2025 Air Quality Annual Status Report (ASR)

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

Date: June, 2025

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Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of Mole Valley District Council with the support and agreement of the following officers and departments:

- Surrey Air Alliance;
- Surrey County Council's (SCC) Transport Studies & SCC Transport Policy.

This ASR has been approved by:

Service Lead Environmental Health and Enforcement – *D. Hine* (David Hine)

On behalf of the Surrey County Council Director of Public Health, the Public Health team work closely with Surrey Air Alliance including District and Borough Council partners responsible for submitting Annual Status Reports (ASR) on air quality within their areas to develop initiatives and implement actions to improve air quality across the county of Surrey through collaboration and consultation. Upon completion, this report was passed for comment to the Health Protection Team Manager, Public Health at Surrey County Council.

If you have any comments on this ASR, please send them to Environmental Health or Tanya Mileusnic at:

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Executive Summary: Air Quality in Our Area

Air Quality in Mole Valley District Council

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Low-income communities are also disproportionately impacted by poor air quality, exacerbating health and social inequalities.

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

Table ES 1 - Description of Key Pollutants

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

Mole Valley District is a predominantly rural area with a population of 80,000. Most of the district's area is within the Metropolitan Green Belt surrounding London. Large part of the area forms part of a National Landscape (formerly known as an Area of Outstanding Natural Beauty), as designated by Natural England.

A number of sites of Special Scientific Interest, and Sites of Nature Conservation Importance overlap the district. The district's two main towns are Dorking and Leatherhead, other towns include Ashtead, Bookham and Fetcham.

The main source of air pollution in the district are road traffic emissions from major roads, notably the M25, A25 and the A24. The M25, located in the north east of the district, has a junction at Leatherhead, whereas the A24 London to Worthing road runs from north to south. The A25 intersects the district east to west from Maidstone in Kent to Guildford.

The service sector is the main source of employment in the district. Significant industrial premises include Brockham oil wells. There are also significant mineral workings related to the two operating brickworks, but these only operate for limited periods of the year.

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.

DEFRA's Environmental Improvement Plan[1] 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 most harmful to human health. The DEFRA Air Quality Strategy[2] provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero[3] 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.

[1] Defra. Environmental Improvement Plan 2024, January 2024

[2] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2024

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

Mole Valley District Council (MVDC) is working jointly with the other Surrey Local Authorities and representatives from Surrey County Council (SCC) to improve air quality.

The Council participates in the work of the regional air quality partnership Surrey Air Alliance (SAA). The partnership has been set up to lead the work on air quality in Surrey. The group has produced an action plan and holds regular meetings with the districts, where work is reviewed and progress of the identified actions is discussed. SAA has completed work on detailed air quality modelling across Surrey for NO_2, PM_{10} and $PM_{2.5}$. Surrey County Council has also published a shared Electric Vehicle Strategy for Surrey, which will form part of the Local Transport Plan (LTP). Next steps for the partnership are to align the air quality work with other relevant Surrey County Council strategies and to develop a multi-agency action plan to support collective action through the SAA.

The **Air Quality Strategy**[4], published in September 2024, outlines MVDC's commitment to maintaining and improving air quality through an integrated, collaborative approach involving various departments, agencies, and the community. It provides an overview of air quality in the district, focusing on the Environmental Health service's proactive and reactive interventions. The strategy sets out key objectives such as monitoring air quality, enforcing regulations, raising public awareness, and informing residents through real-time air quality information services. It also highlights initiatives like the installation of electric vehicle charging points, the MVDC Taxi Licensing Policy for low-emission and energy-efficient vehicles, and public awareness campaigns. Additionally, the strategy emphasises collaboration with Surrey County Council on projects like the Schools' Air Quality Monitoring for Health & Education (SAMHE) Project and the Local Transport Plan aimed at achieving net zero emissions by 2050.

Conclusions and Priorities

Local monitoring for nitrogen dioxide (NO_2) in 2024 has shown compliance with the annual mean NO_2 objective at all sites.

In 2024, NO_2 levels were well below the annual mean NO_2 objective and experienced a noticeable decrease compared to previous years. This decline suggests that measures

[4] https://www.molevalley.gov.uk/environmental-health/air-quality-strategy/#:~:text=The%20requirement%20for%20an%20Air,pollution%20exceedances%20of%20certain%20pollutants

taken to control emissions and improve air quality have been effective, resulting in a continuous decreasing trend.

Overall, the majority of diffusion tube monitoring sites have remained considerably below the annual mean objective for NO_2 for all the years of monitoring. Long-term sites have shown a gradual downward trend since 2014, indicative of a gradual improvement in fleet emissions.

There is currently no continuous monitoring for particulate matter PM_{10} or $PM_{2.5}$ carried out in the Mole Valley District, however Surrey Air Alliance (SAA) led on the work to carry out modelling on the key pollutants of concern including PM_{10} and $PM_{2.5}$ to ascertain if there are any areas that require further investigation. The modelling was done in 2019 and the results showed that most areas in the district were compliant with the annual mean and 24-hour UK objectives, and World Health Organization (WHO) guideline limit values for PM_{10}. Regarding $PM_{2.5}$, most of the district was below the national annual air quality objective for this pollutant, however the north part of the district including some central areas showed concentrations above the guideline limit value recommended by WHO. The plan is to re-model air quality across Surrey in 2026/27.

Mole Valley District Council will continue with the current diffusion tube monitoring programme for nitrogen dioxide.

Mole Valley District Council will continue to work with other local authorities to try to assess any measures that may be taken to improve the air quality further.

Local Engagement and How to get Involved

Mole Valley District Council participates in the AirTEXT service; AirTEXT is a free service for the public providing air quality alerts by SMS text message, email and voicemail as well as 3-day forecasts of air quality, pollen, UV and temperature across the Mole Valley area. AirTEXT is intended for people with respiratory health problems, such as chronic obstructive pulmonary disease or asthma who may be affected by episodes of air pollution. Registered users are sent a text, voicemail or email message the day before moderate or higher levels of air pollution are forecast. This allows people with health problems or their carers to make choices on what they do: where they go and whether they need to take medication with them. The service is free, and you can register online via the AirTEXT website https://www.AirTEXT.info or by telephone on 01223 357 773. This service replaced the airAlert service previously used until October 2024.

The Council also supports Surrey car share scheme. Car sharing not only reduces the overall numbers of cars on the road but could also save you money. See www.surreyliftshare.com for more details.

Mole Valley Connect operates on behalf of Surrey County Council, a new on demand, door to door shared service for residents in the area. Accessible, electric mini-buses are available for travel when they are needed. Journeys can be taken within the Mole Valley area and also to other areas that are adjacent to Mole Valley.

There is a lift share scheme run by Surrey County Council and offers the opportunity to find other people travelling in the same direction so that arrangements to travel can be made. This reduces the cost, congestion and pollution.

When you are considering using your car, consider if it is possible to travel outside of peak times, or whether you could use public transport, cycle or walk instead.

If you would like to obtain further information on the work being done please visit the Mole Valley District Council website or contact:

- Environmental Health: tel. 01306 885001; email: env.health@molevalley.gov.uk
- https://www.molevalley.gov.uk/home/environmental-health/pollution/air-and-water-quality

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1 Local Air Quality Management

This report provides an overview of air quality in the Mole Valley District Council area during 2024. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the 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. The ASR is an annual requirement showing the strategies employed by Mole Valley District 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.

Mole Valley District Council currently does not have any declared AQMAs. A local Air Quality Strategy is in place to prevent and reduce polluting activities. The Local Air Quality Strategy is available at the Council's website[5].

The Council continues to regularly review and monitor the district's air quality. If future air pollution levels exceed the air quality objectives, an Air Quality Management Area (AQMA) will be designated in accordance with the legislation.

For reference, a map of MVDC's monitoring locations is provided in Appendix D.

[5] https://www.molevalley.gov.uk/environmental-health/air-quality-strategy/#:~:text=The%20requirement%20for%20an%20Air,pollution%20exceedances%20of%20certain%20pollutants.

2.2 Progress and Impact of Measures to address Air Quality in the Mole Valley District Council area

DEFRA's appraisal of last year's ASR affirmed the conclusions reached in the report for all sources and pollutants. Specific recommendations were made, and these are reproduced in the paragraphs below:

1. *Progress on measures to improve air quality completed to a good standard. It is detailed and clearly indicated which measures are funded following comments from the previous ASR.*
2. *Addressed comments from previous ASR and included a copy of the national bias adjustment spreadsheet which is an example of good practice and should continue in future ASRs.*
3. *There is no AQMA declared and therefore no requirement for an AQAP for MVDC. However, the Council are currently preparing an Air Quality Strategy. The Council should provide an update on this in their 2025 ASR.*
4. *Clear trend graphs have been provided for all monitoring data which has been split by region and discussed in detail. This allows for more focused discussion and easier source identification, which is commended.*
5. *This ASR has been signed off by the relevant public health body, following comments from the previous ASR which is welcomed and encouraged in future ASRs.*
6. *The maps are clear and concise illustrating all monitoring sites. This is commended.*
7. *There are some minor formatting errors which should be amended before publication, including but not limited to:*
    a. *Table 2.1 all measures of the air quality action plan are highlighted in red.*
    b. *Table A.2 and A.4 deviate slightly from the template. It is recommended to have consistency among all tables which can be achieved by following the ASR Table template.*
8. *Minor grammatical errors, $PM_{2.5}$ should be subscripted consistently throughout the report.*
9. *$PM_{2.5}$ emissions addressed in detail despite the pollutant not currently being monitored in the area. MVDC have also included how local engagement can be increased in regard to $PM_{2.5}$ concentrations. This is encouraged in future ASRs.*

Monitoring

The Council has undertaken a review of the NO_2 diffusion monitoring network. A decision was made to retain the majority of the existing sites as this allows for appropriate evaluation of air pollution trends. However, it is noted that a number of monitoring locations are located some distance away from main roads. Subject to budget, new temporary roadside sites may be added to the monitoring network in order to verify existing concentrations at worst-case locations (in town centres close to areas of congested traffic). In addition, the Council may add temporary sites at locations determined by surveillance and resident complaints about air pollution.

Three new temporary diffusion tube monitoring sites were added to the survey in 2019 – in Bookham (MV15), Fetcham (MV16), and Leatherhead (MV17).

In 2020 additional monitoring started at site MV4 in Fetcham, and MV18 in Dorking at Deepdene roundabout.

In 2021 two sites were re-located (MV4 and MV15), and one site – MV19 added in Charlwood; details of these changes are provided in Section 3.

Surrey Air Quality Modelling

The Surrey Air Alliance (SAA) led on the work to carry out modelling on the key pollutants of concern in the district – NO_2, PM_{10} and $PM_{2.5}$ - to ascertain if there are any areas which require further investigation. Modelling reports per local authority were completed in November 2019. The modelling was carried out for 2017 and the findings are summarised below:

Nitrogen dioxide

Most areas in the district were within the range of 16 to 20µg/m^3 for NO_2 in 2017, which is well below the annual mean objective. The highest concentrations (within the range of 20-24um/m^3) are shown to be in the areas adjacent the M25 motorway. Light Goods Vehicles and diesel cars are the major sources of road emissions.

Particulate matter

Regarding PM_{10}, most areas in the district showed the annual mean concentrations of 16 to 18µg/m^3 in 2017, indicating compliance with the annual mean and 24-hour UK objectives, and WHO guideline limit values (2005) for PM_{10}.

$PM_{2.5}$ is a regional pollutant so similar concentrations of this pollutant are recorded over a wider area. Most of the district was below the national annual air quality objective of

20µg/m^3 in force at that time. However, the northern part of the district and some central areas showed concentrations above the guideline limit value recommended by WHO (2005). No further monitoring has been carried out, however Reigate & Banstead Borough Council placed a $PM_{2.5}$ monitor near Gatwick airport to reflect background concentrations. The results show that the 24-hour average is 5 µg/m^3 which represents levels considered healthy, with little to no risk from exposure.

The plan is to re-model air quality across Surrey in 2026/27.

Air Quality Work

Mole Valley District Council has no AQMAs, and consequently there is no current air quality action plan. Mole Valley District Council has taken forward a number of direct measures during the current reporting year of 2024 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.1.

Twenty measures are included within Table 2.1, with the type of measure and the progress Mole Valley District Council made during the reporting year of 2024 presented. Where there were, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.1.

More detail on these measures can be found in the respective **Air Quality Strategy** (2024)[6]. The Strategy outlines MVDC's commitment to maintaining and improving air quality through an integrated, collaborative approach involving various departments, agencies, and the community. It provides an overview of air quality in the district, focusing on the Environmental Health service's proactive and reactive interventions. The strategy sets out key objectives such as monitoring air quality, enforcing regulations, raising public awareness, and informing residents through real-time air quality information services. It also highlights initiatives like the installation of electric vehicle charging points, the MVDC Taxi Licensing Policy for low-emission and energy-efficient vehicles, and public awareness campaigns. Additionally, the strategy emphasises collaboration with Surrey County Council on projects like the Schools' Air Quality Monitoring for Health & Education (SAMHE) Project and the Local Transport Plan aimed at achieving net zero emissions by 2050.

[6] https://www.molevalley.gov.uk/environmental-health/air-quality-strategy/#:~:text=The%20requirement%20for%20an%20Air,pollution%20exceedances%20of%20certain%20pollutants

Other strategies and plans at Mole Valley District Council include:

Consideration of Air Quality through the Mole Valley Planning Strategy - Inclusion of air quality objectives in the MV Local Plan provides context for new developments to minimise exposure and the emission of air pollutants. New emission sources suitably mitigated to be as low as reasonably practicable. The following two policies: EN12 and EN13 (main modifications versions) from the emerging Local Plan are relevant to air quality objectives. Officers from the Environmental Health service will continue to provide comments and guidance to planning colleagues on proposed new developments that could impact local air quality.

MVDC Climate Change Strategy Action Plan 2022 – 2026 – The strategy and action plan were created in recognition of a climate emergency declared at an extraordinary Council meeting in June 2019 with a pledge to make operations carbon neutral by 2030. The strategy is based on the following objectives:

- Reducing emissions from our estate and operations.
- Reducing energy consumption and emissions by promoting energy efficiency measures, sustainable construction, renewable energy sources and behaviour change.
- Reducing consumption of resources, increasing recycling and reducing waste.
- Supporting council services, residents and businesses to adapt to the impacts of climate change.

Taxi Licensing Policy 2023 – The policy is based on the following objectives to improve air quality:

- The Council encourages drivers and operators to adopt more efficient licensed vehicles, which reduce the levels of CO_2 and NO_x emitted. The use of alternative fuels and different technologies, such as fully electric vehicles, will further reduce emissions.
- The Council may offer reduced licence fees for vehicles that produce lower CO_2 or NO_x emissions, or that are solely electric/hydrogen powered (i.e. zero- emissions).
- The aim is for all vehicles licensed by the Council to be zero carbon by 2030 at the latest. Over the life of this policy we will work in partnership with neighbouring authorities and other partners to improve the infrastructure for electric vehicle charging on Councils' property and land.

- In view of the above, from 1 April 2027 proprietors will be required to have vehicles of at least Euro 4 standard to renew their licence; and Euro 4 (Petrol), Euro 6 (Diesel) or zero-emission capable to receive a new licence.

Key completed measures are:

- Surrey initiative regarding Clean Air Night – resources and information made available to the public via social media which focuses on the health risks around wood burning.
- Taxi Licensing Policy 2023 – This has been implemented in October 2023. The Council have worked in partnership with neighbouring authorities to deliver the 2023 Licensing Policy for Hackney Carriage and Private Hire.
- Mapping of $PM_{2.5}$ and NO_2, including health impact assessments -SAA has completed detailed air quality modelling across Surrey for NO_2, PM_{10} and $PM_{2.5}$.
- Encouraging the use of electric vehicles by providing public charging points – Electric Vehicle Charging Points (EVCP) have been installed in car parks across the district in Dorking, Leatherhead, Ashtead and Bookham. The eight remaining EV charging points have now been installed at Leatherhead Leisure Centre Car Park. This brings Mole Valley to a total of 90 EVCPs in total installed across the district. This can contribute to progress in the uptake of electric cars, leading to cleaner air and improved public health by reducing air pollution.

Most of the measures in Table 2.1 continue to be ongoing.

Mole Valley District Council's priorities for the coming year are to continue to engage with local communities and businesses, providing information about air pollution and health risks. We hope that by raising awareness about air quality and working with others we can help improve air quality for all. We will also continue to collaborate with other local authorities and Surrey County Council on ways to improve air quality.

