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Royal Borough
of Windsor &
Maidenhead

2023 Air Quality Annual Status Report (ASR)

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

Date: June, 2023

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Executive Summary: Air Quality in Our Area

Air Quality in Royal Borough of Windsor and Maidenhead

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, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas^{1,2}.

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

The Council has declared five Air Quality Management Areas (AQMAs) for exceedance of the annual mean Air Quality Objective (AQO) for nitrogen dioxide (NO₂) due to emissions from road vehicles: in Windsor (2 areas), Maidenhead, Bray (near the M4) and Wraysbury (near the M25). The details of the AQMAs can be viewed online:

https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=315

Air quality across the Borough is generally good and in recent years has markedly improved. Overall monitoring results in 2022 show a marginal increase compared with 2021, however they remain below the air quality objectives and below the 2019 levels.

The recorded concentrations within four AQMAs have been below 10% of the objective level of 40 µg/m³ (<36 µg/m³) for a consecutive four-year period. The Imperial Road/ St Leonards Road Junction AQMA has recorded concentrations below 36 µg/m³ for a consecutive six-year period.

¹ Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

³ Defra. Air quality appraisal: damage cost guidance, January 2023

⁴ Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

The Council has a programme of measures in place to reduce the impact of emissions on local air quality. These form an integral part of the Local Transport Plan (LTP) which informs the Highways Capital Programme with the Council's efforts to improve air quality. The LTP also implements a suite of 'soft' measures and smarter choices: influencing better travel choices, such as encouraging public transport use, walking and cycling that can all contribute to reduced road traffic emissions.

Active travel has become a more integral part of sustainable travel and improving the public health, not only through the reduction of vehicle trips and air pollution but in encouraging daily exercise. The Council has adopted a Local Cycling and Walking Infrastructure Plan (LCWIP) to help identify how to make improvements supporting cycling and walking, and where investment is needed in the short, medium and long term.

Actions to Improve Air Quality

The Environmental Improvement Plan⁵ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term PM_{2.5} targets. The National Air Quality Strategy, due to be published in 2023, will provide more information on local authorities' responsibilities to work towards these new targets and reduce PM_{2.5} in their areas. The Road to Zero⁶ details the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

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

The Council has extensive measures and plans to continue to improve local air quality.

⁵ Defra. Environmental Improvement Plan 2023, January 2023

⁶ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

Maidenhead

The [Maidenhead Town Centre Area Action Plan](#) (AAP), a plan to rejuvenate Maidenhead town centre and the surrounding area includes schemes to reduce congestion and improve air quality.

Maidenhead Station Access scheme, construction of a multi-modal transport interchange for Maidenhead station including facilities for buses, taxis, a new cycle parking hub. The access scheme is required to cater for the predicted increase in passengers and vehicles accessing the station as a result of electrification of the Great Western Main Line, the Elizabeth Line and the Western Rail Link to Heathrow. Parking displaced from the rail station forecourt is provided in the Stafferton Way multi-storey car park.

Maidenhead Missing Links scheme has been completed. This is a cycle route that connects current and future residential areas in the north with the town centre and railway station, making active travel across Maidenhead safer and more convenient.

Maidenhead Housing Sites Enabling Works. The improvements needed to help with additional traffic associated with the regeneration of the town centre and the development of the Maidenhead Golf Course site have now been completed leading to improvements in traffic flow.

Improvements to the crossing between the station and town centre and associated changes to the layout of the A308 / Queen Street junction, as well as a new traffic signal scheme have been completed. A two-way traffic operation scheme on Broadway has been completed, this is allowing vehicles to turn left or right out of the Broadway (Nicholsons) car park and left or right onto Frascati Way. Drivers are now able to access the M4, A308 and A4 from the car park without having to travel through the town centre.

Stafferton Way Link Road has been completed for some time, connecting the A4 and A308. The link helps to reduce congestion in front of the rail station and at critical junctions along the A4.

Bray

The M4 Smart Motorway scheme has been completed. This will use the latest technology to improve journeys by monitoring traffic flow and setting speed limits accordingly to keep traffic moving smoothly instead of continually stopping and starting.

A scheme for the widening of the A308 between Holyport Road roundabout and Upper Bray Road has been completed for some time. This has improved traffic flow at the

junction and reduced congestion at peak times. There are new proposals to further improve the junction by replacing the mini roundabout with a traffic light system and creating safer and easier crossing points for walking and cycling.

Windsor

The Local Cycling & Walking Infrastructure Plan proposes a suite of prioritised investment across the borough to make walking a natural choice for more of the short, everyday journeys people make to, from and around the town. Stovell Road and Barry Avenue cycling and walking routes received additional 'quietway' route improvements.

Changes to the operation of the traffic signals at the Imperial Road/St Leonards Road and Clewer Hill Road / Winkfield Road junctions were completed in July 2016. The changes have reduced journey times and improved traffic flow at this bottleneck.

Other areas where improvements have been delivered include the Maidenhead Road/Stovell Road junction where traffic signals have been replaced with a roundabout to improve traffic flow and the Arthur Road/Alma Road junction where coaches are banned from turning right onto Arthur Road when leaving the coach park.

Conclusions and Priorities

Monitoring Data

Annual mean values for NO₂ have significantly decreased since 2015. The maximum NO₂ concentrations in 2019 within all five AQMAs, when distance corrected to nearest relevant exposure (i.e. building façade of a residential property), was below 10% the annual mean objective (<36 µg/m³).

The monitoring results in 2022 across the monitoring network show full compliance with the AQO with concentrations below 36 µg/m³ for four consecutive years. The maximum NO₂ concentration in the Imperial Road/ St Leonards Road Junction AQMA has been below 10% of the objective (<36 µg/m³) for six consecutive years.

Overall monitoring results in 2022 show a marginal increase compared with the results in 2021 however concentrations remain below the 2019 levels (pre Covid-19). Defra's Technical Guidance LAQM TG22 states that there should not be any declared AQMAs for which compliance with the relevant objective has been achieved for a consecutive five-year period. The overall reduction in NO₂ concentrations within the Royal Borough is likely to continue in 2023, consequently the Council should be able to revoke all five AQMAs.

The PM₁₀ results remain well below the AQOs however the annual mean concentration increased from 19 µg/m³ to 23 µg/m³ in 2022. It should be noted that changes in concentrations can occur from year to year due to weather conditions.

Planned Measures

The regeneration of Maidenhead town centre and the arrival of the Elizabeth Line represent both a challenge and an opportunity in driving forward air quality improvements in the area.

The Royal Borough has appointed Countryside as Joint Venture Partners to redevelop four council owned town centre sites accumulating to approximately 1200 new homes across 6.3 hectares of land, while other developers are independently progressing with plans for other sites within and around the town centre. All these sites are being developed with low levels of on-site parking and include residential and workplace travel plans designed to promote sustainable travel patterns. Opportunities are being taken to review the operation and layout of the town centre road network to reduce unnecessary through traffic and improve provision for active travel modes.

The Local Cycling & Walking Infrastructure Plan adopted in 2022 and is progressing a new pipeline of capital investment in walking and cycling facilities across the borough.

An Electric Vehicle Chargepoint Implementation Plan outlining how the Royal Borough will bring forward hundreds more charging points for electric vehicles, helping to support the move to greener travel, has been approved in February 2023.

Windsor Visitor Economy scheme, public realm enhancements and pedestrianisation of Castle Hill in proximity of Windsor Castle, as well as a series of small-scale wayfinding interventions throughout the town. The purpose of the improvements is to improve the environment for pedestrians, with pedestrianisation and enhancement of the area outside Windsor Castle presenting both safety and air quality benefits. Furthermore, the wider wayfinding interventions shall improve visitor routing along main routes within the town centre, primarily between key transport nodes and Windsor Castle.

A no-idling campaign with temporary signs 'No Idling' and 'Back to school, give our kids space' outside schools across the Borough was delivered in April and May 2021. The campaign helped schools manage traffic as they returned to school. Following positive feedback received from residents and local businesses smaller lamppost signs are now display outside schools and near businesses or shops around the borough. The signs will remain in place for the foreseeable future.

LTP and AQAP Update

The Royal Borough is updating the LTP. This strategic plan will identify how the transport networks and services are performing now, and where changes and investment will be needed in the future. A first public consultation has been completed, a second consultation would be carried out in the autumn this year and a draft plan should be considered in 2024.

The new LTP will be an overarching document pulling together the progress made in recent years as well as building on recently adopted new strategies, including the LCWIP. The AQAP forms an integral part of the LTP and will be part of the updating process.

Air quality monitoring results continue to show that the Council is achieving compliance with the AQOs and may be able to revoke all five AQMAs in 2024. As the implementation of the AQAP would no longer be a requirement, any updated version of the AQAP may be retained to form the basis of a local air quality strategy in accordance with Defra's Technical Guidance LAQM TG22.

Local Engagement and How to get Involved

Public consultations and local residents' surveys are used to inform the Council's decisions and policies.

In 2022/23 the Council consulted on,

- Local Transport Plan: Vision and Themes
- The Electric Vehicle Chargepoint Implementation Plan
- Improvement to junction of A308 Windsor Road and Holyport Road
- A308 Corridor Study

In addition to commissioning its own residents' survey, the Council also takes part in the National Highways and Transport (NHT) annual benchmarking survey where residents can give their views on a wide range of transport issues. The results are used to inform future investment programmes.

For further information visit, <https://www.rbwm.gov.uk/home/council-and-democracy/consultations/transport-consultations> or email the Transport team:

traffic@rbwm.gov.uk

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of the Royal Borough of Windsor and Maidenhead Council with the support and agreement of the following officers and departments:

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This ASR has been sent to the council's Head of Public Health

If you have any comments on this ASR please send them to Feliciano Cirimele at:

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1 Local Air Quality Management

This report provides an overview of air quality in the Royal Borough of Windsor and Maidenhead during 2022. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

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

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by the Royal Borough of Windsor and Maidenhead can be found in Table 0.1. The table presents a description of the five AQMAs that are currently designated within the Royal Borough of Windsor and Maidenhead. **Appendix D:**

Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO₂ annual mean

Table 0.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Imperial Road/ St Leonards Road Junction	Declared March 2014	NO2 annual mean	An area encompassing the junction of Imperial Road and Leonards Road	NO	52.5	32.1	6 years	2015 - Update November 2020	https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=315
Windsor	Declared February 2005, Amended July 2009	NO2 annual mean	An enlarged area encompassing parts of west Windsor	NO	52	31.4	4 years	2009 - Update November 2020	https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=315
Maidenhead	Declared February 2005, Amended July 2009	NO2 annual mean	An enlarged area encompassing the town centre.	NO	51.7	31.9	4 years	2009 - Update November 2020	https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=315
Bray/M4	Declared July 2009	NO2 annual mean	An area encompassing part of Bray around the place where the M4 crosses over the A308 Windsor Road	YES	59.8	33.3	4 years	2015 - Update November 2020	https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=315

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Wraysbury/ M25	Declared March 2014	NO2 annual mean	The area runs along the B376 and intersects with the M25 near junction 13	YES	46.9	30.8	4 years	2015 - Update November 2020	https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=315

- Royal Borough of Windsor and Maidenhead confirm the information on UK-Air regarding their AQMA(s) is up to date.
- Royal Borough of Windsor and Maidenhead confirm that all current AQAPs have been submitted to Defra.

2.2 Progress and Impact of Measures to address Air Quality in the Royal Borough of Windsor and Maidenhead

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

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

- 1. Robust and accurate QA/QC procedures were applied. Calculations for bias adjustment factors were outlined in detail. The local bias factor applied was appropriate, as this was calculated using results from two triplicate diffusion tube sites that are co-located with automatic monitoring sites.*
- 2. The Council has included discussion and review of its AQMAs and monitoring strategy, informed due to the extensive monitoring network. The Council is improving the air quality in the area noted by the consistently lowering concentrations observed, which demonstrates the Council's proactive and dedicated approach to improving air quality across the area*
- 3. The council provide an extremely detailed, yet concise summary of the progress and impacts of measures to address air quality in all 5 AQMAs. They also describe their future priorities in detail. As above, this shows the Council's clear commitment to improving air quality in the district, which is great to see and is encouraged going forward. The Council is encouraged to progress with these measures in the coming year.*
- 4. As in last year's ASR, The Public Health Outcomes Framework was mentioned, with specific reference to indicator D01 (Fraction of mortality attributable to particulate air pollution). This, along with the measures stated in the ASR, highlights the Council's awareness of the adverse health impacts of particulate emissions, and the importance of reducing said emissions. This is encouraged.*
- 5. There is an inconsistency between the number of non-automatic monitoring sites in the text, and those listed in table A.2. The text states that the council undertook non-automatic monitoring at 20 sites in 2021. However, there are 36 sites listed in Table A.2. The Council is encouraged to ensure consistency throughout, in future ASRs.*

6. *The Council have provided clear maps of the diffusion tube monitoring network and AQMAs; trends are clearly presented and a comparison with air quality objectives is provided. More discussion around these trends is encouraged in future ASRs.*
7. *Overall, the report is detailed, concise and mostly satisfies the criteria of the relevant reporting standard. The Council should continue their good work.*

The Royal Borough of Windsor and Maidenhead has taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out below and in Table 0.2. 25 measures (measure 22 and 23 are a combined measure) are included within Table 0.2, with the type of measure and the progress the Royal Borough of Windsor and Maidenhead have made during the reporting year of 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 0.2.

2.2.1 Windsor AQMA

Redesign of Clarence Road roundabout

New roundabout layout significantly improved congestion / air quality

Windsor Parking and Transport Strategy

Car parking includes a ring of small-scale park and ride sites.

Heathrow Bus Funding Agreement

Hybrid and low-emission buses are used on bus services to Heathrow Airport.

Supported bus services

Supported bus services under RBWM contract require bus operators to use Euro V buses or better.

Arthur Road

A signal-controlled roundabout has been replaced with a roundabout, other signals have been upgraded to MOVA operation, and coaches are banned from turning right onto Arthur Road when leaving the coach park.

Windsor 20mph

A 20mph speed limit has been implemented in Windsor town centre which may encourage greater numbers of pedestrians and cyclists and improve air quality.

Cycling

Links between Dedworth and Windsor Town Centre have been improved, including the A308 / Barry Avenue cycle route which has this year received additional 'quietway' cycle route improvements including re-prioritised junctions, path widening and enhanced lighting. Proposals exist for further improvements, derived from the Council's Local Cycling & Walking Infrastructure Plan.

Walking

The Local Cycling & Walking Infrastructure Plan proposes a suite of prioritised investment across the borough to make walking a natural choice for more of the short, everyday journeys people make to, from and around the town. This year, widened footways, side-road entry treatments, accessible crossings and vegetation clearance has created an improved 'quietway' walking route along Stovell Road and Barry Avenue. In the Springfield Road area, a new 20 mph speed has been introduced in part to create a safer and more comfortable walking and cycling environment.

Windsor Visitor Economy Scheme

£1.56 million of Local Growth Deal funding has been secured from the Thames Valley Berkshire Local Enterprise Partnership for the 'Windsor Visitor Economy' scheme. The scheme comprises of public realm enhancements and pedestrianisation of Castle Hill in proximity of Windsor Castle, as well as a series of small-scale wayfinding interventions throughout the town. The purpose of the improvements is to improve the environment for pedestrians, with pedestrianisation and enhancement of the area outside Windsor Castle presenting both safety and air quality benefits. Furthermore, the wider wayfinding interventions shall improve visitor routing along main routes within the town centre, primarily between key transport nodes and Windsor Castle.

