposed to govern environmental matters after the UK's departure from the European Union. The Act included a requirement for a long-term target to be set for fine particulate matter. These have now been set through the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 and are as follows:

- 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 suggest that, on average across Slough, the $PM_{2.5}$ 2028 interim target level of 12µg/m^3 has been met at each year of the time series. The grid square that consistently has the highest modelled concentrations of $PM_{2.5}$ and the only location that exceeds the 12µg/m^3 interim target since 2022 is in the Langley area, with a high proportion attributable to industrial sources relative to other grid squares at 13.2%. This suggests that there is a high $PM_{2.5}$ generating activity occurring within the industrial estate in Langley that should be investigated further.

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. Recent 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.

Domestic sources contribute 14% towards Slough's background $PM_{2.5}$ 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. 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 $PM_{2.5}$:

2.3.4 Actions to Reduce $PM_{2.5}$

Slough Borough Council strive to reduce $PM_{2.5}$ concentrations in Slough through the following measures:

- 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 Corporate Plan 2023 – 2027 re-establishes improving the health of Slough's residents, focusing on children, as the primary aim of the plan, 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 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 Emission (NRMM) 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. A new Health and Wellbeing Strategy (2020-2025) developed in June 2020 outlines the 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.

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

- Publication of the emerging AQAP. Although the measures within the action plan are aimed at reducing NO_2 emissions, particularly from road transport sources, there will be co-benefits in reducing $PM_{2.5}$ through modal shift and sustainable transport related measures. The AQAP will also consider measures which focus on indoor air quality and reducing $PM_{2.5}$ exposure from internal domestic sources.
- 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.
- Creation of a steering group consisting of health professions and environmental officers. The group will oversee the implementation of the AQAP and aims to be an informative and technical group, to build a stronger relationship between public health and air quality, and improve public awareness of air quality impacts to health. An element of this will be to develop guidance on how to reduce emissions of PM.
- 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).
- Defra intend to extend their $PM_{2.5}$ monitoring network and current plans suggest that there will be a $PM_{2.5}$ monitor within the AQMA 3 Extension (Tuns Lane / Bath Road), co-located with the existing monitoring station (Windmill – SLH 12).
- Restricted NRMM controls to reduce $PM_{2.5}$ emissions from construction sites. Currently, NRMM are required to meet Stage BIII controls, however this may be restricted further following the development of the AQAP.

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

This section sets out the monitoring undertaken within 2023 by Slough Borough Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2019 and 2023 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 2023, 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

No notable changes to the continuous monitoring network have occurred in 2023, however plans are currently being developed to incorporate a $PM_{2.5}$ monitor into the network, co-located with the monitoring station at Windmill (SLH 12). It is anticipated that the installation of the monitor will occur late 2024 / early 2025. Progress on this shall be reported in ASR 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[10] 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 74 sites (102 diffusion tubes) during 2023. Table A.2 in Appendix A presents the details of the non-automatic sites.

In 2023, eight additional diffusion tubes were introduced to the network:

- SLO 124, SLO 125 and SLO 126 – triplicate monitoring co-located at the Station Road Langley continuous monitoring station (SLH14), installed in February 2023.
- SLO 127, SLO 128, SLO 129, SLO 130 and SLO 131 – monitoring locations installed within Colnbrook village to monitor the impact of the ULEZ implementation (from September 2023).

In the next reporting year, it is anticipated that the network will expand further by approximately 16 sites. This monitoring is being installed for the purpose of monitoring the impacts of the Destination Farnham Road scheme, which is due to commence mid 2024. The monitoring will focus on locations where receptors may be affected by traffic displacement and congestion which may result during the construction phase.

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

[10] Slough Borough Council - Air Quality monitoring service (airqualityengland.co.uk)

bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

During 2023, 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 changes to the network mid-year, three of the new diffusion tube locations described above had to be annualised, whilst two had insufficient data capture to complete annualisation. One further site was also annualised due to suffering from frequent thefts (Poyle Road - SLO 96).

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 air quality objective of 40µg/m^3. 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 2023 dataset of monthly mean values is provided in Appendix B. The concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective 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 2018 national background modelled concentrations (adjusted to the monitoring year 2023 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.

The main roads which have the greatest influence on NO_2 concentrations are:

- M4 (experiences >100,000 vehicle movements/day)
- A4 Wellington Street, Bath Road, London Road, Brands Hill (average more than 20,000-30,000 vehicle movements/day)
- Sutton Lane, Windsor Road, High Street Langley (all experience >10,000 vehicle movements/day

3.2.1.1 Diffusion Tube Trend Analysis 2019 – 2023

All monitoring data presented in this section has been corrected for bias. Corresponding trend graphs are presented in Appendix A (Figure A.3 – Figure A.9).

Concentrations in 2023 represent the second year of data collection that has not been impacted by the pandemic, which had caused widespread traffic reductions and a rapid decrease in NO_2 concentrations in 2020 (-9.1µg/m^3 on average across the passive network). Moving into 2021, further reductions in NO_2 were experienced across the majority of the network but to a lesser degree (-0.9µg/m^3 on average across the network), also as a result of the pandemic.

In 2022, the majority of passive monitoring locations showed increases in NO_2 concentrations from the previous year, however the increase was relatively low (average +1.7µg/m^3) and all sites showed an improvement in comparison to 2018 data (on average -9.8µg/m^3 where data is available).

In contrast, 2023 brings widespread reductions where all sites have improved or remained the same relative to 2022, with an average NO_2 reduction of -3.6µg/m^3. In many cases, concentrations recorded in 2023 are lower than those recorded during the pandemic, despite traffic reductions not being at the same scale (see Appendix C). Comparing the lowest concentrations achieved during the pandemic (recorded in 2021) with concentrations in 2023, on average concentrations have reduced by -2.0µg/m^3. The greatest improvement relative to pandemic concentrations is Brands Hill (A) (SLO 18) by -11.9µg/m^3. Relative to 2021 data, only nine monitoring sites have concentrations higher than pandemic levels, but the difference is marginal (+0.6µg/m^3 on average). As such, the data suggests that concentrations have returned to pandemic levels, or in some cases, improved beyond this. 2023 also represents the first year that there are no exceedances of the AQO, nor are any concentrations within 10% of the AQO, with the highest being Yew Tree Road (SLO 29) at 34.6µg/m^3.

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 2019 to 2023 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 in AQMA 1 have improved on average by -11.5µg/m^3 (35%). In 2019, the highest concentration was recorded at Grampian Way (SLO 8) at 35.0µg/m^3, whilst the highest concentration in 2023 is 22.5µg/m^3 at Highways England Receptor 2 (SLO 69, SLO 70, SLO 71). The biggest change in concentrations experienced over the last five years occurred in 2020 by a maximum of -12.0µg/m^3 (35%) at the Highways England Receptor 1 (SLO 66, SLO 67, SLO 68), with concentrations improving across sites on average by -9.1µg/m^3 (28%). A further decrease was experienced in 2021 but to a lesser degree, with the largest reduction being observed at Highways England Receptor 3 (SLO 72, SLO 73, SLO 74) by -3.6µg/m^3. The highest concentration in 2021 was 23.0µg/m^3 at Grampian Way (SLO 8). By 2022, concentrations had increased on average by +2.0µg/m^3, the greatest increase being observed at Grampian Way (SLO 8) by +4.7µg/m^3, however concentrations remained far below the AQO at 27.8µg/m^3. In contrast, 2023 has brought widespread reductions in NO_2 by -2.2µg/m^3 on average, with Grampian Way (SLO 8) showing the largest reduction (-5.9µg/m^3) to 21.9µg/m^3. Paxton Avenue (SLO 25) is the only site that has seen no change in concentrations since 2022, however concentrations are very low at 19.6µg/m^3. Out of the 13 monitoring locations presented, eight show concentrations the same or lower than concentrations recorded during the pandemic.

AQMA 2

Across AQMA 2, concentrations have improved on average by -15.2µg/m^3 relative to 2019 data. (Brands Hill (A) (SLO 18) in particular has seen the most significant improvement over the last five years, by -24.8µg/m^3 (50.1%), whilst London Road (B) (SLO 39) has improved the least. It should be noted however that concentrations have remained low throughout the period (≤ 30µg/m^3).

In 2019, concentrations across AQMA 2 averaged at 37.2µg/m^3 (including London Road (C) (SLO 45) which was discontinued in 2021), with the highest concentration recorded at

Brands Hill (A) (SLO 18) at 49.4µg/m³. Both London Road (A) (SLO 10) and the Brands Hill Triplicate (SLO 63, SLO 64, SLO 65) also recorded concentrations above the AQO. Concentrations dropped significantly in 2020 to an average of 26.8µg/m³, with the greatest decrease observed at Rogans (Colnbrook Bypass) (SLO 28) by -13.0µg/m³ to a concentration of 25.5µg/m³. In 2021, the change in concentrations was mixed, with the Brands Hill Triplicate (SLO 63, SLO 64 and SLO 65) increasing by +3.2µg/m³, whilst Brands Hill (A) (SLO 18) dropped by -2.0µg/m³. A similar pattern is seen in data for 2022, where the Brands Hill Triplicate (SLO 63, 64, 65) shows a further increase by +4.6µg/m³ reaching 36.8µg/m³, whilst Brands Hill (A) (SLO 18) drops by a further -4.9µg/m³ to 31.6µg/m³. Large reductions occurred in 2023 at all sites, the greatest being at the Brands Hill Triplicate (SLO 63, SLO 64, SLO 65) by -9.8µg/m³ to a concentration of 27.0µg/m³ (the highest recorded concentration within the AQMA), whilst the lowest concentration is observed at Brands Hill (B) (SLO 32) at 18.8µg/m³. Relative to pandemic levels in 2020 and 2021, all but one site (Rogans, Colnbrook Bypass – SLO 28) has lower concentrations in 2023.

AQMA 3 and AQMA 3 Extension

Since 2019, concentrations in AQMA 3 and the AQMA 3 Extension have decreased on average by -11.9µg/m³ (33%). The greatest improvement relative to 2019 is observed at Tuns Lane (B) (SLO 50), which has dropped from 42.8µg/m³ to 27.2µg/m³ (37%), the highest concentration in 2023.Windmill Bath Road (SLO 43) has improved the least (-9.8µg/m³), however concentrations have remained low over the last five years (maximum of 33.1µg/m³ in 2019).

Similarly to other sites, the largest concentration reductions occurred in 2020, the largest being Tuns Lane (B) (SLO 50) by -12.2µg/m³, representing the first year that there were no breaches of the AQO in AQMA 3 or AQMA 3 Extension. From 2020 into 2021, there were very few changes to concentrations (<0.1µg/m³) except for the Windmill Triplicate (SLO 57, SLO 58, SLO 59) which increased by +0.9µg/m³. This increased by a further +0.6µg/m³ in 2022, however the largest increase occurred at Tuns Lane (B) (SLO 50) by +2.2µg/m³ to 32.9µg/m³. In 2023, all sites saw a decrease in NO_2 by -3.0µg/m³ on average. The largest drop was experienced at Tuns Lane (B) (SLO 50) by -5.7µg/m³ (17%), reaching a low of 27.2µg/m³.The lowest concentration in 2023 was recorded at Tuns Lane (SLO 23) at 20µg/m³.

Relative to 2020 and 2021, all concentrations have improved beyond pandemic levels and represent the lowest concentrations in the series.

AQMA 4

Over the last five years, concentrations have improved on average by -11.5µg/m^3 (32%) since 2019. The largest improvement occurs at Blair Road – Victoria Court (SLO 37) by -15.1µg/m^3 (40%), whereas the smallest improvement occurs at the Wellington Street Triplicate (SLO 60, SLO 61, SLO 62) by -7.8µg/m^3 (23%), however concentrations have remained far below the AQO in the series.

In 2020, concentrations at all sites fell below 10% of the AQO, with the largest improvement observed at Yew Tree Road (SLO 29) by -14.7µg/m^3 (30%), to 33.8µg/m^3. The smallest improvement was observed at Princes Street (SLO 5) by -6.0µg/m^3, however concentrations have been consistently low at this site (<30µg/m^3 for the last four years). In 2021, concentration changes were more varied. Concentrations at Cornwall House (SLO 46) decreased by -3.0µg/m^3, whereas concentrations at Yew Tree Road (SLO 29) increased by +5.1µg/m^3. This increased further into 2022 by +5.3µg/m^3 to a concentration of 44.2µg/m^3, the highest concentration recorded that year. Overall, 2022 saw increases in NO_2 at all monitoring sites in AQMA 4.

By 2023 however, all sites saw a decrease in NO_2 concentrations by -4.7µg/m^3 (16%) on average. The greatest improvement was seen at Yew Tree Road (SLO 29) by -9.7µg/m^3 (22%) to a concentration of 34.6µg/m^3, which was the highest concentration recorded in AQMA 4 in 2023, with all other sites measuring <30µg/m^3. Relative to 2020 and 2021, all but one site (Yew Tree Road, SLO 29), recorded concentrations lower than pandemic levels in 2023.

Overall, all AQMAs have seen improvements in NO_2 over the last five years, with the most pronounced change in concentrations being observed within AQMA 2 (Brands Hill). This is primarily driven by the significant concentration reduction seen at Brands Hill (A) (SLO 18) which has dropped by 50% relative to 2019 data. For the majority of sites, concentrations are similar or have improved beyond pandemic levels.

Non-AQMA Sites

In 2023, Slough Borough Council monitored at 37 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. Monitoring for specific transport schemes including the M4 Smart Motorway scheme and the A4 Bus Lane scheme have been discussed separately within Appendix C.

Industrial sites

Over the last five years, NO_2 concentrations at industrial sites have varied, with a similar pattern of change as seen within AQMAs. The biggest improvement in NO_2 concentrations is recorded at Lakeside Road (SLO 12), which has reduced by -19.7µg/m^3 (50%) since 2019. Lakeside Road (SLO 12) was the only industrial site in 2019 which fell within 10% of the AQO at 39.5µg/m^3. All sites saw a reduction in NO_2 concentrations in 2020, with Lakeside Road (SLO 12) seeing the greatest reduction at -12.9µg/m^3, to a concentration of 26.6µg/m^3. Further reductions occurred in 2021 at all sites with the exception of Horton Road (SLO 17), however the increase was small (+0.8µg/m^3). By 2022, all industrial sites saw an increase in NO_2 by +2.4µg/m^3 on average, however all concentrations remained below those recorded in 2019 (-8.8µg/m^3 on average). Reductions in NO_2 occurred at all sites in 2023 by -3.7µg/m^3 on average, with the biggest reduction occurring at Colnbrook Bypass (SLO 7) by -5.2µg/m^3. Relative to pandemic levels, both Colnbrook bypass (SLO 7) and Lakeside Road (SLO 12) concentrations are lower than those recorded in 2021 by -3.4µg/m^3 and -2.4µg/m^3, respectively. Remaining sites have seen a slight increase since the pandemic (+0.7µg/m^3 on average). Overall, concentrations are lower in 2023 on average when compared to previous years.

Roadside and kerbside sites

The majority of roadside sites have seen large improvements in NO_2 concentrations since 2019, with 2023 having the lowest concentrations in the series. Concentrations in 2019 ranged from 29.5µg/m^3 at Parlaunt Road (SLO 55) to 39.9µg/m^3 at High Street Langley (A) (SLO 53). In 2020, NO_2 concentrations dropped by -9.3µg/m^3 on average, with the largest reduction occurring at High Street Langley (A) (SLO 53) at -12.0µg/m^3. The highest concentration at roadside sites in 2020 was 27.9µg/m^3. This reduction continued into 2021, which saw a further -1.0µg/m^3 drop in NO_2 on average, with Sutton Lane (SLO 56) reducing by -3.0µg/m^3, whilst Windsor Road (SLO 21) and Langley Road (SLO 51) both increased by +0.1µg/m^3. High Street Langley (A) (SLO 53) remained the highest concentration site but at a reduced concentration of 27.1µg/m^3. In 2022, increases in NO_2 occurred at all sites by +1.5µg/m^3 on average, however large concentration reductions occurred in 2023 by -3.5µg/m^3 on average. The biggest reduction occurred at High Street Langley (B) (SLO 54) by -6.7µg/m^3, recording the lowest roadside concentration in 2023 of 18.5µg/m^3. The highest concentration was recorded at High Street Langley (A) (SLO 53) at 25.1µg/m^3, however this site has seen the largest improvement over the last five years (-14.8µg/m^3, 30%).

There is only one kerbside site that has data for the five year period from 2019 to 2023 (Windsor Road (B), SLO 49). This site was close to exceeding the AQO in 2019 at 39.5µg/m^3, however concentrations dropped by -15.5µg/m^3 in 2020 as a result of the pandemic to a concentration of 26.0µg/m^3. This concentration increased slightly in 2021 to 28.2µg/m^3, which was maintained in 2022. By 2023, concentrations had reduced to 24.0µg/m^3, -2µg/m^3 lower than pandemic levels.

Suburban sites

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

Concentrations at Elbow Meadows have been below 30µg/m^3 for the last five years. As with other sites, the most notable change in concentrations occurred in 2020, which saw a drop of -8µg/m^3 from 28.9µg/m^3 to 20.9µg/m^3. This reduced further in 2021 to 19.6µg/m^3, before increasing to 32.9µg/m^3 in 2022. By 2023 however, concentrations dropped -3.7µg/m^3 to 18.2µg/m^3, and is the lowest concentration in the last five years.

3.2.1.2 Continuous monitoring NO_2 results 2019 – 2023

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 two and four years, respectively, before a five year analysis can be undertaken at these sites.

Lakeside 2 (SLH 8) has had consistently low concentrations over the last five years, with the highest concentration recorded in 2019 at 27.6µg/m^3. In 2020, concentrations reduced to 19.1µg/m^3, with a small dip in 2021 to 18.1µg/m^3, before reaching 19.9µg/m^3 in 2022. By 2023 however, concentrations dropped to 17.2µg/m^3 and represents the lowest concentrations to date.

Concentrations at Wellington Street (SLH 10) started at 34.7µg/m^3 in 2019, before dropping to 24.6µg/m^3 during the pandemic in 2020. Similarly to busy roadside sites, 2021 saw an increase in NO_2 by +2.7µg/m^3 to 27.3µg/m^3. A further increase in 2022 resulted in a concentration of 28.3µg/m^3, before dropping to 25.1µg/m^3 in 2023 (+0.5µg/m^3 above pandemic levels).

This pattern is also observed at Brands Hill (SLH 11) which dropped from 39.2µg/m^3 to 27.3µg/m^3 from 2019 to 2020, followed by a small increase in 2021 to 32.1µg/m^3. Concentrations increased by +0.5µg/m^3 to 32.6µg/m^3 in 2022, but dropped in 2023 to 26.2µg/m^3, lower than pandemic levels.

Windmill (SLH 12) also started at 39.2µg/m^3 in 2019, with an initial drop in 2020 to 26.9µg/m^3. A small increase was observed during 2021 to 28.9µg/m^3, before experiencing a small drop in concentrations in 2022 to 28.7µg/m^3, before a further drop in 2023 to 25.5µg/m^3.

Overall, Wellington Street (SLH 10) is the only site over the last five years that has not had lower concentrations in 2023 relative to pandemic levels, however the difference is small (+0.5µg/m^3).

Spackmans Way (SLH 13) has been operational for three years. Data collected to date has indicated a gradual decrease in NO_2 concentrations by -0.5µg/m^3 each year.

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 into 2022 and has been maintained in 2023, 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 represents the lowest average concentration since 1990.

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 21.8µg/m^3. The reason for this decrease is primarily due to declining NO_2 emissions from road transport and power generation.

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 however similarities in the reductions seen in 2023, with both local and national trends showing 2023 to be the lowest NO_2 average recorded to date.

Conclusion

In summary, NO_2 diffusion tube concentrations in 2023 have improved on average by -3.6µg/m^3 since 2022, with 83% of sites seeing a reduction in NO_2 relative to pandemic levels in 2020 and 2021. The biggest improvement is seen at the Brands Hill Triplicate (SLO 63, SLO 64, SLO 65) by -9.8µg/m^3, whilst the smallest improvement is observed at Shaggy Calf Lane (b) (SLO 116) by -0.9µg/m^3.

In 2019, the average NO_2 concentration was 32.9µg/m^3. In 2023, the average NO_2 concentration was 22.0µg/m^3. Improvements in 2023 are reflected also in national trends. Where five years of continuous data exists, NO_2 concentrations have reduced by -12.3µg/m^3. The biggest reduction relative to 2019 data is observed at Brands Hill (A) (SLO 18) with a reduction by -24.8µg/m^3 (50%), whereas the smallest improvement is observed at Horton Road (SLO 17) by -7.7µg/m^3. In 2019, the highest concentration was 49.4µg/m^3 recorded at Brands Hill (A) (SLO 18). In comparison, the highest recorded concentration in 2023 is 34.6µg/m^3 at Yew Tree Road (SLO 29).

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 air quality objective 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 air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

All continuous PM_{10} and $PM_{2.5}$ monitoring data has been properly ratified and is illustrated in Figure A.10 – Figure A.13.

Local trends

In 2023, PM_{10} was monitored at five locations, however Spackmans Way (SLH 13) has only recorded data for three years and is therefore not included in this analysis. It should be noted however that 2023 represents the lowest concentration recorded to date at Spackmans Way (SLH 13), at 11.9µg/m^3.

Over the last five years, Brands Hill (SLH 11) has seen the largest reduction in PM_{10} concentrations (-7.6µg/m^3) from 28.0µg/m^3 to 20.4µg/m^3, whilst Lakeside 2 (B) (SLH9) has seen the smallest reduction (0.2µg/m^3) recording 13.8µg/m^3 in 2023. Brands Hill (SLH 11) is the only site that has seen a gradual decrease in PM_{10} concentrations over the five year period, whilst other sites have seen greater fluctuation. Windmill Bath Road (SLH 12) for example recorded 23.4µg/m^3 in 2019, before dropping to 18.9µg/m^3 in 2020. A small decrease of 0.2µg/m^3 occurred in 2021 before increasing to 19.8µg/m^3 in 2022. As with the Brands Hill site, the concentration recorded in 2023 is the lowest in the series, at 17.0µg/m^3.
Lakeside 2 (A) (SLH 8) has seen a similar pattern of concentrations across the five years, with 2019 showing the highest concentrations at 15.0µg/m^3, followed by 2022 measuring at 14.5µg/m^3. The lowest concentrations were recorded in 2021 rather than in 2023, at 12.4µg/m^3. The pattern is similar at Lakeside (B) (SLH 9) however the highest concentration was recorded as 18.3µg/m^3 in 2022. Lakeside (B) also has seen the greatest improvement from 2022 to 2023 at -4.5µg/m^3.
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.

In regards to the 24-hour mean, the trend from 2019 to 2023 shows a gradual decrease in the number of exceedances per year at Brands Hill (SLH 11), with 2023 showing the smallest number of exceedances (three). Windmill (SLH 12) showed a similar decline, however a small increase occurred in 2022 before falling to two exceedances in 2023. Lakeside 2 (SLH 8 & 9) and Spackmans Way (SLH 13) had seen an increase from 2021 to 2022, however exceedances have fallen to a maximum of one at Lakeside 2 (SLH 9), with the two others recording zero exceedances.

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 seven exceedences, which is 13 fewer exceedances than those recorded in 2022. This indicates that Slough Borough Council are compliant with the WHO 2021 AQG in the context of the PM_{10} 24 hour mean.

There are not expected to be any changes to the PM_{10} monitoring network within the next reporting year.

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 have decreased to 12.3µg/m^3, the lowest on record.

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 have fallen to 15.2µg/m^3, representing the lowest recorded PM_{10} concentrations in the series. This is also reflected in the majority of Slough Borough Council's PM_{10} data.

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.

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

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. $PM_{2.5}$ is monitored at one location in Slough (Osiris at Lakeside 2 EfW – SLO 9) (a number of Slough operated Osiris units were discontinued after 2019). Figure A.12 indicates that concentrations of $PM_{2.5}$ have improved from 2022 to 2023, from 7.6µg/m^3 to 5.9µg/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(16) states that when a site measures both PM_{10} and $PM_{2.5}$, a locally derived ratio can be calculated and applied to PM_{10} data to obtain an estimate of $PM_{2.5}$. 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 2023, the national factor for background and roadside sites was 4.7 and 5.9, respectively.