Mole Valley District Council worked to implement these measures in partnership with the following stakeholders during 2024:

- Neighbouring local authorities; via the Surrey Air Alliance officer group
- Surrey County Council

The principal challenges and barriers to implementation that Mole Valley District Council anticipates facing are a shortage of funding to implement measures and engagement with people, businesses, and organisations to change their behaviour. We hope to continue raising awareness and understanding of air quality issues. This is why it is important that

we use all platforms, including our website, to continue to educate the community about air quality and their impacts on health. Hopefully our local initiatives and air quality data can allow people to see the problems caused by air pollution and how they can amend their actions towards cleaner air for the community.

Progress on some of the measures listed in the table has been slower than expected due to issues with funding and resource, however most of the measures are still at implementation stage.

Table 2. 1 – 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	Encouraging the use of electric vehicles by providing charging points	Promoting low emission transport	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	N/A	Ongoing	SCC/MVDC	SCC/MVDC	N/A	SCC/ MVDC funded	N/A	Implementation	Low-Medium	Number of chargers installed and kWh of electricity supplied	Mole Valley District Council (MVDC) is working with Blink Charging to maintain 90 Electric Vehicle Charging Points (EVCPs) in 10 of the district's car parks. The EVCPs were installed in car parks across the district in Dorking in 2023. Ongoing collaboration with Surrey County Council's Local Transport Plan to support the uptake of Zero Emission Vehicles (ZEVs) and improve public transport infrastructure.	It is anticipated there will be provision of more charging points once take-up of EVs increases
2	Climate Change Strategy	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2020	Ongoing	SCC/MVDC	SCC/MVDC	N/A	MVDC		Implementation	Low-Medium		Surrey's climate change strategy was revised in 2020 to provide a clear plan as to how we would build on our carbon reduction achievements to date and work towards the ambitious carbon neutral target. Preparatory work for a roll out of On Street EV Charging points across the County. The Climate Change Action Plan for 2022 – 2025 shows significant progress so far on reducing carbon footprint. The target for that action plan is a reduction to 2500 tonnes CO2 by 2025.	
3	MVDC Taxi Licensing Policy	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	N/A	2027	SCC/MVDC	SCC/MVDC	N/A	N/A	N/A	Implementation	Low	Numbers of compliant taxi licenses issued	The new taxi licensing policy encourages drivers to adopt more energy efficient vehicles with the incentive to reduce vehicle licence fees. This includes alternative fuels with different technologies such as electric vehicles	Working in partnership with neighbouring authorities to deliver the 2023 Licensing Policy for Hackney Carriage and Private Hire. From 1 April 2027, proprietors will be required to have vehicles of at least Euro 4 standard to renew their licence; and Euro 4 (Petrol), Euro 6 (Diesel) or zero-emission capable to

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
															receive a new licence.
4	Regional Groups	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	N/A	N/A	Surrey Air Alliance (SAA)	Surrey Air Alliance (SAA)	No	Not funded	N/A	Ongoing	Low-Medium	N/A	A regional partnership Surrey Air Alliance (SAA) has been set up to lead the work on air quality in Surrey. The group has produced an action plan and holds regular meetings with the districts where work is reviewed and progress of the identified actions is discussed.	N/A
5	Car Sharing	Alternatives to private vehicle use	Car & lift sharing schemes	N/A	N/A	SCC.	N/A	No	Not funded	N/A	Current	Low	N/A	The Liftshare scheme is run by Surrey County Council and offers the opportunity to find other people travelling in the same direction so that you can arrange to travel together and reduce the cost, congestion and pollution.	
6	Flexible/Home Working	Promoting Travel Alternatives	Encourage / Facilitate home-working	N/A	N/A	MVDC/SAA	N/A	N/A	Not funded	N/A	Ongoing	Low	N/A	Ongoing	
7	AirTEXT	Public Information	Other	N/A	N/A	MVDC	MVDC	N/A	MVDC	£930	Ongoing	N/A	Number of participants	MVDC continues with the subscription to AirTEXT (which replaced AirAlert in 2024), to ensure the district's residents have access to a free service, which warns local residents who have respiratory problems, such as asthma, COPD or emphysema, when air pollution in the Mole Valley area is going to be high.	

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
8	Air quality Information on the MVDC website	Public Information	Other	N/A	N/A	MVDC	MVDC	N/A	N/A	N/A	Ongoing	N/A	Visits count	Ongoing Promoting information on the website for residents about how to live more sustainably.	AQ Website undergoes regular reviews. Annual AQ reports and details of action measures are published on the website to ensure broad public access.
9	Community Engagement and Behavioural Change Campaigns	Public Information	Other	N/A	N/A	MVDC & Surrey Air Alliance (SAA)	MVDC & Surrey Air Alliance (SAA)	N/A	N/A	N/A	Ongoing	N/A	Visits/clicks/views count	Public campaigns like “Clean Air Night” to educate residents on the health and environmental impacts of domestic wood burning. Use of social media and the Council’s website to promote air quality initiatives and encourage community action.	
10	Monitoring Programme	Other	Other	N/A	N/A	MVDC	MVDC	N/A	N/A	N/A	Ongoing	N/A	Number of sites investigated	MVDC operates 19 passive diffusion tube sites across the district to monitor nitrogen dioxide levels. Although levels are currently below national thresholds, the Council emphasises the importance of maintaining this status through: • Monthly monitoring and annual reporting via the Annual Status Report (ASR); • Public access to existing and historical air quality data through the Council’s website; • Targeted communication to vulnerable residents and the general public to raise awareness of air quality forecasts and health impacts through platforms like AirTEXT. The monitoring sites are subject to periodic review and where sufficient long-term data has been gathered, some of the diffusion tubes are relocated to new locations of interest.	Expansion of the NO_2 monitoring network with focus on areas near to the proposed garden village development.

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
11	Mapping of $PM_{2.5}$ and NO_2, including health impact assessment	Policy Guidance and Development Control	Other policy	N/A	2027/27	SAA/MVDC	SAA/MVDC	N/A	SAA/ MVDC	SAA/MVDC funded	Completed but needs ongoing revisions	N/A	N/A	The Surrey Air Quality model (2019) will be re-run in 2026/27. Expected level of financial contributions is c. £6k per D&B. Kalaco/ APS expressed an interest in running the modelling, but to ensure efficiency and consistency, it was agreed that the existing CERC model would be re-run, rather than initiating a new model.	Modelling reports per local authority were published in November 2019.
12	Encourage efficient use of open fires & wood burning stoves	Public Information	Other	N/A	N/A	MVDC	MVDC/SCC	N/A	N/A	N/A	Ongoing	Low	N/A	Ongoing	Advice and guidance published on the Website. Promote the use of seasoned fuel on the Website. Discourage the use of garden bonfires.
13	Local Transport Plan	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	N/A	N/A	SCC/MVDC	SCC/MVDC	N/A	N/A	N/A	Ongoing	Low-Medium	N/A	The fourth Local Transport Plan (LTP4) sets out plans for transforming the transport network from 2022 up to 2024 and beyond. It builds upon opportunities to deliver wide-ranging improvements for cleaner, healthier and safer transport in Surrey.	
14	Public Health	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	N/A	N/A	SCC/MVDC	SCC/MVDC	N/A	N/A	N/A	Ongoing	N/A	N/A	The AQAP has been approved by the Head of Regulatory Service. On behalf of the Surrey County Council Director of Public Health, the Public Health team work closely with Surrey Air Alliance including District and Borough Council partners responsible for submitting ASRs on air quality within their area; to develop initiatives, air quality action plans, and implement actions to improve air quality across the county of Surrey.	
15	Asthma Care Bundle	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions	N/A	N/A	SCC/MVDC	SCC	N/A	N/A	N/A	Ongoing	N/A	N/A	During 2022 the Surrey Air Alliance has been working with the Surrey Heartlands Children and Young People's Asthma Team to develop an Asthma care bundle. As part of this work the Air Alliance drew up a prioritised list of schools based on modelled pollution concentrations at all schools within the county, so that the Asthma team could identify the initial	In 2024 the Surrey Air Alliance gave a briefing on air quality (17th May) to the Surrey Asthma Network,

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
			and improve air quality											tranche of schools to roll the project out to, and the group has been briefed on the pollution warning services available in Surrey including airTEXT. The Air Alliance also fed information into the Asthma Toolkit the group were producing, see https://www.healthysurrey.org.uk/children-and-families/asthma-toolkit/parent-and-carer and also provided information on indoor and outdoor air quality issues. The group also attended a number of meetings to help support the production of an Air Quality Pack for healthcare professionals.	including a discussion on ozone levels across the county and how this can also impact on health aside from PM and nitrogen dioxide. The group also helped the Surrey Heartlands Children and Young People's Asthma Team at their Children and Young People's Asthma Learning Event on the 20th of June
16	Working with various Council departments.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	N/A	N/A	MVDC	MVDC	N/A	N/A	N/A	N/A	N/A	N/A	Continuing to attend Topic Working groups for a range of initiatives relating to air quality and carbon reduction measures.	
17	Local Authority Pollution Prevention and Control (LAPPC) Permitting Regime	Policy Guidance and Development Control	Other policy	N/A	Ongoing	MVDC	MVDC	N/A	N/A	N/A	N/A	N/A	N/A	Regulate and inspect installations in line with permits and current DEFRA & LAPPC guidance. Survey the area periodically in order to identify any unauthorised processes.	
18	Gatwick Airport Limited	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality			SCC/MVDC	SCC/ MVDC					N/A		With the proposed expansion of the airport runway, the air quality impacts are in discussion. A Gatwick officer group set up to discuss the proposals for expansion of the new airport runway, including discussions around traffic routes and air quality.	

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19	The Local Cycling and Walking Infrastructure Plan (LCWIP)	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	N/A	Ongoing	SCC/MVDC	N/A	N/A	Exploring funding for stage 2 implementation	N/A	Ongoing	N/A	N/A	MVDC are working with SCC and consultants, Atkins, to produce the LCWIP. The objective is to give residents more and better options to cycle and walk around MV with improved facilities. It is intended to assist with practical and commuting trips, rather than leisure trips. The plan has considered the whole of Mole Valley and looked at major trip attractors and destinations that people could choose walking and cycling over other transport methods. Local groups have been involved, workshops have taken place and an online mapping tool for public engagement was used to get residents' views.	Exploring a bid for government funding at a later stage. A shortlist of schemes has emerged which could be taken forward to Stage 2
20	Reducing emissions from wood burning stoves	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2024	2025	SCC/MVDC	N/A		N/A	N/A	Completed	N/A		Work is complete to support a 'Clean Air Night' campaign. Resources and information made available to the public via social media, educating and building awareness about wood burning and the health risks	
21	Mole Valley Connect	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2021	2024	SCC/MVDC	Department of Transport Rural Mobility Fund	N/A	Funded	N/A	Completed	N/A		Mole Valley Life is delivering on behalf of SCC, Demand Responsive Transport Service called Mole Valley Connect. As of May 2024 the scheme extended to cover the whole of the district, following a micro launch in 2021 and an expansion to the North of Mole Valley in 2022.	

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22	EV Taxi Trial Project	Promoting low emission transport	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2021	2025	SCC/SAA	SCC	Yes	Funded	Unknown	Ongoing	N/A		A meeting with the procurement and legal teams at Guildford/Waverley/Spelthorne resulted in assurances of project progress. Subsequent discussions with Otto were required to clarify project deliverables. Otto's offer of second-hand Teslas was deemed unsuitable for taxi driver uptake. Procurement has mandated a Prior Information Notice (PIN) exercise, to be completed by the end of March 2025. This will precede the full tender process, allowing market testing for alternative providers. County funding remains ringfenced for the project.	
23	Joint Strategic needs Assessment	Public Information	Other	2024	2025	SCC Public health	SCC	N/A	Funded	N/A	Ongoing	N/A		The Joint Strategic Needs Assessment (JSNA) Air Quality (AQ) chapter is currently under development by SCC Public Health working with partners from SAA and is expected to be published in summer 2025. The team is working on condensing the chapter for improved readability and including health data on asthma, COPD, and cardiovascular rates, available at the primary care level.	
24	Healthy Surrey Website	Public Information	Other	N/A	N/A	MVDC	MVDC	N/A	N/A	N/A	Ongoing	N/A	Visits count	SCC Public Health platform's purpose is to offer broad information on air pollution, with users being directed to D&B websites for more detailed project-specific data. The current content has been agreed with the D&Bs.	

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy[7], 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.

The major sources of primary $PM_{2.5}$ are industrial combustion, road transport, off-road transport, residential sources and small-scale waste burning[8]. Road transport sources of $PM_{2.5}$ include mainly exhaust emissions from diesel vehicles, together with non-exhaust emissions from tyre wear, brake wear and road surface abrasion. Chemically, a large proportion of the total mass of $PM_{2.5}$ consists of nitrates, sulphates and organic and elemental/black carbon[9]. The carbon(aceous) particles are associated with a variety of combustion sources including diesel powered engines, residential burning and power stations. There is evidence of adverse health effects of black carbon particles linked with cardiovascular conditions and premature mortality[10].

The modelled background level provided by Defra for the Mole Valley district are modelled to be between 6.2µg/m^3 and 8.2µg/m^3 for 2024, with the annual mean for 2024 being 6.6µg/m^3, so above the latest WHO guideline value of 5µg/m^3 but below the national target of 10µg/m^3 under the Environment Act (2021). The modelled background concentrations are shown to be in the higher range in the northern part of the district along the M25 Motorway and the A246, as well as near industrial installations. The $PM_{2.5}$ background maps are shown in Figure D.10 in Appendix D.

[7] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2024

[8] Air Quality Expert Group (2012) *Fine Particulate Matter (PM2.5) in the United Kingdom*

[9] Elemental carbon and black carbon are terms often used interchangeably, however they are defined by the measurement method applied - John G. Watson, Judith C. Chow, and L.-W. Antony Chen (2005) *Summary of Organic and Elemental Carbon/Black Carbon Analysis Methods and Intercomparisons*

[10] WHO (2013) *Review of evidence on health aspects of air pollution – REVIHAAP Project*

$PM_{2.5}$ levels are used to calculate an indicator in the Public Health Outcomes Framework (PHOF) – Fraction of Mortality Attributable to Particulate Matter Pollution. This indicator is calculated for each local authority in England and it intended to enable Directors of Public Health to prioritise action on air quality in their local area. The estimated fraction of mortality attributable to long-term exposure to current (2023) levels of anthropogenic $PM_{2.5}$ was 5.2% in the Mole Valley district[11]. This places the district in between the areas with the lowest estimated mortality burden in England (the fraction of around 3%) and urbanised areas (London) which show the highest rates of mortality attributable to anthropogenic $PM_{2.5}$ (7%)[12]. The 2023 data is used as it is the latest dataset made available at the time of writing.

Although $PM_{2.5}$ is not monitored in the district, the Council had worked with other Surrey Authorities to carry out modelling on $PM_{2.5}$ levels in the region to ascertain if there are any areas which require further investigation. The work was led by the Surrey Air Alliance (SAA) and this group will facilitate any future targeted projects across the Surrey County. The outcome of the work shows that $PM_{2.5}$ monitoring is not currently required in Mole Valley.

An on-street charging point strategy is being developed by Surrey County Council. A Surrey-wide Electric Vehicle Strategy has been revised, and forms part of the Local Transport Plan 4 (LTP4).

Domestic wood burning as a lifestyle choice is increasing and has been identified as a significant contributor to local air pollution, accounting for 25% of all $PM_{2.5}$ emissions. Solid fuel burning can contribute to the concentrations of $PM_{2.5}$ in the region; that has been quantified at 6 to 9% annually, averaged across urban areas[12]. The Air Quality Strategy (2024)[13] addresses wood burning in several key ways: by emphasising the importance of correct stove installation and maintenance, highlighting initiatives that aim to raise public awareness about the health impacts of domestic burning and discouraging domestic bonfires.

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[11] PHE (2022) Public Health Profiles:

https://fingertips.phe.org.uk/search/air%20quality#page/1/gid/1/pat/15/ati/501/are/E07000210/iid/93861/age/230/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1

[12] As above

[13] https://www.molevalley.gov.uk/environmental-health/air-quality-strategy/

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

This section sets out the monitoring undertaken within 2024 by Mole Valley District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2020 and 2024 to allow monitoring trends to be identified and discussed. A longer trend between 2015 and 2024 is also presented and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Mole Valley District Council does not undertake automatic (continuous) monitoring.

3.1.2 Non-Automatic Monitoring Sites

Mole Valley District Council undertook non-automatic (i.e. passive) monitoring of NO_2 at 19 sites during 2024. Table A.1 and Table A.2 in Appendix A present 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.

