2020 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the
Environment Act 1995
Local Air Quality Management

June 2020

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Executive Summary: Air Quality in Our Area

Air pollution levels within the Borough of Slough continue to remain a significant environmental and public health concern and Slough Borough Council, the 'council', continues to work hard to improve air pollution and to comply with national air quality objectives (AQOs) and EU limits.

Good air quality is not only important to improving health outcomes of our residents, but also for enhancing the natural and built environment and for attracting residents, visitors and businesses to Slough.

The Low Emission Strategy 2018-2025 (LES) was taken by Cabinet on 17th September 2018 and subsequently adopted as a council Strategy, therefore Slough Borough Council are committed to the objectives contained within the Strategy. The wellbeing of those living in Slough are the highest priority and implementation of the LES and its programmes over the next few years will improve air quality and therefore health for all of those living and working in the Borough. The LES programmes have progressed since adoption in 2018, which includes:

- Slough Electric Car Club Programme
- Electric Vehicle (EV) Infrastructure Programme (rapid and public chargers for public and taxis)
- Taxi EV Rapid Charger Infrastructure Programme
- Bus Fleet Programme (retrofit and electric bus routes)
- Cycle Infrastructure and Hire Programme
- Clean Air Zone (CAZ) Feasibility Programme

As the LES is now accepted as council strategy, it is a requirement that air quality is taken into consideration when assessing impact of developments. This ensures mitigation is secured to reduce impact on air quality as much as possible. For example, since implementation of this strategy, every new residential unit is required to have access to EV charging infrastructure, which will help improve air quality in the Borough, as residents transition into ultra low emission vehicles (ULEVs).

The Transport Infrastructure Strategy (TIS) and update to our Local Transport Plan (LTP4) are to be completed this year. These plans focus on increasing public transport

infrastructure, to reduce car dependency and encourage a modal shift away from cars and reduce congestion, whilst supporting the aims of the LES. This will be done by promoting sustainable travel such as use of E-bikes and EVs in transition to a low emission economy. The Government are also developing a Green Recovery Plan in response to the COVID-19 pandemic, which has a focus on active travel.

Slough currently has five Air Quality Management Areas (AQMAs), which exceed the EU limit for nitrogen dioxide (NO_2 (40µg/m^3)). In response to this, Air Quality Action Plans (AQAPs) were established for AQMA 1 and AQMA 2 (2006) and also AQMA3 and AQMA 4 (2012)[1]. The most recent update to these AMQAs was in 2017, when AQMA 3 was extended to include a section of Bath Road.

During 2020, these action plans will be updated under one comprehensive AQAP to address air quality issues in all of our AQMAs. The AQAP will determine existing NO_2 and particulate matter (PM_{10} and $PM_{2.5}$) concentrations, test the effectiveness of the measures outlined in the LES programme in achieving compliance with AQOs, and identify additional measures to tackle air pollution in the Borough. The updated plan will reflect regeneration of the town centre and impacts posed by upcoming major infrastructure schemes including the Heathrow expansion and Smart M4.

Refreshed baseline modelling will be used to determine the status of our AQMAs and if any new areas will be declared. It is predicted that Langley will be designated as an AQMA in the future due to existing air quality trends and committed infrastructure schemes in the area, resulting in greater traffic volumes.

The AQAP will also address sources of local particulate pollution from construction sites and combustion processes. Industrial processes are currently regulated by the Local Authority and Environment Agency under the Environmental Permitting Regulations.

The AQAP will support the aims of the LES, primarily to design additional measures to reduce NO_2 emissions from road transport and improve health outcomes. Programmes such as the Slough EV Plan will help to achieve this aim, by implementing electric public infrastructure such as fast and rapid electric charging points and promote the operation of electric and ultra-low emission vehicles, including electric car clubs and electric taxis.

[1] https://www.slough.gov.uk/pests-pollution-and-food-hygiene/air-quality-reports.aspx

A Clean Air Zone (CAZ) is defined an area where targeted action is taken to improve air quality from traffic sources – it can be a single road or part/ all of a town or city. A feasibility study for the implementation of a CAZ in Slough will be conducted in 2020/2021. It would set emission standards to encourage the uptake of EVs and ULEVs which meet the latest European Emission Standard, applicable to public transport vehicles, HGVs and LGVs. The CAZ may be charging or non-charging. Should the feasibility study demonstrate that a charging CAZ is necessary in Slough to improve air quality in the shortest possible time, an application may be made to the Secretary of State to introduce such a zone.

The CAZ feasibility study, AQAP and LES will be consolidated under a new Clean Air Plan (CAP) during 2021, which will set out all of the council's aspirations for improving air quality, including measures to address $PM_{2.5}$, supplementary planning guidance to support air quality considerations in the planning process, the air quality communication plan and updates to the air quality network.

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 EV infrastructure and operation of lower emission vehicles. The Council will lead by example, by adopting policies to increase its EV fleet, reduce grey fleet emissions, and promote modal shift amongst its workforce.

Air Quality in Slough

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas[2,3].

[2] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[3] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

The annual health cost to society of the impacts of PM alone in the UK is estimated to be around £16 billion[4]. Full details of damage costs can be found on the government website[5].

Sources of Poor Air Quality

The principal source of poor air quality within Slough relates to road traffic emissions, but local construction activities (there is significant regeneration taking place in Slough), diesel trains operating on the Great Western Mainline (some of these are being changed to electric), the town centre bus station (as fleet is relatively old), local industrial processes, larger combustion processes (Energy from Waste Incinerators), airport emissions (affect our receptors in Colnbrook and Poyle), and back-up diesel generators (data centres), as well as transboundary pollutants (e.g. pollutants outside Slough) also contribute to the background pollution levels, and will continue to do so. The Borough has declared 'smoke controlled areas' across Slough's wards, and wood burning and smoke is not known to be a significant source of emissions within Slough, however updated baseline modelling will determine this.

Future significant sources of air pollution may arise from permitted local developments and Nationally Significant Infrastructure Projects in the wider area planned over the next 5-10 years, including::

- Construction and operation of M4 Smart Motorway - this is designed to allow up to 15,000 additional vehicle movements a day during its operation from 2022 (peaking by 2030) and re-routing of traffic through Slough at times during the construction phase (2019-2021) (Impacts: M4 AQMA, Tuns Lane AQMA, Town Centre AQMA and Brands Hill AQMA)
- Construction of M4 construction compound 9 at Sutton Lane on the edge of the Brands Hill AQMA (2019-2021)
- Operation of Sand and Gravel extraction 'Cemex' sites at Riding Court Road and North Park Road (up to 450 HGV movements a day through Brands Hill/M4 AQMAs and Langley area) (2018 – 2030)

[4] Defra. Abatement cost guidance for valuing changes in air quality, May 2013
[5] https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance#annex-a-updated-2019-damage-costs

- Rail Borne Aggregate Distribution Depot and Concrete Batching Plant at Thorney Mill Sidings, Thorney Mill Road, Iver, (up to 82 HGV movements a day through Brands Hill AQMA and Langley) (2019 onwards)
- Significant Town Centre regeneration (construction HGV movements and operational vehicle movements) up to 6,000 residential properties, new offices and commercial and retail uses (Town Centre/Tuns Lane AQMA)(2016 – 2030)
- Western Rail Access to Heathrow significant construction HGV movements through Langley and Brands Hill AQMA (2022 – 2027)
- Heathrow Expansion - a legal challenge to the Airports National Policy Statement has paused the Development Consent Order process for permission to expand, though an appeal is due to be heard in Autumn 2020. An application for expansion could still be made in the next couple of years for Heathrow's 3rd runway (runway located within Slough) and changes to associated airport operations, with impacts also including the re-routeing of the A4 and diversion of the A3044 into Slough, together with construction HGV and operational movements (2023 – 2040) (All AQMAs).
- Demolition, and construction of the new Grundons Energy from Waste facility 200m north of the current site to accommodate the 3rd runway, including a 55m stack (20m lower than the current stack) (currently on hold, potentially 2022-2024) (Iver AQMA and Brands Hill AQMA)
- Slough Northern Extension – a shortfall is predicted in Slough being able to meet its housing allocation within the local plan term, and a proposal for at least 5,000 (and up to 10,000) new homes on Green Belt land within Buckinghamshire is being explored. If pursued this urban extension could generate significant additional vehicle movements in both the construction and operational phases. (2026 – 2036) (All AQMAs).

Air Quality Modelling

Detailed air quality modelling and source apportionment (e.g. which vehicles are mostly responsible for air pollution) was commissioned in 2015[6] to assist with the development of the Councils LES (the modelling used 2014 air quality data, road traffic

[6] http://www.slough.gov.uk/pests-pollution-and-food-hygiene/low-emission-strategy-2018-2025.aspx

data and Heathrow weather data). The modelling determined that local road traffic **contributes around 50% towards NO_2 concentrations** at relevant receptors (i.e. those modelled within the AQMAs and surrounding area).

The remainder is due to background levels that prevail in the area. Light passenger diesel cars are the main source of air pollution in the Borough accounting for between (7% and 30% of the total NO_2 concentrations). HGVs; artic and rigid HGVs and buses also contribute significantly to poor air quality in the Brands Hill AQMA.

The Council will commission further detailed air quality modelling and source apportionment during 2020, to take account, as far as practicable, the above significant development schemes and future traffic growth forecasts in Slough, as well as baseline monitoring data, air quality monitoring, traffic count data and weather data. In addition to running transport and LES scenarios, updated modelling will determine:

- The baseline NO_2, PM_{10} and $PM_{2.5}$ concentrations within Slough
- If any existing AQMAs should be revoked or amended
- If any new AQMAs should be declared within Slough (particularly Langley due to the potential impact of the Western Rail Link to Heathrow)
- The effectiveness of the LES measures and additional measures brought up in the AQAP study, in addressing poor air quality
- The effectiveness of implementing transport measures (e.g. dedicated bus lane, junction re-design etc.) in addressing poor air quality
- The effectiveness of implementing a CAZ(s) within Slough to deal with poor air quality

Air Quality Monitoring and Future Monitoring Proposals

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. The Council is continually looking to extend and improve the air quality network. An overview of both the continuous monitoring network, passive diffusion tube network and new air quality sensor network is given below.

Continuous Monitoring

The Council continuously monitors air quality at six locations: 6 monitoring stations monitor nitrogen dioxide (NO_2) concentrations; 4 monitoring stations monitor particulates (PM_{10}) concentrations, using established reference methods (TEOM or BAM). The Council also operated 2 Osiris indicative particulate monitors which measured $PM_{1.0}$, $PM_{2.5}$ and $PM_{1.0}$, which ceased January 2020.

The Council upgraded its air quality monitoring network by adding 3 new air quality monitoring stations within the AQMA 4 (Wellington Road, Town Centre), AQMA 2 (London Road, Brands Hill) and AQMA 3 extension (Windmill, Bath Road) in October 2017. Additionally, the Council has access to air quality data (NO_2, PM_{10} and $PM_{2.5}$) from a monitoring station operated by Grundons Lakeside Energy from Waste plant in Colnbrook. Access to real-time and historic monitoring data can be found in the following hyperlink http://sloughair.aeat.com/.

The air quality monitoring stations at Salt Hill (SLH 4) and Pippins Colnbrook (SLH 3) are long serving monitors and frequently suffered from water leaks. Due to this, operation of Salt Hill monitoring station ceased November 2019. Data for this area of Slough will continue to be collected at the nearby Windmill monitor (SLH 12), which is more representative of roadside NO_2 concentrations. At Pippins a short-term repair has been done until a replacement station, measuring NO_2 and PM_{10}, can be installed later in 2020/21. A future ambition for this site is to install a certified $PM_{2.5}$ monitor (such as a BAM), to begin collecting reliable $PM_{2.5}$ data in response to concerns over $PM_{2.5}$ health related impacts and reports indicating high $PM_{2.5}$ concentrations in Slough.

Chalvey monitoring station (SLH 7) is also due to be replaced. Currently, the Chalvey station is positioned in a waste depot. Although this area is within AQMA 1 (M4 corridor), it does not represent residential exposure well, therefore it is being relocated on Spackmans Way, to represent exposure at the nearest residential receptor to the M4.

Finally, a new continuous roadside monitor will be located in Langley. Due to passive monitoring results since 2016 showing increases in NO_2, there is a need to monitor continuous daily NO_2 and PM, to produce an evidence base of air quality trends, to

support the declaration of Langley as an AQMA. This monitor will also allow the Council to observe the impact of planned and proposed infrastructure projects, which may influence traffic volumes and subsequently worsen air quality.

Passive (diffusion tube) monitoring

The Council also operates a comprehensive (non-automatic) passive diffusion tube network. The Council operated 65 diffusion tubes across 53 sites for the majority of 2019, however the network was expanded in October 2019 to 96 tubes; to accommodate monitoring commissioned by Highways England to monitor the impact of the Smart M4 Scheme on nearby receptors with triplicates (3 tubes) at 10 residential locations close to the M4, and monitoring at a residential location in Poyle potentially impacted by a high % of HGV traffic to the Poyle Industrial Estate area. The diffusion tubes monitor NO_2 concentrations only.

The 2019 ratified data is reported within the **Appendix A.3** of the report. Please refer to **Appendix D** to see maps of all the air quality monitoring sites in the Borough.

The network was further expanded in early 2020 to co-locate diffusion tubes with monitors in the Slough Sensor Project (see below), additional urban background monitoring and new monitoring locations on congested roads (Albert Street/Upton Court Road). This will be reported on further in the next ASR with the 2020 monitoring results.

Slough Sensor Project

One of the key objectives within Slough's 5-year plan is to protect the livelihood and wellbeing of children. As the health impacts related to poor air quality are becoming more apparent, the need to monitor the impact of vehicle emissions outside of schools is increasing. Evidence obtained through monitoring can be used to support the aims of the LES, encourage behavioural change of parents to use sustainable travel methods and aid engagement with public health campaigns.

An application was made in November 2018 to the Defra AQ Grant Fund to trial low-cost air quality sensors. We were notified in March 2019 that our bid had been

successful and the funding of £99,125 (with £46,625 match funding) was received in late September 2019. Contracts with suppliers were signed in November 2019.

The project will focus on monitoring NO_2 emissions originating from idling vehicles and congestion around four local primary schools over 8-12 months, including Cippenham, Claycots, Pippins and Penn Wood Primary Schools. In the original project plan, monitoring was to cease in November 2020, however due to the disruption caused by COVID-19, this project will extend into 2021. Data obtained during this period will be reported to the Department for Environment, Food and Rural Affairs (Defra) within 6 months of monitoring completion.

Data collected over the monitoring period will be used to produce an evidence base, from which implementation of sustainable travel measures can be used to encourage behavioural change. The monitoring network will consist of 15 Vaisala air quality sensors, installed on lamp posts close to school boundaries, to monitor the impact of idling vehicles during peak school pick up and drop off times. One Vaisala sensor will be co-located with the continuous monitoring station and diffusion tubes in Colnbrook (SLH 3) and each sensor will be co-located with one diffusion tube, to allow sensor accuracy to be determined.

Continuous monitoring of air quality outside of schools will also allow the impact of air quality awareness and public health campaigns to be observed. One such campaign is to implement school streets alongside the schools which are being monitored. Currently, this is planned to be short term (days) rather than a permanent basis. This will affectively be a school street trial, to determine the impact on air quality and the feasibility of implementing schools streets Borough wide. This campaign is due to commence 8th October (to coincide with Clean Air Day), however it may have to be postponed further into 2020 due to COVID-19 disruptions.

The Slough Sensor Project is a key component of increasing awareness of air quality issues in the Borough. Work is ongoing to improve awareness and understanding on air quality for both residents and staff working in Slough

Air Quality Management Areas (AQMAs)

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.). These are also shown within **Appendix D.**

Five AQMAs have been declared within Slough due to breaches of the annual mean concentrations for NO_2 (**40µg/m$^{3)}$.** Details of the AQMAs can be found on https://www.slough.gov.uk/pests-pollution-and-food-hygiene/air-quality-reports.aspx and more detailed maps can be found on the Defra Website https://uk-air.defra.gov.uk/aqma/maps.

AQMA1: 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. **In June 2019, there were 559 residential properties located within AQMA1.**

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 A4 and both side of the A4 carriageway. **In June 2019 there were 28 residential properties located within AQMA 2.** A new residential development (Rogans) is being developed opposite the A4 gyratory (within the AQMA 2) will at least double the number of residential properties exposed.

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". **In June 2019 there were 351 residential properties located within the AQMA 3**.

AQMA 4: incorporates the A4 Bath Road from the junction with Ledgers Road/Stoke Poges Lane, in an easterly direction, along Wellington Street, up to the Sussex Place junction. **In June 2019, there were 823 residential properties located within the AQMA4**.

AQMA Order 3 Extended: The Council declared the new extended AQMA 3 on 10th May 2018 and formally submitted this to DEFRA. In **June 2019, there were 227 residential properties located within the extended AQMA3.**

In June 2019, **1988 residential properties** were located within one of Slough's AQMAs. There are no schools located within Slough's AQMAs. The playing grounds of Foxborough Primary School just skirts the edge of the AQMA1 M4. The number of residential properties is set to increase as more residential units will be built within the Town Centre and along the A4 Bath Road.

Air Quality Concentrations 2019

This report covers the air quality results obtained during 2019 and compares these results over the past five years (or less time if sites are new) at the same sites to determine if there are any clear trends in pollution levels. These rolling trends must be treated with caution as they do not include statistical confidence, and air quality can change significantly from one year to the next due to metrological conditions and pollution episodes.

The air quality trend across the majority of sites shows a decrease in concentrations in 2019 when compared with the previous years' data, which is also the case with the trend from 2016 to 2018, however pollution concentrations need to be continually monitored over the next few years to determine if air quality is improving in the Borough, or if the improvement is caused by favourable meteorological or climatic conditions.

Additionally, the national trend has tended to show a decrease in pollution concentrations (both PM and NO_2) in 2019. The DEFRA air quality statistics reported that in 2019, the lowest average annual mean concentrations since the start of the time series for both roadside and urban background monitoring sites were recorded and there were on average fewer hours of moderate or higher levels of NO_2 pollution in 2019 compared with 2018 at roadside sites[7].

The headlines of the 2019 Slough monitoring results (see **Appendix A, Table A.3** and **Appendix B, Table B.1** for all results) are that:

- Similarly to ASR 2019, there are breaches of the AQO at residential receptors within AQMA 2 (SLO 18, Brands Hill (A)) and AQMA 4 (SLO 29, Yew Tree Road). Generally, there are improvements across most residential receptor

[7] https://www.gov.uk/government/statistics/air-quality-statistics

monitoring locations, however isolated areas have shown a worsening of NO_2 concentrations, namely SLO 8 (Grampian Way, +0.7µg/m^3), SLO 4 (Lansdowne Avenue, +0.1µg/m^3) and SLO 53 (High Street Langley (A), +1.3µg/m^3). To determine if this is a continuous worsening of air quality, these areas will be closely monitored during 2020.

- 8 residential receptor locations across all AQMAs are exposed to NO_2 concentrations within 10% of the AQO, therefore there is no evidence to suggest that any of the AQMAs should be revoked.

- AQMA 1 has shown improvements at all locations excluding Grampian Way (SLO 8). As the construction phase of the Smart Motorway is progressing, periods of closure and speed restrictions are being implemented, which may have an influence on pollution arising from the M4. As SLO 8 represents the closest receptor to Junction 5 of the M4, it is expected that NO_2 concentrations would be higher at this location, however it is a concern that concentrations have risen by 0.7µg/m^3 at this receptor in the last year. This area will be closely monitored over 2020.

- Residential receptors have experienced improvements in air quality across AQMA 2. The biggest NO_2 improvement is observed at SLO 28 (Rogans, Colnbrook By-Pass), which has reduced by 4.6µg/m^3 from 2018 to 2019.

- Similarly to AQMA 2, AQMA 3 has experienced an improvement in air quality (SLO 50, Tuns Lane (B), 2.3µg/m^3 decrease).

- Within AQMA 4, receptors have experienced no or minimal change in concentrations at SLO 46 (Cornwall House, Bath Road) and SLO 4 (Lansdowne Avenue), however the remaining receptor monitoring locations in this AQMA have shown improvement in air quality, with the greatest improvement observed at SLO 29 (Yew Tree Road), reducing from 43.7µg/m^3 to 40.5µg/m^3. SLO 26 (Yew Tree Road (B)) has shown an increase in NO_2 by 3.2µg/m^3, however this is due to the monitoring location being relocated part way through 2019. A full dataset for this location will be observed in ASR 2021.

- Receptors located outside of AQMAs with NO_2 concentrations within 10% of the AQO are SLO 49 (Windsor Road (B)) and SLO 53 (High Street Langley (A)). SLO 49 has experienced an improvement of NO_2 since 2018 (0.6µg/m^3 decrease), whereas SLO 53 has worsened by 1.3µg/m^3.

Air Quality Trends Over 5 Years

Over the last 5 years, there is generally a downward trend in NO_2 and PM across the Borough, with isolated hotspots where a persistent air quality issue exists. This is not unusual as some years will show variations in pollution levels due to weather and climate. This tends to follow the general trend in the UK.

The average reduction in concentrations of annual mean NO_2 over the past 5 years across all diffusion tube monitoring sites and two continuous monitoring sites (Chalvey and Salt Hill), across the Borough is **1.82µg/m^3 per year** (4.73% of the AQO). This figure of average annual reduction in mean NO_2 levels over 5 years has increased since previous calculations in the 2018 and 2019 ASRs – i.e the average annual decrease is getting greater, suggesting possible acceleration of air quality improvement.

However, the rate of improvement required to meet the AQOs is still relatively slow and air pollution remains a significant issue for Slough residents and will continue to do so for some years to come as there are clearly some stubborn hotspots of air pollution, as well as potential for new areas of relevant exposure (Windsor Road and Langley) to be declared.

Concentrations vary significantly between diffusion tube monitoring sites located within our AQMAs. And, there is no conformity to the change in concentrations from one monitoring site to the next even within the same AQMA. This could be down to how traffic is managed on the road network, and where queueing of traffic occurs. It could also be due to how traffic growth has affected some parts of network more than others.

It is recognised that air quality hotspots are going to become even more localised and importance of action at a local level will increase. The effort to reduce NO_2 also needs to be targeted on the sources that make the biggest contribution to the problem: as road vehicles contribute about 80% of NO_2 pollution at the roadside and the growth in the number of diesel cars has exacerbated this problem.

Actions to Improve Air Quality

The Council reported to Defra in 2018 on 41 measures that are aimed at improving directly or indirectly air quality in Slough. The number of measures reported within this 2020 ASR stands at 40. A number of these measures are still ongoing, some have yet to start, and others that were completed in 2018 were removed in ASR 2019. 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 (e.g. refreshed AQAP, the LES and emerging TIS).

It is also 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.

The Council has developed AQAPs for AQMAs 1-4, however there is a need to update these action plans and make them more relevant to reflect the significant regeneration of town centre development, as well as considering the transport impacts of major permitted infrastructure schemes (Smart M4) and potentially the expansion of Heathrow Airport and Western Rail Access to Heathrow.

Slough Borough Council has taken forward a number of direct measures during 2019 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in **Table 2.1.**

Key completed measures are:

- Successful implementation of the Slough LES (2018-2025) with significant development and funding towards the LES programmes, such as the Slough Electric Vehicle Plan, by ensuring provision of EV charging infrastructure at new developments
- Securing on-site mitigation at major developments, to accelerate uptake of ULEVs, such as on-site EV Car Club Hub at Horlicks development (in place 2022/2023)
- Completed transport schemes:

  - Local Enterprise Partnership (LEP) funding secured for SMaRT phase 2 and construction is in progress (continuation of wider SMaRT programme – phase 1 completed in 2018)
  - Introduction of electric bus trials to promote Low Emission Public Transport

- Ongoing Council transformation and relocation to town centre office with no parking available on site, encouraging staff to travel to work in alternative travel methods. The Council are demonstrating good example for the rest of the Borough. This is supported by increase EV charging provision expansion of staff EV fleet for the office move, including 13 fast chargers, 1 rapid charger and a fleet of 20 EVs.
- Installation of 4 fast and 1 rapid charger at a new leisure site on Farnham Road, promoting sustainable transport.

Rapid Charger at the Council's new leisure centre on Farnham Road in 2019 – Charges Electric Car in 30 minutes. The Council is looking to expand its rapid charger network to 10 rapid chargers by the end of 2021.

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

- AQAP taken to Cabinet March 2021
- CAP draft ready for consultation by summer 2021
- CAZ feasibility study to by completed summer 2021
- Completion of the Slough Sensor Project monitoring
- Upcoming transport schemes:
    - A4 lane segregation for bus and cycle prioritisation
    - Reduction in town centre parking from 5000 to 3000 spaces
    - Introduction of park and ride scheme connecting west Slough to the trading estate

Slough Borough Council's priorities for the coming year are to develop the new AQAP and produce the CAP.

More detail on progress with these measures can be found in section 2.2 of the main report, with further background in their respective action plans and in the LES, available on the following link: http://slough.gov.uk/pests-pollution-and-food-hygiene/low-emission-strategy-2018-2025.aspx .

Conclusions and Priorities

Air Quality continues to breach national AQOs in Slough's AQMAs and for some sites outside the AQMAs. The Council has prepared a LES to co-ordinate and outline robust measures to address poor air quality. The AQAPs for all five AQMAs will be updated in 2020 under one consolidated plan. Air quality is a priority for the Council to address.

The key challenges Slough faces in addressing poor air quality are:

- Our population is growing at a significant rate. We are expected to build nearly 20,000 new homes over the next 20 years within a heavily populated and congested urban Borough (Slough is only 32.54 $km^{2)}$. We will need to reduce the amount of parking allocated to town centre residential developments and ensure significant EV charging infrastructure is installed and EV/ULEV car clubs are operating to enable residents to have a low emission car option.

- The main challenges are non-conforming EURO 6 light passenger diesel cars and vans coupled with the significant growth in diesel vehicles over the past 20 years, although these are now showing a significant decline in sales following the VW emission scandal. The Government needs to ensure newer diesel vehicles entering the market will meet the tougher real-world emission standards. There needs to be more promotion and awareness of EVs and their air quality benefits over diesel cars. The Government has announced the ban of sale of all petrol and diesel cars from 2035.
- A lack of public awareness and understanding of air pollution is a significant barrier to change. There is a need for a public awareness campaigns at national level and at a local level, and Slough will work collaboratively with Public Health and all its stakeholders and officers on local communication and awareness of air quality.
- Over the next 10 years – significant traffic growth locally, associated with the operation of M4 Smart Motorway, Town Centre Development, and potentially the expansion of Heathrow airport will place significant strain on the highway network and will adversely impact air quality.

How to Get Involved – Local Engagement

Slough residents can find out more about air quality by visiting the Councils Webpages: http://www.slough.gov.uk/pests-pollution-and-food-hygiene/air-quality.aspx.

Slough residents have access to the free app, AirTEXT, which provides accurate air quality alerts, and health advice for at-risk groups and the general population, on http://www.airtext.info/.

The LES has its own dedicated web page on the Slough Borough Council website. http://www.slough.gov.uk/pests-pollution-and-food-hygiene/low-emission-strategy-2018-2025.aspx.

Slough has prepared a communication Campaign in 2018 to raise awareness of poor air quality and to advise what actions can be taken at a local level to address air

pollution. This will be published on the website. http://www.slough.gov.uk/pests-pollution-and-food-hygiene/low-emission-strategy-2018-2025.aspx.

In May 2019, Public Health Slough launched a new website. A dedicated air quality page has been set up and will be populated with information on air quality, how members of the public can reduce their impact on air quality and the health benefits. This can be found on the following link.
https://www.publichealthslough.co.uk/campaigns/air-quality/

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1 Local Air Quality Management

This report provides an overview of air quality in Slough during 2019. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

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

The statutory AQOs applicable to LAQM in England can be found in **Table E.1 in Appendix E.**

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

AQMAs are declared when there is an exceedance or likely exceedance of an AQO. After declaration, the authority must prepare an AQAP within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by Slough Borough Council can be found in Error! Reference source not found.. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=232. Alternatively, see **Appendix D: Map(s) of Monitoring Locations and AQMAs**, which provides for a map of air quality monitoring locations in relation to the AQMA(s).

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
Slough AQMA 1	Declared 23/06/2005	NO_2 Annual Mean	AQMA M4 Motor way	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	µg/m3	39.5 *	µg/m3	Annex C of the Local Transport Plan. http://www.slough.gov.uk/downloads/LTP2-annexes-A-H.pdf	2006	http://www.slough.gov.uk/downloads/LTP2-annexes-A-H.pdf
Slough AQMA 2	Declared 23/06/2005	NO_2 Annual Mean	AQMA Brands Hill	An area encompassing the A4 London Road east of junction 5 of the M4 motorway as far as Sutton Lane	NO	62	µg/m3	44.6 **	µg/m3	Annex C of the Local Transport Plan. http://www.slough.gov.uk/downloads/LTP2-annexes-A-H.pdf	2006	http://www.slough.gov.uk/downloads/LTP2-annexes-A-H.pdf
Slough AQMA 3	Declared 24/01/2011	NO_2 Annual Mean	AQMA Tuns Lane	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	NO	51	µg/m3	36.6 ***	µg/m3	Action Plan for Slough Air Quality Management Areas Nos. 3 and 4 (19/11/2012)	2012	http://www.slough.gov.uk/downloads/air-quality-management-areas-3-and-4.pdf

				Road, known as the Three Tuns.								
Slough AQMA 4	Declared 24/01/2011	NO_2 Annual Mean	AQMA Town Centre	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	µg/m3	40.5 ****	µg/m3	Action Plan for Slough Air Quality Management Areas Nos. 3 and 4 (19/11/2012) http://www.slough.gov.uk/downloads/air-quality-management-areas-3-and-4.pdf	2012	http://www.slough.gov.uk/downloads/air-quality-management-areas-3-and-4.pdf
Slough AQMA Ext. 3	Declared 10/05/2018	NO_2 Annual Mean	AQMA Bath Road	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	µg/m3	36.8 *****	µg/m3	TBC	2019	TBC

*Highest measured NO_2 concentration within AQMA 1 is at Grampian Way SLO 8 corrected to nearest residential façade
** Highest measured NO_2 concentration within AQMA 2 is at Brands Hill SLO 18 corrected to nearest residential façade
*** Highest measured NO_2 concentration within AQMA 3 is at Tuns Lane SLO 50 corrected to nearest residential façade
**** Highest measured NO_2 concentration within AQMA 4 is at Yew Tree Road SLO 29 corrected to nearest residential façade. Note this is different to ASR 2018 which recorded Blair Road – Victoria Court ID 37 as the highest measured NO_2 concentration
***** Highest measured NO_2 concentration within AQMA 3 Extension is Windmill Monitor Station A4 corrected to the nearest residential façade.

