



**WATFORD
BOROUGH
COUNCIL**

2024 Air Quality Annual Status Report (ASR)

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

Date: June 2024

Information	Watford Borough Council Details
Local Authority Officer	Ben Firmin
Department	Community & Environmental Services
Address	Town Hall, Watford, WD17 3EX
Telephone	01923 278011
E-mail	Ben.Firmin@watford.gov.uk
Report Reference Number	WBC/BF/ASR/2024_FINAL
Date	June 2024

Executive Summary: Air Quality in Our Area

Air Quality in Watford

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality. In the UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year¹.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, people living in less affluent areas are most exposed to dangerous levels of air pollution².

Watford is a concentrated urban area situated to the Northwest of London. The latest estimated population of Watford is 102,200 (2021) (Source: Office for National Statistics - Census 2021). It has a well-established regional shopping centre with major rail and road communication links. It has both mainline and underground train stations, the M1 lies along the northern boundary of the borough and the M25 is situated to the west. The Borough is also served by several major trunk roads, including the A41, A411, A412 and A405.

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

Table ES 1 - Description of Key Pollutants

Pollutant	Description
Nitrogen Dioxide (NO ₂)	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.

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

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

Particulate Matter (PM ₁₀ and PM _{2.5})	Particulate matter is everything in the air that is not a gas. Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes. PM ₁₀ refers to particles under 10 micrometres. Fine particulate matter or PM _{2.5} are particles under 2.5 micrometres.
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The main pollutants of concern in the Borough are NO₂, PM₁₀ and PM_{2.5}. These are mainly associated with road traffic. NO₂ is formed during the combustion process when Nitrogen in the air bonds with Oxygen. Road vehicles emit particulate matter from their exhaust and from non-exhaust sources such as brake, tyre and road surface wear and the resuspension of road dust.

The latest monitoring data shows a general trend of decreasing concentrations of NO₂. This is in line with the national trend. Defra recently reported that “between 2007 and 2019 inclusive, the annual mean NO₂ concentration at roadside sites reduced by an average of 1.8 µg/m³ each year. This reduction was observed at most long-running monitoring sites across the UK; which could be a consequence of the large reduction in road transport emissions of NO₂ over the same period in the UK, as newer vehicles subject to stricter emissions standards enter the transport fleet”.

In 2023, NO₂ concentrations did not exceed the annual mean objective at any of the Council’s diffusion tube sites. There is a general trend of reduction over the last 5 years.

There were no exceedances of the 1-hour objective.

There were no exceedances of the air quality objectives for PM₁₀ relating to both annual mean and daily mean objectives.

There were no exceedances of the Annual Mean Concentration Target for PM_{2.5}.

Due to budgetary issues, the Council’s roadside monitor was decommissioned in December 2023. There are no other proposed changes to the monitoring network.

There are no new major sources of emissions in the Borough. The Council has not introduced any new AQMAs, Action Plans or strategies.

The Council is in the process of drafting a new Air Quality Action Plan (AQAP). As previously agreed with Defra, the final draft will be submitted to the Portal by 28th June 2024.

Actions to Improve Air Quality

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

The Environmental Improvement Plan³ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter (PM_{2.5}), the pollutant of most harmful to human health. The Air Quality Strategy⁴ provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero⁵ details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Local Planning and Policy

Watford Local Plan 2021-2038

The Watford Local Plan was adopted on 17th October 2022.

The Local Plan lists some objectives (Watford's society in 2038 – the sustainability objectives). The following objectives relates to local air quality:

Traffic congestion will be reduced and air quality improved, with priority given to public transport, shared car use, walking and cycling.

Traffic issues are discussed and the Council's AQMAs are considered. The Council's AQAP is mentioned, as are the air quality objectives.

Policy CC8.4 relates to managing air quality. The policy states that development will be supported where it minimises emissions that would contribute towards a worsening of existing air quality and seeks to improve air quality.

³ Defra. Environmental Improvement Plan 2023, January 2023

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

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

The policy also states that all major developments and other forms of development that are considered to be at risk of impacts resulting from significant emissions or pollutants will need to consider air quality. This includes, but is not limited to, development where the occupiers/users may be sensitive to poor air quality and development in close proximity to an AQMA. Proposals will be required to consider the cumulative impacts in conjunction with other developments in the vicinity and include mitigation measures where necessary.

Air quality is mentioned in other policies, for example in respect of green infrastructure, sustainable transport, healthy communities etc.

Where site allocations and new development are discussed, the Council's AQMAs are mentioned as a consideration.

Within the monitoring framework, the target for Policy CC8.4 is given as reduction in the number of AQMAs.

WBC Sustainability Strategy

The Council's Sustainability Strategy 2020 to 2023 contains 6 key strands. One of these strands is Improving Transport & Air Quality.

The section of the strategy entitled Improving Transport & Air Quality, highlights the health impacts of air pollution and the cost to society, and describes the Council's LAQM activities and highlights of progress so far.

Sustainable Transport Strategy

Watford Borough Council's Cabinet have approved a strategy and 20-year programme to help transform how people travel to, from and around the town, with planned activities taking place over the next two years to start fulfilling the proposals to make it easier for people to walk, cycle and use public transport.

The programme of scheduled projects follows Watford Borough Council and Hertfordshire County Council's consultation on their 'Transforming Travel in Watford 2021-2041' strategy, which showed the majority of the 1,000 people who provided feedback were supportive of the need for change to the way people travel, as well as the proposals put forward to do so.

To start implementing the strategy, the key projects that will take place include relaunching an expanded 'Watford Car Club' to provide more residents with short-term car rental services without the hassle of owning a vehicle, as well as the implementation of further phases of public realm improvements in the town centre, starting with the bus gate to

reduce traffic entering High Street, and improvements to cycle and walking routes around the town centre.

Additional works that will also be taking place include continuing sustainable travel projects already underway, such as installing more electric vehicle chargers around the town to help the shift towards less polluting vehicles, and providing more cycle parking facilities to help people travel around the town more easily.

The coming years will also see further investigation into the future delivery of schemes such as new cycle infrastructure on key routes across the town, measures to reduce delays for buses at congestion hotspots such as the ring road, alternative uses of the disused railway line between Watford and Croxley, and also the introduction of 'Town Centre Sustainable Transport Hub' which will allow easy interchange between different types of transport.

The strategy is underpinned by six key themes including: increasing active travel opportunities, improving public transport for longer journeys, providing alternatives to petrol cars, making the town centre more pedestrian and cycle friendly, supporting change and making moving goods more sustainable.

The Council's plans for Watford include the following:

- Greener Taxis;
- Improvements to Bus Stops;
- Freight Consolidation;
- Quieter Residential Streets;
- Local Mini Transport Hubs;
- Town Centre Car Parking Improvements;
- Increased Cycle Parking;
- New Car Club;
- More Electric Vehicle Charging;
- E-Cargo Bikes;
- More Bike Share Bays;
- Greener School Run;
- Investigation of Watford to Croxley Route;

- Assessment of Park and Ride Options.
- New Public Transport Link;
- Sustainable Transport Corridor;
- Improved Bus Route;
- Improved Cycle Route;
- Improved Pedestrian Route;
- Town Centre Sustainable Transport Hub;
- Enhanced Railway Stations;
- Potential Park and Ride.

Local initiatives

Watford Cycle Hub - Watford cycle hub offers cycle repair services, maintenance and cycle training. It also accepts old bikes and recycles them.

Beryl Bike Hire Scheme - Bikes and e bikes are available to hire 24/7 (via Beryl Bays across Watford) all year round through a user-friendly smartphone app. The contract has been extended for another 2 years. The scheme will also expand into two neighbouring authorities, with services provided in Croxley (Three Rivers District Council) and Bushey (Hertsmere Borough Council).

Green loop improvements - The Green Loop will link key locations like Watford Junction, Cassiobury Park, East Watford, and National Cycle Route 6, connecting schools, workplaces, shopping areas, leisure spots, and railway stations.

Watford Car Club - Watford car club to provide convenient, flexible and cost-effective solutions in 2024. Car clubs offer car hire by the hour or by the day, enabling individuals and organisations access to a vehicle without the need for ownership and on an as-needed basis. They are great for people who don't want to incur the high costs associated with car ownership. All the vehicles in Watford that are located at convenient on-street locations will be fully electric. The scheme will be further enhanced by the availability of low-emission vehicles on local developed sites and possible future locations. A market leader, Enterprise Car Club will deliver the service in Watford.

E-charging points across the town - The Council is continuing to introduce Electric Vehicle charging points. There is currently 57 charge points available to the public installed in partnership with Blink charging (114 sockets). The Council also have an additional 79

charging points currently being installed which will add an additional 158 sockets. The Council is in the process of making a further bid to the On-street Residential Chargepoint Scheme. You can view a map of all of our electric vehicle charging points in Watford provided by the council. You can request an Electric Vehicle Charging Point to be placed near your house.

E-bikes with beryl - There are over 100 e-bikes available through the town, which can be differentiated from the standard Beryl Bikes through an electrified symbol that is visible on the bike and bay icons in-app. The local Beryl operations team use a battery swapping process to ensure the e-bikes are charged and ready for use.

Beryl's e-bikes have a centre mount pedal assist, ensuring a lower centre of gravity in the bike which provides a safer and more enjoyable riding experience. The electric assist of the Beryl e-Bike is capped at a max speed of 15.5mph (24.9kmph) in accordance with UK law.

Other useful e-transport information - Apply for a discount on the price of brand new low-emission vehicles through a grant the government gives to vehicle dealerships and manufacturers. Businesses (including local licensed taxi drivers) may also qualify for grants to switch to greener low-emission vehicles. Green number plates - Make it easier to identify zero-emission vehicles, helping council's put in place new policies to incentivise people to own and drive them.

Watford Travel app - Free to download and use, the travelWatford app, is available on IOS and Android. It brings together all of Watford's transport options and lets people choose the best options for a given journey based on cost, waiting time and environmental impact.

Sustainable business grants - There is information on the Council's website regarding the following: eCargo Bike Grant Fund; Plug in vehicle grant; Workplace Charging Scheme; Electric taxi vehicles.

Future Travel Watford - 6 key themes: increasing active travel opportunities, improving public transport for longer journeys, providing alternatives to petrol car, making the town centre more pedestrian and cycle friendly, supporting change and making moving goods more sustainable.

Air Pollution Alert System - Hertfordshire and Bedfordshire Air Pollution Alert System is a free service to subscribers in Hertfordshire and Bedfordshire that sends registered users an alert message if air pollution in their area is forecast or measured to be moderate, high

or very high. The description of the level of pollution is based upon the UK's Air Quality Banding System.

Council vehicle fleet review - Anticipated that replacement vehicles will be all electric. Range, cost or availability of suitable vehicles could be barriers.

Conclusions and Priorities

In 2023, NO₂ concentrations did not exceed the annual mean objective at any of the Council's diffusion tube sites. There is a general trend of reduction over the last 5 years.

There were no exceedances of the 1-hour objective.

There were no exceedances of the air quality objectives for PM₁₀ relating to both annual mean and daily mean objectives.

There were no exceedances of the Annual Mean Concentration Target for PM_{2.5}.

Due to budgetary issues, the Council's roadside monitor was decommissioned in December 2023.

The Council is in the process of drafting a new Air Quality Action Plan (AQAP). As previously agreed with Defra, the final draft will be submitted to the Portal by 28th June 2024.

Adopting the new AQAP is a priority for the coming year.

Local Engagement and How to get Involved

Residents, businesses and visitors to the Borough can play a role in improving air quality, for example, walking, cycling or using public transport instead of driving. For those who need to use a car, replacing it with a greener vehicle such as an electric one is a great way of improving air quality. If individuals or businesses are not ready to replace their existing vehicles, they should ensure that they are serviced regular and in particular, tyre pressures are at the appropriate level as doing so will help lower emissions as well as saving money.

Local Responsibilities and Commitment

This ASR was prepared by the Community & Environmental Services Team of Watford Borough Council.

This ASR has not been signed off by a Director of Public Health.

If you have any comments on this ASR please send them to the Community & Environmental Services Team at:

Town Hall, Hempstead Road, Watford, WD17 3EX

01923 278503

Housingandwellbeing@watford.gov.uk

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1 Local Air Quality Management

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

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

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by Watford Borough Council can be found in Table 2.1. The table presents a description of the two AQMA(s) that are currently designated within Watford Borough Council. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA(s) and also the air quality monitoring locations in relation to the AQMA(s). The air quality objectives pertinent to the current AQMA designation(s) are as follows:

- <NO₂ annual mean.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
AQMA 2 Vicarage Road	Declared 17/02/2006, Amended 10/04/2019	NO2 Annual Mean	A predominately residential area with a cluster of commercial buildings within and as well as close to the vicinity. Queuing traffic.	NO	58	29.9	4 years	Watford Borough Council Air Quality Action Plan, 2011	https://www.airqualityengland.co.uk/local-authority/hnb-reports
AQMA 3A Aldenham Road, Chalk Hill	Declared 25/06/2015, Amended 10/04/2019	NO2 Annual Mean	A combination of residential and commercial buildings along a main road within close proximity to Bushey Station. Queuing traffic.	NO	56.8	30.5	4 years	Watford Borough Council Air Quality Action Plan, 2011	https://www.airqualityengland.co.uk/local-authority/hnb-reports

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

Watford Borough Council confirm that all current AQAPs have been submitted to Defra.

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

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. Watford Borough Council have included comments from last year's appraisal into the ASR and details about how they have addressed them all where necessary, this is encouraging to see.
2. The Air Quality Action Plan (AQAP) was published in 2011 and therefore requires updating.

The Council is in the process of drafting a new AQAP. An earlier draft was submitted to the Portal for appraisal, the Council has made the changes that were suggested. The Council has received comments from internal and external consultees, further changes have been made following consultation. The final draft will go before Cabinet in June, the AQAP will then be submitted to the Portal (by 28th June 2024). Our proposed approach was agreed in writing with Defra in January 2024.

3. Multiple figures are provided comparing the monitored concentration with the Air Quality Objectives, and the Annual Mean Concentration Target for PM_{2.5}, these are appreciated however greater discussion of the trends observed could be provided.

In 2023, NO₂ concentrations did not exceed the annual mean objective at any of the Council's monitoring sites. There is a general trend of reduction over the last 5 years. A proportionate amount of commentary has been provided.

4. The declaration dates for AQMA 2 and AQMA 3A provided in Table 2.1 do not match those within the Portal, these should be updated.

This has been amended in this year's report.

5. Sites which did not record a concentration in 2022 do not need to be included in Table A.2 or A.3 (WF02 and WF06).

Diffusion tubes were deployed at WF02 and WF06 in January and February. In March, the Council made changes to its monitoring network. Monitoring ceased at these locations. The data was included for completeness.

6. A clear statement was provided stating that diffusion tube monitoring was completed in adherence with the 2022 diffusion tube monitoring calendar.
7. No justification was given for the use of the national bias adjustment factor.

A national bias adjustment factor was used last year because building works were being undertaken at the Town Hall. The Council's roadside monitor and the collocated diffusion tubes were located within the building site. The Council did not feel that the data collected at this location should be relied upon, as the building works may have affected monitoring results.

8. Multiple figures are included showing the location of diffusion tube monitoring sites and the AQMAs. The site IDs should be labelled in Figures D.2 and D.3. The maps in Figure D.4 could be arranged in numerical order for clarity.

This has been addressed in this year's report.

9. The coordinates provided in Tables A.1 and A.2 for WF1 and WF46a/WF46b/WF46c are not the same however Figure D.4 shows these to be at the exact same location. The coordinates or figure should be updated to avoid confusion.

This has been addressed in this year's report.

Watford Borough Council is in the process of drafting a new Air Quality Action Plan (AQAP). The final draft will then be submitted to the Portal (by 28th June 2024). Details of all measures (that were included in the 2011 action plan) are set out in Table 2.2. Fifteen measures are included within Table 2.2.