Electric Vehicle Charging Points in Windsor

Public chargepoints have been installed at Shell Windsor (Clarence Road), Albert Street, Alma Road, Park Street, Frances Road and St Leonards Road. The council has adopted a new EV Chargepoint Implementation Plan to extend and accelerate the rollout further.

2.2.2 Imperial Road/St Leonards Road Junction AQMA

New traffic management schemes

Changes to the operation of the traffic signals at the Imperial Road/St Leonards Road and Clewer Hill Road / Winkfield Road junctions were completed in July 2016. The changes have reduced journey times and improved traffic flow. Repositioning of induction loops to improve reliability of the signals was completed in 2019.

LEGOLAND travel plan and traffic signage

The Borough has secured a travel plan to manage staff, hotel guest and day visitor travel to and from the resort. Improved traffic signage has been introduced to encourage visitors to use alternative routes that avoid congested junctions. The aim is to minimise the impact of visitor traffic on the Windsor AQMAs.

2.2.3 Wraysbury/M25 – Junction 13 AQMA

Motorway Emissions

Monitoring results within the AQMA continue to show compliance with the AQOs. Should future monitoring results indicate that air quality measures may be necessary the Council will engage with Highways England to explore possible schemes for the AQMA.

2.2.4 Bray/M4 AQMA

Motorway Emissions

The M4 Smart Motorway scheme has been completed. This will use the latest technology to improve journeys by monitoring traffic flow and setting speed limits accordingly to keep traffic moving smoothly instead of continually stopping and starting.

Junction Improvements

A scheme for the widening of the A308 between Holyport Road roundabout and Upper Bray Road has been completed for some time. This has improved traffic flow at the junction and reduced congestion at peak times. In addition, the completed Stafferton Way Link Road helps to reduce the number of vehicles travelling to Maidenhead turning right into Upper Bray Road. There are new proposals to further improve the junction by replacing the mini roundabout with a traffic light system and creating safer and easier crossing points for walking and cycling.

2.2.5 Maidenhead AQMA

Travel Plans

The Council requires all major new developments to deliver residential and / or workplace travel plans. This is helping to reduce car trips and encourage more sustainable travel patterns. The Council is also exploring options with developers and providers for expanding a car club in the town centre to serve a number of major new developments in the area. Also, Maidenhead is part of the easitNETWORK, a project to support and

encourage businesses in Maidenhead to adopt sustainable transport options with discounts on rail travel and other sustainable travel products and initiatives:

<https://www.easit.org.uk/easitmaidenhead>.

Stafferton Way Link Road

Stafferton Way Link Road has been completed, connecting the A4 and A308 via Oldfield Road and Stafferton Way. The link helps to reduce congestion in front of the rail station and at critical junctions along the A4. The roundabout at the junction of Stafferton Way and A308 Braywick Road has been enlarged with extra traffic lanes to reduce congestion at this point allowing easier access to Stafferton Way and alternative routes.

Chapel Arches

Residential and workplace travel plans have been secured for the Chapel Arches development. Improvements have been secured for local walking and cycling routes as part of the Chapel Arches development. This includes a contra-flow cycle lane on the eastern section of High Street and a raised table to aid pedestrian crossing movements, as well as public realm improvements. The improvements to Chapel Arches area have been completed with the contraflow cycle lane and wider footpaths to encourage increased walking and cycling.

Maidenhead Station Access

£3.75 million of Growth Deal funding was secured from the Thames Valley Berkshire Local Enterprise Partnership for the 'Maidenhead Station Access' scheme. The scheme has delivered a multi-modal transport interchange, including facilities for buses, taxis and passenger drop-off/pick-up. A new cycle parking hub with capacity for 300 bikes and improvements to the crossing between the station and town centre and associated changes to the layout of the A308 / Queen Street junction have been completed, with CCTV improvements completed this year to give greater confidence to leave cycles at this location. Also a two-way traffic operation scheme on Broadway has been completed, this is allowing vehicles to turn left or right out of the Broadway (Nicholsons) car park and left or right onto Frascati Way. Drivers are now able to access the M4, A308 and A4 from the car park without having to travel through the town centre. Parking displaced from the rail station forecourt will be provided in a new facility on Stafferton Way.

Maidenhead Missing Links

£2.42 million of Growth Deal funding was secured from the Thames Valley Berkshire Local Enterprise Partnership for the 'Maidenhead Missing Links' scheme. This connects North Maidenhead to major development sites in and around Maidenhead town centre and

onwards to Maidenhead Station. The scheme completes a new 'inner-ring' for pedestrians and cyclists and will feature new / enhanced crossings of Strand Water and the A4. The scheme is completed.

Maidenhead Housing Sites Enabling Works

£4.21 million Local Growth Deal funding and £1.07 million Business Rates Retention Pilot funding was secured from the Thames Valley Berkshire Local Enterprise Partnership for the 'Maidenhead Housing Sites Enabling Works'. This will deliver capacity improvements at six key junctions around Maidenhead:

- A308(M) / A308 / A330 / The Bingham;
- A4 / A308;
- A4 / B4447 / Market Street;
- A4 / B3028 / Lassell Gardens;
- A4 / A4094 / Guards Club Road;
- A308 / Stafferton Way / Rushington Avenue.

The improvements are needed to cope with additional traffic associated with the regeneration of the town centre and the development of the Maidenhead Golf Course site. They will also enable commercial development to come forward in other parts of Maidenhead. These scheme alterations have now been completed leading to improvements in traffic flow.

Electric Vehicle Chargepoints in Maidenhead

Public chargepoints have been installed at Hines Meadow Car Park, College Road, Cromwell Road, Lower Boyndon Road, Braywick Leisure Centre and Vicus Way car park. The council has adopted a new EV Chargepoint Implementation Plan to extend and accelerate the rollout further.

2.2.6 Future Priorities

The Royal Borough of Windsor and Maidenhead's priorities for the coming year are:

- A multi-modal corridor study along the A308 between Marlow and Staines-upon-Thames has recently been completed, identifying key traffic and transport issues. Options have been assessed and design options developed for the two highest priority locations, one in the Bray/M4 AQMA and the other on the boundary of the Windsor AQMA.

- The borough is developing capital investment schemes in improved walking and cycling facilities in the Maidenhead and Windsor AQMAs, for delivery over the next 2 years.

The Royal Borough of Windsor and Maidenhead anticipates that the measures stated above and in Table 0.2 will continue to achieve compliance within all five AQMAs.

Table 0.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Awareness Campaigns Organise public events to increase knowledge and understanding of local air quality conditions	Public Information	Via other mechanisms	2012	2026	RBWM Environmental Health	Council	NO	Funded	< £10k	Implementation			Cycle Forum Jul 2016 Windsor Town Forum Feb, Oct 2016, Nov 2019, Nov2020	Public meetings
2	Education Programmes 1. Road safety and cycle training with primary schools. 2. Deployment of Speed Indicator Device (SID) / Speed Limit Reminder (SLR)	Promoting Travel Alternatives	Promotion of cycling	2012	2032	RBWM Transport / BeSpoke Cycling Instruction / Department for Transport. Before April 2022: also Project Centre	Council/Central Government	NO	Funded	£10k - 50k	Implementation	3%	Reduction in car journeys Monitored via survey	Ongoing delivery	The 15% reduction in car journeys To deliver a 3% reduction in emission within AQMAs in combination with measure 3, 9, 11 and 13

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
3	Travel information & advice - Providing information on available travel options	Public Information	Via other mechanisms	2012	2032	RBWM Transport // Bucks County Council / transport operators	Council	NO	Funded	£10k - 50k	Implementation	3% reduction in emission in combination with measure 2, 9, 11 and 13	Number of local bus passenger journeys originating in the authority area undertaken each year	<p>Bus Service Improvement Plan published, with bid (not funded) submitted to government for funding to grow passenger numbers</p> <p>Funding support for Traveline South East public transport information service</p> <p>Bus operators provide printed at-stop information for commercial bus services</p> <p>RBWM provides at-stop information for supported bus services</p> <p>Joint work with Bucks County Council on real-time passenger information. Real-time information screens have been provided at key bus stops and other locations, such as Maidenhead Library and St Mark's Hospital</p>	<p>Pre-pandemic (FY 2018-19), DfT reported 1.4 million local bus journeys in the borough (source: DfT Table BUS0109a)</p> <p>Local bus journey numbers are yet to fully recover post-pandemic</p> <p>Information to help people plan journeys NHT indicator - RBWM below NHT average</p> <p>Updated passenger information boards ('where to catch your bus') were installed in December 2020 in town centres stops</p>

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
4	Travel Plans - Promote and monitor travel plans for workplaces, hospitals and schools. Secure Travel Plans through the Planning process. Encourage development of travel plans on a voluntary basis. Produce guidance for all Travel Plans on the web	Promoting Travel Alternatives	Workplace Travel Planning	2012	2032	RBWM Transport & Infrastructure teams	Developers & Council funding	NO	Funded	£10k - 50k	Implementation	3%	Achieve 100% Schools Travel Plans. < 70% driving to work in year 1 <60% by year 3 of the travel plan	<p>easit MAIDENHEAD - offers travel incentives to participating organisations, including discounted rail fares, cycle hire, bike discounts, electric car discounts- 100% of state schools and 3 independent schools have travel plans- 4 School Travel Plans were updated / approved in 2018/19 7 new residential / workplace travel plans were approved in 2018/19 2020/21: RBWM signed up for Modeshift STARS/ All schools are being encouraged to upload information onto the Modeshift database taking away the need for paper-based travel plans. First schools applying for Modeshift accreditation expected in 2022- RBWM encourage/facilitate home-working</p>	Travel plans can achieve a reduction in car driver trips. Combining all travel plans a 3% reduction in emission reduction could be achieved

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
5	Lift sharing - To develop an area-wide lift-sharing. Establishing self-contained lift-sharing schemes	Alternatives to private vehicle use	Car & lift sharing schemes	2014	2032	RBWM Transport.		NO	Not Funded		Implementation			A local lift share scheme was set up in 2014	
6	E-services - Providing online services to reduce the need to travel	Promoting Travel Alternatives	Other	2012	2032	RBWM	Council	NO			Implementation			<p>a) Applications: library membership, school admissions, planning applications, parking permits, home to school transport, and on-street EV charge points</p> <p>b) Payments - Council invoices, Council tax, business rates, parking fines, housing benefit repayment</p> <p>c) Reporting - Council complaints, highway maintenance, pollution, abandoned vehicles, rights of way, and benefit fraud</p>	

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
7	Ticketing solutions - Promoting public transport	Promoting Travel Alternatives	Other	2012	2032	RBWM Transport	Council	NO			Implementation			<p>Bus Service Improvement Plan published, with bid (not funded) submitted to government for funding to improve promotion of buses</p> <p>2 for 1 rail / entry ticket offer available for LEGOLAND</p> <p>Plus Bus tickets provide discounted bus travel in Maidenhead and Windsor for rail users</p> <p>Smart cards and mobile ticketing offered by most local bus operators</p>	Most operators now have mobile tickets but there no unified ticketing system within the borough
8	Urban traffic control - Updating and extending the current UTC, in conjunction with better traffic surveys.	Traffic Management	UTC, Congestion management, traffic reduction	2012	2032	RBWM Highways / Project Centre.	Council	NO	Funded		Implementation	3%	Average journey time	<p>MOVA installed at key junctions to provide real-time response to changing traffic conditions</p> <p>Variable Message Signs in Maidenhead provide advanced warning of planned road works and major events, and live information about incidents and emergency road works</p> <p>Alternative routes signed to LEGOLAND to encourage motorists to avoid the most congested routes through Windsor</p> <p>Advisory HGV route signed in Maidenhead</p> <p>Advisory coach route signed in</p>	

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
														Windsor 30 mph speed limit extension on A308 Braywick Road	
9	Pedestrian and Cycling Facilities. New/improved routes and crossing facilities	Transport Planning and Infrastructure	Cycle network	2012	2032	RBWM Transport	Council	NO	Funded		Rolling programme	3%	See measure 2	The borough has 19.5km of traffic-free paths, and an additional 19.6km of footways that can be used by people cycling- The borough adopted a Local Cycling & Walking Infrastructure Plan in 2022 and is progressing a new pipeline of capital investment in walking and cycling facilities across the borough	Reduction of emission of 3% in conjunction with measure 2, 11 and 13

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
10	Junction Improvements - Modifying the layout of junctions experiencing chronic congestion	Traffic Management	UTC, Congestion management, traffic reduction	2015	2021	RBWM Highways / Project Centre	Council	NO	Funded	£1 million - £10 million	Completed	3%	Average journey time	<p>MOVA upgrades at</p> <ul style="list-style-type: none"> - Imperial Rd/ St Leonards Rd Junction (AQMA). - Clarence Road / Alma Road - A308 / Queen Street & A308 /Broadway junctions <p>Junction Improvements, completed:</p> <ul style="list-style-type: none"> -Right-turn lane extension A308/Upper Bray Road junction (AQMA) -Clarence Road / Victoria Street / St Leonards Road – raised table and upgraded signals / pedestrian crossing -'Maidenhead Housing Sites Enabling Works' to deliver capacity improvements at six key junctions onthe A4 and A308 <p>- 2022: Existing pedestrian crossing in Clewer Hill Road, Windsor converted to raised crossing as part of traffic speed reduction measures to assist pedestrian flow</p>	
11	Safer routes to schools - Identify priorities for investment through School Travel Plans and take forward priority improvements through capital programmes	Promoting Travel Alternatives	Promotion of cycling and walking	2014	Ongoing	RBWM Transport	Council	NO	Rolling, prioritised capital programme	Rolling, prioritised capital programme	Rolling programme	3%	See measure 2	<p>A refuge island on A4 Bath Rd, Maidenhead was installed in November 2019. Funded from the 2019/20 Safer Routes to School budget</p> <p>2019/20 Courthouse Road / St Marks Road / St Marks Crescent – 3no. Raised Zebra crossings installed</p>	

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
12	Parking enforcement - Decriminalised parking enforcement	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway												Completed in 2009
13	Pedestrian / Cycling Facilities - New/improved routes & crossing facilities	Transport Planning and Infrastructure	Cycle network	2016	2032	RBWM Transport	Council	NO			completed			The Borough's Big Conversation exercise has led to the development of a Local Cycling & Walking Infrastructure Plan. Adopted by Cabinet in June 2022	Completed, see measure 9
14	Supported bus services - Providing financial support to local bus services	Promoting Low Emission Transport	Other	2015	2032	RBWM Transport	Council	NO	Funded		Ongoing			The borough supports a network of services that are not currently commercially viable	Commercially supported network under review to better align with post-pandemic travel patterns and increased costs of operation
15	Public transport infrastructure Improvements - Enhance accessibility and attractiveness of public transport and priority bus routes	Transport Planning and Infrastructure	Bus route improvements	2016	2020	RBWM Transport	Council	NO	Funded		Implementation			Improved public transport information, including real-time. Ongoing programme to upgrade stops to provide raised kerbs to improve accessibility	Limited availability of funding.
16	Quality bus partnership - Develop high quality, cross boundary bus services	Transport Planning and Infrastructure	Bus route improvements	2016	2032	RBWM Transport	Council	NO	Funded		Implementation	Borough wide – % target reduction low		The council has adopted a Bus Service Improvement Plan identifying how bus services can be improved and ridership grown	Government funding for delivering the Bus Service Improvement Plan did not materialise