Figure A.13 shows the estimated $PM_{2.5}$ concentrations based on the PM_{10} data. Data from 2018 to 2020 has been corrected based on TG16 guidance (multiplying by 0.7) whereas the data from 2021 and 2022 has been corrected based on TG22 guidance (subtracting the nationally derived factors for background and roadside sites, where appropriate).

The data shows that all calculated $PM_{2.5}$ results are below the annual objective, however one site active in 2023 shows an exceedance of the interim 2028 target level of 12µg/m^3 at Brands Hill (SLH 11) at 14.5µg/m^3, however this is a reduction from 2022 by -2.2µg/m^3. Although the trend at Brands Hill shows improvement from 2019 to 2023, falling by -5.1µg/m^3 over the time series, further intervention is required to bring this concentration below to 12µg/m^3 by the target date of 2028. Decreases in $PM_{2.5}$ are also experienced at Windmill (SLH 12) and Spackmans Way (SLH 13) from 2022 to 2023, by -2.3µg/m^3 and -2.5µg/m^3, respectively. All sites are above the WHO 2021 AQG level and only Spackmans Way (SLH 13) falls below the WHO 2005 AQG level.

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 has recovered slightly in 2022 to 8.3µg/m^3 (5%), but falls again in 2023 to 7.2µg/m^3, with similar reductions seen in Slough Borough Council's data.

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 have reduced from 12.8µg/m^3, to 7.7µg/m^3 in 2023.

Across the UK, $PM_{2.5}$ locations tend to be highest in urban environments, particularly in the southern and eastern areas of the UK. This is likely due to population density, weather conditions and a greater exposure to pollution sources from mainland Europe. In 2023, four of the top five sites in urban environments (three roadside and two background) with the greatest annual mean concentration of $PM_{2.5}$ were located in the South or East (including London).

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?	Monitoring Technique	Distance to Relevant Exposure (m) [(1)]	Distance to kerb of nearest road (m) [(2)]	Inlet Height (m)
SLH 3	Slough-Colnbrook-(Pippins)	Suburban	503542	176827	NOx, NO_2, PM_{10}, $PM_{2.5}$ & PM_1	NO	Chemiluminescence TEOM	7m	1.3m	4m
SLH 4	Salt Hill (Slough-town-centre, A4)	Urban Background	496599	180156	NOx, NO_2 and PM_{10}	NO	Chemiluminescence TEOM	>30m	12.5m	4m
SLH 5	Slough-Colnbrook (Lakeside, Tan House Farm)	Industrial	503551	177258	PM_{10}, $PM_{2.5}$ & PM_1	NO	Osiris	>200m	>50m	10m
SLH 6	Slough-Colnbrook-(Pippins)	Suburban	503542	176827	NOx, NO_2, PM_{10}, $PM_{2.5}$ & PM_1	NO	Osiris	7m	1.3m	4m
SLH 7	Slough-Chalvey, M4	Other	496562	179109	NOx and NO_2	YES - AQMA 1	Chemiluminescence	53m	74m	1.5m
SLH 8	Slough-Lakeside-2 (run by Lakeside Energy from Waste Ltd)	Industrial	503569	177385	NOx, NO_2 and PM_{10}	NO	Chemiluminescence BAM (PM10)	>200m	10m	4m
SLH 9	Slough-Lakeside-2 (run by Lakeside Energy from Waste Ltd)	Industrial	503569	177385	NOx, NO_2 and PM_{10}	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	NOx and NO_2	YES - AQMA 4	Chemiluminescence	8m	5m	1.5m
SLH 11	Brands Hill London Road	Roadside	501643	177753	NOx, NO_2 and PM_{10}	YES - AQMA 2	Chemiluminescence and BAM	12.5m	4m	1.5m
SLH 12	Slough Windmill Bath Road	Roadside	496528	180171	NOx, NO_2 and PM_{10}	YES - AQMA 3 Extension	Chemiluminescence and BAM	12m	7.5m	1.5m

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
SLH 13	Spackmans Way	Other	496447	179117	NOx, NO_2 and PM_{10}	YES - AQMA 1	Chemiluminescence and BAM	9.5m	2.9m	1.5m
SLH 14	Station Road Langley	Roadside	501150	179502	NOx and NO_2	NO	Chemiluminescence	5.5m	2.5m	1.5m

Notes:

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

(2) N/A if not applicable

Table A.2 – 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	NO2	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

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 2023 (%) (2)	2019	2020	2021	2022	2023
SLH 3	503542	176827	Suburban	-	-	26.1	16.2	17.8	21.1	-
SLH 4	496599	180156	Urban Background	-	-	26.4	-	-	-	-
SLH 7	496562	179109	Other	-	-	32.7	21.3	20	-	-
SLH 8	503569	77385	Industrial	99.5	99.5	27.6	19.1	18.1	19.9	17.2
SLH 10	498413	179804	Roadside	99.6	99.6	34.7	24.6	27.3	28.3	25.1
SLH 11	501643	177753	Roadside	99.6	99.6	39.2	27.3	32.1	32.6	26.2
SLH 12	496528	180171	Roadside	99.5	99.5	39.2	26.9	28.9	28.7	25.5
SLH 13	496447	179117	Other	98.9	98.9	-	-	23.2	22.7	22.2
SLH 14	501150	179502	Roadside	98.7	98.7	-	-	-	-	20.5

☒ **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, ASR 2024 requires that the fall-off with distance concentration is calculated and the reported concentration provided in brackets. All concentrations are below AQOs therefore this has not been necessary.**

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%. This was not required for any sitesSee 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 (μg/m³)

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 2023 (%) (2)	2019	2020	2021	2022	2023
SLO 1 Relocated	496904	180187	Urban Background	100	99.7	-	19.7	18.5	19.4	16.2
SLO 2 Relocated	496785	180336	Urban Background	91.7	89.9	-	15.4	14.5	15.5	13.5
SLO 3 Relocated	496665	180236	Urban Background	83.3	80.5	-	17.6	18.0	16.5	15.0
SLO 4 Relocated	497185	180050	Roadside	100	99.7	-	19.4	20.2	21.3	18.8
SLO 5	498541	179815	Roadside	100	99.7	33.6	27.6	25.2	28.3	23.2
SLO 6	498784	179560	Roadside	0	0.0	27.8	21.2	21.2	23.8	-
SLO 7	503196	177349	Industrial	100	99.7	32.8	23.8	23.5	25.3	20.1
SLO 8	501382	178101	Other	91.7	92.1	35.0	26.3	23.0	27.8	21.9
SLO 9	501501	177879	Other	0	0.0	31.8	22.9	21.2	24.6	-
SLO 10	501733	177725	Roadside	100	99.7	**41.1**	28.8	29.7	32.5	25.9
SLO 11	501637	177999	Suburban	0	0.0	28.7	20.5	19.7	21.7	-
SLO 12	503877	177459	Industrial	100	99.7	39.5	26.6	22.3	24.4	19.8
SLO 13	503856	176538	Suburban	100	99.7	28.9	20.9	19.6	21.9	18.2

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
SLO 17	503136	175654	Suburban	91.7	92.1	33.3	24.9	25.7	28.3	25.6
SLO 18	501798	177659	Roadside	100	99.7	**49.4**	38.5	36.5	31.6	24.6
SLO 19	500851	177890	Roadside	100	99.7	33.7	22.7	22.1	23.5	22.0
SLO 20	497925	179450	Urban Background	0	0.0	24.2	16.8	17.0	-	-
SLO 21	497457	179566	Roadside	100	99.7	34.6	24.0	24.1	25.2	22.1
SLO 22	497488	179090	Other	100	99.7	32.7	23.1	19.8	21.0	19.8
SLO 23	496416	180126	Urban Background	100	99.7	30.8	22.0	21.9	22.2	20.0
SLO 24	496272	179187	Other	100	99.7	33.0	22.6	20.9	21.4	18.4
SLO 25	496050	179258	Other	100	99.7	31.8	20.3	19.0	19.6	19.6
SLO 26	498473	179706	Roadside	91.7	91.2	35.2	26.7	29.3	29.7	26.1
SLO 27	498681	179972	Other	0	0.0	26.5	19.8	16.9	-	-
SLO 28	501941	177633	Roadside	83.3	82.2	38.5	25.5	25.6	28.8	25.7
SLO 29	498483	179707	Kerbside	100	99.7	**48.5**	33.8	39.0	**44.2**	34.6
SLO 30	496397	180341	Roadside	0	0.0	32.0	23.2	23.9	23.4	-

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 2023 (%) (2)	2019	2020	2021	2022	2023
SLO 31	496200	181900	Suburban	0	0.0	27.0	21.9	20.9	-	-
SLO 32	501853	177620	Roadside	91.7	92.1	32.8	23.9	23.7	22.2	18.8
SLO 33	498168	179907	Roadside	0	0.0	30.1	23.1	20.0	24.2	-
SLO 34, SLO 35, SLO 36	496562	179109	Other	0	0.0	30.6	18.4	18.4	-	-
SLO 34 Relocated, SLO 35 Relocated, SLO 36 Relocated	496447	179117	Other	100	99.7	-	-	22.5	23.5	21.6
SLO 37	497105	180081	Roadside	100	99.7	37.8	28.2	26.3	27.1	22.7
SLO 38	498071	179949	Roadside	83.3	83.6	33.0	25.0	22.4	22.4	18.1
SLO 39	501734	177733	Roadside	100	99.7	30.1	21.8	20.6	22.9	20.1
SLO 40	498394	179849	Roadside	83.3	84.7	37.9	29.7	29.6	32.6	29.1
SLO 41	493960	181355	Other	0	0.0	19.4	13.6	12.7	-	-
SLO 42	493493	181378	Other	0	0.0	18.6	12.8	13.2	-	-
SLO 43	496533	180175	Roadside	83.3	84.4	33.1	25.0	25.0	25.6	23.3

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 2023 (%) (2)	2019	2020	2021	2022	2023
SLO 44	498961	180113	Roadside	100	99.7	29.8	24.7	23.6	23.6	20.8
SLO 45	501658	177781	Roadside	0	0.0	28.1	19.8	18.9	-	-
SLO 46	497467	179971	Roadside	83.3	83.6	39.0	29.3	26.3	29.8	25.5
SLO 47	497326	180003	Roadside	100	99.7	31.0	22.5	22.7	24.5	21.1
SLO 48	497960	179243	Roadside	0	0.0	29.0	22.2	20.1	-	-
SLO 49	497397	179471	Kerbside	100	99.7	39.5	26.0	28.2	28.2	24.0
SLO 50	496377	179929	Kerbside	100	99.7	**42.8**	30.6	30.7	32.9	27.2
SLO 51	501014	179316	Roadside	100	99.7	35.0	24.8	24.9	26.7	22.7
SLO 52	501161	179538	Roadside	100	99.7	33.3	23.7	22.4	24.8	21.7
SLO 53	501208	178799	Roadside	100	99.7	39.9	27.9	27.1	30.3	25.1
SLO 54	501256	179067	Roadside	91.7	92.1	32.6	24.6	23.3	25.3	18.5
SLO 55	501891	178954	Roadside	100	99.7	29.5	21.3	20.1	21.0	18.7
SLO 56	502241	178679	Roadside	100	99.7	35.7	26.3	23.3	24.1	20.9

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 2023 (%) (2)	2019	2020	2021	2022	2023
SLO 57, SLO 58, SLO 59	469528	180171	Kerbside	91.7	99.7	38.9	27.3	28.2	28.8	27.0
SLO 60, SLO 61, SLO 62	498413	179804	Kerbside	100	99.7	33.6	24.9	26.8	29.5	25.8
SLO 63, SLO 64, SLO 65	501643	177753	Kerbside	83.3	80.5	**41.2**	29.1	32.2	36.8	27.0
SLO 66, SLO 67, SLO 68	496146	179259	Other	100	99.7	34.6	22.6	20.8	23.5	21.4
SLO 69, SLO 70, SLO 71	496223	179217	Other	91.7	92.1	32.7	23.1	21.6	23.6	22.5
SLO 72, SLO 73, SLO 74	496225	179213	Other	100	99.7	32.0	24.7	21.1	23.9	21.9
SLO 75, SLO 76, SLO 77	496227	179207	Other	91.7	92.1	29.3	22.6	20.3	22.6	20.0
SLO 78, SLO 79, SLO 80	496229	179204	Other	100	99.7	31.5	24.1	22.2	24.0	22.1
SLO 81, SLO 82, SLO 83	496232	179199	Other	100	99.7	-	24.1	21.1	24.0	22.1
SLO 84, SLO 85, SLO 86	496234	179195	Other	100	99.7	32.9	23.3	22.0	24.6	22.4
SLO 87, SLO 88, SLO 89	496236	179191	Other	83.3	91.2	33.2	23.1	21.8	23.5	20.9

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 2023 (%) (2)	2019	2020	2021	2022	2023
SLO 90, SLO 91, SLO 92	496238	179186	Other	91.7	92.3	28.7	23.1	21.5	23.8	21.5
SLO 93, SLO 94, SLO 95	497433	179092	Other	100	99.7	33.5	23.8	20.3	21.2	19.5
SLO 96	503272	176597	Roadside	58.3	56.7	28.4	20.5	20.1	23.1	20.7
SLO 97	497725	179360	Roadside	91.7	92.1	-	28.2	27.1	29.2	21.8
SLO 98	503527	176823	Suburban	0	0.0	-	17.1	18.1	-	-
SLO 99	503510	176806	Suburban	0	0.0	-	18.0	18.1	-	-
SLO 100	503613	176912	Suburban	0	0.0	-	16.7	15.4	-	-
SLO 101	494101	180708	Kerbside	0	0.0	-	20.4	20.0	-	-
SLO 102	494199	180637	Urban Background	0	0.0	-	14.4	13.9	-	-
SLO 103	493784	180662	Kerbside	0	0.0	-	18.8	17.7	-	-
SLO 104	493812	180572	Suburban	0	0.0	-	17.7	16.4	-	-
SLO 105	493592	180737	Urban Background	0	0.0	-	16.4	13.7	-	-
SLO 106	495488	182538	Kerbside	0	0.0	-	17.1	16.1	-	-

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 2023 (%) (2)	2019	2020	2021	2022	2023
SLO 107	495457	182550	Roadside	0	0.0	-	17.8	17.2	-	-
SLO 108	495668	182430	Urban Background	0	0.0	-	14.3	13.2	-	-
SLO 109	496526	182276	Suburban	0	0.0	-	14.7	12.8	-	-
SLO 110	496529	182243	Suburban	0	0.0	-	19.3	16.4	-	-
SLO 111	496489	182270	Urban Background	0	0.0	-	14.8	12.8	-	-
SLO 112	497070	181108	Roadside	100	99.7	-	-	24.5	26.8	23.4
SLO 113	497079	181088	Roadside	100	99.7	-	-	23.3	25.2	19.6
SLO 114	497677	180876	Roadside	91.7	92.1	-	-	28.0	27.3	21.3
SLO 115	497671	180866	Roadside	83.3	84.7	-	-	25.7	28.0	21.1
SLO 116	498103	180842	Roadside	100	99.7	-	-	24.5	23.8	22.8
SLO 117	498112	180857	Roadside	83.3	84.7	-	-	21.5	24.5	20.1
SLO 118	497097	179521	Kerbside	91.7	89.9	-	-	25.4	26.4	22.1
SLO 119	497104	179511	Roadside	75	75.3	-	-	26.1	25.8	20.8
SLO 120	497013	179870	Kerbside	100	99.7	-	-	23.5	25.1	22.9

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 2023 (%) (2)	2019	2020	2021	2022	2023
SLO 121	497004	179874	Kerbside	100	99.7	-	-	31.2	35.7	29.8
SLO 122	496167	179975	Kerbside	100	99.7	-	-	25.0	28.0	23.5
SLO 123	496184	179950	Roadside	91.7	92.1	-	-	21.5	20.8	18.4
SLO 124, SLO 125, SLO 126	501150	179502	Roadside	81.8	92.1	-	-	-	-	20.3
SLO 127	502828	176996	Roadside	100	32.6	-	-	-	-	24.1
SLO 128	502884	176967	Roadside	100	32.6	-	-	-	-	23.0
SLO 129	502884	176954	Roadside	100	22.7	-	-	-	-	17.9
SLO 130	503291	176709	Roadside	100	32.6	-	-	-	-	24.6
SLO 131	503522	176671	Roadside	75	15.1	-	-	-	-	-

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

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

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

Notes:

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

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

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

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

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

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

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

Table A.4.1 – Concentration Change from 2019 to 2023 (µg/m³)

Site	Site ID	AQMA / Non-AQMA	Annual MeanNO_2 2019	Annual MeanNO_2 2020	Annual MeanNO_2 2021	Annual MeanNO_2 2022	Annual MeanNO_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	35.0	26.3	23.0	27.8	21.9	-13.1	-37.5	-8.7	-3.3	4.7	-5.9	-3.3	-25%	-12%	21%	-21%	-9%
Winvale	22	1	32.7	23.1	19.8	21.0	19.8	-12.9	-39.5	-9.6	-3.3	1.1	-1.2	-3.2	-29%	-14%	6%	-6%	-11%
Spackmans Way	24	1	33.0	22.6	20.9	21.4	18.4	-14.6	-44.3	-10.4	-1.7	0.5	-3.0	-3.7	-32%	-8%	3%	-14%	-13%
Paxton Avenue	25	1	31.8	20.3	19.0	19.6	19.6	-12.2	-38.4	-11.5	-1.3	0.6	0.0	-3.1	-36%	-7%	3%	0%	-10%
HE Receptor 1	66, 67, 68	1	34.6	22.6	20.8	23.5	21.4	-13.2	-38.2	-12.0	-1.8	2.7	-2.1	-3.3	-35%	-8%	13%	-9%	-10%
HE Receptor 2	69, 70, 71	1	32.7	23.1	21.6	23.6	22.5	-10.2	-31.2	-9.6	-1.5	2.0	-1.1	-2.6	-29%	-6%	9%	-5%	-8%
HE Receptor 3	72, 73, 74	1	32.0	24.7	21.1	23.9	21.9	-10.1	-31.5	-7.3	-3.6	2.8	-1.9	-2.5	-23%	-15%	13%	-8%	-8%
HE Receptor 4	75, 76, 77	1	29.3	22.6	20.3	22.6	20.0	-9.3	-31.6	-6.7	-2.2	2.2	-2.5	-2.3	-23%	-10%	11%	-11%	-8%
HE Receptor 5	78, 79, 80	1	31.5	24.1	22.2	24.0	22.1	-9.4	-29.7	-7.4	-1.9	1.8	-1.9	-2.3	-23%	-8%	8%	-8%	-8%
HE Receptor 7	84, 85, 86	1	32.9	23.3	22.0	24.6	22.4	-10.5	-32.0	-9.6	-1.3	2.6	-2.2	-2.6	-29%	-6%	12%	-9%	-8%
HE Receptor 8	87, 88, 89	1	33.2	23.1	21.8	23.5	20.9	-12.3	-37.2	-10.1	-1.3	1.6	-2.6	-3.1	-30%	-6%	7%	-11%	-10%
HE Receptor 9	90, 91, 92	1	28.7	23.1	21.5	23.8	21.5	-7.2	-25.2	-5.6	-1.5	2.2	-2.3	-1.8	-20%	-7%	10%	-10%	-6%
HE Receptor 10	93, 94, 95	1	33.5	23.8	20.3	21.2	19.5	-14.0	-41.8	-9.7	-3.5	0.9	-1.7	-3.5	-29%	-15%	4%	-8%	-12%
Average	-	-	-	-	-	-	-	**-11.5**	**-35.3**					**-2.9**					**-9%**
London Road (A)	10	2	41.1	28.8	29.7	32.5	25.9	-15.2	-37.0	-12.3	0.9	2.7	-6.5	-3.8	-30%	3%	9%	-20%	-9%
Brands Hill (A)	18	2	49.4	38.5	36.5	31.6	24.6	-24.8	-50.1	-10.9	-2.0	-4.9	-7.0	-6.2	-22%	-5%	-14%	-22%	-16%
Rogans (Colnbrook by-pass)	28	2	38.5	25.5	25.6	28.8	25.7	-12.8	-33.3	-13.0	0.1	3.2	-3.1	-3.2	-34%	0%	12%	-11%	-8%
Brands Hill (B)	32	2	32.8	23.9	23.7	22.2	18.8	-14.0	-42.7	-8.9	-0.2	-1.6	-3.4	-3.5	-27%	-1%	-7%	-15%	-12%
London Road (B)	39	2	30.1	21.8	20.6	22.9	20.1	-10.0	-33.3	-8.3	-1.2	2.3	-2.8	-2.5	-28%	-5%	11%	-12%	-9%
Brands Hill Triplicate	63, 64, 65	2	41.2	29.1	32.2	36.8	27.0	-14.2	-34.5	-12.1	3.2	4.6	-9.8	-3.6	-29%	11%	14%	-27%	-8%
Average	-	-	-	-	-	-	-	**-15.2**	**-38.5**					**-3.8**					**-10%**
Tuns Lane	23	3	30.8	22.0	21.9	22.2	20.0	-10.8	-35.1	-8.8	0.0	0.3	-2.3	-2.7	-29%	0%	1%	-10%	-9%
Tuns Lane (B)	50	3	42.8	30.6	30.7	32.9	27.2	-15.6	-36.5	-12.2	0.1	2.2	-5.7	-3.9	-28%	0%	7%	-17%	-10%
Windmill Bath Road	43	Ext 3	33.1	25.0	25.0	25.6	23.3	-9.8	-29.7	-8.1	0.0	0.5	-2.3	-2.5	-25%	0%	2%	-9%	-8%
Windmill triplicate	57, 58, 59	Ext 3	38.4	27.3	28.2	28.8	27.0	-11.4	-29.8	-11.2	0.9	0.6	-1.8	-2.9	-29%	3%	2%	-6%	-7%
Average	-	-	-	-	-	-	-	**-11.9**	**-32.8**					**-3.0**					**-9%**
Princes Street	5	4	33.6	27.6	25.2	28.3	23.2	-10.4	-31.0	-6.0	-2.4	3.1	-5.1	-2.6	-18%	-9%	12%	-18%	-8%
Yew Tree Road (façade) New	26	4	35.2	26.7	29.3	29.7	26.1	-9.1	-26.0	-8.5	2.6	0.4	-3.7	-2.3	-24%	10%	1%	-12%	-6%
Yew Tree Road	29	4	48.5	33.8	39.0	44.2	34.6	-13.9	-28.8	-14.7	5.1	5.3	-9.7	-3.5	-30%	15%	13%	-22%	-6%
Blair Road - Victoria Court	37	4	37.8	28.2	26.3	27.1	22.7	-15.1	-39.8	-9.6	-1.8	0.8	-4.4	-3.8	-26%	-6%	3%	-16%	-11%
Wellesley Road	38	4	33.0	25.0	22.4	22.4	18.1	-14.9	-45.0	-8.0	-2.6	0.1	-4.3	-3.7	-24%	-10%	0%	-19%	-13%
Wexham Road	40	4	37.9	29.7	29.6	32.6	29.1	-8.8	-23.3	-8.2	-0.1	2.9	-3.5	-2.2	-22%	0%	10%	-11%	-6%
Cornwall House, Bath Road	46	4	39.0	29.3	26.3	29.8	25.5	-13.5	-34.7	-9.7	-3.0	3.6	-4.4	-3.4	-25%	-10%	14%	-15%	-9%
Princess House, Bath Road	47	4	31.0	22.5	22.7	24.5	21.1	-9.9	-31.9	-8.5	0.2	1.8	-3.4	-2.5	-27%	1%	8%	-14%	-8%
Wellington Street Triplicate	60, 61, 62	4	33.6	24.9	26.8	29.5	25.8	-7.8	-23.3	-8.7	1.9	2.7	-3.8	-2.0	-26%	8%	10%	-13%	-5%
Average	-	-	-	-	-	-	-	**-11.5**	**-31.5**					**-2.9**					**-8%**
Colnbrook by-pass	7	I	32.8	23.8	23.5	25.3	20.1	-12.7	-38.7	-9.0	-0.3	1.9	-5.2	-3.2	-27%	-1%	8%	-21%	-10%