More detail on these measures can be found in the Watford Borough Council Air Quality Action Plan, 2011. Key completed measures are:

- Promotion of cycling and walking;
- Promotion of Travelsmart;
- Implement bus strategy;
- Road Infrastructure Improvements;
- Implement the Intalink project;
- Promotion of car sharing scheme;

- Promotion of Travel Plans;
- Annual Council vehicle fleet review;
- Promote air quality within the Borough;
- Continue to monitor air quality;
- Undertake feasibility studies;
- Enforcement of parking policy;
- Installation of EV charging points.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	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 (14)	Promotion of cycling and walking. Increase sustainable transport.	Promoting Travel Alternatives	Promotion of walking	2011	2016	WBC/HCC	WBC/HCC	NO	Funded	£10k - 50k	Completed	Increase sustainable transport.	Number of cyclists and pedestrians	Complete	New cycle route along St. Albans Road. Ebury Road route planned Grand union canal route planned New road signs with pedestrian info being implemented SW Herts cycling strategy Permanent loop monitoring planned
2 (13)	Promotion of Travelsmart. Personalised travel planning to reduce car use.	Alternatives to private vehicle use	Other	2011	2016	WBC	WBC	NO	Funded	£10k - 50k	Completed	Personalised travel planning to reduce car use.	Uptake numbers.	Complete	Travelsmart continues to be promoted.
3 (12)	Implement bus strategy. Encourage the increase of bus patronage.	Alternatives to private vehicle use	Other	2011	2016	HCC/WBC	HCC/WBC	NO	Funded	£50k - £100k	Completed	Encourage the increase of bus patronage.	Bus patronage	Complete	Local Sustainable Transport Fund. On-going partnerships and promotion with local bus companies through council.
1	Road Infrastructure Improvements Ease congestion in St Albans Road AQMA. Further improvements are recommended in the Congestion study	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2011	2016	HCC/WBC	HCC/WBC	NO	Funded	£100k - £500k	Completed	Ease congestion and reduce emissions	Completed scheme	Complete	WBC is investing £400,000 on new street furniture, improved paving, tree planting, more cycle friendly routes etc. Following the first phase of improvements to St Albans Road, WBC are now looking to transform further sections of the key thoroughfare, working out from Balmoral Road towards Bushey Mill Lane. The new phases will look to focus on the pavements and forecourts to improve the look and feel, with more green space, nicer materials and street furniture including cycle parking facilities.
2	Implement the Intalink project Increase the integration of public and sustainable transport movements	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2011	2016	HCC/WBC	HCC/WBC	NO	Funded	£100k - £500k	Completed	Reduce private car use and so reduce emissions.	Bus and rail patronage, number of cyclists and pedestrians	Complete	The Herts Boroughs and Districts have agreed a Memorandum of Understanding setting out the roles of district and borough councils following establishment of the Intalink Enhanced Partnership Plan and Scheme for Hertfordshire. The Intalink Bus Strategy was published in February 2020.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
3	Watford Junction interchange improvement Increase the accessibility of the rail station	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2011	2016	HCC/WBC	HCC/WBC	NO	Funded	£100k - £500k	Aborted	Not applicable	Not applicable	Aborted	The upgrades to the Watford Junction station forecourt have been completed. Due to the impacts of the pandemic, the project is being reassessed. Passenger numbers have clearly changed compared to pre-2020, with many city workers adopting a hybrid model of working in the office and from home.
4	Promotion of car sharing scheme. Increase car sharing to ease congestion	Alternatives to private vehicle use	Car & lift sharing schemes	2011	2016	WBC	WBC	NO	Funded	£10k - 50k	Completed	Reduce private car use and so reduce emissions.	Registered members on lift share. Number of private schemes	Complete	On going promotion through council's commuting officer
5	Promotion of Travel Plans. Increase in sustainable transport	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2011	2016	WBC	WBC	NO	Funded	£10k - 50k	Completed	Increase in sustainable transport	Number of travel plans in schools and businesses	Complete	On going promotion through council's commuting officer
6	Annual Council vehicle fleet review. Maintain clean Council vehicle fleet	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2011	2016	WBC	WBC	NO	Funded	£10k - 50k	Completed	Reduce emissions from Council vehicles	Age and Euro standard of Council vehicle fleet	Complete	Civil engineering contractors using vehicles of Euro 6 standard.
7	Promote air quality within the Borough. Increase awareness of AQ as a health issue.	Public Information	Other	2011	2016	WBC	WBC	NO	Funded	< £10k	Completed	Increased awareness of air quality issues	"Hits" on Hert & Beds Air Quality website	Complete	This is being considered across Hertfordshire and HCC Public Health Director has committed funding. We have worked with HCC and other LA's to draft a Hertfordshire Air Quality Strategy. http://www.hertfordshire.gov.uk/docs/pdf/a/airqualitystrategicplan.pdf
8	Continue to monitor air quality. Maintenance of air quality monitors and data management.	Public Information	Other	2011	2016	WBC	WBC	NO	Funded	£50k - £100k	Completed	Not applicable	Number of operational monitors	Complete	Despite budgetary pressures Watford has continued to fund existing monitoring and has also funded the maintenance of new PM 2.5 monitors.
9	Undertake feasibility studies. To investigate the air quality impact of any potential future schemes	Policy Guidance and Development Control	Other policy	2011	2016	WBC	WBC	NO	Funded	£10k - 50k	Completed	Not applicable	Not applicable	Complete	Site allocation traffic light system put in place with planning policy. Constraint information for developers included in planning information.
10	Enforcement of parking policy. Minimise emissions due to reduced traffic flow caused by obstructions.	Traffic Management	Other	2011	2016	WBC	WBC	NO	Funded	£50k - £100k	Completed	Minimise emissions due to reduced traffic flow caused by obstructions.	Number of warnings, fines and prosecutions for such offences	Complete	The Police have retained powers to issue Fixed Penalty Notices to vehicles causing an obstruction
11	Installation of EV charging points. Encourage the uptake of electric vehicles.	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2011	2016	HCC/WBC	HCC/WBC	NO	Funded	£100k - £500k	Completed	Encourage the uptake of electric vehicles.	Number of charging points installed	Complete	There are now more than 40 electric vehicle charging points across Watford.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
15	Develop Supplementary Planning Document for Air Quality. Develop SPD on AQ for inclusion in the 2011 Development Plan Document.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2011	2016	WBC	WBC	NO	Funded	< £10k	Aborted	Not applicable	Publication of SPD; Number of planning applications made using the guidance.	Council to consider preparing an SPD	HCC Public Health Director has expressed wish for there to be a county wide strategy. As part of the Local Plan Strategy, we will be considering the need for supplementary planning guidance.

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy⁶, local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter (PM_{2.5}). There is clear evidence that PM_{2.5} (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Exposure to high concentrations of particulate matter can exacerbate lung and heart conditions, significantly affecting quality of life, increasing hospital admissions and deaths. Children, the elderly and those with pre-existing respiratory and cardiovascular disease, are known to be more susceptible to the health impacts from air pollution.

Inhalation of particulate matter can have adverse impacts on human health, the greatest impact is believed to be from long term exposure to PM_{2.5}, which increase age-specific mortality risk, particularly from cardiovascular causes.

The following is taken from the Hertfordshire Local Authorities Report on Particulate Matter (PM_{2.5}) in Ambient Air in 2022 for Hertfordshire County Council Public Health:

Poor air quality is considered to be the largest environmental risk to the public's health and contributes to all non-communicable disease, although most commonly referenced are:

- Cardiovascular disease;
- Lung cancer;
- Respiratory diseases;
- Increased chance of hospital admissions and visits to Emergency Departments.

Evidence also states that air pollution is a significant contributor to preventable ill health and early death.

Whilst legal limits are in place, evidence suggests that health effects occur significantly below these limits, as recognised by the 2021 WHO guideline value of 5ug/m³.

⁶ Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

The only specific indicator for air pollution is included within the Public Health Outcomes Framework and relates to particulate matter (PM) with a diameter of 2.5µm or smaller (Public Health Outcome Indicator (PHOI) 3.01).

PHOI 3.01 is 'the fraction of annual all-cause mortality attributable to long-term exposure to current levels of anthropogenic particulate pollution.' The indicator is based on an estimated amount of PM_{2.5} derived by Defra modelling from local measurement, including one site in Borehamwood, Hertfordshire and another in Sandy, Bedfordshire. That data is then adjusted by way of population to give a population weighted figure before its use in deriving the PHOI.

The PM_{2.5} focussed PHOI reflects the adverse impact that this type of air pollution can have on public health as a result of the fine particles being carried deep into the lungs where they can cause inflammation and a worsening of heart and lung diseases.

However, it is important to recognise that the figures published for PHOI 3.01 are estimates and therefore cannot be used for performance monitoring; they can only provide an indication of the scale of the issue.

It is for this reason that this report no longer makes direct reference to the PHOI figures, but uses the population weighted Defra modelled PM_{2.5} concentrations in their place.

The fraction of mortality attributable to particulate air pollution (new method) for England (2022) is 5.8%. The PHOF data is available at:

https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/4/gid/1000043/pat/159/par/K02000001/ati/15/are/E92000001/iid/93861/age/230/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1/page-options/ovw-do-0_car-ao-1_car-do-0

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

An Officer of the Council attends the Hertfordshire and Bedfordshire Air Quality Forum.

The Council will ensure compliance with the Environmental Permitting Regulations to help reduce PM_{2.5} concentrations.

Under the Clean Air Act 1993, Watford has been declared a Smoke Control Area.

It is anticipated that:

- Measures to reduce emissions of NO_x by encouraging a move away from internal combustion engine vehicles to ultra-low emission vehicles (ULEV) will reduce PM_{2.5} emissions from exhausts;

- Measures to reduce road travel altogether will reduce PM_{2.5} emissions from brake and tyre wear and dust re-suspension.

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

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Watford Borough Council undertook automatic (continuous) monitoring at one site during 2023. Table A.1 in Appendix A shows the details of the automatic monitoring sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. The https://www.airqualityengland.co.uk/local-authority/?la_id=408 page presents automatic monitoring results for Watford Borough Council.

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

Watford Borough Council undertook non- automatic (i.e. passive) monitoring of NO₂ at thirty sites during 2023. 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 2023 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.

Figure A.1 presents trends in NO₂ annual mean concentrations at diffusion tube sites WF03 to WF64 between the years 2019 to 2023. In 2023, there were no exceedances of the annual mean objective. Over the last 5 years there has been a general trend of reduction experienced at most sites. In 2022, the Council reported diffusion tube data from a number of new monitoring locations. In 2023, annual mean concentrations at each of these monitoring locations had decreased.

Figure A.2 presents trends in NO₂ annual mean concentrations in AQMA 2 between the years 2019 to 2023. In 2023, there were no exceedances of the annual mean objective. Over the last five years there has been a general trend of reduction experienced within AQMA 2. In 2022, the Council reported diffusion tube data from three new monitoring locations within the AQMA. In 2023, annual mean concentrations at each of these monitoring locations had decreased.

Figure A.3 presents trends in NO₂ annual mean concentrations in AQMA 3A between the years 2019 to 2023. In 2023, there were no exceedances of the annual mean objective.

Over the last five years there has been a general trend of reduction experienced within AQMA 3A. In 2022, the Council reported diffusion tube data from two new monitoring locations within the AQMA. In 2023, annual mean concentrations at each of these monitoring locations had decreased.

There will be no changes to existing AQMAs or the declaration of a new AQMA.

Due to budgetary issues, the Council's roadside monitor was decommissioned in December 2023. There are no other proposed changes to the monitoring network.

There were no exceedances of the 1-hour objective.

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.

Figure A.4 presents trends in PM₁₀ annual mean concentrations at the Watford Town Hall roadside site between the years 2019 to 2023. There were no exceedances of the annual mean objective in 2023.

Figure A.5 presents trends in the number of 24-hour mean PM₁₀ concentrations exceeding 50ug/m³ at the Watford Town Hall roadside site between the years 2019 to 2023. The number of exceedances decreased in 2023, the objective was not exceeded in 2023.

There will be no changes to existing AQMAs or the declaration of a new AQMA.

Due to budgetary issues, the Council's roadside monitor was decommissioned in December 2023. There are no other proposed changes to the monitoring network.

3.2.3 Particulate Matter (PM_{2.5})

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

Figure A.6 presents trends in PM_{2.5} annual mean concentrations at the Watford Town Hall roadside site between the years 2018 to 2022. There were no exceedances of the Annual Mean Concentration Target. The Council commenced monitoring of PM_{2.5} in 2015. The

average annual mean concentration in the three-year period from 1st January 2016 to 31st December 2018 was 11 ug/m³. There was a 27.3% reduction in concentrations between the baseline period and 2023. There is a general trend of reduction experienced at the roadside site.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

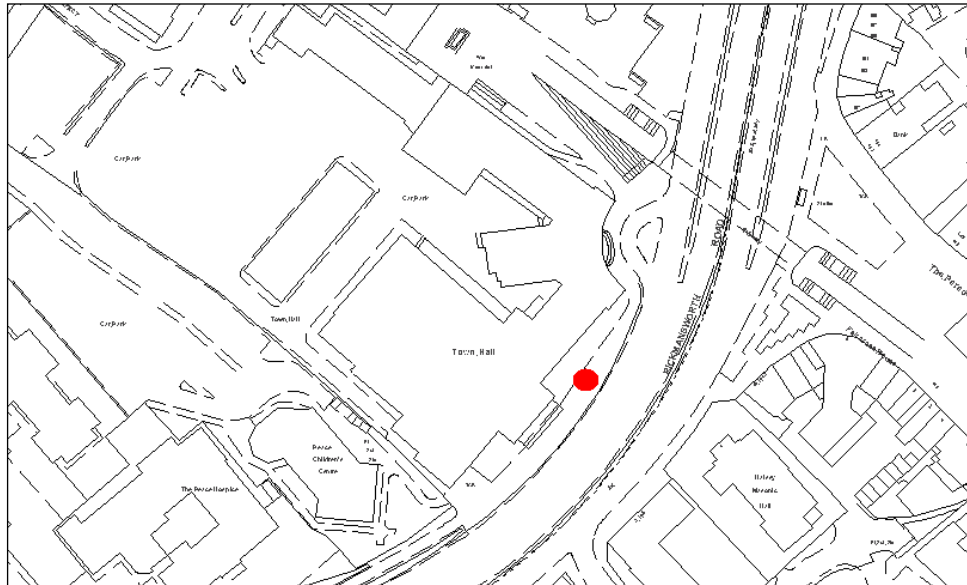
Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
WF1	Watford Town Hall	Roadside	510565	196808	NO ₂ , PM _{2.5} , PM ₁₀	No	API M200E chemiluminescence NO/NO ₂ /NO _x analyser and a Palas Fidas 200 for monitoring PM ₁₀ and PM _{2.5}	N/A	10m	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

Location of Watford Town Hall Automatic Monitoring Site



Photograph showing the Automatic Monitoring Site at Watford Town Hall



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)
WF03	Hospital Vicarage Road	Kerbside	510600	195700	NO2	No	0.0	0.0	No	2.0
WF29	Pinner Road	Kerbside	512000	195300	NO2	Yes - AQMA 3A	6.0	2.0	No	2.1
WF36	Ravenscroft	Industrial	512300	200100	NO2	No	8.0	0.0	No	2.2
WF37	o/s 358 St Albans Road	Kerbside	511200	198100	NO2	No	5.0	1.0	No	2.4
WF38	A405 Horseshoe Lane	Kerbside	511700	200700	NO2	No	2.0	4.0	No	3.0
WF39	Balmoral Road	Kerbside	511000	198300	NO2	No	0.0	1.0	No	2.4
WF40	Salisbury Road	Kerbside	511000	198000	NO2	No	0.0	2.0	No	2.4
WF41	Leavesden Road	Kerbside	510900	197800	NO2	No	0.0	1.0	No	2.5
WF42	Queens Road	Kerbside	511200	197000	NO2	No	4.0	1.0	No	2.4
WF43	Farraline Road	Kerbside	510800	196000	NO2	Yes - AQMA 2	4.0	2.0	No	2.4
WF44	Chalk Hill	Kerbside	512000	195500	NO2	Yes - AQMA 3A	6.0	2.0	No	2.1
WF45	Wellington Road	Kerbside	510800	197200	NO2	No	10.0	4.0	No	2.3

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)
WF46a	Town Hall	Roadside	510565	196808	NO2	No	0.0	6.0	Yes	2.0
WF46b	Town Hall	Roadside	510565	196808	NO2	No	0.0	6.0	Yes	2.0
WF46c	Town Hall	Roadside	510565	196808	NO2	No	0.0	6.0	Yes	2.0
WF47	Willow Lane	Kerbside	510335	195610	NO2	No	3.0	1.0	No	2.4
WF48	High Street	Kerbside	511727	195610	NO2	Yes - AQMA 3A	4.0	1.0	No	2.4
WF49	Gammons Lane (o/s 67)	Kerbside	510499	198454	NO2	No	5.0	1.0	No	2.4
WF50	Eastbury Road (Oxhey Early Years)	Kerbside	511073	194940	NO2	No	0.0	2.7	No	2.9
WF51	Deacons Hill	Kerbside	511266	195050	NO2	No	8.0	3.0	No	2.4
WF52	Victoria PH	Kerbside	512034	195414	NO2	Yes - AQMA 3A	10.0	1.0	No	2.6
WF53	Villiers Road	Kerbside	512043	194963	NO2	Yes - AQMA 3A	4.0	1.0	No	2.6
WF54	Water Lane	Kerbside	511381	196214	NO2	No	25.0	1.0	No	2.8
WF55	Vicarage Road	Kerbside	510985	196196	NO2	No	3.0	2.0	No	2.7
WF56	Wiggenhall Road	Kerbside	511053	195813	NO2	Yes - AQMA 2	3.0	2.0	No	3.2

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)
WF58	Beechen Grove	Kerbside	510966	196665	NO2	No	10.0	0.0	No	2.8
WF59	Upton Road	Kerbside	510598	196482	NO2	Yes - AQMA 2	4.0	4.0	No	2.8
WF60	Merton Road	Kerbside	510827	196082	NO2	Yes - AQMA 2	6.0	0.0	No	2.7
WF61	Ladys Close	Urban Background	511141	196009	NO2	No	30.0	4.0	No	2.8
WF62	Hempstead Road	Kerbside	509814	197936	NO2	No	14.0	0.0	No	2.7
WF63	Purbrock Avenue	Kerbside	511113	199326	NO2	No	18.0	3.0	No	2.8
WF64	Rickmansworth Road	Kerbside	509721	196184	NO2	No	17.0	1.0	No	2.8

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 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
WF1	510565	196808	Roadside	89.01	89.01	30	21	21	21	19

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

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

Where exceedances of the NO₂ annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2023.