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
17	Park & Ride - Exploring opportunities for park and ride	Promoting Travel Alternatives	Other	2014	2016	RBWM Transport					Completed		See measure 9 and 2	Services were formerly introduced from: Centrica, Windsor (Easter and summer); Home Park, Windsor; King Edward VII Car Park; Windsor; and LEGOLAND, Windsor	(none)
18	Inter-urban coach services	Transport Planning and Infrastructure	Bus route improvements	2014	2015	RBWM Transport		NO			Aborted			First Group introduced X9 service from Maidenhead to High Wycombe in 2014.	The service was subsequently withdrawn due to lack of use
19	Rail partnerships - Delivering Maidenhead Station Access scheme	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2016	2021	RBWM Transport	Council	NO	Funded	£1 million - £10 million	Completed			Secured £3.048 million for Maidenhead Station Access scheme to fund new multi-modal interchange and improved ped/ cycle links to the town centre	(none)
20	Parking standards - Imposing strict maximum parking standards for new development as identified in the Borough's Parking Strategy	Traffic Management	Other	2019	2032	RBWM Transport and Infrastructure	Council	NO			Implementation			New town centre residential developments have very low levels of parking Travel Plans are required for all major new developments Electric vehicle charge points being sought for new development	(none)
21	Public parking regimes - Setting parking charges and permitted length of stay	Traffic Management	Other	2012	2032	RBWM Enforcement	Council	NO			Implementation			Stating parking charges and permitted length of stay in public car parks in town centre locations to favour short-stay parking for shoppers and visitors and encourage use of public transport	

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
22 and 23	Improve efficiency of Council's own fleet	Vehicle Fleet Efficiency	Other	2018	2032	RBWM Various Service Areas that retain fleet vehicles	Council	NO	Partially Funded		Implementation			The council fleet has been reduced to 9 directly managed vehicles	(none)
24	Hybrid and electrical vehicles. Promoting, where possible, the use of less and non-polluting vehicles	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	2018	2032	RBWM Transport	Council	NO			Implementation			New web pages introduced on council website with improved information on the benefits and practicalities of switching to lower emission vehicles, to help more residents and businesses make the switch	(none)
25	Reduction of speed limits to 20mph zone	Traffic Management	Reduction of speed limits, 20mph zones	2016	2032	RBWM Highways and RBWM Transport	Council	NO			Ongoing activity			Ongoing consideration of proposals for 20mph speed limits in areas suited to them, where this can support greater uptake of walking and cycling and where traffic can be encouraged to utilise more capacious arterial roads that are less susceptible to congestion	Additional 20 mph speed limits were introduced in residential areas during 2022

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
26	Electric vehicle charge points	Transport Planning and Infrastructure	Other	2018	2035	RBWM Transport	OLEV, LEVI bid, CIL	NO	Funded		Implementation			<p>The borough adopted an EV Chargepoint Implementation Plan in February 2023</p> <p>The borough is targeting c. 600 on-street public chargepoints, c. 125 car park public chargepoints and c. 100 rapid recharge charging sockets at service stations by 2035</p> <p>Currently there are 69 car park public chargepoints, 39 on street chargepoints and 2 rapid recharge points – many of these delivered in 2022- This is supplemented by a wide network of non-public chargepoints and home charging</p>	Securing LEVI funding

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), 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.

The Public Health Outcomes Framework local indicator D01 (Fraction of mortality attributable to particulate air pollution) for Windsor and Maidenhead in 2021 is 5.9%, the average for England is 5.5%.

PM_{2.5} annual mean concentration for 2022 was estimated using the nationally derived roadside factor (6.4) in accordance with Defra Technical Guidance LAQM.TG22. The PM₁₀ recorded annual mean concentration at MW1, Fracati Way site in 2022 was 23µg/m³. The resulting PM_{2.5} estimated annual mean concentration is 16.6µg/m³.

It is important to note that changes in PM₁₀ concentrations can occur from year to year due to weather conditions.

The current Defra 2022 background maps for the Royal Borough of Windsor and Maidenhead show that all background concentrations of PM_{2.5} are well below the annual mean objective. The concentration near MW1 site is 10.5µg/m³ (1km x 1km grid square reference 488500, 181500) and the highest concentration is 11.3µg/m³ (reference 499500, 177500).

The Royal Borough of Windsor and Maidenhead is taking the following existing measures in the Action Plan to address PM_{2.5}:

- Promoting workplace, school and personalised travel planning (measure 4)
- Introduced MOVA at signal-controlled junctions (measure 8)
- Improving facilities for cycling and walking (measures 9, 11 and 13)
- Promoting bus services (measure 14, 15 and 16)
- Implemented a scheme for Maidenhead station interchange (measure 19)
- Development of an Electric Vehicle Chargepoint Implementation Plan (measure 26)
- Designated Smoke Control Area in West Windsor

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

This section sets out the monitoring undertaken within 2022 by the Royal Borough of Windsor and Maidenhead and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2018 and 2022 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

The Royal Borough of Windsor and Maidenhead undertook automatic (continuous) monitoring at 3 sites during 2022. Table A.1 in Appendix A shows the details of the automatic monitoring sites.

The https://www.londonair.org.uk/london/asp/publicbulletin.asp?la_id=35 page presents automatic monitoring results for the Royal Borough of Windsor and Maidenhead, with automatic monitoring results also available through the UK-Air website.

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

3.1.2 Non-Automatic Monitoring Sites

The Royal Borough of Windsor and Maidenhead undertook non-automatic (i.e. passive) monitoring of NO₂ at 36 sites during 2022. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2022 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.

Table A.5 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year. Current and historical concentrations data show no exceedances of the 1-hour objective.

Over the past five years air quality in the Royal Borough has significantly improved. Monitoring results in 2022 show no exceedances of the annual mean objective of 40 µg/m³ for NO₂ with all concentrations below 36 µg/m³.

Since 2019 the maximum NO₂ concentration within the five AQMAs has been below 10% the annual mean objective (<36 µg/m³) with some concentrations corrected to account for the distance to nearest relevant exposure (i.e. building façade of a residential property).

The Imperial Road/ St Leonards Road Junction AQMA has recorded concentration below 36 µg/m³ for a consecutive six-year period. The overall reduction in NO₂ concentrations within the Royal Borough is expected to continue in 2023 consequently the Council should be able to revoke all five AQMAs.

3.2.2 Particulate Matter (PM₁₀)

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past five years with the air quality objective of 40µg/m³.

Table A.7 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past five years with the air quality objective of 50µg/m³, not to be exceeded more than 35 times per year.

Over the past five years PM₁₀ annual mean and daily mean concentrations remained well below the respective air quality objectives.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
MW1	Frascati Way	Roadside	488626	180994	NO ₂	Y	Chemiluminescent	5	2	1.7
MW1	Frascati Way	Roadside	488626	180994	PM ₁₀	Y	BAM	5	2	1.7
MW2	Clarence Road	Roadside	495664	176592	NO ₂	Y	Chemiluminescent	5	3	1.7
MW4	Aldebury Road	Background	488503	182710	NO ₂	N	Chemiluminescent	5	20	1.7

Notes:

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

(2) N/A if not applicable

Table A.2 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
WM1	Longmead	Urban Background	494067	176764	NO ₂	No	5.0	1.0	No	3.0
WM2	Priors Way	Suburban	489807	178760	NO ₂	Yes - Bray/M4	10.0	2.0	No	2.0
WM5b	Queen Street	Roadside	488864	180951	NO ₂	Yes - Maidenehad	10.0	2.0	No	2.0
WM9a	Alma Road	Roadside	496237	176584	NO ₂	Yes - Windsor	7.0	2.0	No	2.0
WM10a	Imperial Road	Roadside	495606	176364	NO ₂	Yes - Windsor	8.0	2.0	No	2.0
WM11a	Straight Rd	Kerbside	498232	174916	NO ₂	No	3.5	0.5	No	2.0
WM11b	Straight Rd	Kerbside	498388	174797	NO ₂	No	11.0	1.0	No	1.5
WM13	Wraysbury Road 1	Roadside	502017	172541	NO ₂	Yes - Wraysbury/M2 5	5.0	2.0	No	2.0
WM13a	Wraysbury Road 2	Roadside	502108	172461	NO ₂	Yes - Wraysbury/M2 5	5.0	2.0	No	2.0
WM15	Wraysbury Road 3	Roadside	502259	172322	NO ₂	Yes - Wraysbury/M2 5	5.0	2.0	No	2.0
WM15a	Wraysbury Road 4	Roadside	502257	172333	NO ₂	Yes - Wraysbury/M2 5	2.0	5.0	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
WM15b	Wraysbury Road 5	Roadside	502300	172278	NO ₂	Yes - Wraysbury/M2 5	5.0	2.0	No	2.0
WM18, WM19, WM20	Clarence Road 3	Roadside	495664	176592	NO ₂	Yes - Windsor	5.0	2.5	Yes	1.5
WM21, WM22, WM23	Frascati Way 3	Roadside	488626	180994	NO ₂	Yes - Maidenhead	5.0	2.0	Yes	1.5
WM28	Keate's Lane	Roadside	496604	177866	NO ₂	No	3.0	2.0	No	2.0
WM28a	Eton Wick Road	Roadside	496539	177826	NO ₂	No	3.0	2.0	No	2.0
WM29	M4 Windsor Road 1	Roadside	489975	178721	NO ₂	Yes - Bray/M4	10.0	2.0	No	2.0
WM29a	M4 Windsor Road 2	Roadside	489928	178754	NO ₂	Yes - Bray/M4	10.0	2.0	No	2.0
WM29b	M4 Windsor Road 3	Roadside	490060	178593	NO ₂	Yes - Bray/M4	10.0	2.0	No	2.0
WM30a	Queens Road	Kerbside	498549	177064	NO ₂	No	5.0	1.0	No	2.0
WM30b	High Street	Kerbside	498645	176990	NO ₂	No	5.0	1.0	No	2.0
WM30c	The Green	Kerbside	498725	177092	NO ₂	No	3.0	1.0	No	2.0
WM31	Arthur Road 1	Kerbside	495896	176939	NO ₂	Yes - Windsor	10.0	1.0	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
WM32	Arthur Road 2	Kerbside	496082	176903	NO ₂	Yes - Windsor	2.5	1.0	No	2.0
WM33	Arthur Road 3	Kerbside	496312	176886	NO ₂	Yes - Windsor	0.0	1.0	No	2.0
WM34	Ludlow Road	Urban Background	488417	180554	NO ₂	No	5.0	1.0	No	2.5
WM01	Hythe End Road	Suburban	501366	172377	NO ₂	No	20.0	0.0	No	2.0
WM03	St Leonards Road 1	Kerbside	495331	175569	NO ₂	Yes - Imperial/St Leonards Road Junction	7.0	1.0	No	2.0
WM03a	St Leonards Road 2	Kerbside	495294	175556	NO ₂	Yes - Imperial/St Leonards Road Junction	7.0	1.0	No	2.0
WM03b	St Leonards Road 3	Kerbside	495314	175551	NO ₂	Yes - Imperial/St Leonards Road Junction	5.0	1.0	No	2.0
WM03c	St Leonards Road 4	Roadside	495413	175587	NO ₂	Yes - Imperial/St Leonards Road Junction	5.0	2.0	No	2.0
WM04	Osborne Road 1	Kerbside	496631	175927	NO ₂	No	3.0	1.0	No	2.0
WM04a	Osborne Road 1	Kerbside	496380	176035	NO ₂	No	3.0	1.0	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
WM013	Bridge Road 1	Roadside	489571	181334	NO ₂	Yes - Maidenhead	15.0	2.0	No	2.0
WM013a	Bridge Road 2	Roadside	489652	181323	NO ₂	Yes - Maidenhead	5.0	2.0	No	2.0
WM014a	Stafferton Way	Roadside	489033	180622	NO ₂	Yes - Maidenhead	5.0	1.0	No	2.0

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
MW1	488626	180994	Roadside	99	99	36.4	35.1	24.7	26.4	26.1
MW2	495664	176592	Roadside	99	99	34.3	32.2	21.8	24.2	27.5
MW4	488503	182710	Urban Background	97	97	17.5	17.4	12.6	14	14.5

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

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

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

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

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

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

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

Table A.4 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
WM1	494067	176764	Urban Background	100	100.0	17.9	18.0	12.4	12.9	13.4
WM2	489807	178760	Suburban	100	100.0	26.3	25.3	17.1	17.1	18.2
WM5b	488864	180951	Roadside	89.6	89.6		28.8	19.3	20.9	22.4
WM9a	496237	176584	Roadside	100	100.0		29.7	19.2	21.6	22.5
WM10a	495606	176364	Roadside	100	100.0		39.9	25.4	31.7	29.9
WM11a	498232	174916	Kerbside	100	100.0		37.4	27.4	30.4	32.2
WM11b	498388	174797	Kerbside	100	100.0		36.9	25.9	29.4	31.6
WM13	502017	172541	Roadside	89.6	89.6	39.2	32.9	26.2	26.4	25.6
WM13a	502108	172461	Roadside	100	100.0	36.8	36.5	25.7	26.9	26.8
WM15	502259	172322	Roadside	100	100.0	41.6	39.4	28.6	29.8	30.8
WM15a	502257	172333	Roadside	82.4	82.4	38.7	36.2	27.2	27.7	27.9
WM15b	502300	172278	Roadside	67.9	67.9	38.4	35.5	26.5	27.3	27.1
WM18, WM19, WM20	495664	176592	Roadside	100	100.0	34.3	32.8	21.2	23.2	25.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
WM21, WM22, WM23	488626	180994	Roadside	100	100.0	37.9	35.6	25.2	26.6	27.8
WM28	496604	177866	Roadside	92.9	92.9	31.2	27.3	20.5	23.5	23.6
WM28a	496539	177826	Roadside	92.9	92.9	32.6	29.1	21.4	23.8	25.5
WM29	489975	178721	Roadside	100	100.0	48.8	43.3	30.6	33.2	33.3
WM29a	489928	178754	Roadside	100	100.0	41.0	36.9	26.4	29.0	28.5
WM29b	490060	178593	Roadside	92.9	92.9	37.3	32.0	22.9	24.8	24.3
WM30a	498549	177064	Kerbside	100	100.0	31.2	29.0	19.1	22.4	22.0
WM30b	498645	176990	Kerbside	100	100.0		32.1	22.4	26.3	25.9
WM30c	498725	177092	Kerbside	84.9	84.9		43.0	29.8	34.6	35.8
WM31	495896	176939	Kerbside	100	100.0	44.8	40.9	26.2	30.5	29.1
WM32	496082	176903	Kerbside	100	100.0	31.7	32.2	21.6	23.0	24.4
WM33	496312	176886	Kerbside	90.7	90.7	38.5	34.6	24.0	27.8	31.4
WM34	488417	180554	Urban Background	100	100.0		19.1	13.7	15.4	15.0
WM01	501366	172377	Suburban	100	100.0	18.6	16.9	12.4	12.5	13.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
WM03	495331	175569	Kerbside	92.3	92.3	38.7	37.1	26.7	27.9	26.1
WM03a	495294	175556	Kerbside	100	100.0	44.3	42.1	30.9	32.1	34.1
WM03b	495314	175551	Kerbside	90.7	90.7	46.7	47.4	34.1	35.0	39.1
WM03c	495413	175587	Roadside	92.3	92.3		23.7	16.4	16.7	18.9
WM04	496631	175927	Kerbside	100	100.0	31.5	30.9	20.7	24.4	23.9
WM04a	496380	176035	Kerbside	100	100.0	34.8	31.5	20.9	22.6	24.1
WM013	489571	181334	Roadside	100	100.0	29.9	31.5	22.6	24.0	24.3
WM013a	489652	181323	Roadside	100	100.0	39.5	41.1	30.6	28.3	31.9
WM014a	489033	180622	Roadside	100	100.0	32.9	31.4	21.8	22.8	24.5

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

Diffusion tube data has been bias adjusted.