MVDC has been monitoring NO_2 at a number of sites around the district for many years. The locations were chosen to provide local data on:

- locations that local knowledge of road traffic would expect to have higher level of pollutants, even if it was unlikely that that the sites would provide long term exposure to members of the public;
- locations that appear to be representative of likely residential exposure; and
- a reference rural background location where the levels of NO_2 should be low.

The sites are subject to periodic review and where sufficient long term data has been gathered, some of the diffusion tubes are relocated to new locations of interest.

In 2021 there were changes to the sites in the monitoring survey:

- MV15 was re-located in February 2021 from Guildford Rd in Bookham to Lower Rd in Bookham following a request from the local community. The position allowed the tube to be located at the roadside and at the boundary of a residential property, which had the support of the councillors.
- MV4 was relocated to the A24 in Beare Green from a residential address in Fetcham as this location became inaccessible.
- A new site MV19 was added in August 2021 on Lowfield Heath Road at the Gatwick Airport boundary in Charlwood – to monitor the impact of the Gatwick Northern Runway proposal, which was at a councillor's request. The site is a worst-case location but is not within MV district and not close to any residential properties.

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 (NO_2)

Table A3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2024 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values only where relevant.

Data capture for 2024 was good – 100% for all sites apart from MV10 (Green Ln, Ashtead), which was 61.7% due to lack of access, and was annualised.

The results for 2024 have been adjusted using a national bias correction factor of 0.81, as obtained from the national database of factors.

Full details of the bias adjustment, annualisation, and QA/QC procedure are provided in Appendix C.

As can be seen from the results the annual mean nitrogen dioxide concentrations at all sites monitored were well below the annual mean objective for NO_2 in 2024.

All sites have shown a reduction on the previous year's levels, which is particularly evident at roadside and kerbside locations.

The overall trend is a long-term decrease, which can be attributed to decreasing background concentrations and is also indicative of a gradual improvement in fleet emissions. It is also noted that although vehicle use has increased since the Covid-19 pandemic, it has not returned to pre-pandemic levels.

According to traffic count data from Surrey County Council (SCC), the Capel site in the south experienced a 3% decrease in 2024 compared to 2023. Near Dorking, Westhumble and Mickleham saw reductions of 9% and 1.5%, respectively. Ashtead, located north of Leatherhead, recorded a 7% decrease from the previous year. These figures indicate that the traffic volumes are stabilising.

Dorking Sites

A new monitoring site MV18 was established on Deepdene Roundabout in 2020. The site is exposed to the intersecting traffic of both the A24 and A25 so the concentrations recorded at MV18 are expected to be higher than at locations along the A24 or A25. The site has recorded the highest results of all sites in the monitoring survey between 2020 and 2024. Although the levels increased after the end of the pandemic to 32.6µg/m³ in 2021, there has since been a decrease to 25.4µg/m³ in 2024. Even though this site still presents the highest concentration of all monitoring locations, it currently remains well below the annual mean objective for NO_2. Furthermore, the nearest receptor (Mulberry Cottage) is located approximately 26m away, where the concentration will be significantly lower.

Three of the Dorking sites – MV1 (West Street), MV3 (Lonsdale Road) and MV14 (Pippbrook) – are long-term sites with data available from 1996 to the present. West Street, Lonsdale and Pippbrook contribute information to the national long-term nitrogen dioxide survey and were chosen over a decade ago.

The West Street site MV1, situated in a narrow street canyon, showed a significant decrease in 2024 on 2023, following three years of stable levels from 2021. The site was selected due to West Street's unique characteristics as a one way (single lane) high-sided canyon formed by tall buildings, which frequently experiences stationary traffic, especially during rush hour.

There are residential properties within the street at first floor level, and the site represents the worst traffic conditions within Dorking. The diffusion tube site is positioned in the middle of West Street, enhancing the representation of the street canyon effect. In 2010, an average mean level was recorded at 39.1µg/m³. This trend aligns with the overall long-term pattern for roadside monitoring sites and the ongoing decline in urban NO_2 emissions, primarily due to reductions in traffic emissions associated with the implementation of European Standards.

The Longsdale site MV3 was initially established in 1996, to represent the background concentrations in the residential areas of Dorking town. The average annual concentrations of NO_2 have generally remained between 15µg/m³ and 20µg/³ since the site's set up until 2017. From that point onwards, levels have declined to below 10µg/m³ in 2024.

The Pippbrook site MV14 was selected due to its relatively secure location and suitable distance from the busy A25, adjacent to the main roundabout which intersects the A24, a dual carriageway with daily flow rates of approx. 34,000 vehicles. During the morning and evening rush hours the roundabout becomes very congested, often resulting in queues of traffic waiting to negotiate the roundabout, especially on the A24 Northbound, A25 Westbound in the morning, and the A24 Southbound and A25 Eastbound in the evening. The site recorded the annual mean concentration of 16.7µg/m³ in 2019, which further decreased to 13.6µg/m³ in 2020 and 11.0µg/m³ in 2024, demonstrating a continuous decreasing trend since the set up in 2003.

Two new diffusion tubes sites, MV2 and MV13, were set up in 2016 at the top and bottom of Vincent Lane. This one-way road accommodates traffic filtering from the A24 heading towards Guildford or Dorking, becoming congested at rush hour periods. MV2 at Vincent Lane CH recorded annual mean concentrations within the range of 20µg/m³ over the monitoring period from 2016 to 2019, decreased in 2020 to 14.1µg/m³, and increased to 16.9µg/m³ in 2021. Meanwhile, Vincent Lane WS exceeded 30µg/m³ in 2016, 2017 and 2019, to decrease to approx. 20µg/m³ in 2020 and 2021. In 2022, levels at both sites increased slightly, with a more prominent increase for MV13 at 25.1 µg/m³. By 2024, the levels had declined to 11.8µg/m³ for MV2 and 20.0µg/m³ for MV13. Although these levels remain well below the objective, ongoing monitoring is recommended due to the sites representing the most congested areas in Dorking.

Overall, monitoring results in 2024 from long-term sites in Dorking have shown an initial increase since 2020 (after the pandemic), remained stable over 2021-2023, but have shown a significant decrease in 2024. Considering the concentrations are significantly lower than

in 2019 (pre-pandemic), it is important that monitoring for all sites continues to evidence the progress.

Leatherhead Sites

All of the Leatherhead sites are located in the vicinity of the M25 motorway. The site MV6, situated at the Surrey County Coucil Highways depot south of the M25, is a long-term site with data available from 1996 to the present. MV6 contributes information to the national long-term NO2 survey. The sites MV10, MV11 and MV12 are located in Green Lane, north of the M25.

The location of site MV6 at the Surrey County Coucil Highways depot is directly adjacent to the M25 and the A243 (dual carraige way). The site was selected as representative data could be collected without having to enter the curtilage of the M25. The average daily number of vehicles on the M25 (156,000) and A243 (25,000) suggests that this area of Leatherhead will have the highest levels of background NO_2. The site is a transport depot with no residential receptors present and no long term public exposure. From 1996 the concentrations of NO_2 at the site MV6 have decreased below the national objective level of 40µg/m³ and remained at the level of about 30µg/m³ from 2014-2017, to increase sharply again in 2019 to approx. 30µg/m³. The level then decreased below 17µg/m³ between 2020 and 2024.

The monitoring sites MV10, MV11 and MV12 at Green Lane were added in 2007. They have been located on lamp posts adjacent to the nearest residential properties that are exposed to emissions from the M25. The purpose of having these sites has been to determine the levels of NO_2 at varying distances from the edge of the motorway. The three sites thus located are MV10 (approximately 21m from the curtilage of the M25), MV11 (approx. 87m) and MV12 approx (63m). All three sites showed an increase in 2019 compared to 2018, followed by a significant (35%) decrease in 2020 to below 25µg/m³. Although the concentrations increased (by 11%) in 2021, they were still significantly below 2019 levels. Similar to Dorking sites, the levels remained fairly stable over 2021-2023 but decreased significantly in 2024 to levels below 17µg/m³.

Due to the close proximity to the M25, Leatherhead sites generally have elevated levels of background NO_2 compared to the rest of the district. As the main routes through the town are affected by a high volume of traffic, a new monitoring site MV17 was installed on Leret Way in 2019 to establish current NO_2 levels in that location. MV17 started with the level of 24.2µg/m³ and decreased significantly during the pandemic. The levels increased after 2020 but appear to be decreasing from 2022. The decrease in 2024 was to 14µg/m³.

Remaining Sites

Monitoring at Charlwood, Hookwood, Betchworth and Capel commenced in 2000; as such two decades of data has been available to investigate trends.

The diffusion tube MV7 in Betchworth is located at a property bordering the A25 and is intended to monitor the contribution of the road to NO_2 levels. The A25 road has relatively high traffic flows during the morning and evening rush hours with an average daily flow of 18,000 vehicles. The site has shown a slight increase over 2016 and 2017, however the concentrations reduced in 2018 and 2019, and the overall trend is that of a continuous decrease to below 10µg/m³ in 2024.

The MV5 site in Capel is situated in a background location, over 40m away from the A24. The A24 at this point in Capel has not been bypassed with a dual carriage as have other sections of the A24 and there seems to be little commitment to the scheme. Therefore at present it is still a single carriageway, which carries an average daily flow of 15,000 vehicles. The Capel site has shown a gradual decrease over the last 10 years of monitoring to levels below 10µg/m³.

MV8 Charlwood and MV9 Hookwood are suburban sites, which have been located closely in line with the prevailing south westerly winds coming from the direction of Gatwick Airport. The Charlwood site was selected because it was adjacent to an A2 PPC process (Brickworks), which has sinced closed in 2010. The site is in a suburban location and has remained below the level of 20µg/m³ over the monitoring period. MV8 Charlwood has shown a decreasing trend to 2015, followed by an increase between 2016 and 2019; the increase may have been caused by a rise in local traffic emissions on Russ Hill Road. In 2020 the site decreased by 26% on 2019, to increase post-pandemic over 2021-2022, after which the levels declined again to 10.3µg/m³ in 2024.

The trend for Hookwood has mainly been downwards with peaks recorded in 2010 and 2013. The site has shown a decrease both long-term and in the recent years, in line with the national trend for rural background sites. The results recorded in 2020 and 2021 at the Hookwood site MV9 were 8.1µg/m³ and 8.5µg/m³ respectively, followed by a slight increase over the past three years, with the result of 9.2µg/m³ in 2024.

A new suburban industrial site MV19, set up on Lowfield Heath Road at Gatwick Airport boundary in 2021, showed a concentration of 14.0µg/m³ for that year, increasing to levels above 15µg/m³ in the years proceeding. The MV4 Beare Green site showed a rising trend to 27.4 µg/m³ in 2022 but then decreased to 19.2µg/m³ in 2024.

In Fetcham, a roadside site MV16 was added in 2019 in the village centre, at the junction of The Street and Cobham Road. In 2019 the site showed a concentration of 23.7µg/m³, followed by a decrease to 15.0µg/m³ in 2020. Similar to other sites, the levels increased post-pandemic over 2021-2022 to decrease in 2023 and 2024 to 14.4µg/m³.

A new site MV15 at the Square-about in Bookham measured 21.7µg/m³ in 2021 and remained stable over 2022 and 2023, to decrease in 2024 to 18.7µg/m³.

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

There is currently no particulate matter monitoring undertaken by Mole Valley District Council.

3.2.3 Sulphur Dioxide (SO_2)

Mole Valley District Council does not monitor for sulphur dioxide.

Appendix A: Monitoring Results

Table A.1 – Details of Non-Automatic Monitoring Sites in 2024

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)
MV1	West St, Dorking	Roadside	516388	149366	NO_2	NO AQMA	1.0	2.0	NO	2.5
MV2	Vincent Ln CH, Dorking	Roadside	516273	148876	NO_2	NO AQMA	0.0	2.0	NO	2.5
MV3	Lonsdale Road, Dorking	Urban Background	516869	149797	NO_2	NO AQMA	N/A	27.0	NO	2.5
MV4	A24 Beare Green	Kerbside	517819	143055	NO_2	NO AQMA	11.0	1.0	NO	2.5
MV5	Osbrooks Lodge, A24 Horsham Rd, Capel	Urban Background	517227	138685	NO_2	NO AQMA	N/A	48.0	NO	2.5
MV6	Surrey County Council Highways Depot	Roadside	517210	157200	NO_2	NO AQMA	N	28.0	NO	2.5
MV7	A25 Reigate Road, Betchworth	Roadside	520204	150578	NO_2	NO AQMA	0.0	13.0	NO	2.5
MV8	8 Russ Hill, Charlwood	Suburban	523412	140582	NO_2	NO AQMA	N/A	36.0	NO	2.5
MV9	Withey Meadows, Hookwood	Suburban	526913	142369	NO_2	NO AQMA	N/A	55.0	NO	2.5
MV10	Green Lane Ashtead	Roadside	517712	156744	NO_2	NO AQMA	1.0	2.0 – Green Ln 21.0 – M25	NO	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
MV11	Green Lane Ashtead	Roadside	517804	156751	NO_2	NO AQMA	2.0	2.0 – Green Ln 87.0 – M25	NO	5.0
MV12	Green Lane (Quarry Gardens)	Roadside	517674	156840	NO_2	NO AQMA	2.0	2.0 – Green Ln 63.0 – M25	NO	2.5
MV13	Vincent Ln WS, Dorking	Kerbside	516120	149357	NO_2	NO AQMA	0.0	1.0	NO	2.5
MV14	Pippbrook Council Offices, Dorking	Roadside	517035	149805	NO_2	NO AQMA	N	15.0	NO	2.5
MV15	Square-about, Lower Road, Bookham	Kerbside	513483	154600	NO_2	NO AQMA	1.0	0.2	NO	2.5
MV16	Cobham Road, Fetcham	Kerbside	514677	156557	NO_2	NO AQMA	N	0.5	NO	2.5
MV17	Leret Road, Leatherhead	Roadside	516763	156563	NO_2	NO AQMA	5.0	1.5	NO	2.5
MV18	Deepdene Roundabout, Dorking	Kerbside	517241	149847	NO_2	NO AQMA	26.0	0.5	NO	2.5
MV19	Lowfield Heath Road, Charlwood	Kerbside	524909	140231	NO_2	NO AQMA	N	1.0	NO	2.5

Notes:

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

(2) N/A if not applicable.

(3) N – No exposure

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

Diffusion Tube ID	Site Name	Site Type	Triplicate or Co-located Tube?	OS Grid Ref X	OS Grid Ref Y	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Diffusion Tube Height
Beare Green Sites										
MV4	A24 Beare Green	Kerbside	N	517819	143055	NO_2	NO AQMA	Y (11m)	1m	2.5m
Betchworth Sites										
MV7	A25 Reigate Road, Betchworth	Roadside	N	520204	150578	NO_2	NO AQMA	Y (0m)	13m	2.5m
Bookham Sites										
MV15	Square-about, Lower Road, Bookham	Kerbside	N	513483	154600	NO_2	NO AQMA	Y (1m)	0.2m	2.5m
Capel Sites										
MV5	Osbrooks Lodge, A24 Horsham Rd, Capel	Urban Background	N	517227	138685	NO_2	NO AQMA	N/A	48m	2.5m
Charlwood Sites										
MV8	8 Russ Hill, Charlwood	Suburban	N	523412	140582	NO_2	NO AQMA	N/A	36m	2.5m
MV19	Lowfield Heath Road, Charlwood	Kerbside	N	524909	140231	NO_2	NO AQMA	N	1m	2.5m
Dorking Sites										
MV1	West Street, Dorking	Roadside	N	516388	149366	NO_2	NO AQMA	Y (1m)	2m	2.5m
MV2	Vincent Ln CH, Dorking	Roadside	N	516273	148876	NO_2	NO AQMA	Y (0m)	2m	2.5m
MV3	Lonsdale Road, Dorking	Urban Background	N	516869	149797	NO_2	NO AQMA	N/A	27m	2.5m
MV13	Vincent Ln WS, Dorking	Kerbside	N	516120	149357	NO_2	NO AQMA	Y (0m)	1m	2.5m
MV14	Pippbrook Council Offices, Dorking	Roadside	N	517035	149805	NO_2	NO AQMA	N	15m	2.5m
MV18	Deepdene Roundabout	Kerbside	N	517241	149847	NO_2	NO AQMA	Y (26)m	0.5m	2.5m
Fetcham Sites										
MV16	Cobham Road, Fetcham	Kerbside	N	514677	156557	NO_2	NO AQMA	N	0.5m	2.5m

Diffusion Tube ID	Site Name	Site Type	Triplicate or Co-located Tube?	OS Grid Ref X	OS Grid Ref Y	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Diffusion Tube Height
Hookwood Sites										
MV9	Withey Meadows, Hookwood	Suburban	N	526913	142369	NO_2	NO AQMA	N/A	55m – Reigate Rd	2.5m
Leatherhead Sites										
MV6	Surrey County Council Highways Depot	Roadside	N	517210	157200	NO_2	NO AQMA	N	28m	2.5m
MV10	Green Lane, Ashtead	Roadside	N	517712	156744	NO_2	NO AQMA	Y (1m)	2m – Green Ln 21m – M25	2.5m
MV11	Green Lane, Ashtead	Roadside	N	517804	156751	NO_2	NO AQMA	Y (2m)	2m – Green Ln 87m – M25	5.0m
MV12	Green Lane (Quarry Gardens)	Roadside	N	517674	156840	NO_2	NO AQMA	Y (2m)	2m – Green Ln 63m – M25	2.5m
MV17	Leret Way, Leatherhead	Roadside	N	516763	156563	NO_2	NO AQMA	Y (1.5m)	5m	2.5m

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.