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 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
WF03	510600	195700	Kerbside	90.4	90.4	28.9	21.9	23.3	21.5	18.7
WF29	512000	195300	Kerbside	100.0	100.0	34.7	26.1	32.0	30.0	28.9
WF36	512300	200100	Industrial	100.0	100.0	25.5	17.7	18.6	18.4	15.5
WF37	511200	198100	Kerbside	90.4	90.4	30.0	25.4	27.2	27.1	23.8
WF38	511700	200700	Kerbside	100.0	100.0	30.7	23.2	23.3	25.0	20.2
WF39	511000	198300	Kerbside	90.4	90.4	30.4	24.1	25.5	24.5	23.0
WF40	511000	198000	Kerbside	100.0	100.0	25.1	25.5	25.8	24.3	22.7
WF41	510900	197800	Kerbside	82.7	82.7	34.2	26.9	27.1	25.3	25.5
WF42	511200	197000	Kerbside	84.6	84.6	29.8	20.7	22.3	20.6	19.0
WF43	510800	196000	Kerbside	90.4	90.4	42.2	34.9	38.3	34.7	29.9
WF44	512000	195500	Kerbside	100.0	100.0	49.0	39.5	45.6	44.6	36.0
WF45	510800	197200	Kerbside	100.0	100.0	32.5	27.0	29.8	24.5	23.3
WF46a	510565	196808	Roadside	100.0	100.0	26.3	20.2	21.7	20.7	22.2

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
WF46b	510565	196808	Roadside	75.0	75.0				19.8	23.9
WF46c	510565	196808	Roadside	100.0	100.0				21.2	22.6
WF47	510335	195610	Kerbside	92.3	92.3	26.3	19.6	21.4	20.3	19.0
WF48	511727	195610	Kerbside	100.0	100.0	41.7	34.6	35.1	34.2	31.5
WF49	510499	198454	Kerbside	100.0	100.0	31.5	23.7	24.4	23.2	21.3
WF50	511073	194940	Kerbside	90.4	90.4	31.1	23.3	24.4	23.0	21.4
WF51	511266	195050	Kerbside	84.6	84.6				33.0	28.3
WF52	512034	195414	Kerbside	76.9	76.9				40.0	35.8
WF53	512043	194963	Kerbside	84.6	84.6				25.2	21.0
WF54	511381	196214	Kerbside	92.3	92.3				26.7	25.5
WF55	510985	196196	Kerbside	84.6	84.6				32.3	28.6
WF56	511053	195813	Kerbside	92.3	92.3				25.6	23.0
WF58	510966	196665	Kerbside	100.0	100.0				25.1	20.7
WF59	510598	196482	Kerbside	59.6	59.6				24.8	23.0

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
WF60	510827	196082	Kerbside	100.0	100.0				30.9	28.2
WF61	511141	196009	Urban Background	100.0	100.0				18.0	16.5
WF62	509814	197936	Kerbside	100.0	100.0				21.9	20.1
WF63	511113	199326	Kerbside	100.0	100.0				28.2	27.1
WF64	509721	196184	Kerbside	100.0	100.0				25.2	20.7

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 – Trends in Annual Mean NO₂ Concentrations

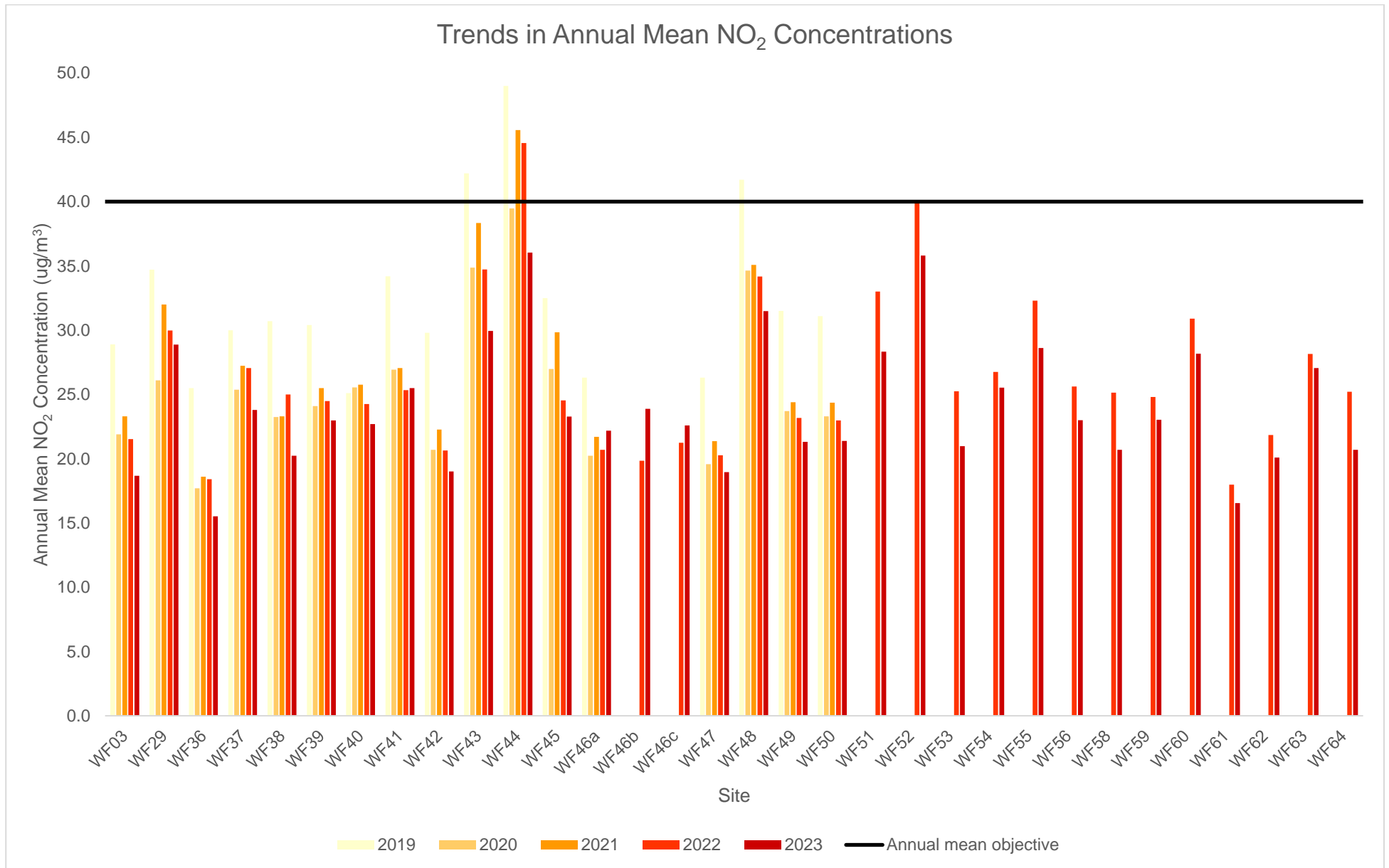


Figure A.2 - Trends in Annual Mean NO₂ Concentrations in AQMA 2

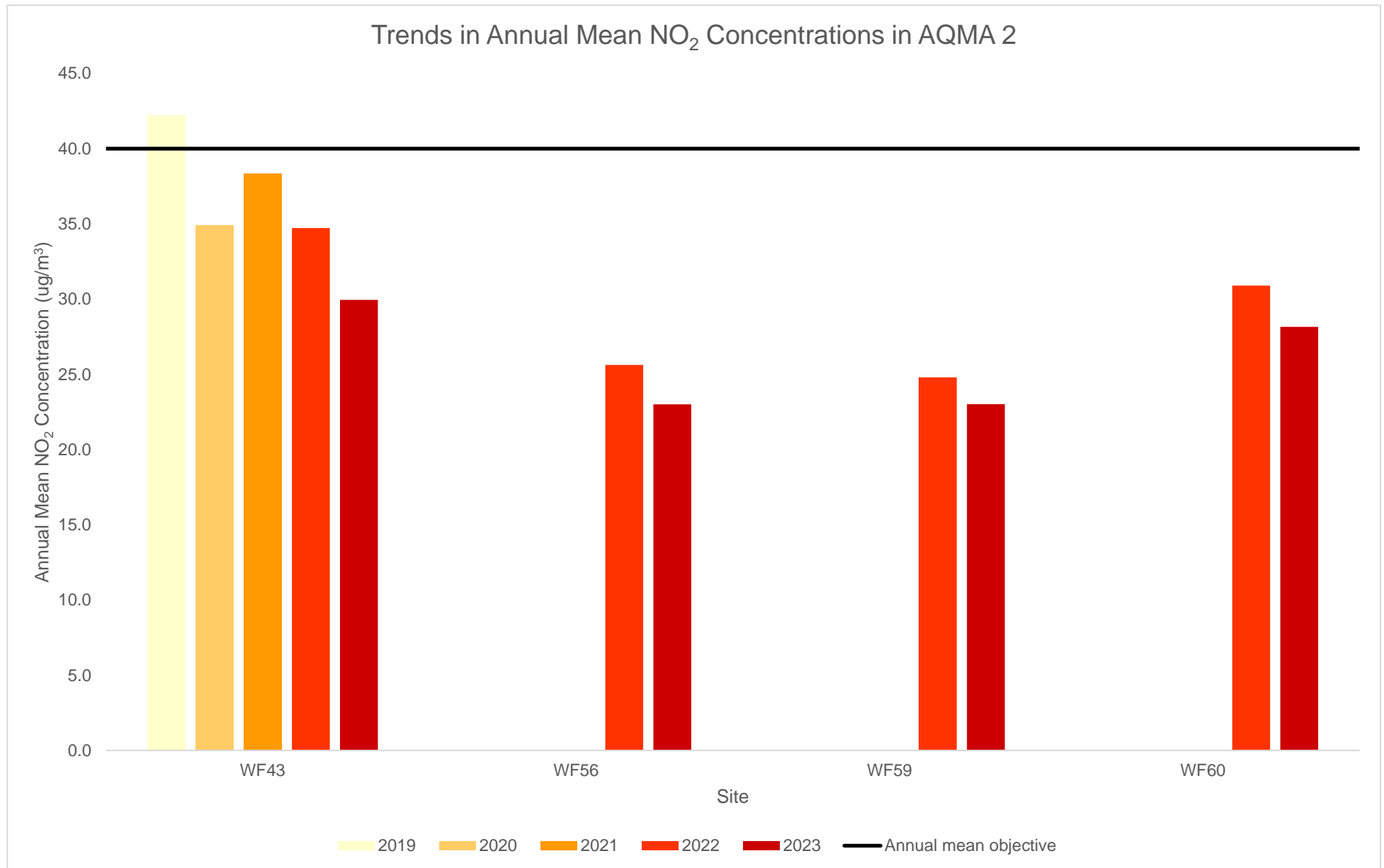


Figure A.3 - Trends in Annual Mean NO₂ Concentrations in AQMA 3A

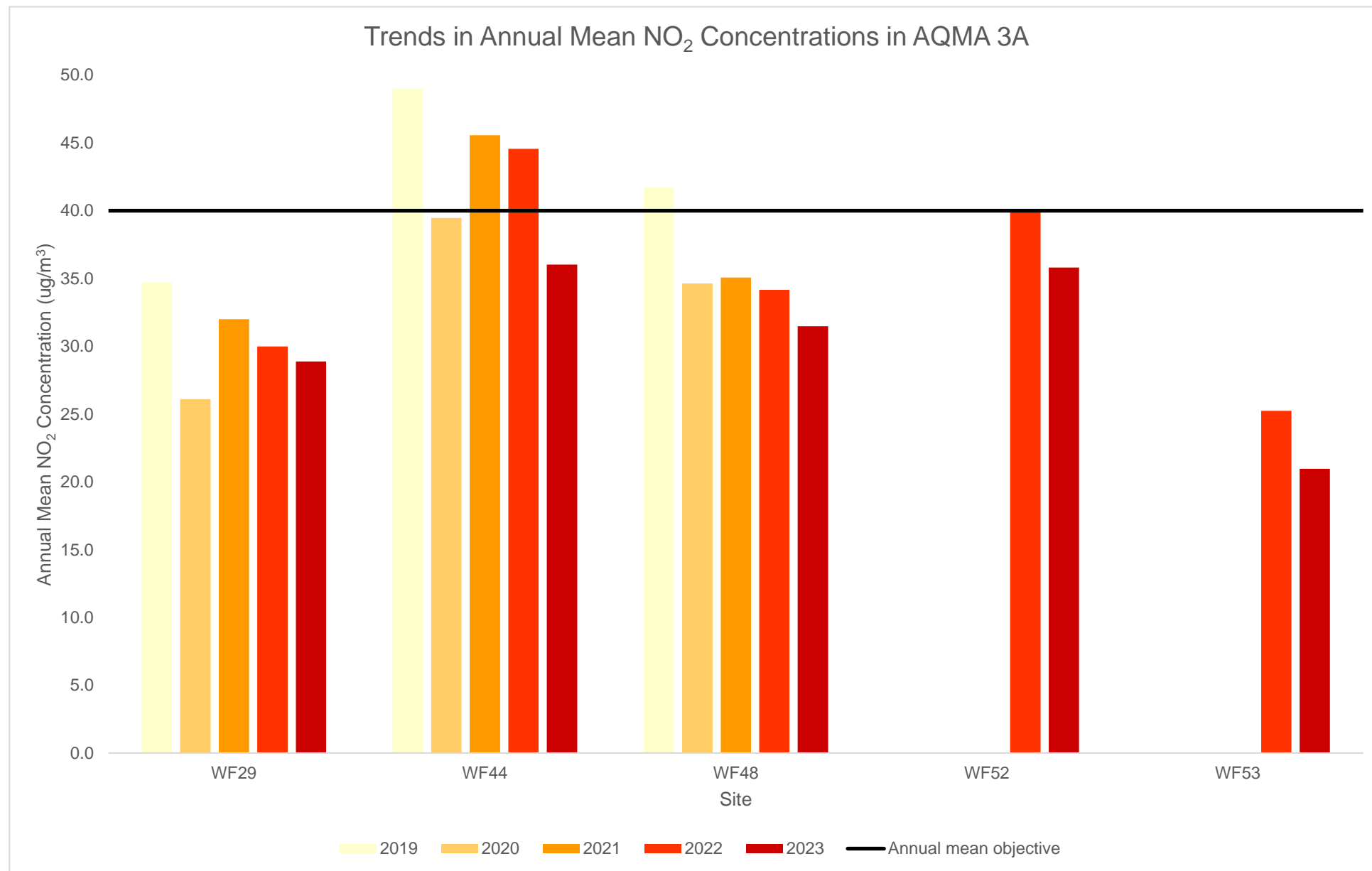


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
WF1	510565	196808	Roadside	89.01	89.01	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 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
WF1	510565	196808	Roadside	90.35	90.35	15	13	13	14	14

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.4 – Trends in Annual Mean PM₁₀ Concentrations

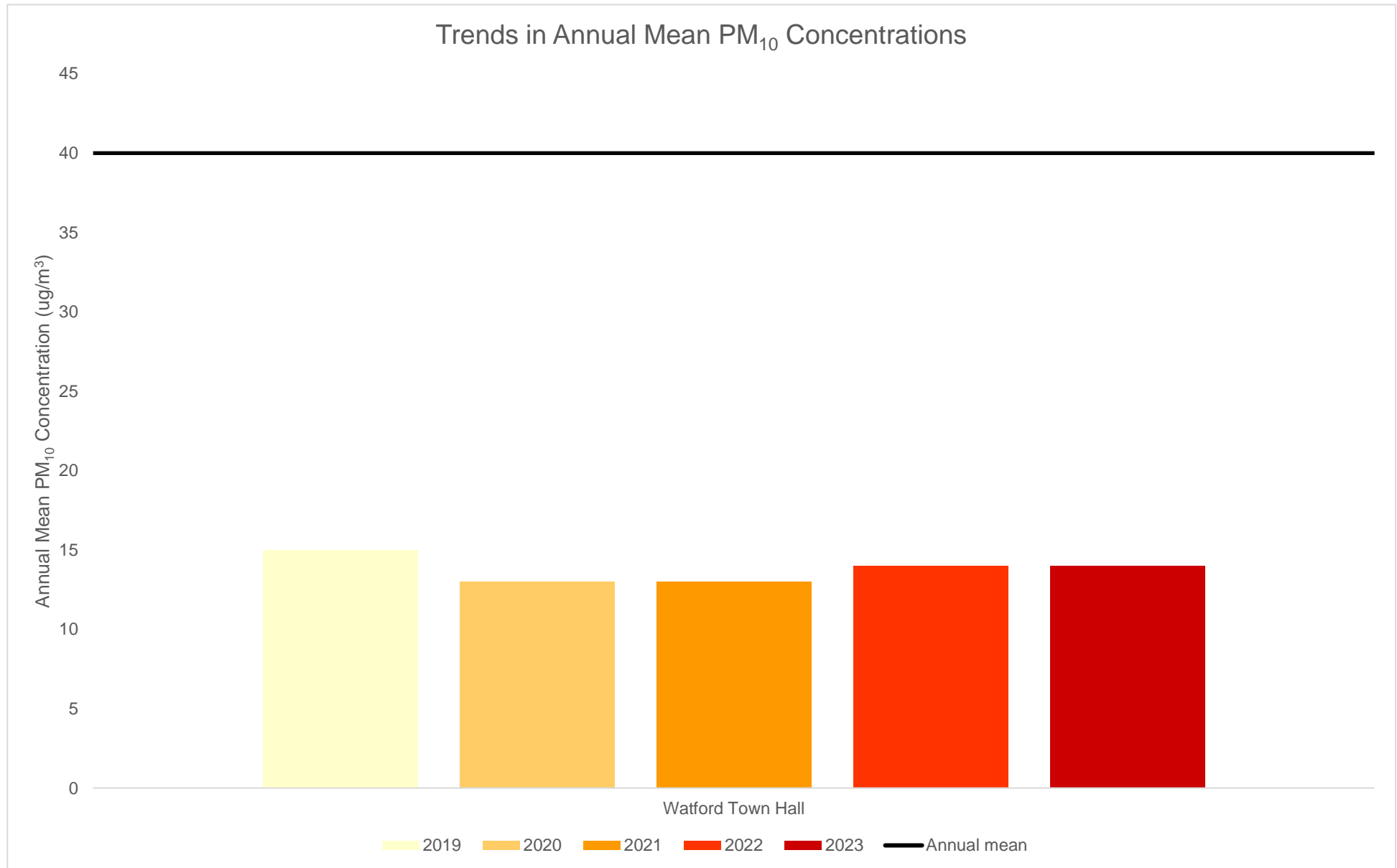


Table A.7 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
WF1	510565	196808	Roadside	90.35	90.35	4	0	0	3	1

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%).