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

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

Defra's appraisal of last year's ASR concluded the Council has identified hotspots of exceedance and potential exceedance outside of existing AQMAs in Windsor Road and Langley and will continue to monitor these areas to determine if additional AQMAs are required. Defra support plans to update and consolidate the AQAPs for the existing AQMAs in the Borough and advise this work takes priority as the existing AQAPs are outdated.

Slough Borough Council has taken forward a number of direct measures during 2019 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in **Table 2.1.**

More detail on these measures can be found in their respective action plans and in the LES, available on the following link: http://slough.gov.uk/pests-pollution-and-food-hygiene/low-emission-strategy-2018-2025.aspx

Key completed measures are:

- Successful implementation of the Slough LES (2018-2025) with significant development and funding towards the LES programmes, such as the Slough Electric Vehicle Plan, by ensuring provision of EV charging infrastructure at new developments
- Securing on-site mitigation at major developments, to accelerate uptake of ULEVs, such as on-site EV Car Club Hub at Horlicks development
- Completed transport schemes:
    - Local Enterprise Partnership (LEP) funding secured for SMaRT phase 2 and construction is in progress (continuation of wider SMaRT programme – phase 1 completed in 2018)
    - Introduction of electric bus trials to promote Low Emission Public Transport
- Ongoing Council transformation and relocation to town centre office with no parking available on site, encouraging staff to travel to work in alternative travel methods. The Council are demonstrating good example for the rest of the Borough. This is supported by increase EV charging provision expansion of staff

EV fleet for the office move, including 13 fast chargers, 1 rapid charger and a fleet of 20 EVs.

- Installation of 4 fast and 1 rapid charger at a new leisure site on Farnham Road, promoting sustainable transport.

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

- AQAP taken to Cabinet March 2021
- CAP draft ready for consultation by summer 2021
- CAZ feasibility study to by completed summer 2021
- Completion of the Slough Sensor Project monitoring
- Upcoming transport schemes:
    - A4 lane segregation for bus and cycle prioritisation
    - Reduction in town centre parking from 5000 to 3000 spaces
    - Introduction of park and ride scheme connecting west Slough to the trading estate

Slough Borough Council's priorities for the coming year are to develop the new AQAP and produce the CAP.

The principal challenges and barriers to implementation that Slough Borough Council anticipates facing are disruption to project timelines due to COVID-19. The pandemic has caused a number of delays to projects, due to staff being unwell or resources not being available. It is expected that delays will occur, particularly to the Slough Sensor Project, as sensors were installed late as a consequence of the pandemic.

Progress on the LES programme measures has been slower than expected due to a lack of officer resources, however the Council has approved the business case to expand the Environmental Quality team, to appoint a Low Emission Programme Project Manager and a Project Officer, which will allow projects within the LES to be progressed.

Slough Borough Council anticipates that the measures stated above and in **Table 2.1** will achieve compliance in AQMA 3 and 4. Although steps are being taken to improve air quality in AQMA 1, additional action is required by Highways England to manage pollution arising from the M4. Due to high volumes of HGVs using the Brands Hill gyratory and expected increases in traffic as a result of major infrastructure projects in the area (for example the Heathrow Expansion Project), harder measures are required to reduce NO_2 to meet compliance levels. It is anticipated that a CAZ will improve air quality in this area, however this will be confirmed in the feasibility study.

Whilst the measures stated above and in **Table 2.1** 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 1 and AQMA 2.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Access Fund Smarter Travel for Slough Business Programme	Promoting Travel Alternatives	Workplace Travel Planning	April 2017	SBC, Slough Workplaces	DfT	% mode share	Borough Wide	Access programme in progress	Ongoing	Further £500k awarded by DfT, now running until 2021. Cycle September 2019 involved 21 organisations to participate
2	Access Fund Smarter Travel for Slough Schools Programme	Promoting Travel Alternatives	School Travel Plans	April 2017	SBC, Slough Schools	DfT	% mode share	Borough Wide	Access programme in progress	Ongoing	Further £500k awarded by DfT, now running until 2021.
3	Access Fund Smarter Travel for Slough residents Programme	Promoting Travel Alternatives	Other	April 2017	SBC, charities, voluntary groups	DfT	% mode share	Borough Wide	Access programme in progress	Ongoing	Further £500k awarded by DfT, now running until 2021.
4	Marketing and Promotion of Sustainable travel options in Slough	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	April 2017	SBC	DfT	% mode share	Borough Wide	Access programme in progress	Ongoing	Further £500k awarded by DfT, now running until 2021.
5	Promote use of rail SBC staff	Promoting Travel Alternatives	Promote use of rail and inland waterways	Jan 2011	SBC	SBC	% mode share rail travel, % increase of travel warrants	Borough Wide and Outside Borough	Interest free Rail travel loans and Travel warrants issued for business travel	Ongoing	Increased partnership work with GWR recommended to further promote rail travel.
6	Access Fund: Personalise Travel Planning	Promoting Travel Alternatives	Personalised Travel Planning	April 2017	SBC, Slough schools and businesses	DfT	Number of personalised travel plans	Borough Wide and Outside Borough	Access programme in progress	Ongoing	Further £500k awarded by DfT, now running until 2021.
7	Home Working	Promoting Travel Alternatives	Encourage / Facilitate home-working	April 2019	SBC	SBC	% take up of staff	Borough Wide and Outside Borough	Agile working policy in place, (previously 'Smarter working')	Ongoing	Currently happening successfully en masse as part of the COVID-19 impacts. Likely to lead to ongoing widespread practice.
8	Promotion of cycling	Promoting Travel Alternatives	Promotion of cycling	April 2017	SBC	SBC	Cycling counts	N/A	increased promotion through Access programme	ongoing	LCWIP completed. Awaiting SD sign-off. Currently being referred to as part of the emergency measures in response to the COVID-19 impacts.
9	Promotion of walking	Promoting Travel Alternatives	Promotion of walking	April 2017	SBC	SBC	Walking counts	N/A	increased promotion through Access programme	ongoing	LCWIP completed. Awaiting SD sign-off. Currently being referred to as part of the emergency measures in response to the COVID-19 impacts.
10	Freight Partnerships	Freight and Delivery Management	Freight Partnerships for town centre deliveries	Not yet actioned	SBC	SBC	Reduction in emissions of freight deliveries	AQMA2 & AQMA 4	dialogue with logistics industry	ongoing	Freight sub-strategy (SSD) to be prepared as part of the overall LTP4 project 2020/21
11	Slough Cycle Hire Scheme	Transport Planning and Infrastructure	Public cycle hire scheme	October 2013	SBC	SBC	Cycle usage	Borough Wide	Year on Year increase on uptake – more than 48 bikes and 123 docking bays available in the scheme.	Ongoing	Expanded via community funds. 17 docking stations. Town Centre cycle hub now closed and new location sought. Currently all stations closed due to the COVID-19 impacts

12	Pedestrian Wayfinding System	Transport Planning and Infrastructure	Other	April 2017	SBC	S.106	% mode share	Borough Wide	Ongoing	Ongoing	S106 funding
13	Local safety and accessibility schemes to schools and businesses	Transport Planning and Infrastructure	Cycle network	April 2017	SBC	SBC & DfT	% mode share	Borough Wide	Ongoing	Ongoing	To be further enhanced by Access fund
14	Bus route improvements	Transport Planning and Infrastructure	Bus route improvements	2001 - ongoing	SBC	SBC, DfT, Bus Operators	Bus patronage	Borough Wide	Bus routes and frequencies have been reviewed following the Better Bus Area Fund highway improvements	Ongoing	Ongoing, regular reviews by principle bus operator. Plans to re-establish the Bus Quality Partnership ASAP. Reading Buses are now the main operator in Slough. Long term contracts still under review.. Emergency funding of services in place in response to the COVID-19 impacts. Various bids and expressions of interest being prepared for possible DfT funding (including an 'all electric bus town')
15	Public transport improvements -interchanges stations and services	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	May 2011	SBC	LEP	Bus patronage	Borough Wide	New bus station opened town centre and integrated with adjacent rail station enhancement	Ongoing	Burnham Station access scheme with LEP funding is complete. Langley station access scheme now complete, also LEP funded.
16	Slough Mass Rapid Transit[8]	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, bus priority (dedicated bus lane). Includes Park and Ride in phase 2	Sept 2015	SBC	LEP, bus operators, utility companies, developers, HE	Bus usage & NO_2 concentrations	AQMA 2, AQMA 3, AQMA 4	Ongoing. Enforcement of bus lanes planned. Phase 2 currently in construction. Temporarily minimal activity due to COVI-19	Summer 18' Phase 1. Summer 2020 Phase 2 (to be revised). Summer 22' overall	SMaRT phase 1 infrastructure completed early 2018. Phase 1 bus operations Slough Trading Estate to town centre using Euro VI buses become operational December 18'. SMaRT phase 2 – LEP Funding granted. Construction in progress. Park and Ride element subject to successful land purchase.
17	Reduction of speed limits, 20mph zones	Traffic Management	Reduction of speed limits, 20mph zones	Jan 2010	SBC	SBC, schools, residents	Number of Zones	Borough Wide	7 zones operational	Ongoing	No AQMA declared in areas with 20 mph zone. New 20mph zones will be declared. Additionally, some 40mph roads are being reduced to 30mph along the A4
18	Parking Enforcement on highway	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	June 2018	SBC	SBC	Congestion	Borough Wide	Ongoing	Ongoing	Parking contract commenced with Indigo, June 2018. Moving traffic enforcement commenced on the A4 (SMaRT) 2019
19	Emissions based parking charges	Traffic Management	Emission based parking or permit charges	Proposed Dec 2020	SBC	SBC	Number of spaces	Borough Wide	4 'free' EV spaces	Ongoing	Additional spaces to be secured 2025
20	EV Parking Provision – New Developments	Policy Guidance and Development Control	Low Emission Strategy	Sept 2018	SBC	SBC	Number of new EV Parking spaces	Borough Wide	Ongoing	Ongoing	New Parking must include at least 10% EV provision all new parking

[8] http://www.slough.gov.uk/parking-travel-and-roads/slough-mass-rapid-transit-smart.aspx

21	Air Quality Assessments for new developments in AQMAs and all Major Developments (significant net increase in trip rates	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance (Low Emission Strategy)	Sept 2018	SBC	SBC	Negligible Air Quality Impacts (following mitigation and offsetting)	All AQMAs	Draft – Public Consultation	Ongoing	To be included in the Planners Developers Guide
22	Securing developer air quality contributions for low emission infrastructure and EV car clubs	Policy Guidance and Development Control	Low Emission Strategy	Sept 2018	SBC, Developers	S.106	Financial Contributions amount (£s)	All AQMAs	Draft – Public Consultation	Ongoing	S106 Funding
23	Ceiling figure on long stay car parking in town centre (5000 spaces)	Policy Guidance and Development Control	Other	October 2020	SBC	SBC	Number of spaces	AQMA 4	Ongoing	Ongoing	To be reviewed as part of new Local Plan. Possible MIP bid submission for LEP funding for MSCP projects. TBA
24	EV infrastructure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging		SBC	SBC, S.106, OLEV	Number of EV chargers in Borough. Number of EV charge events	All AQMAs and Wider Borough	16 public EV chargers. Over 2500 EV charge events	Summer 2020	S106/OLEV/Capital funding
25	Taxi emission incentives	Promoting Low Emission Transport	Taxi emission incentives – free charging and licensing for early adopters		SBC	SBC, S.106, OLEV	Number of Taxi Rapid Chargers	AQMA 4, and Borough Wide	Successful Taxi Bid	Postponed 2021	7 Rapid Chargers to be installed by summer 2020
26	Taxi Licensing	Promoting Low Emission Transport	Taxi Licensing conditions		SBC	SBC, Taxi Operators	Number of ULEV taxi/PHVs licenses	AQMA 4, and Borough Wide	Approved by Licensing Committee	Autumn 2025	Report to sub-licensing committee – approved all PHVs/ taxis (except disabled access) to be ULEVs by 2025
27	Council Electric Pool Car and Bike Scheme	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles		SBC	SBC	Number of electric business miles travelled. Reduction in CO_2 (tonnes). Reduction in NO_2 and PM (Kg and grams)	Borough Wide	6 Electric Pool Cars purchased/leased And 6 E-bikes purchased	Winter 2025	Objective is to reduce 90% CO_2 and 85% NO_x emissions from grey fleet
28	Council – ULEV staff company salary sacrifice car scheme	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles		SBC	SBC	Number of ULEV Company cars	Borough Wide	6 ULEV company lease cars	Ongoing	Aim is 50 ULEV company lease cars by Dec 2020 in the Councils grey fleet
29	Council – Low Emission Hire Car Scheme	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	Not yet actioned	SBC	SBC	Number of miles in Low Emission -EURO 6 hire cars and Car club car	Outer Borough	Call off framework contract being reviewed	2025	Objective is to reduce 90% CO_2 and 85% NO_x emissions from grey fleet and operational cost
30	Clean Air Zone Feasibility Study	Promoting Low Emission Transport	Ultra Low Emission Zone (ULEZ)	2022 (if study is successful)	SBC	SBC	Successful feasibility study	AQMA 2, AQMA3 and AQMA 4 to be modelled	Ongoing (Modelling planned in 2020)	2021	May lead to policy to adopt CAZ in 2022
31	SBC Car & lift sharing schemes	Alternatives to private vehicle use	Car and Lift Sharing Schemes	June 2019	SBC	SBC	Car share %	Borough Wide	Increased activity through Access programme	In Progress	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. Currently only limited parking needed due to COVID-19.

32	Town Centre E car club	Alternatives to private vehicle use	Car Clubs	Not yet actioned	SBC	S.106, SBC	Number of Electric Cars operating and number of E-Car clubs users	AQMA 4	Capital monies secured	Postponed 2021	S106 funding being secured. Capital money secured
33	Bus park and ride	Alternatives to private vehicle use	Bus based Park & Ride	Post 2022	SBC	LEP, Heathrow PTL, bus operators, utility companies, private land owners, HE	Number of journeys	Borough Wide	Bid to LEP included within the SMaRT phase 2 project. Feasibility study bid made to Heathrow PTL fund.	Subject to Highways England SMaRT motorway completion	PTL bid unsuccessful to date. To resubmit. LEP funding successful. Detailed designs in progress for P&R site within the overall project, which is in progress. Ongoing design and land negotiations
34	Rail based park and ride	Alternatives to private vehicle use	Rail based Park & Ride	Post 2022	SBC	SBC	Number of journeys	AQMA 4 and Borough Wide	Bid to LEP	Subject to funding	Not successful Re-submit bid
35	Promoting Low Emission Public Transport	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	July 2018	SBC	DfT	Euro Fleet Emissions	AQMA 4 and Borough Wide	Major bus operator has upgraded vehicle fleet with support of DfT Green Bus Fund	Ongoing	Next round of funding to be used for retrofit of Euro V bus. Expression of Interest for the DfT's All Electric Bus Town being prepared for submission June 2020
36	Air Quality Communicatio n Plan	Public Information	Via all Media	December 2020	SBC	SBC	Number of re-tweets	Borough Wide	Outline Communication Plan prepared	Ongoing	Using Defra six principles of communication
37	New Air Quality Action Plan	Public Information	via leaflets and social media	March 2021	SBC	SBC	Leaflets	Borough Wide	Draft Low Emission Strategy prepared	Ongoing	Action plan will bring new measures to improve air quality
38	Clean Air Campaign	Public Information	Signed up	October 2020	SBC, GAP	SBC	Various media sources	Borough Wide	Clean Air Day stand at SBC offices	Each Year	Next year to be set up in Town Centre
39	AirText Service	Public Information	Via the Internet and text (smart phones	Jan 2007	SBC	SBC	Number of subscribers	Borough Wide	Over 100 Subscribers	Ongoing	Public Awareness Campaign
40	Stoke Road Sustainable Transport Infrastructure and Highways Works (regeneration)	Transport Planning and Infrastructure	Public Transport and Infrastructure	Feb 2020	SBC	LEP, bus operators, utility companies, developers, Network Rail, Canal and rivers trust, Slough Urban Renewal	Number of journeys (via sustainable modes)	Town Centre	Funding awarded by the LEP. Currently in progress. Limited activity due to COVID-19	March 2021	Part of the wider town centre regeneration. Temporary delay due to COVID-19 but beginning to return. Ongoing design work.

Air Quality Action Plan Revision

During 2020/2021, the Council will update its existing AQAPs under one comprehensive AQAP that will cover all five AQMAs as well any new emerging AQMAs during 2019/20. This allows time to evaluate the impact of air pollution in Slough during 2018 and 2019, including within the Langley area which have previously demonstrated elevated pollution levels (NO_2) at the kerbside and roadside monitoring locations. The updated AQAP will include updated air quality modelling using the latest transport model and traffic growth forecasts, to determine the sources of NO_2 and PM in the Borough. Within a stakeholder steering group, existing and emerging policies will be reviewed to form a collaborate approach to tacking air quality issues and draw out new measures which can contribute to air quality improvements. The dispersion modelling exercise will test the effectiveness of the measures outlined in the LES programme in achieving compliance with AQOs and any additional measures raised through the steering group to tackle air pollution in the Borough. The new AQAP will act as statutory support for the existing LES, aimed at reducing road transport emissions and improving health outcomes.

Slough's Low Emission Strategy (LES 2018-2025)

The objective of the LES is to focus on the short to medium term (over next 1-8 years) with the following principal outcomes:

- Improving air quality within the whole Borough.
- Improving communication and raising awareness of vehicle emissions and their impact on air quality and health.
- Implementing electric public transport infrastructure (pubic 'fast' and 'rapid' electric charging points) to cater for and allow for the acceleration of EVs in the Borough.
- Implementing and enabling the operation of electric/ULEV taxis through changes to the Licensing emission standards and provision of dedicated EV taxi infrastructure.
- Working with bus operators to upgrade the emission standards of their buses operating in the Borough (including through retro-fitting) with a view to promoting and facilitating (through the provision of low emission infrastructure) electric/hybrid/gas buses.

- To implement and operate in partnership a dedicated town centre wide electric/ULEV car club for all residents to use, and to expand the car club to transport hubs (Burnham and Langley).
- Adopting planning policies for new developments to support sustainable transport (including restrictions on parking) and implementation of low emission technologies and vehicles standards (including on site EV charging, low emission NO_x boilers and requiring the latest EURO standards for HDVs servicing new major commercial developments).
- Developing planning air quality and planning guidance to promote air quality mitigation at the design stage of new development and support wider air quality improvements through off-setting mitigation.
- Requiring developers to produce sustainable travel plans that are focused on modal shift away from car use, and where this is not possible on increased uptake of ULEVs.
- The Council leading by example, by implementing Fleet Challenge and Low Emission Standards within all the Council fleet operations.
- As necessary, enforceable regulatory controls (such as the potential introduction of CAZ(s)), subject to suitable funding, feasibility assessments and air quality modelling evidencing their effectiveness in tackling poor air quality in Slough.

Slough Transport Infrastructure Strategy (TIS)

Slough is currently developing its TIS as part of the Regeneration Framework, which is due to be circulated for consultation in September 2020. The Regeneration Framework is the spatial framework for the development and regeneration of Slough town centre, which incorporates measures to create an attractive and sustainable town centre whilst improving air quality, such as introducing cycle lanes onto the A4 and reducing parking in the town centre from 5000 to 3000 parking spaces. This framework is being developed in conjunction with the new Local Plan, the first phase of which will be out for consultation in October 2020.

The TIS builds upon the existing Transport Vision, which was published by the Council in February 2020, and the Local Transport Plan 3 (LTP3). This LTP is being refreshed as this Strategy develops, to produce LTP4 which will be out for consultation in November 2020. LTP4 is an overarching plan, supported by supplementary strategy documents.

The emerging TIS has been updated to reflect and address the review of Slough's Local Plan and its principal objectives for significant residential and business growth over the next 20 years. One of the main strands of the TIS is aimed at reducing impact of travel on communities (in particular air pollution) and the main emphasis is to reduce congestion.

This Strategy is focused on the medium/long term (5-20 years) in particular ensuring significant modal shift, improved cycling infrastructure, improved public transport service access and connectivity, constraint on town centre car parking, introduction of park and ride bus service, a dedicated ULEV mass rapid transit system on the A4 and the potential slough transit network across the north of the Borough[9]. This is also supported by the Slough Access Fund.

Slough Access Fund

The Slough Access Fund programme is aimed to support the local economy by addressing traffic congestion, boosting levels of cycling and walking and by improving access to jobs, skills, training and education. Key elements of the programme include smarter travel for schools and businesses, and sustainable and healthy travel and are summarized below (specific measures are identified in **Table 2.2**, measures 1-4, 6, 8 and 9).

Element 1 – Smarter Travel for Slough Businesses

Cycle September:

21 organisations in Slough participated in 2019, in which there were 212 registrants and 132 participants. Of the 132 participants, the majority were regular cyclists with a smaller percentage being occasional and new cyclists. The data showed that 14,294

[9] http://www.slough.gov.uk/council/strategies-plans-and-policies/the-emerging-local-plan-for-slough-2016-2036.aspx

miles were covered in a total of 1,147 trips, which saved approximately 1,402kg of CO2. 51% of these trips were for 'transport' purposes.

The results of the follow up survey showed that Cycle September did have a positive impact on participants, and it is hoped that the event encouraged them to cycle more often.

Liftshare:

The Better By team worked with workplaces to promote Liftshare and the benefits of car sharing. Slough as a Borough has its own Liftshare group where members of the public can join. Lonza gained nearly 500 new members since joining Liftshare and Royal Mail has seen a steady rise in member numbers since its group's inception in 2014.

Workplace Grants:

Match funded grants for businesses and organisations were given as part of the Access Fund programme for cycle parking and similar small-scale projects. Grants were not awarded in 2017 as they had yet to be established and available for applications. Over £35,000 of funding was awarded to workplaces for a variety of projects.

Insights from workplaces:

The financial assistance granted by the Access Fund and assistance given by the Better By team was positively received by many workplaces and contacts gave an insight into how it had made a difference in their workplace.

Element 2 – Supporting Sustainable Access to Jobs and Training

Station Travel Plans:

Slough produced a Station Travel Plan (STP) in 2016 for each of the three stations in the Borough, which were Slough, Burnham and Langley. The issues raised will be incorporated into the three stations.

Each of the STPs went on to identify opportunities to address the issues for each of their respective stations. At Slough station, opportunities identified included installing real time passenger information screens in the station to display bus times; resurfacing,

pedestrianising and increasing the capacity at the North Station car park; and installation of a crossing point opposite the main station entrance.

The STP for Burnham station proposed measures such as the placement of onward travel posters and information at the ticket office and main entrance, and increased and improved cycle parking. Similarly, the STP for Langley station proposed the installation of a Slough cycle hire docking station near the rail station (ideally on the south side), as well as the installation of new wayfinding signage for cyclists and upgraded pedestrian infrastructure.

Element 3 – Smarter Travel for Schools

Bikeability Training:

Bikeability is a training programme funded through the DfT and further supported by the Access Fund by providing cycle training at schools and supporting the programme with educational material. Cycle Experience ran courses on behalf of the Better By team in schools to teach pupils and to attain various levels of riding capability and confidence in cycling. The aspiration of running Bikeability training was to encourage more active travel to/from school. The first two years saw attendance levels of over 80% when compared to allocated funding or targets.

Transitional Training project – July 2019:

The purpose of this project was to aid pupils moving from one school to another or from one stage of their education to the next (e.g. primary to secondary) and to provide relevant information on their travel options. Moving schools may involve travelling to a new site and therefore may require a new route and possibly new modes of transport. Pupils will also have more independence as they progress through the different education stages.

Notes from the workshop presented ideas the pupils put forward to overcome barriers to walking. These included: digitalisation of textbooks to improve comfort of walking – i.e. less to carry; street lighting improvements in the school's vicinity to create a safer walking environment; and public transport service improvements to create a more compelling case for its use (walking is often used to access public transport).

Go Cycle Padlock Competition:

Eight schools were involved in the four week Go Cycle - Padlock Competition.
Start dates were in the months of March to June 2019. The competition results were as follows:

- There was a trend of increasing cycling and scooting for all schools (bar one school), from week 1 to week 2. This could be due to an immediate impact the competition had;
- From Week 2 to 3, half the schools had an increase in both modes whilst half had a slight decrease;
- From week 3 to 4 the decreases/increases of either mode were not as prominent as previous weeks (which is possibly due to three schools not competing for all 4 weeks, bringing down the average); and
- By week 3, all schools had an increase in both modes compared to Week 1.

Active Movement for Schools:

Active Movement is a national health programme that integrates non-sedentary behaviour and low-level activity into daily routine across primary schools, children centres and nurseries. It has become a well-being programme that applies an over-arching principle: frequent small steps lead to cumulative behaviour change across many areas of a child's health including immunisation, oral health and nutrition.
Active School Travel was a campaign for primary schools promoting reduction in car usage and increasing walking or cycling levels in Slough. 'Walking with Daisy' was a nursery programme using one of the toys from its delivery system to promote more walking and less buggy usage. This was a 12-month project which began in October 2019. However, data was collected up to December 2019. Schools participate for a month within the project's 12 months. In total, 16 primary schools (approximately 10,000 pupils) and 16 Early Years settings (nurseries) were involved in the programme in Slough. Before the programme began, Active Movement supplied every participating school with material to support and encourage the initiative.

Overall, from a qualitative perspective, the programme was successful in promoting, implementing and raising awareness/understanding of the intention of the initiative,

and as a means of creating discussion around the issue of active travel to schools. There is evidence that the cards and the support material were well received and most participants also found the programme easy to introduce and all were keen to try it again next year.

Banner Competition for Schools – May 2019:

This was a competition created by the Better By team as part of Walk to School Week. Two school pupils won a competition to design a banner promoting road safety and now have it displayed outside their school. Five schools participated in the competition and 848 pupils took part in the competition overall.

Rollapaluza for Schools – Summer 2019:

Rollapaluza is a cycling activity/events company based in London who are able to assist with a number of cycling related activities or events. Rollapaluza attended seven Slough schools in the summer of 2019. A total of 936 pupils participated in cycling activities across all schools and from Years 2 to 6.

Element 4 – Targeted Marketing of Sustainable and Healthy Travel

Slough Cycle Hire:

Slough Cycle Hire[10] has 17 strategically placed docking stations, where bikes can be picked up and dropped off at any time of the day. The scheme is part of SBC's aspiration to encourage more people to make their journeys by walking, cycling or public transport. The hopes are also to reduce reliance on the car, to help reduce congestion, improve air quality and make Slough's streets safer, cleaner and more pleasant.

Key observations show:

- Daily usage of cycle hire bikes does not exhibit a clear trend, with the peak number of members being 111 in the month of August. This may be owed to changes in the climate – warmer temperatures may encourage the public to use the scheme more frequently;

[10] https://www.cycleslough.com/

- As time progresses, there was a general increase in the number of monthly subscribers, which could be owed to greater awareness and acceptance by members of the public;
- From May to September, the number of monthly subscribers had almost tripled. The total number of subscribers equalled 832 during May to December, with average total subscriptions being 104 per month.;
- The number of total successful departures and returns (i.e. trips) was cumulatively 4,538 from May to December 2019;
- The total riding hours for the same period was 5,229 hours and the total distance covered was 9,825 km; and
- Total departures, riding hours and distance covered all increased at a fairly consistent rate every month, discounting the surge in riding hours in July 2019.

Adult Cycle Training – April to September 2019:

SBC funded subsidised courses at various levels to encourage adults to take up cycling. Training occurred across 12 dates spanning six months to provide an opportunity for those interested to participate for £5 a session. The courses took place in Salt Hill Park, with a fully qualified instructor. In a typical training session, participants built skills and confidence to cycle first in a traffic free environment then on the road.

Free Cycle Hire – October 2019

Slough in Motion's physical activity referral programme was launched in October 2019. This equated to 12 months free cycle hire to residents in Slough with a long-term health condition and who had been referred by their GP.

Slough's Clean Air Plan (CAP)

During 2021, the Council will be developing the new CAP. The CAP will consolidate all air quality aspirations and improvement plans across the Borough into one comprehensive strategy. This plan will include the following:

- The new AQAP, including the LES measures to improve air quality (including the CAZ feasibility study measures) and any new measures which emerge from the AQAP process.

- Planning policy supplementary planning document, to support the LES in setting clear guidance on air quality assessments and securing mitigation against significant air quality impacts as a result of major development schemes
- A study focusing on improvements in $PM_{2.5}$ and smoke control. Despite Slough not exceeding the EU limit for PM, it is important that action is taken to reduce emissions as far as possible. Public Health will have a key role in this study.
- A comprehensive communication plan, which outlines the methodology to increase awareness of air quality for residents in the Borough, including use of media such as AirTEXT, results from Slough's Sensor Project and one to one consultations with GPs.
- Improvements and aspirations for Slough's air quality network, including adaptations to the continuous monitoring network, introducing new monitors (e.g. $PM_{2.5}$ monitors) and increasing the use of air quality sensors (dependent on the outcome of Slough Sensor Project).