(3) N – No exposure

Table A.3 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
MV1	516388	149366	Roadside	95.7	95.7	16.1	20.0	19.9	20.0	13.7
MV2	516273	148876	Roadside	95.7	95.7	14.1	16.9	17.7	16.5	11.8
MV3	516869	149797	Urban Background	95.7	95.7	9.7	12.1	12.3	12.1	9.1
MV4	517819	143055	Kerbside	95.7	95.7	23.4	25.2	27.4	25.9	19.2
MV5	517227	138685	Urban Background	95.7	95.7	8.3	10.3	11.1	9.2	8.4
MV6	517210	157200	Roadside	83.0	83.0	22.5	22.7	23.4	22.2	16.6
MV7	520204	150578	Roadside	95.7	95.7	10.8	12.4	12.4	11.3	9.1
MV8	523412	140582	Suburban	95.7	95.7	11.6	12.1	14.0	12.8	10.3
MV9	526913	142369	Suburban	86.3	86.3	8.1	8.5	10.1	9.7	9.2
MV10	517712	156744	Roadside	61.7	61.7	22.4	23.1	23.6	22.0	15.2
MV11	517804	156751	Roadside	95.7	95.7	17.5	20.4	21.1	19.3	15.2
MV12	517674	156840	Roadside	95.7	95.7	17.6	20.1	19.4	17.9	14.7
MV13	516120	149357	Kerbside	95.7	95.7	19.8	22.9	25.1	24.2	20.0
MV14	517035	149805	Roadside	95.7	95.7	13.6	13.2	16.1	13.4	11.0
MV15	513483	154600	Kerbside	88.1	88.1	-	21.7	22.0	21.3	18.7
MV16	514677	156557	Kerbside	95.7	95.7	15.0	18.2	22.1	19.8	14.4
MV17	516763	156563	Roadside	83.0	83.0	17.5	20.2	21.8	19.0	14.0
MV18	517241	149847	Kerbside	95.7	95.7	28.2	32.6	29.1	31.5	25.4
MV19	524909	140231	Kerbside	95.7	95.7	-	14.0	17.1	16.3	13.4

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

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

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

Notes:

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

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

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

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

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

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

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

Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3) by Area and Across Monitoring Period

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture 2024 (%) [2]	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
					(BF = 1.0)	(BF= 1.06)	(BF = 0.91)	(BF = 1.03)	(BF = 0.92)	(BF = 0.97)	(BF = 0.94)	(BF = 0.95)	(BF = 0.85)	(BF = 0.81)
Beare Green Sites														
MV4	517819	143055	K	95.7	-	-	-	-	-	23.4	25.2	27.4	25.9	19.2
Betchworth Sites														
MV7	520204	150578	R	95.7	14.5	17.3	17.2	14.9	14.6	10.8	12.4	12.4	11.3	9.1
Bookham Sites														
MV15	513483	154600	K	88.1	-	-	-	-	-	-	21.7	22.0	21.3	18.7
Capel Sites														
MV5	517227	138685	UB	95.7	11.2	14.5	12.2[a]	11.4	11.2	8.3	10.3	11.1	9.2	8.4
Charlwood Sites														
MV8	523412	140582	S	95.7	9.4	15.4	18.1	14.6	15.7	11.6	12.1	14.0	12.8	10.3
MV19	524909	140231	K	95.7	-	-	-	-	-	-	14.0	17.1	16.3	13.4
Dorking Sites														
MV1	516388	149366	R	95.7	22.7	27.2	24.4	23.4	23.1	16.1	20.0	19.9	20.0	13.7
MV2	516273	148876	R	95.7	-	21.2[a]	20.2	18.2	20.1	14.1	16.9	17.7	16.5	11.8
MV3	516869	149797	UB	95.7	14.5	17.6	16.9	13.4	13	9.7	12.1	12.3	12.1	9.1
MV13	516120	149357	K	95.7	-	30.2[a]	33.1	28.5	30.7	19.8	22.9	25.1	24.2	20.0
MV14	517035	149805	R	95.7	16.9	21.0[a]	17.7	15.6	16.7	13.6	13.2	16.1	13.4	11.0
MV18	517241	149847	K	95.7	-	-	-	-	-	28.2	32.6	29.1	31.5	25.4
Fetcham Sites														
MV16	514677	156557	K	95.7	-	-	-	-	23.7	15.0	18.2	22.1	19.8	14.4
Hookwood Sites														
MV9	526913	142369	S	86.3	14.4	15.5	10.9	10.3	11	8.1	8.5	10.1	9.7	9.2
Leatherhead Sites														
MV6	517210	157200	R	83.0	28.4	30.0	30.3	23.7	29.5	22.5	22.7	23.4	22.2	16.6
MV10	517712	156744	R	61.7	31.2	35.1	32.9	28.5	31.1	22.4	23.1	23.6	22.0	15.2
MV11	517804	156751	R	95.7	27.8	31.7	27.8[a]	22.3	27.3	17.5	20.4	21.1	19.3	15.2
MV12	517674	156840	R	95.7	24.8	29.3	29.5	22.8	29.6	17.6	20.1	19.4	17.9	14.7
MV17	516763	156563	R	83.0	-	-	-	-	24.2	17.5	20.2	21.8	19.0	14.0

[a] Annual mean concentration "annualised" as per Box 7.10 of TG(16) as data capture less than 75%.

NBF – National Bias Adjustment Factor; LBF – Local (regional) Bias Adjustment Factor

K – Kerbside; R-Roadside; S – Suburban; UB – Urban background

In **bold**, exceedance of the NO_2 annual mean objective of 40µg/m^3.

Figure A.1 – Trends in Annual Mean NO_2 Concentrations Measured at Diffusion Tube Monitoring Sites 2020-2024: Dorking

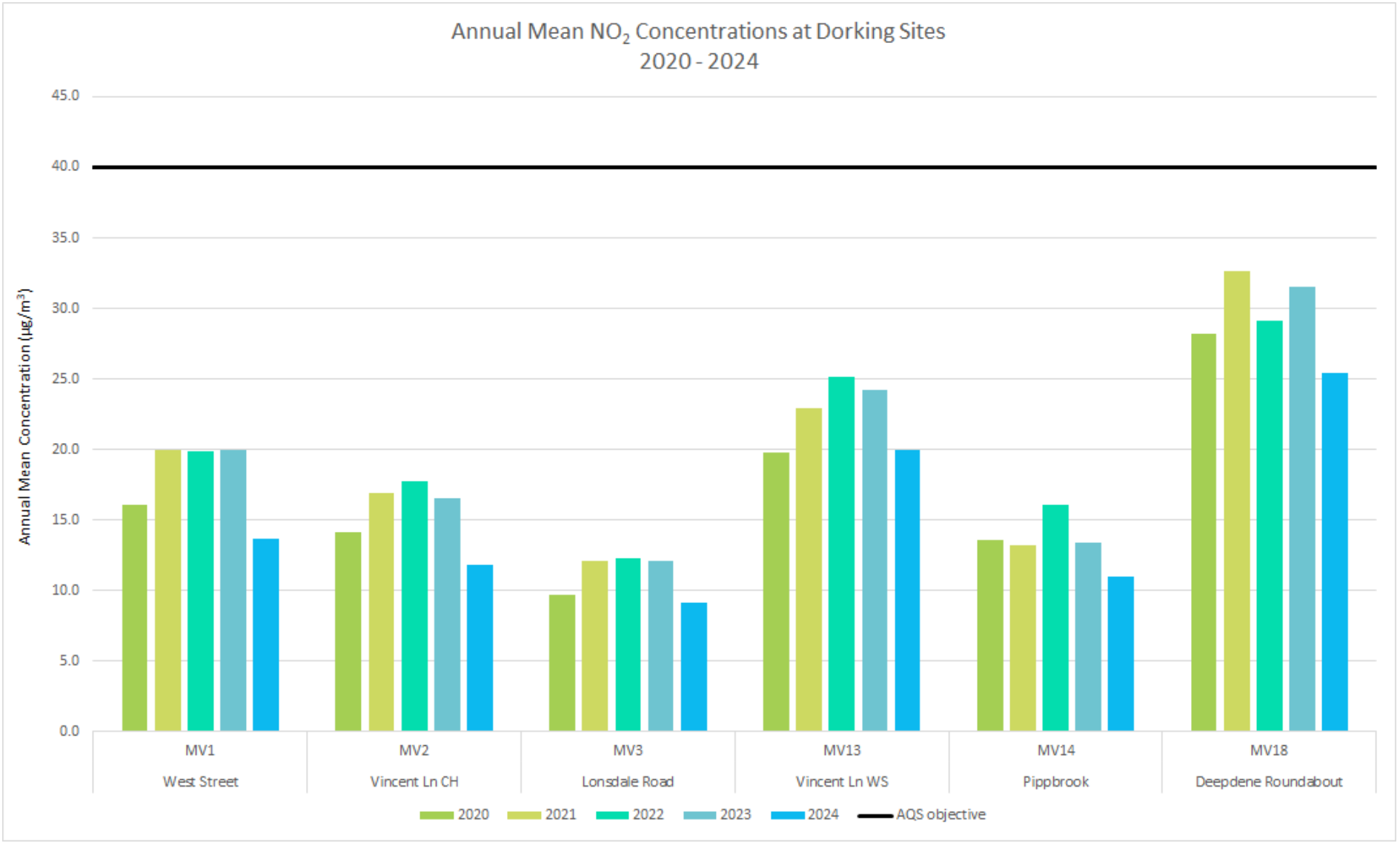


Figure A.2 – Trends in Annual Mean NO_2 Concentrations Measured at Diffusion Tube Monitoring Sites 2015-2024: Dorking

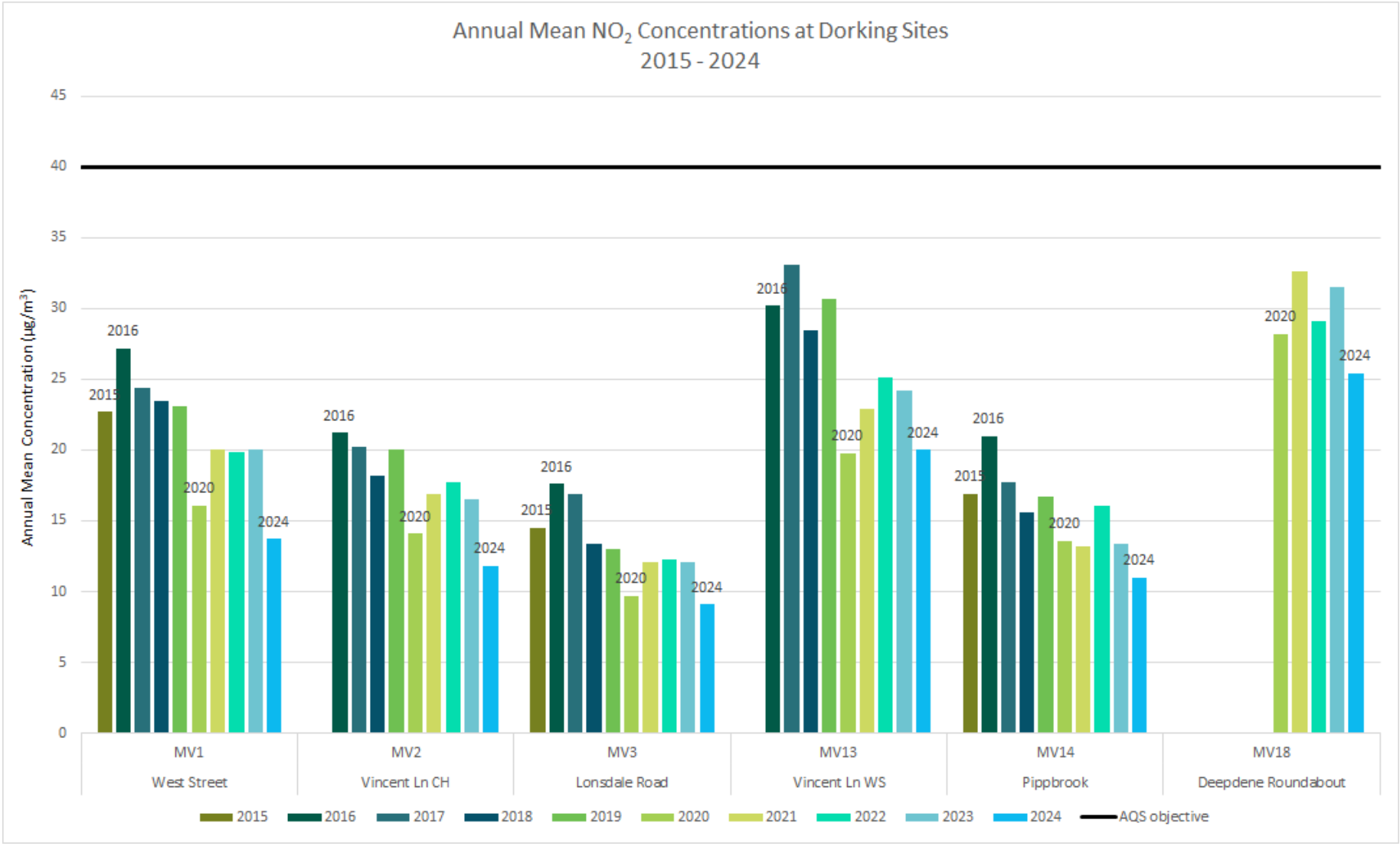


Figure A.3 – Trends in Annual Mean NO_2 Concentrations Measured at Diffusion Tube Monitoring Sites 2020-2024: Leatherhead

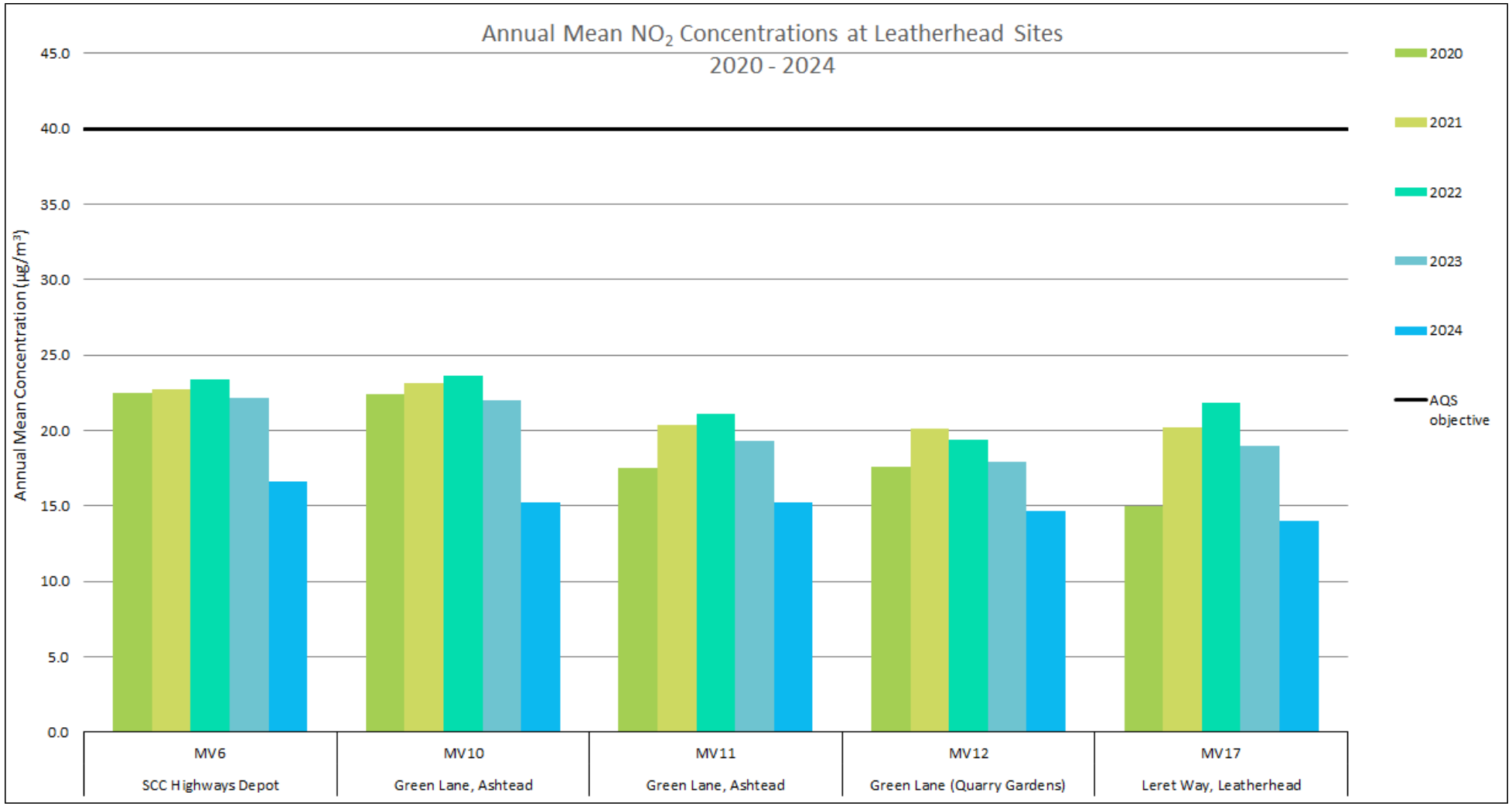


Figure A.4 – Trends in Annual Mean NO_2 Concentrations Measured at Diffusion Tube Monitoring Sites 2015-2024: Leatherhead