Site	Site ID	AQMA / Non-AQMA	Annual MeanNO_2 2019	Annual MeanNO_2 2020	Annual MeanNO_2 2021	Annual MeanNO_2 2022	Annual MeanNO_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
Lakeside Road	12	I	39.5	26.6	22.3	24.4	19.8	-19.7	-49.8	-12.9	-4.3	2.2	-4.6	-4.9	-33%	-16%	10%	-19%	-15%
Horton Road (Caravan Site)	17	I	33.3	24.9	25.7	28.3	25.6	-7.7	-23.1	-8.4	0.8	2.5	-2.7	-1.9	-25%	3%	10%	-9%	-5%
Poyle Road	96	I	30.9	20.5	20.1	23.1	20.7	-10.2	-32.9	-10.4	-0.4	3.0	-2.4	-2.5	-34%	-2%	15%	-10%	-8%
Ditton Road	19	R	33.7	22.7	22.1	23.5	22.0	-11.7	-34.8	-11.0	-0.6	1.4	-1.5	-2.9	-33%	-3%	6%	-7%	-9%
Windsor Road	21	R	34.6	24.0	24.1	25.2	22.1	-12.5	-36.1	-10.6	0.1	1.2	-3.1	-3.1	-31%	0%	5%	-12%	-9%
Goodman Park (Uxbridge Rd)	44	R	29.8	24.7	23.6	23.6	20.8	-9.0	-30.2	-5.1	-1.1	0.0	-2.8	-2.2	-17%	-5%	0%	-12%	-8%
Langley Road	51	R	35.0	24.8	24.9	26.7	22.7	-12.3	-35.1	-10.2	0.1	1.8	-4.0	-3.1	-29%	0%	7%	-15%	-9%
Station Road	52	R	33.3	23.7	22.4	24.8	21.7	-11.6	-34.7	-9.6	-1.3	2.4	-3.0	-2.9	-29%	-6%	11%	-12%	-9%
High Street Langley (A)	53	R	39.9	27.9	27.1	30.3	25.1	-14.8	-37.2	-12.0	-0.9	3.2	-5.2	-3.7	-30%	-3%	12%	-17%	-10%
High Street Langley (B)	54	R	32.6	24.6	23.3	25.3	18.5	-14.1	-43.2	-8.0	-1.3	1.9	-6.7	-3.5	-25%	-5%	8%	-27%	-12%
Parlaunt Road	55	R	29.5	21.3	20.1	21.0	18.7	-10.8	-36.8	-8.2	-1.2	0.8	-2.3	-2.7	-28%	-5%	4%	-11%	-10%
Sutton Lane	56	R	35.7	26.3	23.3	24.1	20.9	-14.8	-41.5	-9.4	-3.0	0.8	-3.2	-3.7	-26%	-11%	3%	-13%	-12%
Windsor Road (B)	49	K	39.5	26.0	28.2	28.2	24.0	-15.5	-39.2	-13.5	2.2	0.0	-4.2	-3.9	-34%	9%	0%	-15%	-10%
Elbow Meadows	13	S	28.9	20.9	19.6	21.9	18.2	-10.7	-37.0	-8.0	-1.3	2.3	-3.7	-2.7	-28%	-6%	12%	-17%	-10%
Average	-	-	-	-	-	-	-	-12.5	-36.7					-3.1					-10%

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

Figure A.1 – Trends in Annual Mean Automatic NO_2 Concentrations from 2019 to 2023

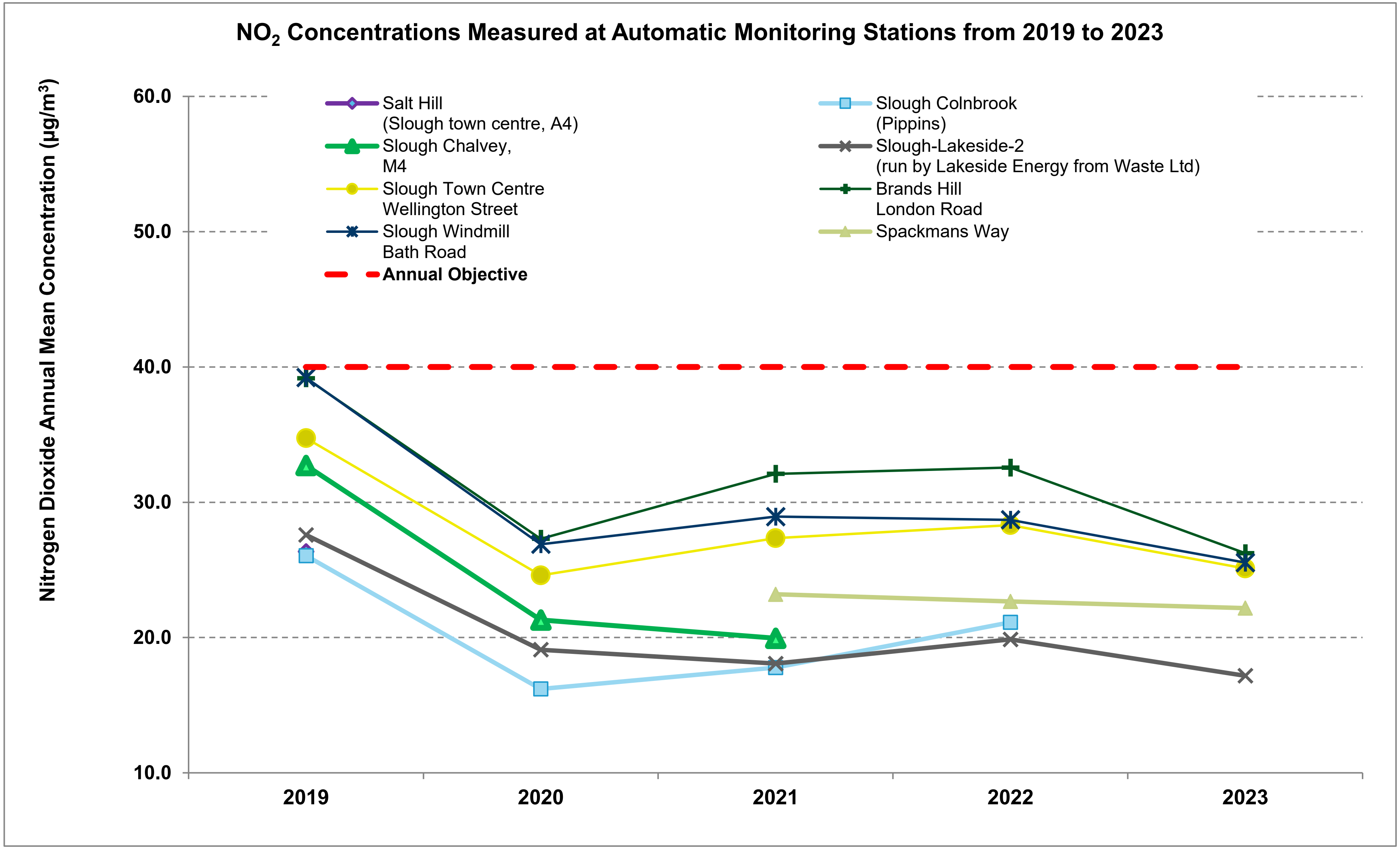


Figure A.2 – Trends in Annual Mean Continuous NO_2 Concentrations, Grouped by Location

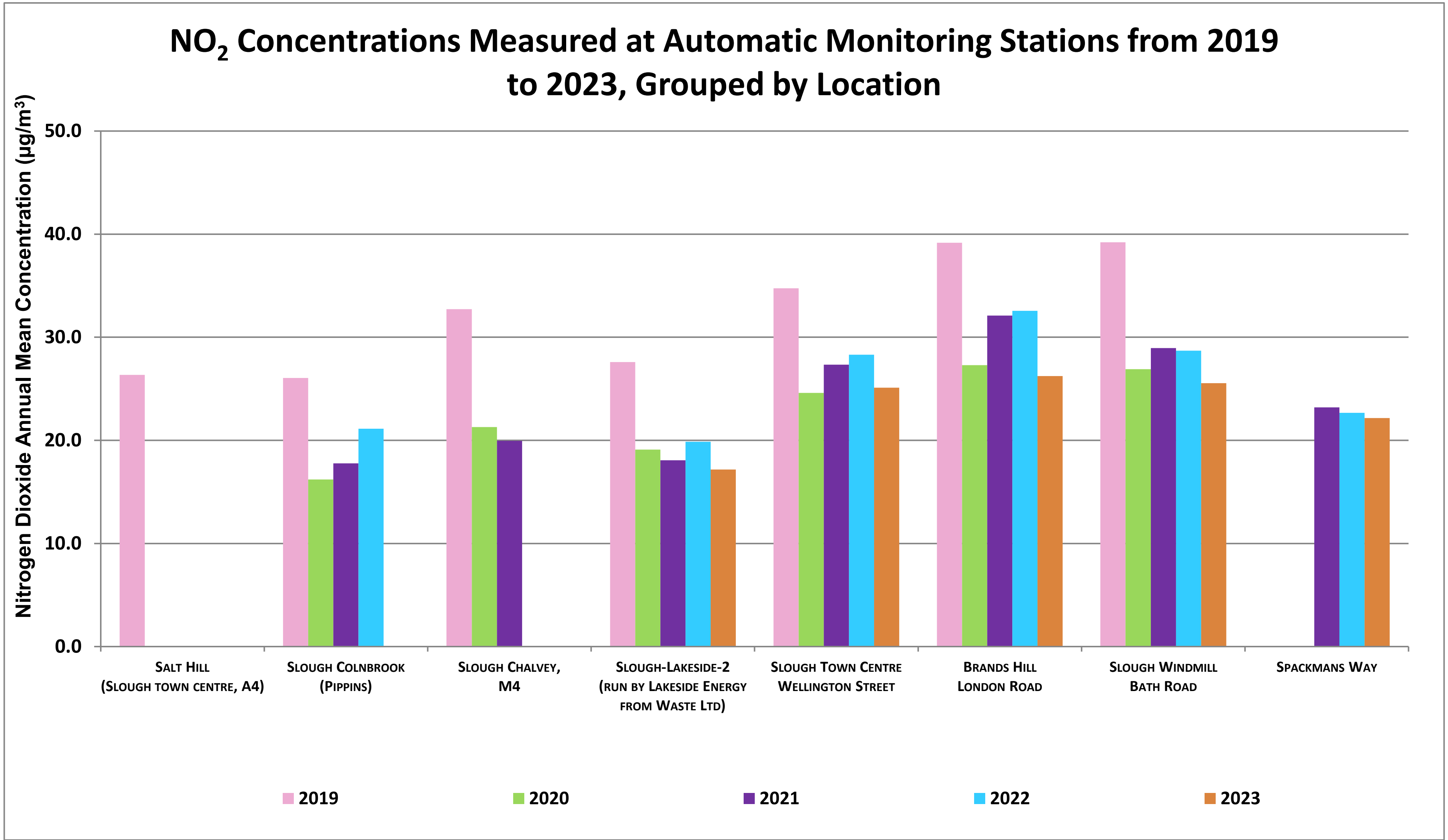


Figure A.3 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at AQMA 1

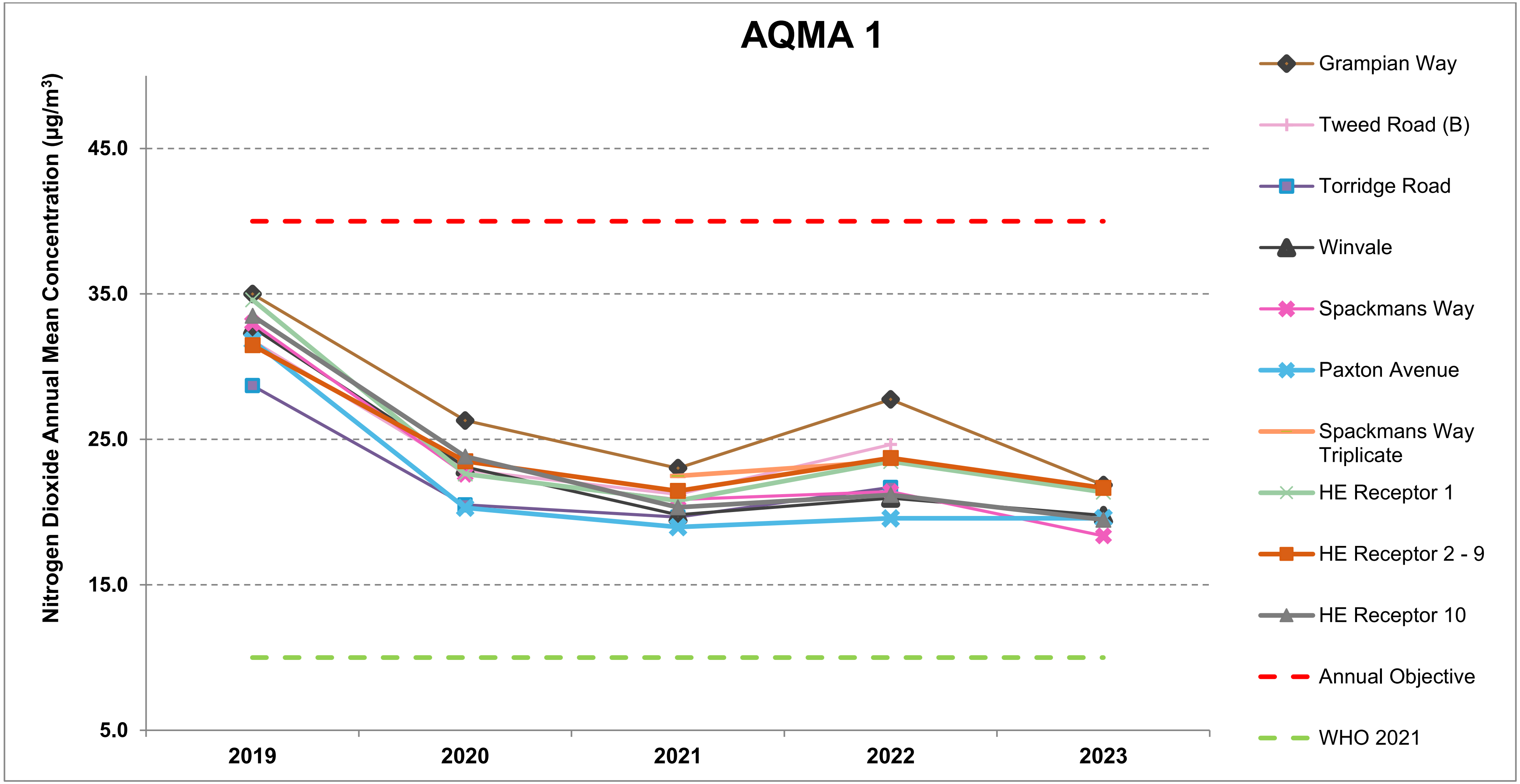


Figure A.4 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at AQMA 2

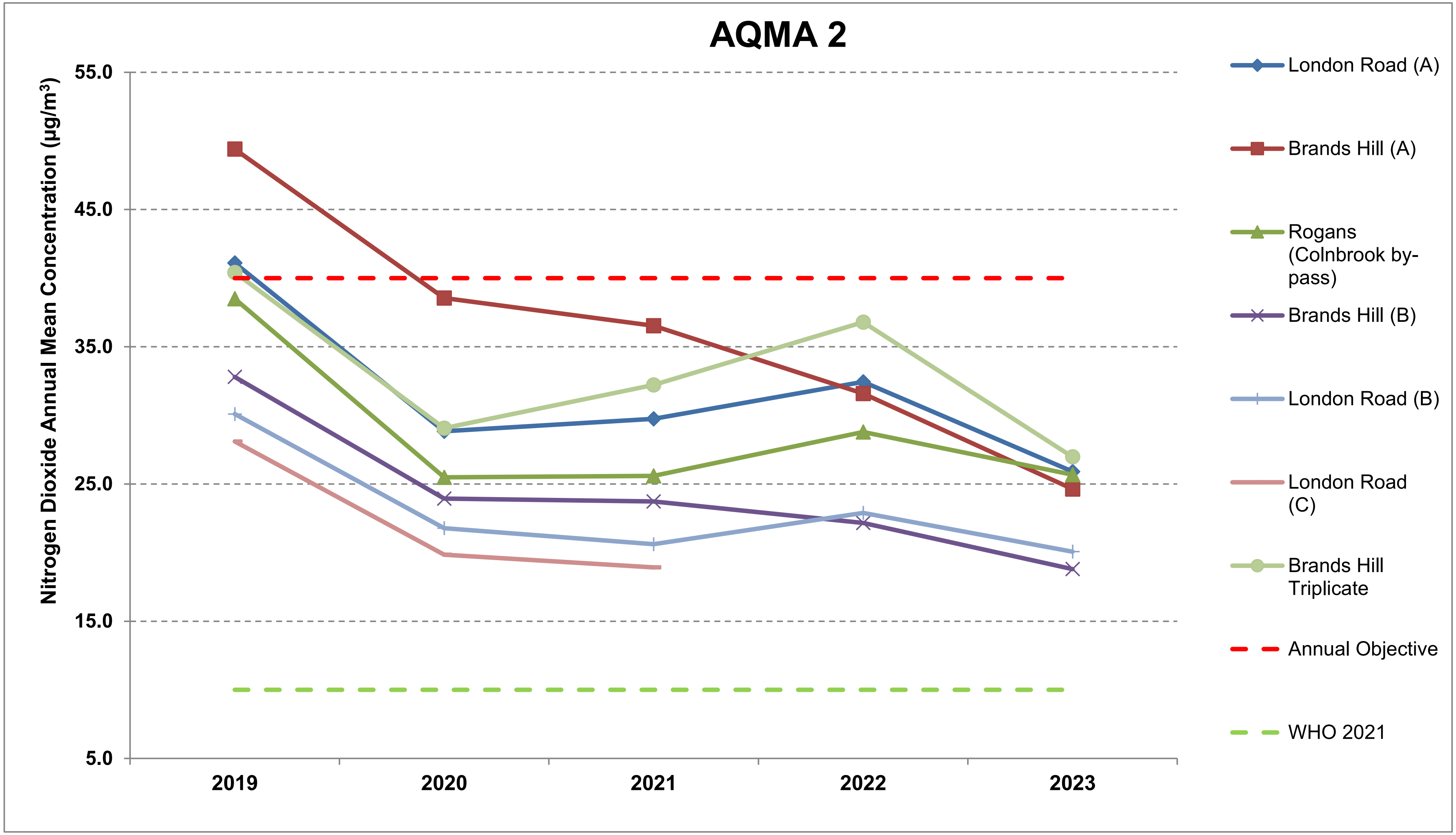


Figure A.5 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at AQMA 3 and AQMA 3 Extension

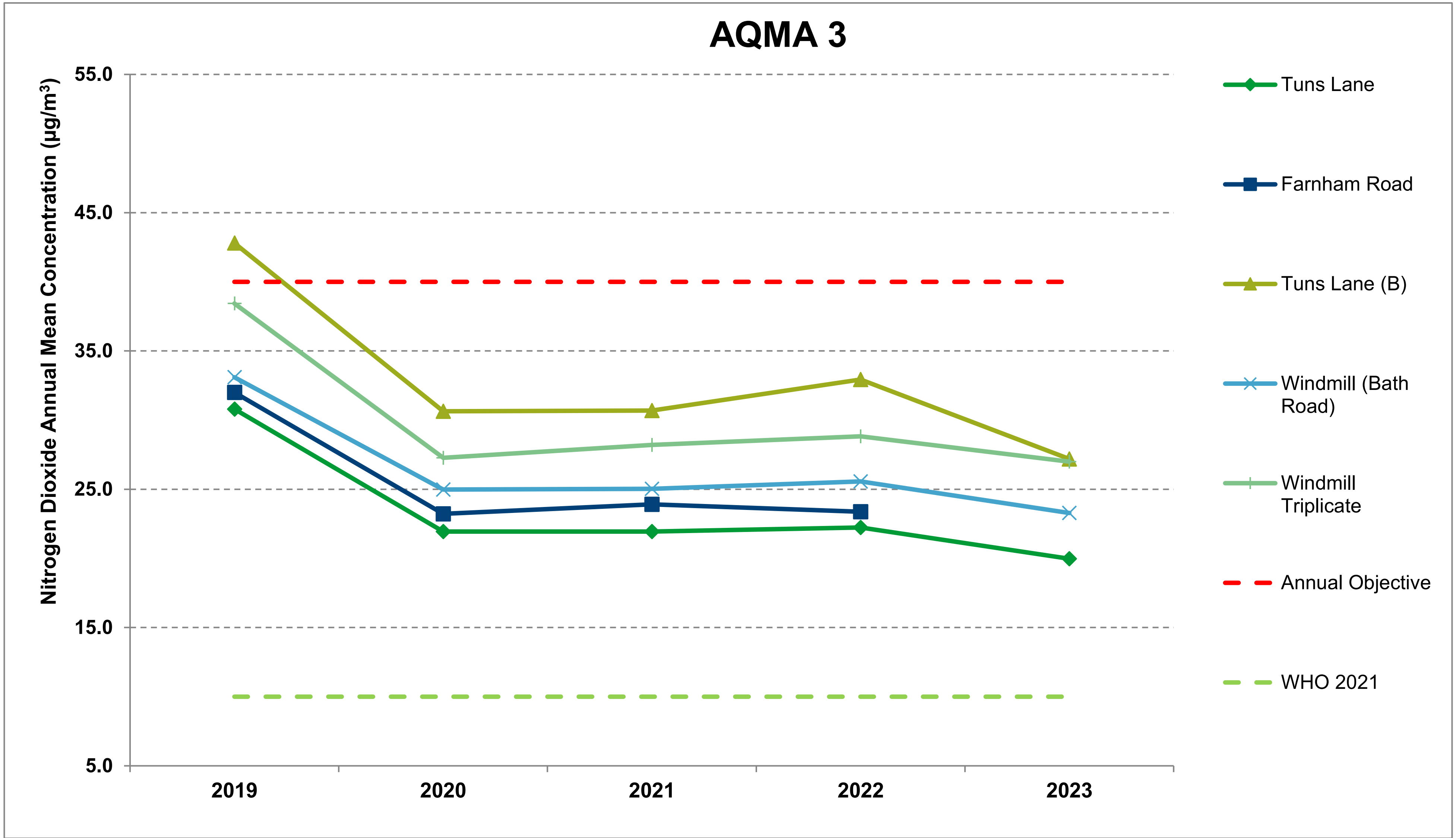


Figure A.6 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at AQMA 4

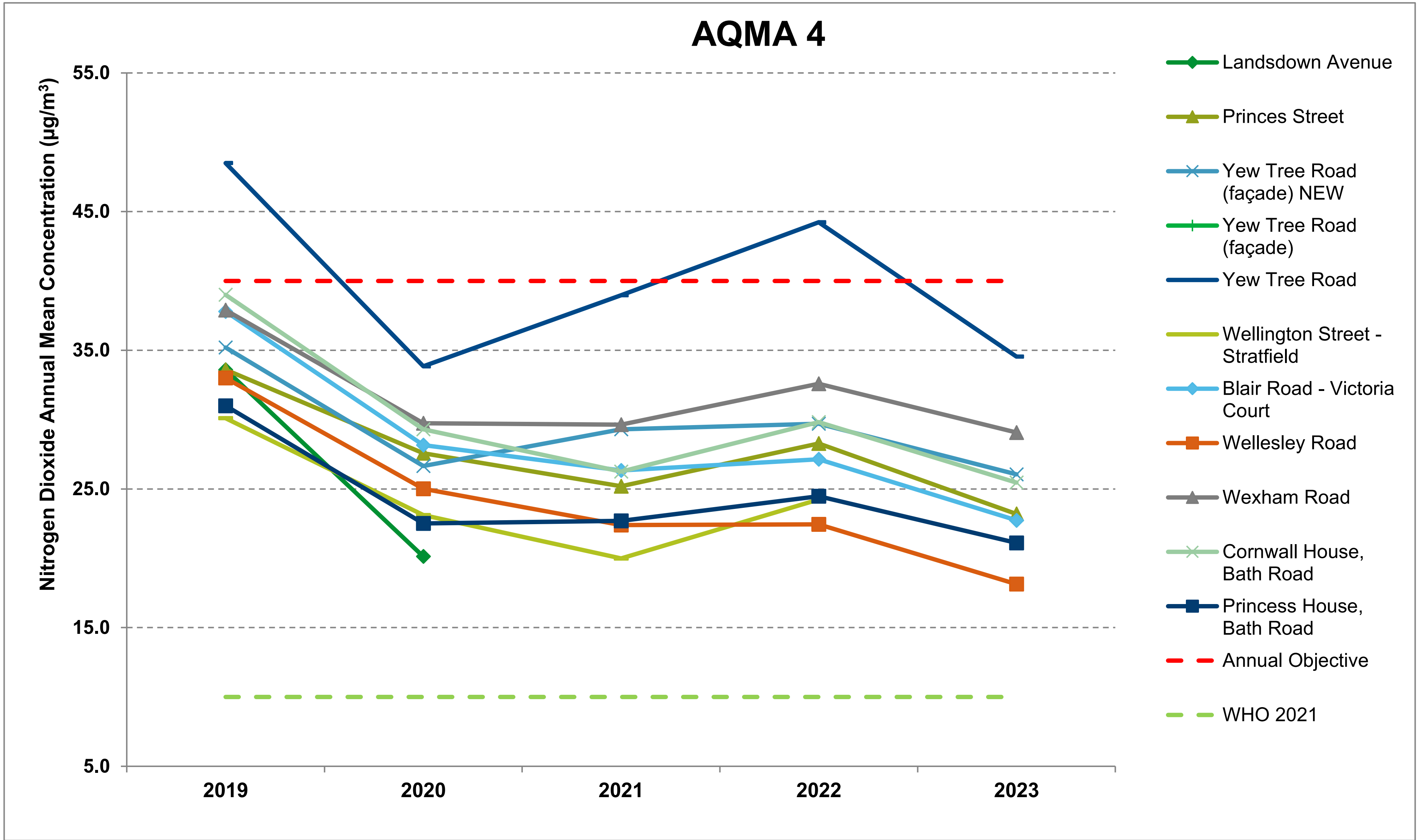


Figure A.7 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at Non AQMA: Roadside and Kerbside Sites