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

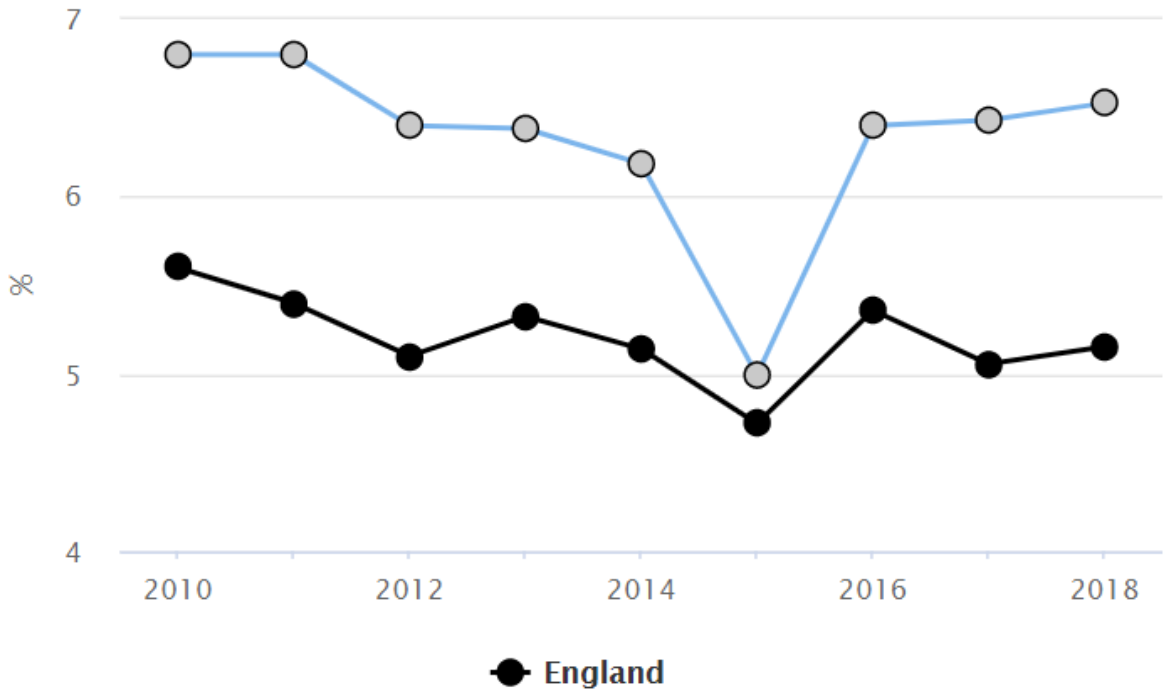
Work carried out by Public Health England as part of the Public Health Outcomes Framework (PHOF) shows that the fraction of mortality associated with particulate air pollution in 2018 within Slough Borough Council is 6.5%. This is slightly higher than 2017 (6.4%), however it was recently published that $PM_{2.5}$ concentrations in Slough are highest in the South East. This information is available from the following web link[11].

Figure 2.1 shows the fraction of mortality attributable to particulate air pollution calculated for Slough Borough Council over the past 5 years and compares this with

[11] https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/4/gid/1000043/pat/102/par/E06000039/ati/101/are/E06000039/iid/30101/age/230/sex/4

the England average. It is noted over this 5 year trend the mortality has slightly worsened in both England and Slough since 2017. The England average in 2018 is 5.2% and the regional average in the south east is 5.6%. Slough continues to remain above these mortality rates, at 6.5% (2018). However, as a note of caution regarding the trends; Slough does not actually monitor $PM_{2.5}$ using reference methods and there may be local sources that could give rise to higher concentrations.

Figure 2.1 – Fraction of mortality attributable to particulate air pollution for Slough



Slough has existing measures to control and reduce $PM_{2.5}$:

- All of the Slough area is covered by smoke control orders. These were made to reduce air pollution in the town, mainly arising from the use of coal for heating purposes. However, smoke control areas only restrict smoke from domestic chimneys and do not cover garden bonfires or bonfires on building and construction sites, therefore additional measures are required to control $PM_{2.5}$ emissions.
- The Council Five Year Plan (2018-2023) is a rolling 5 year plan and has outcomes based on improving children's and adults health, wellbeing and the ability to manage their health through increases in levels of physical activity and hence less dependency on car use (*which is very high within Slough*). This plan is due to be

renewed soon, but health is still a key outcome and the new plan has a measure on improving air quality concentrations[12].

- 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 NO_x 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 Emissions (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 will require planning controls on major developments that all HDVs travelling through the AQMAs will use best endeavours to operate to EURO VI standards (i.e. CAZ compliant).
- The emerging TIS is aimed at supporting the new Local Plan that is being developed for Slough. The strategy is aimed at reducing congestion by significantly increasing modal shift away from dependency on cars in Slough, as well as road widening to enable traffic to flow more smoothly, a new mass rapid transit system on the A4, and future proposals for park and ride scheme and improved cycle infrastructure.[13]
- The Slough Wellbeing Board takes a lead on promoting a healthier Slough and has developed the Slough Wellbeing Strategy (2016 – 2020) there are a number of strategic aims; including improving health and wellbeing and reducing gaps in life expectancy. The Health and Adult Social Care Priority Delivery Group (PDG) supports the Slough Wellbeing Board. The LES has been presented to the PDG to raise awareness of the impact on poor air quality on public health and we will report to the group on progress made with the LES on an annual basis. Public health colleagues will raise the awareness of the harm of air pollution on human health[14].
- The Council has signed up to the Airtext Service[15] which is a free app subscription service that provides Members of the Public text alerts on pollution episodes,

[12] http://www.slough.gov.uk/council/strategies-plans-and-policies/five-year-plan.aspx

[13] http://www.slough.gov.uk/council/strategies-plans-and-policies/the-emerging-local-plan-for-slough-2016-2036.aspx
[14] http://www.slough.gov.uk/council/strategies-plans-and-policies/slough-wellbeing-board.aspx
[15] http://www.airtext.info/

excess cold and hot weather, including useful health advice and precautions to take when air pollution levels are high including $PM_{2.5}$.

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

- Completing Borough wide $PM_{2.5}$ dispersion modelling and source apportionment. This will identify the percentage of $PM_{2.5}$ pollution that is sourced outside and inside the Borough boundary, and what those sources are. This is likely to include local infrastructure development (construction activities), diesel generators related to datacentres (significantly increasing), wood burning, local industrial sources and traffic emissions. Once this is complete, refined measures for targeting $PM_{2.5}$ reduction specifically can be raised.
- Revision of Slough's Smoke Control Policy. Part of the development of the CAP is to refine measures to tackle $PM_{2.5}$ reduction, which includes revisiting the Smoke Control policy and determine whether stricter controls on burning is required in the Borough, such as an outright ban on burning fuels outdoors.
- Creation of the Air Quality and Health group. In 2020, a partnership between health professionals and air quality experts will be established, which 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).
- Restricted non-mobile road machinery (NRMM) controls to reduce $PM_{2.5}$ emissions from construction sites. Currently, NRMM are required to meet Stage BIII controls, however this may be revised and restricted further with the development of the CAP.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with objectives.

Slough Borough Council undertook automatic (continuous) monitoring at 7 sites during 2019, which includes:

- Salt Hill (Slough-town-centre, A4) SLH 4
- Slough-Colnbrook-(Pippins) SLH 3 & SLH6
- Slough-Chalvey, M4 SLH 7 (AQMA 1)
- Slough-Colnbrook (Lakeside, Tan House Farm) SLH 5
- Slough Town Centre (Wellington Street) SLH 10 (AQMA 4)
- Slough Brands Hill (London Road) SLH 11 (AQMA 2)
- Slough Windmill (Bath Road) SLH12 (AQMA 3)

Additionally Lakeside Energy from Waste Ltd[16] operate an EfW in Colnbrook, Slough since 2010. The plant processes over 450,000 tonnes of residual waste per year, generating up to 37MW of power. The operator of the site as well as undertaking continuous stack monitoring as part of their Permit, operate 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 NO_x, PM_{10} and $PM_{2.5}$ monitoring.

- Slough-Lakeside-2 (Lakeside Road) SLH8 & SLH9

The air quality monitoring station at Salt Hill (SLH 4) is an old station and frequently suffered from water leaks. Due to this, operation of Salt Hill monitoring station ceased November 2019. Although this has affected data capture for 2019 at this location (reduced to 78.4%), it was not financially feasible to keep the site running until the end of the year after equipment connections were damaged. Although this site is no longer active and will be decommissioned during 2020, data for this area of Slough will

[16] http://www.lakesideefw.co.uk/

continue to be collected at the nearby Windmill monitor (SLH 12), which is more representative of roadside NO_2 concentrations.

Pippins Colnbrook air quality monitoring station (SLH 3) has also suffered water ingress (causing a data capture of 89.6%), however short term repair has temporarily resolved this issue. To ensure data is not compromised by damage in future, this site will be replaced with a new walk-in cabinet, complete with updated monitoring equipment to measure NO_2 and PM_{10}. A future ambition for this site is to install a certified $PM_{2.5}$ monitor (such as a BAM), to begin collecting reliable $PM_{2.5}$ data in response to concerns over $PM_{2.5}$ health related impacts and reports indicating high $PM_{2.5}$ concentrations in Slough.

Chalvey monitoring station (SLH 7) is also due to be replaced. Currently, the Chalvey station is positioned in a waste depot. Although this area is within AQMA 1 (M4 corridor), it does not represent residential exposure well, therefore it is being relocated on Spackmans Way, to represent exposure at the nearest residential receptor to the M4.

Finally, a new continuous roadside monitor will be located in Langley. Due to passive monitoring results since 2016 showing increases in NO_2, there is a need to monitor continuous daily NO_2 and PM, to produce an evidence base of air quality trends, to support the declaration of Langley as an AQMA. This monitor will also allow the Council to observe the impact of planned and proposed infrastructure projects, which may influence traffic volumes and subsequently worsen air quality.

Table A.1 in **Appendix A** shows the details of the 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. National monitoring results are available at https://uk-air.defra.gov.uk.

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 (passive) monitoring of NO_2 at 53 sites (65 diffusion tubes) across the borough for the majority of 2019, however the

network was expanded in October 2019 to 96 tubes across 57 sites during 2019. **Table A.2** in **Appendix A** shows the details of the sites.

The Council had previously expanded its diffusion tube network in late 2016 to cover Langley village and the surrounding area, adding a further 5 monitoring sites. The Council has also co-located diffusion tubes with its new air quality monitors in late 2017. Additionally, the Council decommissioned its temporary air quality monitoring station (TRL) and relocated the diffusion tubes to three new sites (Tuns Lane, Windsor Road and Castle Street) in 2017.

The Council's recent diffusion tube network expansion was to accommodate the following:

- Monitoring commissioned by Highways England to monitor the impact of the Smart M4 Scheme on nearby receptors. This consists of 3 monitoring locations, each with triplicate sampling to provide 30 additional tubes: Spackmans Way (8 residential receptors – 24 tubes), Paxton Avenue (1 receptor – 3 tubes) and Winvale (1 receptor – 3 tubes).
- Monitoring in residential locations that are affected by high % volume of HGVs on the local road network (Poyle area)

The following updates occurred early 2020:

- Co-location of diffusion tubes with Vaisala sensors, in support of the Slough Sensor Project (see below for details).
- Background monitoring in open spaces to determine the NO_2 'clean' baseline recorded by diffusion tubes.
- New monitoring locations on congested roads (Albert Street/Upton Court Road)

Maps showing the location of the monitoring sites are provided in **Appendix D.** These tubes are collected on a 4 or 5 weekly basis and analysed at a UKAS accredited laboratory (Gradko International). Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. "annualisation" and/or distance correction), are included in **Appendix C.**

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.

The following diffusion tubes have been annualised due to having low data capture for the year: SLO 4, 26, 69-82, 84-86, 88-96. Data for these sites should therefore be treated with caution, as annualised data is less accurate than measured data.

Details of precision checks undertaken for triplicate diffusion tube monitoring sites is provided in **Appendix C.1 – C.6.** As identified using the method identified in **Appendix C.10**, there is one triplicate with poor precision, with coefficient of variation (CoV) >20% (SLO 90-92 Spackmans Way HE Receptor 9). The results for SLO 91 and SLO 92 are confirmed as having poor precision in December and October respectively. Although poor precision exists for this location, the results have been retained for reporting purposes.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias[17], "annualisation" (where the data capture falls below 75%), and distance correction[18]. Further details on adjustments are provided in **Appendix C**.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in **Appendix A** compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the AQO of 40µg/m^3. Note that the concentration data presented in **Table A.3** 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 2019 dataset of monthly mean values is provided in **Appendix B**. Note that the concentration data presented in **Table B.1** includes distance corrected values, only where relevant.

The distance correction concentration to the nearest site for relevant exposure (normally a residential property unless otherwise indicated) is also shown using the DEFRA tool[19] Nitrogen Dioxide Fall Off with distance and in **Appendix C.11**. The reference year 2017 national background modelled concentrations (adjusted to the monitoring year 2019) for Slough and Royal Borough of Windsor and Maidenhead

[17] https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html
[18] Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)
[19] https://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html

were used within the DEFRA tool. The distance to the 'relevant exposure' and nearest main road was obtained through a combination of on-site measurements and GIS map measurements. These had been significantly revised and updated from the ASR 2016 and are considered to be accurate.

There are several factors which may affect the distance correction calculation as follows:

- for several sites the receptor is closer to the main road ('A' road, Motorway, local busy main road) than the passive diffusion tube;
- in some cases where the receptor is closer to the main road than the monitor the distance between receptor and monitor is quite large over the recommended minimum 10m (i.e. Winvale, Grampian Way);
- for the purposes of the assessment; the influence of the local road where the tube is located cannot be taken into account within this calculation and it is assumed to make up part of the background NO_2;
- the main roads we are concerned with 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

2019 NO2 Results

The 2019 Slough monitoring results (See **Appendix A, Table A.3** and **Appendix B, Table B.1**) indicate that:

- Similarly to 2018, there are breaches of the AQO at residential receptors within AQMA 2 (SLO 18, Brands Hill (A)) and AQMA 4 (SLO 29, Yew Tree Road). Generally, there are improvements across most residential receptor monitoring locations, however isolated areas have shown a worsening of NO_2 concentrations, namely SLO 8 (Grampian Way, +0.7µg/m^3), SLO 4 (Lansdowne Avenue, +0.1µg/m^3) and SLO 53 (High Street Langley (A), +1.3µg/m^3). To

determine if this is a continuous worsening of air quality, these areas will be closely monitored during 2020.

- Eight residential receptor locations across all AQMAs are exposed to NO_2 concentrations within 10% of the AQO, therefore there is no evidence to suggest that any of the AQMAs should be revoked.

- AQMA 1 has shown improvements at all locations excluding Grampian Way (SLO 8). As the construction phase of the Smart Motorway is progressing, periods of closure and speed restrictions are being implemented, which may have an influence on pollution arising from the M4. As SLO 8 represents the closest receptor to Junction 5 of the M4, it is expected that NO_2 concentrations would be higher at this location, however it is a concern that concentrations have risen by 0.7µg/m^3 at this receptor in the last year. This area will be closely monitored over 2020.

- Residential receptors have experienced improvements in air quality across AQMA 2. The biggest NO_2 improvement is observed at SLO 28 (Rogans, Colnbrook By-Pass), which has reduced by 4.6µg/m^3 from 2018 to 2019.

- Similarly to AQMA 2, AQMA 3 has experienced an improvement in air quality (SLO 50, Tuns Lane (B), 2.3µg/$m^3$3 decrease).

- Within AQMA 4, receptors have experienced no or minimal change in concentrations at SLO 46 (Cornwall House, Bath Road) and SLO 4 (Lansdowne Avenue), however the remaining receptor monitoring locations in this AQMA have shown improvement in air quality, with the greatest improvement observed at SLO 29 (Yew Tree Road), reducing from 43.7µg/m^3 to 40.5µg/m^3. SLO 26 (Yew Tree Road (B)) has shown an increase in NO_2 by 3.2µg/m^3, however this is due to the monitoring location being relocated part way through 2019. A full dataset for this location will be observed in ASR 2021.

- Receptors located outside of AQMAs with NO_2 concentrations within 10% of the AQO are SLO 49 (Windsor Road (B)) and SLO 53 (High Street Langley (A)).

SLO 49 has experienced an improvement of NO_2 since 2018 (0.6µg/m^3 decrease), whereas SLO 53 has worsened by 1.3µg/m^3.

In 2019, the local air quality across the majority of sites shows a decrease in concentrations when compared with the previous year's data, which is also the case with the trend from 2016 to 2018.

However, the rate of improvement required to meet the AQOs is still relatively slow and air pollution remains a significant issue for Slough residents and will continue to do so for some years to come as there are clearly some stubborn hotspots of air pollution, as well as potential for new areas of relevant exposure (Windsor Road and Langley) to be declared.

Concentrations vary significantly between diffusion tube monitoring sites located within our AQMAs. Whilst some diffusion sites within our AQMAs are demonstrating compliance with the national AQOs, others are still showing significant breaches in the AQMAs. A summary of progress within AQMAs is summarised below:

- In AQMA 1 (no breaches of AQO in 2019)
- In AQMA 2 (4 breaches at SLO 10, SLO 18, SLO 64 and SLO 65)
- In AQMA 3 (1 breach at SLO 50)
- In Extended AQMA 3 (no breaches of AQO in 2019)
- In AQMA 4 (1 breach at SLO 29)

Also despite the diffusion tube network undergoing a bias correction (i.e. statistical correction against our continuous air quality monitoring data), diffusion tube accuracy is still ± 25% and continuous air quality monitoring stations accuracy ± 10% at best. Therefore, in order to be confident that the air quality concentrations are below the national AQOs the levels should at the very least be consistently demonstrating levels at least 10% below the national AQOs (i.e. **36µg/m^3**) over several years before considering the revocation or amendment of an AQMA.

At every AQMA, the data for 2019 brings down the 5 year average NO_2 concentrations further than last years dataset, each with diffusion tubes close to or exceeding the AQO. Therefore, it is recommended that none of the AQMAs are revoked.

Including sites outside of AQMAs, when comparing to 2018 data, the following diffusion tube sites have dropped below 36 µg/m^3:

- SLO 17 (8.2µg/m^3 improvement)
- SLO 32 (3.4µg/m^3 improvement)
- SLO 51 (1.0µg/m^3 improvement)
- SLO 56 (1.9µg/m^3 improvement)

The following sites, however, have showed a worsening in air quality from 2018, the highest of which is 3.0µg/m^3 at SLO 30:

- SLO 8
- SLO 14
- SLO 19
- SLO 20
- SLO 23
- SLO 24
- SLO 26
- SLO 30
- SLO 38
- SLO 48
- SLO 52
- SLO 53

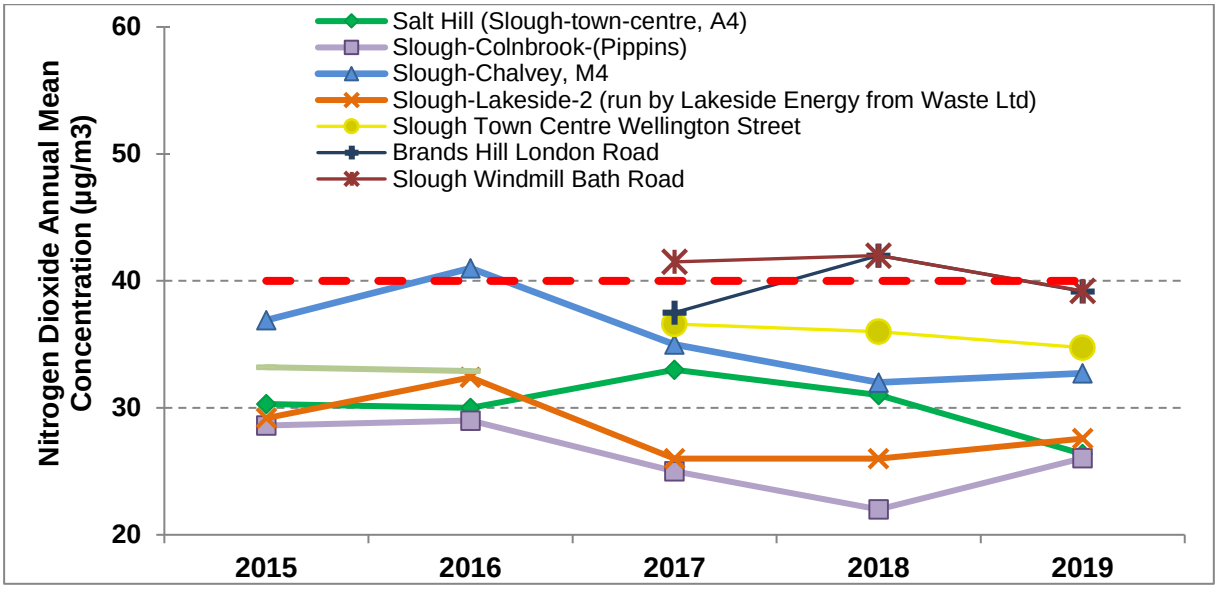
However, none of these sites exceed the AQO. SLO 53 is closest to exceedance at 39.9µg/m^3. This site will be continually monitored to determine over the next few years to determine if air quality in Langley overall is deteriorating and to determine if Langley needs to be declared as a new AQMA.

Automatic Monitoring Station Trends

The NO_2 annual mean concentrations for the past 5 years are illustrated in the line graph below for the 7 automatic monitoring stations located in Slough, **Figure 3.1**.

The TRL station is shown however this site was only set up in late 2014 for a 2 year period, and decommissioned in early 2017. Monitoring sites Windmill, Brands Hill and Town Centre were commissioned in 2017 therefore only 2 data points are shown. All monitoring stations (excluding Salt Hill SLH 4) were used to determine the local bias correction for 2019, using the statistical type B approach that gave a bias correction of **0.920.** Salt Hill (SLH 4) was not included, due to low data capture (<90%, specifically 78.4%) for that site.

Figure 3.1 – Nitrogen dioxide concentrations measured at automatic monitoring stations (2014 – 2018) including for the new monitoring sites



As shown in **Figure 3.1**, there are a range of trends observed in NO_2 continuous monitoring data. Salt Hill monitor has been included for information purposes, but results must be treated with caution due to the low data capture at the site. Monitoring stations at Pippins, Lakeside and Chalvey all show an increase in NO_2 however Wellington Street, Windmill and Brands Hill show a reduction in NO_2, indicating that air quality has improved at major roads but worsened at background locations.

Diffusion Tube Trends within AQMAs

The following graphs (**Figure 3.2 to 3.6**) illustrate the 5 year trends for those diffusion tubes in our AQMAs. The results have been bias corrected and annualised, but not distance corrected to areas of relevant exposure. These are the most relevant tubes to understand if air quality concentrations within Slough are showing a downward trend, no trend or an upward trend. These are particularly important where the trend is not showing any significant change as this indicates pollution hotspots where efforts need to be focussed on measures to deal with poor air quality. **Figure 3.7** shows data for Langley, which may be declared as an AQMA in future.

Figure 3.2 – Nitrogen Dioxide Concentrations measured by diffusion tube in Slough from 2015 to 2019 in AQMA 1

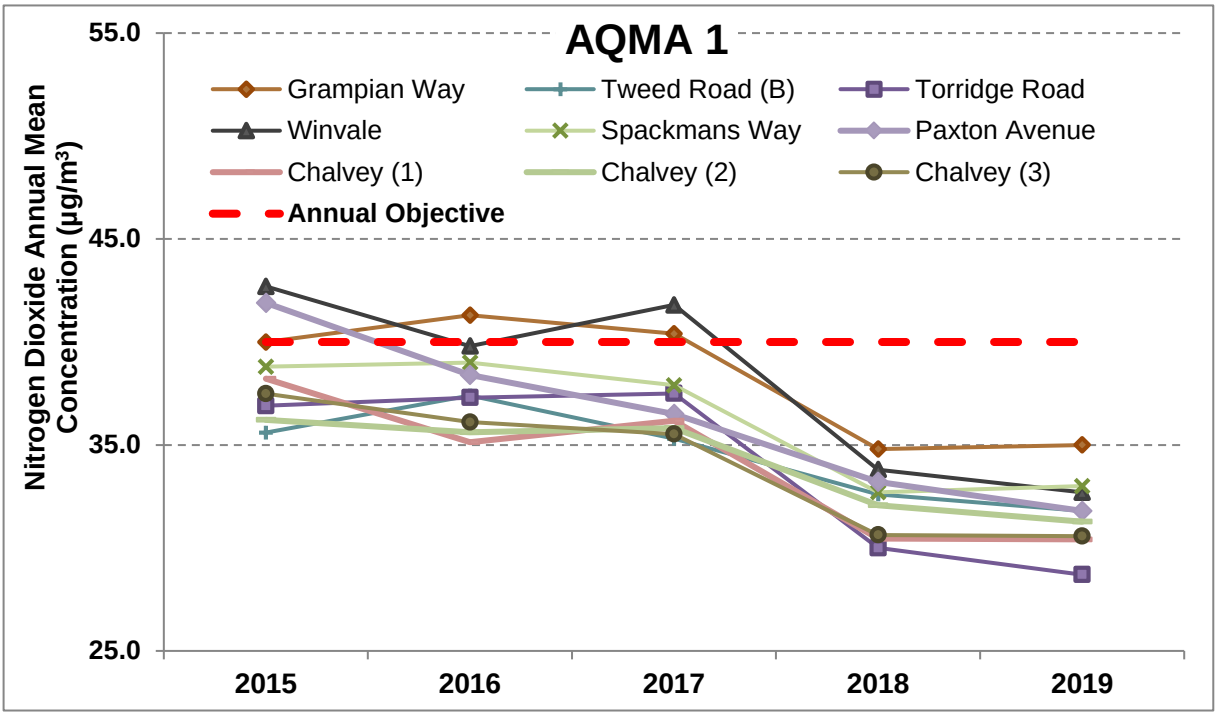


Figure 3.3 – Nitrogen Dioxide Concentrations measured by diffusion tube in Slough from 2015 to 2019 in AQMA 2

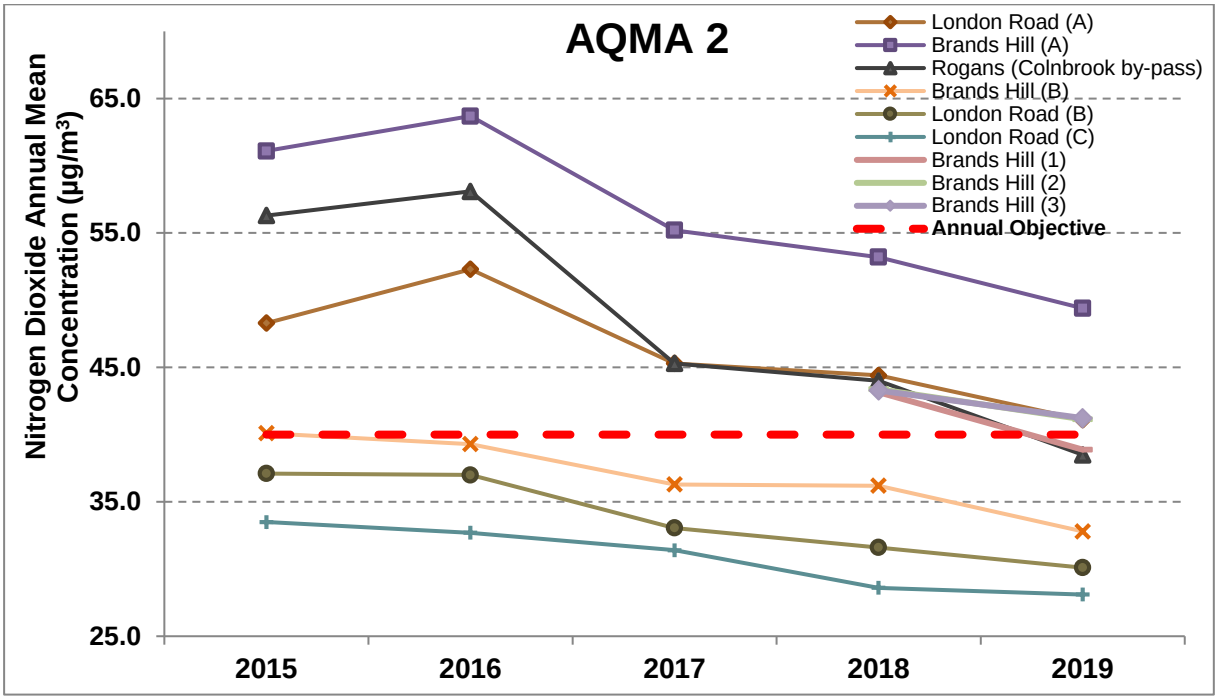


Figure 3.4 – Nitrogen Dioxide Concentrations measured by diffusion tube in Slough from 2015 to 2019 in AQMA 3

