Elmbridge Borough Council

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2023 Air Quality Annual Status Report (ASR)

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

Date: October 2023

Stantec

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Executive Summary: Air Quality in Our Area

The following Annual Status Report (ASR) was prepared and written by Stantec UK Ltd (Stantec), on behalf of Elmbridge Borough Council ('the Council') in accordance with Local Air Quality Management (LAQM) Technical Guidance (TG) 2022[1], published by Department for Environment, Food and Rural Affairs (DEFRA) on behalf of the devolved administrations. The 2023 ASR provides the latest information regarding air quality in Elmbridge for the reporting year of 2022. It also provides updates on actions to improve air quality that have occurred since the previous 2022 ASR was published.

Air Quality in Elmbridge

This report is designed to provide a summary for those living and working within the Borough of Elmbridge about the state of air quality in the area. It also provides progress on the actions that the Council and others, including the public, are taking, or could take, to improve air quality. Air quality and a healthy environment are important to the Council and measures to improve air quality are also in the Council Plan and The Council Vision 2030.

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

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages[4], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017 which is based on modelling from Public Health England[5].

[1] DEFRA. Local Air Quality Management Technical Guidance (LAQM: TG.22). August 2022.

[2] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

[4] Defra. Air quality appraisal: damage cost guidance, January 2023

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

The main air pollutants of concern within Elmbridge are nitrogen dioxide (NO_2) and particulate matter ($PM_{2.5}$).

Nitrogen Dioxide

The air quality objectives relevant to LAQM in England are outlined in Appendix E. Monitoring in the Borough shows that there were no breaches of the annual mean objective for NO_2 in 2022 at any of the monitoring locations. It should be noted that measured NO_2 concentrations in 2022 are higher than 2021 at most monitoring sites. However, measured NO_2 concentrations in 2020 and 2021 were much lower than previous years due to the impact of COVID-19 restrictions on road traffic levels.

Surrey-wide modelling of pollutant concentrations, undertaken by Cambridge Environmental Research Consultants (CERC)[6], provides source apportionment predictions for nitrogen oxides (NOx: nitric oxide (NO) plus NO_2) in Elmbridge. The largest contributor to NOx emissions in Elmbridge is road transport sources (48%), with diesel cars (20%) being the largest contributor within the road transport source group.

Particulate Matter – $PM_{2.5}$

Whilst the air quality objectives do not include $PM_{2.5}$, the 2019 Clean Air Strategy[7] includes a commitment to set a "new, ambitious, long-term target to reduce people's exposure to $PM_{2.5}$" which the Environment Act 2021[8] commits the Secretary of State to setting. Two $PM_{2.5}$ targets were published in December 2022 and are set out below:

- An annual mean concentration target for $PM_{2.5}$ levels in England to be 10 µg/m^3 or below by 2040; and
- A population exposure reduction target for a reduction in $PM_{2.5}$ population exposure of 35% compared to 2019 to be achieved by 2040.

The Government has published an Environmental Improvement Plan 2023[9] which sets out the following interim $PM_{2.5}$ targets to be met by the end of January 2028:

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[6] CERC. Detailed Air Quality Modelling and Source Apportionment for Elmbridge Borough Council. Final Report. November 2019.

[7] DEFRA. Clean Air Strategy, 2019

[8] Statutory Instruments. Environmental Act 2021, 2021.

[9] DEFRA. Environmental Improvement Plan 2023, 2023.

- The highest annual mean concentration in the most recent full calendar year must not exceed 12 µg/m^3 of $PM_{2.5}$; and
- Compared to 2018, the reduction in population exposure to $PM_{2.5}$ in the most recent full calendar year must be 22% or greater.

The plan also details how these targets will be met including reducing emissions at home, driving effective local action through local authorities, maintaining and improving the regulatory framework for industrial emissions, supporting farmers to reduce their impact on ammonia emissions and reducing emissions from cars and other forms of transport.

The World Health Organisation (WHO) sets out more stringent target levels for $PM_{2.5}$ than the legal air quality objectives in the UK, and the Council has ambitiously committed to achieving the WHO Guideline Value by 2030. This can only be achieved through partnership working with the Surrey Authorities to drive down levels of $PM_{2.5}$ across the County. In September 2021, the WHO introduced even more stringent Guideline Values for particulates (5 µg/m^3). Elmbridge Borough Council has committed to a $PM_{2.5}$ annual mean concentration target in the Air Quality Action Plan (AQAP) and this will remain at the former Guideline Value of 10 µg/m^3 for $PM_{2.5}$.

Surrey-wide modelling of pollutant concentrations, undertaken by Cambridge Environmental Research Consultants (CERC)[10], provides source apportionment predictions for particulate matter (PM_{10} and $PM_{2.5}$) in Elmbridge. The largest contributor to $PM_{2.5}$ emissions is “other sources” at 20%[11] which is followed by road source contribution at 17%. Furthermore, the report predicted exceedances of the 24-hour mean PM_{10} objective along the A3 and M25 (in 2017), however, the exceedances occur within the road and are therefore not representative of relevant exposure. In addition, the contour map for the predicted annual mean $PM_{2.5}$ concentrations in 2017 shows no exceedances of the annual mean $PM_{2.5}$ objective (20 µg/m^3) in Elmbridge. However, a large proportion of Elmbridge does exceed the 10 µg/m^3 target value in 2017.