Figure A.5 – Trends in Number of 24-Hour Mean PM₁₀ Results > 50µg/m³

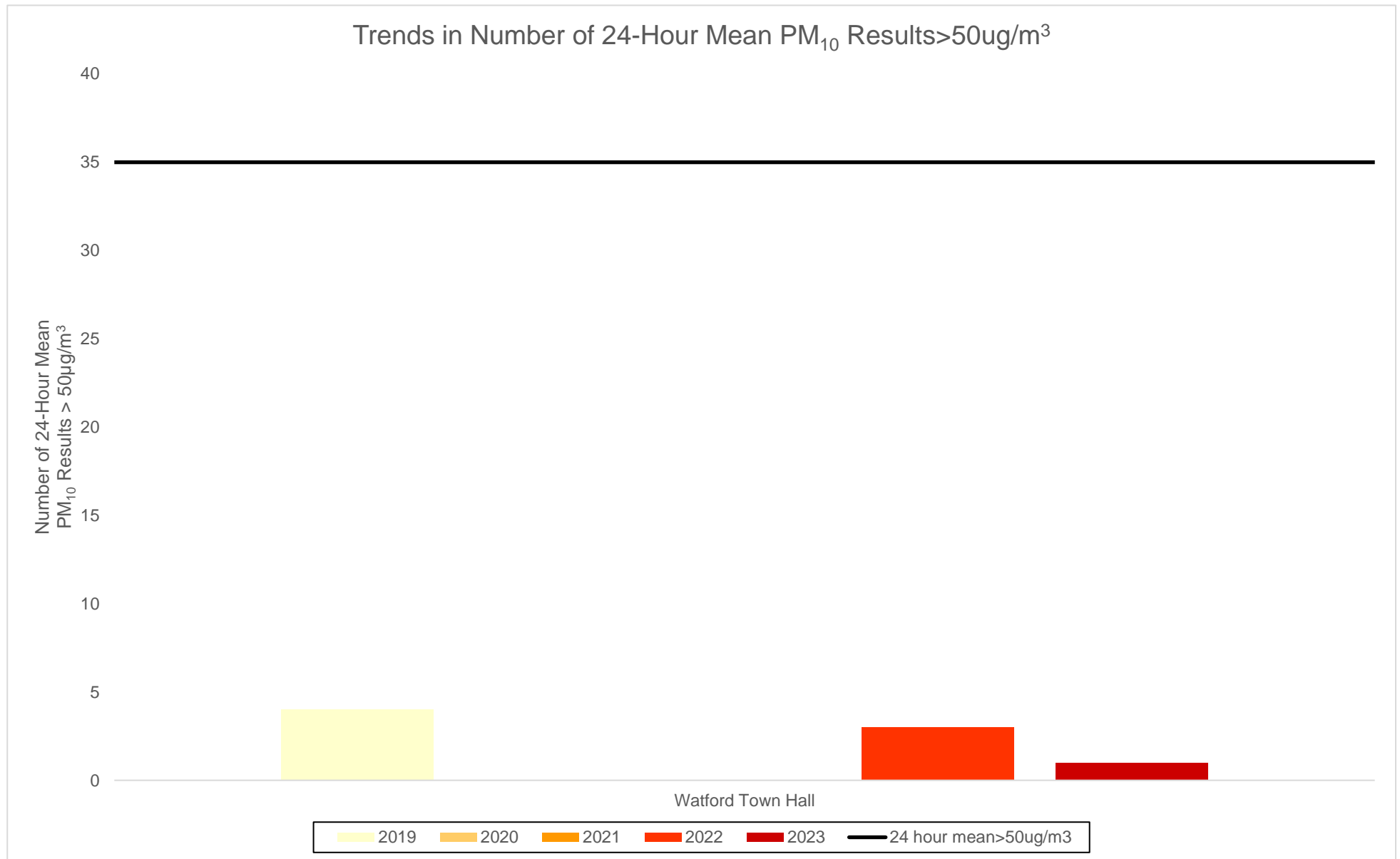


Table A.8 – Annual Mean PM_{2.5} Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
WF1	510565	196808	Roadside	90.35	90.35	9	8	8	8	8

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

Notes:

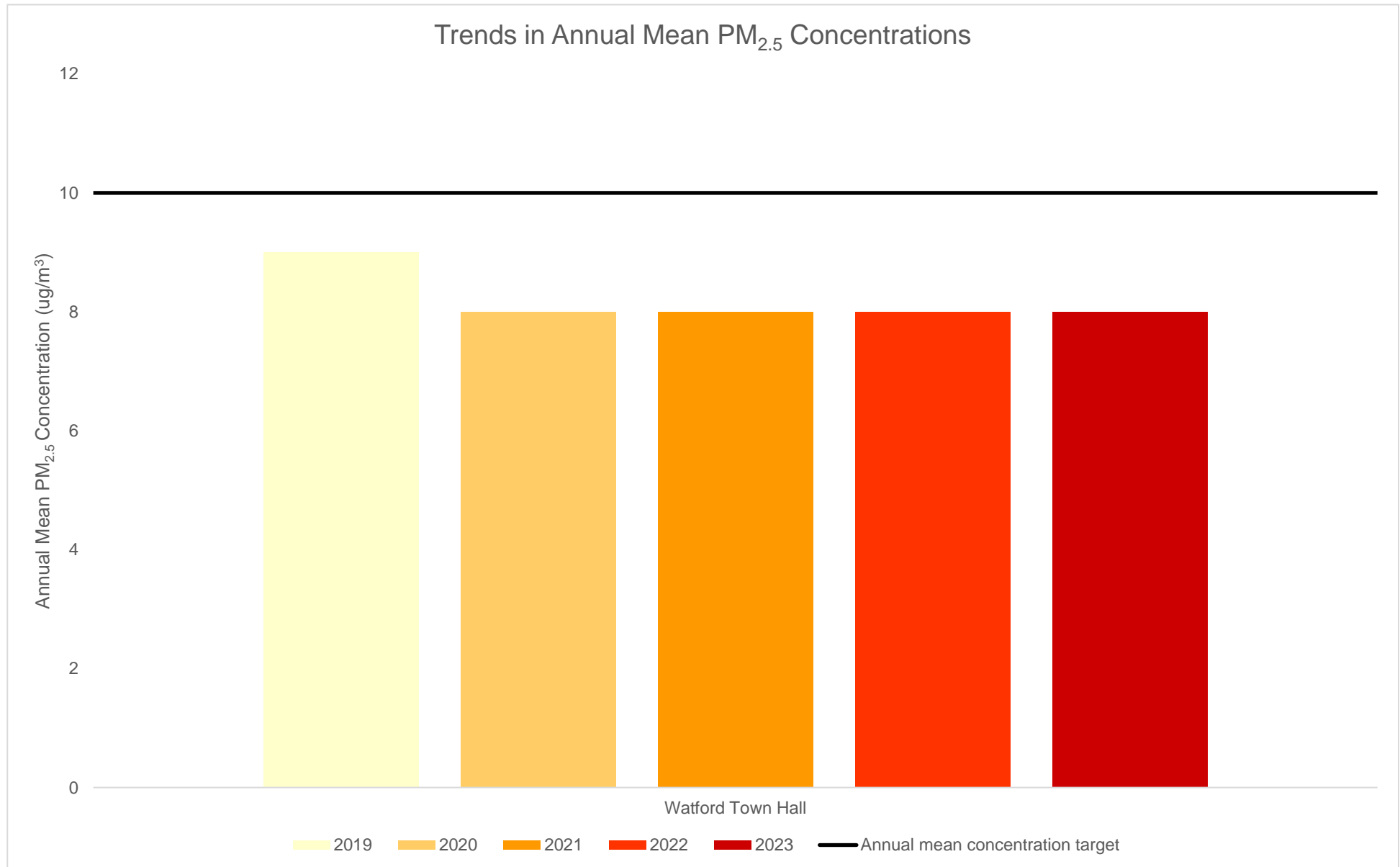
The annual mean concentrations are presented as µg/m³.

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.6 – Trends in Annual Mean PM_{2.5} Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO₂ 2023 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
WF03	510600	195700	33.1	33.4	18.0	27.0	21.2	22.0	15.4		26.0	24.1	25.9	20.7	24.3	18.7	-	
WF29	512000	195300	51.6	53.1	41.7	43.0	40.1	32.3	15.9	29.3	50.7	31.0	37.1	24.3	37.5	28.9	-	
WF36	512300	200100	24.4	26.8	17.4	23.8	18.6	20.2	13.7	17.5	21.6	22.5	19.6	15.8	20.2	15.5	-	
WF37	511200	198100	37.6	39.6	33.5	32.9	29.4	26.3	20.6		29.7	31.5	34.0	24.7	30.9	23.8	-	
WF38	511700	200700	32.7	36.7	24.5	31.8	29.4	24.0	19.0	22.1	19.1	28.5	27.2	20.3	26.3	20.2	-	
WF39	511000	198300	40.4	38.8	30.3	33.0	26.8	25.8	20.2		28.6	31.3	29.8	23.3	29.8	23.0	-	
WF40	511000	198000	39.9	41.0	32.7	32.3	26.8	23.8	19.6	25.4	28.8	27.1	32.0	24.2	29.5	22.7	-	
WF41	510900	197800	40.8	43.5	34.9	33.0	31.0	24.9	23.5	20.8	35.0	43.7			33.1	25.5	-	
WF42	511200	197000	36.2	35.3	25.0	24.1	21.2	16.8	15.3	17.9	23.4		31.7		24.7	19.0	-	
WF43	510800	196000	52.5	51.5	31.7	43.3	44.0	36.3	30.0		39.5	35.1	38.6	25.3	38.9	29.9	-	
WF44	512000	195500	72.5	66.4	27.9	61.4	52.4	49.3	37.8	12.3	51.2	45.9	48.5	35.9	46.8	36.0	30.5	
WF45	510800	197200	43.5	45.0	28.8	33.6	28.7	25.2	20.2	22.5	30.7	29.7	32.6	22.3	30.2	23.3	-	
WF46 a	510565	196808	34.9	34.1	30.6	33.3	25.0	22.5	24.0	22.2	32.8	28.5	30.9	27.0	28.8	22.2	-	
WF46 b	510565	196808	37.1	39.7	30.1	34.2	23.3	23.9			31.2	29.5	30.2		31.0	23.9	-	
WF46 c	510565	196808	34.8	44.2	23.7	32.3	25.8	26.4	21.4	25.0	30.8	30.0	32.7	24.8	29.3	22.6	-	
WF47	510335	195610	35.1	30.5	25.4	26.7	26.6	25.0	15.9	16.7		25.0	26.1	17.8	24.6	19.0	-	
WF48	511727	195610	59.4	55.7	42.9	45.5	30.8	33.6	33.3	37.4	41.3	38.2	40.7	31.8	40.9	31.5	-	
WF49	510499	198454	39.0	35.9	28.0	27.8	23.0	22.6	19.4	23.8	31.5	31.5	32.3	17.4	27.7	21.3	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
WF50	511073	194940	37.7	39.7	25.6	31.7	19.7	20.9	19.1		28.5	29.6	29.3	23.7	27.8	21.4	-	
WF51	511266	195050		54.4	34.6	43.5		38.8	32.3	23.2	36.5	36.2	39.2	29.1	36.8	28.3	-	
WF52	512034	195414		63.6	49.0	53.7	47.2	49.1	30.6	47.4			46.3	31.6	46.5	35.8	-	
WF53	512043	194963		42.5	25.4	30.4	25.1	22.4	19.9	26.1	26.1		32.3	22.1	27.2	21.0	-	
WF54	511381	196214	43.9	47.3	34.9	34.2	25.5	26.0	25.0	27.8	34.7	28.5	36.9		33.2	25.5	-	
WF55	510985	196196		47.2	38.2	43.1	36.2	35.7	30.6	31.7		40.8	39.5	28.5	37.2	28.6	-	
WF56	511053	195813		41.1	31.0	35.6	30.8	26.4	25.5	26.0	30.8	30.0	30.0	21.4	29.9	23.0	-	
WF58	510966	196665	33.6	35.5	24.6	35.6	25.3	20.5	17.2	21.9	24.5	26.6	31.4	25.7	26.9	20.7	-	
WF59	510598	196482		40.4			21.2	25.3	18.9	25.3		30.8	37.2		28.4	23.0	-	
WF60	510827	196082	49.4	46.4	35.8	34.4	39.6	36.3	25.3	30.6	40.2	38.2	40.1	22.6	36.6	28.2	-	
WF61	511141	196009	32.2	27.9	20.0	22.3	22.4	16.7	11.2	17.1	22.6	22.8	22.0	20.6	21.5	16.5	-	
WF62	509814	197936	34.1	36.0	25.4	30.9	25.1	23.8	16.5	20.3	28.3	28.5	24.6	19.6	26.1	20.1	-	
WF63	511113	199326	53.0	40.1	36.3	35.4	25.1	29.5	30.2	31.5	39.1	38.9	31.0	31.6	35.1	27.1	-	
WF64	509721	196184	33.6	35.5	24.6	35.6	25.3	20.5	17.2	21.9	24.5	26.6	31.4	25.7	26.9	20.7	-	

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.

National bias adjustment factor used.

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

Watford Borough Council confirm that all 2023 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 Watford During 2023

Watford Borough Council has not identified any new sources relating to air quality within the reporting year of 2023.

Additional Air Quality Works Undertaken by Watford Borough Council During 2023

Watford Borough Council has not completed any additional works within the reporting year of 2023.

QA/QC of Diffusion Tube Monitoring

Diffusion tubes were supplied by SOCOTEC (Didcot laboratory) in 2023. The method of preparation used was 50% TEA (triethanolamine) in acetone.

SOCOTEC are UKAS accredited. Diffusion Tubes were analysed in accordance with SOCOTEC's standard operating procedure ANU/SOP/1015. This method meets the guidelines set out in DEFRA's 'Diffusion Tubes For Ambient NO₂ Monitoring: Practical Guidance.'

SOCOTEC participate in the AIR PT intercomparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes. SOCOTEC currently holds the highest rank of a Satisfactory laboratory.

In the most recent round (AIR PT AR059 September - October 2023), 100% of results submitted were determined to be satisfactory.

SOCOTEC were considered to have good diffusion tube precision in 2023.

Monitoring was completed in adherence with the 2023 Diffusion Tube Monitoring Calendar.

Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. Annualisation was required for WF59. Details of the calculation method undertaken are provided in Table C.1.

Table C.1 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor Borehamwood Meadow Park	Annualisation Factor Hillingdon	Annualisation Factor London N. Kensington	Annualisation Factor	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
WF59	1.0514	1.0520	1.0508	-	1.0514	28.4	29.9

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2024 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Watford Borough Council have applied a national bias adjustment factor of 0.77 to the 2023 monitoring data. A summary of bias adjustment factors used by Watford Borough Council over the past five years is presented in Table C.2.

Watford Borough Council applied a national bias adjustment because building works are being carried out at the Town Hall. The Council's roadside monitor and the collocated diffusion tubes are located within the building site. The Council does not feel that the data collected at this location should be relied upon, as the building works may have affected monitoring results.

National Diffusion Tube Bias Adjustment Factor Spreadsheet (Spreadsheet Version Number: 03/24)

National Diffusion Tube Bias Adjustment Factor Spreadsheet						Spreadsheet Version Number: 03/24							
<p>Follow the steps below in the correct order to show the results of relevant co-location studies</p> <p>Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods</p> <p>Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet</p> <p>This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.</p> <p>The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.</p> <p>Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.</p> <p>This spreadsheet will be updated at the end of June 2024</p> <p>LAQM Helpdesk Website</p>													
Step 1:		Step 2:		Step 3:		Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Select a Preparation Method from the Drop-Down List		Select a Year from the Drop-Down List		<p>Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution.</p> <p>Where there is more than one study, use the overall factor³ shown in blue at the foot of the final column.</p> <p>If you have your own co-location study then see footnote⁴. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMhelpdesk@bureauveritas.com or 0800 0327953</p>							
If a laboratory is not shown, we have no data for this laboratory.		If a preparation method is not shown, we have no data for this method at this laboratory.		If a year is not shown, we have no data ² .									
Analysed By ¹		Method To undo your selection, choose (All) from the pop-up list		Year 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	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot		50% TEA in acetone		2023			Overall Factor ³ (28 studies)				Use		0.77
<p>¹ For Carella Stanger/Bureau Veritas (NOT Bureau Veritas Lab) use Gedka 50; TEA in Acetone.</p> <p>For Carella Seal/GHSS/Carella CRE/Bureau Veritas Lab/Eurofin/ure Environmental Scientific Group.</p> <p>From 2011 for Environmental Scientific Group ure ESG Glarqau.</p> <p>From 2011 for Horuall Scientific Services ure ESG Didcot.</p> <p>For 2017 for SOCOTEC ure ESG Didcot, as name changed mid year.</p> <p>For 2018 SOCOTEC entered as Didcot and Glarqau. Glarqau analyzr lab moved to Didcot mid 2018.</p> <p>For Staffordshire CC SSS/Staffordshire County Analyzr ure Staffordshire Scientific Services.</p> <p>For Bedycote Health Sciences and Clyde Analytical Laboratories ure Exava.</p> <p>For Rotherham MBC ure South Yorkshire Labr.</p> <p>For Dundee CC ure Tayside SS.</p> <p>For Leicester Scientific Services ure Staffordshire Scientific Services.</p> <p>For South Yorkshire Air Quality Samplers ure South Yorkshire Labr. As of January 2010 sampler body changed. As of April 2010 sampler cap changed.</p> <p>Lancashire County Analyzr withdrew from the Field Inter-comparison at the end of 2010. Harrogate ure supplied in 2011.</p> <p>Walsall MBC closed in March 2011.</p> <p>Bristol Scientific Services closed at the end of 2011.</p> <p>Somerset County Council did not start the Marylebone road inter-comparison until June 2012.</p> <p>Essex stopped providing diffusion tubes at the end of 2013.</p> <p>Kent Scientific Services stopped providing diffusion tubes at the end of 2013.</p> <p>Kirklees Council stopped providing diffusion tubes in the middle of 2016.</p> <p>Northampton, Bedford and Armidale Diffusion tubes in 2017.</p> <p>² In this situation it would be reasonable to use data from the nearest year.</p> <p>³ Overall factors have been calculated using orthogonal regression to allow for uncertainty in both the automatic monitor and diffusion tube. The uncertainty of the diffusion tube has been assumed to be double that of the automatic monitor.</p> <p>⁴ If you have your own co-location study, please send your data to us, so that it can be included here. If this is not possible, but you wish to combine these factors with your own, select and copy the relevant data from this spreadsheet and paste them into a new one (otherwise your calculations will include hidden data). Then add your own data and calculate the bias. To obtain a new correction factor that includes your data, average the bias (B) values, expressed as a factor, i.e. -16% is 0.16. Next add 1 to this value, e.g. -0.16 + 1.00 = 0.84 in this example, then take the inverse to give the bias adjustment factor 1/0.84 = 1.19. (This will not be exactly the same as the correction factor calculated using orthogonal regression as used in this spreadsheet, but will be reasonably close).</p> <p>⁵ Where an annual dataset falls into two years it has been ascribed to the year in which most of the data has fallen.</p> <p>⁶ Tube precision is determined as follows: G - Good precision - coefficient of variation (CV) of diffusion tube replicator is considered G when the CV of eight or more periods is less than 20%, and the average CV of all monitoring periods is less than 10%; P - Fair precision - CV of four or more periods >20% and/or average CV >10%; S - Single tube, therefore not applicable; n - not available.</p>													

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.77
2022	National	03/23	0.76
2021	National	03/22	0.78
2020	National	03/21	0.77
2019	National	Not recorded	0.75

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.