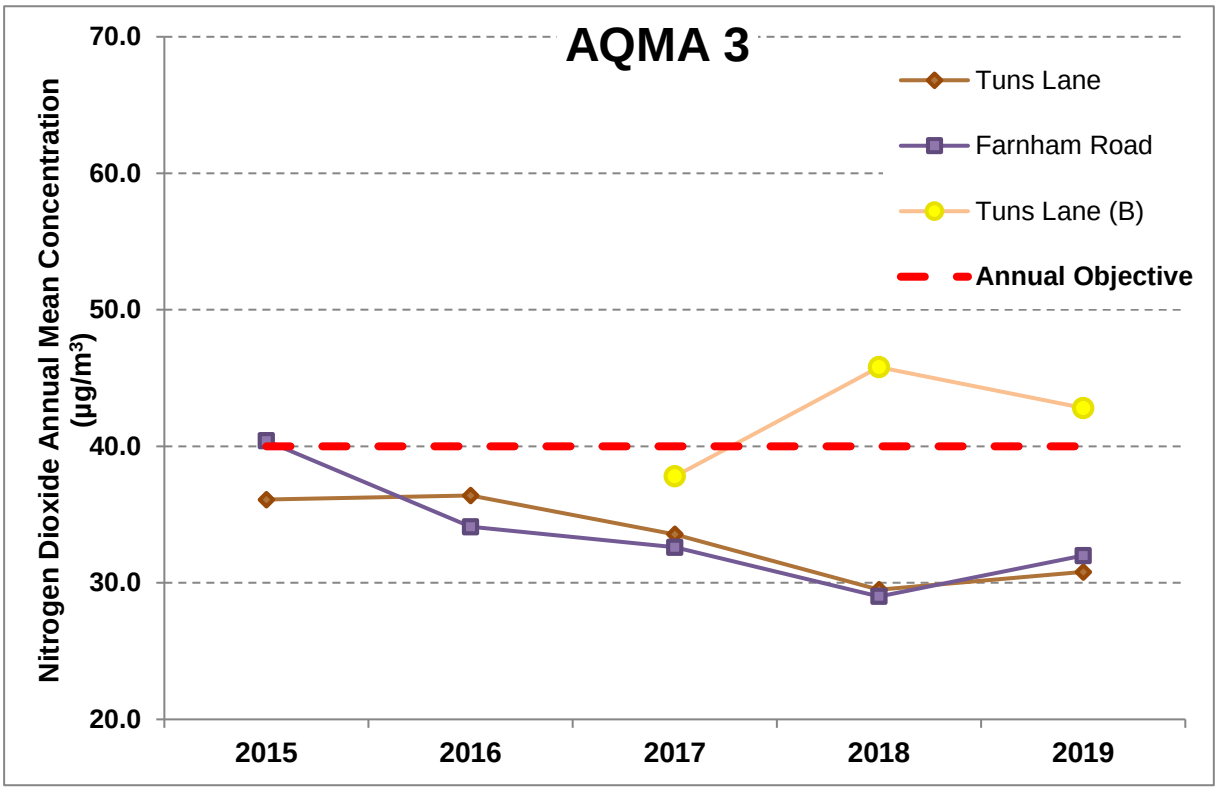


Figure 3.5 – Nitrogen Dioxide Concentrations measured by diffusion tube in Slough from 2015 to 2019 in AQMA 3 Extension

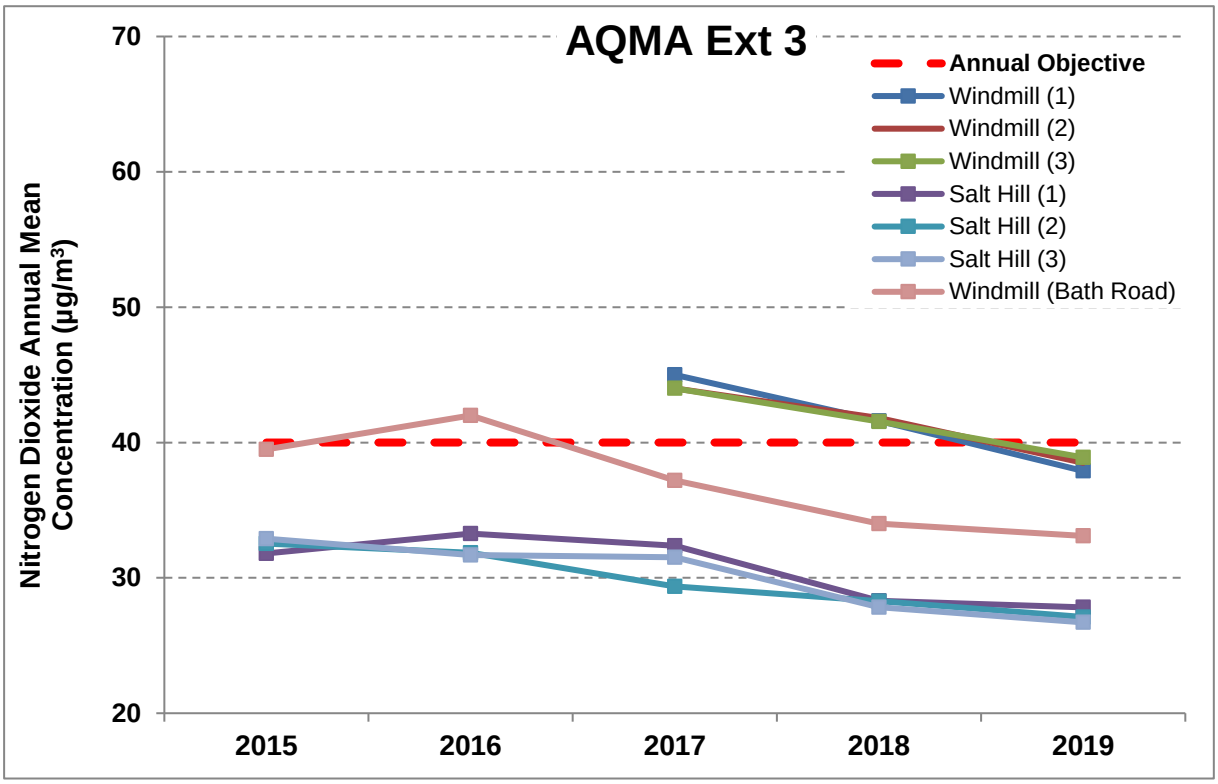


Figure 3.6 – Nitrogen Dioxide Concentrations measured by diffusion tube in Slough from 2015 to 2019 in AQMA 4

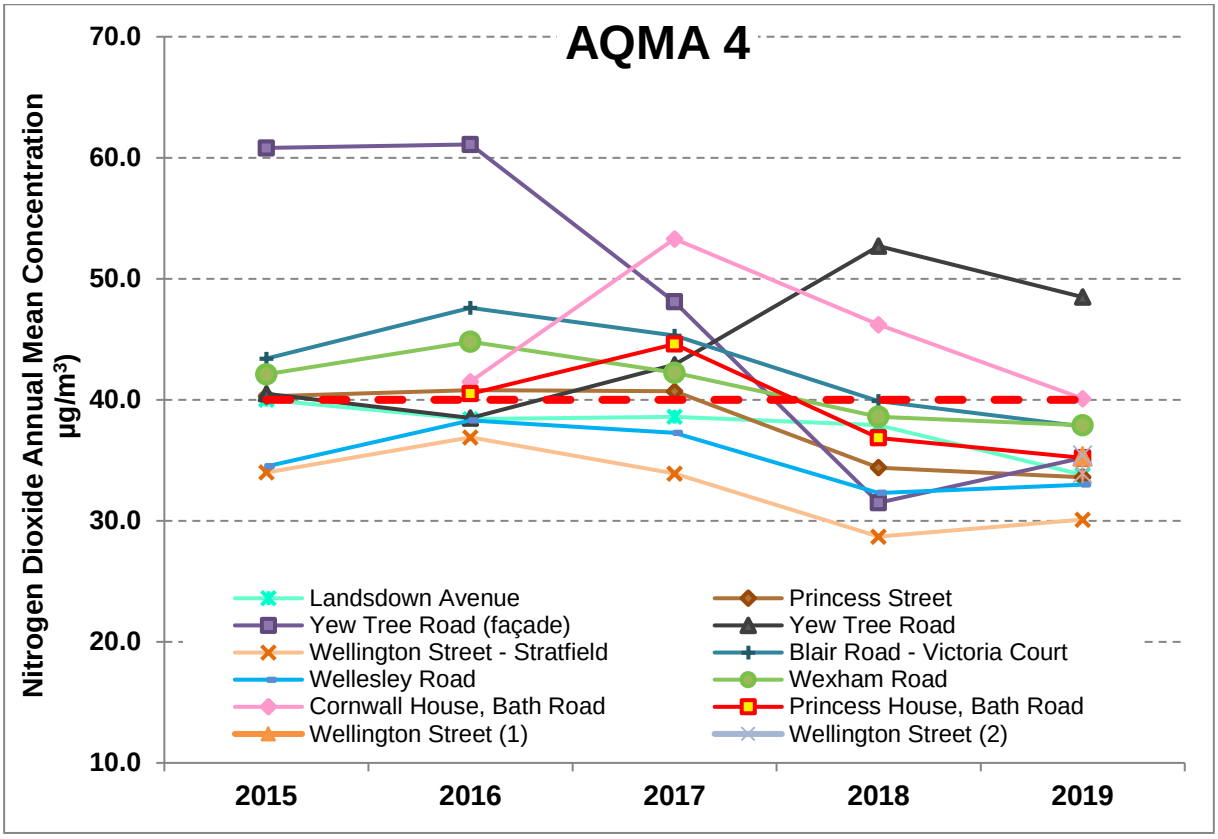
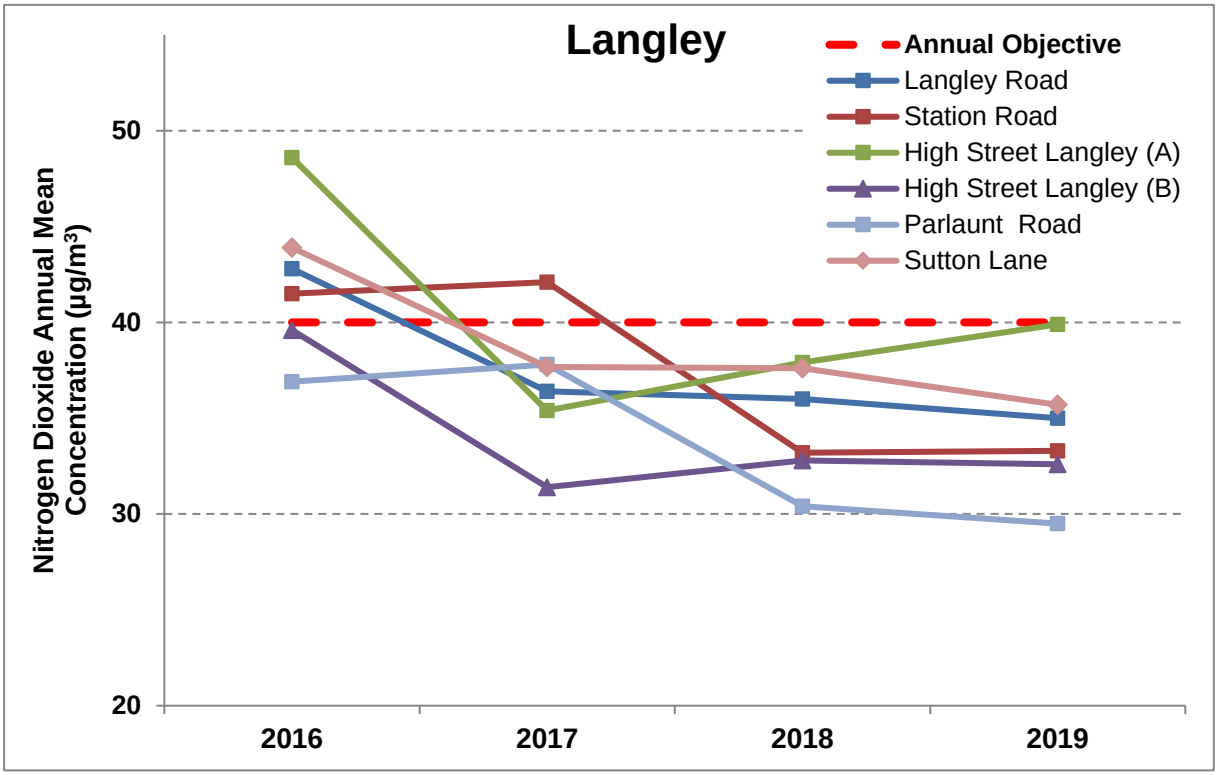
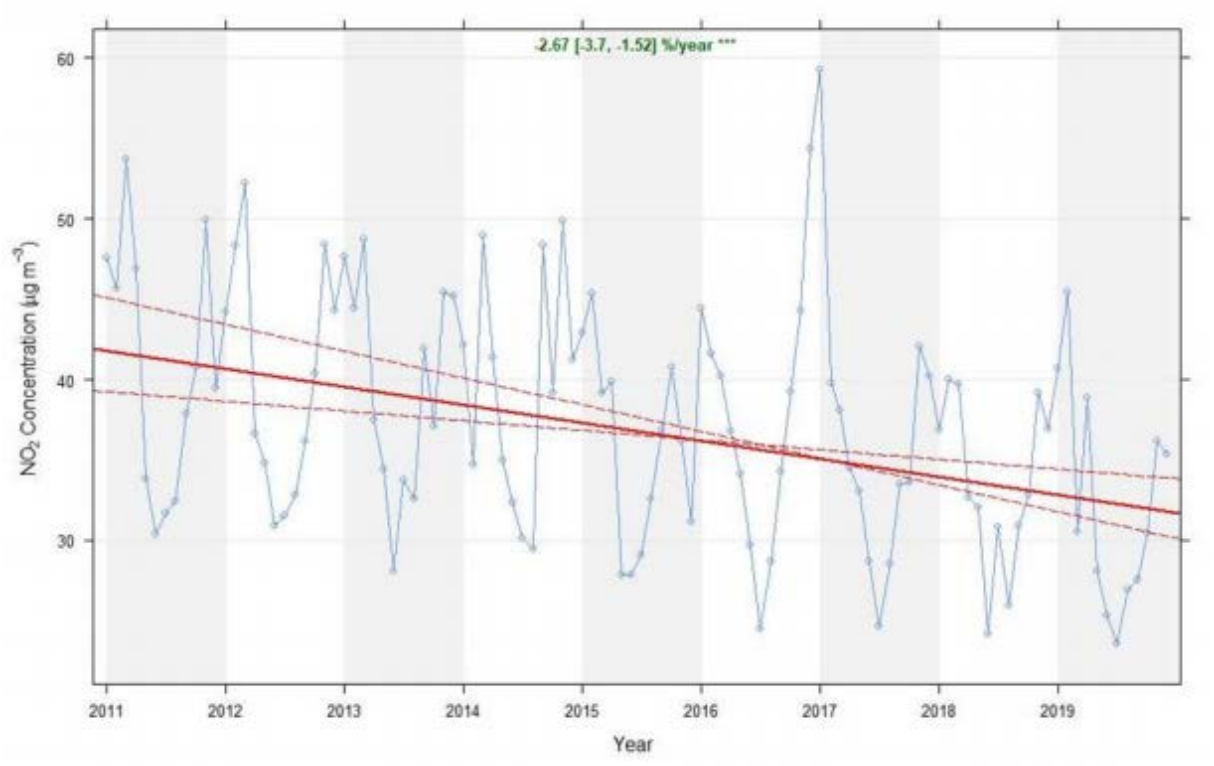


Figure 3.7 – Nitrogen Dioxide Concentrations measured by diffusion tube in Slough from 2015 to 2019 in Langley (potential future AQMA)



To observe whether this trend is similar to nearby local areas, comparison can be made to the graph shown in **Figure 3.8.** This graph was produced by the openair package provided by Heathrow Airport Limited[20], which was used to analyse trends in NO_2 concentrations, measured by all automatic monitoring stations <5km away from Heathrow Airport from 2011 to 2019. The graph indicates that NO_2 concentrations are reduced by 2-3% per year over this period. The reductions are likely to be primarily driven by reducing vehicle emissions as newer vehicles that meet tighter emission standards replace older ones. Observations from Slough's monitoring network broadly match the trend shown here.

Figure 3.8: Analysis of NO2 concentrations at all sites <5km from Heathrow Airport (2011-2019) (%/yr)



A summary of the changes in nitrogen dioxide concentrations within each AQMA is provided in **Table 3.1**. The average change was calculated by estimating the line of best fit though the concentrations and dividing through by the number of monitoring years (most recent five years). The trends were calculated using excel LINEST function. The five year average concentrations for each site are also recorded.

[20] http://www.heathrowairwatch.org.uk/documents/AQ_briefing_2019_Q4.pdf

Values in bold red indicate concentrations above the AQO. Values in bold black are within 10% of the AQO.

The Langley sites have been included in a separate table to determine the average change in nitrogen dioxide concentrations over the last 4 years, as monitoring began in 2016.

Table 3.1 – NO_2 trends over 5 years within AQMAs

AQMA	Site ID	Site Name	Years Monitored	Average nitrogen dioxide concentrations over last 5 years (µg/m^3)	Average change in nitrogen dioxide concentrations over last 5 years (µg/m^3/year)
1	SLH 7	Slough, Chalvey, M4 (Automatic)	5	35.52	-1.74
1	SLO 8	Grampian Way	5	**38.30**	-1.65
1	SLO 22	Winvale	5	**38.16**	-2.60
1	SLO 24	Spackmans Way	5	**36.28**	-1.79
1	SLO 11	Torridge Road	5	34.08	-2.37
1	SLO 9	Tweed Road	5	34.54	-1.24
1	SLO 34	Chalvey (1)	5	34.08	-2.03
1	SLO 35	Chalvey (2)	5	34.20	-1.34
1	SLO 36	Chalvey (3)	5	34.07	-1.93
1	SLO 25	Paxton Avenue	5	**36.36**	-2.54
Average decreases in AQMA 1 (µg/m^3)					**-1.92**
2	SLO 32	Brands Hill (B)	5	**36.94**	-1.77
2	SLO 45	London Road (C)	5	30.86	-1.49
2	SLO 18	Brands Hill (A)	5	**56.52**	-3.39
2	SLO 10	London Road (A)	5	**46.28**	-2.23
2	SLO 39	London Road (B)	5	33.77	-1.94
2	SLO 28	Rogans (Colnbrook by pass)	5	**48.44**	-4.97
Average decrease in AQMA 2 (µg/m^3/year)					**-2.63**
3	SLO 23	Tuns Lane	5	33.27	-1.75
3	SLO 30	Farnham Road	5	33.62	-2.19
Average decrease in AQMA 3 (µg/m^3/year)					**-1.97**
Ext 3	SLO 43	Windmill	5	**37.16**	-2.08
Ext 3	SLH 4	Salt Hill (Automatic)	5	30.13	-0.69
Ext 3	SLO 1	Salt Hill (1)	5	30.71	-1.29
Ext 3	SLO 2	Salt Hill (2)	5	29.83	-1.44
Ext 3	SLO 3	Salt Hill (3)	5	30.13	-1.62
Average decrease in AQMA 3 extension (µg/m^3/year)					**-1.43**
4	SLO 4	Lansdowne Avenue	5	**36.46**	-1.44

4	SLO 38	Wellesley Road	5	35.07	-0.90
4	SLO 33	Wellington Street	5	32.72	-1.60
4	SLO 29	Yew Tree Road	5	**44.62**	3.02
4	SLO 5	Princess Street	5	**37.96**	-1.98
4	SLO 37	Blair Road	5	**42.80**	-1.89
4	SLO 40	Wexham Road	5	**41.13**	-1.46
4	SLO 46	Cornwall House	5	**44.02**	-1.82
4	SLO 47	Princess House	5	**37.63**	-2.84
Average decrease in AQMA 4 (µg/m^3/year)					**-1.21**
Overall average decrease across all AQMAs					**-1.83**

Table 3.2 – Diffusion tube trends over 4 years within Langley

Site ID	Site Name	Years Monitored	Average nitrogen dioxide concentrations over last 4 years (µg/m^3)	Average change in nitrogen dioxide concentrations over last 4 years (µg/m^3/year)
51	Langley Road	4	**37.55**	-2.38
52	Station Road	4	**37.53**	-3.35
53	High Street Langley (A)	4	**40.45**	-2.36
54	High Street Langley (B)	4	34.10	-1.96
55	Parlaunt Road	4	33.65	-2.96
56	Sutton Lane	4	**38.72**	-2.47
Average decrease in Langley (µg/m^3/year)				**-2.58**

Note: a negative value (black) indicates a trend showing a decrease in concentrations (improvement) over the past 5 years and a positive number (red) indicates a trend showing an increase in concentrations (deterioration) over the past 5 years, where value is 0 there no discernible trend pollution concentrations are not changing/improving

It is recognised that five years is a short time for detailed trend analysis and inter-year variability will exist, due to changes in traffic volume and congestion, weather or climatic impacts, or local impacts. Once full datasets have been obtained for more than 5 years across monitoring sites, a longer term comparison can be made.

The average reduction in concentrations of annual mean NO_2 over the past 5 years across all diffusion tube monitoring sites and two continuous monitoring sites (Chalvey and Salt Hill), across the Borough is **1.82µg/m^3 per year** (4.73% of the AQO). This is an improvement from the 2018 and 2019 ASRs (1.15µg/m^3 and 1.33µg/m^3, respectively).

Although Langley is displaying an overall improvement in NO_2 concentrations, certain sites (SLO 53) are close to exceeding the AQO for 2019. Monitoring will continue at

this location to determine if an AQMA needs to be declared in this area. This will be supported further by continuous monitoring, which is due to commence in 2020.

In addition to those diffusion tubes within the existing and proposed AQMAs exceeding the national AQOs, there are some diffusion tube sites of interest that are currently not located within an AQMA, but are also showing elevated levels of annual mean NO_2 above the national AQOs.

Those sites where the nitrogen dioxide concentrations were measured equal to or greater than **40µg/m^3** are shown in **Appendix B, Table B.1**. Additionally, some sites that measured below the AQO of **40µg/m^3** may lead to relevant exposure above the AQO of **40µg/m^3.**

Hourly Air Quality Objectives

Appendix A, Table A.4 compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the AQO of **200µg/m^3,** not to be exceeded more than 18 times per year. There were no exceedances of the **200µg/m^3** objective monitored in 2019 at any of the automatic monitoring sites.

There were also no diffusion sites in 2019 where the annual means exceeded **60µg/m^3.** Sites where the annual mean exceeds 60µg/m^3 may indicate breaches of the hourly objective of 200µg/m^3[21].

3.2.2 Particulate Matter (PM_{10})

Appendix A, Table A.5 compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the AQO of 40µg/m^3. All data has been properly ratified. This is illustrated in **Figure 3.9.**

[21] DEFRA LAQM Technical Guidance (TG 16) section 7-31

Figure 3.9 – PM_{10} concentrations measured within Slough Borough Council from 2015 to 2019

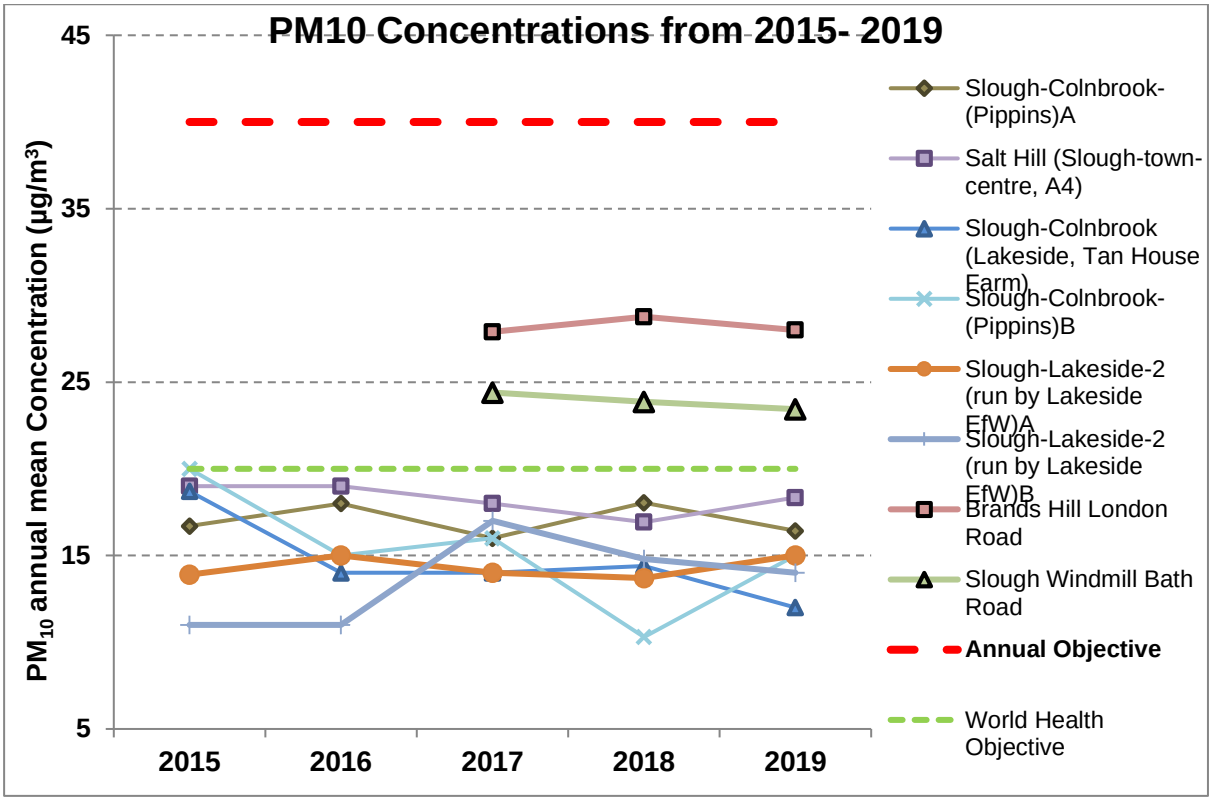


Table 3.3 summarises the change in PM_{10} concentrations over the 5 year period from 2014 to 2018. The average change was calculated by estimating the line of best fit through the concentrations and dividing through by the number of monitoring years.

Table 3.3 – Average Change in PM_{10} at each monitoring station

ID	Site Name	Number of years of monitoring	Average change[1] in PM_{10} concentration from 2015 to 2019 (µg/m³/year)
SLH 3	Slough-Colnbrook-(Pippins)A	5	-0.05
SLH 4	Salt Hill (Slough-town-centre, A4)	5	-0.34
SLH 5	Slough-Colnbrook (Lakeside, Tan House Farm)	5	-1.30
SLH 6	Slough-Colnbrook-(Pippins)B	5	-1.47
SLH 8	Slough-Lakeside-2 (run by Lakeside EfW)A	5	0.09
SLH 9	Slough-Lakeside-2 (run by Lakeside EfW)B	5	0.98
SLH 11	Brands Hill London Road	3	0.06
SLH 12	Slough Windmill Bath Road	3	-0.48

Note: a negative value indicates a decrease in concentration

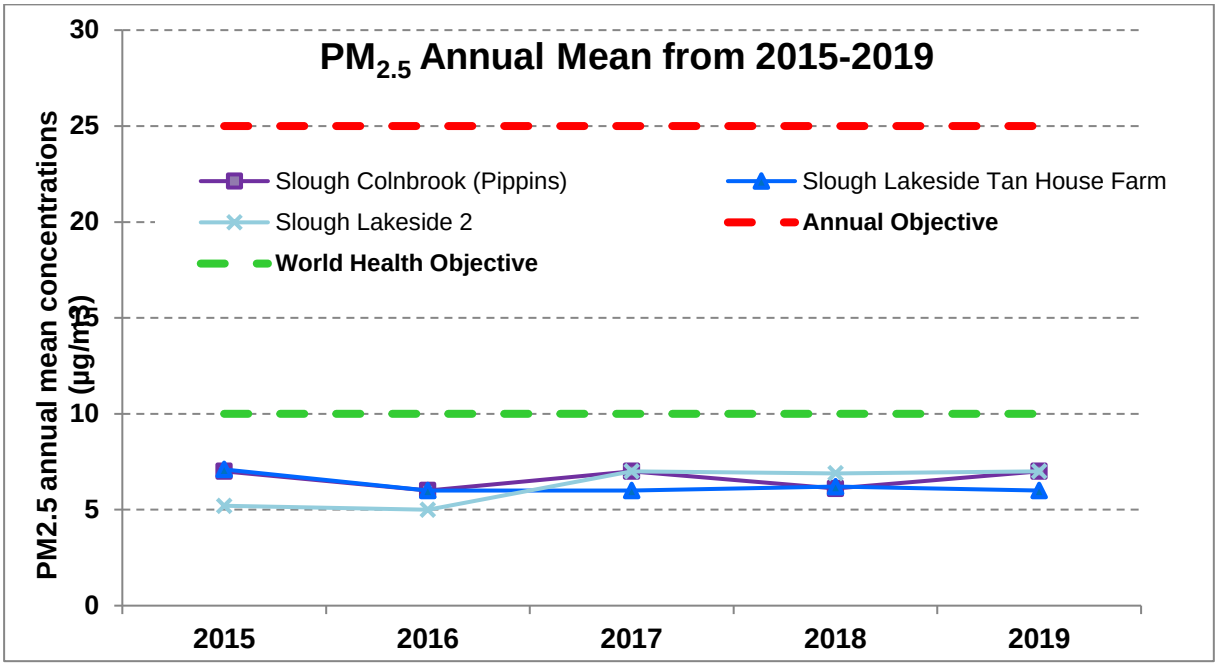
Comparing to 2018 data, PM_{10} has increased at SLH 4, SLH 6 and SLH 8. However, the 5 year trend shows that SLH 8, SLH 9 and SLH 11 have longer term increase in PM_{10}. Although all values are below the AQO for PM_{10} (40µg/m^3), work must continue to reduce concentrations due to the health implication this pollutant causes, particularly at Brands Hill (SLH 11) and Windmill (SLH 12) which are above the World Health Organisation objective level (20µg/m^3).

Table A.6 in **Appendix A** compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the AQO of 50µg/m^3, not to be exceeded more than 35 times per year. The AQOs were not breached at any of the sites, however Brands Hill observed the most exceedances of the daily AQO with 23.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.7 in **Appendix A** presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past 5 years. This is shown in **Figure 3.10** below:

Figure 3.10 – PM_{10} concentrations measured within Slough Borough Council from 2015 to 2019



The air quality concentrations are significantly below the national AQOs and also below the World Health Objectives threshold of 10µg/m^3. Comparing to **Figure 2.1** (fraction of mortality attributable to air pollution in Slough) which shows a worsening of $PM_{2.5}$

from 2017 to 2018, only Lakeside Tan House Farm follows that trend, with Pippins Colnbrook showing a reduction in $PM_{2.5}$.

As a note of caution, the OSIRIS[22] instrument has not been demonstrated to be equivalent to the reference method for $PM_{2.5}$ and the results should be considered with caution.