[10] CERC. Detailed Air Quality Modelling and Source Apportionment for Elmbridge Borough Council. Final Report. November 2019.

[11] Other sources include the following combustion in commercial, institution and agricultural sectors, combustion in industry, combustion in energy production and transfer, production processes, extraction and distribution of fossil fuels, solvent use, other transport and machinery, waste treatment and disposal, agricultural, forests and land use change, other sources and sinks.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades and will continue to improve due to national policy decisions, there are some areas where local action is needed to protect people and the environment from the effects of air pollution. Furthermore, the Council is committed to targeting $PM_{2.5}$ pollution through a range of interventions with the aim of achieving concentrations of less than 10 µg/m^3 by 2030 across the Borough.

The Environmental Improvement Plan[12] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term $PM_{2.5}$ targets. The Air Quality Strategy[13] which provides more information on local authorities' responsibilities to work towards these new targets and reduce $PM_{2.5}$ in their areas. The Road to Zero[14] details the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

The Council works to understand local air quality through an appropriate monitoring network within its administrative boundary to include two real time monitoring stations and a network of passive diffusion tubes monitoring nitrogen dioxide levels. The Council has obtained Community Infrastructure Levy (CIL) funding for a PM_{10} and $PM_{2.5}$ automatic monitoring station to be installed in the Borough; this will establish a baseline for levels of particulate matter in the Borough and monitor progress in reducing particulate levels. There have been delays with implementing the project, and costs have increased. Additional CIL funding was secured in July 2023, with a revised implementation target date of winter 2023.

Measures to improve air quality have been included in the Council's Development Management Plan and air quality is an important consideration for all planning applications, particularly within and adjacent to the Borough's six AQMAs. Addressing air quality as part of new developments is embedded in the draft Local Plan which is currently

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

[13] Defra (2023). The Air Quality Strategy for England.

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

being progressed. In recognition of the importance of addressing air quality within the Borough, a specific ‘air quality’ policy is proposed (draft Policy ENV8). Currently air quality is included within a wider policy which encompasses other pollutants.
The Council has also committed to preparing several Supplementary Planning Documents (SPDs), that will provide detailed guidance on the implementation of policies set out in the draft Local Plan. The Council’s adopted Local Development Scheme (LDS) 2023-2026, identifies three SPDs of particular relevance to air quality will be prepared. These are the Elmbridge Local Design Code; the Climate Change and Renewables SPD; and the Healthy Environment SPD.

The Council continues to fund and promote the airAlert pollution warning service to people living and working in the Borough. As of May 2023, 284 residents in Elmbridge had subscribed to receive airAlerts.

The Council also utilises its website to display public information regarding air quality, including an animation of wood burning stoves which was added to the website in 2020 (see image below). Regular promotion of this continues throughout the year with a particular focus on the autumn and winter months.

Clean Air Day on 16 June 2022, Elmbridge released an article (see image below) highlighting the Council's five priorities in tackling air pollution up to 2026[15].The article detailed information on the five priorities:

1. Reducing emissions from traffic
2. Buildings and new development
3. Monitoring
4. Raising awareness and
5. Lobby and partnership working.

In July 2019, the Council declared a 'Climate Emergency' and have pledged to take action locally to contribute to national carbon neutral targets through the development of policies and practices, together with the aim of making the Council a carbon neutral organisation by 2030. In the Council's Service Delivery Plan for 2022/2023, a Council key priority is to respond to the climate change emergency and carbon neutral aim. The Council has

[15] Elmbridge Borough Council (2022). Elmbridge supports Clean Air Day. Available at: https://news.elmbridge.gov.uk/Home/News/elmbridge-supports-clean-air-day

adopted its Carbon Management and Reduction Plan[16] in 2020 to assist in the delivery of this commitment. The Council recently launched The Elmbridge Vision 2030, for a sustainable, thriving Elmbridge driven by the power of its community. Sustainability is at the heart of the Vision and the Boroughs Air Quality Action Plan 2021- 2026 is integral to the commitment for sustainability and enhancing our natural environment.

There are number of carbon reduction measures proposed which will also benefit air quality, including the installation of electric car charging points in the key Council car parks, encouraging the use of sustainable transport modes.

Air Quality Action Plan 2021 – 2026

The Council's AQAP was approved by DEFRA and Council members and adopted in December 2021. Progress on measures to improve air quality within the AQAP have been reported in this ASR.

Surrey Air Alliance

The Surrey Air Quality Study Group, formed in May 2016, has developed into the Surrey Air Alliance (SAA) made up of officer representatives from all eleven District and Borough Councils, and Surrey County Council's (SCC) Highways and Public Health services.

The Council continues to be an active member of the Surrey Air Alliance (SAA) and assist in the delivery of the SAA workplan.