Fall-off-with-distance calculations were required for WF44. The output from the Diffusion Tube Data Processing Tool is presented in Table C.4.

Table C.4 – Non-Automatic NO₂ Fall off With Distance Calculations (concentrations presented in µg/m³)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted)	Background Concentration	Concentration Predicted at Receptor	Comments
WF44	2.0	8.0	36.0	18.9	30.5	

QA/QC of Automatic Monitoring

Ricardo Energy & Environment complete data management and Local Site Operator (LSO) duties for the Council's automatic monitoring site.

Calibrations are carried out monthly, UKAS ISO 17025 QC audits are undertaken twice yearly. Servicing and maintenance are carried out by Enviro Technology Services Ltd.

Monitoring data is ratified in accordance with The Air Quality Data Validation and Ratification Process used for the UK Automatic Urban and Rural Monitoring Network (AURN). The monitoring data presented within the ASR is ratified.

Live and historic data is available at https://www.airqualityengland.co.uk/local-authority/?la_id=408.

PM₁₀ and PM_{2.5} Monitoring Adjustment

The type of PM₁₀/PM_{2.5} monitor(s) utilised within Watford Borough Council do not require the application of a correction factor.

Automatic Monitoring Annualisation

All automatic monitoring locations within Watford Borough Council 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.

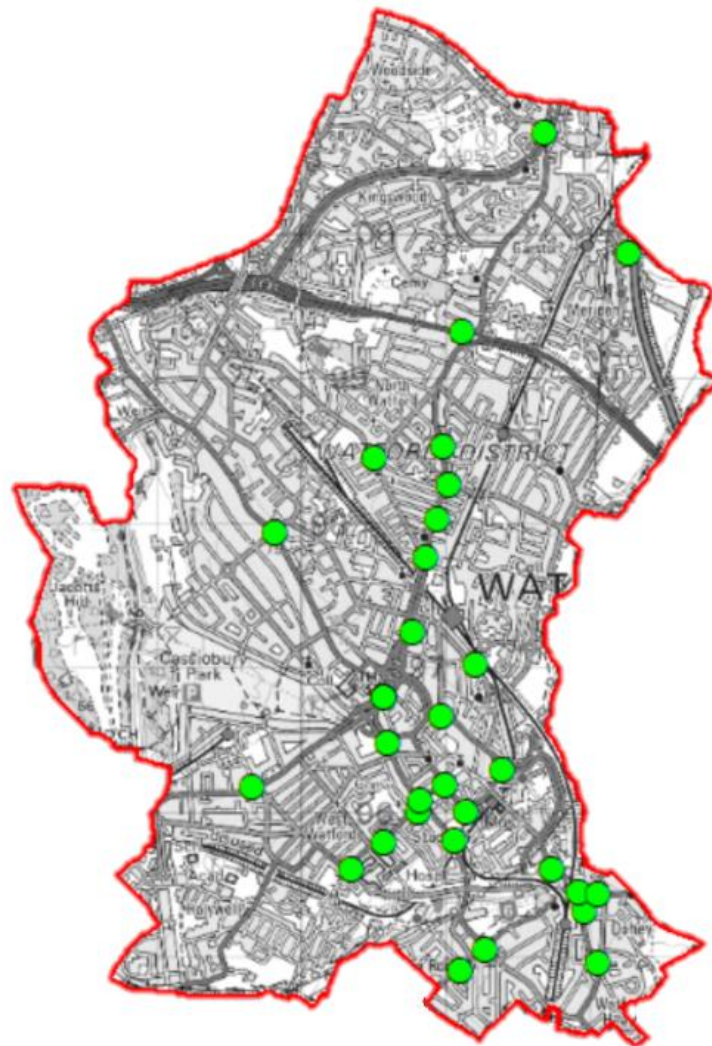
NO₂ Fall-off with Distance from the Road

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, automatic annual mean NO₂ concentrations corrected for distance are presented in Table A.3.

No automatic NO₂ monitoring locations within Watford Borough Council required distance correction during 2023.


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

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



Watford Borough Council
Town Hall,
Watford,
Hertfordshire WD17 3EX
www.watford.gov.uk

Legend

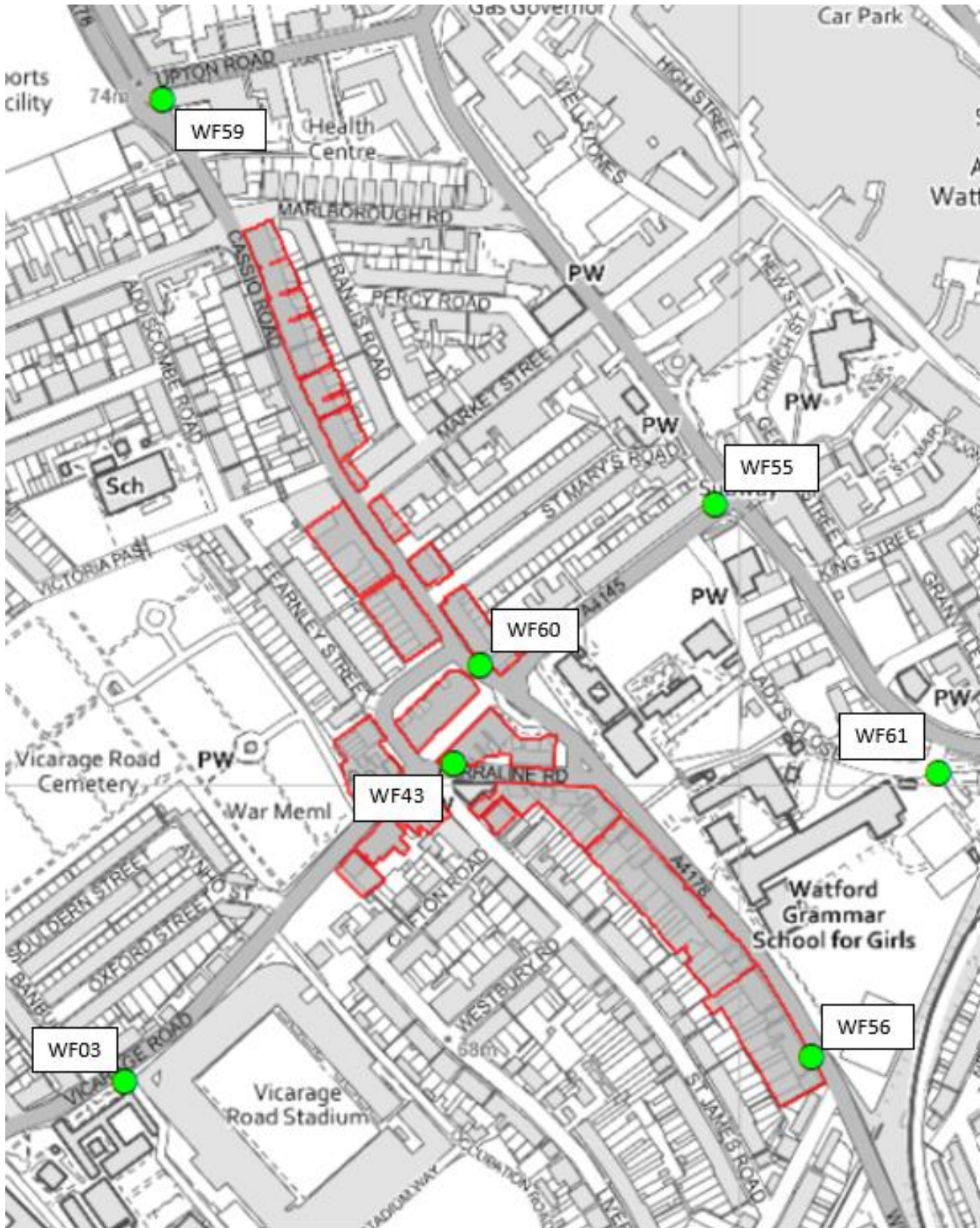
 Air Quality Monitoring Sites



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Figure D.2 - Map showing Non-Automatic Monitoring Sites in and around AQMA No. 2 (Vicarage Road)



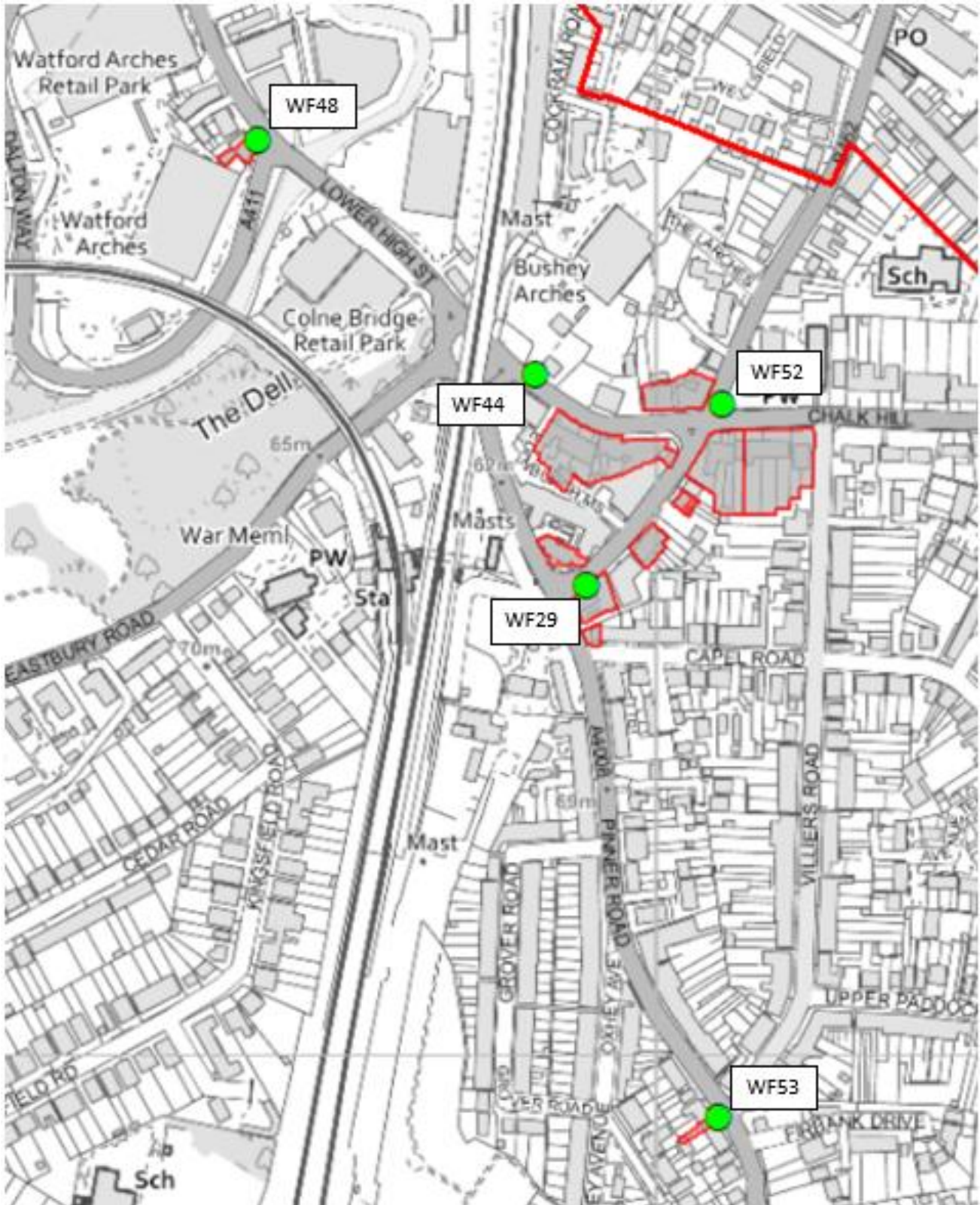
Legend

- Air Quality Monitoring Sites
- AQMA_2019



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Figure D.3 - Map showing Non-Automatic Monitoring Sites in and around AQMA 3A (Pinner Road)



Watford Borough Council
Town Hall,
Watford,
Hertfordshire WD17 3EX

Legend

- Air Quality Monitoring Sites
- AQMA_2019

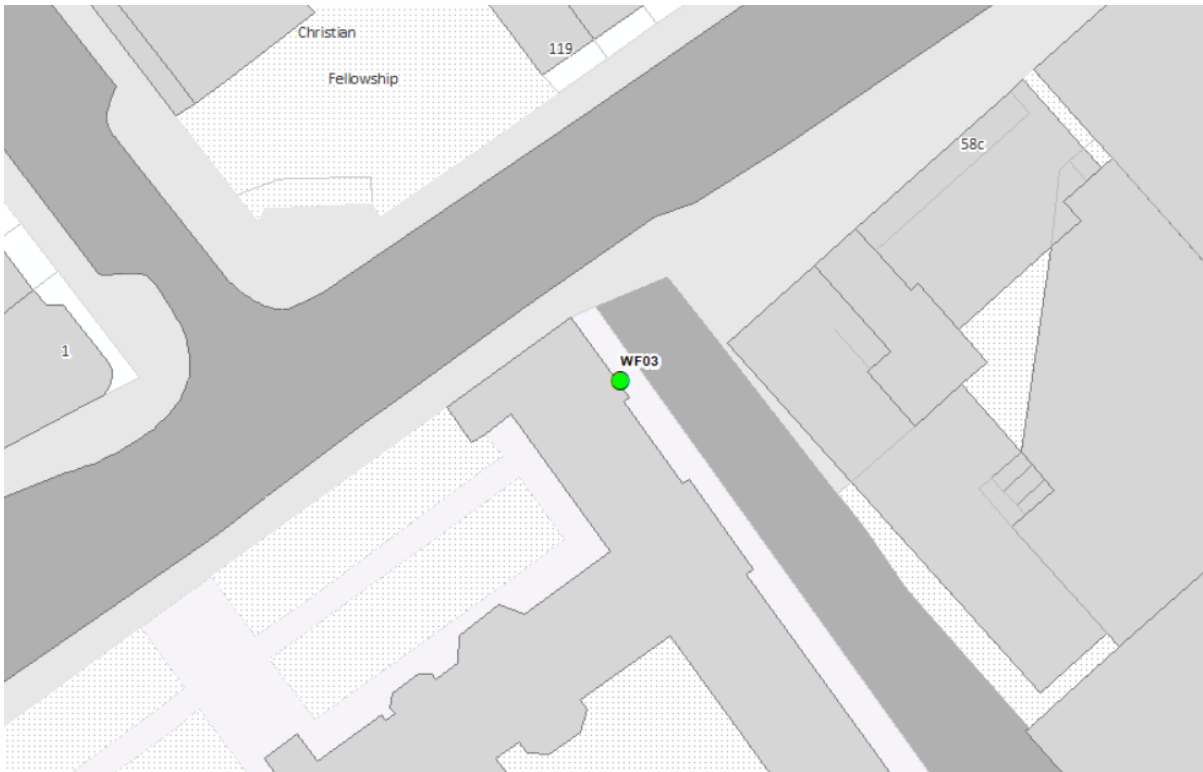


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Figure D.4 - Maps showing Non-Automatic Monitoring Sites