[22] The Osiris instrument gives a continuous indication of $PM_{2.5}$ concentration by using a light scattering technique to determine the concentration of airborne dust in a given particle size range

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

SLH9	Slough-Lakeside-2 (run by Lakeside Energy from Waste Ltd)	Industrial	503569	177385	NO_x, NO_2 and PM_{10}	NO	Co-located Osiris (PM_{10}, $PM_{2.5}$ and PM_1)	>200m	10m	4m
SLH10	Slough Town Centre Wellington Street	Roadside	498413	179804	NO_x and NO_2	YES AQMA 4	Chemiluminescence	8m	5m	1.5m
SLH11	Brands Hill London Road	Roadside	501643	177753	NO_x, NO_2 and PM_{10}	YES AQMA 2	Chemiluminescence and BAM	12.5m	4m	1.5m
SLH12	Slough Windmill Bath Road	Roadside	496528	180171	NO_x, NO_2 and PM_{10}	YES AQMA 3 Ext	Chemiluminescence and BAM	12m	7.5m	1.5m
TRL	Farnham Road	Roadside	496392	180344	NO_x and NO_2	YES AQMA 3	Chemiluminescence	15m	15m	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

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
SLO 1	Salt Hill *	Urban Background	496599	180156	NO_2	NO	N/A (located in Park) > 30m	12.5	YES	2.5
SLO 2	Salt Hill *	Urban Background	496599	180156	NO_2	NO	N/A (located in Park) > 30m	12.5	YES	2.5
SLO 3	Salt Hill *	Urban Background	496599	180156	NO_2	NO	N/A (located in Park) > 30m	12.5	YES	2.5
SLO 4	Lansdowne Avenue	Roadside	497188	180050	NO_2	YES	5.5	13.8	NO	2.5
SLO 5	Princess Street	Roadside	498541	179815	NO_2	YES	12	22	NO	2
SLO 6	Sussex Place	Roadside	498784	179560	NO_2	NO	4.5	9.6	NO	2
SLO 7	Colnbrook By-pass	Industrial	503196	177349	NO_2	NO	N/A Industrial Area >200m	5	NO	2
SLO 8	Grampian Way	Other	501382	178101	NO_2	YES	20	35	NO	2
SLO 9	Tweed Road (B) Moved 2012	Other	501501	177879	NO_2	YES	12.9	22	NO	2
SLO 10	London Road (A)	Roadside	501733	177725	NO_2	YES	12.5	4	NO	2
SLO 11	Torridge Road	Suburban	501637	177999	NO_2	YES	30	65	NO	3
SLO 12	Lakeside Road	Industrial	503877	177459	NO_2	NO	N/A Industrial Area >200m	>100	NO	2

SLO 13	Elbow Meadows	Suburban	503856	176538	NO_2	NO	37	50	NO	2
SLO 14	Pippins *	Suburban	503542	176827	NO_2	NO	7	>50	YES	2.5
SLO 15	Pippins *	Suburban	503542	176827	NO_2	NO	7	>50	YES	2.5
SLO 16	Pippins *	Suburban	503542	176827	NO_2	NO	7	>50	YES	2.5
SLO 17	Horton Road (Caravan Park)	Suburban	503136	175654	NO_2	NO	28.5	15	NO	2
SLO 18	Brands Hill (A)	Roadside	501798	177659	NO_2	YES	10.5	6	NO	2.5
SLO 19	Ditton Road	Roadside	500851	177890	NO_2	NO	21	1.8	NO	2
SLO 20	Hencroft Street	Urban Background	497925	179450	NO_2	NO	5	>100	NO	2
SLO 21	Windsor Road	Roadside	497457	179566	NO_2	NO	10.5	2.5	NO	2.5
SLO 22	Winvale	Other	497488	179090	NO_2	YES	20	31	NO	2
SLO 23	Tuns Lane	Urban Background	496416	180126	NO_2	YES	18	17.5	NO	2.5
SLO 24	Spackmans Way	Other	496272	179187	NO_2	YES	53	60.5	NO	2.5
SLO 25	Paxton Avenue	Other	496050	179258	NO_2	YES	34.5	27	NO	2
SLO 26	Yew Tree Rd (Ux Rd) (B)	Roadside	498473	179706	NO_2	YES	0	9.5	NO	2
SLO 27	India Road	Other	498681	179972	NO_2	NO	0 (railway exposure)	13	NO	2
SLO 28	Rogans (Colnbrook by pass)	Roadside	501941	177633	NO_2	YES	8.5	4.5	NO	2.5
SLO 29	Yew Tree Road (Uxbridge Rd)	Kerbside	498483	179707	NO_2	YES	6	1.5	NO	2
SLO 30	Farnham Road (2)	Roadside	496397	180341	NO_2	YES	17.5	12	NO	2
SLO 31	Essex Avenue	Suburban	496200	181900	NO_2	NO	3	1.4	NO	2
SLO 32	Brands Hill (B)	Roadside	501853	177620	NO_2	YES	0	9	NO	2
SLO 33	Wellington Street - Stratfield	Roadside	498168	179907	NO_2	YES	8	12	NO	2.5

SLO 34	Chalvey (CAS) *	Other	496562	179109	NO_2	YES	N/A (located in Transfer Station) > 50m	74	YES	1.5
SLO 35	Chalvey (CAS) *	Other	496562	179109	NO_2	YES	N/A (located in Transfer Station) > 50m	74	YES	1.5
SLO 36	Chalvey (CAS) *	Other	496562	179109	NO_2	YES	N/A (located in Transfer Station) > 50m	74	YES	1.5
SLO 37	Blair Road-Victoria Court	Roadside	497105	180081	NO_2	YES	11	11	NO	2
SLO 38	Wellesley Road	Roadside	498071	179949	NO_2	YES	13	11.5	NO	2.5
SLO 39	London Rd (B)	Roadside	501734	177733	NO_2	YES	0	11.5	NO	2.5
SLO 40	Wexham Road	Roadside	498394	179849	NO_2	YES	11.5	11	NO	2
SLO 41	Sandringham Court	Other	493960	181355	NO_2	NO	0 (Railway exposure)	10.5	NO	2.5
SLO 42	Walpole Rd	Other	493493	181378	NO_2	NO	0 (railway exposure)	16	NO	2.5
SLO 43	Windmill (Bath Rd)	Roadside	496533	180175	NO_2	YES	0	12	NO	2
SLO 44	Goodman Park (Ux Rd)	Roadside	498961	180113	NO_2	NO	10	9.7	NO	2.5
SLO 45	London Rd (C)	Roadside	501658	177781	NO_2	YES	0	14	NO	2
SLO 46	Cornwall House, Bath Rd	Roadside	497467	179971	NO_2	YES	11	5	NO	2
SLO 47	Princes House, Bath Road	Roadside	497326	180003	NO_2	YES	0	4.5	NO	2
SLO 48	Castle Street	Other	497960	179243	NO_2	NO	15.5	14	NO	2
SLO 49	Windsor Road (B)	Kerbside	497397	179471	NO_2	NO	6	1.5	NO	2
SLO 50	Tuns Lane (B)	Kerbside	496377	179929	NO_2	YES	13	4	NO	2

SLO 51	Langley Road	Roadside	501014	179316	NO_2	NO	10	2.5	NO	2.5
SLO 52	Station Road	Roadside	501161	179538	NO_2	NO	10	3.5	NO	2.5
SLO 53	High Street Langley (A)	Roadside	501208	178799	NO_2	NO	5.5	2	NO	2.5
SLO 54	High Street Langley (B)	Roadside	501256	179067	NO_2	NO	6	4	NO	2.5
SLO 55	Parlaunt Road	Roadside	501891	178954	NO_2	NO	8	2.5	NO	2.5
SLO 56	Sutton lane	Roadside	502241	178679	NO_2	NO	7.5	4	NO	2.5
SLO 57	Windmill	Kerbside	496528	180171	NO_2	YES	12	7.5	YES	1.5
SLO 58	Windmill	Kerbside	496528	180171	NO_2	YES	12	7.5	YES	1.5
SLO 59	Windmill	Kerbside	469528	180171	NO_2	YES	12	7.5	YES	1.5
SLO 60	Wellington Street	Kerbside	498413	179804	NO_2	YES	8	5	YES	1.5
SLO 61	Wellington Street	Kerbside	498413	179804	NO_2	YES	8	5	YES	1.5
SLO 62	Wellington Street	Kerbside	498413	179804	NO_2	YES	8	5	YES	1.5
SLO 63	Brands Hill	Kerbside	501643	177753	NO_2	YES	12.5	4	YES	1.5
SLO 64	Brands Hill	Kerbside	501643	177753	NO_2	YES	12.5	4	YES	1.5
SLO 65	Brands Hill	Kerbside	501643	177753	NO_2	YES	12.5	4	YES	1.5
SLO 66	Paxton Avenue HE Receptor 1	Other	496146	179259	NO_2	YES	22.1	20.4	NO	2
SLO 67	Paxton Avenue HE Receptor 1	Other	496146	179259	NO_2	YES	22.1	20.4	NO	2
SLO 68	Paxton Avenue HE Receptor 1	Other	496146	179259	NO_2	YES	22.1	20.4	NO	2
SLO 69	Spackmans Way HE Receptor 2	Other	496223	179217	NO_2	YES	0	34.1	NO	1.5
SLO 70	Spackmans Way HE Receptor 2	Other	496223	179217	NO_2	YES	0	34.1	NO	1.5
SLO 71	Spackmans Way HE Receptor 2	Other	496223	179217	NO_2	YES	0	34.1	NO	1.5

SLO 72	Spackmans Way HE Receptor 3	Other	496225	179213	NO_2	YES	0	34.9	NO	1.5
SLO 73	Spackmans Way HE Receptor 3	Other	496225	179213	NO_2	YES	0	34.9	NO	1.5
SLO 74	Spackmans Way HE Receptor 3	Other	496225	179213	NO_2	YES	0	34.9	NO	1.5
SLO 75	Spackmans Way HE Receptor 4	Other	496227	179207	NO_2	YES	0	34.7	NO	1.5
SLO 76	Spackmans Way HE Receptor 4	Other	496227	179207	NO_2	YES	0	34.7	NO	1.5
SLO 77	Spackmans Way HE Receptor 4	Other	496227	179207	NO_2	YES	0	34.7	NO	1.5
SLO 78	Spackmans Way HE Receptor 5	Other	496229	179204	NO_2	YES	0	34.3	NO	1.5
SLO 79	Spackmans Way HE Receptor 5	Other	496229	179204	NO_2	YES	0	34.3	NO	1.5
SLO 80	Spackmans Way HE Receptor 5	Other	496229	179204	NO_2	YES	0	34.3	NO	1.5
SLO 81	Spackmans Way HE Receptor 6	Other	496232	179199	NO_2	YES	0	34.1	NO	1.5
SLO 82	Spackmans Way HE Receptor 6	Other	496232	179199	NO_2	YES	0	34.1	NO	1.5
SLO 83	Spackmans Way HE Receptor 6	Other	496232	179199	NO_2	YES	0	34.1	NO	1.5
SLO 84	Spackmans Way HE Receptor 7	Other	496234	179195	NO_2	YES	0	33.9	NO	1.5
SLO 85	Spackmans Way HE Receptor 7	Other	496234	179195	NO_2	YES	0	33.9	NO	1.5
SLO 86	Spackmans Way HE Receptor 7	Other	496234	179195	NO_2	YES	0	33.9	NO	1.5
SLO 87	Spackmans Way HE Receptor 8	Other	496236	179191	NO_2	YES	0	33.7	NO	1.5
SLO 88	Spackmans Way HE Receptor 8	Other	496236	179191	NO_2	YES	0	33.7	NO	1.5
SLO 89	Spackmans Way HE Receptor 8	Other	496236	179191	NO_2	YES	0	33.7	NO	1.5

SLO 90	Spackmans Way HE Receptor 9	Other	496238	179186	NO_2	YES	0	33.8	NO	1.5
SLO 91	Spackmans Way HE Receptor 9	Other	496238	179186	NO_2	YES	0	33.8	NO	1.5
SLO 92	Spackmans Way HE Receptor 9	Other	496238	179186	NO_2	YES	0	33.8	NO	1.5
SLO 93	Winvale HE Receptor 10	Other	497433	179092	NO_2	YES	17.2	25.3	NO	2
SLO 94	Winvale HE Receptor 10	Other	497433	179092	NO_2	YES	17.2	25.3	NO	2
SLO 95	Winvale HE Receptor 10	Other	497433	179092	NO_2	YES	17.2	25.3	NO	2
SLO 96	Poyle Rd	Roadside	503272	176597	NO_2	NO	0	7	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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3) (4)				
							2015	2016	2017	2018	2019
SLH 3	503542	176827	Suburban	Automatic	89.6	89.6*	28.6	29.0	25	22	26.05
SLH 4	496599	180156	Urban Background	Automatic	89	78.4**	**30.3**	**30**	**33**	31	26.36
SLH 7	496562	179109	Other	Automatic	98.7	98.7	**36.9**	**41.0**	**35**	32	32.72
SLH 8	503569	77385	Industrial	Automatic	89.4	89.4	29.2	32.4	26	26	27.59
SLH 10	498413	179804	Roadside	Automatic	99.4	99.4	-	-	36.6	36	34.74
SLH 11	501643	177753	Roadside	Automatic	99.4	99.4	-	-	37.5	**42**	39.17
SLH 12	496528	180171	Roadside	Automatic	99.8	99.8	-	-	**41.5**	**42**	39.21
TRL	496392	180344	Roadside	Automatic	-	-	33.2	32.9	-	-	-
SLO 1	496599	180156	Urban Background	Diffusion Tube	100	100	31.8	33.3	32.4	28.3	27.8
SLO 2	496599	180156	Urban Background	Diffusion Tube	100	100	32.5	31.9	29.4	28.3	27.1
SLO 3	496599	180156	Urban Background	Diffusion Tube	100	100	32.9	31.7	31.5	27.8	26.7
SLO 4	497188	180050	Roadside	Diffusion Tube	41.7	41.7	38.4	38.6	37.9	33.8	33.6
SLO 5	498541	179815	Roadside	Diffusion Tube	100	100	**40.3**	**40.8**	**40.7**	34.4	33.6
SLO 6	498784	179560	Roadside	Diffusion Tube	91.7	91.7	34.1	34.2	32.1	29.0	27.8
SLO 7	503196	177349	Industrial	Diffusion Tube	100	100	39.1	38.7	38.7	35.0	32.8
SLO 8	501382	178101	Other	Diffusion Tube	100	100	**40**	**41.3**	**40.4**	34.8	35

SLO 9	501501	177879	Other	Diffusion Tube	100	100	35.6	37.4	35.3	32.6	31.8
SLO 10	501733	177725	Roadside	Diffusion Tube	100	100	**48.3**	**52.3**	**45.3**	**44.4**	**41.1**
SLO 11	501637	177999	Suburban	Diffusion Tube	100	100	36.9	37.3	32.7	30.0	28.7
SLO 12	503877	177459	Industrial	Diffusion Tube	100	100	**42.9**	**44.3**	38.6	**40.7**	**39.5**
SLO 13	503856	176538	Suburban	Diffusion Tube	100	100	34.9	35.9	30.5	31.2	28.9
SLO 14	503542	176827	Suburban	Diffusion Tube	100	100	25	34.7	26.3	23.5	25.2
SLO 15	503542	176827	Suburban	Diffusion Tube	100	100	28.5	29.0	26.5	25.7	24.9
SLO 16	503542	176827	Suburban	Diffusion Tube	100	100	27.6	28.8	25.3	25.3	23.8
SLO 17	503136	175654	Suburban	Diffusion Tube	100	100	30	31.9	25.6	**41.5**	33.3
SLO 18	501798	177659	Roadside	Diffusion Tube	91.7	91.7	**61.1**	**63.7**	**55.2**	**53.2**	**49.4**
SLO 19	500851	177890	Roadside	Diffusion Tube	100	100	**41.1**	**40.0**	34.6	33.2	33.7
SLO 20	497925	179450	Urban Background	Diffusion Tube	100	100	27.9	28.6	27.0	23.7	24.2
SLO 21	497457	179566	Roadside	Diffusion Tube	75	75	**44.6**	**47.8**	**40.9**	35.0	34.6
SLO 22	497488	179090	Other	Diffusion Tube	100	100	**42.7**	39.8	**41.8**	33.8	32.7
SLO 23	496416	180126	Urban Background	Diffusion Tube	100	100	36.1	36.4	33.6	29.5	30.8
SLO 24	496272	179187	Other	Diffusion Tube	100	100	38.8	39.0	37.9	32.7	33
SLO 25	496050	179258	Other	Diffusion Tube	100	100	**41.9**	38.4	36.5	33.2	31.8
SLO 26	498473	179706	Roadside	Diffusion Tube	100	50	**60.8**	**61.1**	**48.1**	31.5	35.2

SLO 27	498681	179972	Other	Diffusion Tube	100	100	31.4	33.9	31.3	26.9	26.5
SLO 28	501941	177633	Roadside	Diffusion Tube	91.7	91.7	**56.3**	**58.1**	**45.3**	**44.0**	38.5
SLO 29	498483	179707	Kerbside	Diffusion Tube	91.7	91.7	**40.5**	38.5	**42.9**	**52.7**	**48.5**
SLO 30	496397	180341	Roadside	Diffusion Tube	91.7	91.7	**40.4**	34.1	32.6	29.0	32
SLO 31	496200	181900	Suburban	Diffusion Tube	100	100	30.1	30.9	28.7	27.0	27
SLO 32	501853	177620	Roadside	Diffusion Tube	91.7	91.7	**40.1**	39.3	36.3	36.2	32.8
SLO 33	498168	179907	Roadside	Diffusion Tube	91.7	91.7	34	36.9	33.9	28.7	30.1
SLO 34	496562	179109	Other	Diffusion Tube	100	100	38.2	35.1	36.2	30.5	30.4
SLO 35	496562	179109	Other	Diffusion Tube	91.7	91.7	36.2	35.6	35.8	32.1	31.3
SLO 36	496562	179109	Other	Diffusion Tube	100	100	37.5	36.1	35.5	30.6	30.6
SLO 37	497105	180081	Roadside	Diffusion Tube	91.7	91.7	**43.4**	**47.6**	**45.3**	39.9	37.8
SLO 38	498071	179949	Roadside	Diffusion Tube	100	100	34.5	38.3	37.4	32.3	33
SLO 39	501734	177733	Roadside	Diffusion Tube	100	100	37.1	37.0	33.1	31.6	30.1
SLO 40	498394	179849	Roadside	Diffusion Tube	100	100	**42.1**	**44.8**	**42.3**	**38.6**	37.9
SLO 41	493960	181355	Other	Diffusion Tube	100	100	32.3	25.9	25.9	21.9	19.4
SLO 42	493493	181378	Other	Diffusion Tube	100	100	24.9	28.4	23.1	21.2	18.6
SLO 43	496533	180175	Roadside	Diffusion Tube	100	100	39.5	**42**	**37.2**	**34.0**	33.1
SLO 44	498961	180113	Roadside	Diffusion Tube	83.3	83.3	38.7	38.4	36.4	**31.9**	29.8

SLO 45	501658	177781	Roadside	Diffusion Tube	91.7	91.7	33.5	32.7	31.4	28.6	28.1
SLO 46	497467	179971	Roadside	Diffusion Tube	91.7	91.7	**41.5**	**53.3**	**46.2**	**40.1**	39
SLO 47	497326	180003	Roadside	Diffusion Tube	91.7	91.7	**40.5**	**44.6**	36.9	35.2	31
SLO 48	497960	179243	Roadside	Diffusion Tube	100	100	-	-	29.4	28.1	29
SLO 49	497397	179471	Kerbside	Diffusion Tube	91.7	91.7	-	-	**48.7**	40.0	**39.5**
SLO 50	496377	179929	Kerbside	Diffusion Tube	100	100	-	-	**45.3**	45.8	**42.8**
SLO 51	501014	179316	Roadside	Diffusion Tube	100	100	-	**42.8**	37.8	**36.0**	35
SLO 52	501161	179538	Roadside	Diffusion Tube	100	100	-	**41.5**	36.4	33.2	33.3
SLO 53	501208	178799	Roadside	Diffusion Tube	100	100	-	**48.6**	**42.1**	**37.9**	**39.9**
SLO 54	501256	179067	Roadside	Diffusion Tube	100	100	-	39.6	35.4	32.8	32.6
SLO 55	501891	178954	Roadside	Diffusion Tube	100	100	-	36.9	31.4	30.4	29.5
SLO 56	502241	178679	Roadside	Diffusion Tube	100	100	-	**43.9**	37.8	37.6	35.7
SLO 57	496528	180171	Kerbside	Diffusion Tube	100	100	-	-	**44.5**	**41.6**	37.9
SLO 58	496528	180171	Kerbside	Diffusion Tube	100	100	-	-	**43.5**	**41.8**	38.5
SLO 59	469528	180171	Kerbside	Diffusion Tube	100	100	-	-	**44.2**	**41.5**	38.9
SLO 60	498413	179804	Kerbside	Diffusion Tube	100	100	-	-	37.3	35.3	34.8
SLO 61	498413	179804	Kerbside	Diffusion Tube	100	100	-	-	35.2	35.4	33.1
SLO 62	498413	179804	Kerbside	Diffusion Tube	100	100	-	-	37.3	33.9	33.6

SLO 63	501643	177753	Kerbside	Diffusion Tube	100	100	-	-	37.8	**43.2**	38.9
SLO 64	501643	177753	Kerbside	Diffusion Tube	100	100	-	-	37.1	**43.4**	**41.1**
SLO 65	501643	177753	Kerbside	Diffusion Tube	100	100	-	-	36.9	**43.3**	**41.2**
SLO 66	496146	179259	Other	Diffusion Tube	66.7	16.7	-	-	-	-	34.3
SLO 67	496146	179259	Other	Diffusion Tube	66.7	16.7	-	-	-	-	32.7
SLO 68	496146	179259	Other	Diffusion Tube	66.7	16.7	-	-	-	-	34.6
SLO 69	496223	179217	Other	Diffusion Tube	100	25	-	-	-	-	32.3
SLO 70	496223	179217	Other	Diffusion Tube	100	25	-	-	-	-	33
SLO 71	496223	179217	Other	Diffusion Tube	100	25	-	-	-	-	32.7
SLO 72	496225	179213	Other	Diffusion Tube	100	25	-	-	-	-	34.1
SLO 73	496225	179213	Other	Diffusion Tube	100	25	-	-	-	-	33.9
SLO 74	496225	179213	Other	Diffusion Tube	100	25	-	-	-	-	32
SLO 75	496227	179207	Other	Diffusion Tube	100	25	-	-	-	-	31.4
SLO 76	496227	179207	Other	Diffusion Tube	100	25	-	-	-	-	31.7
SLO 77	496227	179207	Other	Diffusion Tube	100	25	-	-	-	-	29.3
SLO 78	496229	179204	Other	Diffusion Tube	100	25	-	-	-	-	33.3
SLO 79	496229	179204	Other	Diffusion Tube	100	25	-	-	-	-	34
SLO 80	496229	179204	Other	Diffusion Tube	100	25	-	-	-	-	31.5

SLO 81	496232	179199	Other	Diffusion Tube	100	25	-	-	-	-	31.5
SLO 82	496232	179199	Other	Diffusion Tube	100	25	-	-	-	-	32.8
SLO 83	496232	179199	Other	Diffusion Tube	66.7	16.7	-	-	-	-	0
SLO 84	496234	179195	Other	Diffusion Tube	100	25	-	-	-	-	32.2
SLO 85	496234	179195	Other	Diffusion Tube	100	25	-	-	-	-	31.8
SLO 86	496234	179195	Other	Diffusion Tube	100	25	-	-	-	-	32.9
SLO 87	496236	179191	Other	Diffusion Tube	66.7	16.7	-	-	-	-	0
SLO 88	496236	179191	Other	Diffusion Tube	100	25	-	-	-	-	30
SLO 89	496236	179191	Other	Diffusion Tube	100	25	-	-	-	-	33.2
SLO 90	496238	179186	Other	Diffusion Tube	100	25	-	-	-	-	30.7
SLO 91	496238	179186	Other	Diffusion Tube	100	25	-	-	-	-	28.5
SLO 92	496238	179186	Other	Diffusion Tube	100	25	-	-	-	-	28.7
SLO 93	497433	179092	Other	Diffusion Tube	100	25	-	-	-	-	32.7
SLO 94	497433	179092	Other	Diffusion Tube	100	25	-	-	-	-	33.3
SLO 95	497433	179092	Other	Diffusion Tube	100	25	-	-	-	-	33.5
SLO 96	503272	176597	Roadside	Diffusion Tube	100	25	-	-	-	-	28.4

☒ **Diffusion tube data has been bias corrected**

☒ **Annualisation has been conducted where data capture is <75%**

☒ **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 adjustment**

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.**

(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%).

(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

*SLH 3 was retained for bias correction, as the data capture is only marginally below the 90% threshold

**SLH 4 was excluded from the bias correction, as the data capture is too low

Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	NO_2 1-Hour Means > 200µg/m³ (3)				
							2015	2016	2017	2018	2019
SLH 3	503542	176827	Suburban	Automatic	89.6	89.6	**0 (111)**	**0**	**0**	0	**0**
SLH 4	496599	180156	Urban Background	Automatic	89.03	78.4	**0 (101)**	**0**	**0**	0	**0 (88)**
SLH 7	496562	179109	Other	Automatic	98.71	98.71	**0 (117)**	0	0	0	0
SLH 8	503569	77385	Industrial	Automatic	89.4	89.4	**0 (109)**	0	0	0	0
SLH 10	498413	179804	Roadside	Automatic	99.41	99.41	**-**	**-**	**0 (114)**	0	0
SLH 11	501643	177753	Roadside	Automatic	99.41	99.41	**-**	**-**	**0 (121)**	0	0
SLH 12	496528	180171	Roadside	Automatic	99.77	99.77	**-**	**-**	**0 (117)**	0	0

Notes:

Exceedances of the NO_2 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold.**

(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%).

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

Table A.5 – Annual Mean PM_{10} Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	PM_{10} Annual Mean Concentration ($\mu g/m^3$) (3)				
						2015	2016	2017	2018	2019
SLH 3	503542	176827	Suburban	96.43	96.43	16.7	18	16	18.0	16.42
SLH 4	496599	180156	Urban Background	88.03	77.52	19	19	18	16.9	18.34
SLH 5	503551	177258	Industrial	50.7	50.7	18.7	14	14	14.4	12
SLH 6	503542	176827	Urban Background	51.48	51.48	20	15	16	10.3	15
SLH 8	503569	77385	Industrial	97.39	97.39	13.9	15	14	13.7	15.01
SLH 9	503569	77385	Urban Background	58.86	58.86	11	11	17	14.8	14
SLH 11	501643	177753	Roadside	98.82	98.82	-	-	27.9	28.77	28.01
SLH 12	496528	180171	Roadside	99.13	99.13	-	-	24.4	23.86	23.44

☒ **Annualisation has been conducted where data capture is <75%**

Notes:

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

(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%).

(3) All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	PM_{10} 24-Hour Means > 50µg/m³ (3)				
						2015	2016	2017	2018	2019
SLH 3	503542	176827	Suburban	96.43	96.43	3	5	5	1	3
SLH 4	496599	180156	Urban Background	88.03	77.52	4	4	3	1	**3 (32)**
SLH 5	503551	177258	Industrial	50.7	50.7	0	1	1	1	**0 (19)**
SLH 6	503542	176827	Urban Background	51.48	51.48	3	1	5	0	**0 (24)**
SLH 8	503569	77385	Industrial	97.39	97.39	1	1	3	1	3
SLH 9	503569	77385	Urban Background	58.86	58.86	1	3	9	1	**0 (24)**
SLH 11	501643	177753	Roadside	98.82	98.82	**-**	**-**	**5 (36)**	25	23
SLH 12	496528	180171	Roadside	99.13	99.13	**-**	**-**	**5 (36)**	11	15

Notes:

Exceedances of the PM_{10} 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold.**

(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%).

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

Table A.7 – $PM_{2.5}$ Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	$PM_{2.5}$ Annual Mean Concentration (µg/m^3) (3)				
						2015	2016	2017	2018	2019
SLH 5	503551	177258	Industrial	50.66	50.66	7.1	6	6	6.2	6
SLH 6	503542	176827	Suburban	51.47	51.47	7	6	7	6.1	7
SLH 9	503569	77385	Industrial	59.16	59.16	5.2	5	7	6.9	7

☒ **Annualisation has been conducted where data capture is <75%**

Notes:

(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%).