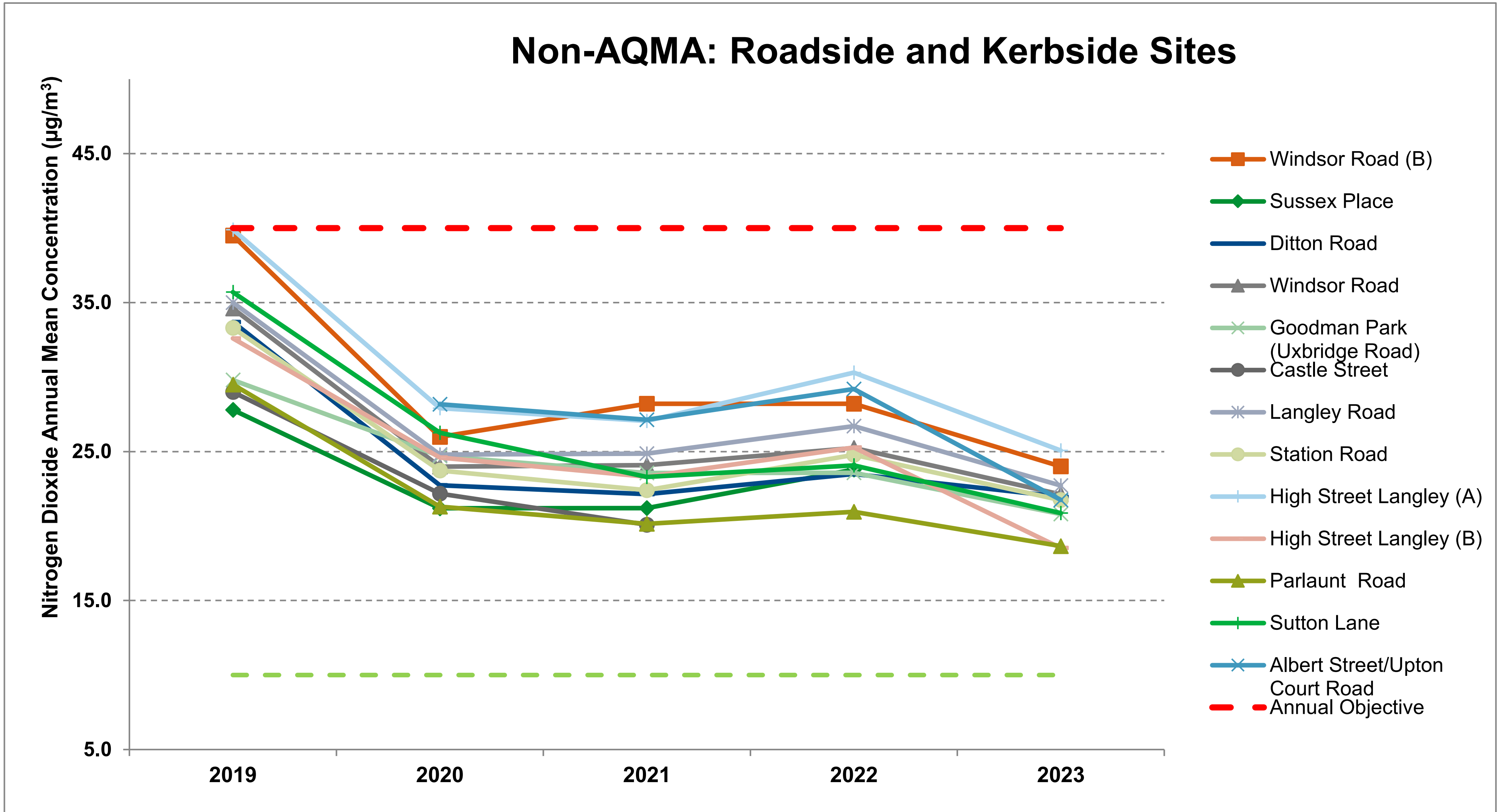


Figure A.8 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at Non AQMA: Suburban and Urban Background Sites

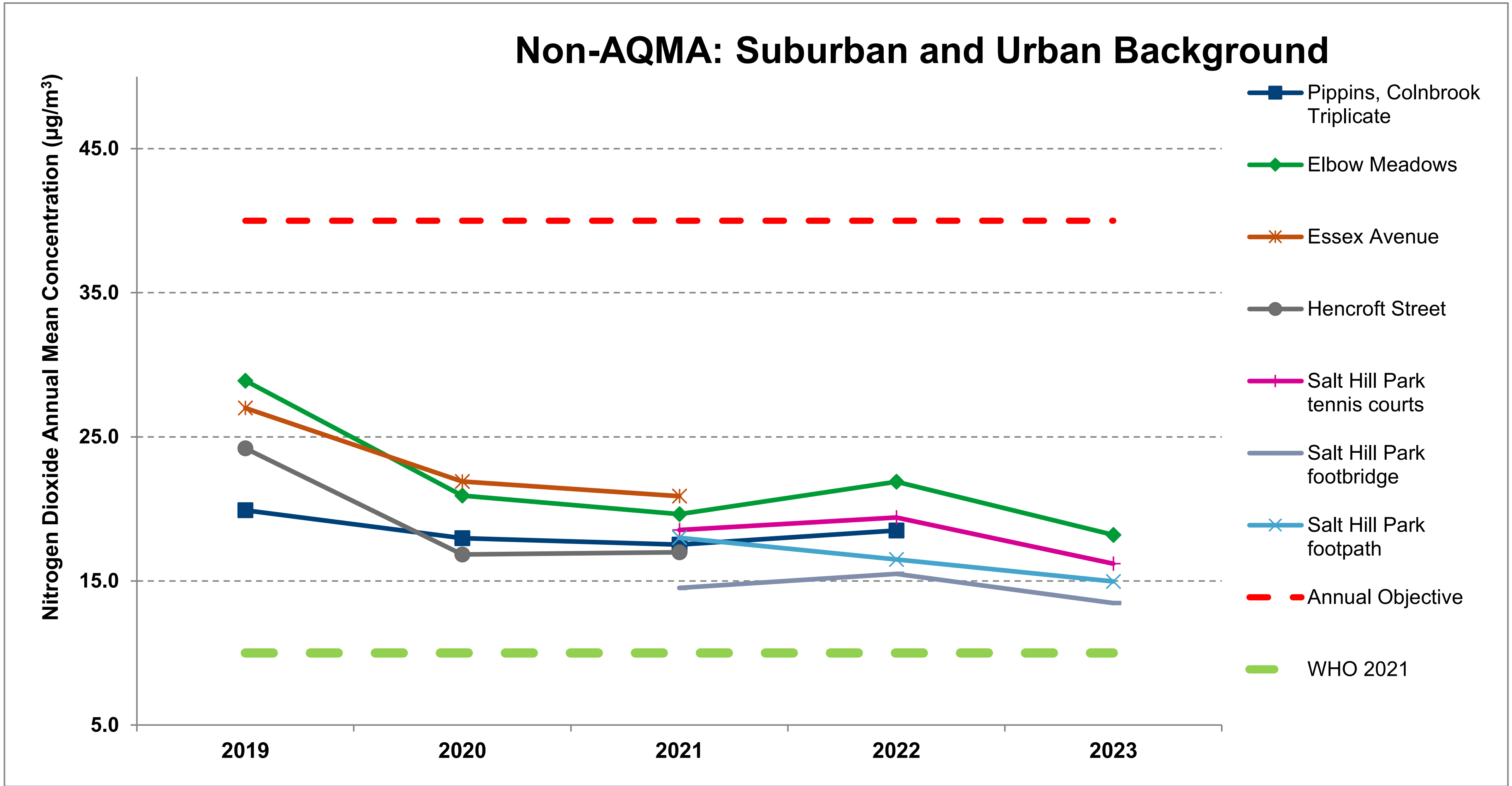


Figure A.9 – Trends in Annual Mean Diffusion Tube NO_2 Concentrations at Non AQMA: Rail and Industrial Sites

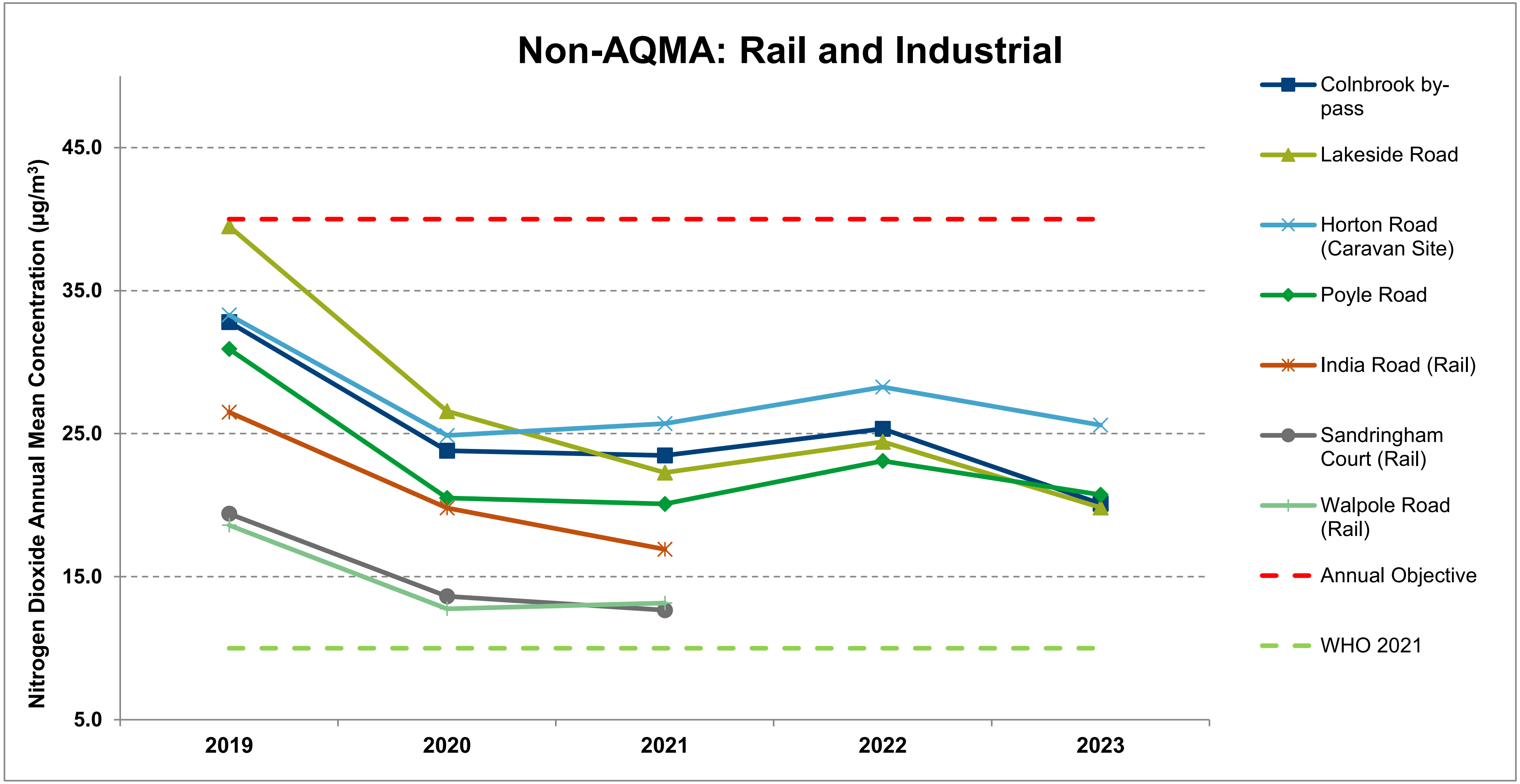


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
SLH 3	503542	176827	Suburban	-	-	0	0	0	**0 (74.0)**	**-**
SLH 4	496599	180156	Urban Background	-	-	**0 (88)**	**-**	**-**	**-**	**-**
SLH 7	496562	179109	Other	-	-	0	0	**0 (78.6)**	**-**	**-**
SLH 8	503569	77385	Industrial	99.5	99.5	0	0	0	0	0
SLH 10	498413	179804	Roadside	99.6	99.6	0	0	0	0	0
SLH 11	501643	177753	Roadside	99.6	99.6	0	0	0	0	0
SLH 12	496528	180171	Roadside	99.5	99.5	0	0	1	0	0
SLH 13	496447	179117	Other	98.9	98.9	**-**	**-**	**0 (72.9)**	0	0
SLH 14	501150	179502	Roadside	98.7	98.7	**-**	**-**	**-**	**-**	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m³ have been recorded.

Exceedances of the NO_2 1-hour mean objective (200µg/m³ 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 (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 2023 (%) (2)	2019	2020	2021	2022	2023
SLH 3	503542	176827	Suburban	-	-	16.4	17	15.2	17.0	-
SLH 4	496599	180156	Urban Background	-	-	18.3	-	-	-	-
SLH 5	503551	177258	Industrial	-	-	12	-	-	-	-
SLH 6	503542	176827	Urban Background	-	-	15	-	-	-	-
SLH 8	503569	77385	Industrial	82.6	82.6	15	14	12.4	14.5	12.6
SLH 9	503569	77385	Urban Background	80.2	80.2	14	16.7	12.6	18.3	13.8
SLH 11	501643	177753	Roadside	99.2	99.2	28	25.4	24.4	23.1	20.4
SLH 12	496528	180171	Roadside	97.9	97.9	23.4	18.9	18.7	19.8	17.0
SLH 13	496447	179117	Other	98.7	98.7	-	-	13.3	15.2	11.9

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22. This was not required for any sites in 2023.**

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the PM_{10} 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.

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

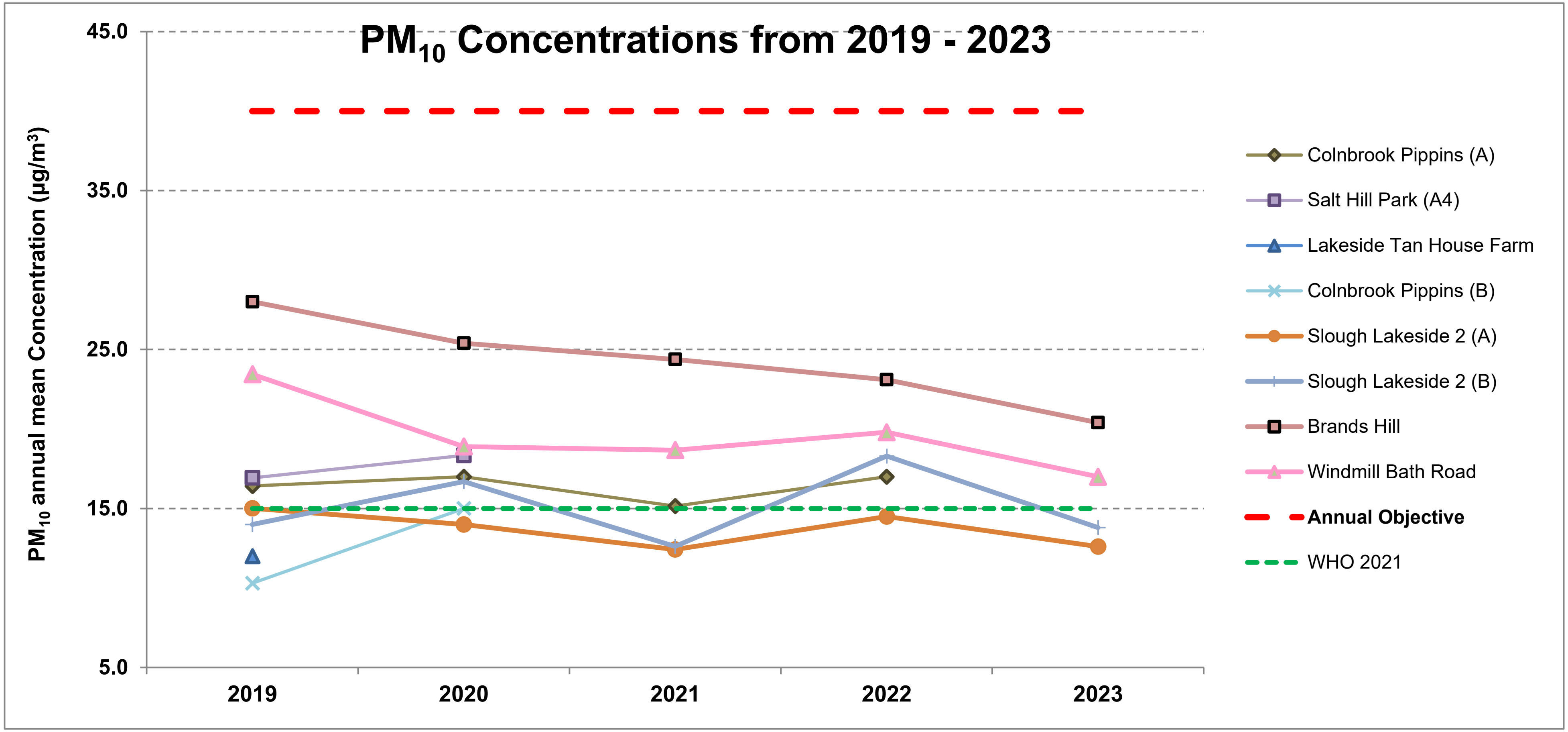


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
SLH 3	503542	176827	Suburban	-	-	3	0	0	**0 (27.9)**	**-**
SLH 4	496599	180156	Urban Background	-	-	**3 (32)**	**-**	**-**	**-**	**-**
SLH 5	503551	177258	Industrial	-	-	0 (19)	-	-	-	-
SLH 6	503542	176827	Urban Background	-	-	0 (24)	-	-	-	-
SLH 8	503569	77385	Industrial	82.6	82.6	3	0	0	1	0
SLH 9	503569	77385	Urban Background	80.2	80.2	0 (24)	4	2 (23.2)	7	1
SLH 11	501643	177753	Roadside	99.2	99.2	23	19	14	14	3
SLH 12	496528	180171	Roadside	97.9	97.9	15	7	4	5	2
SLH 13	496447	179117	Other	98.7	98.7	-	-	0 (21.3)	1	0

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m³ have been recorded.

Exceedances of the PM_{10} 24-hour mean objective (50µg/m³ 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.11 – Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m³

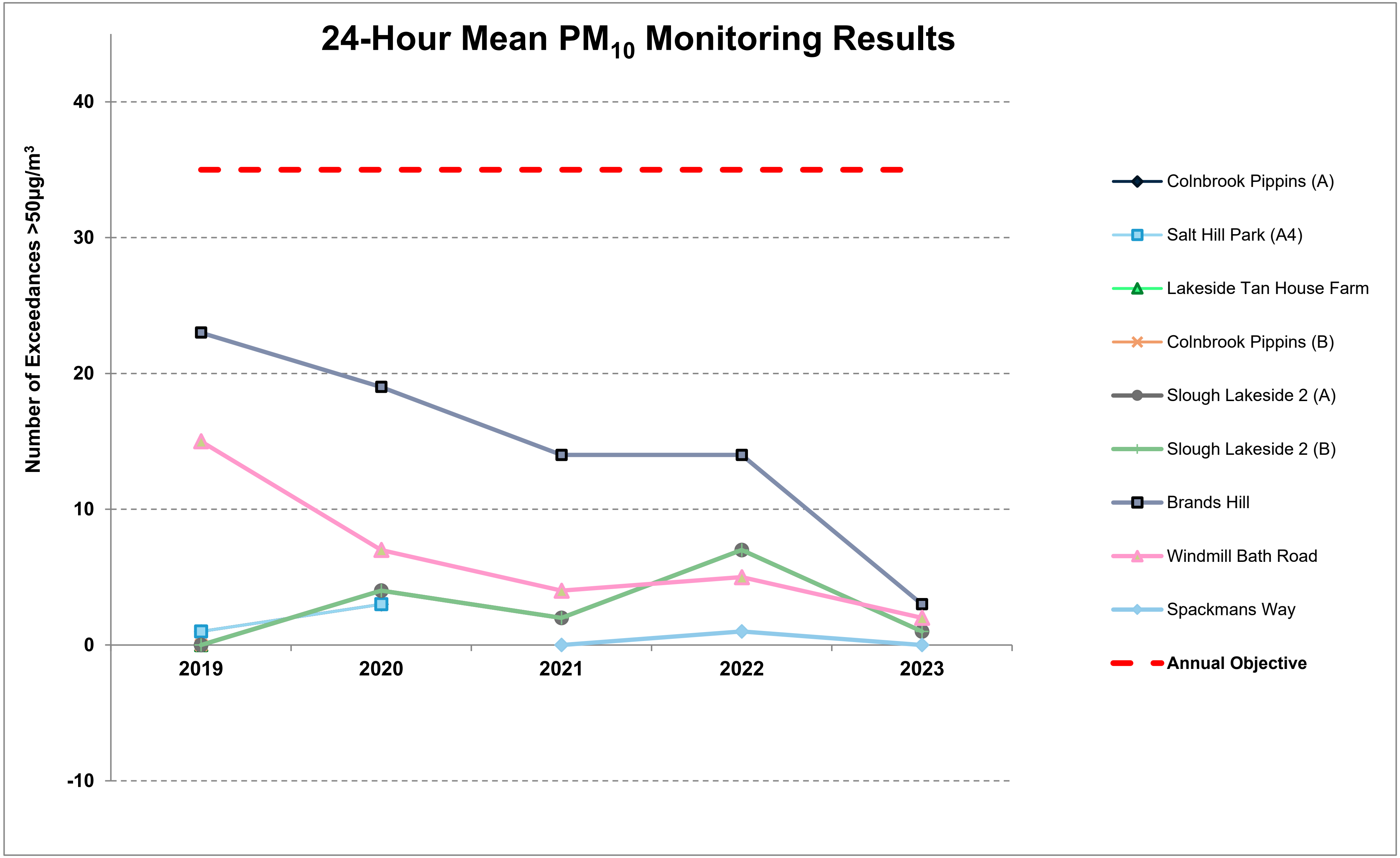


Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
SLH 5	503551	177258	Industrial	-	-	6	-	-	-	-
SLH 6	503542	176827	Suburban	-	-	7	-	-	-	-
SLH 9	503569	77385	Industrial	80.2	80.2	7	5.5	5.5	7.6	5.9

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22. This was not required in 2023.**