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

Notes:

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

Exceedances of the NO₂ annual mean objective of 40 $\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO₂ annual means exceeding 60 $\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

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

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

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

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

Figure A.1 to A.1.8 – Trends in Annual Mean NO₂ Concentrations

Figure A1 - NO₂ annual mean concentrations for sites MW1, MW2 and MW4 between years 2018 to 2022. There are no exceedances of the annual mean objective in 2022 and considering the lower concentrations recorded during Covid-19 there is a general trend of reduction experienced across the sites.

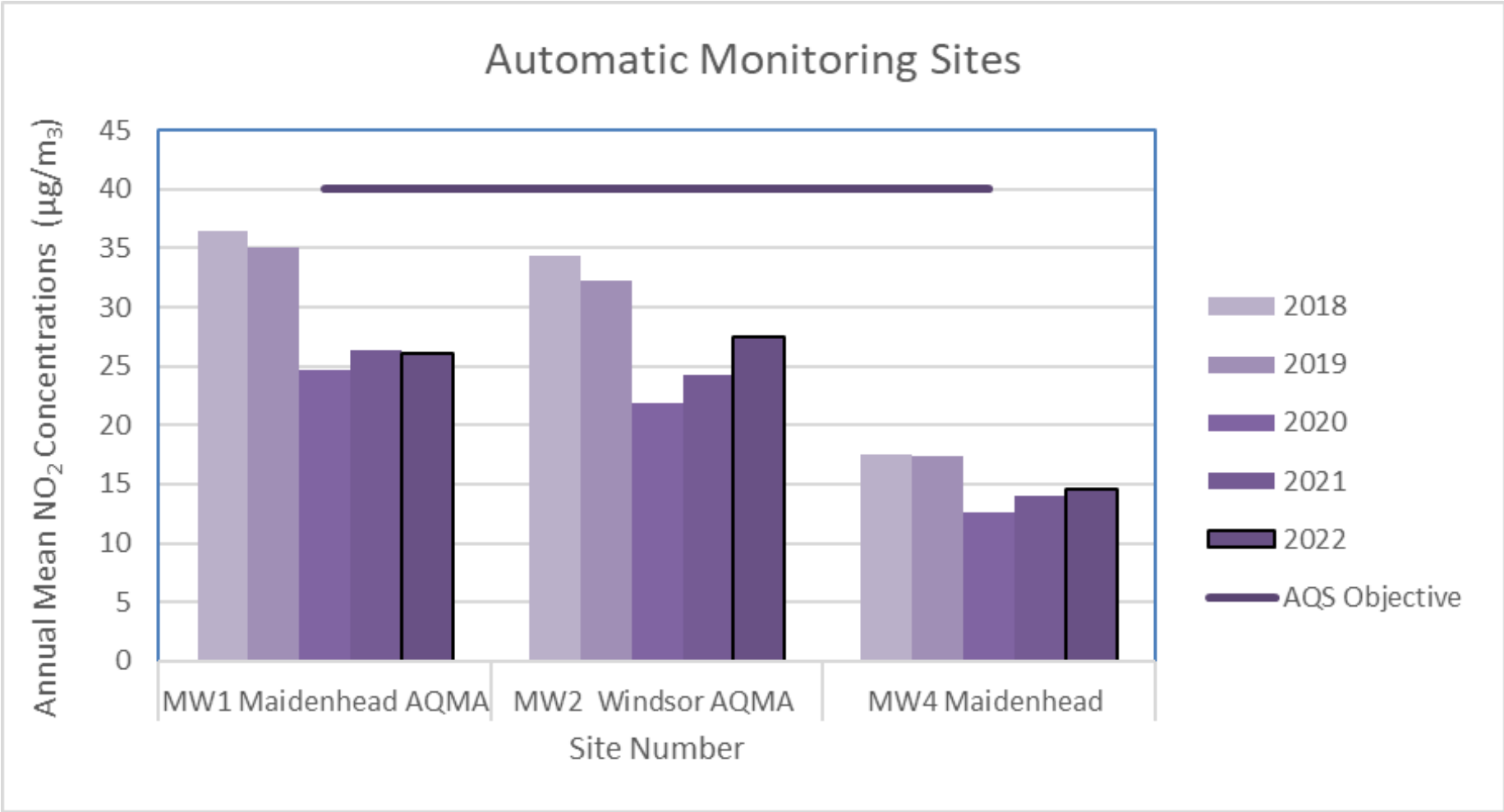


Figure A1.1 - NO₂ annual mean concentrations for diffusion tube sites in Maidenhead AQMA between years 2018 to 2022. There are no exceedances of the annual mean objective in 2022 and considering the lower concentrations recorded during Covid-19 there is a general trend of reduction experienced across the sites.

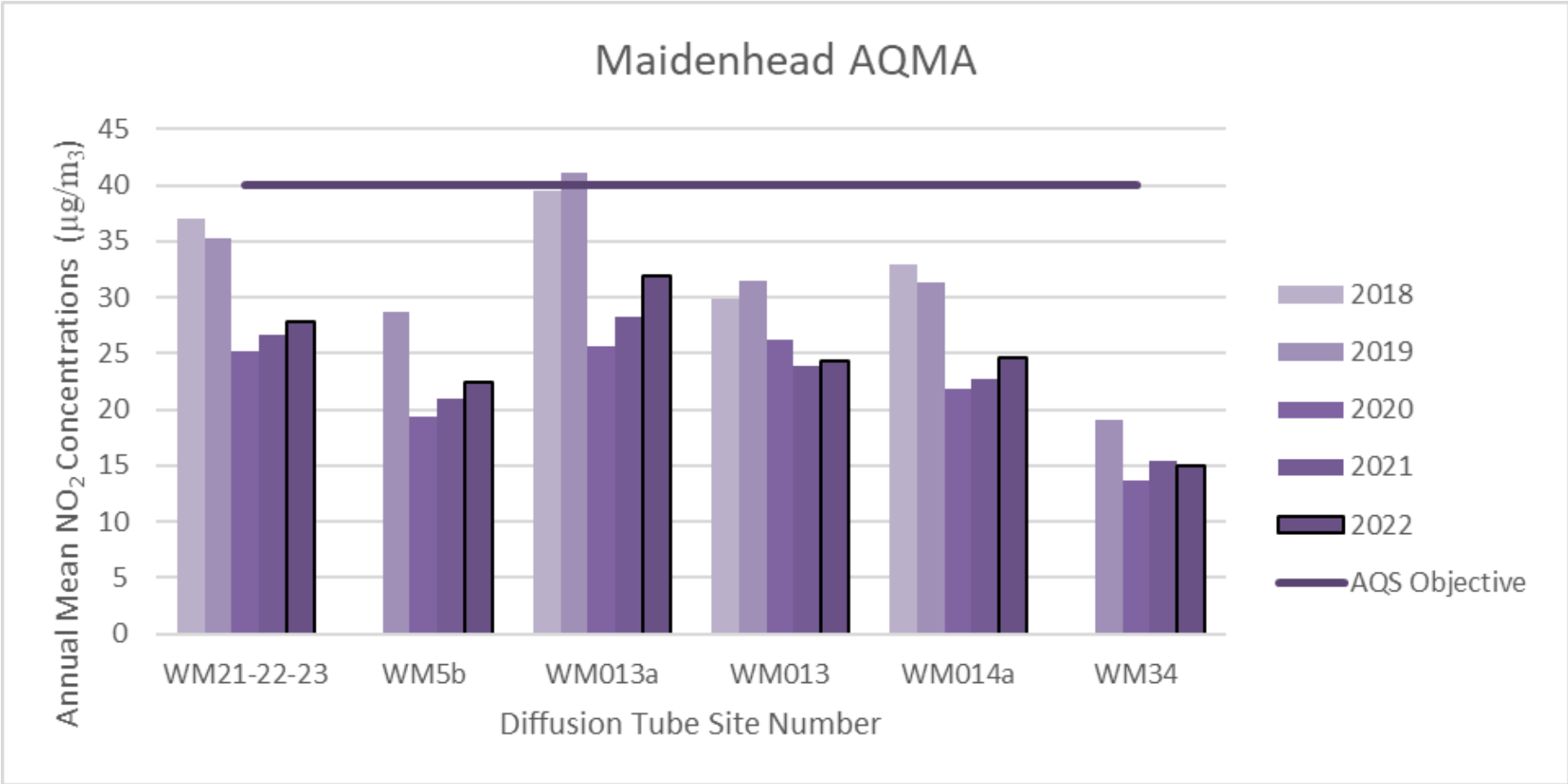


Figure A1.2 - NO₂ annual mean concentrations for diffusion tube sites in Bray AQMA between years 2018 to 2022. There are no exceedances of the annual mean objective in 2022 and considering the lower concentrations recorded during Covid-19 there is a general trend of reduction experienced across the sites.

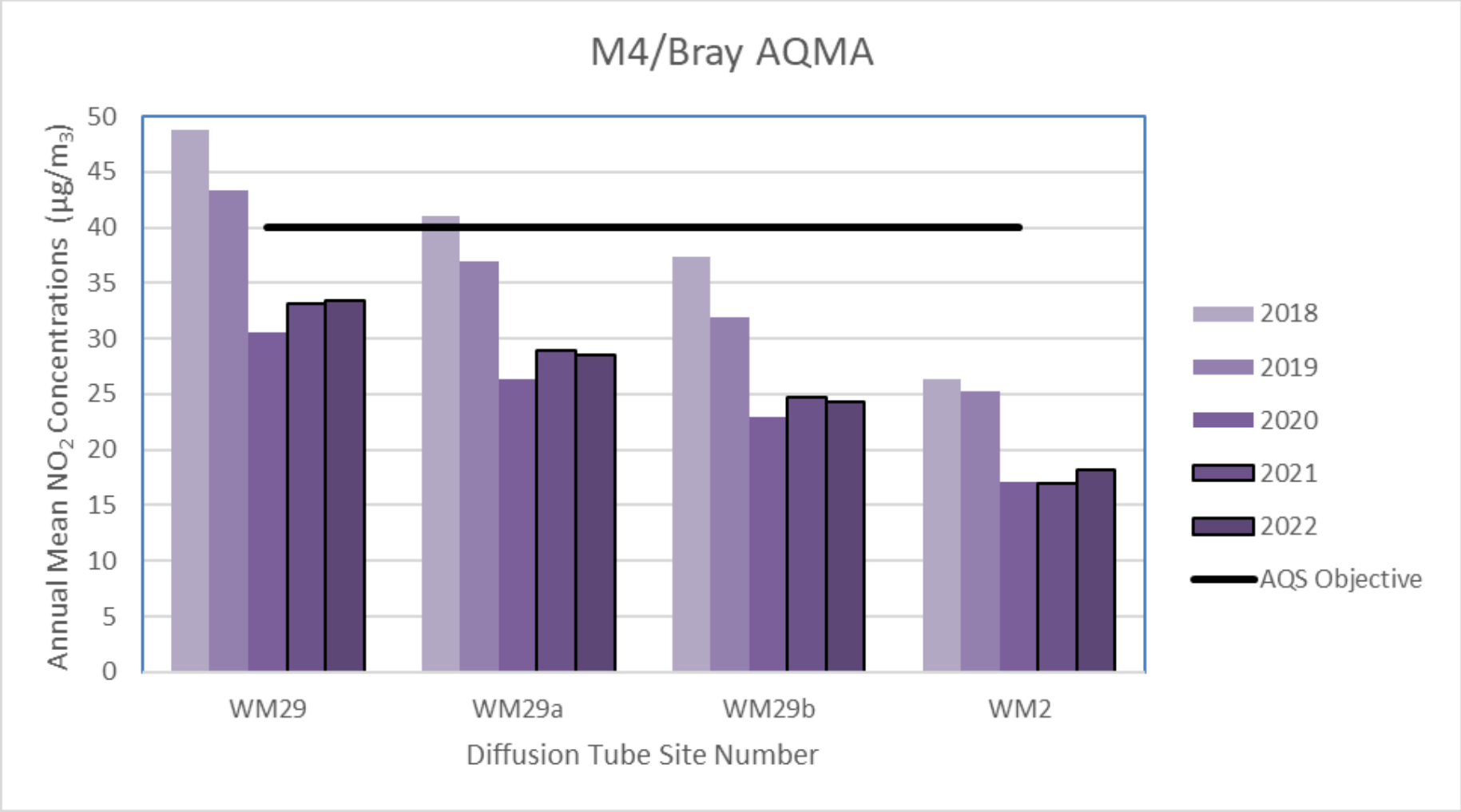


Figure A1.3 - NO₂ annual mean concentrations for diffusion tube sites in Windsor AQMA between years 2018 to 2022. There are no exceedances of the annual mean objective in 2022 and considering the lower concentrations recorded during Covid-19 there is a general trend of reduction experienced across the sites.

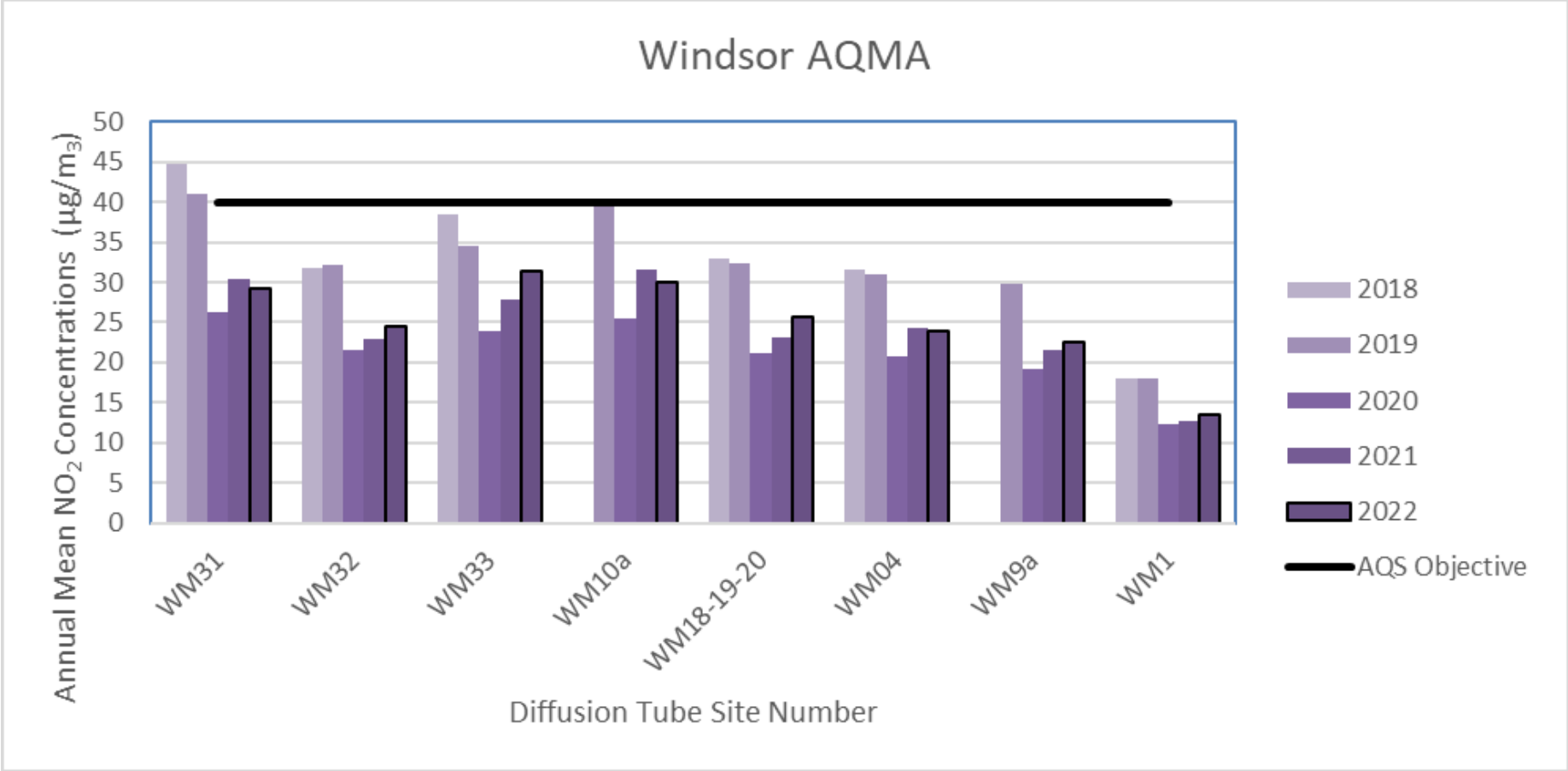


Figure A1.4 - NO₂ annual mean concentrations for diffusion tube sites in Imperial/St Leonards Road Junction AQMA between years 2018 to 2022. There are no exceedances of the annual mean objective in 2022 and considering the lower concentrations recorded during Covid-19 there is a general trend of reduction experienced across the sites.