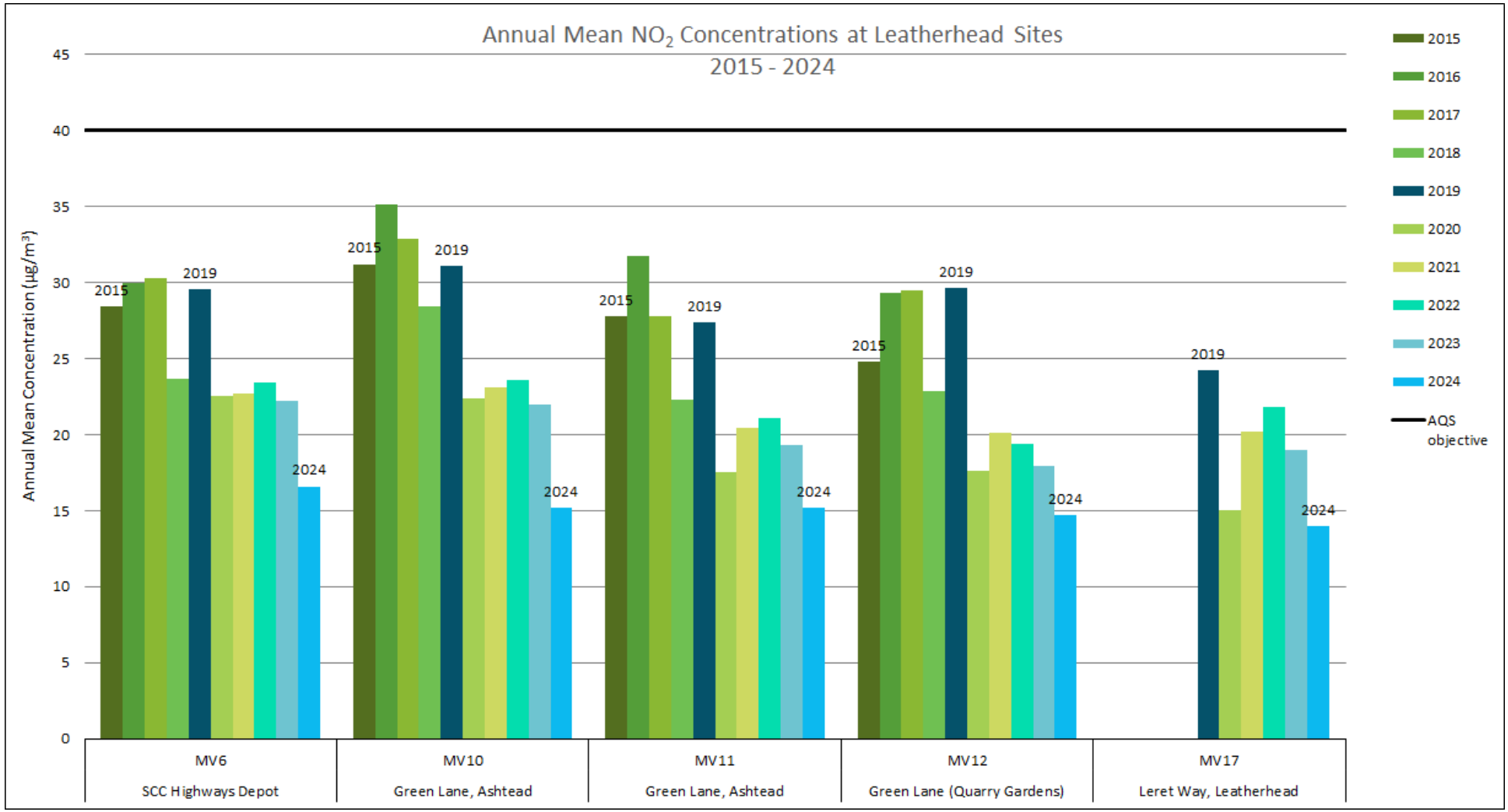


Figure A.5 – Trends in Annual Mean NO_2 Concentrations Measured at Diffusion Tube Monitoring Sites 2020-2024: Betchworth, Bookham, & Fetcham

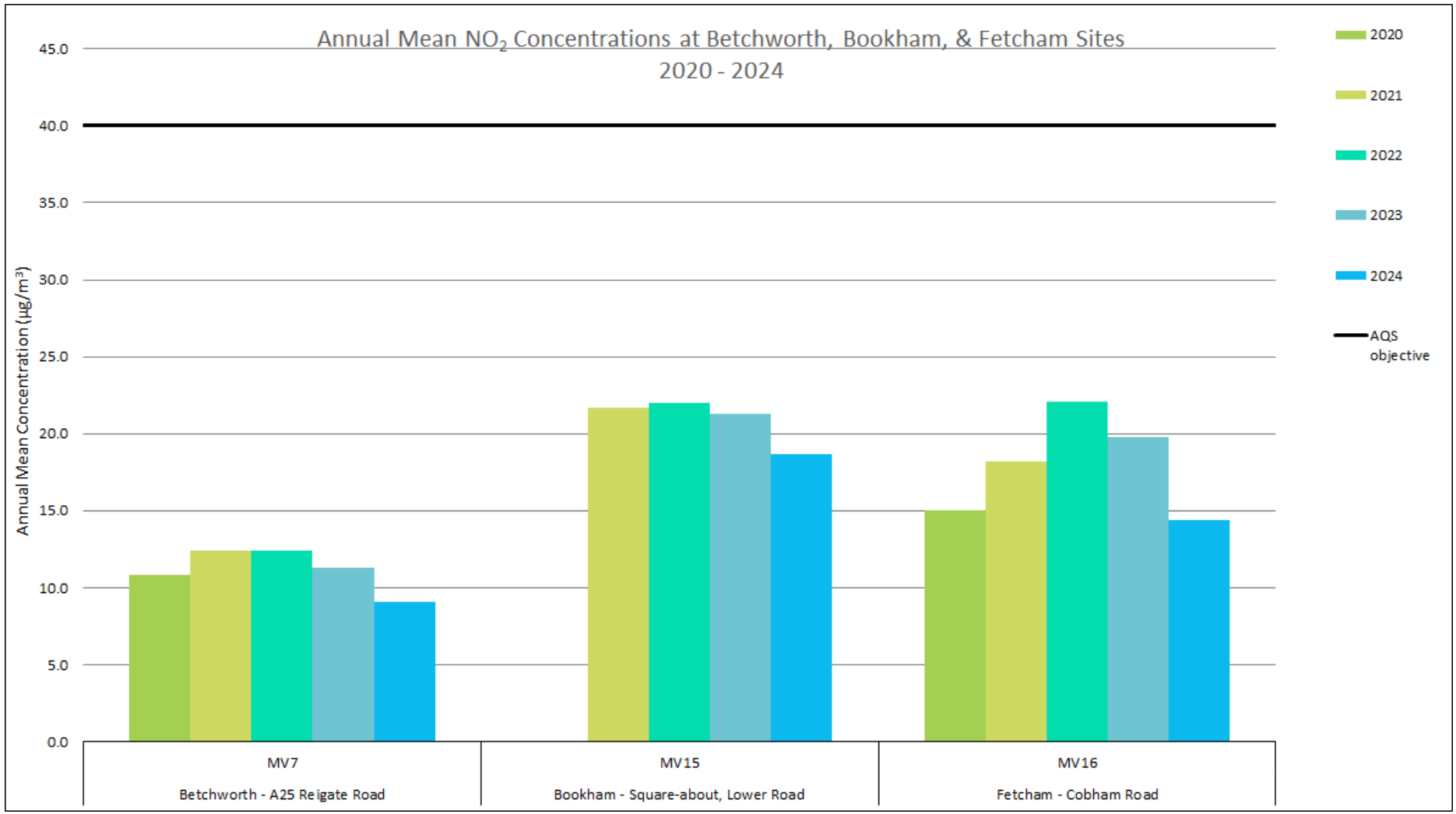


Figure A.6 – Trends in Annual Mean NO_2 Concentrations Measured at Diffusion Tube Monitoring Sites 2015-2024: Betchworth, Bookham, & Fetcham

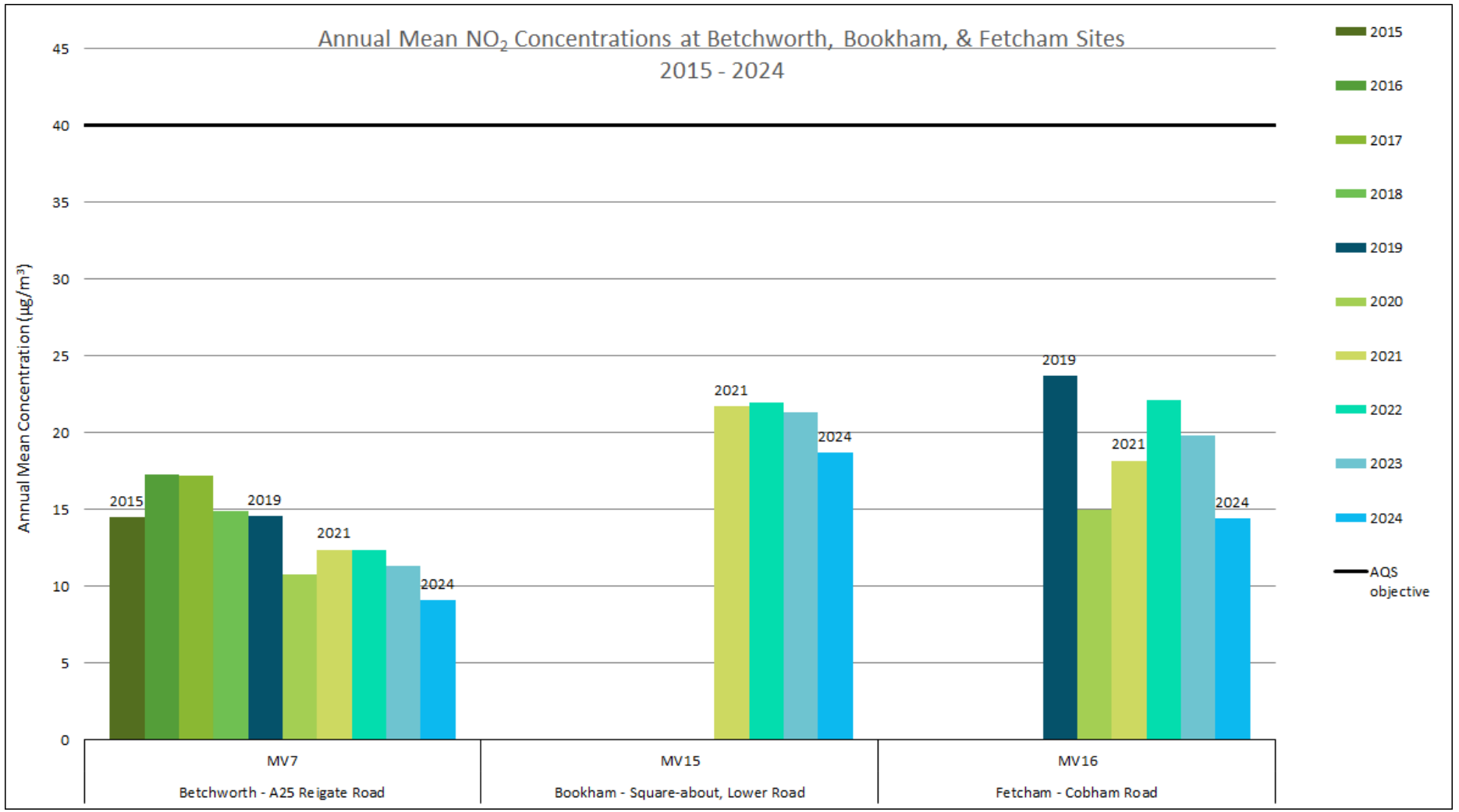


Figure A.7 – Trends in Annual Mean NO_2 Concentrations Measured at Diffusion Tube Monitoring Sites 2020-2024: Remaining Sites