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

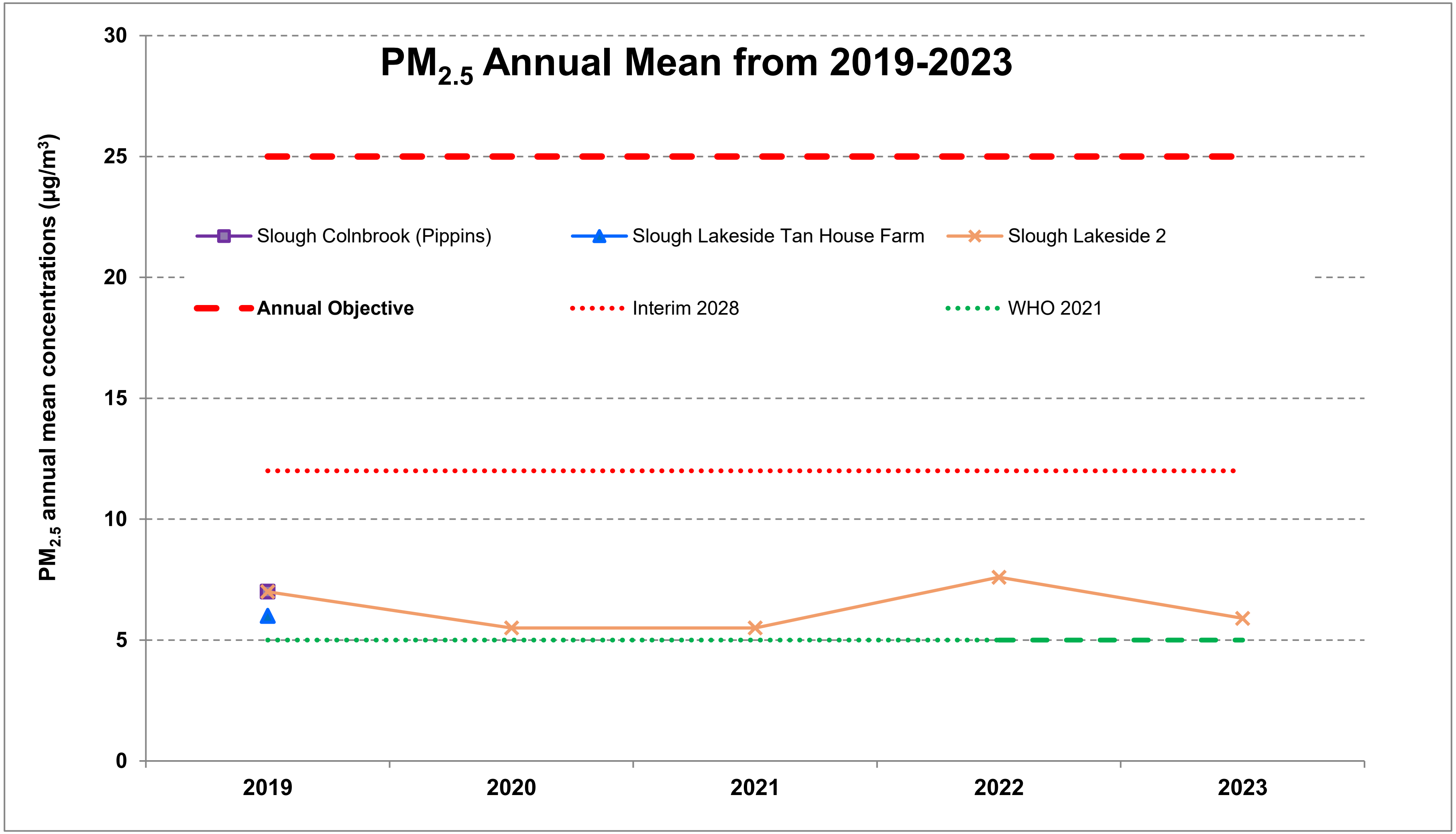
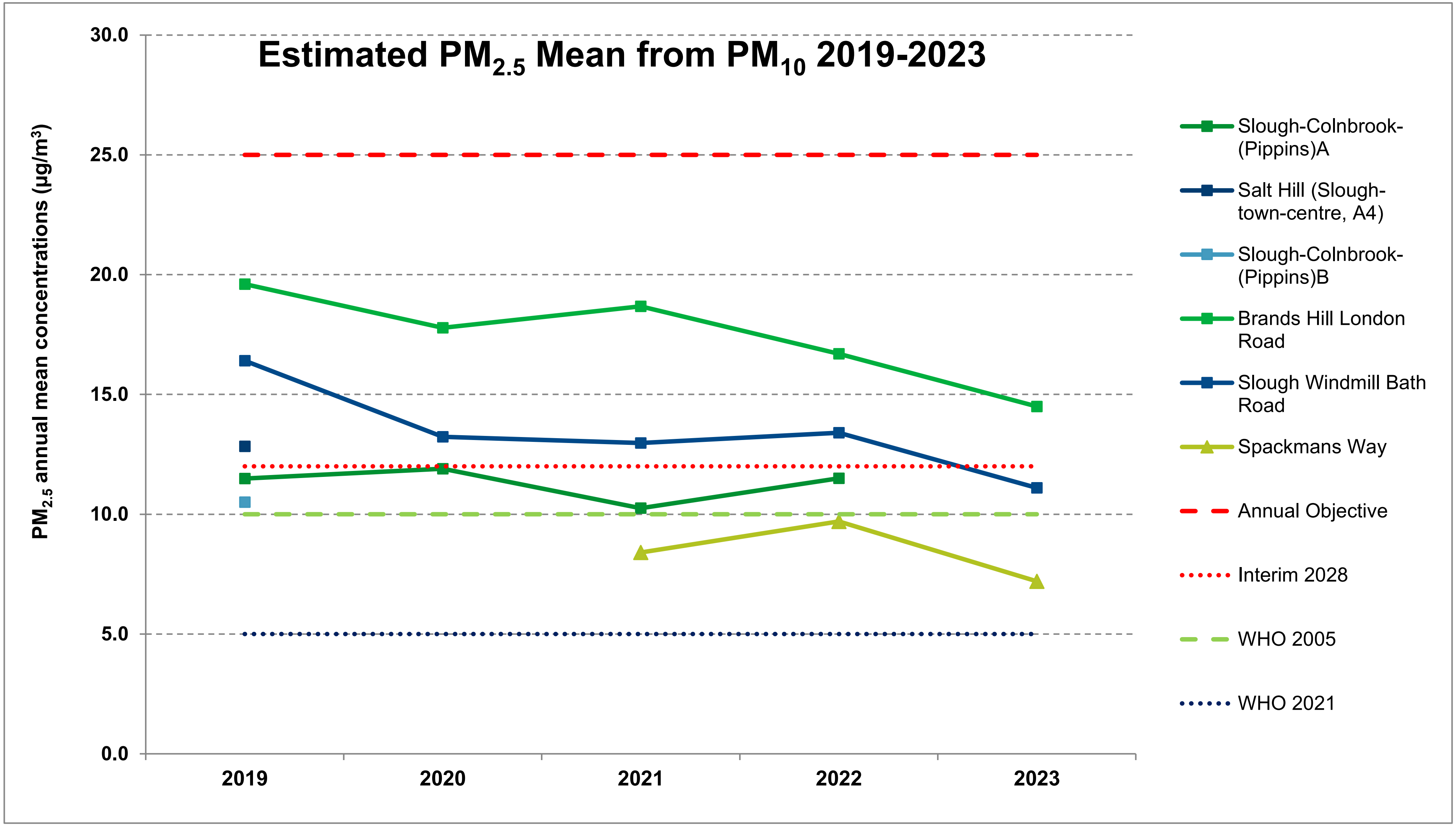


Figure A.13 – Trends in Annual Mean $PM_{2.5}$ Concentrations, Estimated from PM_{10}



Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO_2 2023 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	31.0	26.5	20.6	21.3	15.3	15.2	10.3	16.6	20.2	24.8	30.4	17.3	20.8	16.2	-	
SLO 2 Relocated	496785	180336	25.9	19.1	18.9	19.3	14.1	12.9	13.4		14.7	18.6	17.5	15.7	17.3	13.5	-	
SLO 3 Relocated	496665	180236	26.4	12.6	20.5	19.3	13.2		15.4		17.8	23.7	28.5	14.7	19.2	15.0	-	
SLO 4 Relocated	497185	180050	36.3	31.3	25.4	21.2	18.7	18.7	24.3	21.7	25.7	24.3	24.1	18.6	24.2	18.8	-	
SLO 5	498541	179815	37.1	38.9	31.9	27.6	22.2	25.9	24.5	27.3	35.0	37.3	33.6	16.0	29.8	23.2	-	
SLO 6	498784	179560														-	-	
SLO 7	503196	177349	34.1	32.5	27.0	25.3	18.7	18.1	23.1	23.6	29.0	28.9	32.6	16.8	25.8	20.1	-	
SLO 8	501382	178101	30.0	32.9	32.3	24.4	18.8	23.5		28.7	34.1	33.7	32.6	17.7	28.1	21.9	22.6	
SLO 9	501501	177879														-	-	
SLO 10	501733	177725	40.7	41.1	35.4	38.0	38.6	38.5	20.0	37.8	36.1	29.7	25.5	17.7	33.3	25.9	-	
SLO 11	501637	177999														-	-	
SLO 12	503877	177459	33.4	33.4	27.8	26.8	25.1	23.5	13.7	27.3	28.1	29.1	19.9	17.5	25.5	19.8	-	
SLO 13	503856	176538	29.3	29.7	28.7	26.2	24.1	22.3	15.2	22.2	22.5	23.7	25.2	11.2	23.4	18.2	-	
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	36.1	34.1	29.2	39.0	33.9	35.0	22.0	34.5	30.0	32.5	35.2		32.9	25.6	-	
SLO 18	501798	177659	40.4	40.1	28.3	39.4	38.2	33.3	19.9	31.2	27.5	31.1	35.3	14.8	31.6	24.6	-	

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 19	500851	177890	34.0	35.6	32.9	34.1	23.0	22.7	20.2	25.5	29.7	32.3	30.6	17.8	28.2	22.0	-	
SLO 20	497925	179450														-	-	
SLO 21	497457	179566	30.5	41.1	30.5	26.2	25.3	23.1	21.7	27.4	30.1	29.3	34.1	21.5	28.4	22.1	-	
SLO 22	497488	179090	36.1	31.2	29.4	25.6	16.9	16.3	15.0	23.0	22.5	30.1	39.0	19.5	25.4	19.8	-	
SLO 23	496416	180126	28.2	34.7	24.2	30.6	24.6	21.7	20.5	25.7	25.3	25.9	29.3	17.0	25.6	20.0	-	
SLO 24	496272	179187	28.2	20.1	25.9	13.6	19.5	20.7	18.0	26.1	27.7	28.6	36.5	18.0	23.6	18.4	-	
SLO 25	496050	179258	28.7	31.4	26.8	29.9	17.6	20.9	21.8	23.9	25.3	26.2	28.7	20.4	25.1	19.6	-	
SLO 26	498473	179706	43.2	46.3	34.5		38.9	35.3	17.9	30.5	33.3	31.0	34.5	22.5	33.4	26.1	-	
SLO 27	498681	179972														-	-	
SLO 28	501941	177633	44.8	27.6	34.4	29.1	31.1	29.9	34.2	32.3	33.2	33.0			33.0	25.7	26.2	
SLO 29	498483	179707	56.1	63.0	40.4	51.2	48.8	44.6	17.5	41.7	44.6	47.0	52.6	24.8	44.4	34.6	-	
SLO 30	496397	180341														-	-	
SLO 31	496200	181900														-	-	
SLO 32	501853	177620	29.7	24.6	22.2	29.1	27.8	23.8	23.7	21.6	18.8	18.2	25.9		24.1	18.8	-	
SLO 33	498168	179907														-	-	
SLO 34, SLO 35, SLO 36	496562	179109														-	-	
SLO 34 Relocated	496447	179117	39.6	37.1	29.8	26.0	19.7	20.2	18.9	27.4	32.4	31.0	36.9	25.2	-	-	-	Triplicate Site with SLO 34 Relocated, SLO 35 Relocated and SLO 36 Relocated - Annual data provided for SLO 36 Relocated only
SLO 35 Relocated	496447	179117	35.5	14.2	30.3	29.3	20.2	22.7	24.6	28.3	31.8	34.0	30.8	23.9	-	-	-	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	38.4	28.3	30.6	29.2	19.8	23.8	23.5	25.6	25.4	27.3	32.6	25.9	27.8	21.6	-	Triplicate Site with SLO 34 Relocated, SLO 35 Relocated and SLO 36 Relocated -

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
																		Annual data provided for SLO 36 Relocated only
SLO 37	497105	180081	44.5	18.9	29.4	38.0	26.4	25.5	19.1	26.1	38.0	32.8	36.9	14.7	29.2	22.7	22.9	
SLO 38	498071	179949		33.0	24.8		20.1	23.6	14.0	23.4	25.0	26.6	31.4	10.9	23.3	18.1	-	
SLO 39	501734	177733	29.9	31.2	23.0	30.6	23.1	22.6	27.7	26.0	24.7	27.8	29.7	12.8	25.8	20.1	-	
SLO 40	498394	179849	49.1		37.1	43.5	32.5	36.4	16.3	34.7	40.4	39.7	43.5		37.3	29.1	-	
SLO 41	493960	181355														-	-	
SLO 42	493493	181378														-	-	
SLO 43	496533	180175		39.5	28.6	36.1	31.8	27.4	13.9	28.7	27.8	31.4	33.7		29.9	23.3	-	
SLO 44	498961	180113	36.4	35.2	25.5	25.4	19.2	20.8	19.2	23.1	26.3	29.6	39.1	20.7	26.7	20.8	-	
SLO 45	501658	177781														-	-	
SLO 46	497467	179971	36.5	43.4	31.5			30.5	14.7	33.6	37.9	35.8	37.3	25.6	32.7	25.5	-	
SLO 47	497326	180003	36.6	29.1	26.9	31.7	23.0	24.5	14.2	27.0	26.4	31.5	34.6	19.7	27.1	21.1	-	
SLO 48	497960	179243														-	-	
SLO 49	497397	179471	41.3	37.9	31.2	30.7	30.6	29.0	24.9	30.5	31.6	31.0	34.8	16.2	30.8	24.0	-	
SLO 50	496377	179929	47.3	39.1	37.4	38.9	37.7	32.8	16.3	32.3	39.3	34.0	38.3	25.5	34.9	27.2	-	
SLO 51	501014	179316	42.2	38.6	28.4	32.4	27.4	28.3	16.8	27.2	26.9	30.2	33.8	17.8	29.2	22.7	-	
SLO 52	501161	179538	39.6	30.8	27.0	26.0	27.4	26.4	22.5	24.8	29.2	31.5	30.5	19.2	27.9	21.7	-	
SLO 53	501208	178799	46.1	36.5	37.1	37.2	31.8	26.8	18.7	30.6	34.6	29.3	38.4	19.1	32.2	25.1	-	
SLO 54	501256	179067	38.5	26.4	22.7	28.8	20.6	19.0	11.5	25.8	29.8		23.8	14.7	23.8	18.5	-	
SLO 55	501891	178954	37.3	32.7	23.1	26.6	19.8	15.0	17.8	18.5	25.6	23.0	30.8	17.2	24.0	18.7	-	
SLO 56	502241	178679	32.9	34.5	31.6	28.0	23.6	21.9	23.4	24.1	24.7	27.6	33.2	16.0	26.8	20.9	-	

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 57	469528	180171	46.3	43.7	29.2	40.3	37.2	34.0	21.1	30.3	33.1	36.9	41.5	14.4	-	-	-	Triplicate Site with SLO 57, SLO 58 and SLO 59 - Annual data provided for SLO 59 only
SLO 58	469528	180171	40.9	46.5	32.8	38.6	36.1	32.3	24.8	32.4	36.3	36.5	42.4	22.3	-	-	-	Triplicate Site with SLO 57, SLO 58 and SLO 59 - Annual data provided for SLO 59 only
SLO 59	469528	180171	46.3	44.1	33.5	36.4	36.9	32.9	20.5	34.5	34.8	38.8	40.6		34.7	27.0	-	Triplicate Site with SLO 57, SLO 58 and SLO 59 - Annual data provided for SLO 59 only
SLO 60	498413	179804	40.9	27.1	32.3	37.9	29.3	30.4	19.9	29.4	30.8	37.2		27.9	-	-	-	Triplicate Site with SLO 60, SLO 61 and SLO 62 - Annual data provided for SLO 62 only
SLO 61	498413	179804	41.8	37.8	34.3	38.6	31.1	30.5	19.8	29.7	34.8	35.6	40.5	28.7	-	-	-	Triplicate Site with SLO 60, SLO 61 and SLO 62 - Annual data provided for SLO 62 only
SLO 62	498413	179804	34.5	33.4	33.7	34.7	32.3	28.8	29.7	29.5	33.6	39.0	42.8	30.3	33.1	25.8	-	Triplicate Site with SLO 60, SLO 61 and SLO 62 - Annual data provided for SLO 62 only
SLO 63	501643	177753	42.2	47.0	40.7	48.0	39.8		27.6		27.7	38.4	34.8	19.5	-	-	-	Triplicate Site with SLO 63, SLO 64 and SLO 65 - Annual data provided for SLO 65 only
SLO 64	501643	177753	42.7	37.4	38.8	22.6	39.7		26.3		30.7	36.1	38.1	19.6	-	-	-	Triplicate Site with SLO 63, SLO 64 and SLO 65 - Annual data provided for SLO 65 only
SLO 65	501643	177753	41.3	39.1	39.1	33.8	39.4		21.5		31.8	37.0	38.9	19.1	34.6	27.0	-	Triplicate Site with SLO 63, SLO 64 and SLO 65 - Annual data provided for SLO 65 only
SLO 66	496146	179259	31.9	31.5	31.8	21.3	22.2	24.6	21.4	27.1	30.2	32.2	27.7	16.4	-	-	-	Triplicate Site with SLO 66, SLO 67 and SLO 68 - Annual data provided for SLO 68 only
SLO 67	496146	179259	30.6	31.2	33.5	32.0	23.3	25.3	18.9	27.4	31.8	32.0	31.3	19.5	-	-	-	Triplicate Site with SLO 66, SLO 67 and SLO 68 - Annual data provided for SLO 68 only
SLO 68	496146	179259	33.3	30.2	29.8	30.1	22.6	23.2	25.5	29.4	30.1	30.5	29.1	18.6	27.4	21.4	-	Triplicate Site with SLO 66, SLO 67 and SLO 68 - Annual data provided for SLO 68 only
SLO 69	496223	179217	37.9	29.0	28.6	27.2	22.3	22.7	24.0	30.7	34.1	30.0	35.0		-	-	-	Triplicate Site with SLO 69, SLO 70 and SLO 71 - Annual data provided for SLO 71 only
SLO 70	496223	179217	35.2	27.7	29.1	28.6	21.8	23.2	23.8	26.3	29.4	32.3	36.1		-	-	-	Triplicate Site with SLO 69, SLO 70 and SLO 71 - Annual data provided for SLO 71 only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
SLO 71	496223	179217	36.8	35.7		26.0	21.8	23.0	25.2	27.3	30.6	30.4	31.8		28.9	22.5	-	Triplicate Site with SLO 69, SLO 70 and SLO 71 - Annual data provided for SLO 71 only
SLO 72	496225	179213	38.8	34.7	28.4	19.6	21.9	23.4	26.0	28.9	31.1	33.7	36.3	23.8	-	-	-	Triplicate Site with SLO 72, SLO 73 and SLO 74 - Annual data provided for SLO 74 only
SLO 73	496225	179213	33.7	33.2	28.5	30.1	21.2		27.9		32.7	28.9	34.1	22.4	-	-	-	Triplicate Site with SLO 72, SLO 73 and SLO 74 - Annual data provided for SLO 74 only
SLO 74	496225	179213	37.9	33.4	28.8	22.9	21.4	23.7	25.4	23.1	29.0	32.1	23.5	22.7	28.1	21.9	-	Triplicate Site with SLO 72, SLO 73 and SLO 74 - Annual data provided for SLO 74 only
SLO 75	496227	179207	32.2	22.9	26.8	27.7	20.4	22.7	25.4	27.5	27.7		31.4	18.5	-	-	-	Triplicate Site with SLO 75, SLO 76 and SLO 77 - Annual data provided for SLO 77 only
SLO 76	496227	179207	36.0	30.8	26.5	20.0	19.5	22.5	25.0	25.3	28.7		30.4	20.0	-	-	-	Triplicate Site with SLO 75, SLO 76 and SLO 77 - Annual data provided for SLO 77 only
SLO 77	496227	179207	35.6	30.7	25.5	20.1	20.4	22.7	28.6	25.0	27.8		28.4	16.1	25.7	20.0	-	Triplicate Site with SLO 75, SLO 76 and SLO 77 - Annual data provided for SLO 77 only
SLO 78	496229	179204	36.2	27.7	30.4	25.2	23.2	25.0	25.9	30.1	32.1	33.4	29.9	21.8	-	-	-	Triplicate Site with SLO 78, SLO 79 and SLO 80 - Annual data provided for SLO 80 only
SLO 79	496229	179204		34.4	28.3	24.7	22.5	24.4	25.6	29.0	29.6	31.5	28.4	20.5	-	-	-	Triplicate Site with SLO 78, SLO 79 and SLO 80 - Annual data provided for SLO 80 only
SLO 80	496229	179204	37.4	31.2	26.2	29.4	23.0	25.2	25.9		31.9	32.8	31.1	22.4	28.4	22.1	-	Triplicate Site with SLO 78, SLO 79 and SLO 80 - Annual data provided for SLO 80 only
SLO 81	496232	179199	35.8	33.0	29.5	26.9	21.1	22.4	28.2	37.6	31.2	31.7	27.9	23.3	-	-	-	Triplicate Site with SLO 81, SLO 82 and SLO 83 - Annual data provided for SLO 83 only
SLO 82	496232	179199	34.0	33.5	29.0	23.7	21.9	20.8	25.6	27.5	28.9	28.7	35.5	21.2	-	-	-	Triplicate Site with SLO 81, SLO 82 and SLO 83 - Annual data provided for SLO 83 only
SLO 83	496232	179199	35.7	35.8	27.0	25.5	22.5	24.8	26.6	28.0	29.5	30.6		24.7	28.4	22.1	-	Triplicate Site with SLO 81, SLO 82 and SLO 83 - Annual data provided for SLO 83 only
SLO 84	496234	179195	36.6	19.7	27.4	28.9	22.6	20.8	27.5	29.4	32.3	30.0	35.3	22.9	-	-	-	Triplicate Site with SLO 84, SLO 85 and SLO 86 - Annual data provided for SLO 86 only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
SLO 85	496234	179195	34.4	37.8	29.7	29.7	23.2	23.6	25.2		32.0	32.0	35.2	23.4	-	-	-	Triplicate Site with SLO 84, SLO 85 and SLO 86 - Annual data provided for SLO 86 only
SLO 86	496234	179195	33.1	34.8	28.2	30.6	21.9	23.7	19.7		32.9	27.4	38.9	24.0	28.7	22.4	-	Triplicate Site with SLO 84, SLO 85 and SLO 86 - Annual data provided for SLO 86 only
SLO 87	496236	179191		16.6			19.8	18.6	26.4	28.0	25.7	29.5	34.5	23.1	-	-	-	Triplicate Site with SLO 87, SLO 88 and SLO 89 - Annual data provided for SLO 89 only
SLO 88	496236	179191	23.5	32.3			20.7	17.9	25.7	29.1	31.6	36.1	37.6	24.1	-	-	-	Triplicate Site with SLO 87, SLO 88 and SLO 89 - Annual data provided for SLO 89 only
SLO 89	496236	179191		27.8	29.4		21.4	22.4	26.5	27.7	31.6	30.8	36.0	23.1	26.8	20.9	-	Triplicate Site with SLO 87, SLO 88 and SLO 89 - Annual data provided for SLO 89 only
SLO 90	496238	179186	23.9	24.2	29.4	30.6	21.2	21.3	26.2	25.1		36.2	32.8	24.5	-	-	-	Triplicate Site with SLO 90, SLO 91 and SLO 92 - Annual data provided for SLO 92 only
SLO 91	496238	179186	33.3	34.4	29.4	29.2	21.8	23.7	25.5	36.4		25.5	31.7	19.7	-	-	-	Triplicate Site with SLO 90, SLO 91 and SLO 92 - Annual data provided for SLO 92 only
SLO 92	496238	179186	32.9	32.0	29.1	25.8	22.2	22.8	26.1	29.3		29.3	31.5	22.6	27.6	21.5	-	Triplicate Site with SLO 90, SLO 91 and SLO 92 - Annual data provided for SLO 92 only
SLO 93	497433	179092	33.3	33.5	31.5	29.2	18.8	21.6	24.2	25.2	26.3	30.9	30.3	25.6	-	-	-	Triplicate Site with SLO 93, SLO 94 and SLO 95 - Annual data provided for SLO 95 only
SLO 94	497433	179092	35.5	16.6	28.6	27.4	16.6	21.8	13.1	23.1	29.7	32.2	26.9	22.3	-	-	-	Triplicate Site with SLO 93, SLO 94 and SLO 95 - Annual data provided for SLO 95 only
SLO 95	497433	179092	28.3	10.1	29.0	15.6	18.6	22.0		26.7	27.7	29.0	31.9	18.5	25.0	19.5	-	Triplicate Site with SLO 93, SLO 94 and SLO 95 - Annual data provided for SLO 95 only
SLO 96	503272	176597		30.9	22.4		22.3		25.7	25.3	23.9			16.3	23.8	20.7	-	
SLO 97	497725	179360	38.3	36.3	32.0	31.9	26.8	25.9	19.7	27.9	26.5		31.7	10.2	27.9	21.8	-	
SLO 98	503527	176823														-	-	
SLO 99	503510	176806														-	-	