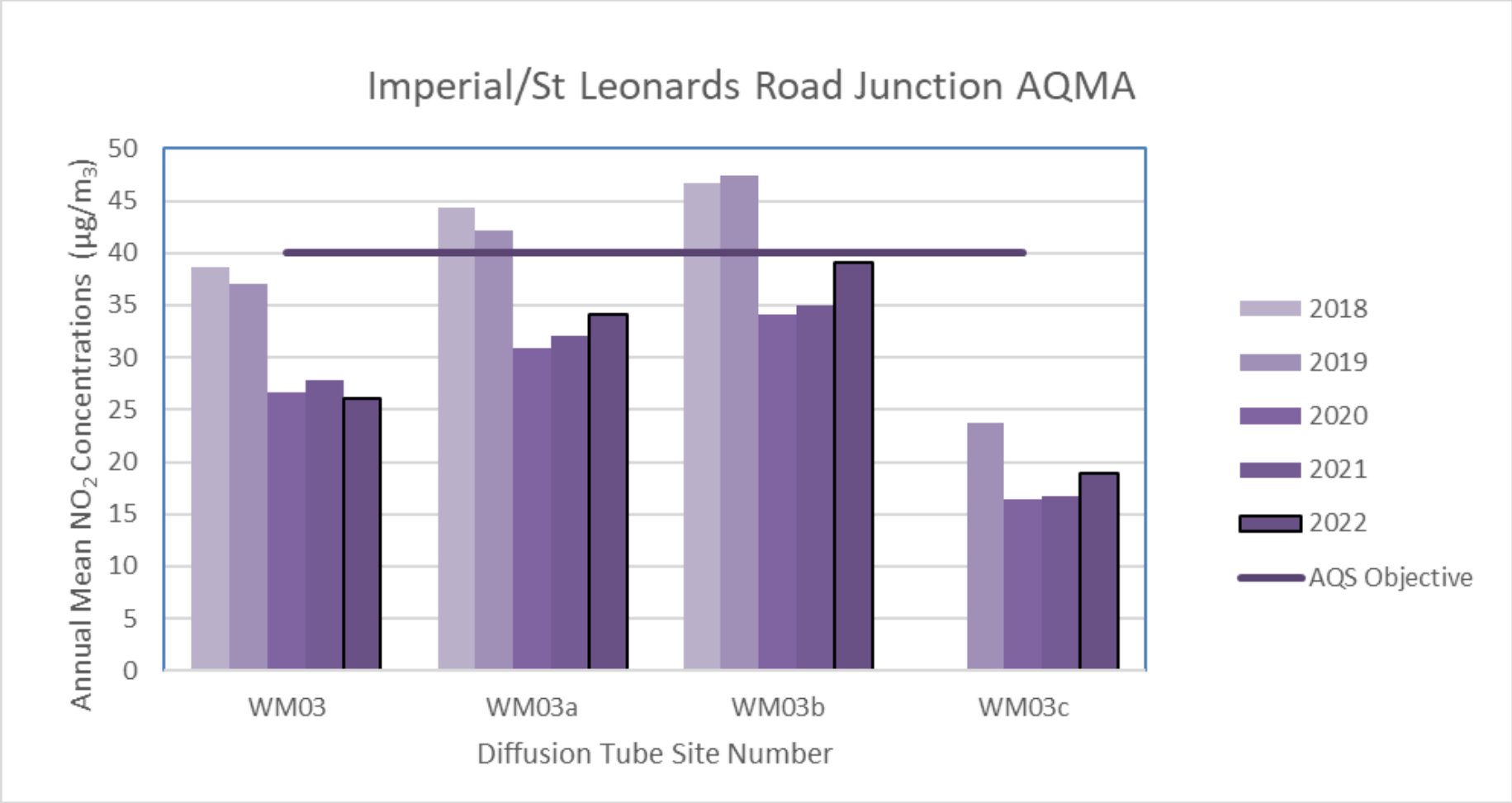


Figure A1.5 - NO₂ annual mean concentrations for diffusion tube sites in Wraysbury Road AQMA between years 2018 to 2022. There are no exceedances of the annual mean objective in 2022 and considering the lower concentrations recorded during Covid-19 there is a general trend of reduction experienced across the sites.

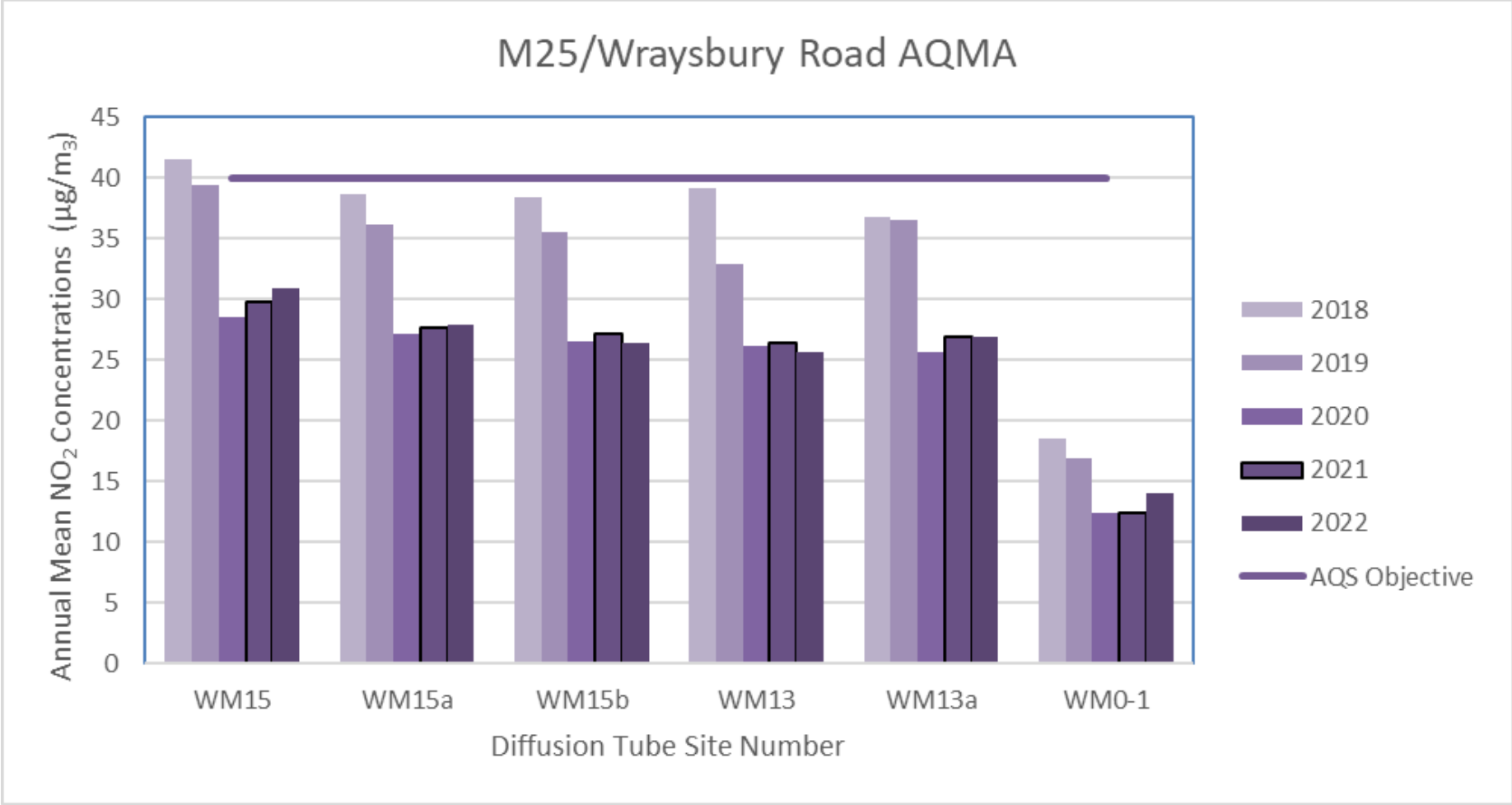


Figure A1.6 - NO₂ annual mean concentrations for diffusion tube sites in Datchet between years 2018 to 2022. There are no exceedances of the annual mean objective in 2022 and considering the lower concentrations recorded during Covid-19 there is a general trend of reduction experienced across the sites.

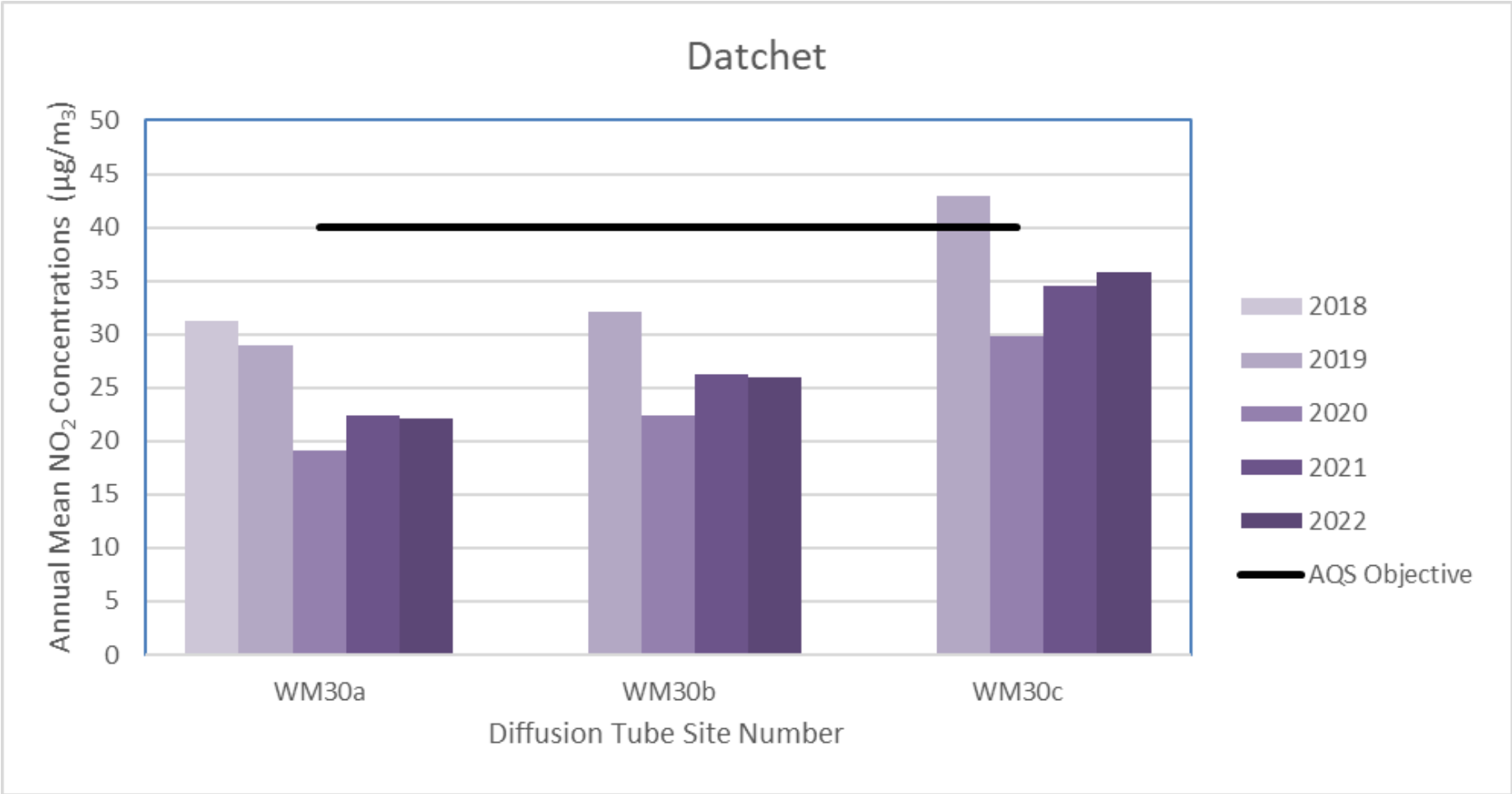


Figure A1.7 - NO₂ annual mean concentrations for diffusion tube sites in Eton between years 2018 to 2022. There are no exceedances of the annual mean objective in 2022 and considering the lower concentrations recorded during Covid-19 there is a general trend of reduction experienced across the sites.