(3) All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO_2 Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations ($\mu g/m^3$)														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (0.920) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
SLO 1	496599	180156	39.3	38.4	31.1	28.9	24.2	23.2	25.7	27.7	28.0	29.1	34.3	33.1	30.2	27.8	
SLO 2	496599	180156	39.5	34.8	29.2	27.2	20.2	25.1	25.8	29.9	26.2	28.6	37.0	30.2	29.5	27.1	
SLO 3	496599	180156	35.4	40.3	32.2	24.2	22.3	24.2	24.4	27.6	24.8	28	34	31.1	29.0	26.7	
SLO 4	497188	180050	44.2	45.5								40.6	47.5	32.7	36.5	33.6	37.1
SLO 5	498541	179815	47.8	48.4	20.6	35.2	30	31.5	29.8	40	33	38.2	44	39.5	36.5	33.6	33.6
SLO 6	498784	179560	43.8	39.4		30.4	24.7	23.7	21.6	28.4	27.9	30.3	31.3	31.2	30.2	27.8	
SLO 7	503196	177349	48.6	49.7	20.6	42.1	29	31.1	32	34.1	34.1	34.2	40.7	31.2	35.6	32.8	
SLO 8	501382	178101	43.2	49.8	19.5	39.7	32.2	35.4	33.1	42.3	36.4	38.8	49	36.6	38.0	35.0	39.5
SLO 9	501501	177879	48.3	39.6	38.4	39.5	31.2	27.6	27	30	30.1	30.4	42.4	30.4	34.6	31.8	34.5
SLO 10	501733	177725	58.7	44.4	47.8	52.7	41.4	42.4	37.8	36.9	39.1	44.4	53.1	36.9	44.6	**41.1**	35.1
SLO 11	501637	177999	43.9	33.7	31.8	31.3	28.4	23.7	24.7	23.1	28.7	31	45.7	28.3	31.2	28.7	31.1
SLO 12	503877	177459	43	49.1	36.8	50.8	39	41.5	41.1	41.9	40.7	41.5	49	41.3	43.0	39.5	
SLO 13	503856	176538	38.2	39.2	26.9	40.6	26.1	26.5	26.2	23.9	25.8	31.8	45	26.4	31.4	28.9	
SLO 14	503542	176827	35.8	34.5	22.3	35.2	18.7	22.8	20.2	21.1	24.1	27.6	39.5	27.3	27.4	25.2	
SLO 15	503542	176827	34.9	36.5	25.7	30.9	20.3	23.3	21.4	17.9	22.9	27	39.7	24.9	27.1	24.9	

SLO 16	503542	176827	30.7	31.3	25.5	31.4	15.4	22.8	20.3	20.8	23.3	26.8	37.1	24.6	25.8	23.8	
SLO 17	503136	175654	50.6	37.4	37.4	50.2	33.4	36.3	27.8	28.6	33.5	23.9	47.4	28.1	36.2	33.3	
SLO 18	501798	177659		60.4	55.9	61.7	51.6	53.1	46.1	51.2	48.5	55.6	56	50.3	53.7	**49.4**	**44.6**
SLO 19	500851	177890	46.9	45.9	31.8	41.9	30.3	32	28.4	33.9	31.3	36.1	45.4	35.2	36.6	33.7	
SLO 20	497925	179450	37.1	34.5	25.6	28.4	19.4	20	17.9	21.1	24.9	26.8	34.6	26	26.4	24.2	
SLO 21	497457	179566	46.1	46.6	34.8	38.9			27.9		31.3	33	45.7	34.4	37.6	34.6	
SLO 22	497488	179090	48.8	41.7	36.4	30.1	29.6	28.2	29.7	31.6	34.2	33.3	42.4	41	35.6	32.7	34.9
SLO 23	496416	180126	45.2	42.3	33.3	38.6	28.4	29.1	26	27.6	29.3	28.2	42.7	30.8	33.5	30.8	
SLO 24	496272	179187	44	48.9	37	34.6	31.9	28.6	28.7	37.4	31.6	32.7	37.2	38.2	35.9	33.0	
SLO 25	496050	179258	45.3	43.4	35.6	38.6	24.1	30	28.8	34.4	30.8	32	38.8	33.4	34.6	31.8	
SLO 26	498473	179706							33.2	36	39.6	34.6	43.1	33.7	38.3	35.2	35.1
SLO 27	498681	179972	39.7	38.8	29.6	30	20.9	21.9	21.4	22.5	26.8	29.6	36.1	28.6	28.8	26.5	
SLO 28	501941	177633	54.9	51.1	40.3	42.2	40.8	40.1	33.3	37		37.5	49.8	32.6	41.8	38.5	35.5
SLO 29	498483	179707	66.4	55.7	54.9	58.3	50.7	51.5	50.5	45.2	49.1		53.7	44.4	52.7	**48.5**	**40.5**
SLO 30	496397	180341	41.8	48.4	33.9	29.8	26.6	29.6		32.2	31.1	34.9	40.2	33.6	34.7	32.0	
SLO 31	496200	181900	38.4	41	32.2	27.7	23.7	24.8	19	26.5	22.1	31.9	34.9	30	29.3	27.0	
SLO 32	501853	177620	39.9	35.2		48.4	32.2	33.1	32.1	26.8	35.1	36	50.7	23.1	35.7	32.8	
SLO 33	498168	179907	43.1	39.6	37.7	30.1		23.2	27.2	27.6	29	32.5	41.8	27.8	32.7	30.1	
SLO 34	496562	179109	41.7	35.6	33.1	35.3	28.8	29.7	26.9	30.6	30.9	33.1	37.4	33.5	33.1	30.4	
SLO 35	496562	179109	42.9	42.9	33.8	33.6	30.7	31	27.1	34.5	28.5	33.4	35.5		34.0	31.3	
SLO 36	496562	179109	42.8	39.8	33.9	34.1	27.6	29.4	27	33.5	28.2	32.6	38.3	31.6	33.2	30.6	
SLO 37	497105	180081	44.8	56.7	44.6	42	34.7	37.1	37.3	32.4	39.4		42.1	40.4	41.1	37.8	37.8
SLO 38	498071	179949	46.9	48.1	38.3	33.7	29.7	27.6	29.2	32.5	34.1	34.1	42.4	33.7	35.9	33.0	
SLO 39	501734	177733	40.4	40.7	31.3	37.4	29.7	29.5	28.7	27.4	31.7	31.5	39.2	25.7	32.8	30.1	
SLO 40	498394	179849	50	54.3	44	41.9	36.6	33.6	33.9	37.5	36.1	39.6	48.5	38.6	41.2	37.9	37.6
SLO 41	493960	181355	29.3	28.3	18	20	16.6	16.3	15.2	17.1	19	22.4	29.5	21.4	21.1	19.4	

SLO 42	493493	181378	28.4	28.9	19.9	22.1	15.3	15.8	12.6	14.7	16.1	19.7	29.1	20	20.2	18.6	
SLO 43	496533	180175	41.9	43.7	38.4	41.5	33.8	35.3	29.7	28.5	32	36.1	39.1	31.8	36.0	33.1	
SLO 44	498961	180113	39.6			30.5	25.7	28.6	27.3	32.1	32.8	33.1	42.1	32.2	32.4	29.8	
SLO 45	501658	177781	40.3	40.1	32.6		28.8	26.8	27.3	24.7	27.2	28.1	33.5	26.3	30.5	28.1	
SLO 46	497467	179971	51.8		42.3	44.2	32	43.5	42.5	46.5	38.2	35.6	47.4	42.6	42.4	39.0	35.7
SLO 47	497326	180003	44.6	44.7		32.4	32	28.1	28.7	28.3	31.4	31	40.8	28.2	33.7	31.0	
SLO 48	497960	179243	37.6	44	32.8	32.1	24.6	22.7	24.9	27.8	28.3	31.6	41.5	30.7	31.6	29.0	
SLO 49	497397	179471	42	52.9	43.7	44.3	40	39.7	37.6	31.8	40.9	43.6	56		43.0	39.5	35.1
SLO 50	496377	179929	57.2	62.6	45	49.8	34.3	45.4	40	40	42.4	43.8	59	39.4	46.6	**42.8**	36.6
SLO 51	501014	179316	51.1	49.1	44.1	43.2	35	33.7	28.7	25.5	33	35.2	48.3	29.7	38.0	35.0	
SLO 52	501161	179538	44	46.1	38	41.9	30.6	30.9	30.5	27.4	30.8	32.4	47.6	33.6	36.2	33.3	
SLO 53	501208	178799	52.5	57.4	39.6	48	39	38.3	38.8	37	41.5	40	50.1	38.7	43.4	39.9	36.1
SLO 54	501256	179067	45.3	54.3	36.4	33.9	29.6	31.2	25.4	29.2	32.9	34.8	36.2	35.4	35.4	32.6	
SLO 55	501891	178954	41.5	38.1	32.5	33.5	24.8	24.5	25.7	24.3	30.8	34	43.2	31.5	32.0	29.5	
SLO 56	502241	178679	47.8	58.8	42.4	41.2	29.5	31.6	29.1	27.2	36.8	38.4	46.2	36.9	38.8	35.7	
SLO 57	496528	180171	50.3	49.4	44.7	45	41.3	38.3	36.6	31.7	40.2	41.6	43.7	30.8	41.1	37.9	35.7
SLO 58	496528	180171	48.8	50.5	45.5	46.4	42.8	37.4	32.9	31.8	40.6	37.8	49.8	38	41.9	38.5	36.2
SLO 59	469528	180171	50.1	48.5	43.3	53.8	42.1	38.2	34.6	31.5	40.6	37.4	50.8	36.9	42.3	38.9	36.6
SLO 60	498413	179804	45.9	41.6	39.8	45.1	36.2	32.3	31.5	29.9	33.5	37.6	45.4	34.9	37.8	34.8	
SLO 61	498413	179804	45.8	45.7	38.3	43.4	25.3	33.3	30.9	29.5	33.2	37.2	41.6	28.1	36.0	33.1	
SLO 62	498413	179804	43.4	44	35.2	45.4	34.6	30.1	29.5	28.8	34.7	36	43.6	33.3	36.6	33.6	
SLO 63	501643	177753	41.6	47	38.2	56.9	44	38.5	38.7	32.2	40.4	41	53.3	35.4	42.3	38.9	32.3
SLO 64	501643	177753	51.4	52.1	40.6	54	45.6	44.8	36	34	42.3	45.4	60	30.3	44.7	**41.1**	33.6
SLO 65	501643	177753	54.6	44.4	42.1	61.4	41.5	43.3	38.5	29.3	41.4	43.5	64.1	33.6	44.8	**41.2**	33.7
SLO 66	496146	179259											41.6	33.1	37.3	34.3	
SLO 67	496146	179259											37.4	33.6	35.5	32.7	

SLO 68	496146	179259											40.7	34.6	37.7	34.6	
SLO 69	496223	179217										35.4	41.7	35.8	35.1	32.3	
SLO 70	496223	179217										36.3	42.5	37	35.9	33.0	
SLO 71	496223	179217										36.4	41.1	36.8	35.5	32.7	
SLO 72	496225	179213										39.5	43.8	36.1	37.1	34.1	
SLO 73	496225	179213										36	43.4	38.9	36.8	33.9	
SLO 74	496225	179213										34.7	40.9	36.4	34.8	32.0	
SLO 75	496227	179207										33.6	42.8	33.5	34.1	31.4	
SLO 76	496227	179207										36.2	40.9	34	34.5	31.7	
SLO 77	496227	179207										33.5	37.3	32	31.9	29.3	
SLO 78	496229	179204										38.9	43.9	33.8	36.2	33.3	
SLO 79	496229	179204										38	42.3	38.8	37.0	34.0	
SLO 80	496229	179204										37.2	42.4	30.6	34.2	31.5	
SLO 81	496232	179199										34.3	41.1	34.6	34.2	31.5	
SLO 82	496232	179199										38.3	41.8	34.8	35.7	32.8	
SLO 83	496232	179199										37.9	43.4				
SLO 84	496234	179195										35.9	44.6	32	35.0	32.2	
SLO 85	496234	179195										34.1	44.1	33.3	34.6	31.8	
SLO 86	496234	179195										35	43.2	36.9	35.8	32.9	
SLO 87	496236	179191											39.2	26.4			
SLO 88	496236	179191										33.3	42	29.5	32.6	30.0	
SLO 89	496236	179191										35.5	43.1	37.7	36.1	33.2	
SLO 90	496238	179186										32.8	39.9	34.9	33.4	30.7	
SLO 91	496238	179186										33.4	42	24.3	31.0	28.5	
SLO 92	496238	179186										21.4	42.2	36.7	31.2	28.7	
SLO 93	497433	179092										36.2	39.8	38.2	35.5	32.7	

SLO 94	497433	179092										37.5	40.2	38.8	36.2	33.3	
SLO 95	497433	179092										37	41.5	38.7	36.4	33.5	
SLO 96	503272	176597										31.2	41.9	26.4	30.9	28.4	

☒ **Local bias adjustment factor used**

☐ **National bias adjustment factor used**

☒ **Annualisation has been conducted where data capture is <75%**

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

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.**

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

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

The bias correction factor (**0.920**) was derived from the average of the local collation studies within Slough using the method prescribed by TG (16):

- Chalvey = 0.990 (M4 Air Quality Monitoring Station) see **Appendix C.1**;
- Colnbrook = 0.935 (Suburban Air Quality Monitoring Station) see **Appendix C.2**
- Windmill = 0.935 (Kerbside Air Quality Monitoring Station) see **Appendix C.3**
- Brands Hill = 0.885 (Kerbside Air Quality Monitoring Station) see **Appendix C.4**
- Wellington = 0.935 (Kerbside Air Quality Monitoring Station) see **Appendix C.5**

Salt Hill monitoring station was not used due to low data capture. Chalvey monitoring station was not included in the bias correction factor calculation as it is an industrial site.

The national bias adjustment factor is shown in **Appendix C.6**. This is slightly different from the local bias adjustment value and is more conservative, therefore the local bias factor was used to adjust the diffusion tube results.

Technical Guidance 2016 suggests the calculation of average bias should be done as follows:

1. For each location take the bias correction B, from either the value including all data or with only using those coefficients of variation <20%.
2. Convert the percentage to a factor by dividing by 100, adding 1, and then dividing 1 by the result.
3. Repeat stage 2) for all co-location sites and average the result.
4. Adjust all diffusion tubes by the resulting value.

Appendix C.1: Chalvey

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	10/01/2019	06/02/2019	41.7	42.9	42.8	42	0.7	2	1.7
2	06/02/2019	06/03/2019	35.6	42.9	39.8	39	3.7	9	9.1
3	06/03/2019	03/04/2019	33.1	33.8	33.9	34	0.5	1	1.1
4	03/04/2019	02/05/2019	35.3	33.6	34.1	34	0.9	3	2.2
5	02/05/2019	05/06/2019	28.8	30.7	27.6	29	1.5	5	3.8
6	05/06/2019	03/07/2019	29.7	31.0	29.4	30	0.9	3	2.1
7	03/07/2019	09/08/2019	26.9	27.1	27.0	27	0.1	0	0.2
8	09/08/2019	02/09/2019	30.6	34.5	33.5	33	2.0	6	5.0
9	02/09/2019	04/10/2019	30.9	28.5	28.2	29	1.5	5	3.7
10	04/10/2019	06/11/2019	33.1	33.4	32.6	33	0.4	1	1.0
11	06/11/2019	04/12/2019	37.4	35.5	38.3	37	1.4	4	3.6
12	04/12/2019	10/01/2020	33.5		31.6	33	1.3	4	12.1
13									

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

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
41.034521	99.69183359	Good	Good
45.067374	99.70282318	Good	Good
32.606634	98.66270431	Good	Good
34.144774	99.42611191	Good	Good
28	99.51040392	Good	Good
25	99.85141159	Good	Good
26	99.88751406	Good	Good
31	99	Good	Good
28	99.34980494	Good	Good
30	99.8738966	Good	Good
40.571818	99.85141159	Good	Good
33.492942	99	Good	Good
Overall survey -->		Good precision	Good Overall DC

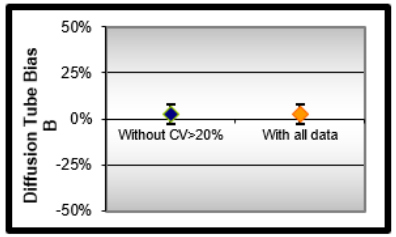
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	CHALVEY (SLH 7)

Precision: 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 12 periods of data	
Bias factor A	0.99 (0.94 - 1.04)
Bias B	1% (-4% - 6%)
Diffusion Tubes Mean:	33 μgm^{-3}
Mean CV (Precision):	4
Automatic Mean:	33 μgm^{-3}
Data Capture for periods used:	99%
Adjusted Tubes Mean:	33 (31 - 35) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 12 periods of data	
Bias factor A	0.99 (0.94 - 1.04)
Bias B	1% (-4% - 6%)
Diffusion Tubes Mean:	33 μgm^{-3}
Mean CV (Precision):	4
Automatic Mean:	33 μgm^{-3}
Data Capture for periods used:	99%
Adjusted Tubes Mean:	33 (31 - 35) μgm^{-3}



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Appendix C.2: Pippins Colnbrook

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	10/01/2019	06/02/2019	35.8	34.9	30.7	34	2.7	8	6.8	30.436052	99.53775039	Good	Good
2	06/02/2019	07/03/2019	34.5	36.5	31.3	34	2.6	8	6.5	32.67398	99.85652798	Good	Good
3	07/03/2019	03/04/2019	22.3	25.7	25.5	25	1.9	8	4.8	21.458945	99.22958398	Good	Good
4	03/04/2019	01/05/2019	35.2	30.9	31.4	33	2.3	7	5.8	35.812637	100	Good	Good
5	01/05/2019	05/06/2019	18.7	20.3	15.4	18	2.5	14	6.2	21	100	Good	Good
6	05/06/2019	03/07/2019	22.8	23.3	22.8	23	0.3	1	0.7	18	96.13670134	Good	Good
7	03/07/2019	09/08/2019	20.2	21.4	20.2	21	0.7	3	1.7	20	61.19235096	Good	or Data Capture
8	09/08/2019	03/09/2019	21.1	18.0	20.8	20	1.7	9	4.2	24	51.74708819	Good	or Data Capture
9	03/09/2019	04/10/2019	24.1	22.9	23.3	23	0.6	3	1.5	25	68.8590604	Good	or Data Capture
10	04/10/2019	06/11/2019	27.6	27.0	26.8	27	0.4	2	1.1	23	99.62168979	Good	Good
11	06/11/2019	04/12/2019	39.5	39.7	37.1	39	1.4	4	3.6	36.317724	100	Good	Good
12	04/12/2019	10/01/2020	27.3	24.9	24.6	26	1.5	6	3.7	21.984261	99.66254218	Good	Good
13													

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

Overall survey --> Good precision | Poor Overall DC

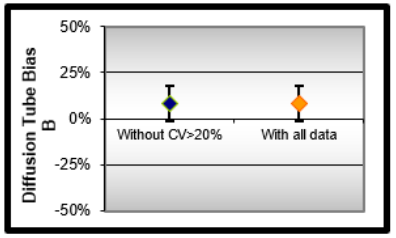
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	PIPPINS (SLH 3 & SLH 6)

Precision: 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 9 periods of data	
Bias factor A	0.93 (0.86 - 1.03)
Bias B	7% (-3% - 17%)
Diffusion Tubes Mean:	29 μgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	27 μgm^{-3}
Data Capture for periods used:	99%
Adjusted Tubes Mean:	27 (25 - 29) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 9 periods of data	
Bias factor A	0.93 (0.86 - 1.03)
Bias B	7% (-3% - 17%)
Diffusion Tubes Mean:	29 μgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	27 μgm^{-3}
Data Capture for periods used:	99%
Adjusted Tubes Mean:	27 (25 - 29) μgm^{-3}



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Appendix C.3: Windmill

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	11/01/2019	06/02/2019	50.3	48.8	50.1	50	0.8	2	2.0	49.54513	99.84	Good	Good
2	06/02/2019	07/03/2019	49.4	50.5	48.5	49	1.0	2	2.5	47.85195	99.713056	Good	Good
3	07/03/2019	02/04/2019	44.7	45.5	43.3	45	1.1	2	2.7	39.34834	99.68	Good	Good
4	02/04/2019	01/05/2019	45.0	46.4	53.8	48	4.7	10	11.7	47.24662	99.2826399	Good	Good
5	01/05/2019	05/06/2019	41.3	42.8	42.1	42	0.8	2	1.9	37	100	Good	Good
6	05/06/2019	03/07/2019	38.3	37.4	38.2	38	0.5	1	1.2	32	99.8514116	Good	Good
7	03/07/2019	08/08/2019	36.6	32.9	34.6	35	1.8	5	4.6	30	100	Good	Good
8	08/08/2019	02/09/2019	31.7	31.8	31.5	32	0.2	1	0.4	29	100	Good	Good
9	02/09/2019	04/10/2019	40.2	40.6	40.6	40	0.2	1	0.6	34	99.479844	Good	Good
10	04/10/2019	06/11/2019	41.6	37.8	37.4	39	2.3	6	5.8	37	100	Good	Good
11	06/11/2019	04/12/2019	43.7	49.8	50.8	48	3.8	8	9.5	51.3174	99.4056464	Good	Good
12	04/12/2019	10/01/2020	30.8	38.0	36.9	35	3.9	11	9.6	34.216	100	Good	Good
13													
											Overall survey -->	Good precision	Good Overall DC

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

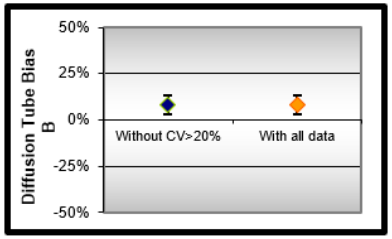
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	WINDMILL (SLH 12)

Precision: 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 12 periods of data	
Bias factor A	0.93 (0.89 - 0.98)
Bias B	7% (2% - 12%)
Diffusion Tubes Mean:	42 μgm^{-3}
Mean CV (Precision):	4
Automatic Mean:	39 μgm^{-3}
Data Capture for periods used:	100%
Adjusted Tubes Mean:	39 (37 - 41) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 12 periods of data	
Bias factor A	0.93 (0.89 - 0.98)
Bias B	7% (2% - 12%)
Diffusion Tubes Mean:	42 μgm^{-3}
Mean CV (Precision):	4
Automatic Mean:	39 μgm^{-3}
Data Capture for periods used:	100%
Adjusted Tubes Mean:	39 (37 - 41) μgm^{-3}



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Appendix C.4: Brands Hill

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	11/01/2019	06/02/2019		51.4	54.6	53	2.3	4	20.3	48.60357	99.84	Good	Good
2	06/02/2019	07/03/2019	47.0	52.1	44.4	48	3.9	8	9.7	47.494329	99.85652798	Good	Good
3	07/03/2019	03/04/2019	38.2	40.6	42.1	40	2.0	5	5.0	35.562984	99.53775039	Good	Good
4	03/04/2019	01/05/2019	56.9	54.0	61.4	57	3.7	6	9.2	56.081719	95.69093611	Good	Good
5	01/05/2019	05/06/2019	44.0	45.6	41.5	44	2.1	5	5.1	37	99.64328181	Good	Good
6	05/06/2019	03/07/2019	38.5	44.8	43.3	42	3.3	8	8.2	33	100	Good	Good
7	03/07/2019	08/08/2019	38.7	36.0	38.5	38	1.5	4	3.8	29	99.88439306	Good	Good
8	08/08/2019	03/09/2019	32.2	34.0	29.3	32	2.4	8	5.9	27	100	Good	Good
9	03/09/2019	04/10/2019	40.4	42.3	41.4	41	1.0	2	2.4	33	99.06040268	Good	Good
10	04/10/2019	06/11/2019	41.0	45.4	43.5	43	2.2	5	5.4	37	100	Good	Good
11	06/11/2019	04/12/2019	53.3	60.0	64.1	59	5.4	9	13.5	54.272795	99.25705795	Good	Good
12	04/12/2019	10/01/2020	35.4	30.3	33.6	33	2.6	8	6.4	30.620465	99.88751406	Good	Good
13													
											Overall survey -->	Good precision	Good Overall DC

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

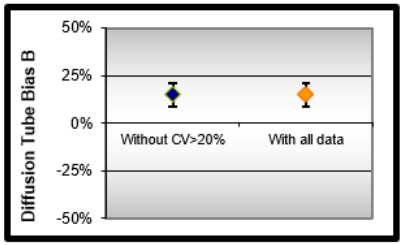
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	BRANDS HILL (SLH 11)

Precision: 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 12 periods of data	
Bias factor A	0.88 (0.84 - 0.93)
Bias B	13% (7% - 20%)
Diffusion Tubes Mean:	44 μgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	39 μgm^{-3}
Data Capture for periods used:	99%
Adjusted Tubes Mean:	39 (37 - 41) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 12 periods of data	
Bias factor A	0.88 (0.84 - 0.93)
Bias B	13% (7% - 20%)
Diffusion Tubes Mean:	44 μgm^{-3}
Mean CV (Precision):	6
Automatic Mean:	39 μgm^{-3}
Data Capture for periods used:	99%
Adjusted Tubes Mean:	39 (37 - 41) μgm^{-3}



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Appendix C.5: Wellington

Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	11/01/2019	06/02/2019	45.9	45.8	43.4	45	1.4	3	3.5	44.63204	99.84	Good	Good
2	06/02/2019	07/03/2019	41.6	45.7	44.0	44	2.1	5	5.1	44.84982	99.856528	Good	Good
3	07/03/2019	03/04/2019	39.8	38.3	35.2	38	2.4	6	5.9	33.37339	99.6918336	Good	Good
4	03/04/2019	01/05/2019	45.1	43.4	45.4	45	1.1	2	2.7	43.67637	95.5423477	Good	Good
5	01/05/2019	05/06/2019	36.2		34.6	35	1.1	3	9.7	30	99.8810939	Good	Good
6	05/06/2019	03/07/2019	32.3	33.3	30.1	32	1.6	5	4.1	26	99.5542348	Good	Good
7	03/07/2019	08/08/2019	31.5	30.9	29.5	31	1.0	3	2.5	25	99.6531792	Good	Good
8	08/08/2019	02/09/2019	29.9	29.5	28.8	29	0.6	2	1.4	27	99.6672213	Good	Good
9	02/09/2019	04/10/2019	33.5	33.2	34.7	34	0.8	2	2.0	29	99.2197659	Good	Good
10	04/10/2019	06/11/2019	37.6	37.2	36.0	37	0.8	2	2.1	33	100	Good	Good
11	06/11/2019	04/12/2019	45.4	41.6	43.6	44	1.9	4	4.8	46.01675	99.7028232	Good	Good
12	04/12/2019	10/01/2020	34.9	28.1	33.3	32	3.6	11	8.8	32.43402	99.7750281	Good	Good
13													
												Good precision	Good Overall DC

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

Overall survey -->

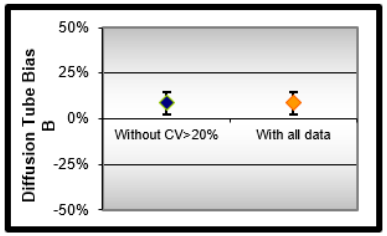
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	WELLINGTON (SLH 10)

Precision: 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval) without periods with CV larger than 20%	
Bias calculated using 12 periods of data	
Bias factor A	0.94 (0.89 - 0.99)
Bias B	7% (1% - 13%)
Diffusion Tubes Mean:	37 μgm^{-3}
Mean CV (Precision):	4
Automatic Mean:	35 μgm^{-3}
Data Capture for periods used:	99%
Adjusted Tubes Mean:	35 (33 - 37) μgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA	
Bias calculated using 12 periods of data	
Bias factor A	0.94 (0.89 - 0.99)
Bias B	7% (1% - 13%)
Diffusion Tubes Mean:	37 μgm^{-3}
Mean CV (Precision):	4
Automatic Mean:	35 μgm^{-3}
Data Capture for periods used:	99%
Adjusted Tubes Mean:	35 (33 - 37) μgm^{-3}



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Appendix C.6: National Bias Adjustment

Analysed By[1]	Method To undo your selection, choose (All) from the pop-up list	Year[5] To undo your selection, choose (All)	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m^3)	Automatic Monitor Mean Conc. (Cm) (µg/m^3)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2019	R	City of London	12	74	71	4.1%	G	**0.96**
Gradko	50% TEA in acetone	2019	UB	City of London	12	37	33	14.3%	G	**0.88**
Gradko	50% TEA in acetone	2019	KS	Marylebone Road Intercomparison	12	83	65	26.3%	G	**0.79**
Gradko	50% TEA in acetone	2019	R	London Borough of Richmond upon Thames	12	46	35	30.4%	G	**0.77**
Gradko	50% TEA in acetone	2019	R	London Borough of Richmond upon Thames	12	29	27	7.1%	G	**0.93**
Gradko	50% TEA in acetone	2019	B	London Borough of Richmond upon Thames	11	21	21	1.0%	G	**0.99**
Gradko	50% TEA in acetone	2019	UB	Falkirk Council	9	18	15	18.1%	G	**0.85**
Gradko	50% TEA in acetone	2019	R	LB Newham	12	35	30	16.2%	G	**0.86**
Gradko	50% TEA in acetone	2019		**Overall Factor[3] (8 studies)**				**Use**		**0.87**

PM Monitoring Adjustment

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.

Short-term to Long-term Data Adjustment

A short to long term data adjustment was not necessary for automatic sites as the data capture was at least 75% for all sites

QA/QC of Automatic Monitoring

Slough Borough Council's automatic sites are part of the National Automatic Monitoring Calibration Club, whereby monitoring data are managed to the same procedures and standards as AURN sites by Ricardo Energy and Environment.

QA/QC of Diffusion Tube Monitoring

All tubes used by Slough Borough Council are prepared using 50% TEA in acetone, and are supplied and analysed by Gradko International. In the past (up to the end of 2018) Slough used 50% TEA in acetone tubes supplied and analysed by Environmental Services Group (now SOCOTEC).

Both laboratories participate in the AIR Proficiency Testing (PT) external proficiency testing scheme run by the Government. Four spiked diffusion tubes are distributed to participating laboratories on a quarterly basis to assess the analytical performance of those laboratories supplying diffusion tubes to Local Authorities for use in the context of LAQM.

Table C.1 shows the results of the most recent 8 rounds of proficiency testing under AIR-PT. The table gives the % 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.

In 2016/17 (as reflected in the rolling average at AR021), there was a slight dip below 95% by Environmental Services Group, but otherwise performance by both laboratories has been satisfactory at ≥95%. These laboratories are consistently two of the best performing laboratories in the tests. Results from Lambeth Scientific Services are included in **Table C.1** as an example of a laboratory that has had variable performance testing results in individual rounds to show how this impacts on the rolling average calculation. Based on the latest AIR-PT results the Council does not need to consider any changes to its supplier, Gradko, on the basis of performance.