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 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	31.8	39.9	31.7	30.6	27.2	26.2	20.3	24.9	30.1	30.7	45.6	21.7	30.1	23.4	-	
SLO 113	497079	181088	19.0	37.4	29.2	24.9	20.5	19.9	20.5	25.3	28.8	29.1	32.4	15.6	25.2	19.6	-	
SLO 114	497677	180876		36.2	30.1	34.9	27.4	24.9	15.2	25.5	28.0	27.2	30.6	21.0	27.4	21.3	-	
SLO 115	497671	180866	40.9		30.1	19.5		24.4	15.8	25.7	29.4	28.3	37.0	19.9	27.1	21.1	-	
SLO 116	498103	180842	43.0	39.2	31.4	30.2	22.8	24.9	21.9	24.9	25.6	28.1	36.3	23.5	29.3	22.8	-	
SLO 117	498112	180857	31.0	31.7	28.4	21.7	21.6	22.3		23.8		28.7	28.5	20.0	25.8	20.1	-	
SLO 118	497097	179521	36.5	41.0	25.6	22.7	25.7	27.6	11.1		32.3	36.0	29.5	23.6	28.3	22.1	-	
SLO 119	497104	179511		27.1	23.1	33.2	23.8		25.6	29.2		31.1	25.2	22.2	26.7	20.8	-	
SLO 120	497013	179870	40.1	37.5	25.0	30.9	23.8	22.8	32.6	23.9	30.4	32.6	34.7	18.5	29.4	22.9	-	

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 121	497004	179874	49.3	54.5	40.5	38.9	31.7	31.3	18.6	36.6	44.7	42.7	39.2	31.6	38.3	29.8	-	
SLO 122	496167	179975	35.0	40.2	26.6	36.0	26.0	24.6	25.1	28.1	30.5	32.9	35.1	22.4	30.2	23.5	-	
SLO 123	496184	179950	32.5	10.6	17.0	30.8	22.8	21.4	22.6	19.9	23.9	28.4	29.7		23.6	18.4	-	
SLO 124	501150	179502		33.2	29.8	28.8	25.3	23.5			28.9	29.0	28.2	18.0	-	-	-	Triplicate Site with SLO 124, SLO 125 and SLO 126 - Annual data provided for SLO 126 only
SLO 125	501150	179502		28.3	22.0	32.6	24.6	24.7	17.5	25.4	29.2	28.2	27.9	17.8	-	-	-	Triplicate Site with SLO 124, SLO 125 and SLO 126 - Annual data provided for SLO 126 only
SLO 126	501150	179502		33.8	27.2	27.5	26.2	26.8	18.7	23.9	27.2	28.3	33.5	20.3	26.0	20.3	-	Triplicate Site with SLO 124, SLO 125 and SLO 126 - Annual data provided for SLO 126 only
SLO 127	502828	176996									40.7	35.8	34.1	19.7	32.6	24.1	-	
SLO 128	502884	176967									37.6	33.9	36.8	16.4	31.2	23.0	-	
SLO 129	502884	176954									26.5	29.4		13.2	23.0	17.9	-	
SLO 130	503291	176709									34.7	40.2	37.9	20.1	33.2	24.6	-	
SLO 131	503522	176671									37.9	39.8			-	-	-	

☒ **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 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

C.1 New or Changed Sources Identified Within Slough During 2023

Slough Borough Council has not identified any new major sources relating to air quality within the reporting year of 2023. There have however been changes that have affected the road traffic vehicle volumes which may have impacted the results.This includes increasing capacity on the road network resulting from new developments, or construction periods resulting in traffic disruption. Although not all fully operational, it is expected that the construction phase also contributes to baseline creep. It should be noted also that traffic levels have begun to decrease in some areas in Slough, which may originate from travel behaviours initiated during the pandemic, where remote working was 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. It should be noted however that maintenance of automatic traffic counters located in Slough has reduced since the S114 notice in 2021, therefore the association between air quality and traffic levels will be difficult to judge using this data in future unless funding to cover maintenance is obtained.

C.2 Additional Air Quality Works Undertaken by Slough Borough Council During 2023

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, to 2022 (2019 has not been included due to monitoring starting too late in the year to be annualised). Figure C.1 shows the three year trend at the three key receptor areas and Figure C.2 shows concentrations at each identified receptor. The graphs indicate that concentrations in 2020 were low, ranging from 22.6μg/m^3 to 24.7μg/m^3. In 2021, concentrations dropped by -2.1μg/m^3 on average, likely as a result from the pandemic as with other sites in the borough. From 2021 to 2022, concentrations worsened at all sites by +2.1μg/m^3 on average, with the greatest increase observed at HE Receptor 6 (Spackmans Way, SLO 81, SLO 82 and SLO 83) by

+2.9µg/m^3 and the smallest increase at HE Receptor 10 (Winvale, SLO 93, SLO 94 and SLO 95) by -0.9µg/m^3. All sites have seen a decrease in NO_2 in 2023 by -2.0µg/m^3 on average (ranging from -1.1µg/m^3 to -2.6µg/m^3).As of 2023, the highest concentration is 22.5µg/m^3, therefore all sites are far below the AQO. It is recommended that one additional year of data is collected as a minimum, to determine whether 2023 data is anomalously low, or a realistic representation of the direction of travel for NO_2 levels associated with the scheme.

C.2.2 Bus Lane Monitoring

The 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. All sites fall below the AQO for NO_2 but exceed the WHO 2021 AQGs. All diffusion tube sites show a decrease in NO_2 concentrations from 2022 to 2023. The highest concentrations are observed at Ledgers Road (b) at 29.8µg/m^3, after being close to within 10% of the AQO the previous year (35.7µg/m^3). The average concentration across all sites is 22.2µg/m^3 and currently there is no evidence that the bus lane is resulting in a worsening of air quality at these locations.

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, 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 such, the following sites were installed:

- King John's Palace, Park Street (SLO 127)
- Park Street (north) (SLO 128)
- Park Street (south) (SLO 129)
- Bath Road (a) (SLO 130)
- Bath Road (b) (SLO 131)

Full datasets across the new sites were only achieved for September and October 2023. Unfortunately, thefts in November and December resulted in two sites (SLO 129 and SLO 131) having insufficient data capture to provide an annualised average. Four months of data was obtained for the remaining three sites, therefore these were annualised and are presented in Table C.3. It should be noted however that annualised concentrations are less reliable than monitored datasets so should be treated with caution.

The highest concentration was recorded at Bath Road (a) (SLO 130), at 24.6µg/m^3. As there is only one dataset currently, which has also been annualised, further years of data will be required to determine whether Colnbrook should be considered an area of concern in regards to NO_2 concentrations.

C.3 Air Quality Management Area Status Review

A review of AQMA status has been completed. Defra have clarified that due to the effects of COVID-19 on traffic levels and therefore 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. Each AQMA and the 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 there have been no

exceedances of the AQO within AQMA 1 since 2017, the Council will prepare to revoke this AQMA in 2024.

- **AQMA 2: Approaching Compliance - Retain**
  The first year that all sites in AQMA 2 complied with the AQO for NO_2 was 2020. Prior to this, concentrations were high, particularly on London Road in 2019 (49.4µg/m^3 at SLO 18). Excluding COVID-19 years of 2020 and 2021, the first year of compliance was therefore 2022, which has been maintained in 2023. As such, revocation of AQMA 2 can only be considered in 2025, if the subsequent years of data show concentrations below 36µg/m^3.
- **AQMA 3 + Extension: Approaching Compliance - Retain.**
  Some monitoring sites, such as Tuns Lane (SLO 23), have fallen below 10% of the AQO for over five years, whereas others such as Tuns Lane (B) (SLO 50) have only reached compliance as a result of the pandemic. The first year of compliance is therefore 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. 2023 represents the second year of compliance. As such, the earliest year that revocation can be considered is 2025.
- **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 site is within 10% of the AQO, 2022 cannot be considered a year of compliance for AQMA 4. The earliest that AQMA 4 can be considered for revocation is therefore 2026.

C.4 Factors Influencing Air Quality During 2023

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.4 shows traffic count data (monthly average daily traffic flows) from 2018 to 2023. 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 has produced more varied results. It should be noted that due to the financial position of the Council, automatic traffic counters are not being maintained to the same degree as prior to 2021. 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 Figure C.5. This includes traffic counters AS001, AS005 and AS012. 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).

Overall, traffic flows were lowest during the pandemic, with lowest flows in April 2020. Traffic levels recovered during the remainder of 2020, before dipping again in January 2021, in line with the national lockdown measures implemented during the pandemic. By March 2021 however, traffic levels had recovered but remained slightly below pandemic levels.

Average daily traffic flows at the A4 Stow Road (AS009) traffic counter were 18,810 in 2023, representing a reduction of 1,973 from 2022 (average 20,783). Traffic flows remained relatively stable during the first half of the year with a gradual increase (averaging at 20,626), until flows dropped from 21,432 in June, to 17,319 in July. This level was maintained for the remainder of the year.

Average daily traffic flows at London Road west of junction 5 (AS011) in comparison saw a steep increase from January to March 2023 peaking at 34,015, followed by a rapid fall to 25,847 by August 2023. A small increase occurred in September 2023 and levels remained low relative to March levels for the remainder of the year.

The traffic counter on Bath Road / Walpole Road (AS022) showed a similar pattern of results to AS009, with a gradual increase at the start of the year, dropping sharply after June 2023 from 25,718, to 22,913 by August 2023. Traffic flows gradually increased up until November at 24,833, before dropping in December to 23,306.

The drops 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, however the drop seen at AS009 is similar to the levels seen during January 2021 and it is unlikely that holidays are the sole reason for this reduction. In addition, the traffic patterns do not appear to correspond with the air quality monitoring data. For example, AS011 has similar average daily traffic flows in 2022 and 2023 at 29,421 and 29,582, respectively, however the nearest monitoring stations (for example Grampian Way – SLO 8, and Brands Hill Triplicate – SLO 63, 64 and 65) show a much lower concentration in 2023 when compared with 2022 (-5.9µg/m^3 and -9.8µg/m^3, respectively). This suggests that there may be other factors which have caused reductions at these locations.

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.

This section provides a summary on weather patterns experienced during 2023 informed by statistics collected by the Met Office[11], which can help to understand the causes of pollution levels in Slough.

The weather in 2023 was predominantly warm and wet, being the second warmest year in the UK since 1884, with an annual mean temperature of 9.97°C (10.03°C in 2022). Eight of the 12 months of the year were warmer than average, and England had the sixth wettest year since 1836. Eight named storms occurred from August to December, resulting in heavy rain and strong winds. This may explain why concentrations were lower

[11] Climate summaries - Met Office

than usual during the winter months, as strong winds result in greater dispersion of pollutants.

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. Temperatures in December 2023 however were particularly mild following a short cold snap at the beginning of the month, followed by unsettled weather. It is likely that these conditions have caused lower than usual NO_2 levels in December 2023, resulting in an overall lower annual mean for the year.

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

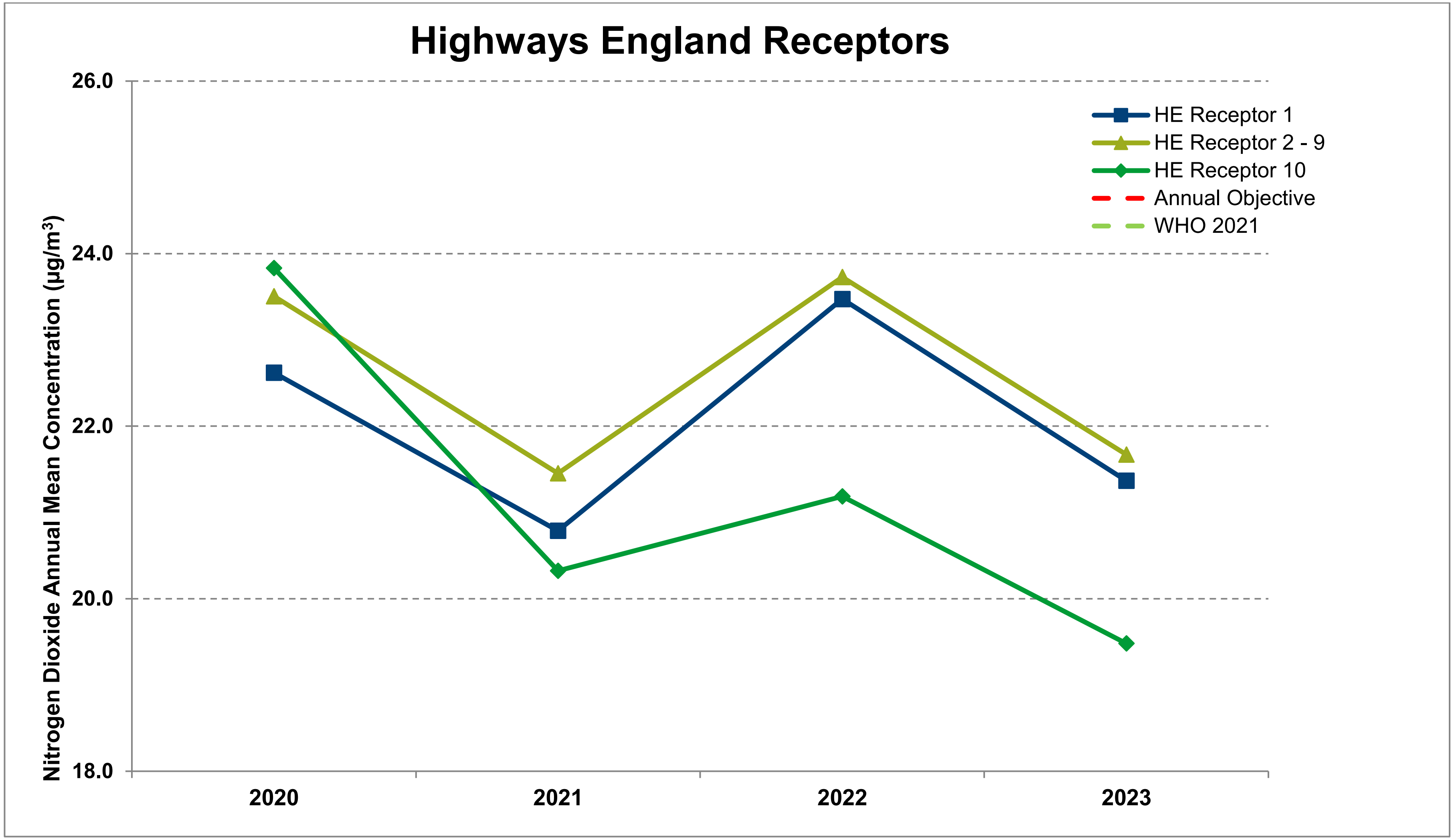


Figure C.2 – Highways England Receptor NO_2 Concentrations, by Individual Receptor

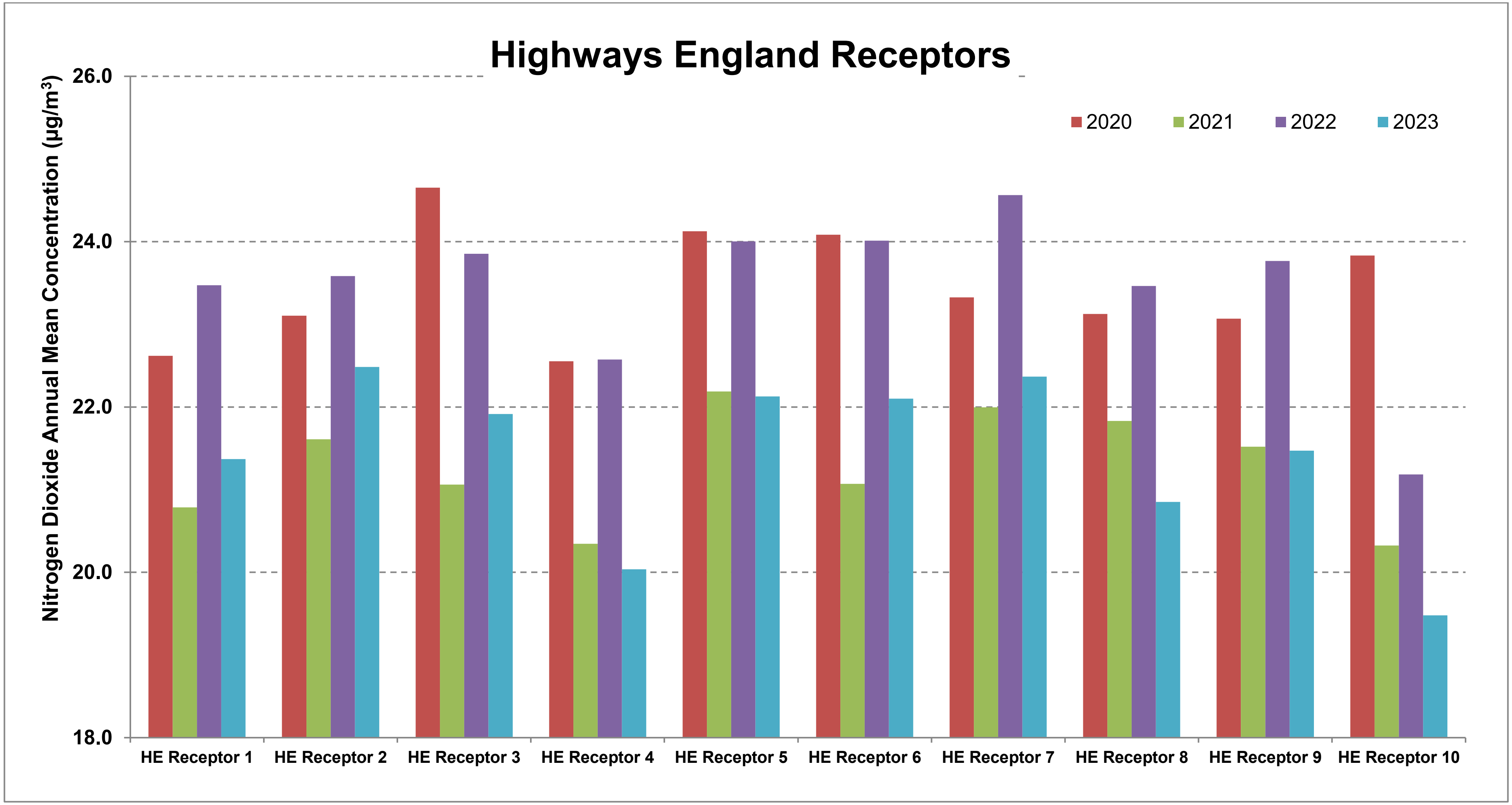


Figure C.3 – Bus Lane Monitoring

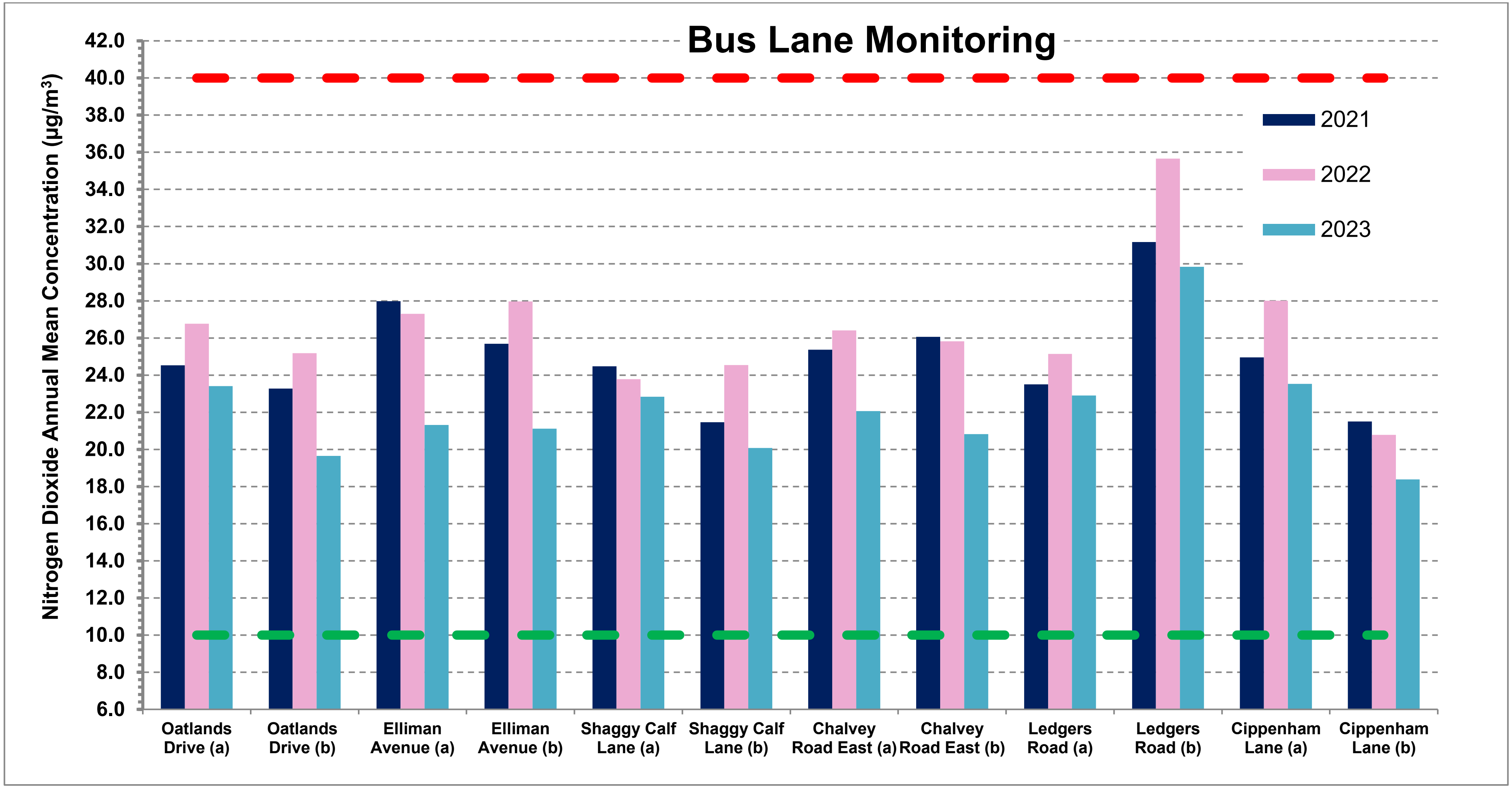


Figure C.4 – Monthly Average Daily Traffic Flows along the A4 Between Huntercombe Roundabout and Brands Hill

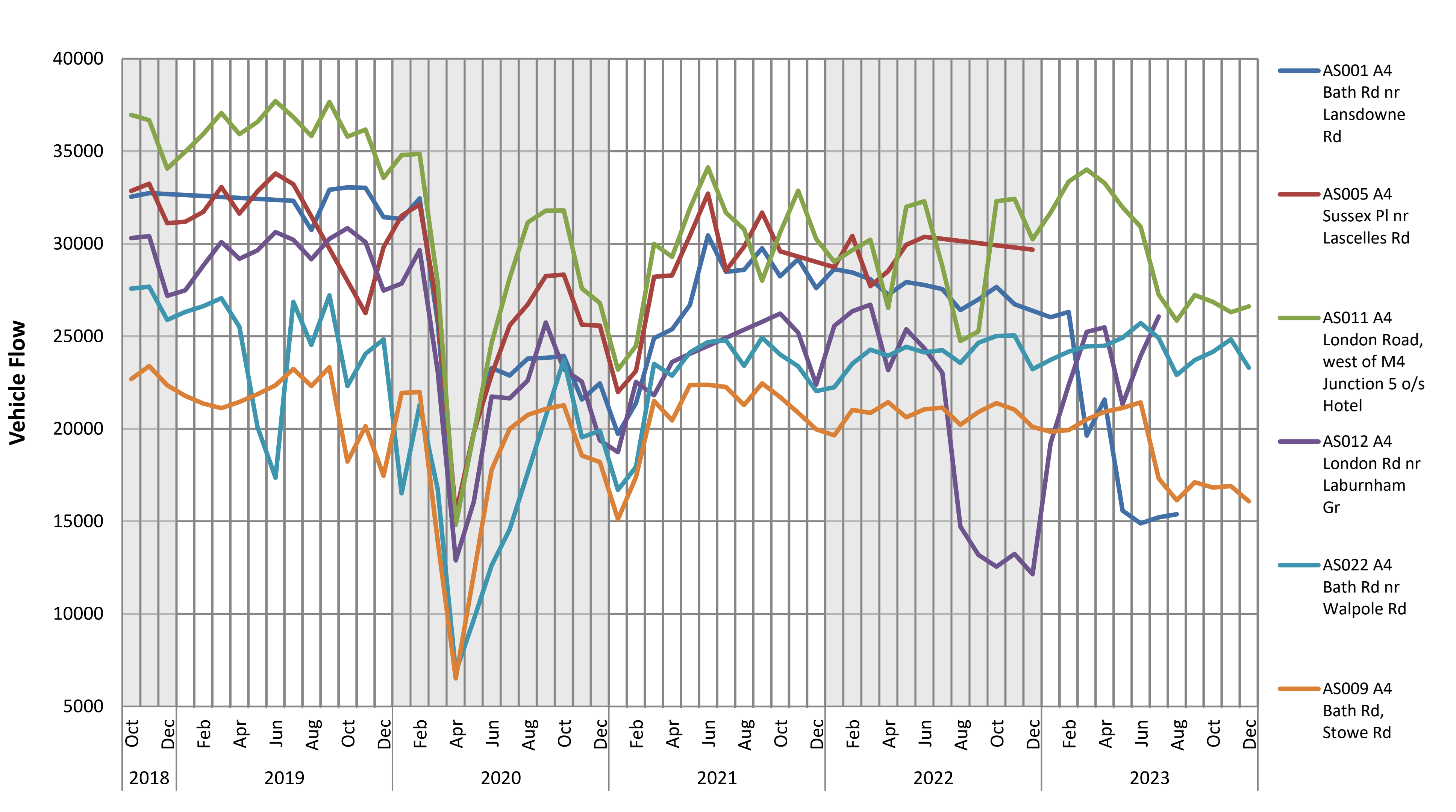


Figure C.5 – Traffic Counter Data Quality Summary

Key

Full Data Capture

Partial Data Capture

No Data Capture

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

C.5 QA/QC of Diffusion Tube Monitoring

During 2023, Slough Borough Council used services provided by SOCOTEC (Didcot) for the supply and analysis of diffusion tubes, who was the sole supplier during 2023. The existing contract was implemented in January 2022 and will be in place until December 2024. 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.1. 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 2023 Diffusion Tube Monitoring Calendar (+- 2 days).