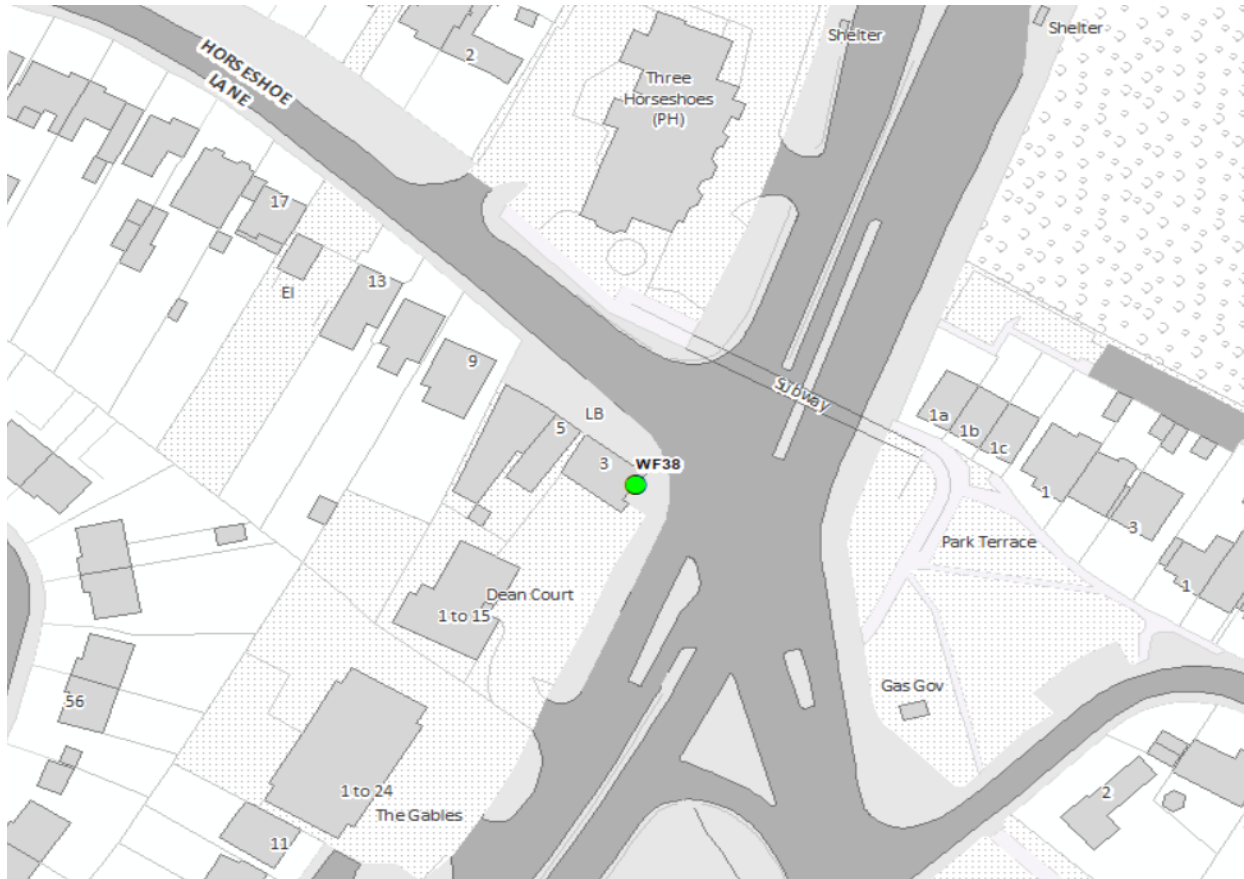
WF03 Hospital Vicarage Road



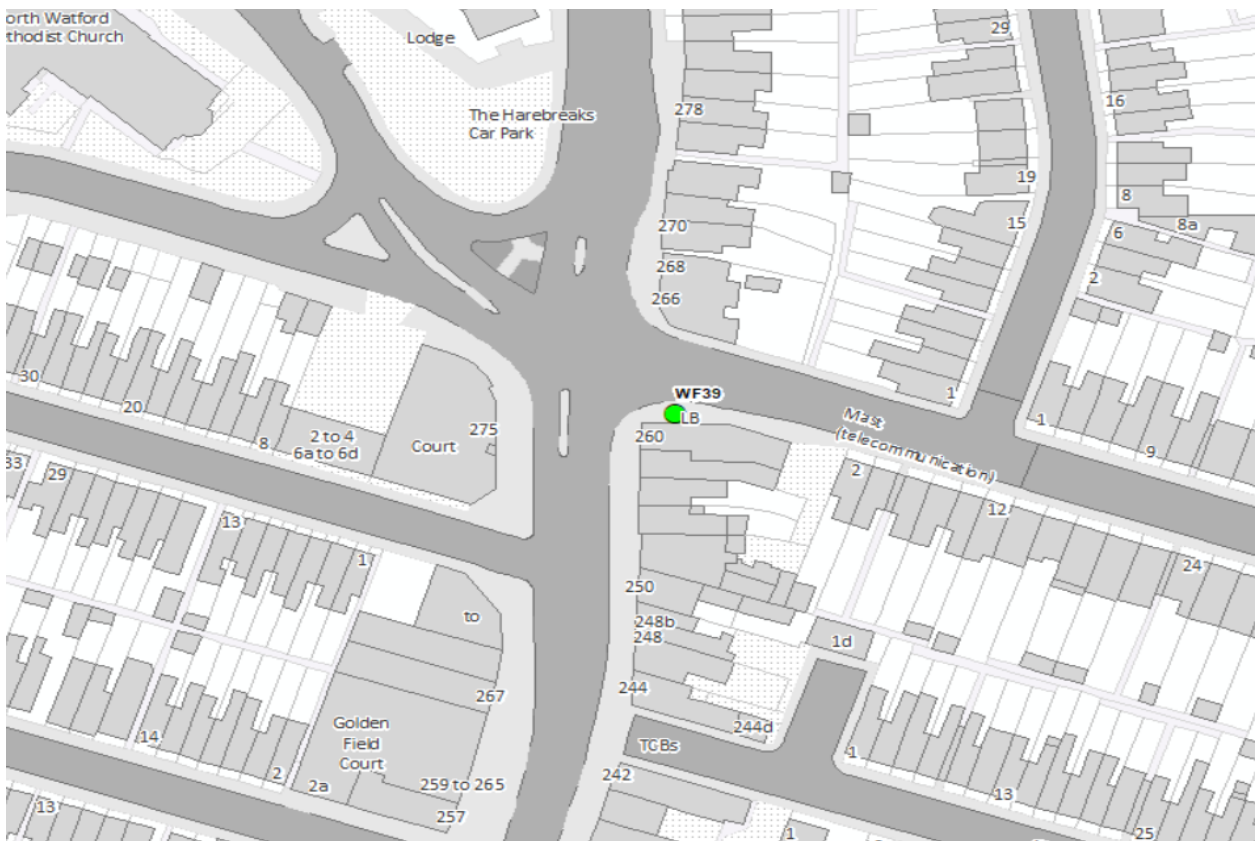
WF29 Pinner Road, WF44 Chalk Hill, WF52 Victoria PH (AQMA 3A)