Appendix C.7 Laboratory summary performance for AIR NO2 PT rounds AR024 – AR034 (Defra, November 2019) [23]

AIR PT Round	AIR PT AR024	AIR PT AR025	AIR PT AR027	AIR PT AR028	AIR PT AR030	AIR PT AR031	AIR PT AR033	AIR PT AR034
Round conducted in the period	January – February 2018	April – May 2018	July – August 2018	September – October 2018	January – February 2019	April – May 2019	July – August 2019	September – November 2019
Aberdeen Scientific Services	100 %	100 %	100 %	100 %	75 %	100 %	100 %	100 %
Cardiff Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Edinburgh Scientific Services	100 %	100 %	100 %	100 %	100 %	NR [2]	100 %	25 %
SOCOTEC	100 % [1]	100 % [1]	100 % [1]	100 % [1]	87.5 % [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]
Glasgow Scientific Services	100 %	100 %	50 %	100 %	100 %	100 %	100 %	50 %
Gradko International [1]	100 % [1]	100 %	100 %	100 %	75 %	100 %	100 %	100 %
Kent Scientific Services	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]
Lambeth Scientific Services	NR [2]	NR [2]	NR [2]	25 %	50 %	100 %	50 %	100 %
Milton Keynes Council	100 %	75 %	100 %	100 %	100 %	100 %	50 %	100 %
Northampton Borough Council	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Somerset Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
South Yorkshire Air Quality Samplers	100 %	100 %	100 %	100 %	100 %	100 %	100 %	75 %
Staffordshire County Council	50 %	100 %	100 %	100 %	100 %	75 %	75 %	75 %
Tayside Scientific Services (formerly Dundee CC)	100 %	NR [2]	100 %	NR [2]	100 %	NR [2]	100 %	NR [2]
West Yorkshire Analytical Services	50 %	75 %	100 %	100 %	100 %	100 %	100 %	50 %

[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] Northampton Borough Council, Kent Scientific Services, Cardiff Scientific Services, Kirklees MBC and Exova (formerly Clyde Analytical) no longer carry out NO2 diffusion tube monitoring and therefore did not submit results.

[23] Department for Environment Food & Rural Affairs [Defra], November 2019, *Summary of Laboratory Performance in AIR NO_2 Proficiency Testing Scheme (January 2018 – November 2019).* Available at https://laqm.defra.gov.uk/assets/laqmno2performancedatauptonovember2019v1.pdf

Appendix C.8 - Rolling average percentage of satisfactory samples in AIR-PT

Laboratory	Rolling average over 5 rounds									
	AR021	AR022	AR024	AR025	AR027	AR028	AR030	AR031	AR033	AR034
Gradko	100	100	100	100	100	100	95	95	95	95
SOCOTEC (formerly ESG)	90	95	100	100	100	100	100	97.5	97.5	97.5
Lambeth	92	92	100	100	100	63	38	58	56	65

NOTES:

1. *No results reported for Lambeth in rounds AR019, AR021, AR024, AR025, and AR027 so rolling average based on available results within 5 previous rounds:*

   AR021 – based on three rounds of AR015, AR016 & AR018. No results for AR019 & AR021

   AR022 – based on three rounds of AR016, AR018 & AR022. No results for AR019 & AR021.

   AR024 – Based on two rounds of AR018 & AR022 only. No results available for AR019, AR021 or AR024.

   AR025 – Based on one round of AR022 only. No results available for AR019, AR021, AR024 or AR025.

   AR027 – Based on one round of AR022 only. No results available for AR021, AR024, AR025 or AR027.

Appendix C.9: Annualisation corrections for diffusion tubes

TG 16 Guidance was followed to analyse diffusion tube results that did not meet at least 75% data capture rates. This was applied to the following diffusion tubes:

- SLO 4
- SLO 26
- SLO 69-82
- SLO 84-86
- SLO 88-96

The following diffusion tubes were not able to be annualised as there was only two months of data collected:

- SLO 66
- SLO 67
- SLO 68
- SLO 83
- SLO 87

SLO 4: Landsdown Avenue

			D1	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
			SLO 4 Lansdowne Avenue	SLH 3 Pippins CMS	SLO 1 Salt Hill	SLO 2 Salt Hill	SLO 3 Salt Hill	SLO 11 Torridge Rd	SLO 13 Elbow Meadows	SLO 14 Pippins	SLO 15 Pippins	SLO 16 Pippins	SLO 17 Horton Caravan Park	SLO 20 Hencroft Street	SLO 23 Tuns Lane	SLO 31 Essex Avenue
	Start Date	End Date														
Jan-19	10/01/2019	06/02/2019	44.2	30.4	39.3	39.5	35.4	43.9	38.2	35.8	34.9	30.7	50.6	37.1	45.2	38.4
Feb-19	06/02/2019	07/03/2019	45.5	32.7	38.4	34.8	40.3	33.7	39.2	34.5	36.5	31.3	37.4	34.5	42.3	41.0
Mar-19	07/03/2019	03/04/2019		21.5	31.1	29.2	32.2	31.8	26.9	22.3	25.7	25.5	37.4	25.6	33.3	32.2
Apr-19	03/04/2019	01/05/2019		35.8	28.9	27.2	24.2	31.3	40.6	35.2	30.9	31.4	50.2	28.4	38.6	27.7
May-19	01/05/2019	05/06/2019		21.0	24.2	20.2	22.3	28.4	26.1	18.7	20.3	15.4	33.4	19.4	28.4	23.7
Jun-19	05/06/2019	03/07/2019		18.0	23.2	25.1	24.2	23.7	26.5	22.8	23.3	22.8	36.3	20.0	29.1	24.8
Jul-19	03/07/2019	09/08/2019		20.0	25.7	25.8	24.4	24.7	26.2	20.2	21.4	20.3	27.8	17.9	26.0	19.0
Aug-19	09/08/2019	03/09/2019		24.0	27.7	29.9	27.6	23.1	23.9	21.1	17.9	20.8	28.6	21.1	27.6	26.5
Sep-19	03/09/2019	04/10/2019		25.0	28.0	26.2	24.8	28.7	25.8	24.1	22.9	23.3	33.5	24.9	29.3	22.1
Oct-19	04/10/2019	06/11/2019	40.6	23.0	29.1	28.6	28.0	31.0	31.8	27.6	27.0	26.8	23.9	26.8	28.2	31.9
Nov-19	06/11/2019	04/12/2019	47.5	36.3	34.3	37.0	34.0	45.7	45.0	39.5	39.7	37.1	47.4	34.6	42.7	34.9
Dec-19	04/12/2019	10/01/2020	32.7	22.0	33.1	30.2	31.1	28.3	26.4	27.3	24.9	24.6	28.1	26.0	30.8	30.0
	Am		**42.1**	**25.81**	**30.24**	**30.24**	**29.47**	**29.04**	**31.19**	**31.39**	**27.44**	**27.11**	**25.83**	**36.23**	**26.35**	**33.46**

	B1 when D1 is available	*B2 when D1 is available*	*B3 when D1 is available*	*B4 when D1 is available*	*B5 when D1 is available*	*B6 when D1 is available*	*B7 when D1 is available*	*B8 when D1 is available*	*B9 when D1 is available*	*B10 when D1 is available*	*B11 when D1 is available*	*B12 when D1 is available*	*B13 when D1 is available*
44	30.44	39	40	35	44	38	36	35	31	51	37	45	38
46	32.67	38	35	40	34	39	35	37	31	37	35	42	41
41	23.00	29	29	28	31	32	28	27	27	24	27	28	32
47	36.32	34	37	34	46	45	40	40	37	47	35	43	35
33	21.98	33	30	31	28	26	27	25	25	28	26	31	30
Pm	**28.88**	**34.83**	**34.83**	**34.01**	**33.74**	**36.51**	**36.11**	**32.96**	**32.59**	**30.09**	**37.48**	**31.80**	**37.85**

The ratio R of the annual mean to the period mean (Am/Pm) is	**0.89**	**0.87**	**0.87**	**0.87**	**0.86**	**0.85**	**0.87**	**0.83**	**0.83**	**0.86**	**0.97**	**0.83**	**0.88**

Average of R = Ra	**0.87**	
D1a = D1 annualisation	**D1a = Am x Ra**	**36.53**

SLO 26: Yew Tree Road

			D1	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
	Start Date	End Date	SLO 26 Yew Tree Rd Uxb Rd (B)	SLH 3 Pippins CMS	SLO 1 Salt Hill	SLO 2 Salt Hill	SLO 3 Salt Hill	SLO 11 Torridge Rd	SLO 13 Elbow Meadows	SLO 14 Pippins	SLO 15 Pippins	SLO 16 Pippins	SLO 17 Horton Caravan Park	SLO 20 Hencroft Street	SLO 23 Tuns Lane	SLO 31 Essex Avenue
Jan-19	10/01/2019	06/02/2019		30.4	39.3	39.5	35.4	43.9	38.2	35.8	34.9	30.7	50.6	37.1	45.2	38.4
Feb-19	06/02/2019	07/03/2019		32.7	38.4	34.8	40.3	33.7	39.2	34.5	36.5	31.3	37.4	34.5	42.3	41.0
Mar-19	07/03/2019	03/04/2019		21.5	31.1	29.2	32.2	31.8	26.9	22.3	25.7	25.5	37.4	25.6	33.3	32.2
Apr-19	03/04/2019	01/05/2019		35.8	28.9	27.2	24.2	31.3	40.6	35.2	30.9	31.4	50.2	28.4	38.6	27.7
May-19	01/05/2019	05/06/2019		21.0	24.2	20.2	22.3	28.4	26.1	18.7	20.3	15.4	33.4	19.4	28.4	23.7
Jun-19	05/06/2019	03/07/2019		18.0	23.2	25.1	24.2	23.7	26.5	22.8	23.3	22.8	36.3	20.0	29.1	24.8
Jul-19	03/07/2019	09/08/2019	33.2	20.0	25.7	25.8	24.4	24.7	26.2	20.2	21.4	20.3	27.8	17.9	26.0	19.0
Aug-19	09/08/2019	03/09/2019	36.0	24.0	27.7	29.9	27.6	23.1	23.9	21.1	17.9	20.8	28.6	21.1	27.6	26.5
Sep-19	03/09/2019	04/10/2019	39.6	25.0	28.0	26.2	24.8	28.7	25.8	24.1	22.9	23.3	33.5	24.9	29.3	22.1
Oct-19	04/10/2019	06/11/2019	34.6	23.0	29.1	28.6	28.0	31.0	31.8	27.6	27.0	26.8	23.9	26.8	28.2	31.9
Nov-19	06/11/2019	04/12/2019	43.1	36.3	34.3	37.0	34.0	45.7	45.0	39.5	39.7	37.1	47.4	34.6	42.7	34.9
Dec-19	04/12/2019	10/01/2020	33.7	22.0	33.1	30.2	31.1	28.3	26.4	27.3	24.9	24.6	28.1	26.0	30.8	30.0
	Am		**36.7**	**25.81**	**30.24**	**30.24**	**29.47**	**29.04**	**31.19**	**31.39**	**27.44**	**27.11**	**25.83**	**36.23**	**26.35**	**33.46**

	B1 when D1 is available	*B2 when D1 is available*	*B3 when D1 is available*	*B4 when D1 is available*	*B5 when D1 is available*	*B6 when D1 is available*	*B7 when D1 is available*	*B8 when D1 is available*	*B9 when D1 is available*	*B10 when D1 is available*	*B11 when D1 is available*	*B12 when D1 is available*	*B13 when D1 is available*
33	20.00	26	26	24	25	26	20	21	20	28	18	26	19
36	24.00	28	30	28	23	24	21	18	21	29	21	28	27
40	25.00	28	26	25	29	26	24	23	23	34	25	29	22
35	23.00	29	29	28	31	32	28	27	27	24	27	28	32
43	36.32	34	37	34	46	45	40	40	37	47	35	43	35
34	21.98	33	30	31	28	26	27	25	25	28	26	31	30
Pm	**25.05**	**29.63**	**29.63**	**29.60**	**28.30**	**30.24**	**29.86**	**26.66**	**25.62**	**25.47**	**31.56**	**25.21**	**30.78**

The ratio R of the annual mean to the period mean (Am/Pm) is	**1.03**	**1.02**	**1.02**	**1.00**	**1.03**	**1.03**	**1.05**	**1.03**	**1.06**	**1.01**	**1.15**	**1.05**	**1.09**

Average of R = Ra	**1.04**	
D1a = D1 annualisation	**D1a = Am x Ra**	**38.28**

SLO 69-95 HE Receptors, SLO 96 Poyle Road

Start Date	End Date	D1 SLO 69	D1 SLO 70	D1 SLO 71	D1 SLO 72	D1 SLO 73	D1 SLO 74	D1 SLO 75	D1 SLO 76	D1 SLO 77	D1 SLO 78	D1 SLO 79	D1 SLO 80	D1 SLO 81	D1 SLO 82	D1 SLO 84	D1 SLO 85	D1 SLO 86	D1 SLO 88	D1 SLO 89	D1 SLO 90	D1 SLO 91	D1 SLO 92	D1 SLO 93	D1 SLO 94	D1 SLO 95	D1 SLO 96
10/01/2019	06/02/2019																										
06/02/2019	07/03/2019																										
07/03/2019	03/04/2019																										
03/04/2019	01/05/2019																										
01/05/2019	05/06/2019																										
05/06/2019	03/07/2019																										
03/07/2019	09/08/2019																										
09/08/2019	03/09/2019																										
03/09/2019	04/10/2019																										
04/10/2019	06/11/2019	35.4	36.3	36.4	39.5	36.0	34.7	33.6	36.2	33.5	38.9	38.0	37.2	34.3	38.3	35.9	34.1	35.0	33.3	35.5	32.8	33.4	21.4	36.2	37.5	37.0	31.2
06/11/2019	04/12/2019	41.7	42.4	41.1	43.8	43.4	40.9	42.8	40.8	37.3	43.9	42.3	42.4	41.1	41.8	44.6	44.1	43.2	42.0	43.1	39.9	42.0	42.2	39.8	40.2	41.5	41.9
04/12/2019	10/01/2020	35.8	37.0	36.8	36.1	38.9	36.4	33.5	34.0	32.0	33.8	38.8	30.6	34.6	34.8	32.0	33.3	36.9	29.5	37.7	34.9	24.3	36.7	38.2	38.8	38.7	26.4
	Am	37.6	38.6	38.1	39.8	39.4	37.3	36.6	37.0	34.3	38.9	39.7	36.7	36.7	38.3	37.5	37.2	38.4	34.9	38.8	35.9	33.2	33.4	38.1	38.8	39.1	33.2
	D1a	35.08	35.93	35.51	37.10	36.76	34.80	34.15	34.49	31.94	36.23	37.01	34.24	34.18	35.70	34.96	34.64	35.76	32.56	36.14	33.43	30.98	31.16	35.48	36.20	36.42	30.92

B1 SLH 3 Pippins CMS	B2 SLO 1 Salt Hill	B3 SLO 2 Salt Hill	B4 SLO 3 Salt Hill	B5 SLO 11 Torridge Rd	B6 SLO 13 Elbow Meadows	B7 SLO 14 Pippins	B8 SLO 15 Pippins	B9 SLO 16 Pippins	B10 SLO 17 Horton Caravan Park	B11 SLO 20 Hencroft Street	B12 SLO 23 Tuns Lane	B13 SLO 31 Essex Avenue
30.4	39.3	39.5	35.4	43.9	38.2	35.8	34.9	30.7	50.6	37.1	45.2	38.4
32.7	38.4	34.8	40.3	33.7	39.2	34.5	36.5	31.3	37.4	34.5	42.3	41.0
21.5	31.1	29.2	32.2	31.8	26.9	22.3	25.7	25.5	37.4	25.6	33.3	32.2
35.8	28.9	27.2	24.2	31.3	40.6	35.2	30.9	31.4	50.2	28.4	38.6	27.7
21.0	24.2	20.2	22.3	28.4	26.1	18.7	20.3	15.4	33.4	19.4	28.4	23.7
18.0	23.2	25.1	24.2	23.7	26.5	22.8	23.3	22.8	36.3	20.0	29.1	24.8
20.0	25.7	25.8	24.4	24.7	26.2	20.2	21.4	20.3	27.8	17.9	26.0	19.0
24.0	27.7	29.9	27.6	23.1	23.9	21.1	17.9	20.8	28.6	21.1	27.6	26.5
25.0	28.0	26.2	24.8	28.7	25.8	24.1	22.9	23.3	33.5	24.9	29.3	22.1
23.0	29.1	28.6	28.0	31.0	31.8	27.6	27.0	26.8	23.9	26.8	28.2	31.9
36.3	34.3	37.0	34.0	45.7	45.0	39.5	39.7	37.1	47.4	34.6	42.7	34.9
22.0	33.1	30.2	31.1	28.3	26.4	27.3	24.9	24.6	28.1	26.0	30.8	30.0
25.81	30.24	30.24	29.47	29.04	31.19	31.39	27.44	27.11	25.83	36.23	26.35	33.46

B1 when D1 is availabl	*B2 when D1 is availab*	*B3 when D1 is availab*	*B4 when D1 is availabl*	*B5 when D1 is availab*	*B6 when D1 is availabl e*	*B7 when D1 is availabl e*	*B8 when D1 is availabl e*	*B9 when D1 is available*	*B10 when D1 is availabl*	*B11 when D1 is availab*	*B12 when D1 is availabl*	*B13 when D1 is availab*
23.0	29.1	28.6	28.0	31.0	31.8	27.6	27.0	26.8	23.9	26.8	28.2	31.9
36.3	34.3	37.0	34.0	45.7	45.0	39.5	39.7	37.1	47.4	34.6	42.7	34.9
22.0	33.1	30.2	31.1	28.3	26.4	27.3	24.9	24.6	28.1	26.0	30.8	30.0
27.10	32.15	32.15	31.92	31.01	34.98	34.39	31.50	30.51	29.48	33.14	29.13	33.92

The ratio R of												
	0.95	0.94	0.94	0.92	0.94	0.89	0.91	0.87	0.89	0.88	1.09	0.90	0.99

Average of R = Ra	0.93
D1a = D1 annualisation	D1a = Am x Ra

Appendix C.10: Precision Checks

Note[24]: 5.1.3 Identifying Outlying Values From Triplets

A CoV of more than 20% would indicate that the precision of the triplet of results is relatively poor. In such cases, where it is not possible to identify any one value as an outlier, a judgement must be made on whether to accept or reject all three results.

Adjustment of DUPLICATE or TRIPLICATE Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Average	Standard Deviation	CV	95% CI mean	Data Quality Check: Diffusion Tubes Precision Check
1		Jan-19								
2		Feb-19								
3		Mar-19								
4		Apr-19								
5		May-19								
6		Jun-19								
7		Jul-19								
8		Aug-19								
9		Sep-19								
10		Oct-19	32.8	33.4	21.4	29.2	6.78	23.23	16.85	Poor Precision
11		Nov-19	39.9	42.0	42.2	41.4	1.26	3.04	3.13	Good
12		Dec-19	34.9	24.3	36.7	32.0	6.68	20.90	16.60	Poor Precision
13										

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

Jaume Targa, for AEA

Version 04 - February 2011

Site Name/ ID:

Adjusted measurement (95% confidence level)
Without periods with CV larger than 20%
Bias calculated using 7 periods of data
Tube Precision: 5 Automatic DC: 98%
Bias factor A: 0.92 (0.85 - 1.02)
Bias B: 8% (-2% - 18%)
Information about tubes to be adjusted
Diffusion Tube average: µgm^{-3}
Average Precision (CV):
Adjusted Tube average: µgm^{-3}

Adjusted measurement (95% confidence level)
with all data
Bias calculated using 7 periods of data
Tube Precision: 5 Automatic DC: 98%
Bias factor A: 0.92 (0.85 - 1.02)
Bias B: 8% (-2% - 18%)
Information about tubes to be adjusted
Diffusion Tube average: µgm^{-3}
Average Precision (CV):
Adjusted Tube average: µgm^{-3}

[24] https://laqm.defra.gov.uk/documents/0802141004_NO2_WG_PracticalGuidance_Issue1a.pdf

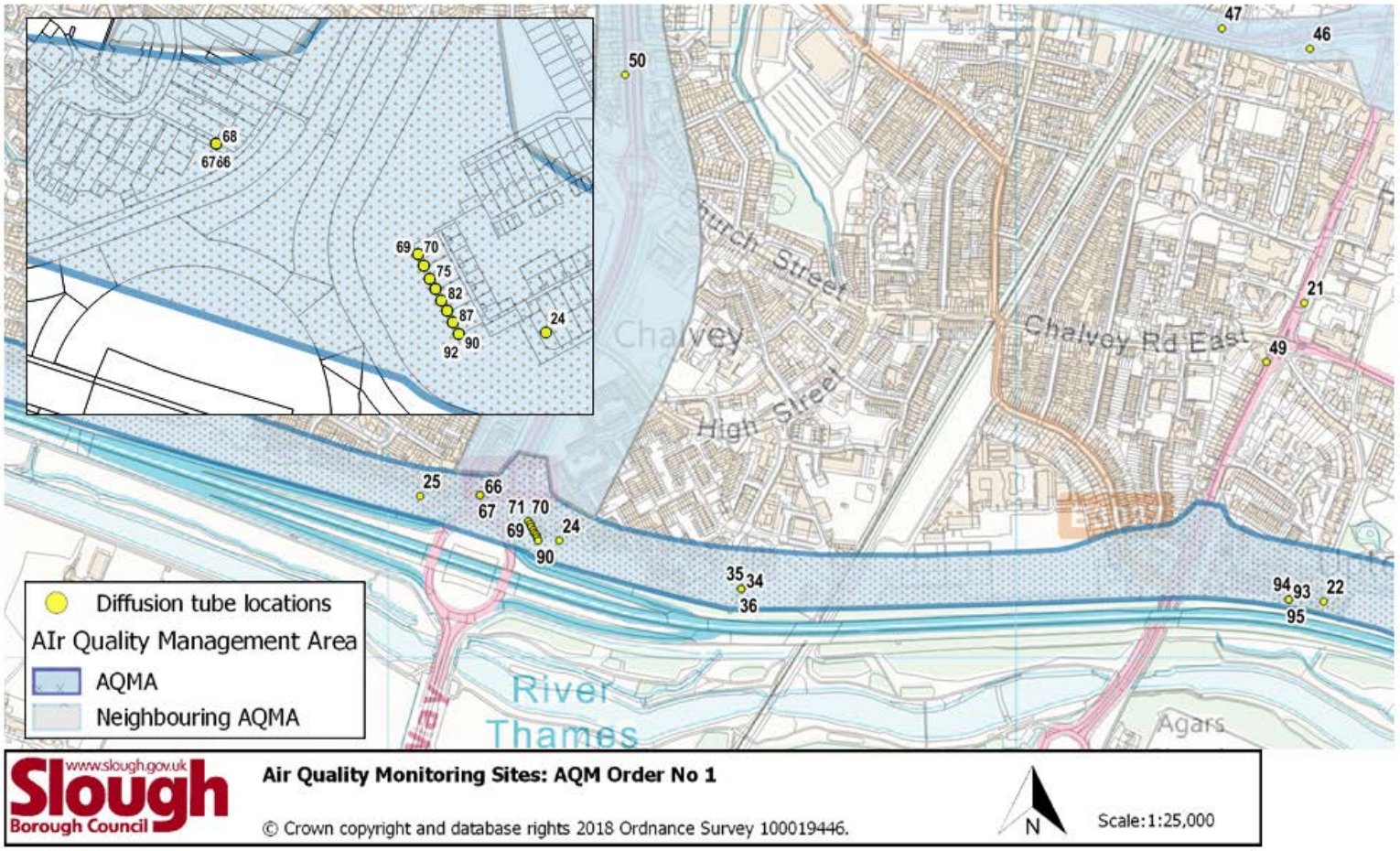
Appendix C.11: Distance Corrections

Enter data into the pink cells

Site Name/ID	Distance (m)		NO_2 Annual Mean Concentration ($\mu g/m^3$)			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
Grampian Way (SLO 8)	35.0	20.0	23.8	35.0	32.5	Predicted concentration at Receptor within 10% the AQS objective. Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.
Tweed Road (SLO 9)	22.0	13.0	22.2	31.8	34.5	Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.
Torridge Road (SLO 11)	50.0	30.0	23.8	28.7	31.1	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution. Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.
Winvale (SLO 22)	31.0	20.0	25.1	32.7	34.9	Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.
London Road (SLO 10)	4.0	12.5	22.2	41.1	35.1	
Brands Hill (SLO 18)	6.0	10.5	22.2	49.4	**44.6**	Predicted concentration at Receptor above AQS objective.
Rogans (SLO 28)	4.5	8.5	22.2	38.5	35.5	
Brands Hill (SLO 63)	4.0	16.5	22.2	36.9	32.3	
Brands Hill (SLO 64)	4.0	16.5	22.2	41.1	33.6	
Brands Hill (SLO 65)	4.0	16.5	22.2	41.2	33.7	
Tuns Lane (SLO 50)	4.0	13.0	24.1	42.8	36.6	Predicted concentration at Receptor within 10% the AQS objective.
Windmill (SLO 57)	7.5	12.0	24.4	37.9	35.7	
Windmill (SLO 58)	7.5	12.0	24.4	38.5	36.3	Predicted concentration at Receptor within 10% the AQS objective.
Windmill (SLO 59)	7.5	12.0	24.4	38.9	36.6	Predicted concentration at Receptor within 10% the AQS objective.
Lansdowne Av. (SLO 4)	13.5	5.5	24.5	33.6	37.1	Predicted concentration at Receptor within 10% the AQS objective. Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.

Princess St. (SLO 5)	12.0	12.0	22.3	33.6	33.6	Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.
Yew Tree Rd (SLO 29)	1.5	6.0	22.3	48.5	**40.5**	Predicted concentration at Receptor above AQS objective.
Blair Road (SLO 37)	11.0	11.0	24.5	37.8	37.8	Predicted concentration at Receptor within 10% the AQS objective. Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.
Wexham Rd. (SLO 40)	11.0	11.5	22.3	37.9	37.6	Predicted concentration at Receptor within 10% the AQS objective. Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.
Cornwall House (SLO 46	5.0	11.0	25.0	39.0	35.7	
Windsor Rd (B) (SLO 49)	1.5	6.0	25.0	39.5	35.1	
High St Langley (SLO 53	2.0	5.5	23.8	39.9	36.1	Predicted concentration at Receptor within 10% the AQS objective.

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



Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2020]

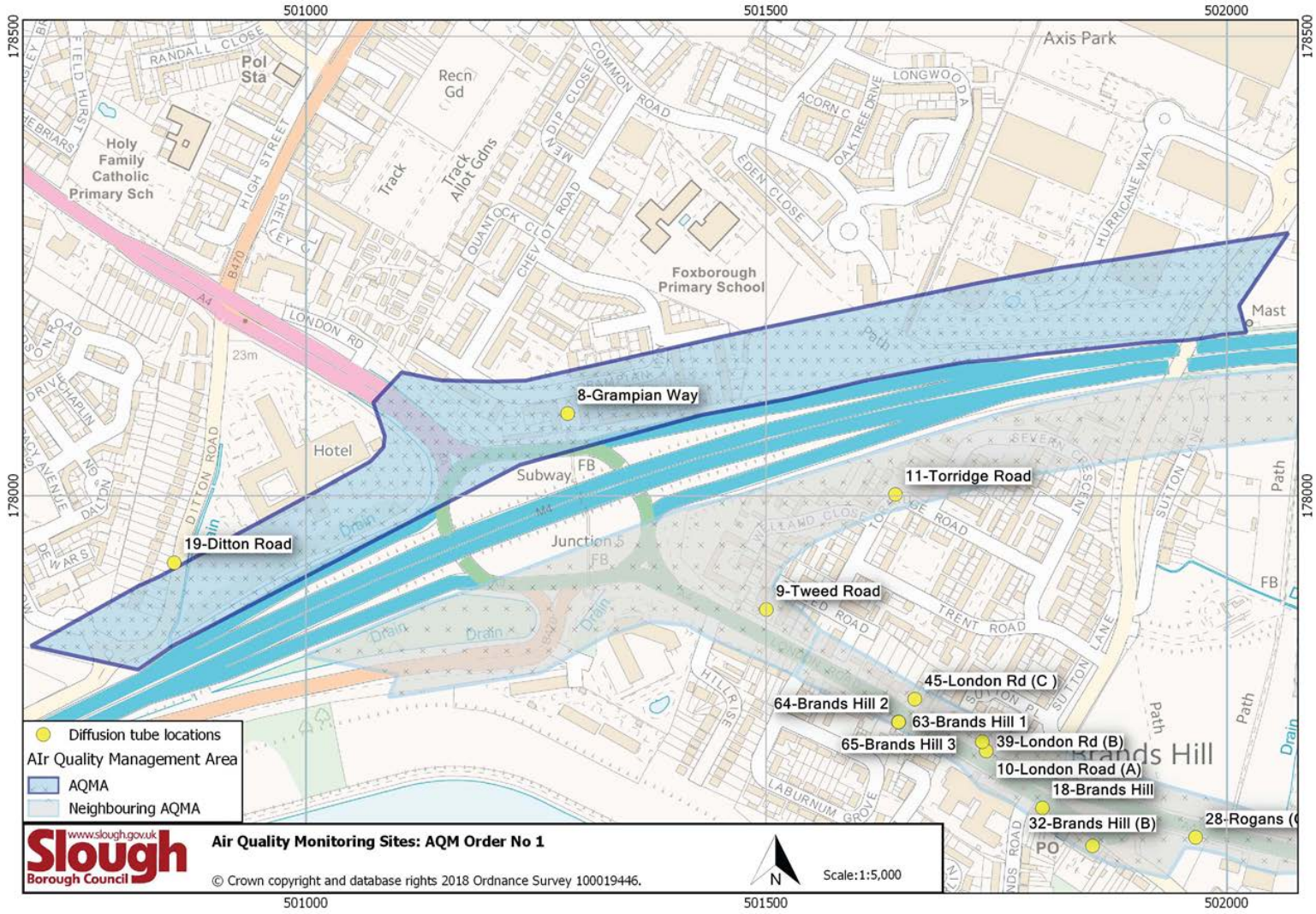
Location:
AQMA 1 M4

Title
Diffusion Tube Locations

Includes:

SLO 22 Winvale
SLO 24 Spackmans Way
SLO 25 Paxton Avenue
SLO 34-36 Chalvey (CAS)
SLO 66-95 HE Receptors

Date	Figure No.
24.06.20	D.1



Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2020]