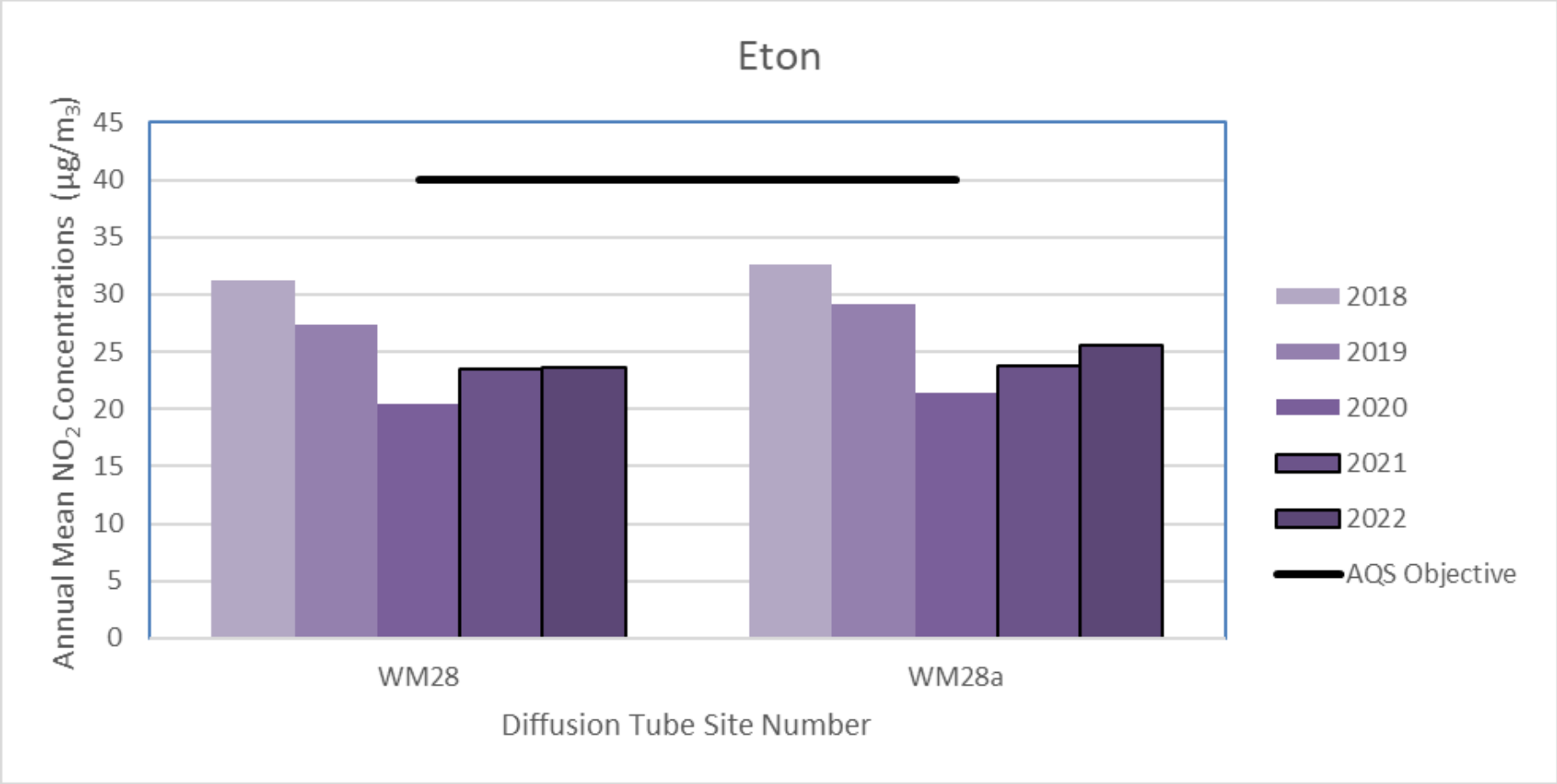


Figure A1.8 - NO₂ annual mean concentrations for diffusion tube sites in Old Windsor between years 2018 to 2022. There are no exceedances of the annual mean objective in 2022 and considering the lower concentrations recorded during Covid-19 there is a general trend of reduction experienced across the sites.

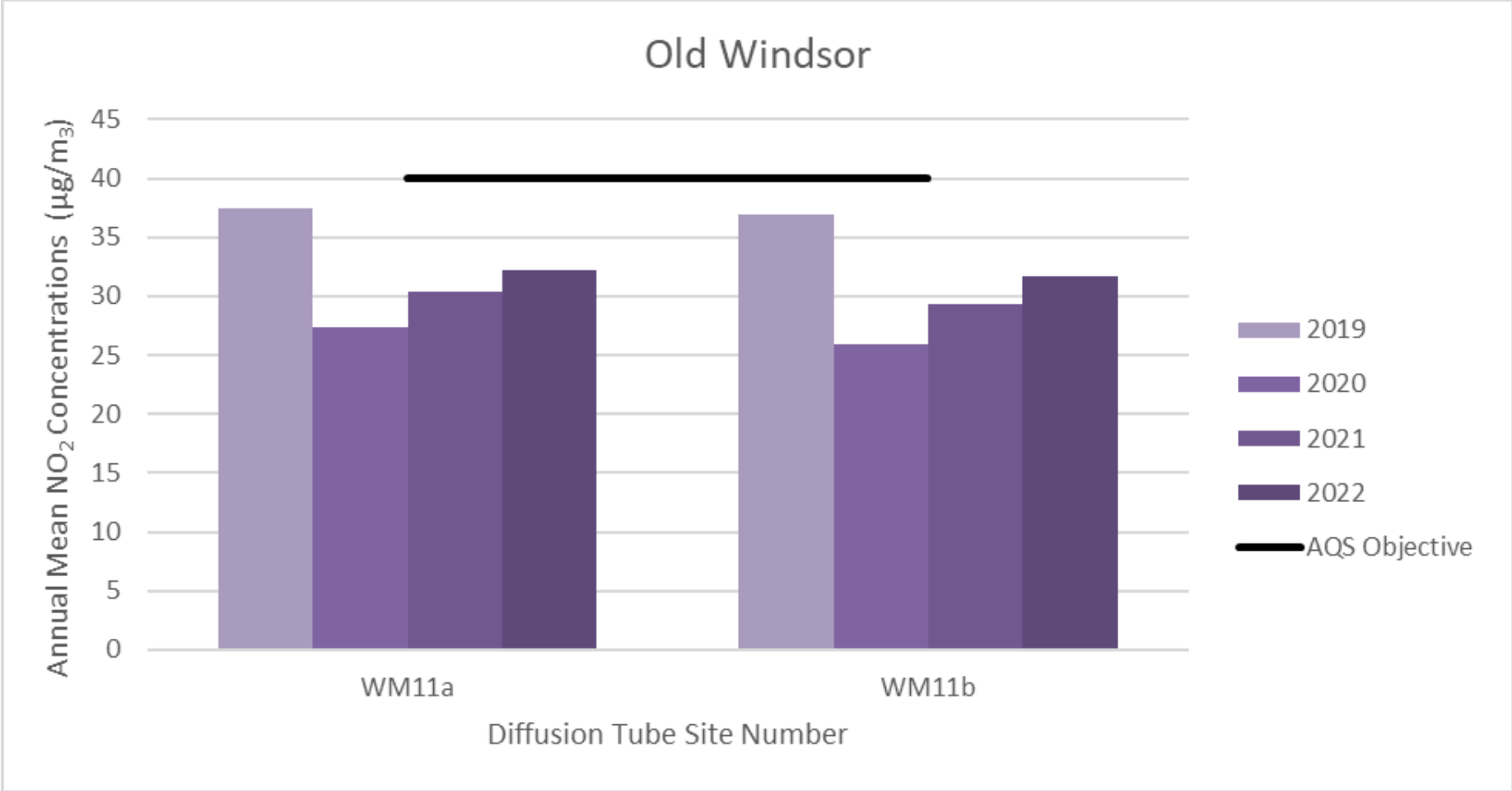


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
MW1	488626	180994	Roadside	99	99	0	0	0	0	0
MW2	495664	176592	Roadside	99	99	0	0	1	0	0
MW4	488503	182710	Urban Background	97	97	0	0	0	0	0

Notes:

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

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

Table A.6 – Annual Mean PM₁₀ Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
MW1	488626	180994	Roadside	100	100	22.8	22.8	18.8	19.2	23

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

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ are shown in **bold**.

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

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

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

Figure A.2 – Trends in Annual Mean PM₁₀ Concentrations

PM₁₀ annual mean concentrations in Maidenhead between years 2016 to 2022. There are no exceedances of the annual mean objective in 2022.

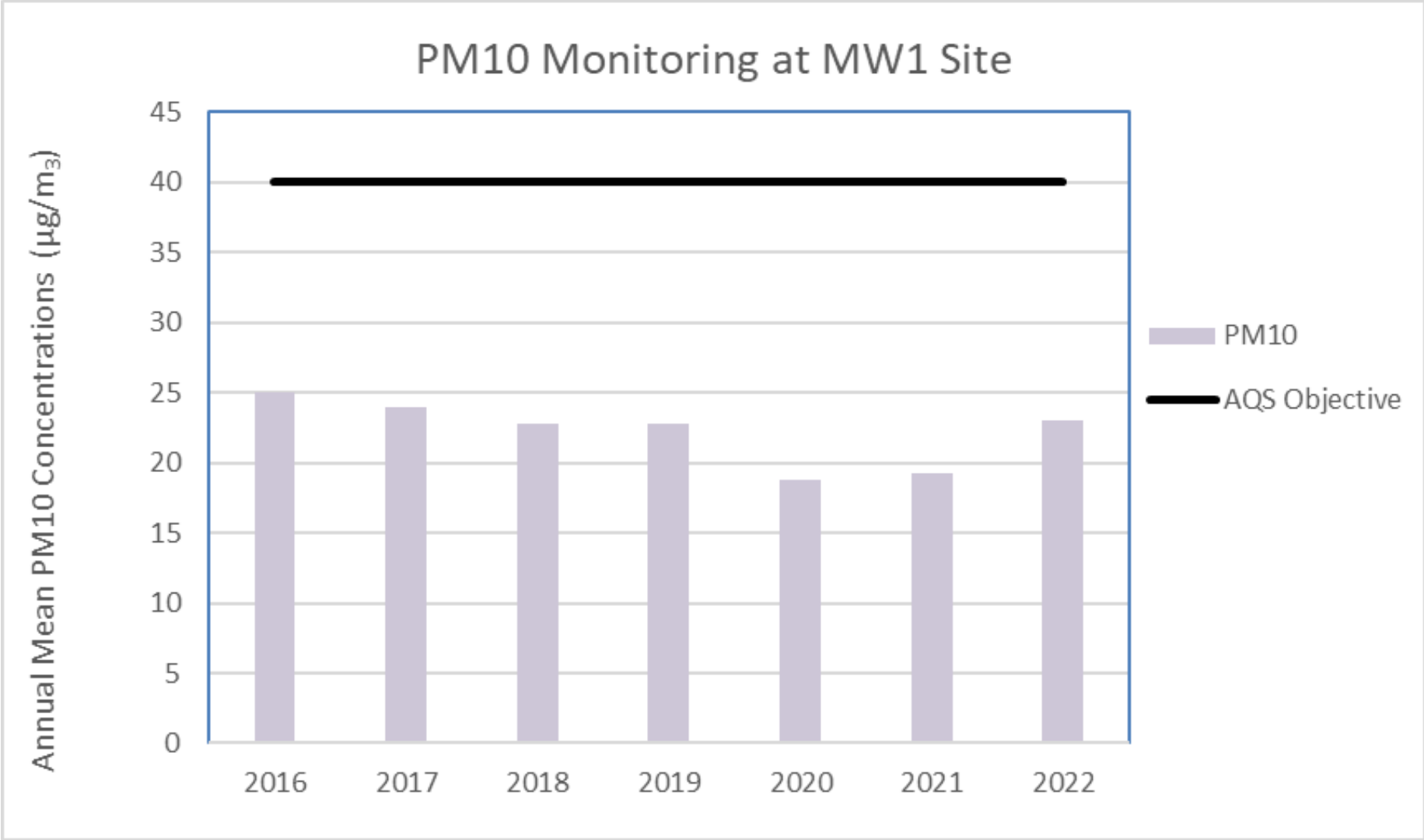


Table A.7 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
MW1	488626	180994	Roadside	100	100	2	8	3	2	6

Notes:

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

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO₂ 2022 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.94)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
WM1	494067	176764	22.4	12.8	20.7	14.1	8.8	7.8	9.4	10.9	12.3	14.9	17.3	19.8	14.3	13.4	-	
WM2	489807	178760	29.4	16.5	22.2	17.3	14.4	12.8	14.1	17.3	18.4	20.4	23.3	26.1	19.3	18.2	-	
WM5b	488864	180951	35.6	21.8	27.2	20.2	18.8	17.6	18.4	20.5	22.1		28.8	31.2	23.8	22.4	-	
WM9a	496237	176584	33.6	19.5	31.2	24.4	18.3	17.0	19.7	22.9	25.9	21.0	23.8	30.7	24.0	22.5	-	
WM10a	495606	176364	38.1	24.7	30.1	32.5	28.0	27.9	30.1	34.9	34.1	34.0	30.5	37.2	31.8	29.9	-	
WM11a	498232	174916	40.2	31.2	38.9	34.4	27.5	30.1	33.8	36.3	33.9	34.8	38.4	32.7	34.3	32.2	-	
WM11b	498388	174797	45.7	26.7	43.0	34.5	27.9	28.3	32.1	35.0	33.6	31.9	32.9	32.6	33.7	31.6	-	
WM13	502017	172541	17.9	25.0	33.1	28.7	21.5	22.0	25.5	30.9	28.3		33.0	34.1	27.3	25.6	-	
WM13a	502108	172461	29.9	23.6	36.4	32.7	21.6	22.1	25.3	32.6	28.0	27.5	31.2	32.4	28.6	26.8	-	
WM15	502259	172322	45.3	31.4	32.0	30.3	28.4	26.4	30.4	32.4	33.2	33.2	34.4	36.6	32.8	30.8	-	
WM15a	502257	172333	43.7	31.3	31.5	26.8	26.8		18.5	29.9	28.9	27.7	32.1		29.7	27.9	-	
WM15b	502300	172278	40.3	28.7			25.9	13.0		28.2	30.3	27.0		31.4	28.1	27.1	-	
WM18	495664	176592	32.6	23.0	32.3	24.2	22.5	22.8	24.0	27.3	27.2	28.9	28.2	30.9	-	-	-	Triplicate Site with WM18, WM19 and WM20 - Annual data provided for WM20 only
WM19	495664	176592	33.8	23.9	33.0	25.1	22.9	20.6	22.7	27.9	28.1	29.8	30.7	30.0	-	-	-	Triplicate Site with WM18, WM19 and WM20 - Annual data provided for WM20 only
WM20	495664	176592	31.2	23.6	32.5	26.6	23.7	22.3	23.8	28.9	26.4	27.3	31.1	29.0	27.2	25.5	-	Triplicate Site with WM18, WM19 and WM20 - Annual data provided for WM20 only
WM21	488626	180994	36.1	30.6	34.0	24.7	27.2	27.0	27.2	29.0	27.3	31.2	33.2	32.6	-	-	-	Triplicate Site with WM21, WM22 and WM23 - Annual data provided for WM23 only
WM22	488626	180994	36.7	29.6	31.0	28.3	26.2	24.3	27.6	28.6	28.7	32.2	32.3	29.3	-	-	-	Triplicate Site with WM21, WM22 and WM23 - Annual data provided for WM23 only
WM23	488626	180994	34.0	21.5	32.7	28.5	26.1	25.2	28.1	28.1	29.6	32.2	33.4	32.1	29.6	27.8	-	Triplicate Site with WM21, WM22 and WM23 - Annual data provided for WM23 only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.94)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
WM28	496604	177866	35.2	20.1	28.3	26.2	19.3	18.0	21.4	27.6	25.4	24.5		29.9	25.1	23.6	-	
WM28a	496539	177826	35.4	21.9	29.5	26.7	23.2	23.4	27.1	27.6	28.2	26.8		29.1	27.2	25.5	-	
WM29	489975	178721	41.3	32.9	44.7	37.4	30.3	27.5	35.1	38.9	31.6	34.2	38.5	33.4	35.5	33.3	-	
WM29a	489928	178754	35.9	25.7	33.6	29.8	26.9	26.3	28.8	32.4	27.4	32.5	32.7	32.3	30.4	28.5	-	
WM29b	490060	178593	36.1	19.1	33.0	30.9	20.1	17.4	23.3	30.2	26.9	18.2		29.4	25.9	24.3	-	
WM30a	498549	177064	30.9	18.9	26.2	25.1	18.4	17.6	20.6	21.7	23.9	22.4	27.0	28.9	23.5	22.0	-	
WM30b	498645	176990	30.3	24.5	33.5	26.8	24.8	23.3	27.8	28.0	27.9	29.0	29.9	24.6	27.6	25.9	-	
WM30c	498725	177092	49.6		41.7	41.0	35.9	30.1	38.8	37.0		33.8	36.4	37.1	38.1	35.8	-	
WM31	495896	176939	37.2	23.8	34.2	34.3	26.6	23.9	29.5	35.5	34.8	29.8	28.3	34.3	31.0	29.1	-	
WM32	496082	176903	33.2	24.8	26.3	23.5	23.6	19.9	22.0	27.4	25.9	26.0	28.3	31.3	26.0	24.4	-	
WM33	496312	176886	40.8	26.1		36.7	30.7	29.6	33.2	38.6	36.3	30.1	33.2	32.6	33.4	31.4	-	
WM34	488417	180554	24.5	12.8	22.6	17.2	10.9	9.1	10.8	14.1	14.4	15.8	17.9	21.8	16.0	15.0	-	
WM01	501366	172377	33.1	10.0	19.3	12.7	9.6	8.5	10.7	14.9	13.5	14.2	13.8	17.8	14.8	13.9	-	
WM03	495331	175569		24.2	30.1	26.4	21.5	23.8	27.9	30.8	29.8	28.8	29.5	32.6	27.8	26.1	-	
WM03a	495294	175556	44.7	33.8	39.2	36.4	30.4	31.3	34.6	38.1	36.5	37.5	37.5	36.4	36.4	34.1	-	
WM03b	495314	175551	39.8	42.1		39.2	40.9	41.8	45.1	42.5	41.9	42.7	42.3	39.7	41.6	39.1	32.1	
WM03c	495413	175587	28.5	18.8	21.9		18.5	17.5	17.1	15.9	17.8	20.6	21.4	23.3	20.1	18.9	-	
WM04	496631	175927	35.4	21.4	31.5	25.9	20.2	18.7	20.8	23.9	24.0	25.3	27.6	30.7	25.5	23.9	-	
WM04a	496380	176035	33.5	18.7	30.6	24.3	18.9	20.9	22.5	25.2	28.1	25.9	27.1	32.4	25.7	24.1	-	
WM013	489571	181334	37.0	30.2	30.2	22.6	21.1	15.2	20.5	22.3	22.0	28.2	31.3	29.9	25.9	24.3	-	
WM013a	489652	181323	39.5	31.6	32.9	30.4	29.4	31.4	30.3	31.6	32.0	40.1	42.7	35.4	33.9	31.9	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.94)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
WM014a	489033	180622	36.4	24.0	32.1	26.3	21.6	19.1	21.7	25.4	25.1	25.9	27.3	28.8	26.1	24.5	-	