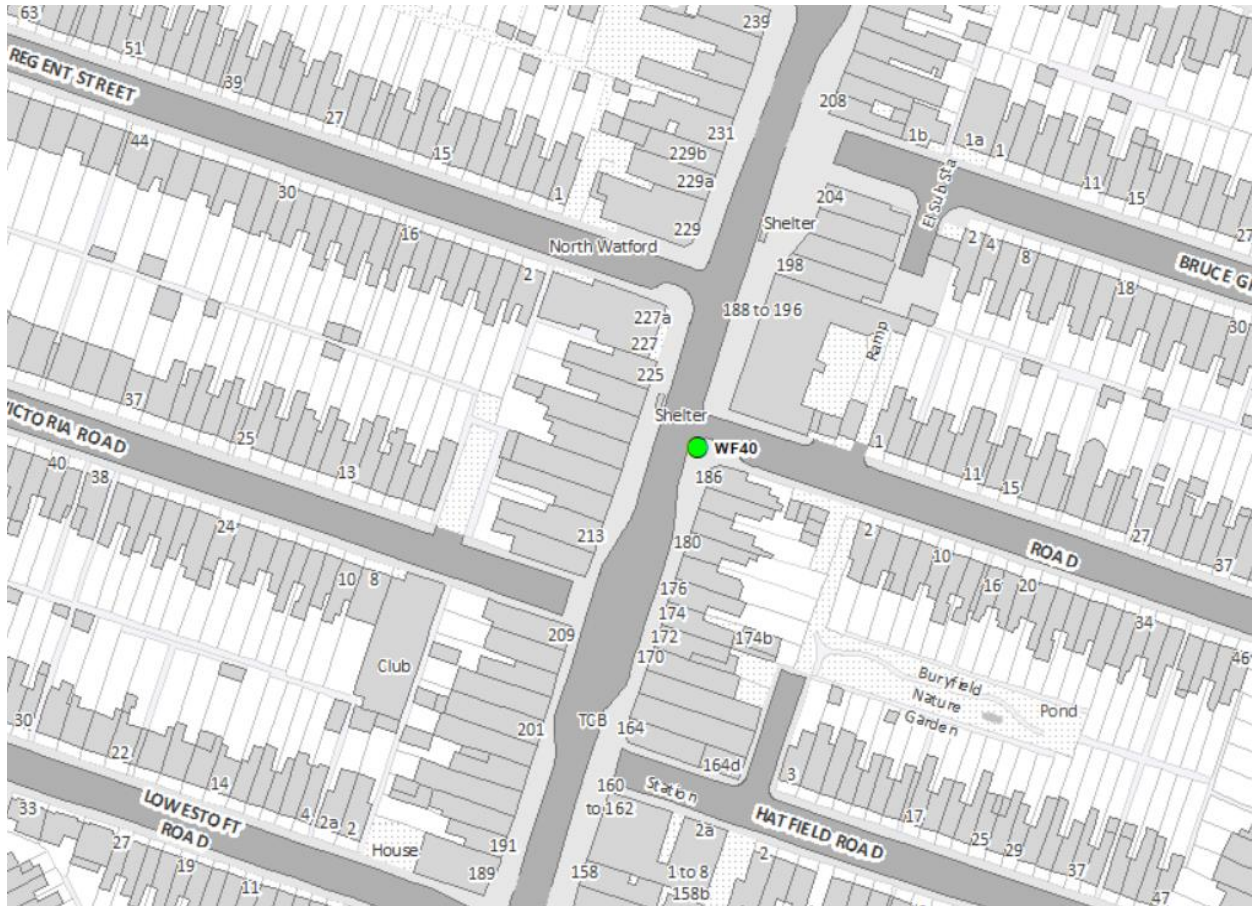
WF38 A405 Horseshoe Lane



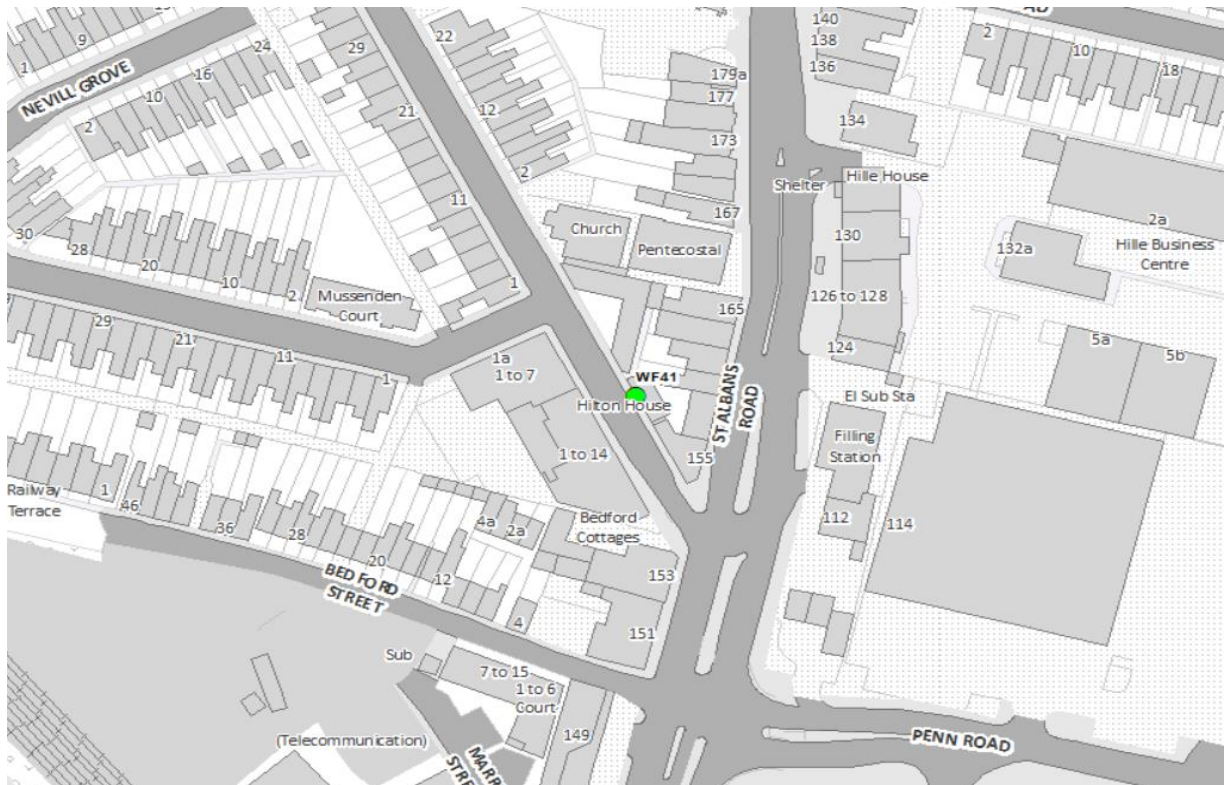
WF39 Balmoral Road



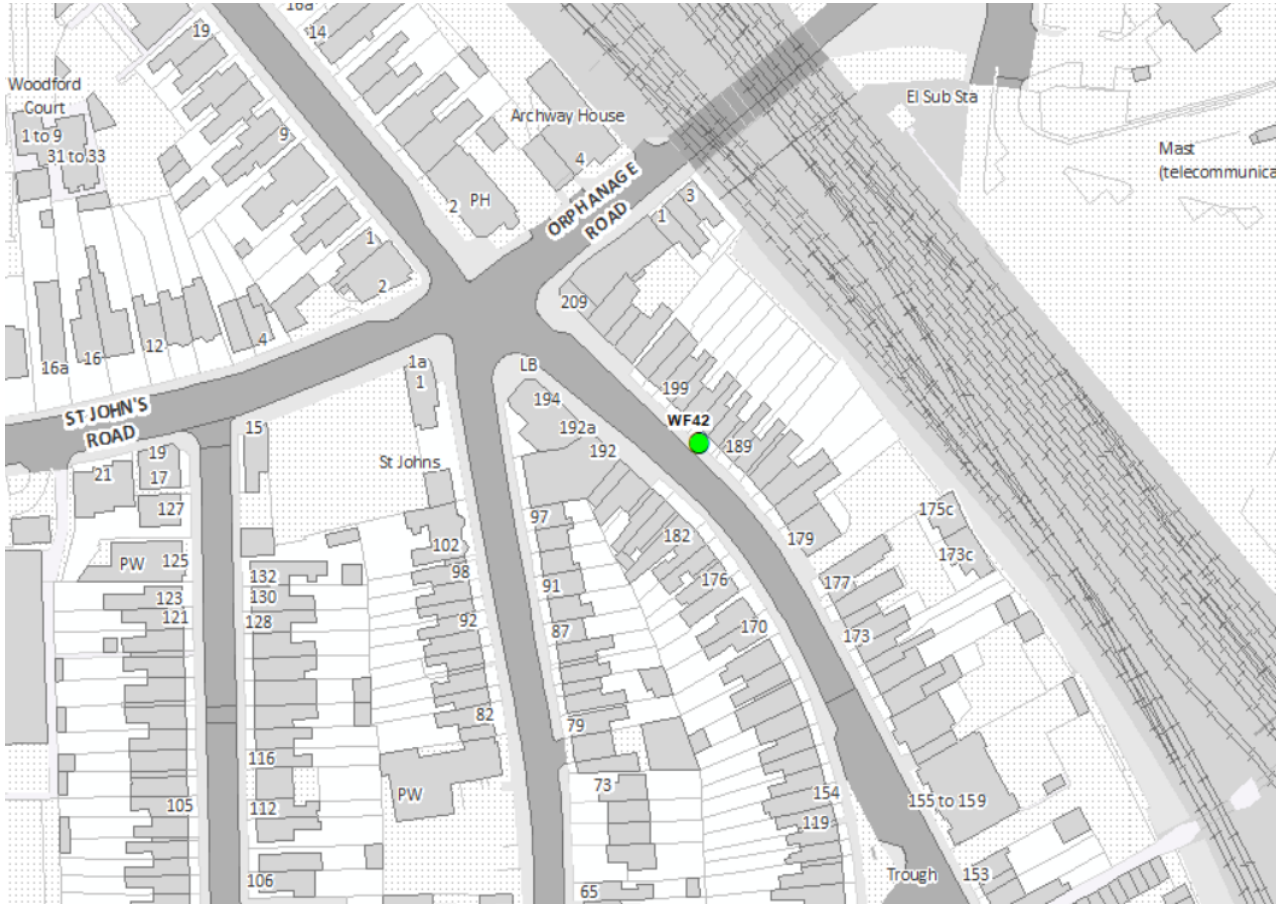
WF40 Salisbury Road



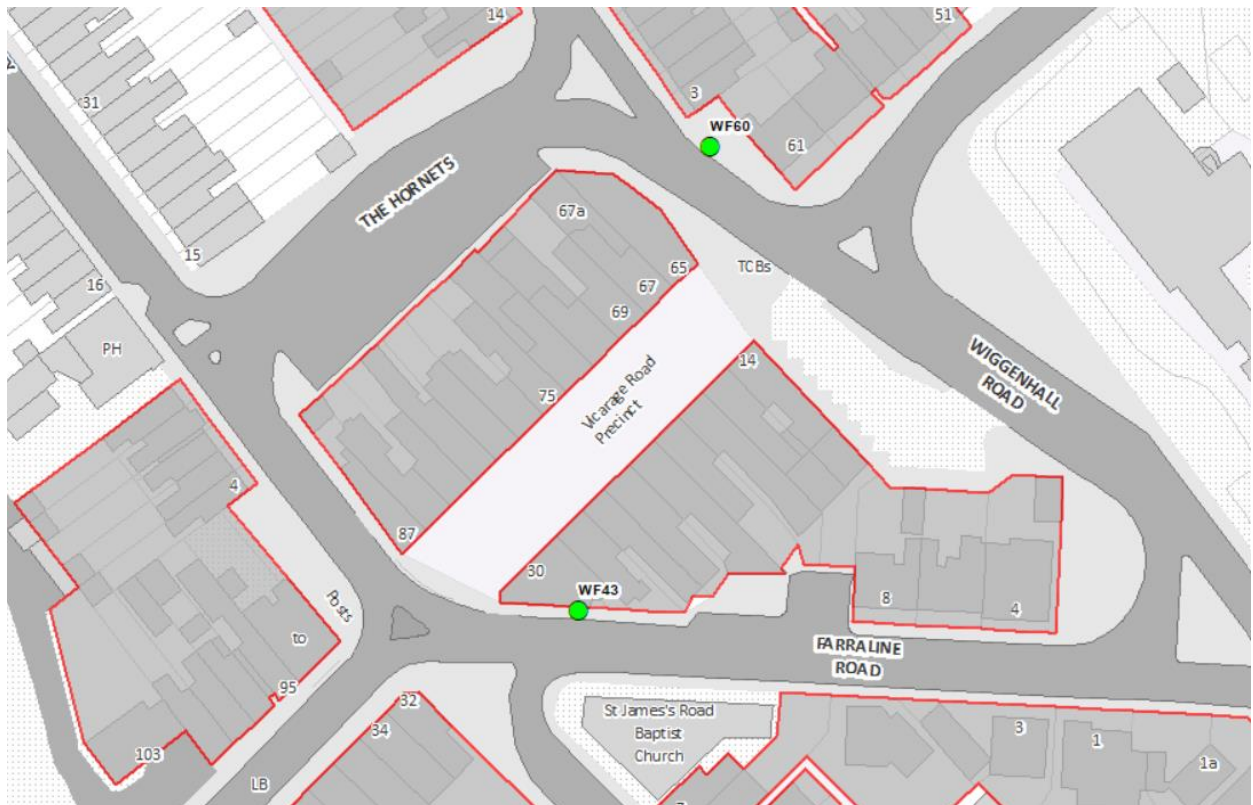
WF41 Leavesden Road



WF42 Queens Road

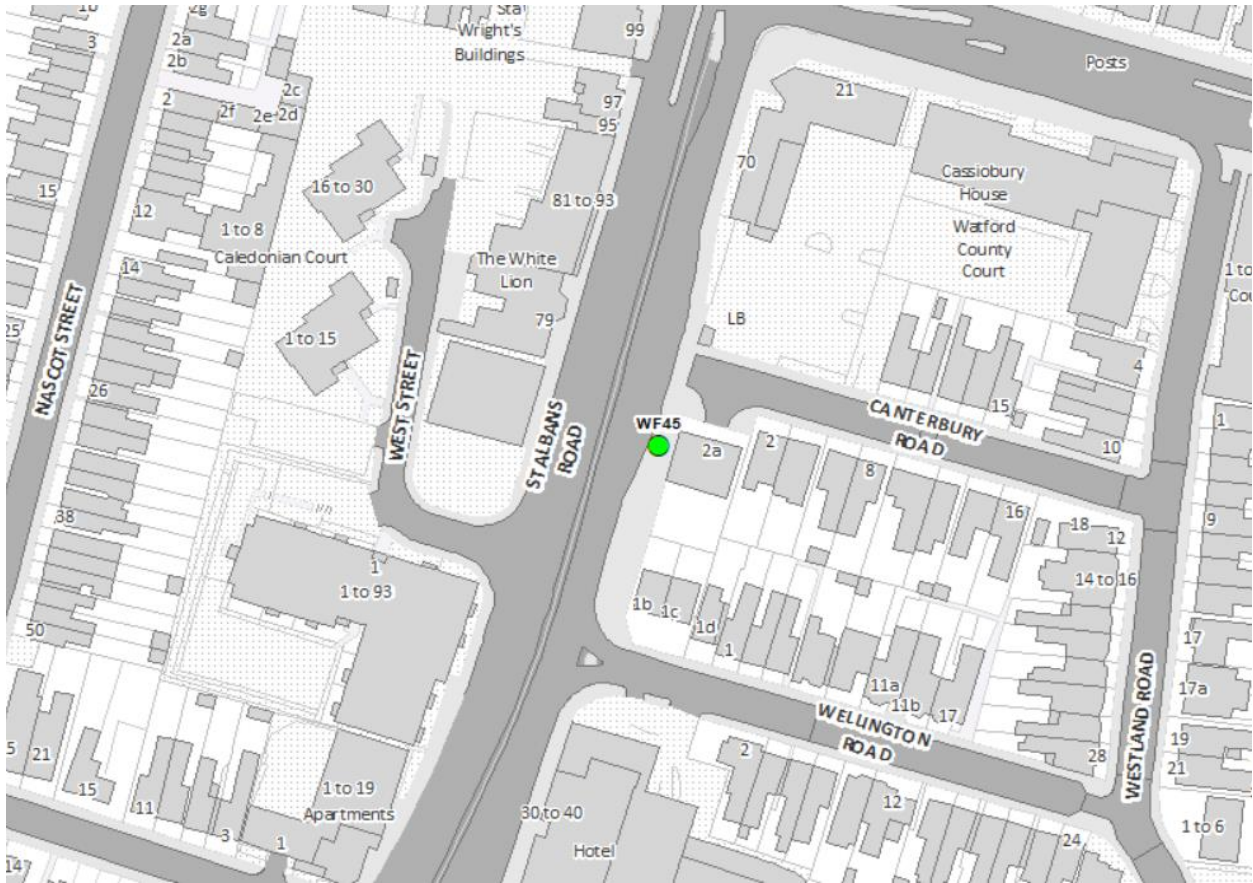


WF43 Farraline Road, WF60 Merton Road (AQMA 2)

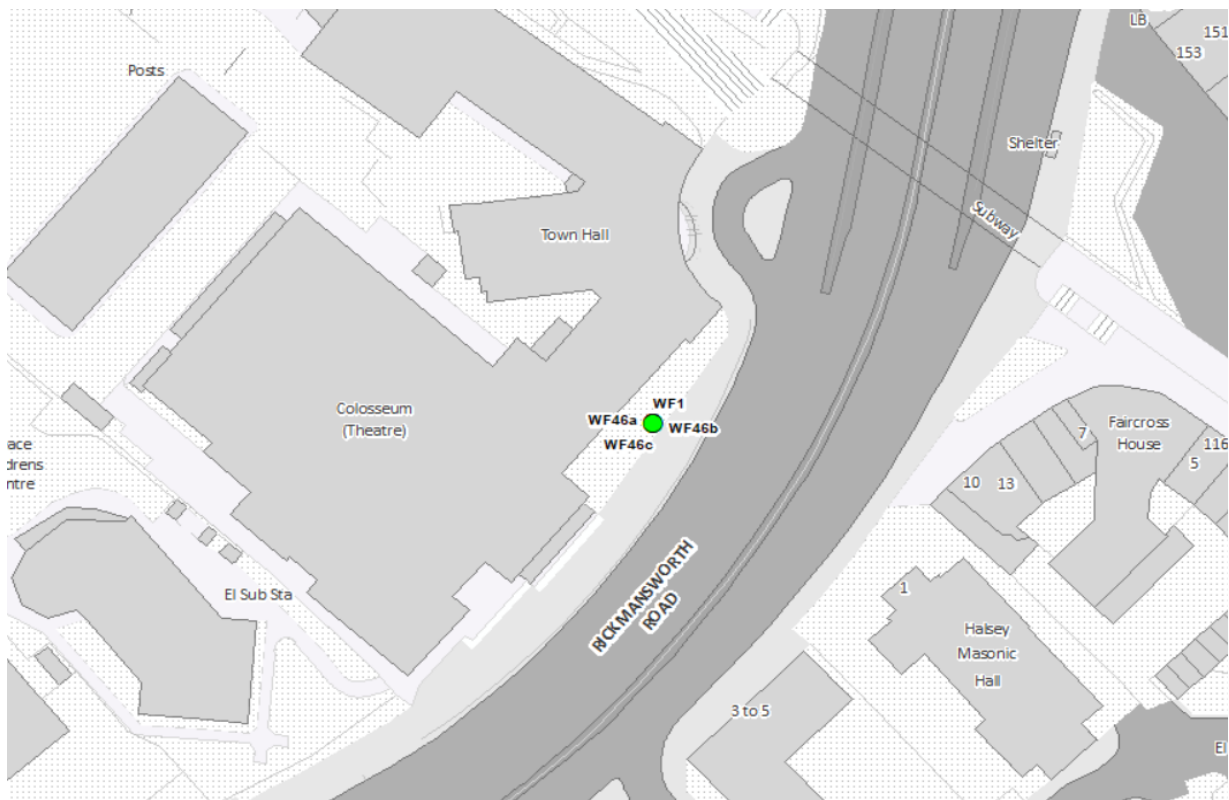


WF44 (*see WF29)

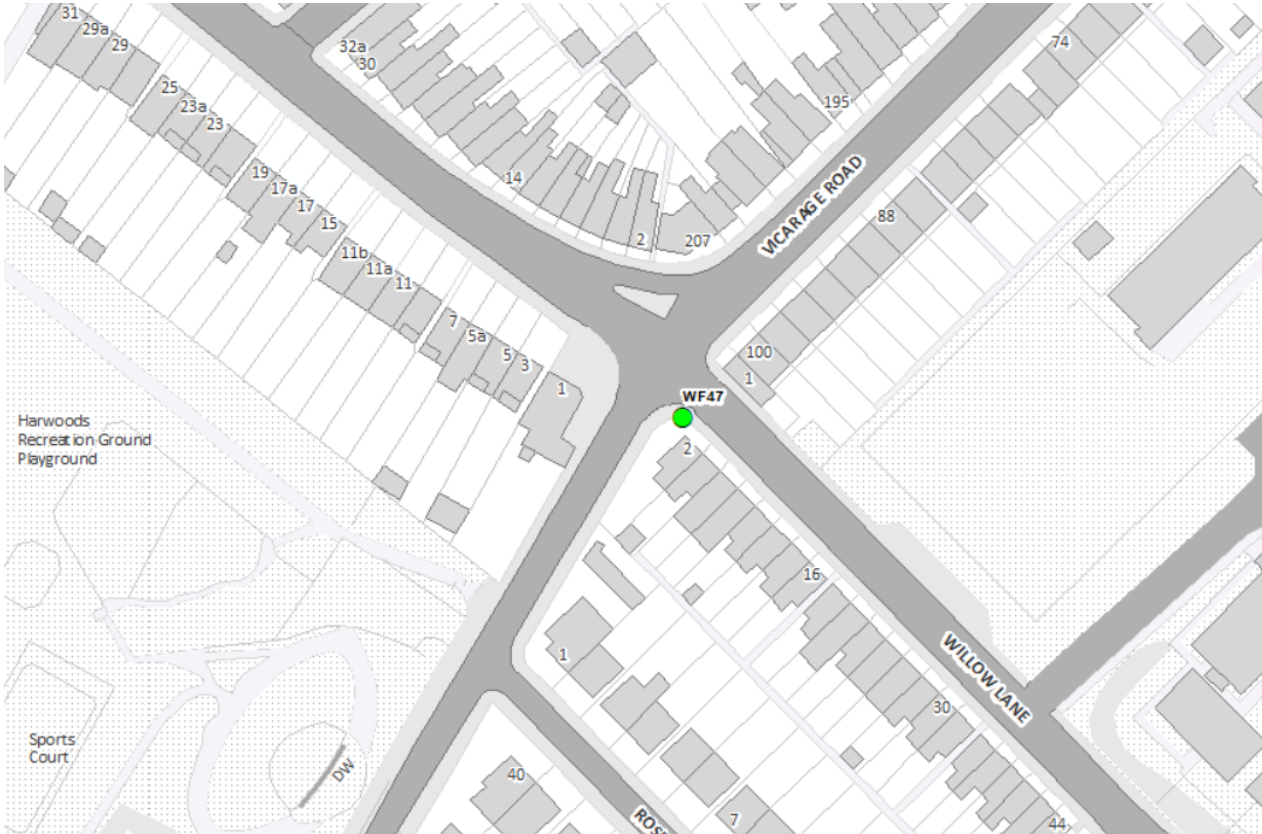
WF45 Wellington Road



WF46a, WF46b, WF46c Town Hall (also the site of WF1 – Automatic Monitoring Site)



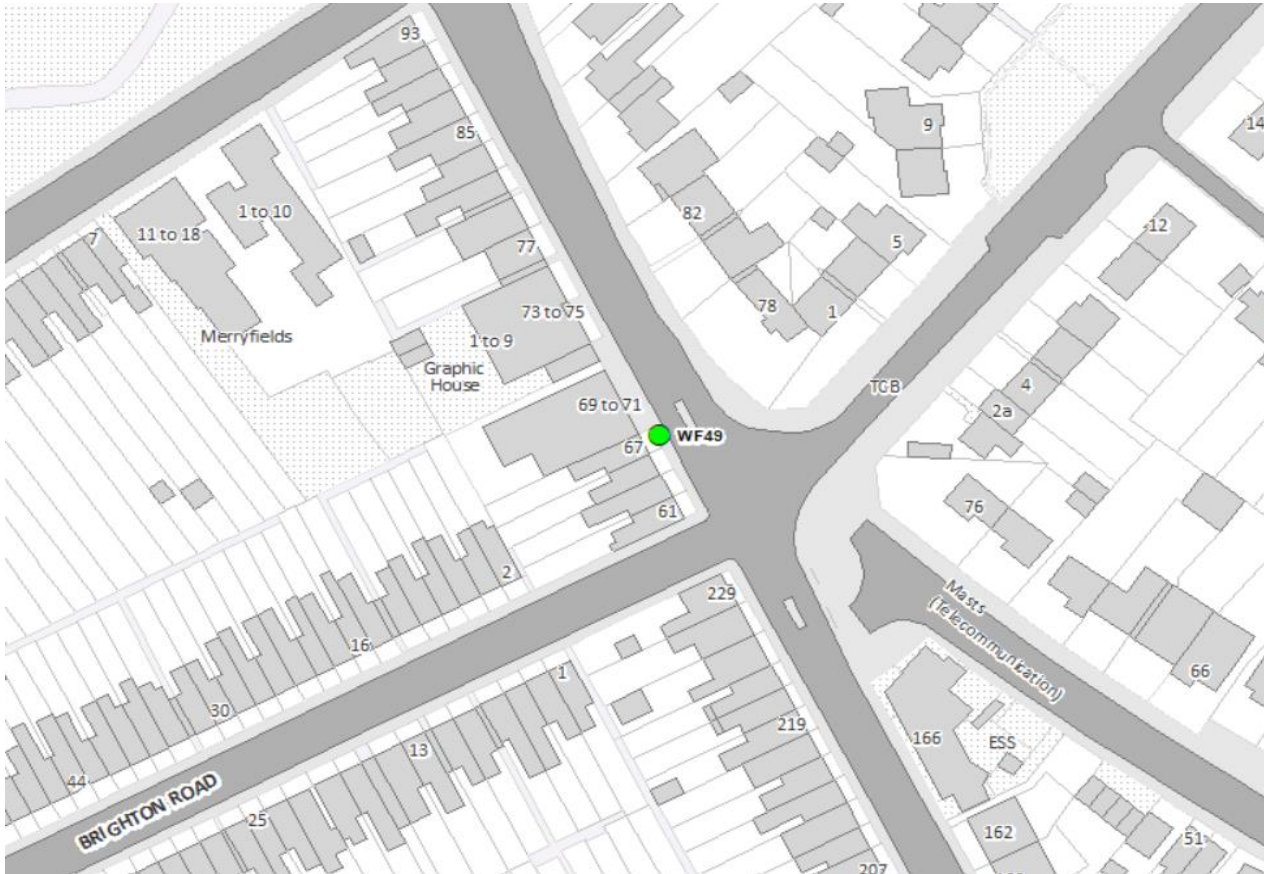
WF47 Willow Lane



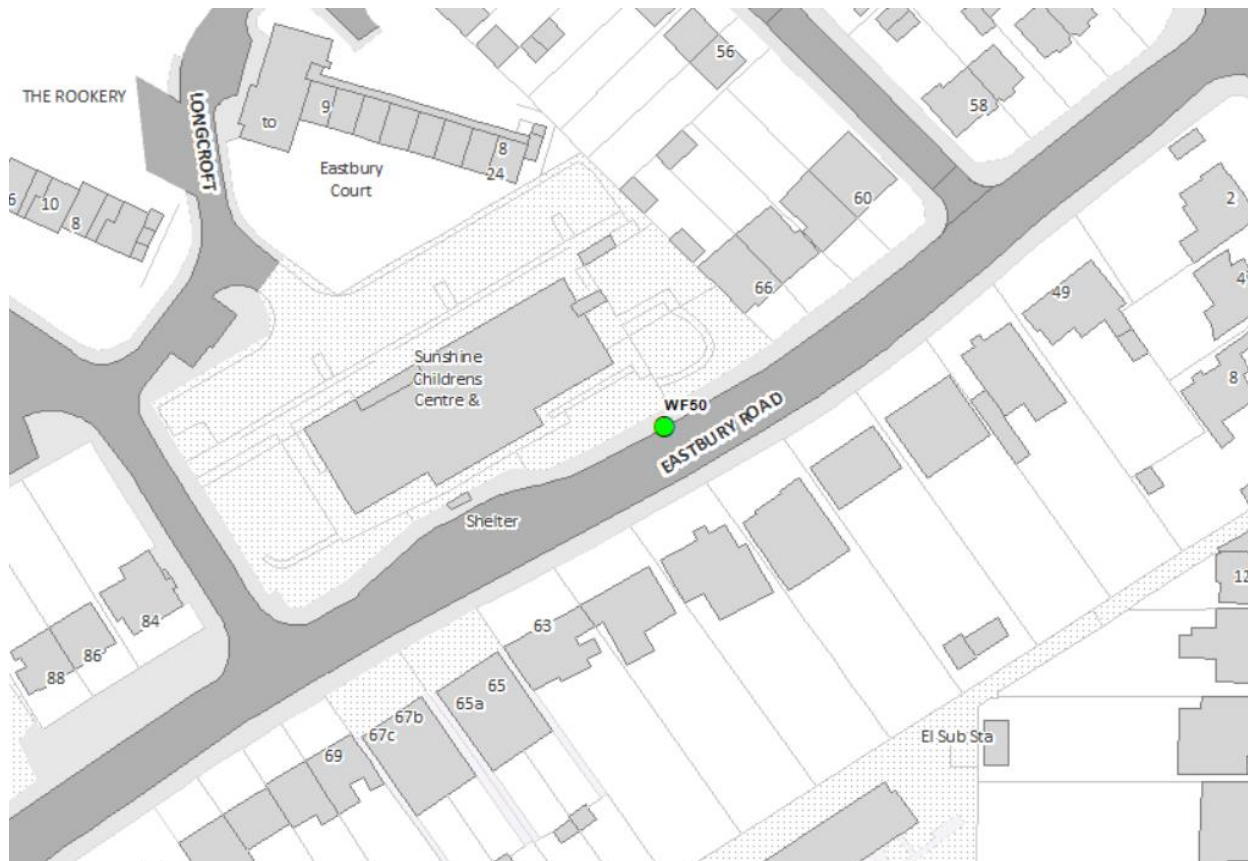
WF48 High Street (AQMA 3A)



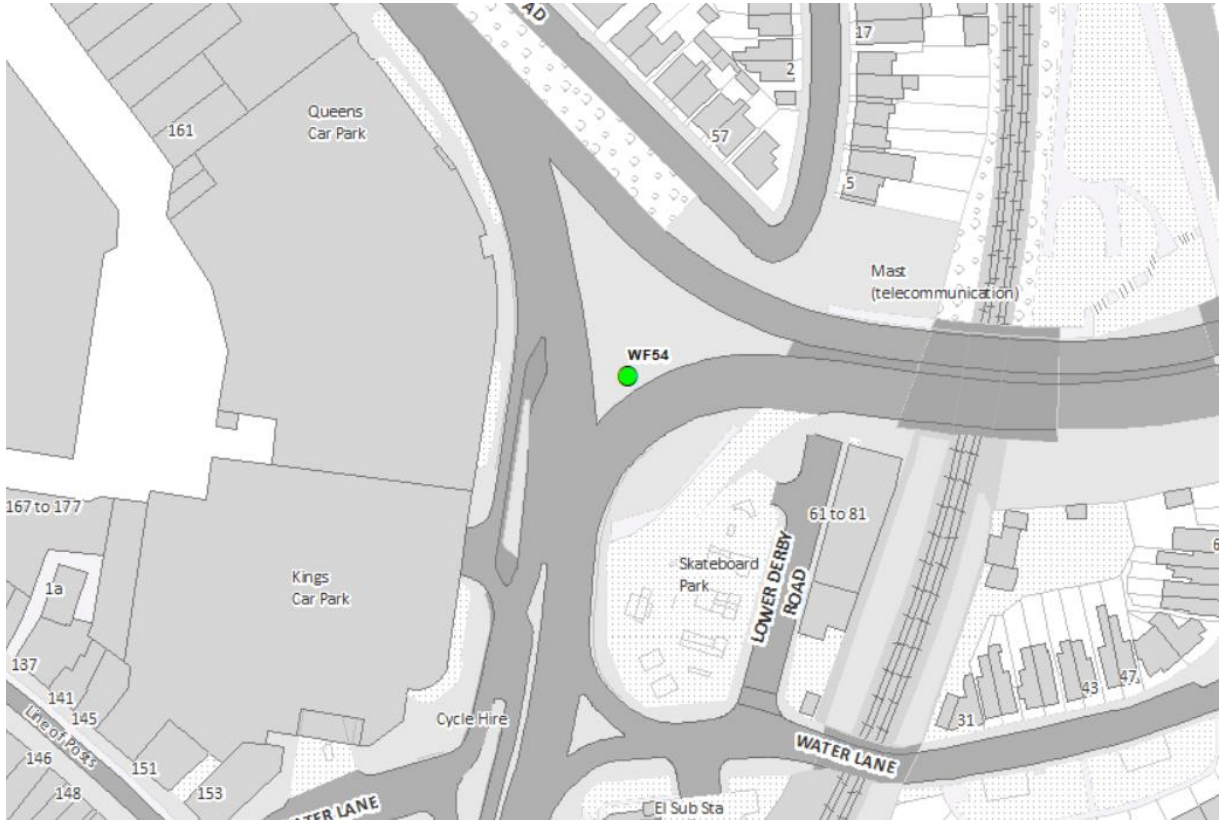
WF49 Gammons Lane (o/s 67)