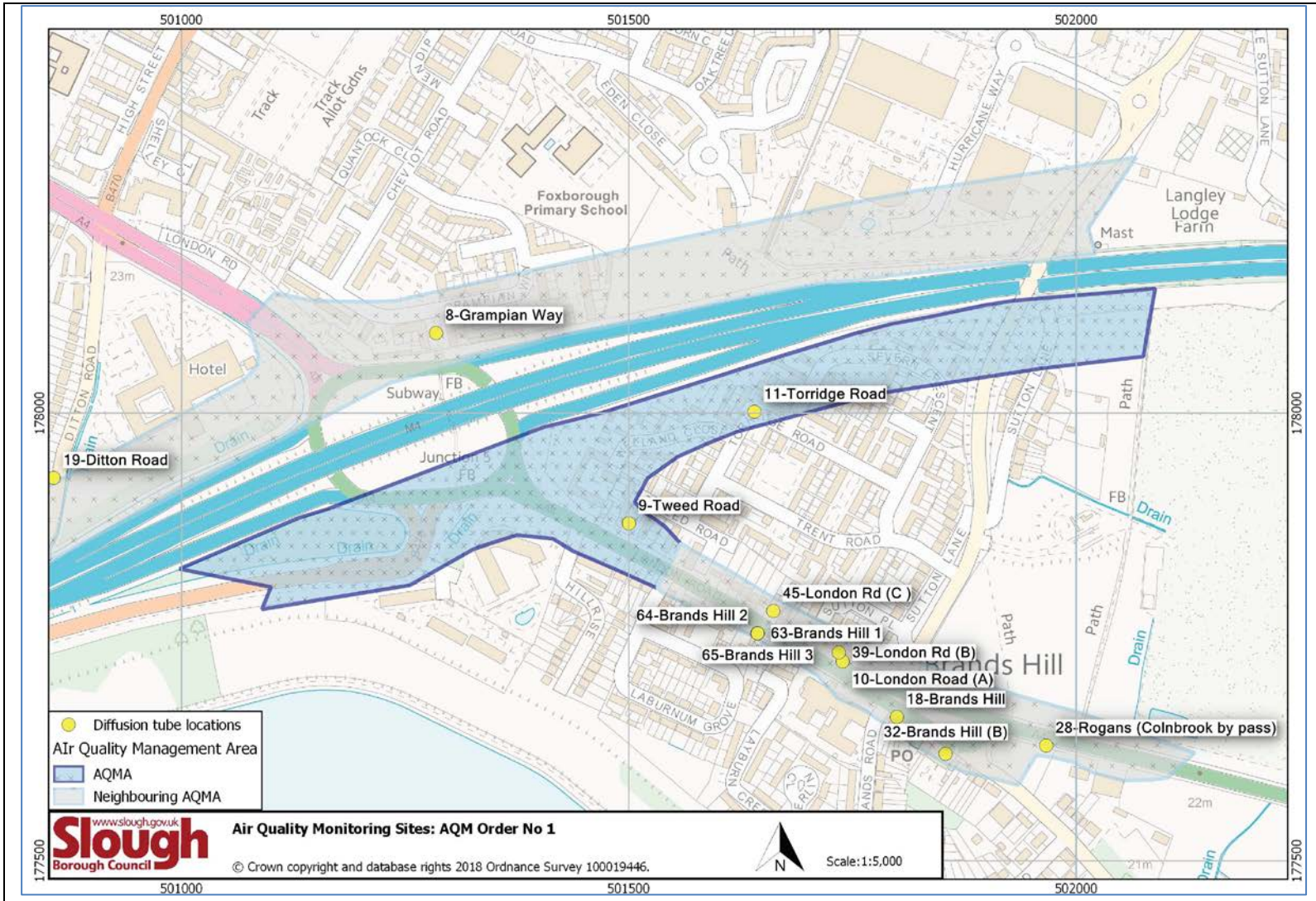
Location:
AQMA 1 M4

Title
Diffusion Tube Locations

Includes:

SLO 8 Grampian Way
SLO 19 Ditton Road

Date	Figure No.
24.06.20	D.2



Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2020]

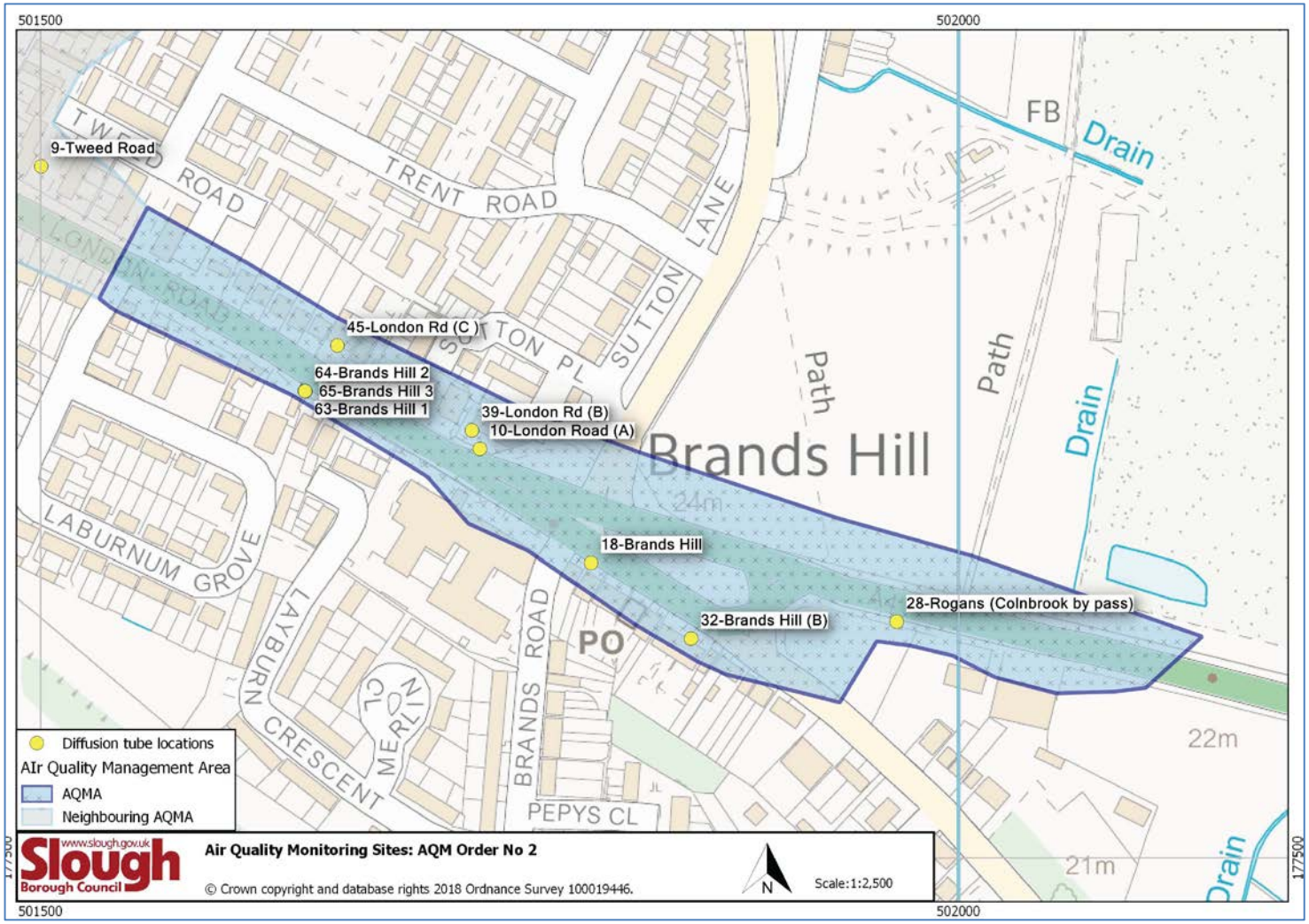
Location:
AQMA 1 M4

Title
Diffusion Tube Locations

Includes:

SLO 9 Tweed Road
SLO 11 Torridge Road

Date	Figure No.
24.06.20	D.3



Legend

Diffusion Tube Locations

AQMA Boundary

Contains Ordnance Survey Data Crown Copyright and Database Right [2020]

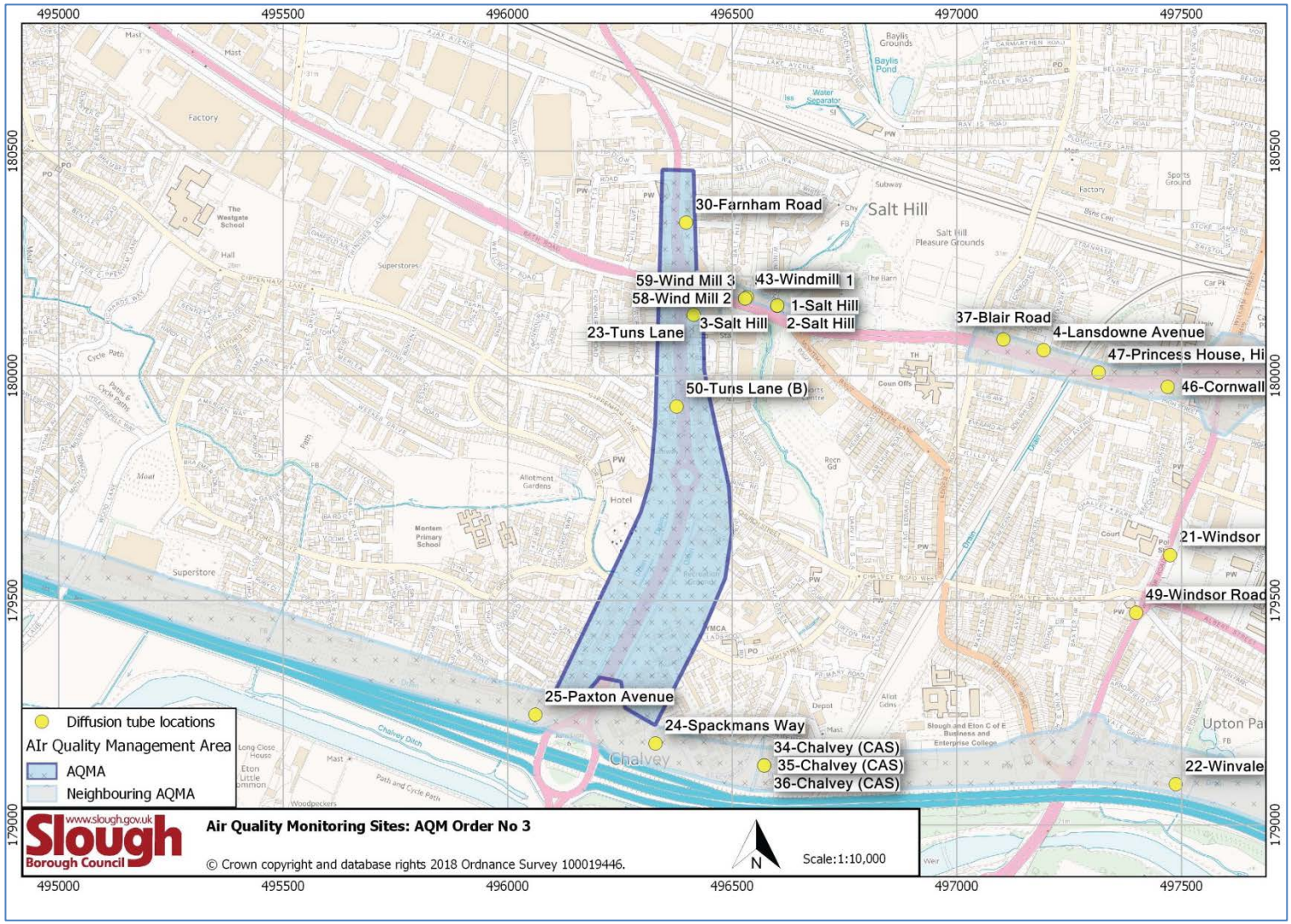
Location:
AQMA 2 Brands Hill

Title
Diffusion Tube Locations

Includes:

SLO 10 London Road (A)
SLO 18 Brands Hill (B)
SLO 28 Rogans (Colnbrook Bypass)
SLO 32 Brands Hill (B)
SLO 39 London Road (B)
SLO 45 London Road (C)
SLO 63 Brands Hill (1)
SLO 64 Brands Hill (2)
SLO 65 Brands Hill (3)

Date	**Figure No.**
24.06.20	**D.4**



Legend

Diffusion Tube Locations

AQMA Boundary

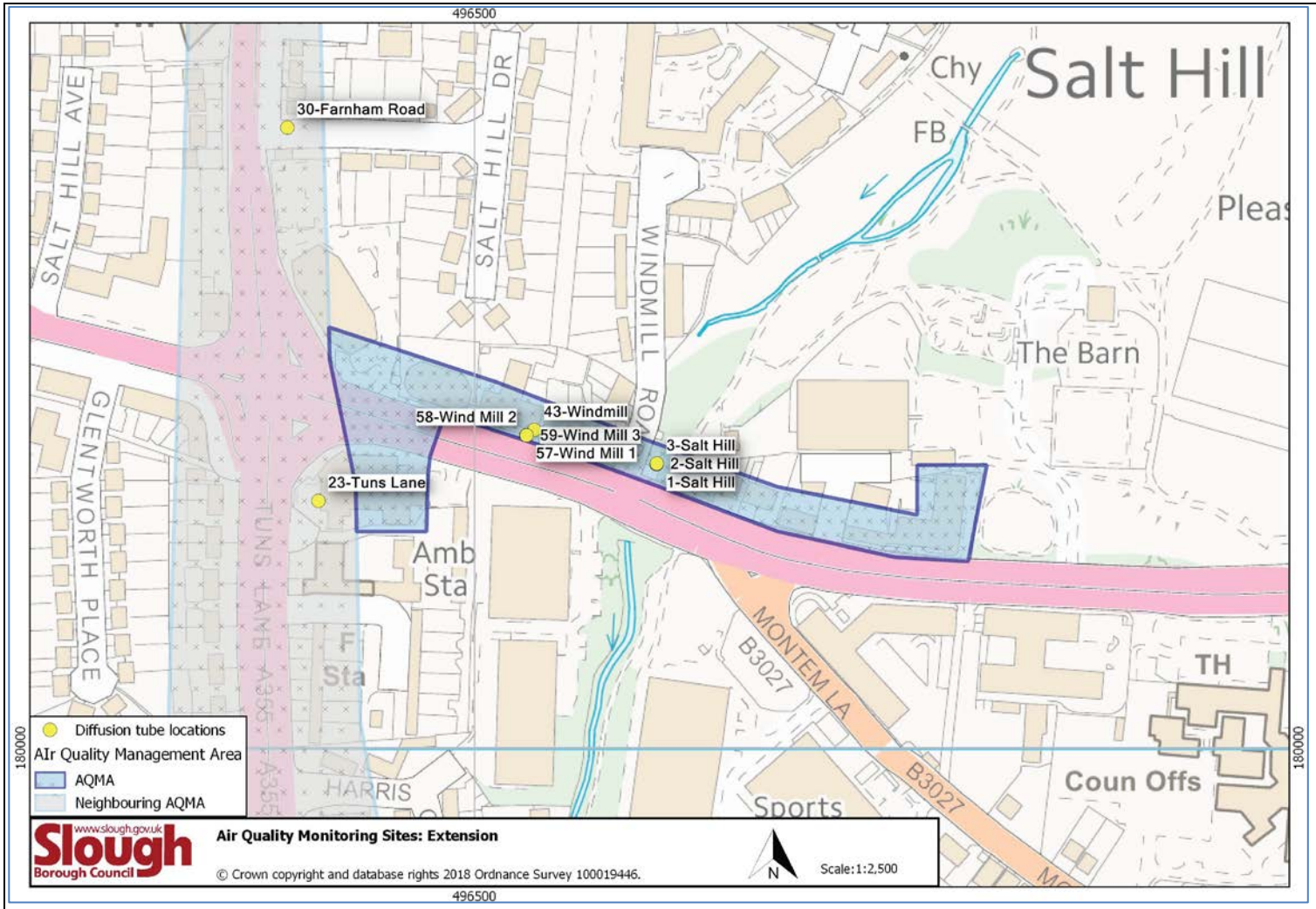
Location:
AQMA 3 Tuns Lane

Title
Diffusion Tube Locations

Includes:

SLO 23 Tuns Lane
SLO 30 Farnham Road
SLO 50 Tuns Lane (B)

Date	Figure No.
24.06.20	D.5



Legend

Diffusion Tube Locations

AQMA Boundary

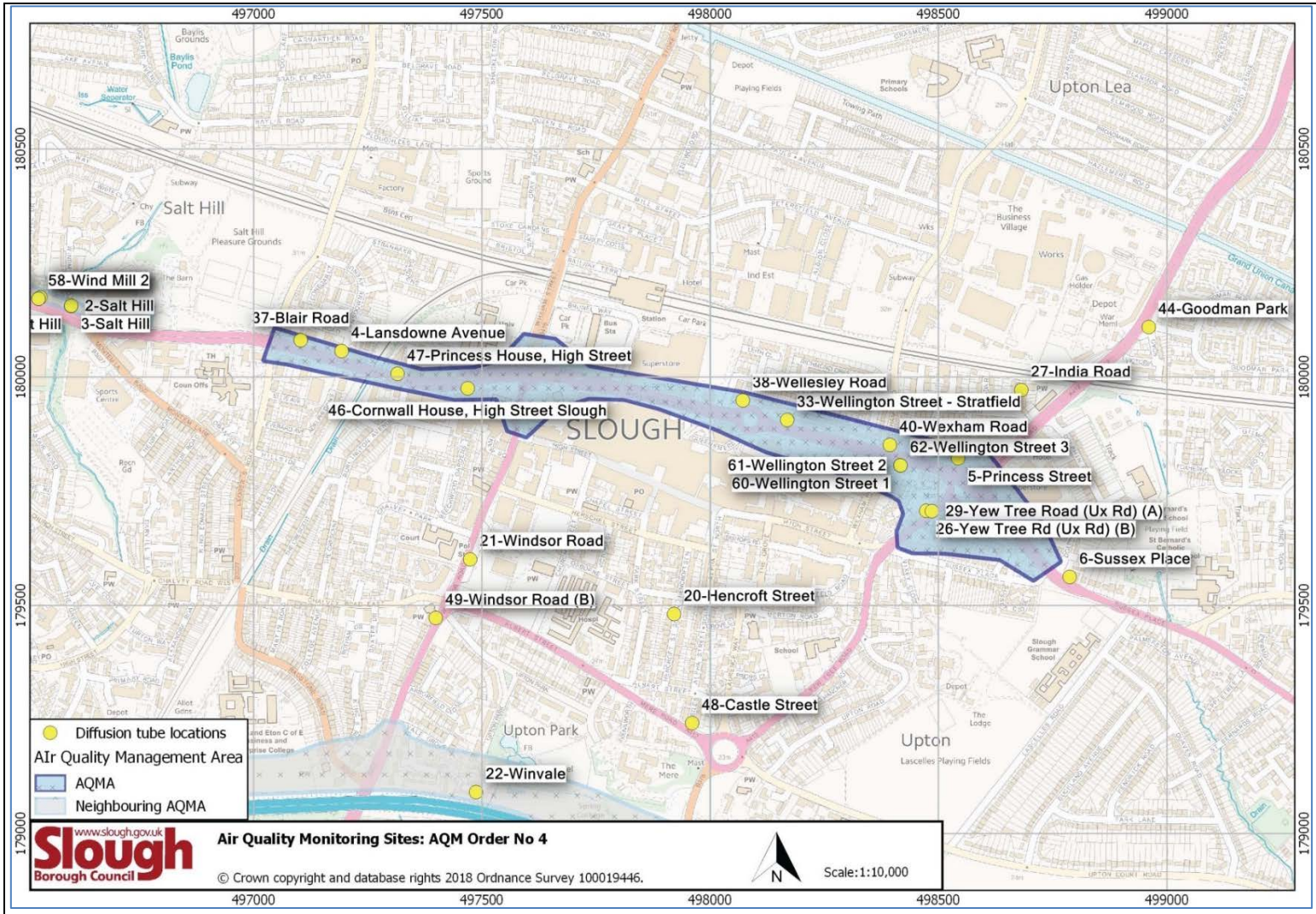
Contains Ordnance Survey Data Crown Copyright and Database Right [2020]

Location:
AQMA 3 Ext

Title
Diffusion Tube Locations

SLO 1 Salt Hill (1)
SLO 2 Salt Hill (2)
SLO 3 Salt Hill (3)
SLO 43 Windmill
SLO 57 Windmill (1)
SLO 58 Windmill (2)
SLO 59 Windmill (3)

Date	Figure No.
24.06.20	D.6



Legend

Diffusion Tube Locations

AQMA Boundary

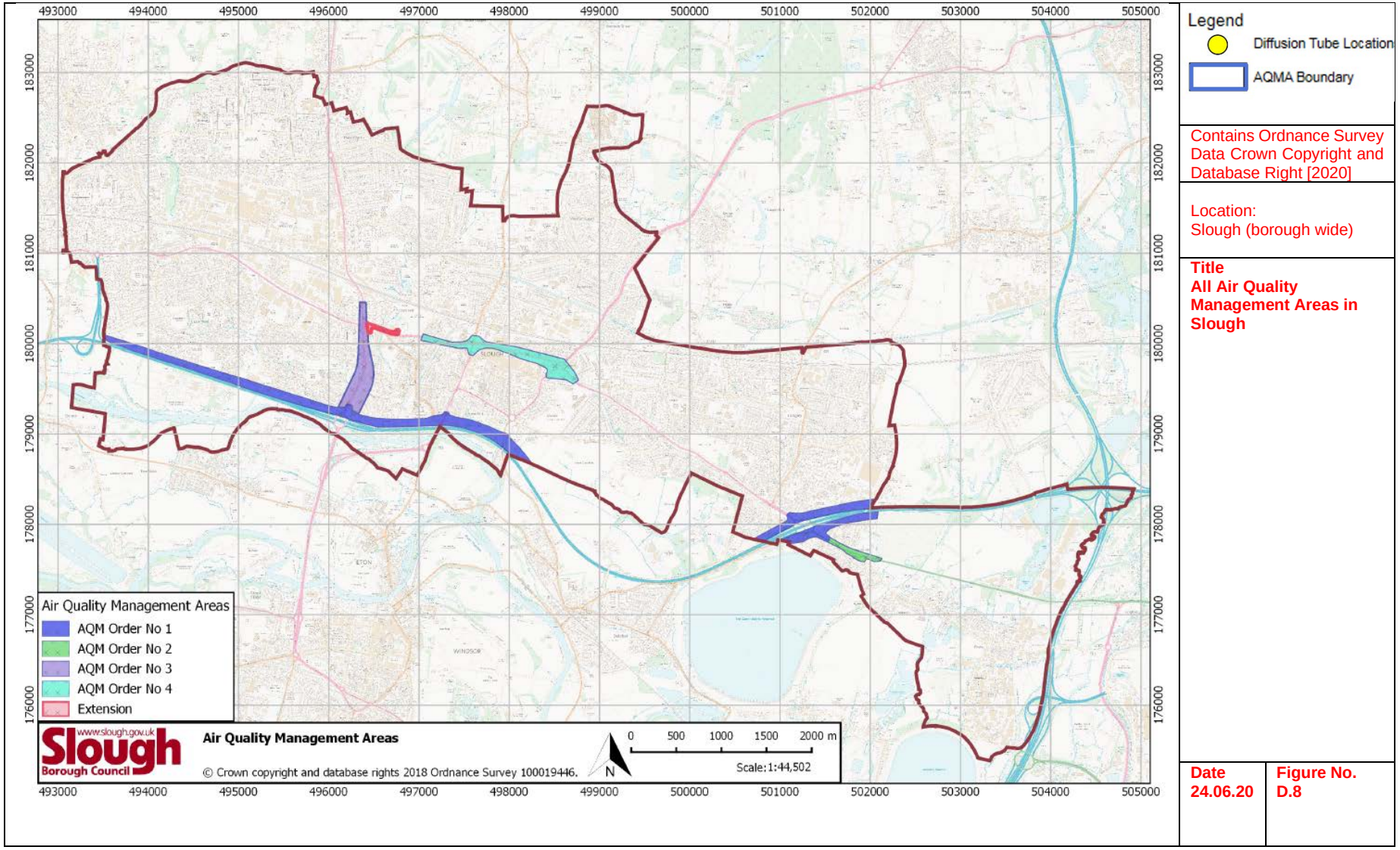
Location:
AQMA 4 Town Centre

Title
Diffusion Tube Locations

Includes:

SLO 4 Lansdown Avenue
SLO 5 Princes Street
SLO 26 Yew Tree Road (B)
SLO 29 Yew Tree Road (A)
SLO 33 Wellington Street
SLO 37 Blair Road
SLO 38 Wellesley Road
SLO 40 Wexham Road
SLO 46 Cornwall House
SLO 47 Princ
SLO 60 Wellington St (1)
SLO 61 Wellington St (2)
SLO 62 Wellington St (3)

Date	Figure No.
24.06.20	D.7


493000
494000
495000
496000
497000
498000
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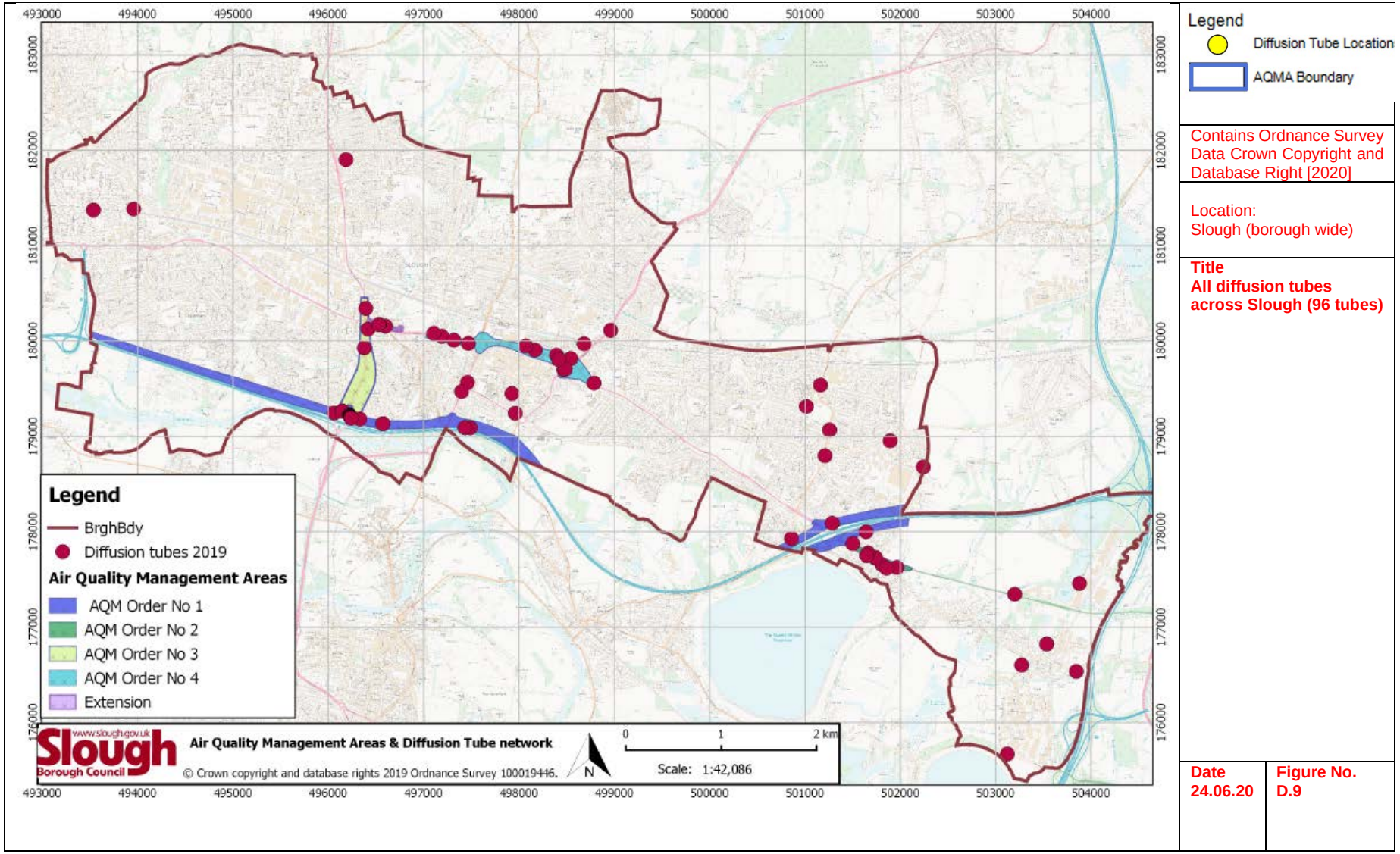
500000
501000
502000
503000
504000
505000
183000
182000
181000
180000
179000
178000
177000
176000
Air Quality Management Areas
AQM Order No 1
AQM Order No 2
AQM Order No 3
AQM Order No 4
Extension
www.slough.gov.uk
Slough
Borough Council
Air Quality Management Areas
© Crown copyright and database rights 2018 Ordnance Survey 100019446.
N
0 500 1000 1500 2000 m
Scale:1:44,502
Legend
Diffusion Tube Location
AQMA Boundary
Contains Ordnance Survey Data Crown Copyright and Database Right [2020]
Location:
Slough (borough wide)
Title
All Air Quality Management Areas in Slough
Date
24.06.20
Figure No.
D.8


Legend
BrghBdy
Diffusion tubes 2019
Air Quality Management Areas
AQM Order No 1
AQM Order No 2
AQM Order No 3
AQM Order No 4
Extension
Air Quality Management Areas & Diffusion Tube network
© Crown copyright and database rights 2019 Ordnance Survey 100019446.
N
0 1 2 km
Scale: 1:42,086
Legend
Diffusion Tube Location
AQMA Boundary
Contains Ordnance Survey Data Crown Copyright and Database Right [2020]
Location:
Slough (borough wide)
Title
All diffusion tubes across Slough (96 tubes)
Date
24.06.20
Figure No.
D.9

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[25]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[25] 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'
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	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) 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
LES	Low Emission Strategy (2018-2025)
AQO	Air Quality Objective
CAZ	Clean Air Zone
EV	Electric Vehicle

ULEV	Ultra Low Emission Vehicle
TIS	Transport Infrastructure Strategy
LTP	Local Transport Plan
CAP	Clean Air Plan