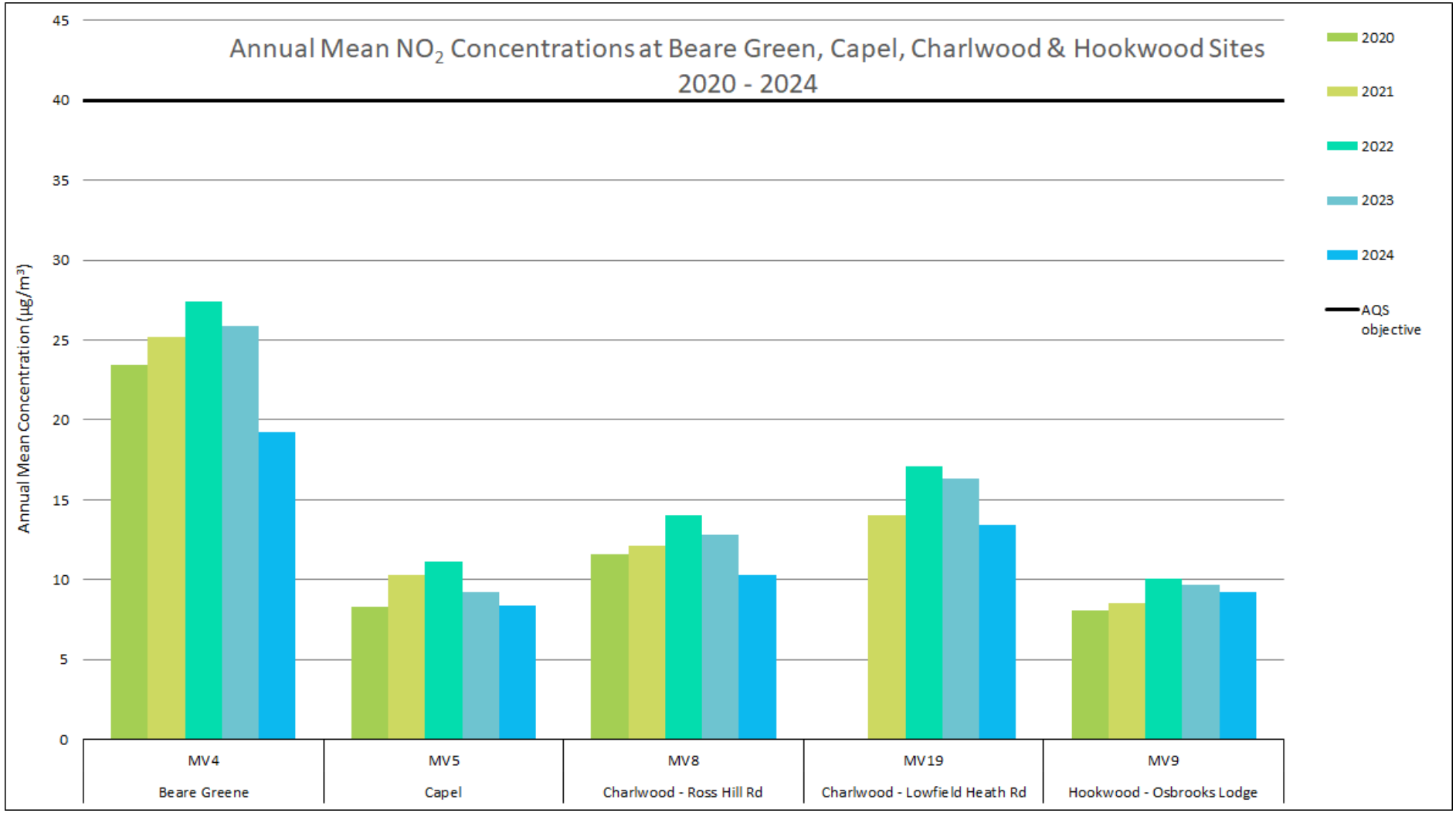
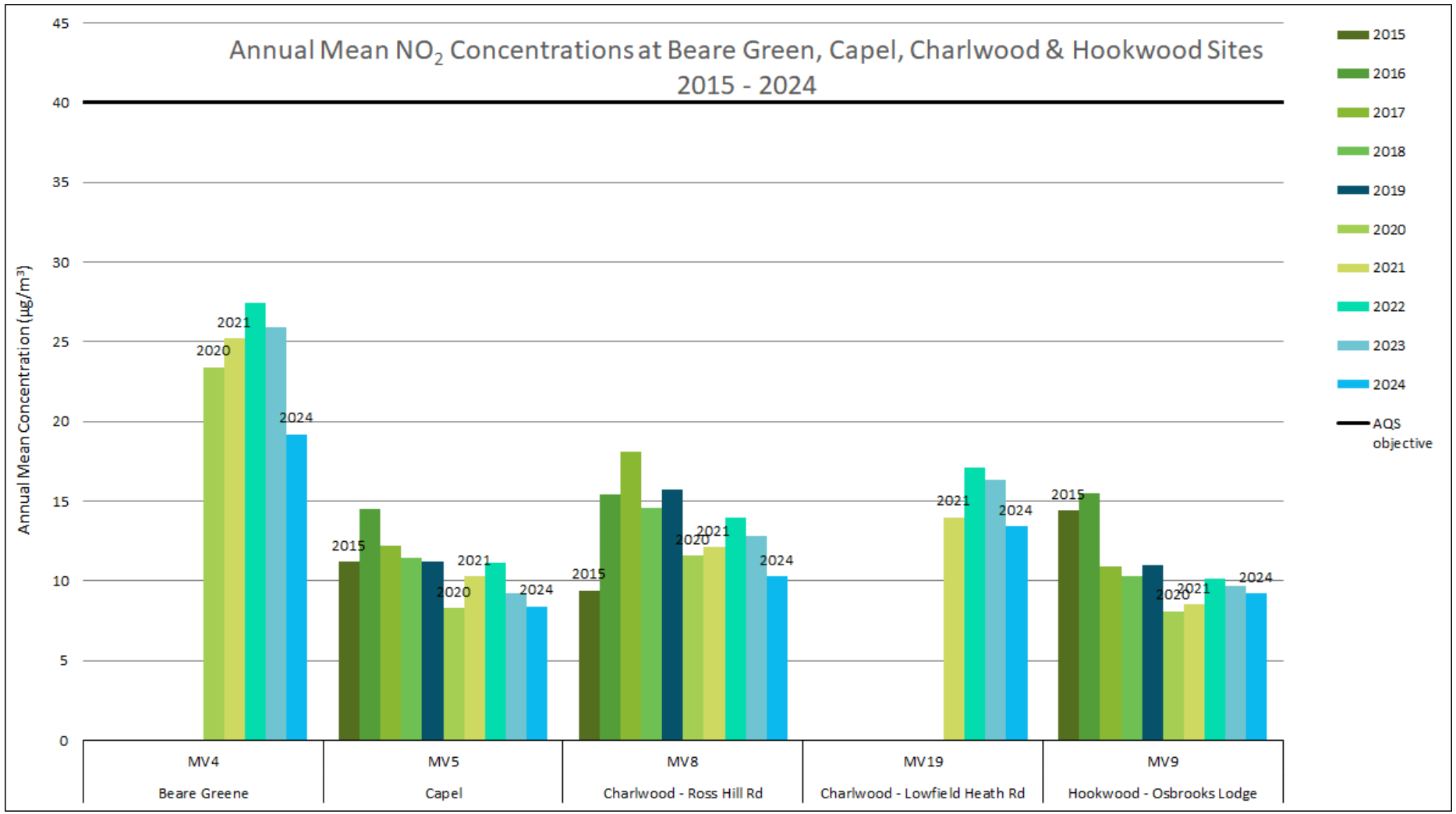


Figure A.8 – Trends in Annual Mean NO_2 Concentrations Measured at Diffusion Tube Monitoring Sites 2015-2024: Remaining Sites



Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO_2 2024 Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
MV1	516388	149366	13.0	20.0	22.0	20.0	19.0	17.0	19.0	16.0	15.0	9.0	22.0	16.0	16.9	13.7		
MV2	516273	148876	10.0	17.0	17.0	18.0	14.0	13.0	12.0	10.0	18.0	14.0	18.0	13.0	14.5	11.8		
MV3	516869	149797	7.0	13.0	13.0	14.0	11.0	9.0	9.0	7.0	11.0	13.0	16.0	10.0	11.3	9.1		
MV4	517819	143055	16.0	27.0	26.0	25.0	28.0	26.0	23.0	19.0	27.0	23.0	21.0	19.0	23.6	19.2		
MV5	517227	138685	4.0	10.0	11.0	10.0	11.0	18.0	9.0	8.0	10.0	11.0	10.0	9.0	10.3	8.4		
MV6	517210	157200	24.0	24.0	23.0	26.0	19.0	10.0	21.0	18.0	25.0	19.0			20.6	16.6		
MV7	520204	150578	7.0	12.0	13.0	13.0	12.0	14.0	11.0	9.0	11.0	9.0	13.0	12.0	11.2	9.1		
MV8	523412	140582	8.0	15.0	16.0	14.0	12.0	18.0	12.0	10.0	14.0	10.0	13.0	11.0	12.7	10.3		
MV9	526913	142369	4.0	11.0	12.0	11.0		7.0	9.0	8.0	14.0	18.0	12.0	11.0	11.3	9.2		
MV10	517712	156744	22.0	28.0	26.0	22.0					16.0	12.0	23.0	16.0	19.9	15.2		
MV11	517804	156751	24.0	22.0	23.0	18.0	18.0	17.0	18.0	15.0	18.0	20.0	20.0	12.0	18.8	15.2		
MV12	517674	156840	15.0	20.0	20.0	17.0	17.0	16.0	20.0	17.0	17.0	20.0	20.0	16.0	18.1	14.7		
MV13	516120	149357	23.0	31.0	30.0	30.0	22.0	24.0	23.0	18.0	23.0	25.0	28.0	20.0	24.7	20.0		
MV14	517035	149805	14.0	16.0	16.0	14.0	16.0	13.0	12.0	10.0	12.0	12.0	16.0	13.0	13.5	11.0		
MV15	513483	154600	24.0	24.0	47.0	22.0	19.0	18.0		13.0	20.0	25.0	28.0	15.0	23.1	18.7		
MV16	514677	156557	20.0	24.0	21.0	21.0	17.0	12.0	18.0	15.0	21.0	15.0	18.0	13.0	17.7	14.4		
MV17	516763	156563	15.0	21.0	22.0	17.0	20.0	14.0	17.0	12.0	21.0	15.0			17.3	14.0		
MV18	517241	149847	34.0	34.0	33.0	35.0	34.0	32.0	32.0	24.0	36.0	31.0	27.0	24.0	31.3	25.4		
MV19	524909	140231	8.0	19.0	18.0	18.0	14.0	14.0	19.0	16.0	17.0	19.0	15.0	18.0	16.6	13.4		

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1**

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

☐ **Local (regional) bias adjustment factor used**

☒ **National bias adjustment factor used**

☒ **Data has not been distance corrected for relevant exposure in the final column as all results are below 36µg/m^3**

☒ **Mole Valley District Council confirm that all 2024 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:

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

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **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 Mole Valley District Council During 2024

Mole Valley District Council has not identified any new sources relating to air quality within the reporting year of 2024.

Additional Air Quality Works Undertaken by Mole Valley District Council During 2024

Mole Valley District Council has published the district's Air Quality Strategy[14] within the reporting year of 2024. The focus of the document is on the actions undertaken within the organisation and the Surrey County Council to improve air quality in the Mole Valley Area.

QA/QC of Diffusion Tube Monitoring

Diffusion tubes are supplied and analysed by Lambeth Scientifics Services using the 50% TEA (a chemical that absorbs nitrogen dioxide) in acetone preparation method.

The diffusion tube deployment dates adhered to the 2024 Diffusion Tube Monitoring Calendar for most of the year. There were some divergences from the calendar, i.e. January, October and December exposure periods varied beyond the recommended 4-5 week (+/- 4 days) exposure periods.

Laboratories participate in two QA/QC schemes. The new AIR-PT Scheme (a continuation of the Workplace Analysis Scheme for Proficiency (WASP)) is run by LGC and supported by the Health & Safety Laboratory. The other scheme is a monthly field intercomparison Exercise operated by the National Physics Laboratory (NPL). Defra advises that local

[14] https://www.molevalley.gov.uk/environmental-health/air-quality-strategy/

authorities should use diffusion tubes supplied by laboratories that have demonstrated satisfactory performance under the QA/QC schemes.

Lambeth Scientific is a UKAS accredited laboratory and participates in both QA/QC schemes described above. The list of those laboratories which have performed satisfactorily in the AIR-PT scheme is provided to local authorities on the LAQM Support website. In the latest available AIR-PT edition of results, Lambeth Scientific has scored 100% for all rounds in 2024. The percentage score reflects the results deemed to be satisfactory based upon the z-score of < ± 2.

Regarding the inter-comparison co-location study from Marylebone Road, it was rated as 'good' (tubes are considered to have "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%).

Diffusion Tube Annualisation

Annualisation (short to long term data adjustment) is required for any site with data capture less than 75% but greater than 25%.

The adjustment was undertaken for one diffusion tube monitoring site in Green Lane, MV10, where data capture was affected by difficult access.

The calculations presented in Table C.1 were carried out using Diffusion Tube Data Processing Tool[15] in line with LAQM Technical Guidance LAQM Guidance TG(22) Box 7-9.

Table C.1 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Reading New Town	Annualisation Factor Lullington Heath	Annualisation Factor London Bexley	Annualisation Factor Thurrock	Average Annualisation Factor	Raw Data Time Weighted Annual Mean (µg/m^3)	Annualised Data Time Weighted Annual Mean (µg/m^3)
MV10	0.9134	0.9754	0.9398	0.9472	0.9439	19.9	18.8

[15] https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/

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.

Mole Valley District Council have applied a national bias adjustment factor of 0.81 to the 2024 monitoring data. A summary of bias adjustment factors used by Mole Valley District Council over the past five years is presented in Table C.2.

The rationale for using the national bias adjustment factor is given in Table C.2.

Table C.2 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor	Comments
2024	National		0.81	MVDC does not undertake continuous monitoring so there are no co-location studies available locally. In addition, no other Surrey co-location studies were available at the moment of writing aside from that included in the national database. Historically, a national bias adjustment factor was used most of the time to adjust the diffusion tube data and has therefore been applied for 2024. The overall factor from the national database in March 2024 was 0.81, based on 2 regional co-location studies in 2 different locations; Spelthorne Borough Council and Marylebone Road

				intercomparison. The version of the National Bias Adjustment Factor Spreadsheet is 03/25. Figure below shows calculations of bias adjustment factor.

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/25

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2025
LAQM Helpdesk Website

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.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

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	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.
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]	If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[5]	Bias Adjustment Factor (A) (Cm/Dm)
Lambeth Scientific Services	50% TEA in acetone	2024	KS	Marylebone Road Intercomparison	10	44	35	26.5%	G	0.79
Lambeth Scientific Services	50% TEA in acetone	2024	UB	Spelthorne Borough Council	12	22	18	20.1%	G	0.83
Lambeth Scientific Services	50% TEA in acetone	2024		Overall Factor[3] (2 studies)				Use		0.81

2023	National		0.85	MVDC does not undertake continuous monitoring so there are no co-location studies available locally. Historically, a national bias adjustment factor was used to adjust the diffusion tube data for all the previous years of monitoring and has therefore been applied for 2024. The overall factor from the national database in March 2024 was 0.85, based on 3 regional co-location studies in 2 different locations; Elmbridge Borough Council and Marylebone Road intercomparison. The version of the National Bias Adjustment Factor Spreadsheet is 03/24. Table below shows calculations of bias adjustment factor.

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

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2024
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Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

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	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.
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]	If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[5]	Bias Adjustment Factor (A) (Cm/Dm)
Lambeth Scientific Services	50% TEA in acetone	2023	R	Elmbridge Borough Council	12	29	28	2.5%	G	0.98
Lambeth Scientific Services	50% TEA in acetone	2023	R	Elmbridge Borough Council	10	29	25	15.3%	G	0.87
Lambeth Scientific Services	50% TEA in acetone	2023	KS	Marylebone Road Intercomparison	11	51	38	36.9%	G	0.73
Lambeth Scientific Services	50% TEA in acetone	2023		Overall Factor[3] (3 studies)				Use		0.85

2022	National	-	0.95	MVDC does not undertake continuous monitoring so there are no co-location studies available locally. Historically, a national bias adjustment factor was used to adjust the diffusion tube data for all the previous years of monitoring and has therefore been applied for 2022. The overall factor from the national database in March 2022 was 0.95, based on 4 regional co-location studies in 3 different locations; Spelthorne Borough Council, Surrey Heath Borough Council and Marylebone Road Intercomparison.
2021	Local (regional)	-	0.94	MVDC does not undertake continuous monitoring so there are no co-location studies available locally. Historically, a national bias adjustment factor was the prevalent factor used to adjust the diffusion tube data. The overall factor from the national database in March 2022 was 0.97, based on 4 regional co-location studies combined with a Marylebone study. However, four more regional studies from Reigate became available in May. All regional co-location studies had good data capture and precision. Although arguably both national or regional factors could have been used, it was decided to remain consistent with previous years and apply a regional factor, which had the advantage of utilising a higher number of co-location studies. It is expected that those additional studies will be included in the next release of the national database in June.
2020	Local (regional)	-	0.97	MVDC does not undertake continuous monitoring so there are no co-location studies available locally.

				Historically, a national bias adjustment factor was the prevalent factor used to adjust the diffusion tube data. The national database of bias factors contained 5 regional studies in March 2021. However, three more studies became available in April. All regional co-location studies had good data capture and precision. Although it would not be unreasonable to use a national bias adjustment factor, the regional factor was deemed to give more accurate results and its value was slightly more conservative. As such the regional factor was used to adjust 2020 results.
2019	Local (regional)	-	0.92	MVDC does not undertake continuous monitoring so there are no co-location studies available locally. Historically, a national bias adjustment factor was the prevalent factor used to adjust the diffusion tube data. However, the March 2020 version of the national database of adjustment factors listed only one co-location study for 2019, from the inter-comparison survey at Marylebone Road in London. As concentrations measured in central London are much higher than those measured locally, a decision was taken to use the regional bias adjustment factor for 2019, obtained from several co-location studies in Surrey. Those studies had good data capture and tube precision in 2019. The value of the national database factor was lower (0.85, based on the Marylebone inter-comparison study). Thus, the use of the regional bias adjustment factor represented a more conservative approach.

NO_2 Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure should be estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

Distance correction should be considered at any monitoring site where the annual mean concentration is greater than 36µg/m^3 and the monitoring site is not located at a point of relevant exposure (taking the limitations of the LAQM NO_2 fall-off with distance calculator into account).

As the monitoring results were below 36µg/m^3 at all sites no diffusion tube NO_2 monitoring locations within Mole Valley District Council required distance correction during 2024.