Table C.2 shows the rolling averages from the AIR-PT scores for 50% TEA / Acetone laboratories (intervals of five). South Yorkshire Air Quality Samplers no longer provide diffusion tube services, having submitted their final round in October 2021, therefore have been removed from the moving average.

The moving average results indicate that SOCOTEC have consistently performed well in the AIR-PT test, however a lower score in AR045 (scoring 87.5%) between July and August 2021 resulted in a lower rolling average at the start of the dataset. Results from October 2021 to date however indicate that SOCOTEC have consistently scored 100%, therefore Slough Borough Council have confidence that the diffusion tubes are analysed accurately.

Table C.1 – 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	**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**
Round conducted in the period	September – October 2021	January – February 2022	May – June 2022	July – August 2022	September – October 2022	January – February 2023	May – June 2023	July – August 2023	September – October 2023
Aberdeen Scientific Services	100%	100%	100%	100%	100%	0%	100%	100%	75%
Cardiff Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Edinburgh Scientific Services	75%	NR [2]	50%	100%	100%	100%	75%	100%	50%
SOCOTEC	100% [1]	100% [1]	100% [1]	100% [1]	100% [1]	100% [1]	100% [1]	100% [1]	100% [1]
Exova (formerly Clyde Analytical)	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Glasgow Scientific Services	NR [2]	100%	100%	100%	100%	100%	100%	100%	100%
Gradko International	100%	100%	100%	100%	100%	100%	100%	100%	100%
Kent Scientific Services	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]
Lambeth Scientific Services	75%	50%	75%	100%	50%	0%	75%	50%	0%
Milton Keynes Council	100%	75%	100%	100%	100%	50%	75%	100%	100%
Northampton Borough Council	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Somerset Scientific Services	100%	75%	100%	75%	100%	100%	75%	100%	100%
South Yorkshire Air Quality Samplers	100%	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]
Staffordshire County Council, Scientific Services	100%	100%	100%	0%	100%	100%	100%	100%	100%
Tayside Scientific Services (formerly Dundee CC)	100%	NR [2]	NR [2]	100%	100%	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]

[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.2 – Rolling Average AIR-PT Scores for 50% TEA/Acetone Laboratories

Laboratory	AR046	AR049	AR050	AR052	AR053	AR055	AR056	AR058	AR059
Gradko	85	100	100	100	100	100	100	100	100
SOCOTEC	97.5	97.5	97.5	97.5	100	100	100	100	100
Edinburgh Scientific Services	75	81.25	81.25	81.25	81.25	87.5	85	95	85
Lambeth Scientific Services	80	75	75	75	70	55	60	55	35

C.5.1 Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. In 2023, four 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.

Annualisation was undertaken for the following diffusion tube sites:

- Sites which were installed late in 2023: SLO 127, SLO 128 and SLO 130.
- Sites which had a low data capture due to frequent thefts: SLO 96.

Table C.3– 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 Annual Mean	Annualised Annual Mean
SLO 96	1.0456	1.1918	1.1132	1.1169	23.8	26.6
SLO 127	0.8953	1.0561	0.8948	0.9487	32.6	30.9
SLO 128	0.8953	1.0561	0.8948	0.9487	31.2	29.6
SLO 130	0.8953	1.0561	0.8948	0.9487	33.2	31.5

C.5.2 Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2024 ASR 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 2023 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 March 2024, with 28 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.

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

Table C.4 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.78
2022	Local	-	0.78
2021	National	06/22	0.83
2020	Local	-	0.86
2019	Local	-	0.93

Slough Borough Council undertook co-location of diffusion tubes with a continuous analyser at five sites during 2023. The sites and their bias factors are presented below. 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.6.

Table C.5 – 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	11	9	11	11	11
Bias Factor A	0.77 (0.72 - 0.83)	0.74 (0.69 - 0.79)	0.73 (0.69 - 0.77)	0.77 (0.75 - 0.8)	0.76 (0.71 - 0.82)
Bias Factor B	30% (21% - 38%)	36% (27% - 44%)	37% (31% - 44%)	30% (25% - 34%)	31% (22% - 40%)
Diffusion Tube Mean (µg/m^3)	34.0	34.6	36.1	27.9	26.0
Mean CV (Precision)	5.7%	5.3%	4.9%	7.2%	6.9%
Automatic Mean (µg/m^3)	26.2	25.5	26.3	21.5	19.8
Data Capture	99%	98%	99%	98%	97%
Adjusted Tube Mean (µg/m^3)	26(24 - 28)	26(24 - 27)	26(25 - 28)	21(21 - 22)	20(18 - 21)

Table C.6 – Combined Local and National Bias Adjustment

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)
City Of York Council	11	15	12	27.9%	G	**0.782**
City Of York Council	11	22	17	26.8%	G	**0.788**
City Of York Council	9	22	17	33.7%	G	**0.748**
City Of York Council	10	31	25	26.1%	G	**0.793**
Gravesham Borough Council	12	19	15	25.6%	G	**0.796**
Gravesham Borough Council	12	23	19	18.4%	G	**0.844**
Ipswich Borough Council	9	26	20	33.0%	G	**0.752**
Ipswich Borough Council	12	36	27	34.3%	G	**0.744**
North East Lincolnshire Council	12	43	26	61.9%	G	**0.618**
North East Lincolnshire Council	10	13	10	29.1%	G	**0.775**
North East Lincolnshire Council	11	24	21	18.0%	G	**0.848**
Cardiff Council / Shared Regulatory Services	11	41	34	22.2%	G	**0.818**
Torfaen County Borough Council	11	12	9	43.9%	G	**0.695**
East Suffolk Council	12	29	21	38.9%	G	**0.720**
Wrexham County Borough Council	11	17	14	25.2%	G	**0.799**
Horsham District Council	12	21	17	23.5%	G	**0.810**
Horsham District Council	10	25	17	43.5%	G	**0.697**
Horsham District Council	10	23	24	-5.4%	G	**1.058**
North Lincolnshire Council	10	14	11	26.2%	G	**0.792**
Bridgend Council	11	32	27	20.8%	G	**0.828**
Cambridge City Council	12	22	18	24.8%	G	**0.802**
Leeds City Council	10	39	29	32.3%	G	**0.756**
Leeds City Council	10	30	20	48.9%	G	**0.671**
Leeds City Council	12	25	19	30.0%	G	**0.769**
Leeds City Council	11	26	19	40.0%	G	**0.714**
Marylebone Road intercomparison	11	53	38	41.4%	G	**0.707**
Vale Of White Horse District Council	10	22	18	21.2%	G	**0.825**
Wirral Council	11	15	13	16.7%	G	**0.857**
Slough Borough Council	12	34	26	29.8%	G	**0.770**
Slough Borough Council	12	35	26	35.7%	G	**0.737**
Slough Borough Council	12	36	26	37.3%	G	**0.728**
Slough Borough Council	12	28	22	29.8%	G	**0.770**

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)
Slough Borough Council	12	26	20	31.3%	G	**0.762**

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/m³ and 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.7).

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

Table C.7 – Non-Automatic NO_2 Fall off With Distance Calculations (concentrations presented in µg/m³)

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	21.9	20.1	22.6	*Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.*
SLO 28	1.3	0.9	25.7	19.6	26.2	
SLO 37	10.8	9.1	22.7	20.0	22.9	*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 download 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 has been 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