- All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.
- Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.
- Local bias adjustment factor used.
- National bias adjustment factor used.
- Where applicable, data has been distance corrected for relevant exposure in the final column.
- The Royal Borough of Windsor and Maidenhead confirm that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within the Royal Borough of Windsor and Maidenhead During 2022

The Royal Borough of Windsor and Maidenhead has not identified any new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by the Royal Borough of Windsor and Maidenhead During 2022

The Royal Borough of Windsor and Maidenhead has not completed any additional works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

Diffusion Tubes are supplied by Gradko International Ltd. The preparation method is TEA 50% acetone. Nitrogen dioxide is determined by U.V. Spectrophotometry.

The laboratory performance under the Workplace Analysis Scheme for Proficiency (WASP) for AIR NO₂ PT round AR050 (May – June 2022) show a percentage of results submitted with satisfactory score of 100%.

[WASP – Annual Performance Criteria for NO₂ Diffusion Tubes \(defra.gov.uk\)](https://www.defra.gov.uk/air-quality/monitoring/diffusion-tubes/wasp-annual-performance-criteria-for-no2-diffusion-tubes)

The monitoring has been completed in adherence with Defra 2022 Diffusion Tube Monitoring Calendar.

Diffusion Tube Annualisation

Site WM15b within the Royal Borough of Windsor and Maidenhead recorded data capture of 67% during 2022. Annualisation is required for any site with data capture less than 75% but greater than 25%. Defra LAQM tool was used to complete annualization.

Table C.1 – Annualisation Summary (concentrations presented in µg/m³)

Site ID	Annualisati on Factor MW4	Annualisati on Factor MW2	Annualisati on Factor <Site 3 Name>	Annualisati on Factor <Site 4 Name>	Average Annualis ation Factor	Raw Data Annual Mean	Annualised Annual Mean
WM15b	1.0275	1.0281	-	-	1.0278	28.1	28.9

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

The Royal Borough of Windsor and Maidenhead have applied a local bias adjustment factor of 0.94 to the 2022 monitoring data. A summary of bias adjustment factors used by The Royal Borough of Windsor and Maidenhead over the past five years is presented in Table C.2.

Two co-location studies at sites MW1 and MW2 have been utilised to derive the local factor. The local factors data had good precision and accuracy, the calculations used to derive the local factor are in line with guidance provided within LAQM.TG22 Chapter 7.

The local factor is derived by averaging the B values of the two studies: 14% for MW1 and -1% for MW2 = 6.5%. This is then expressed as a factor, 0.0646. Next, 1.00 is added to this value = 1.06. The inverse is taken to give the bias adjustment factor: $1/1.06 = 0.94$.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	Local	-	0.94
2021	Local	-	0.92
2020	Local	-	0.87
2019	Local	-	0.94
2018	Local	-	0.95

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	12	12			
Bias Factor A	0.88 (0.83 - 0.93)	1.01 (0.94 - 1.09)			
Bias Factor B	14% (7% - 21%)	-1% (-9% - 6%)			
Diffusion Tube Mean ($\mu\text{g}/\text{m}^3$)	14	-1			
Mean CV (Precision)	29.6	27.2			
Automatic Mean ($\mu\text{g}/\text{m}^3$)	4.9%	3.5%			
Data Capture					
Adjusted Tube Mean ($\mu\text{g}/\text{m}^3$)	26.0	27.5			

Notes:

A combined local bias adjustment factor of 0.94 has been used to bias adjust the 2022 diffusion tube results.

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

Site WM03b within the Royal Borough of Windsor and Maidenhead recorded an annual mean concentration of 39.1 $\mu\text{g}/\text{m}^3$ during 2022. Defra Diffusion Tube Data Processing Tool was used to complete the correction for distance.

Table C.4 – NO₂ Fall off With Distance Calculations (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted)	Background Concentration	Concentration Predicted at Receptor	Comments
WM03b	1.0	6.0	39.1	19.8	32.1	-

QA/QC of Automatic Monitoring

Automatic Monitoring sites MW1, MW2 and MW4 are part of the London Air Quality Network (LAQN) which is operated and managed by the Environmental Research Group (ERG) at Imperial College London. ERG is also responsible for data management and ratification process. QA/QC audits are completed by the National Physical Laboratory (NPL). Data have traceability to national standards and operational procedures defined for LAQN. Audit and servicing of the sites is completed six monthly. The NO₂ monitoring data presented within the ASR is fully ratified. The PM₁₀ monitoring data for 2022 is provisional. Live and historic data is available through the London Air Quality website.

Local Site Operator (LSO) duties for all automatic monitoring sites are completed by the Council's Environmental Protection Officer.

PM₁₀ and PM_{2.5} Monitoring Adjustment

The type of PM₁₀ monitor utilised within the Royal Borough of Windsor and Maidenhead do not require the application of a correction factor.

Automatic Monitoring Annualisation

All automatic monitoring locations within the Royal Borough of Windsor and Maidenhead recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

No automatic NO₂ monitoring locations within the Royal Borough of Windsor and Maidenhead required distance correction during 2022.