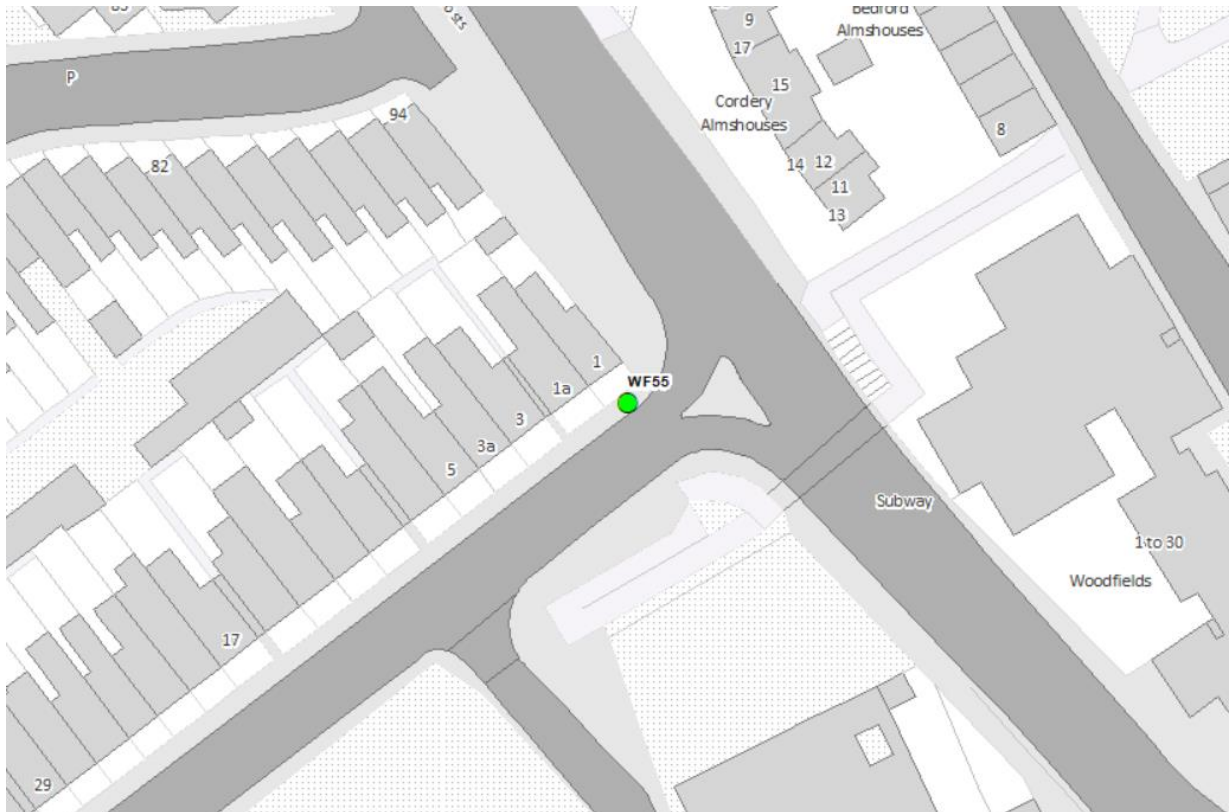
WF50 Eastbury Road (Oxhey Early Years)



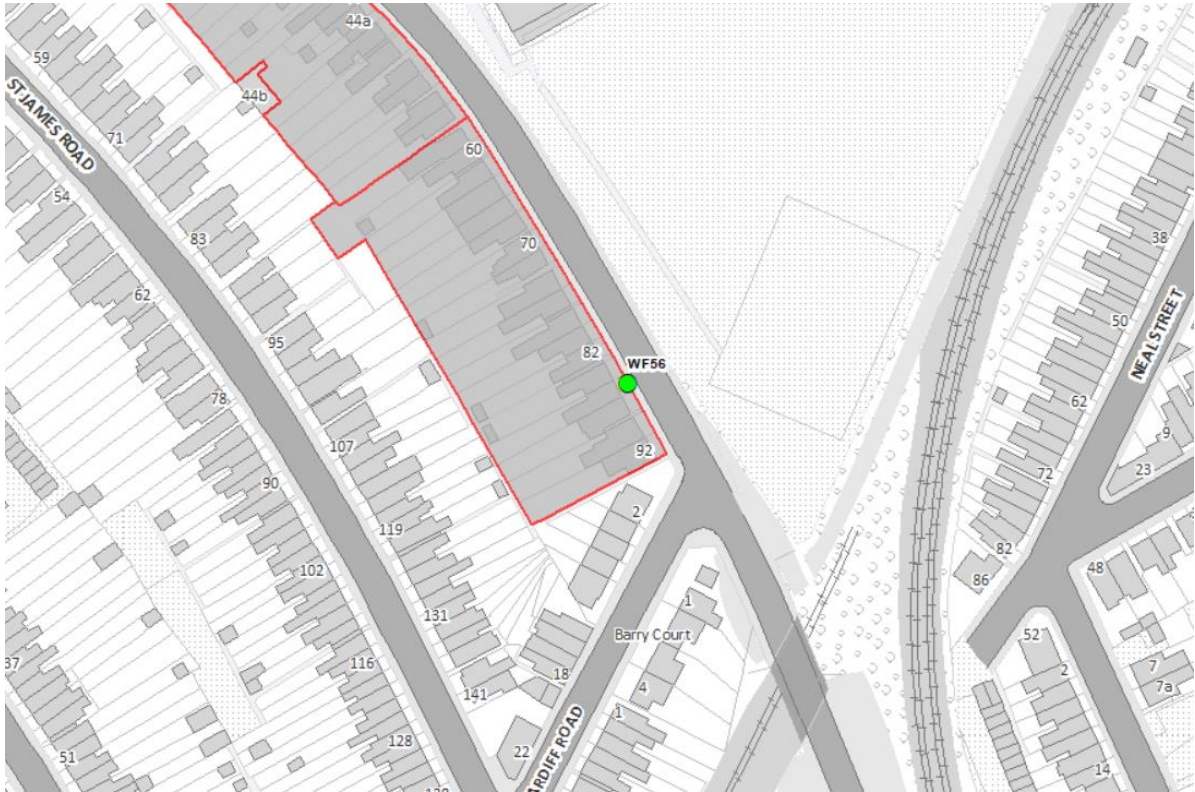
WF54 Water Lane



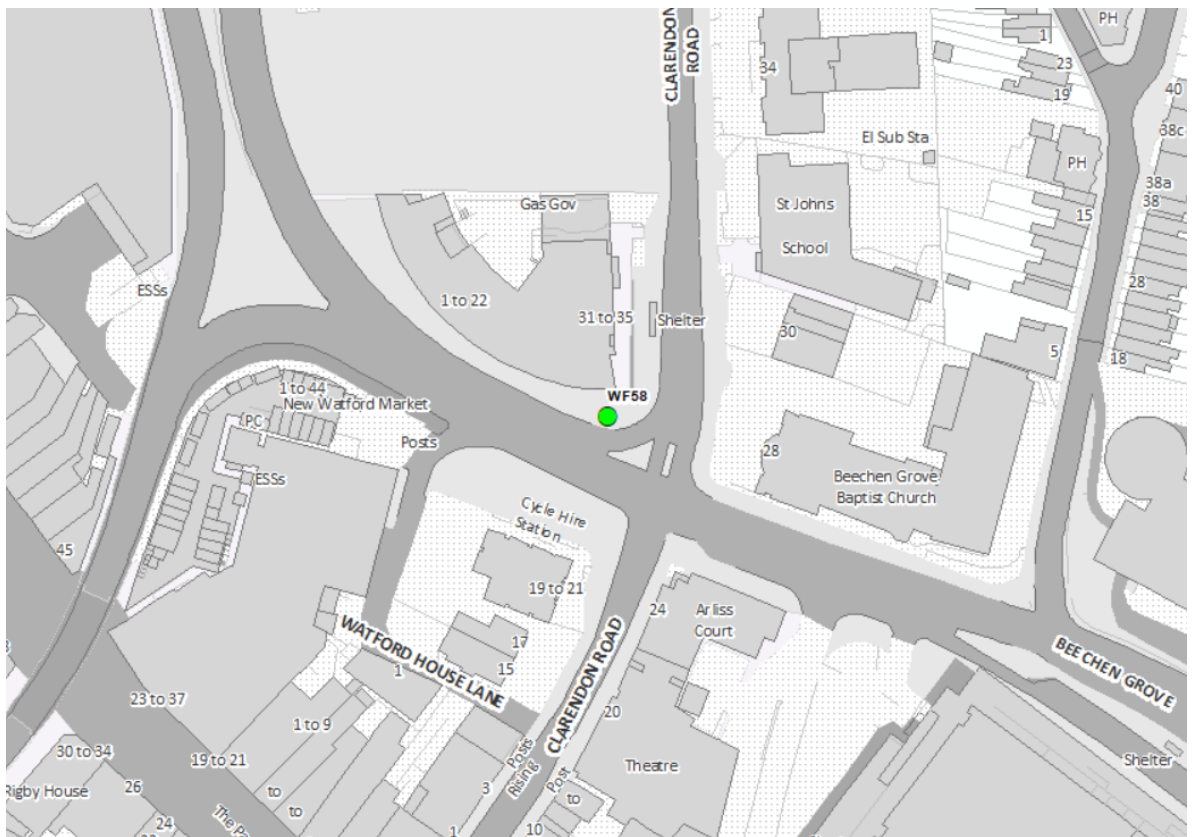
WF55 Vicarage Road



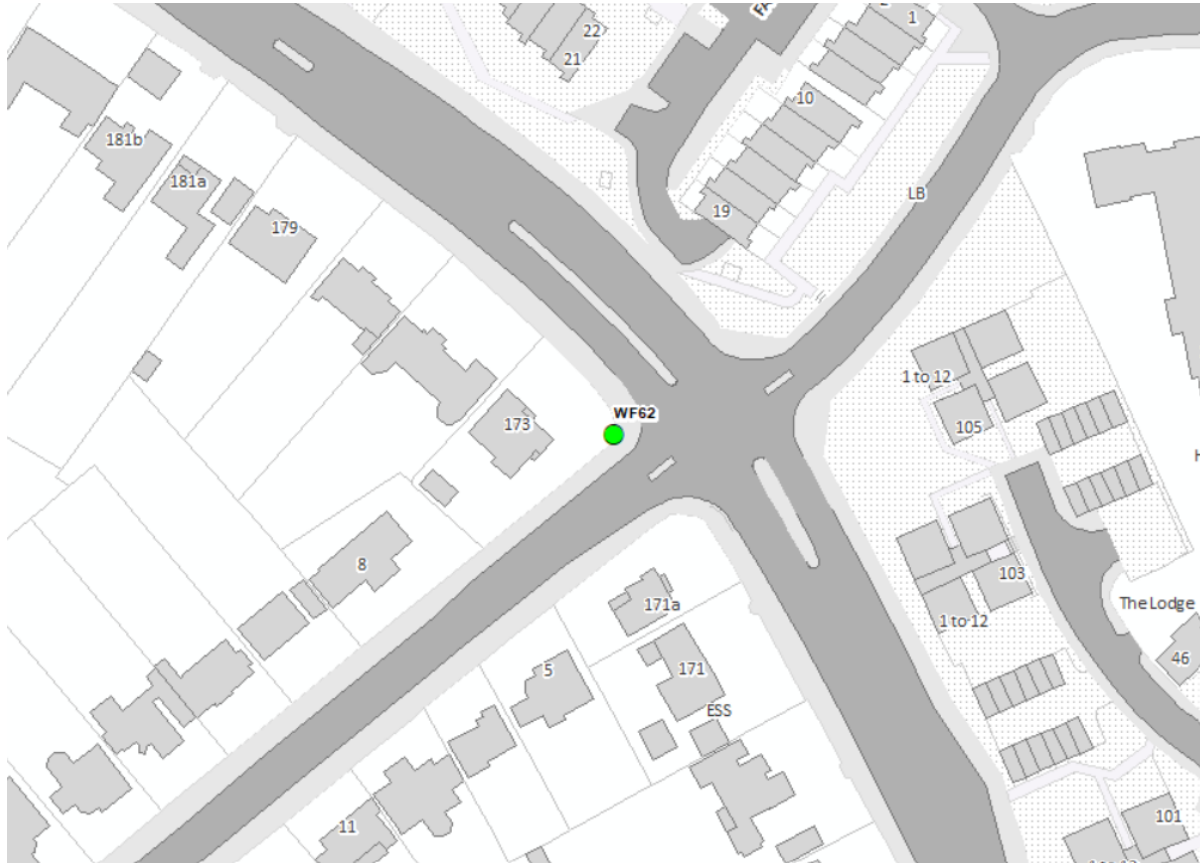
WF56 Wiggenhall Road (AQMA 2)



WF58 Beechen Grove



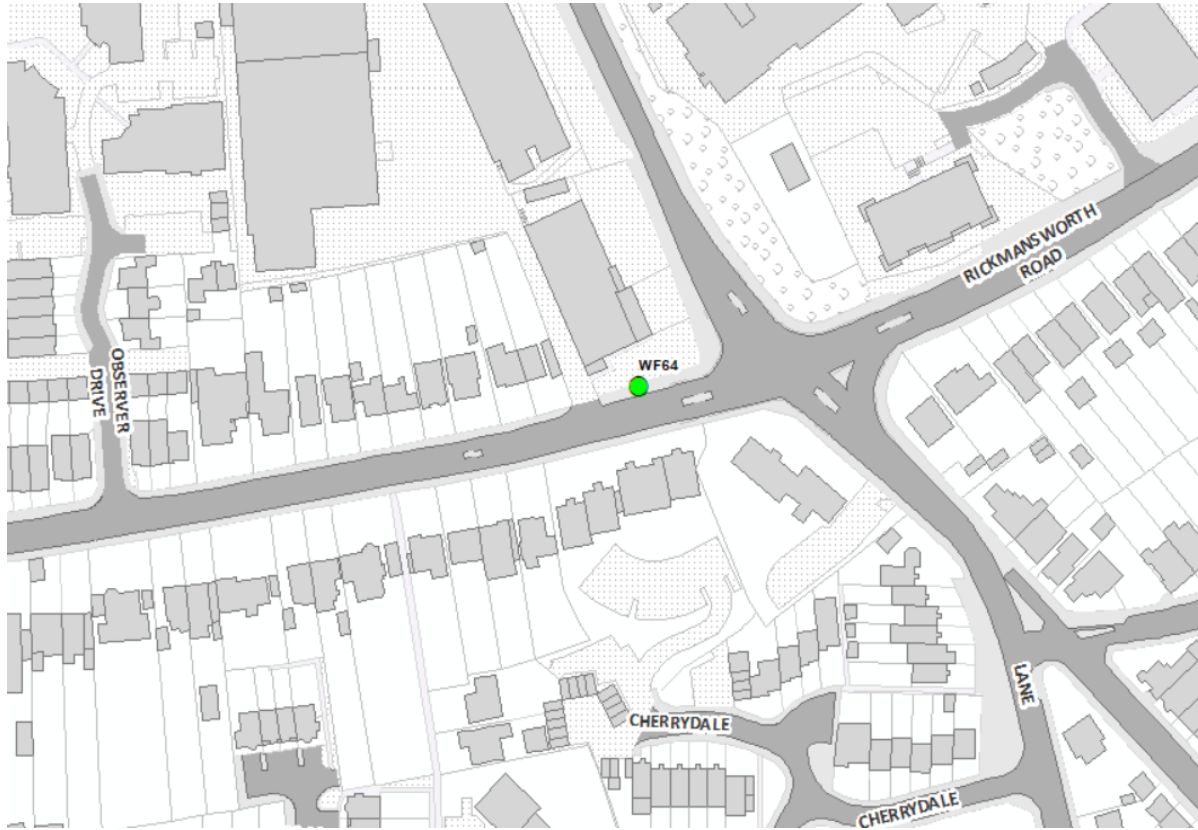
WF62 Hempstead Road



WF63 Purbrock Avenue



WF64 Rickmansworth Road



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

*The Environment Act 2021 established a legally binding duty on Government to bring forward at least two new air quality targets in secondary legislation.

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 introduced the following air quality targets:

Annual Mean Concentration Target for PM_{2.5}

The annual mean concentration target is that by the end of 31st December 2040 the annual mean level of PM_{2.5} in ambient air must be equal to or less than 10 µg/m³ (“the target level”).

Population exposure reduction target for PM_{2.5}

The population exposure reduction target is that there is at least a 35% reduction in population exposure by the end of 31st December 2040 (“the target date”), as compared with the average population exposure in the three-year period from 1st January 2016 to 31st December 2018 (“the baseline period”), determined in accordance with regulation 8.

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
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
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 or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control

References

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