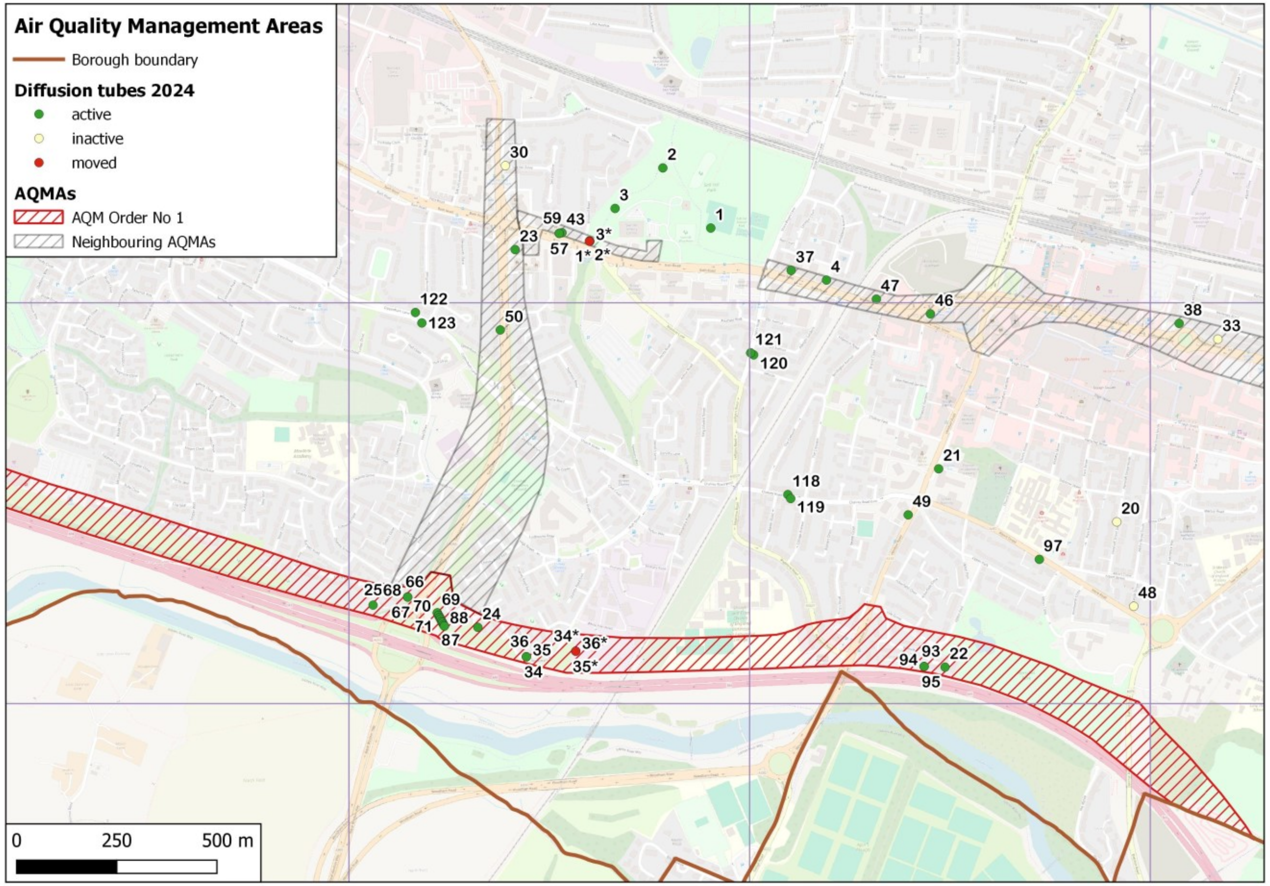


Figure D.2 – Map of Non-Automatic Monitoring Sites in AQMA 1b

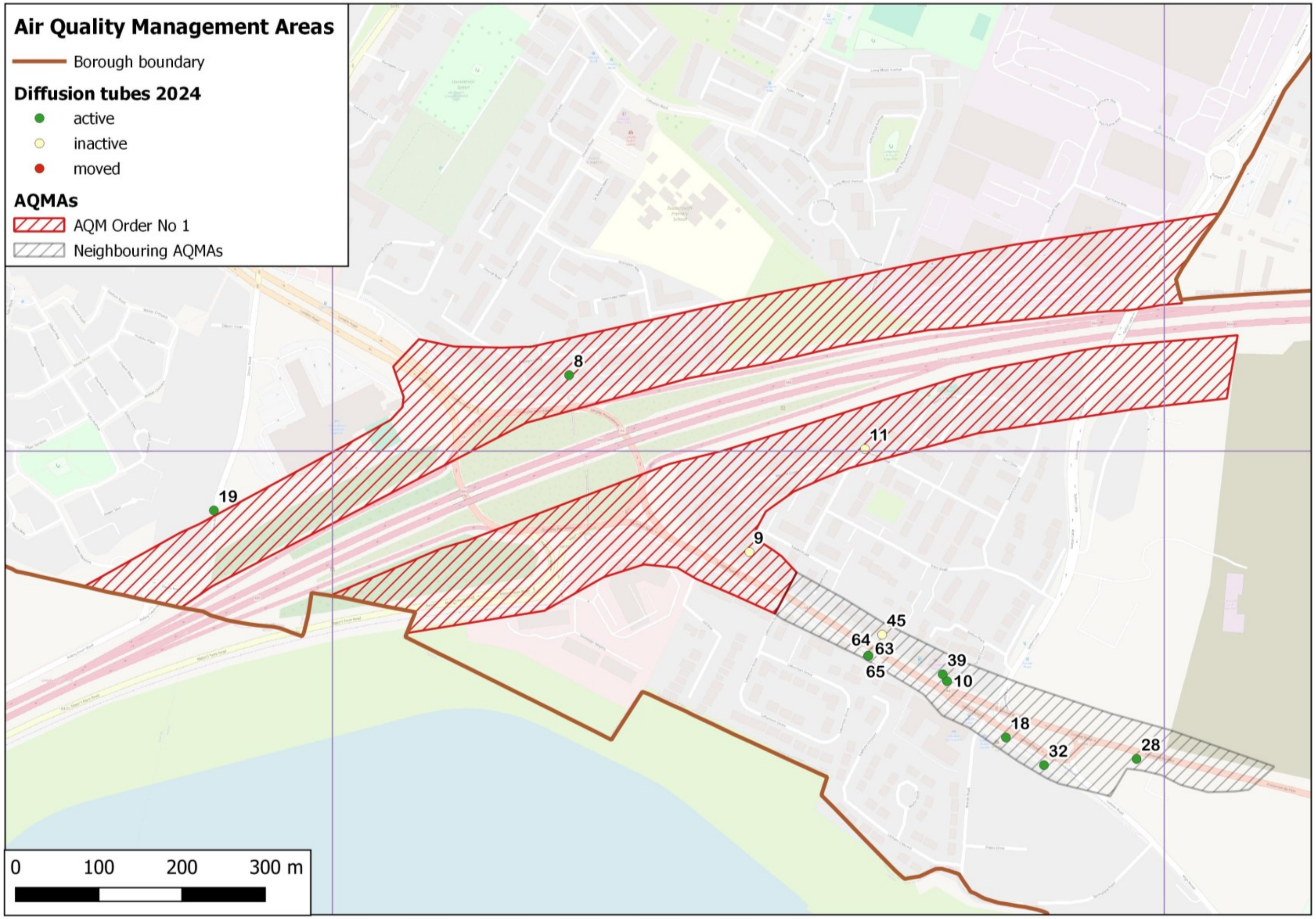


Figure D.3 – Map of Non-Automatic Monitoring Sites in AQMA 2

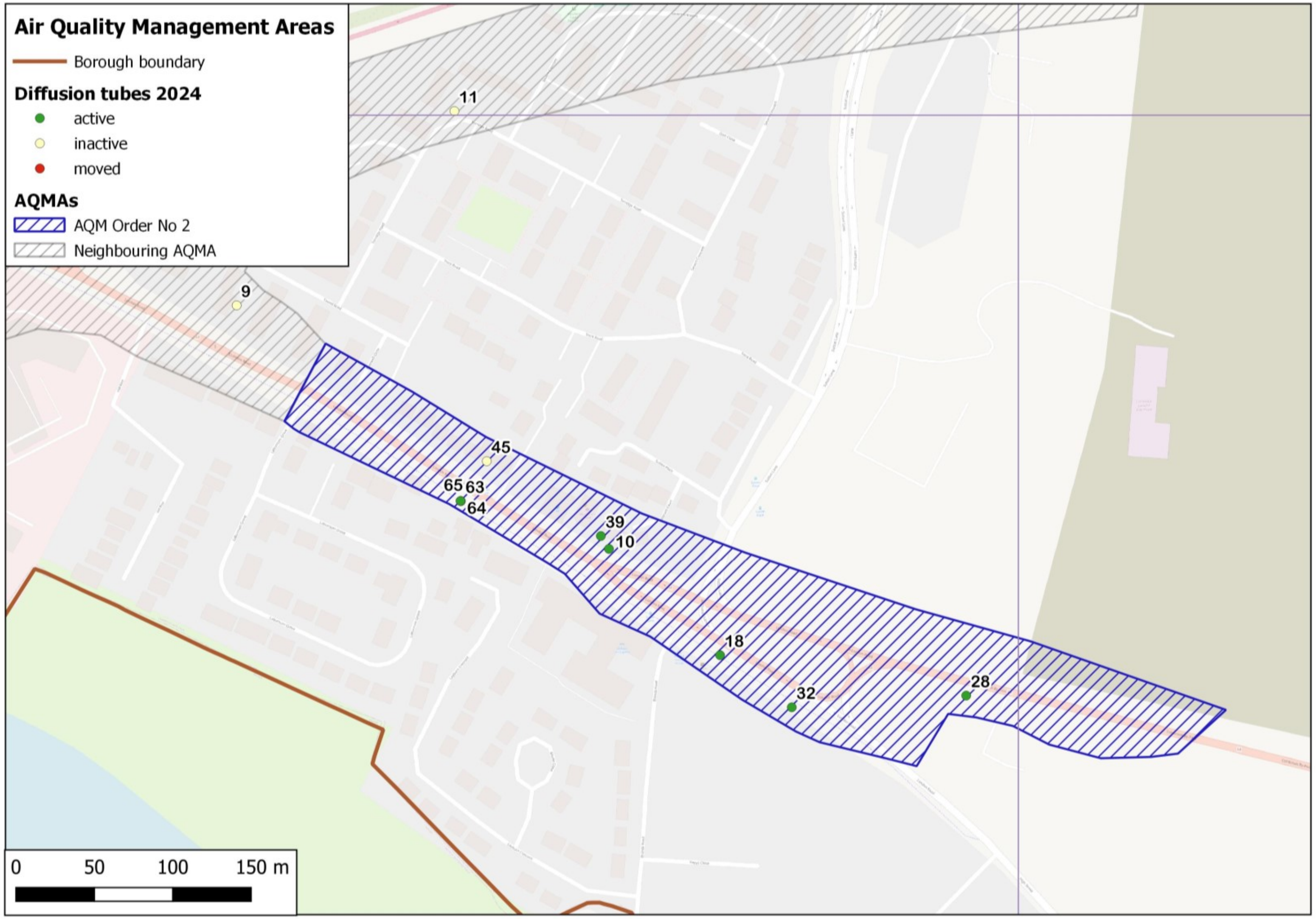


Figure D.4 – Map of Non-Automatic Monitoring Sites in AQMA 3

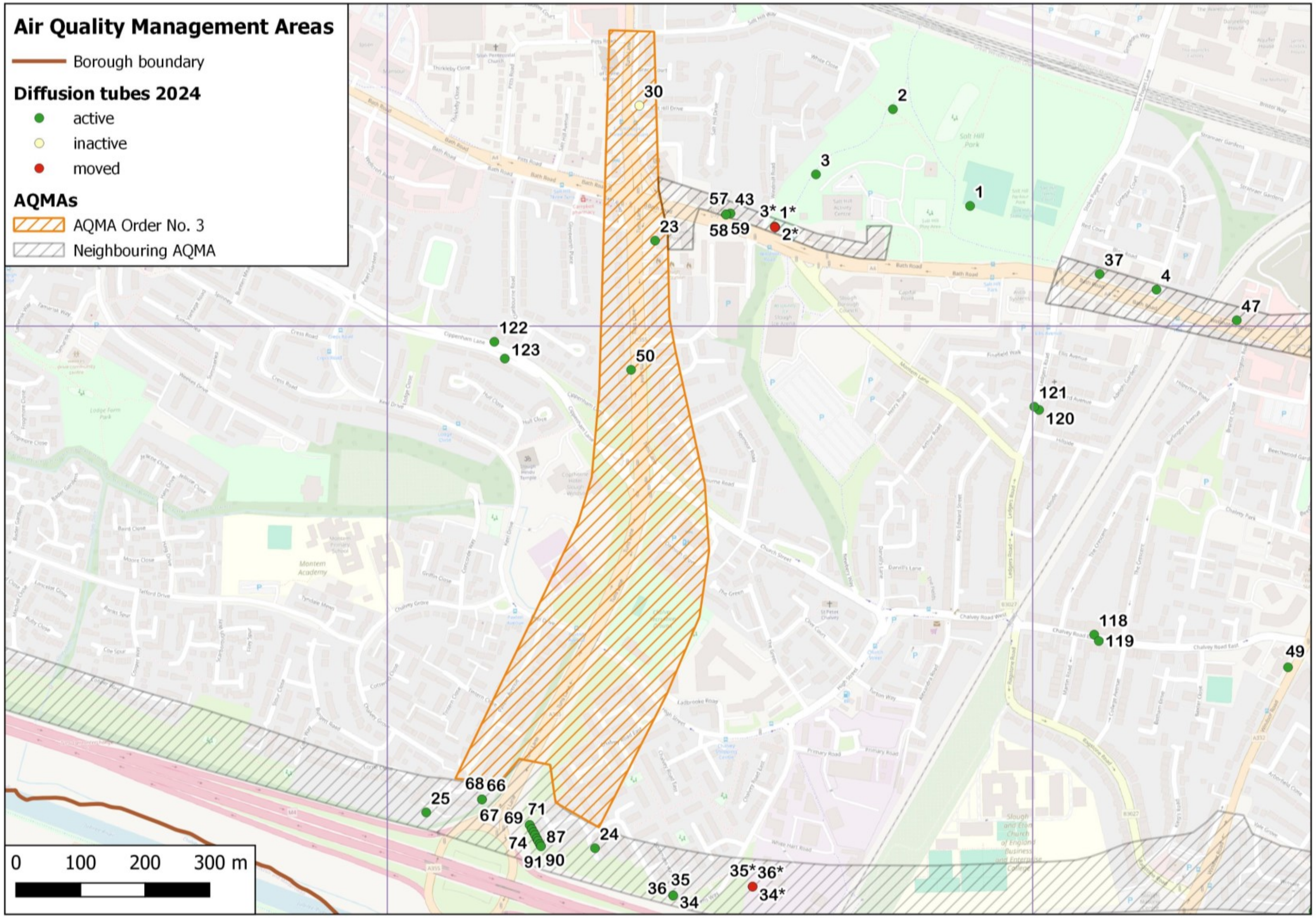


Figure D.5 – Map of Non-Automatic Monitoring Sites in AQMA 3 Extension

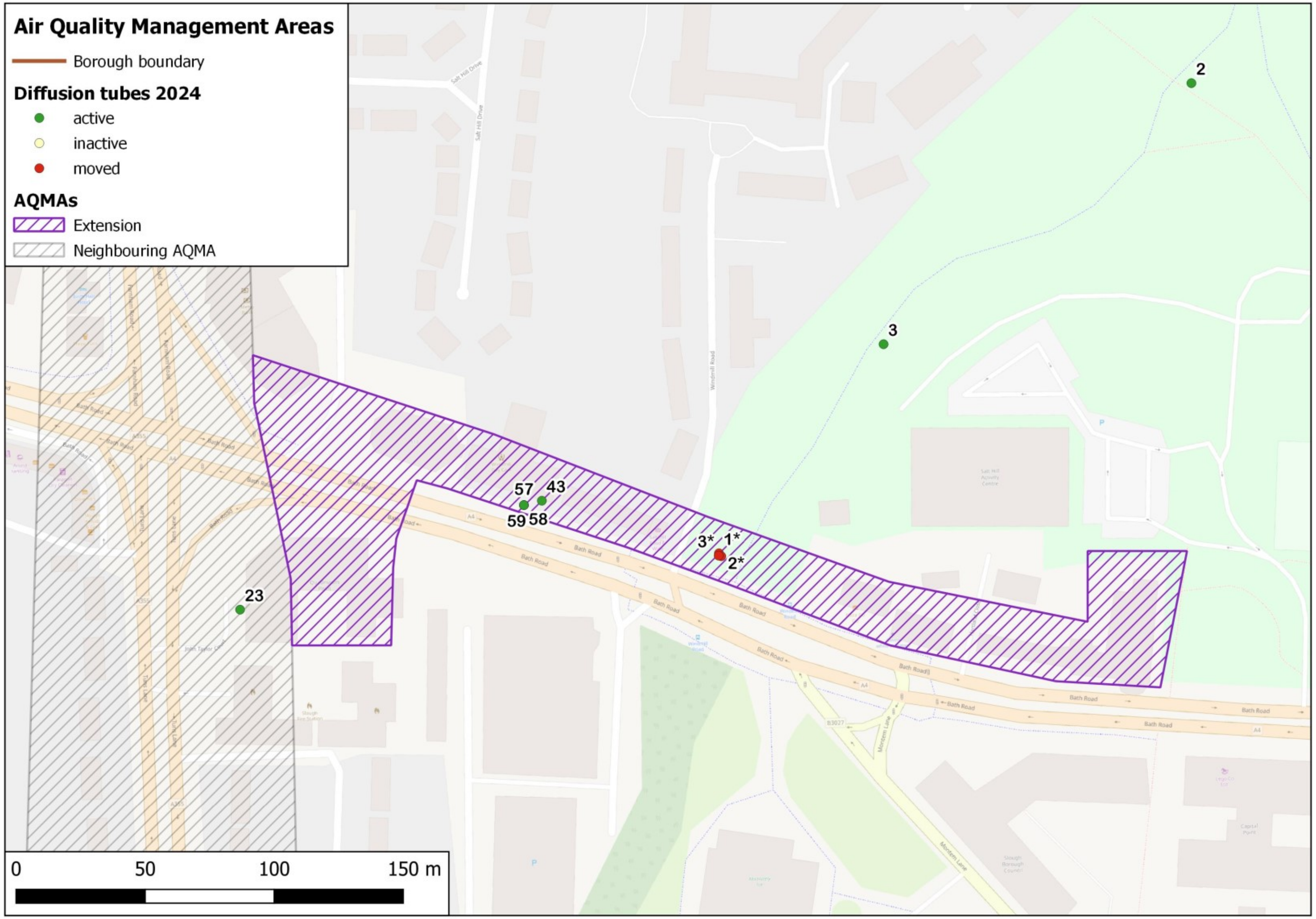


Figure D.6 – Map of Non-Automatic Monitoring Sites in AQMA 4

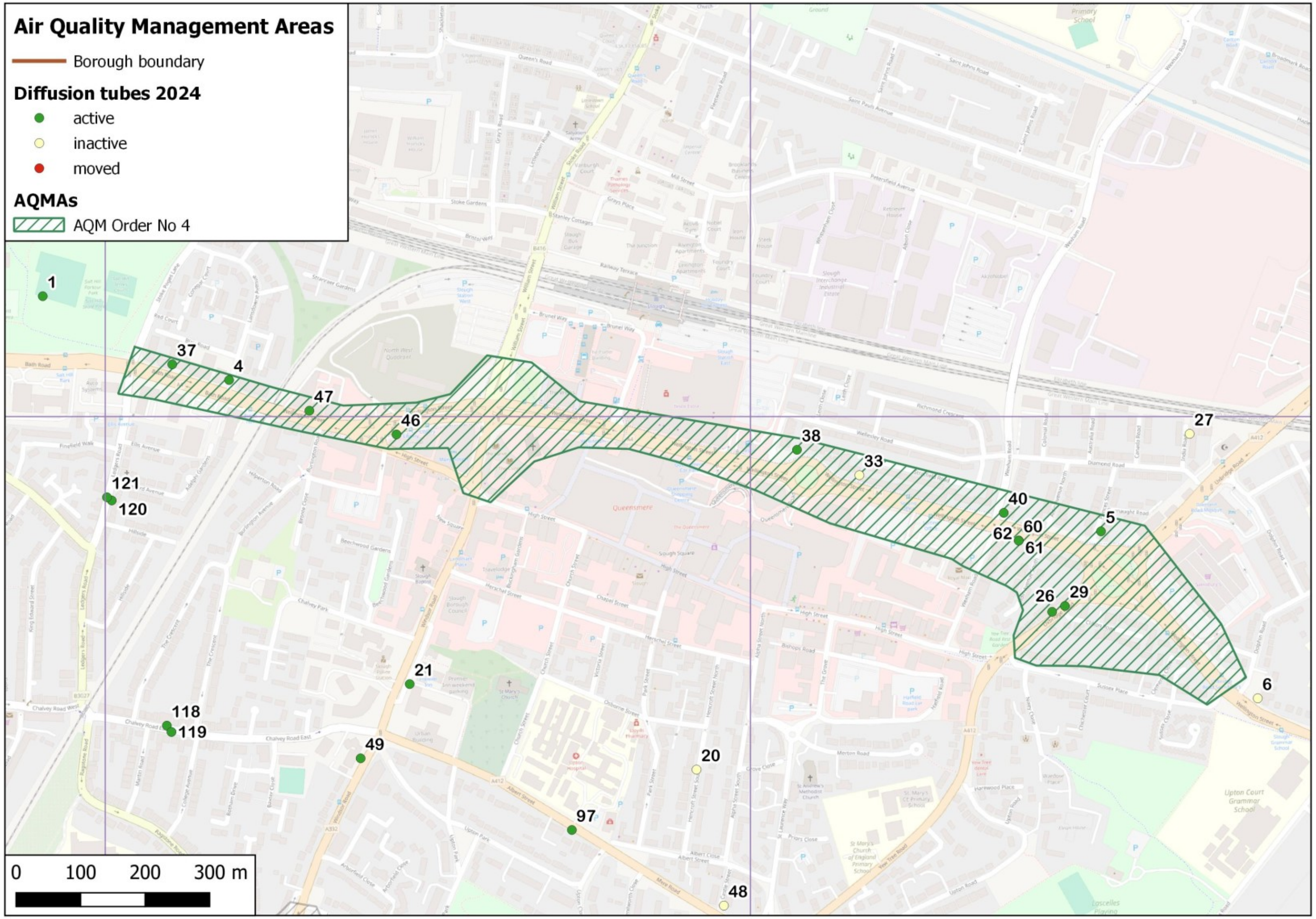


Figure D.7– Map of All Non-Automatic Monitoring Sites

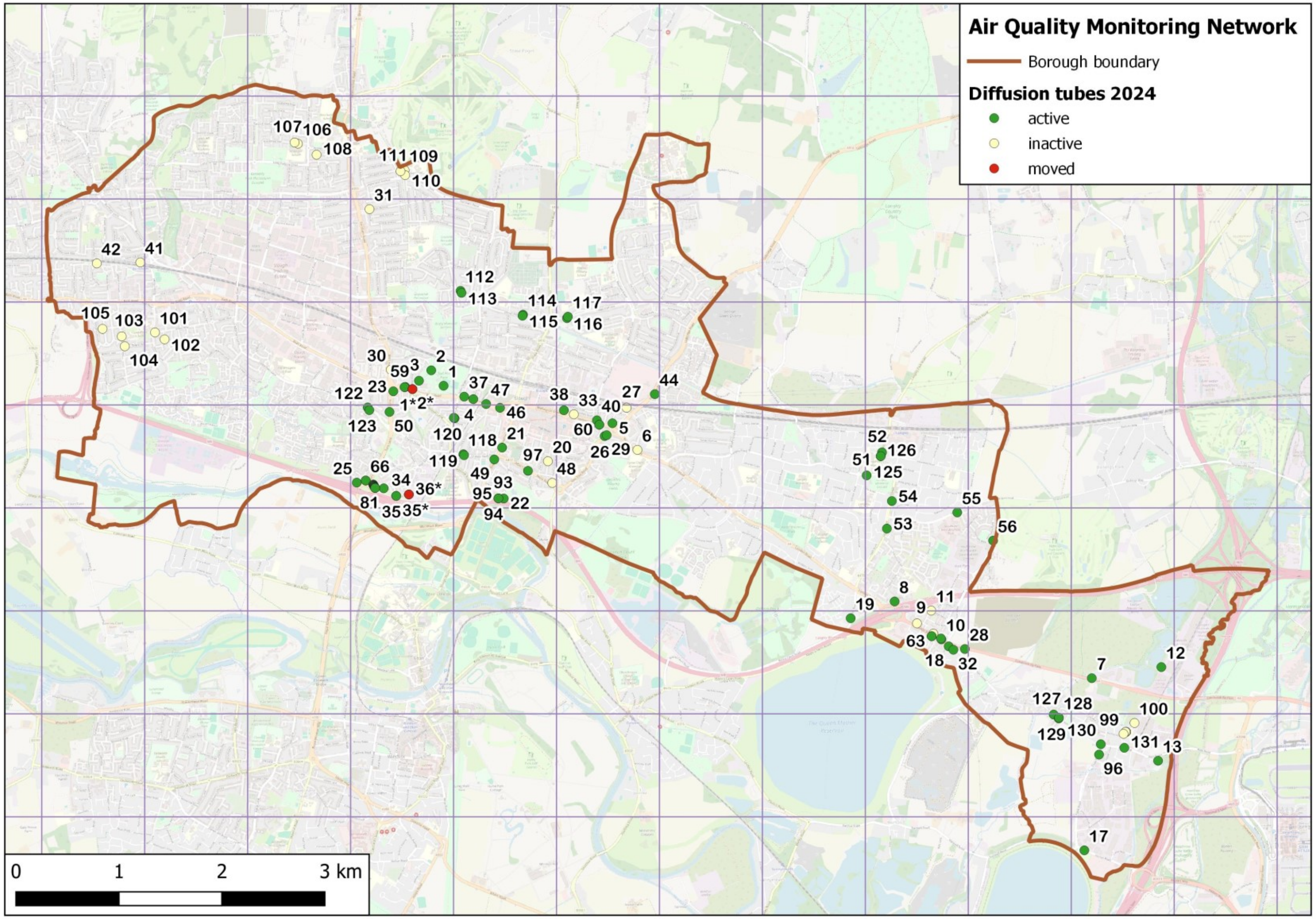


Figure D.8 – Map of All Automatic Continuous Monitors in Slough

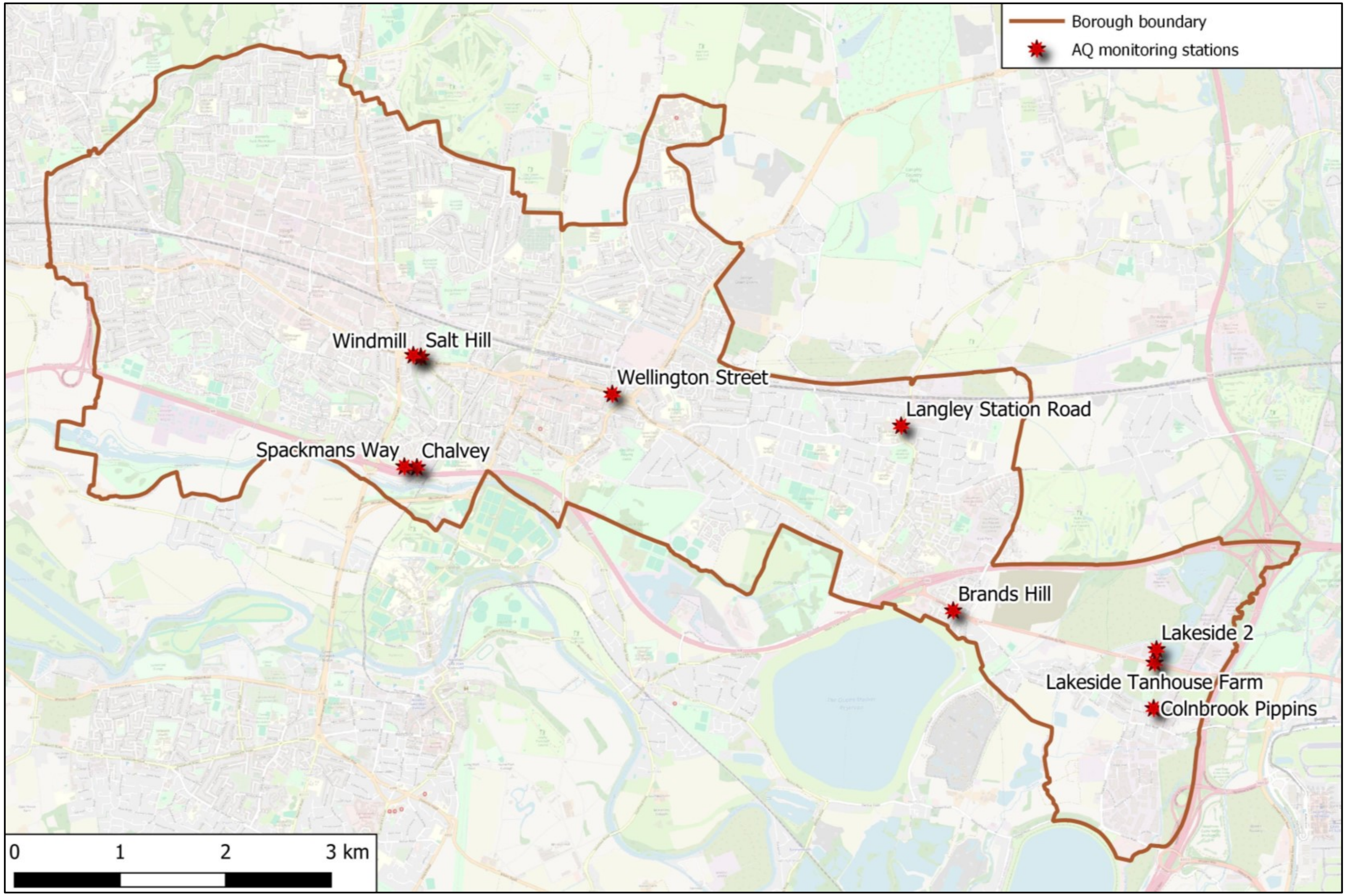


Figure D.9 – Map of All AQMAs in Slough

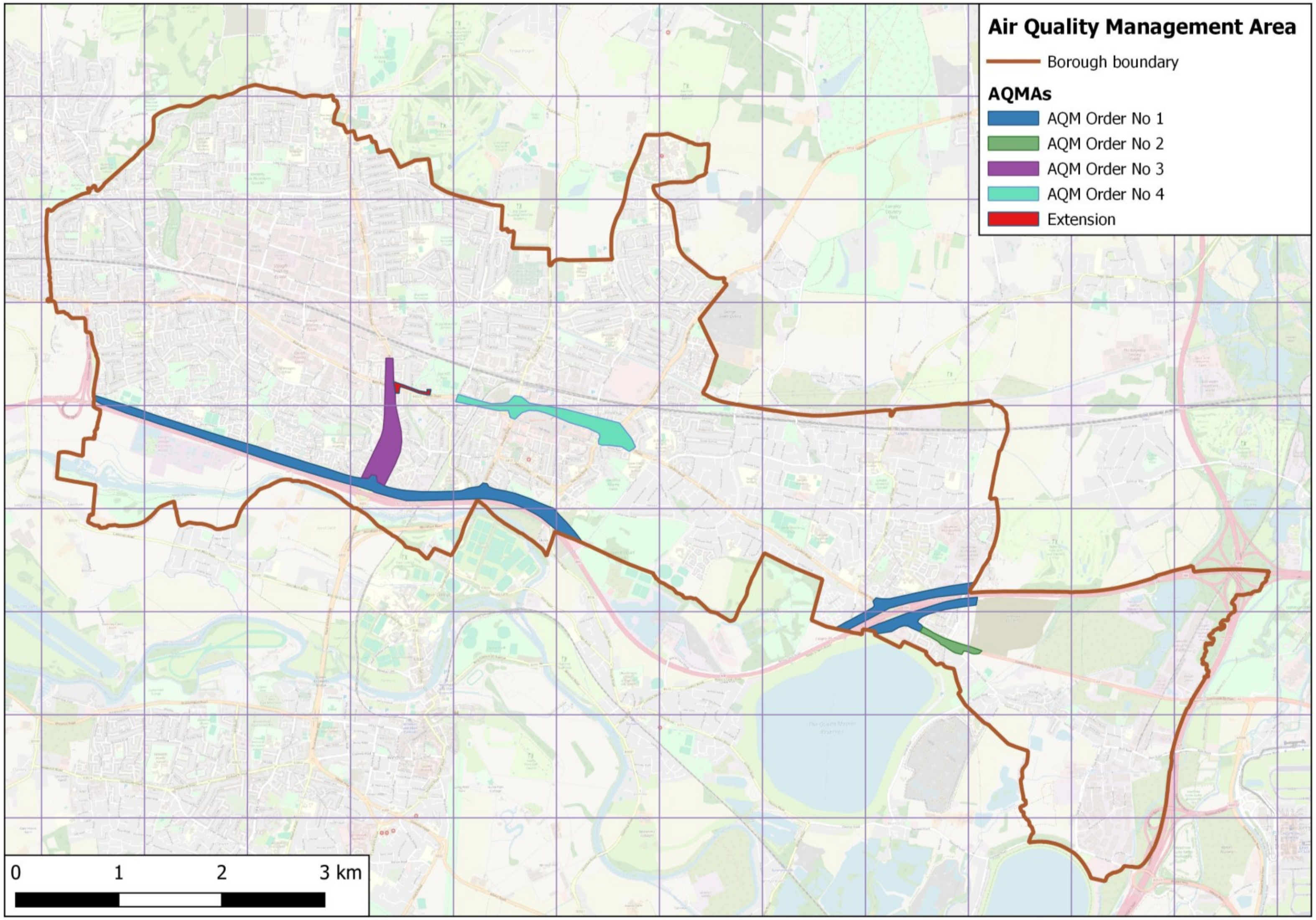
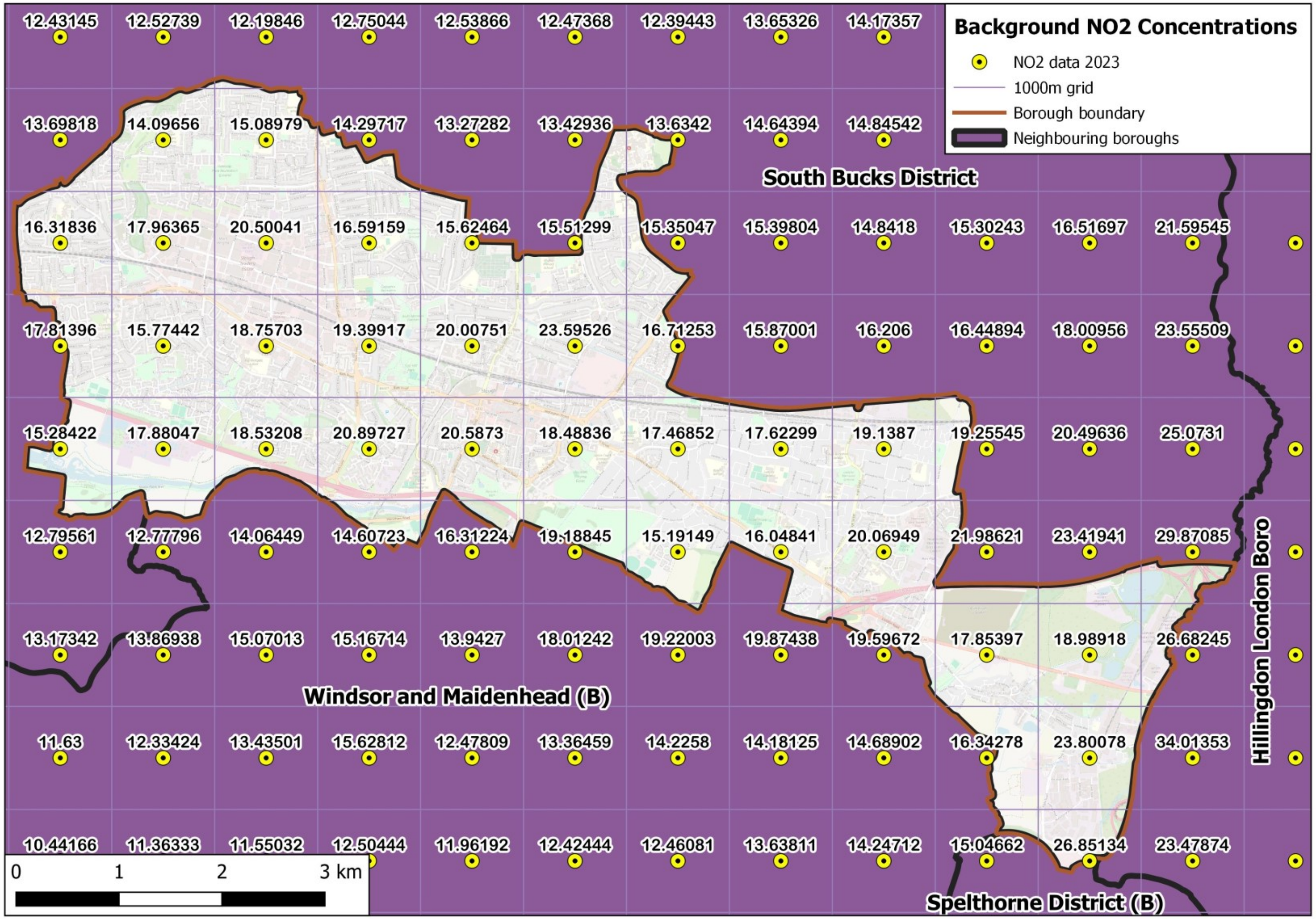


Figure D.10 – Map of Defra Background NO_2 Concentrations



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[12]

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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQG	Air Quality Guidelines
AQO	Air Quality Objective
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
HGV	Heavy Goods Vehicle
LAQM	Local Air Quality Management
LES	Low Emission Strategy
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NRMM	Non-Road Mobile Machinery
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide
ULEZ	Ultra-Low Emission Zone
WHO	World Health Organisation

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