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

Figure D.1 – AQMAs in the Royal Borough of Windsor and Maidenhead

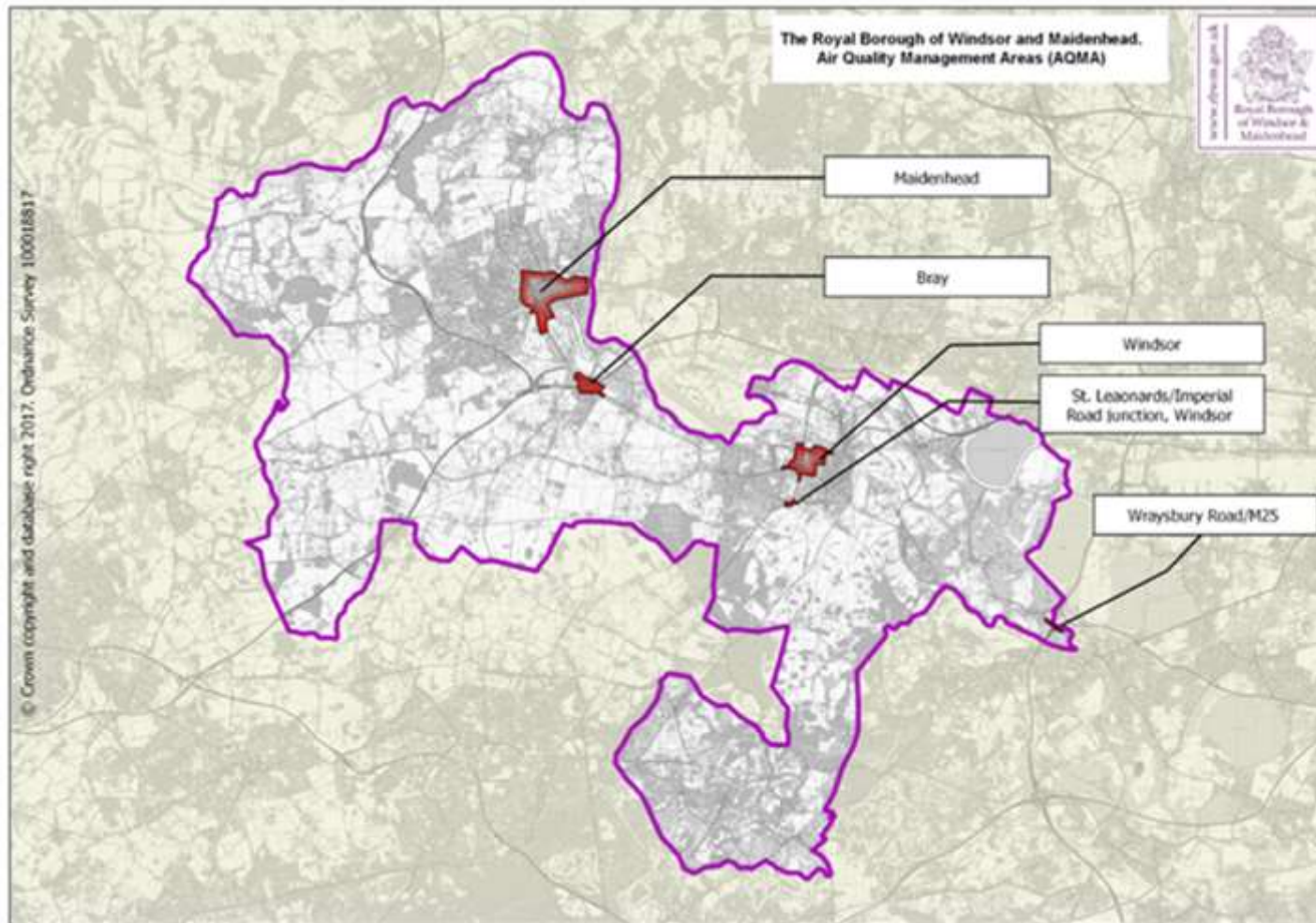


Figure D.2 – Map Monitoring Sites Windsor AQMA

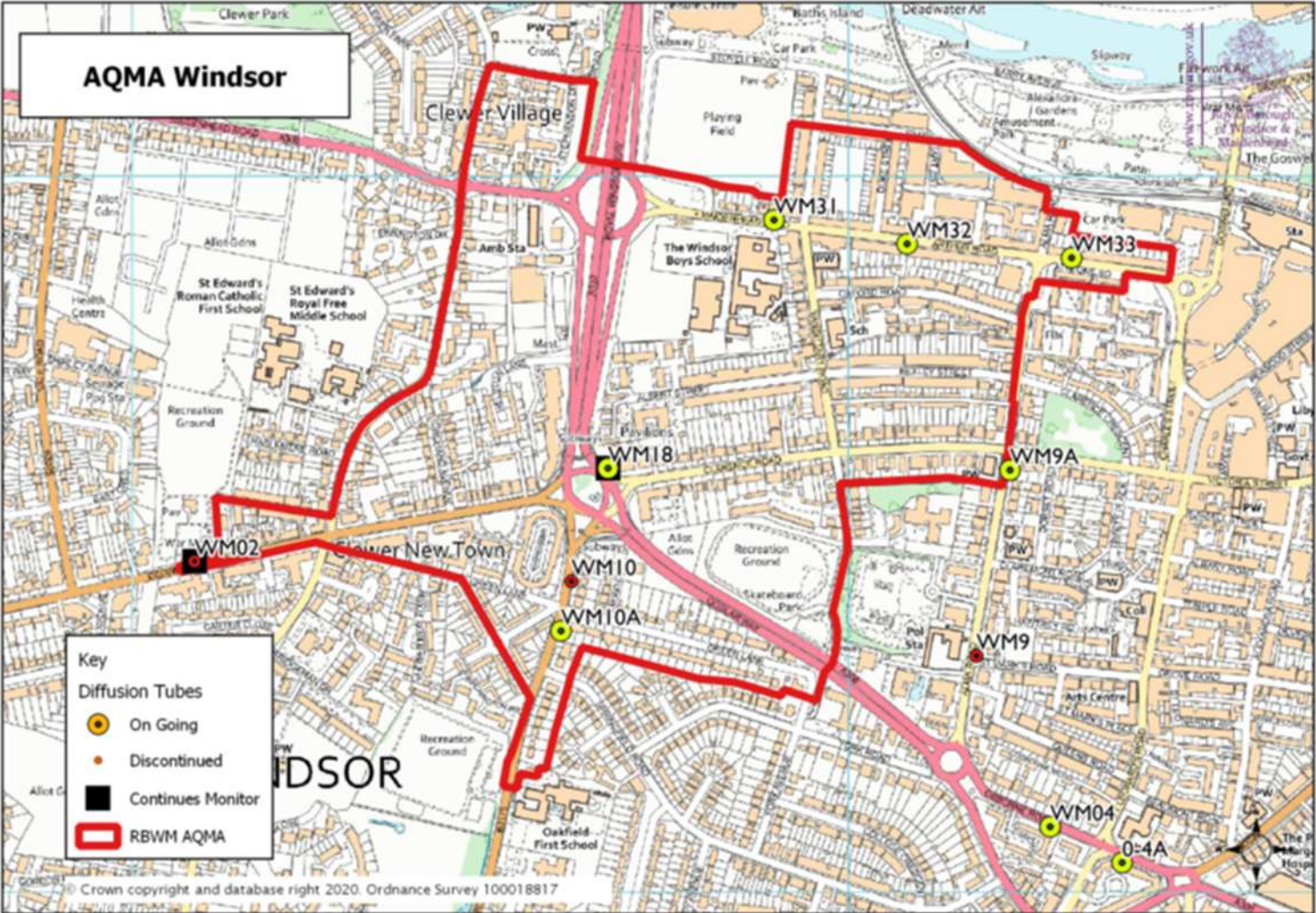


Figure D.3 – Map Monitoring Sites St Leonards/Imperial Road Junction AQMA

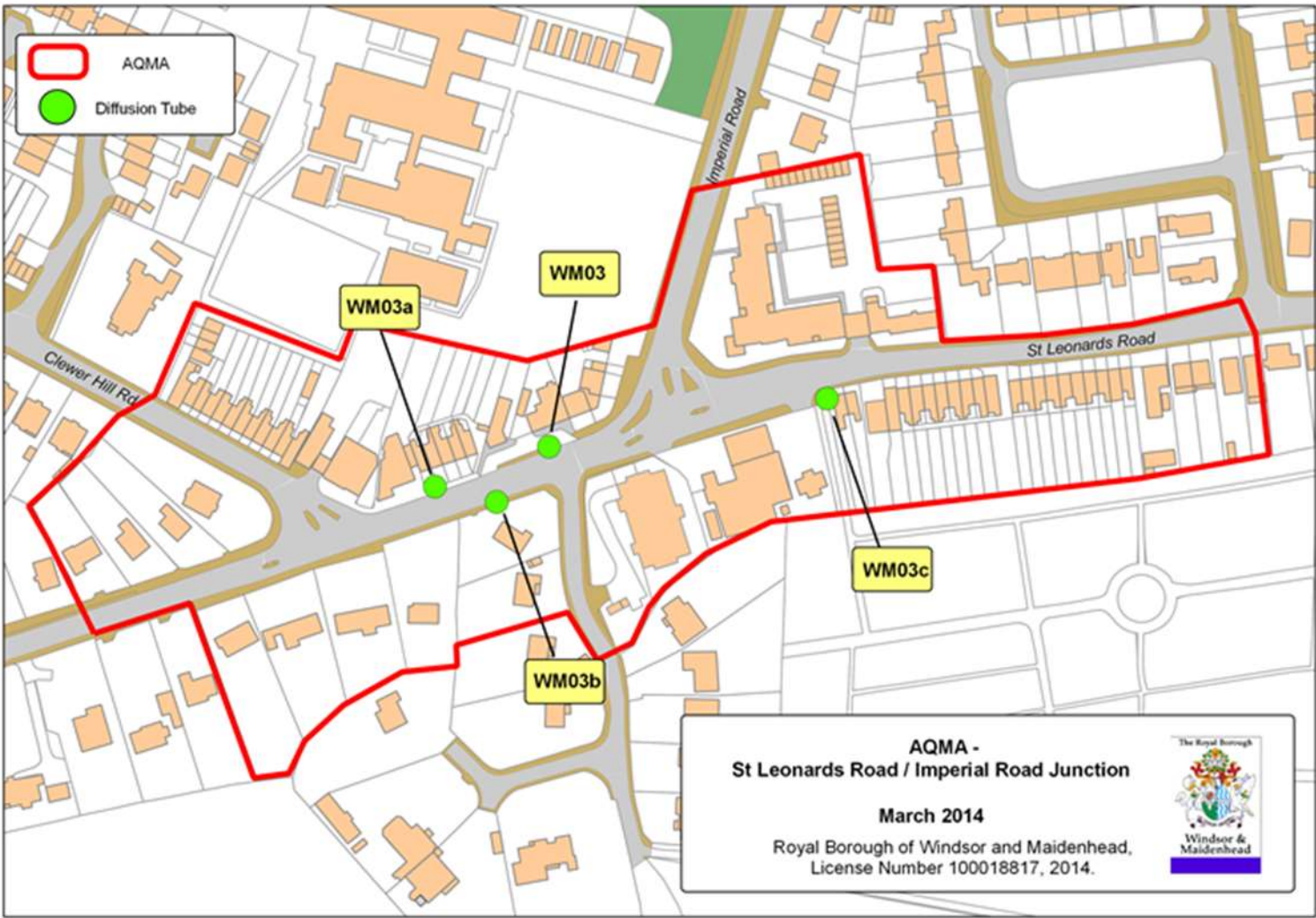


Figure D.4 – Map Monitoring Sites Maidenhead AQMA

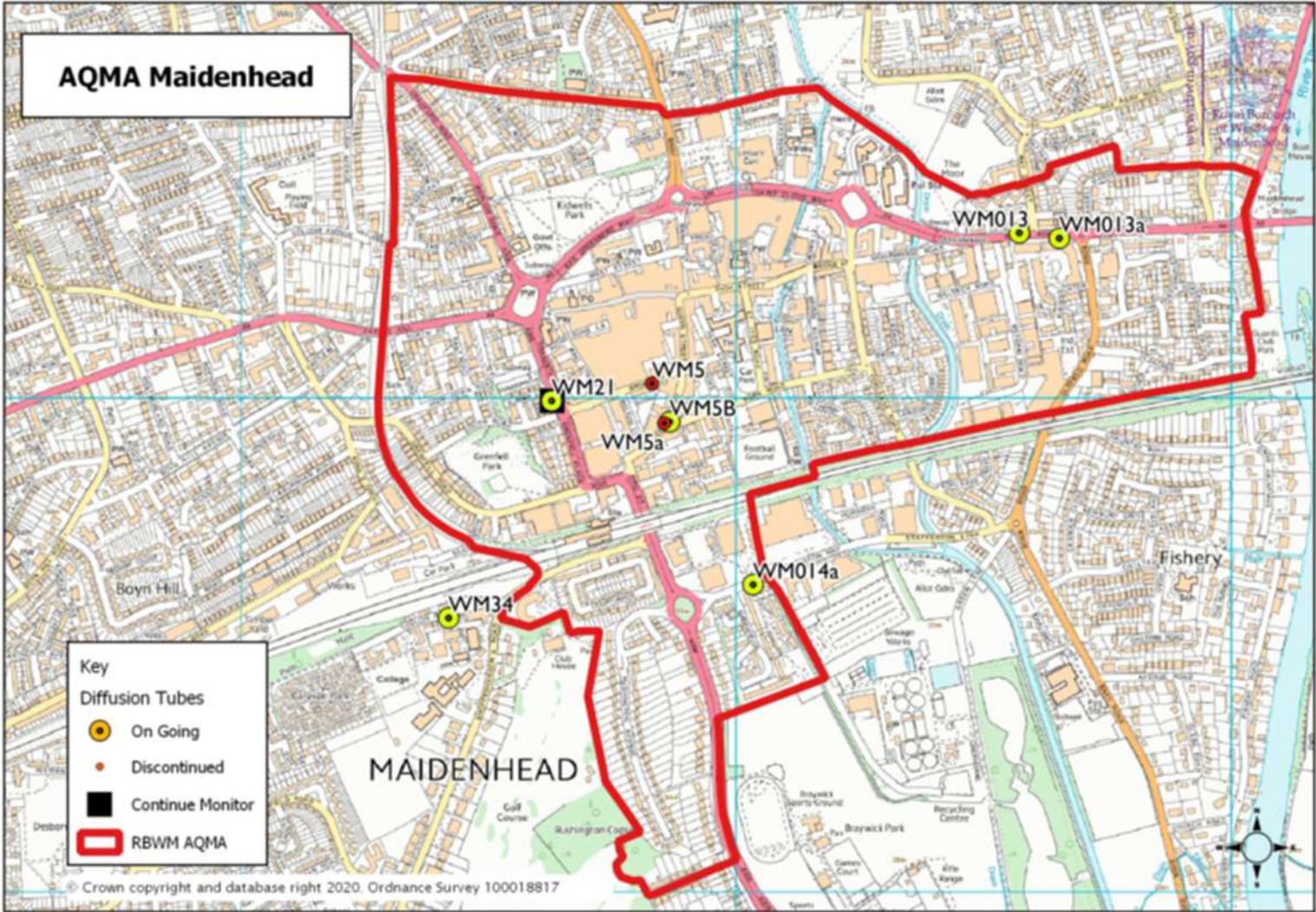


Figure D.5 – Map Monitoring Sites Bray/M4 AQMA

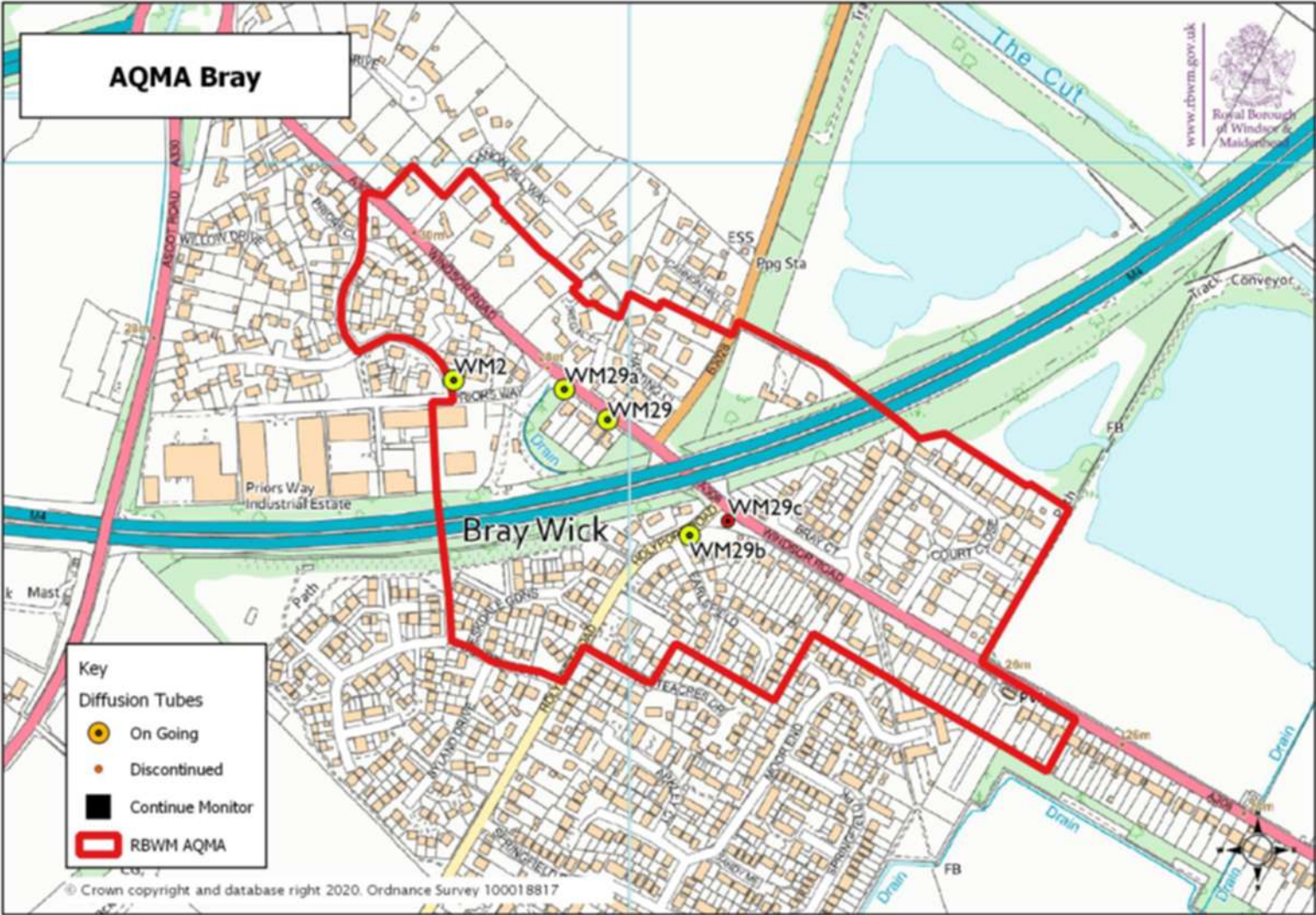
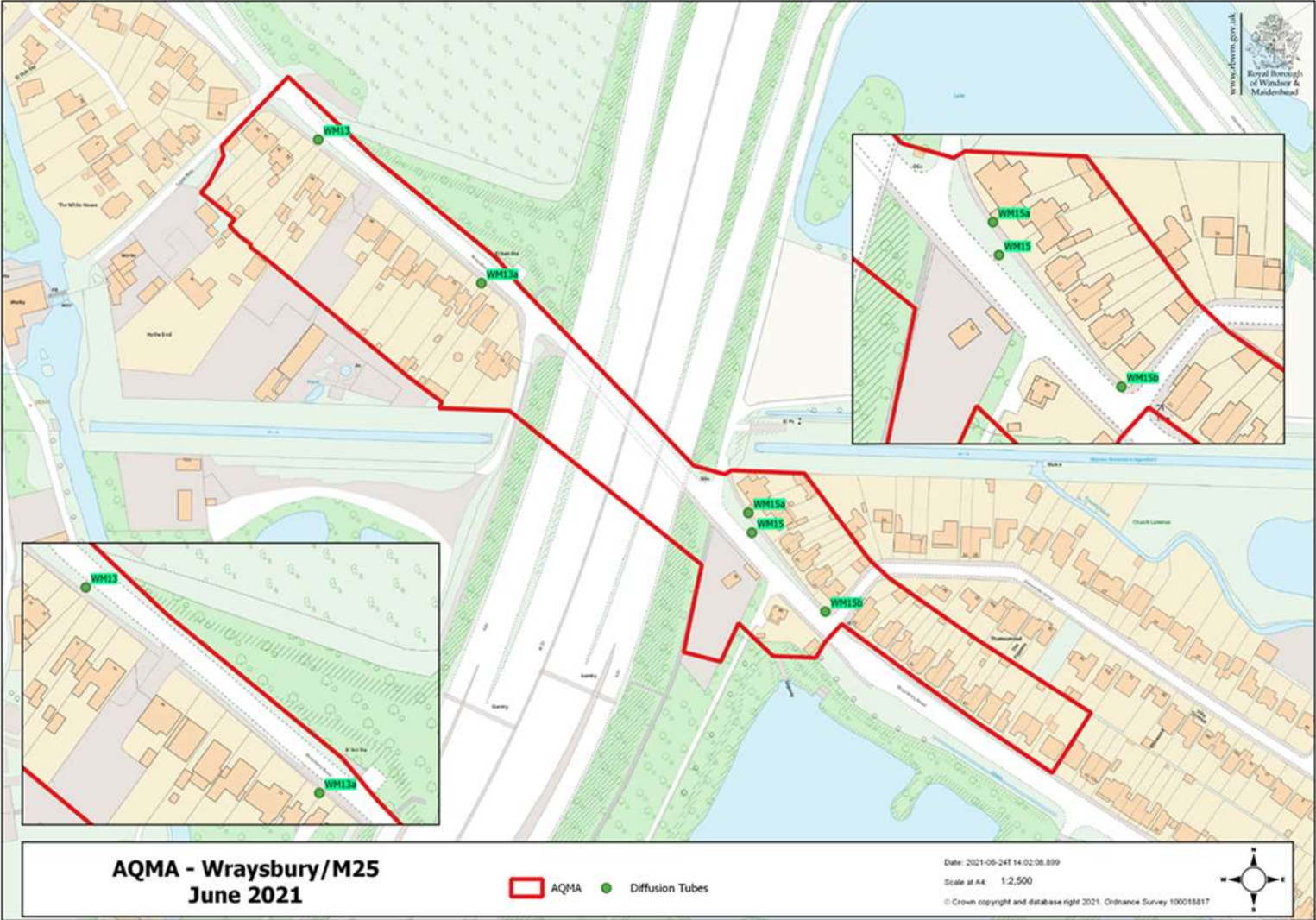


Figure D.6 – Map Monitoring Sites Wraysbury/M25 AQMA



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁷

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO ₂)	200µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO ₂)	40µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM ₁₀)	40µg/m ³	Annual mean
Sulphur Dioxide (SO ₂)	350µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO ₂)	125µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO ₂)	266µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

⁷ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
BAM	Beta Attenuation Mass – PM10 monitor
BSIPs	Bus Service Improvement Plans
LAQM	Local Air Quality Management
LCWIP	Local Cycling & Walking Infrastructure Plan
LTP	Local Transport Plan
$\mu\text{g}/\text{m}^3$	Microgram per cubic metre
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of $10\mu\text{m}$ (micrometres or microns) or less
$\text{PM}_{2.5}$	Airborne particulate matter with an aerodynamic diameter of $2.5\mu\text{m}$ or less
QA/QC	Quality Assurance and Quality Control
RBWM	Royal Borough of Windsor & Maidenhead

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