Appendix D: Map(s) of Monitoring Locations and $PM_{2.5}$ background levels

Figure D.1 – Locations of Diffusion Tube Monitoring Sites (2024)

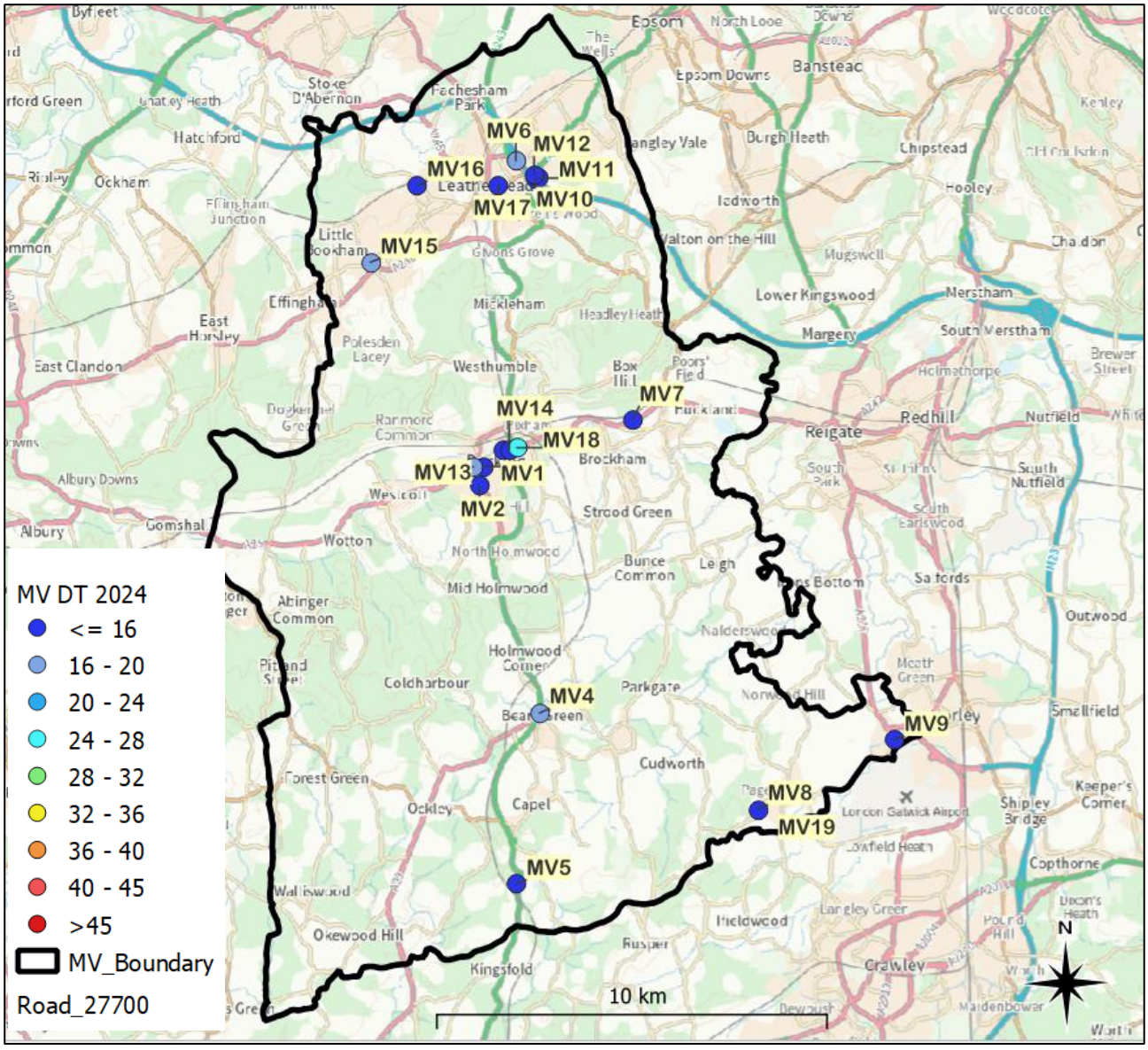


Figure D.2 – Locations of Diffusion Tube Monitoring Sites – Dorking (2024)

Figure D.3 – Locations of Diffusion Tube Monitoring Sites – Deepdene Roundabout, Dorking (2024)

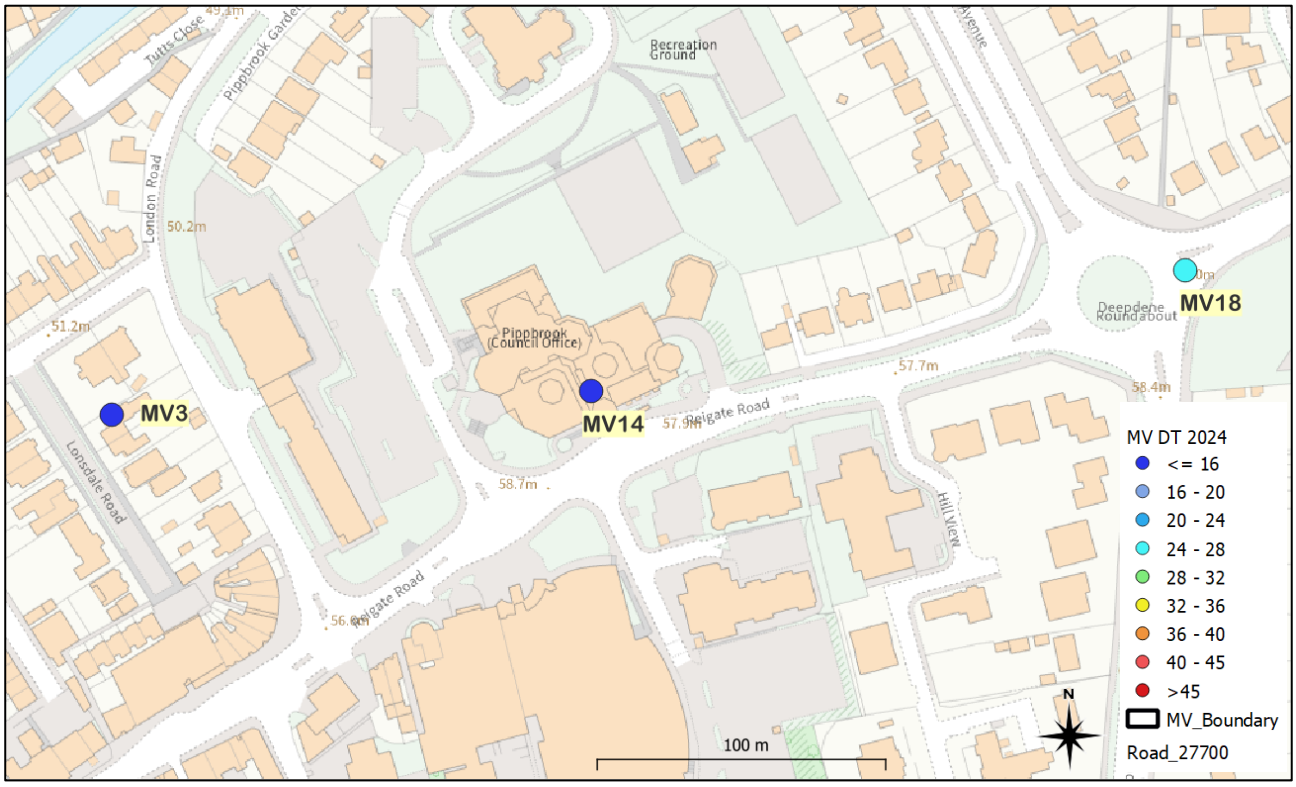


Figure D.4 – Locations of Diffusion Tube Monitoring Sites – Leatherhead (2024)

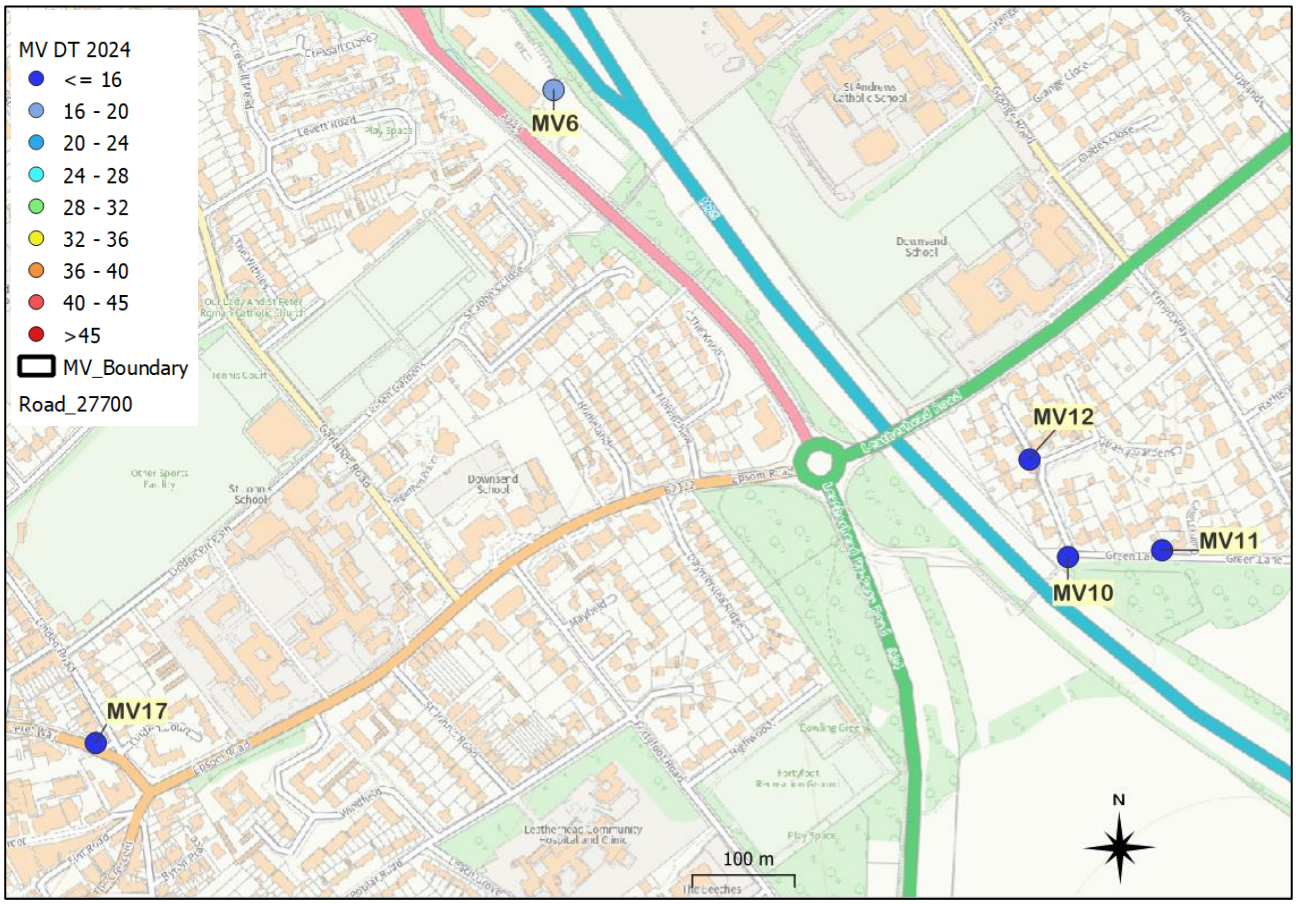


Figure D.5 – Locations of Diffusion Tube Monitoring Sites – Bookham & Fetcham (2024)

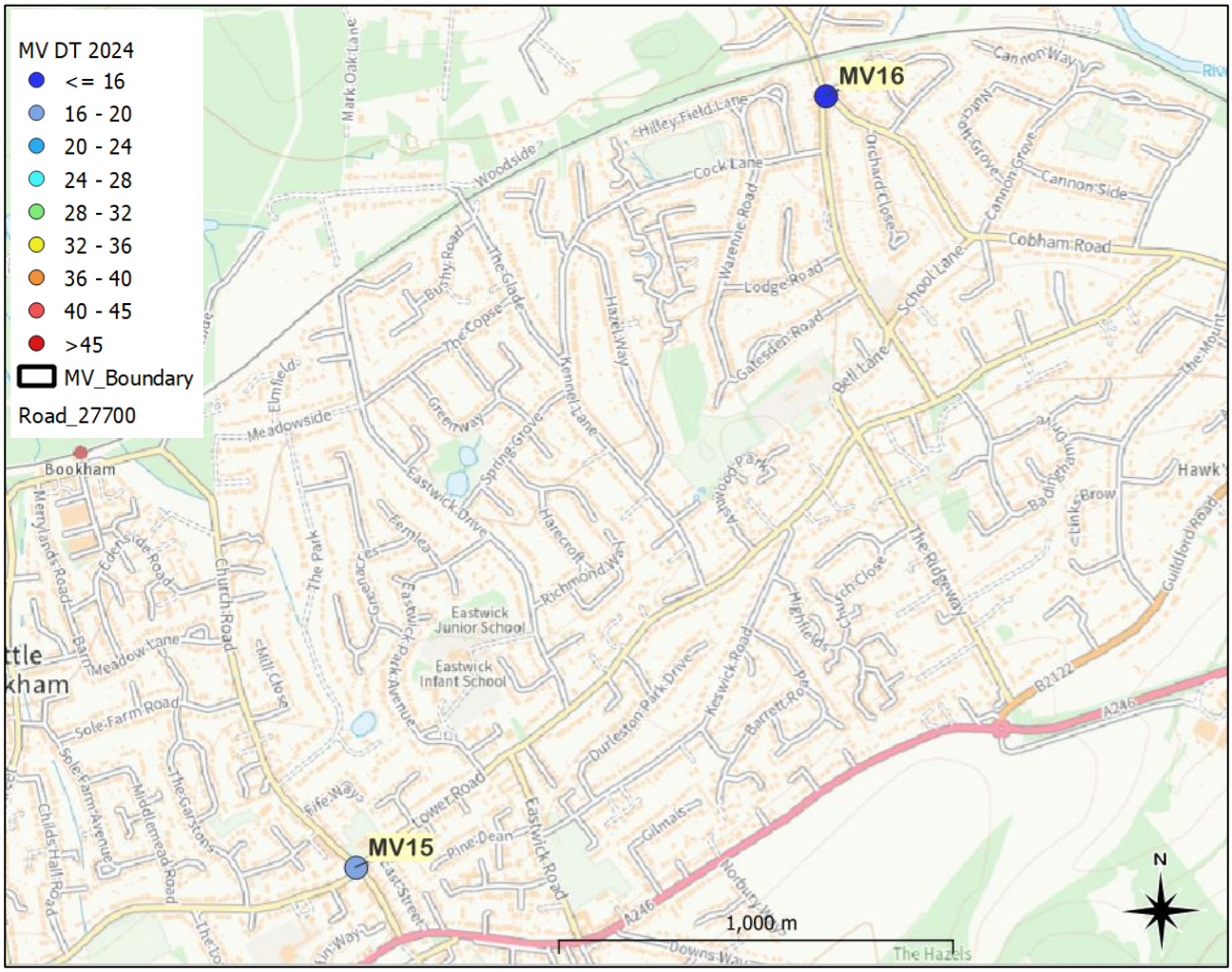


Figure D.6 – Locations of Diffusion Tube Monitoring Sites – Betchworth (2024)

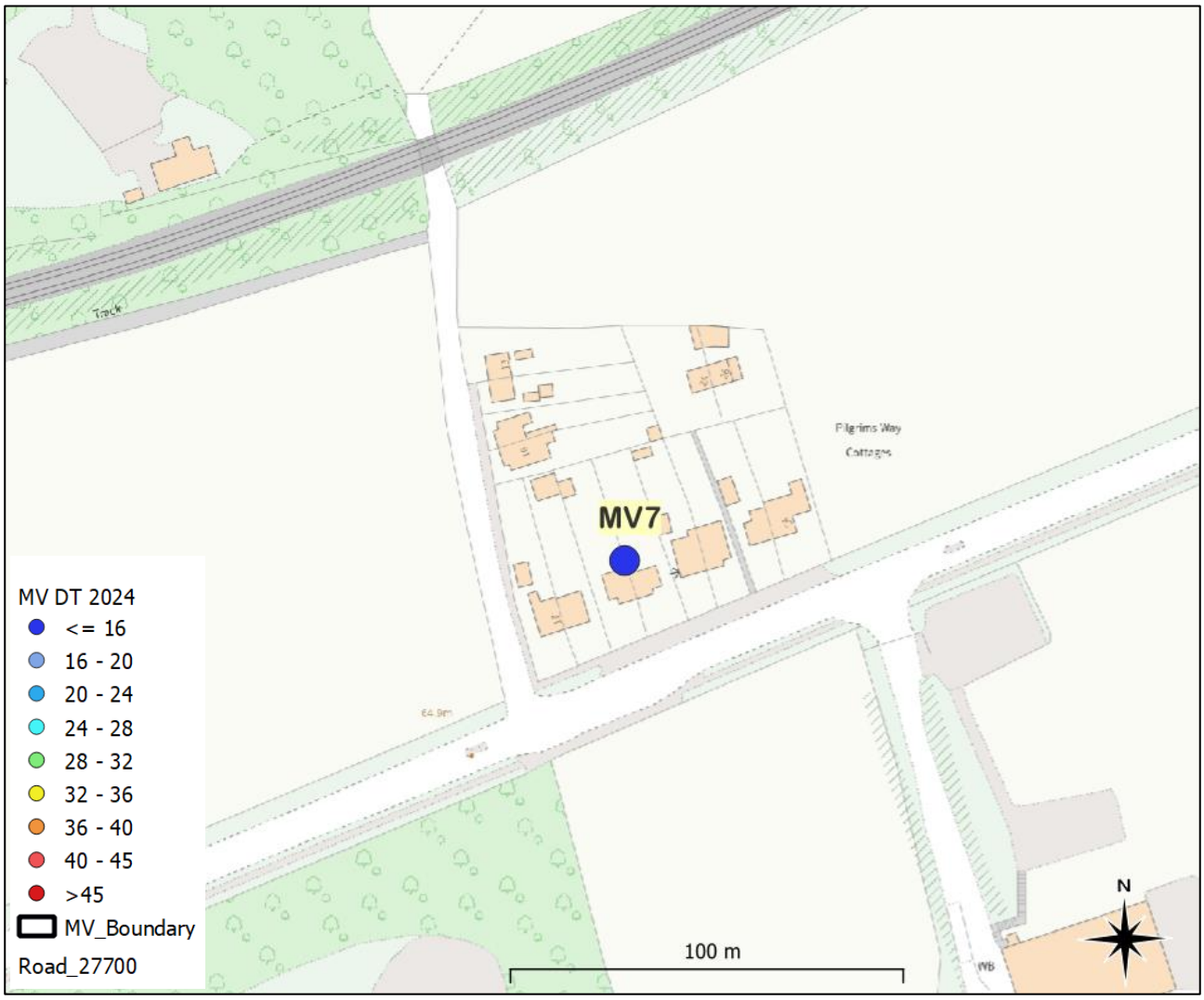


Figure D.7 – Locations of Diffusion Tube Monitoring Sites – Beare Green & Capel (2024)

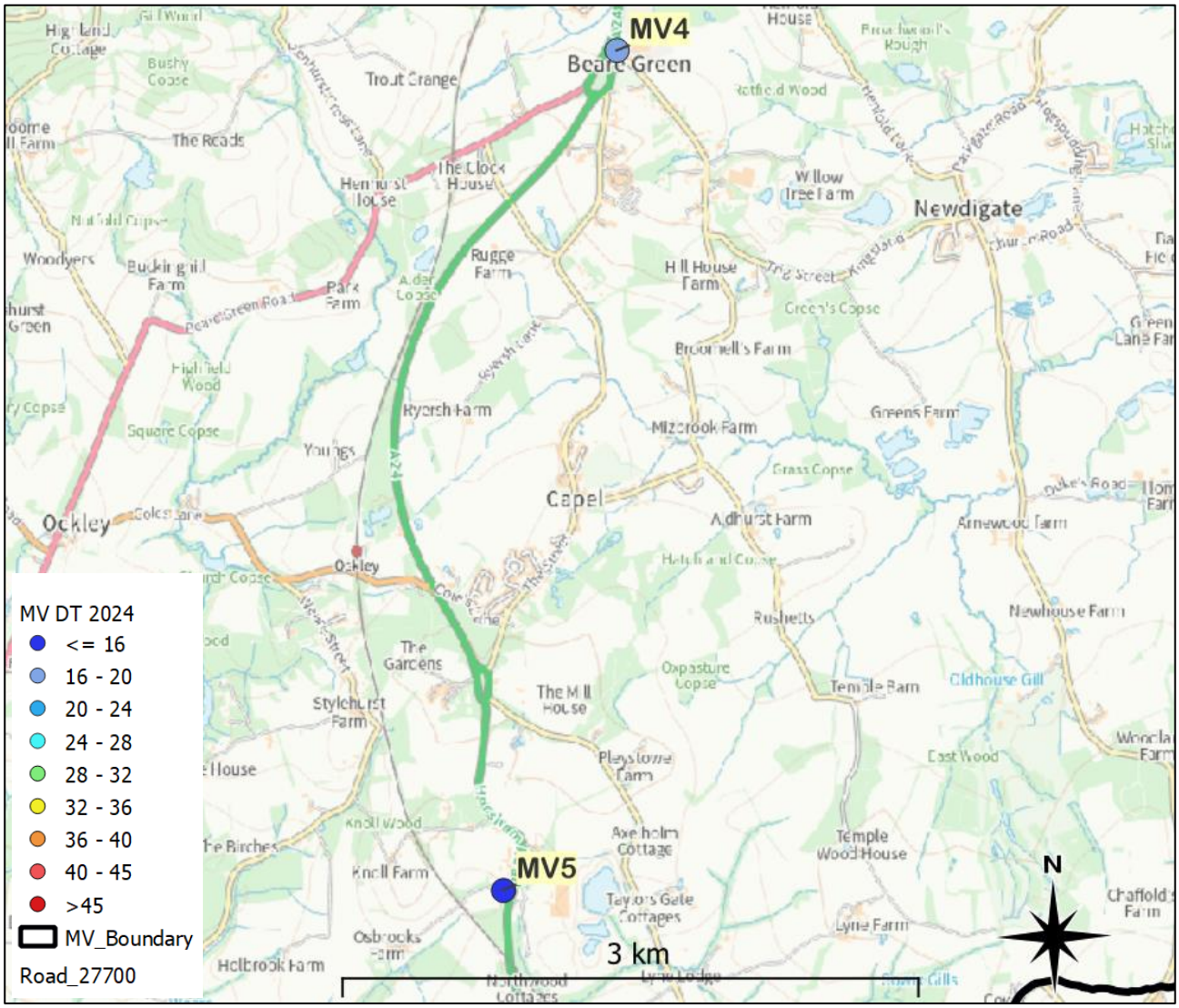


Figure D.8 – Locations of Diffusion Tube Monitoring Sites – Charlwood (2024)

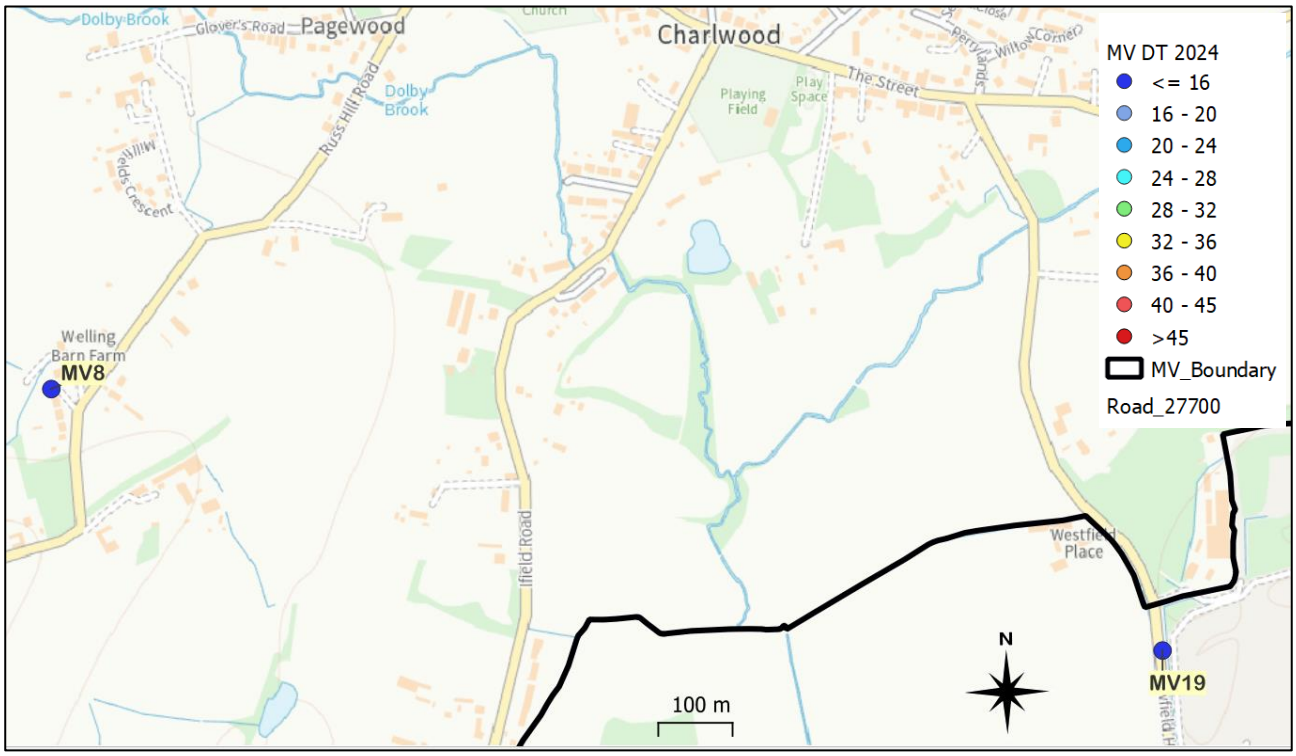


Figure D.9 – Locations of Diffusion Tube Monitoring Sites – Hookwood (2024)

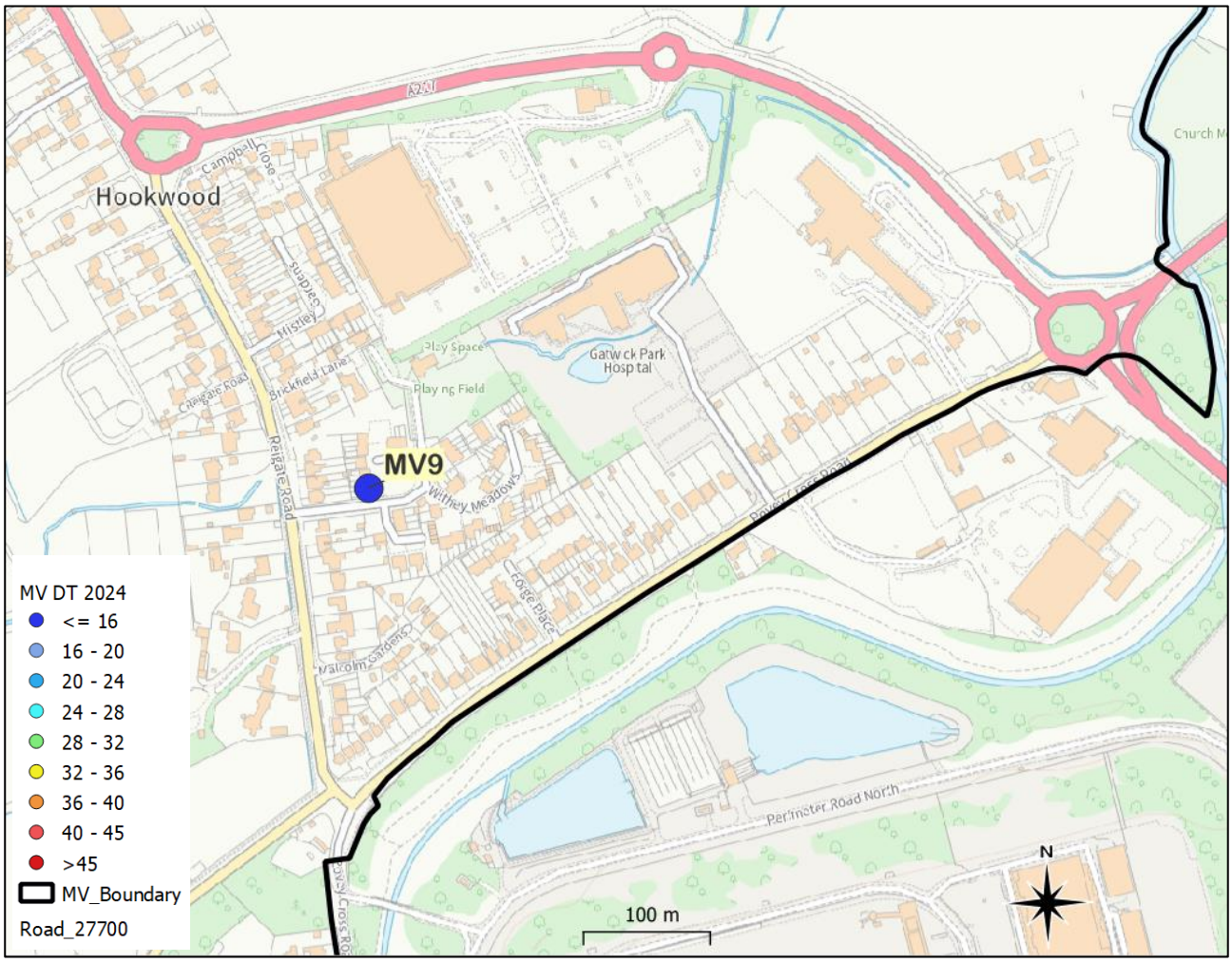
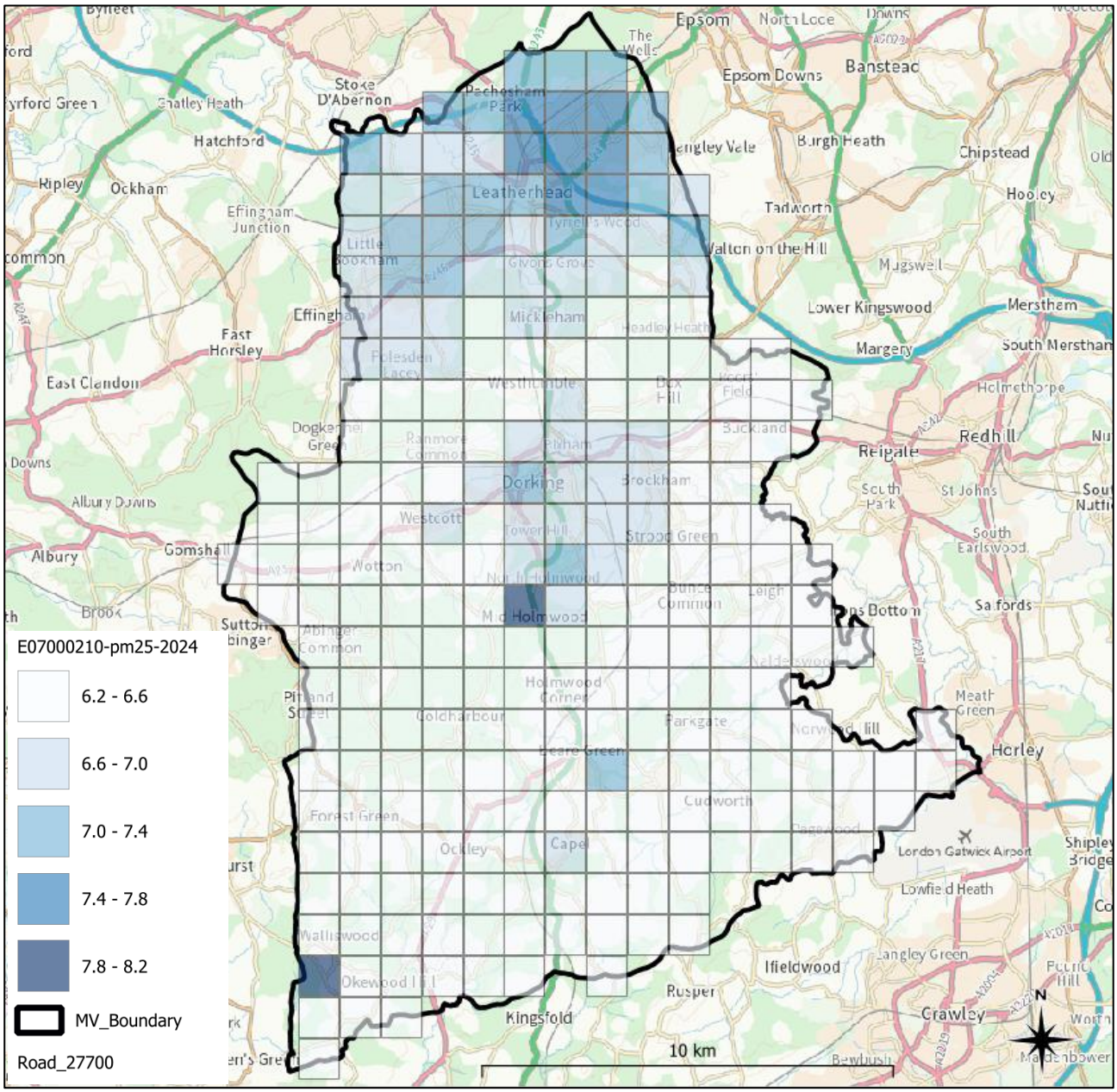


Figure D.10 – Modelled background levels of $PM_{2.5}$ in Mole Valley (2024)



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[16]

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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
D&B	District and Borough
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EVCP	Electric Vehicle Charging Point
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
SO_2	Sulphur Dioxide

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