A key workplan task on which the Council has taken the lead on is the Surrey-wide air quality modelling project. The air quality modelling project, undertaken by CERC, was completed in 2019 and establishes a clear baseline for key pollutants (NO_2, PM_{10} and $PM_{2.5}$) across Surrey. The Council will work with the SAA to deliver an update to the

[16] Elmbridge Borough Council (2021). Carbon Management and Reduction Plan. Available at: https://www.elmbridge.gov.uk/pollution/climate-change-and-sustainability/

Surrey-wide modelling in 2024. The interactive contour maps of modelled pollutant concentrations have continued to be hosted on the SCC website throughout 2022: https://surreycc.maps.arcgis.com/apps/webappviewer/index.html?id=43910ffb100248ed972115b7a9b49d20

A key workplan project Elmbridge is involved in is directed at raising awareness of air quality within schools close to AQMAs. The SAA applied to DEFRA for a further £264,819 of funding to support schools across Surrey close to AQMAs to develop School Travel Plans, develop and pilot a new cycle training course for secondary school children and an overarching media campaign. In March 2020, DEFRA confirmed that the project scored well, and was put before the final panel, but was unsuccessful on this occasion.

Since this, the SAA have worked with The Safer Travel Team and received grant funding from Surrey County Councils Rethinking Transport budget to support schools in encouraging parents and children to travel to school more sustainably.

Within Elmbridge there are currently 11 schools with a school travel plan on Modeshift STARS (an accreditation scheme which aims to recognises schools that have shown excellence in sustainable and active travel), 9 schools have a bronze accreditation level, 1 achieving the highest accreditation level (platinum), and 1 with the lowest accreditation grade (green). Some schools have also accepted the challenge to become Green Flag schools through the internationally recognised Eco-Schools Framework, focusing their efforts on topics including transport and energy. A total of 232 schools have engaged with the Eco-Schools programme with 73 schools in the County achieving Green Flag,10 of which are within Elmbridge.

A new initiative within schools has been launched called Let's Go Zero with commitment to achieve Net Zero by 2030 to which 63 schools in the County have signed up, 7 within Elmbridge.

During 2022 the SAA has been working with the Surrey Heartlands Children and Young People's Asthma Team on a project to develop an Asthma care bundle. As part of this work the SAA 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 tranche of schools to roll the project out to, and the group has been briefed on the pollution warning services available in Surrey including Surrey airAlert. Three schools within Elmbridge were on the prioritised list.

The Air Alliance also fed information into the Asthma Toolkit the group, see the following link for more information https://www.healthysurrey.org.uk/children-and-families/asthma-toolkit/parent-and-carer. The above link provides information for the general public on indoor and outdoor air quality issues.

Ask about Asthma week was held during 3-9 October 2022, where 40 primary schools across Surrey Heartlands were targeted and sent stickers and a weblink to the toolkit. Elmbridge released an article promoting the week with links to the toolkit and airAlert.

The group also attended a number of meetings to help support the production of an Air Quality Pack for healthcare professionals, with the aim of ensuring air quality information is easily accessible and available, what messaging about poor air quality means for patients, and what actions they can take.

In 2023 the SAA gave a briefing on air quality (17 May) to the Surrey Asthma Network, 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 20 June 2023, with a stand demonstrating the Surrey airAlert service, and other pollution services available across the UK. The event was well attended by a number of health care professionals (doctors, nurses, and pharmacists) working in asthma and respiratory medicine, and provided a key forum at which to demonstrate pollution warning services in Surrey. As of June 2023, 21 schools within Elmbridge have signed up for asthma training which includes education on asthma triggers such as air quality.

In 2020, the SAA applied for a DEFRA 2020/21 Air Quality Grant to fund a project to encourage a greater uptake of Electric Vehicles as Taxi's across 7 eligible Boroughs, and Districts in Surrey which included Elmbridge. Taxis were selected as the target vehicles given the high mileage and multiple trips the vehicles make within Surreys AQMA's and the nature of the journeys which take the vehicles into areas frequented by the members of our communities who are most sensitive to air pollution such as to hospitals and care facilities and schools. In March 2021, the project was awarded £256,686 from the DEFRA Air Quality Grant Fund. Following attempts to find a supplier and to begin procurement in 2021 it became clear that the prolonged impact of the pandemic on the taxi trade made the project unviable as it had been originally configured, and no vehicle supplier could be found. The project was reconfigured to accommodate longer vehicle trials based on feedback from the taxi trade and potential vehicle suppliers and submission of the reconfigured project was made to DEFRA for approval. The project team obtained legal advice regarding State Subsidy Control, and this was submitted to DEFRA for review at their request. DEFRA took over 6 months to confirm that the reconfigured project could continue. Due to the passage of time, the match funding source is no longer available so the project will only be able to proceed if alternative match funding can be secured.

The Council is participating in this project and the Council's Licensing and Pollution Teams are supporting the project which will proceed if match funding can be secured.

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. In 2022, Elmbridge Borough Council (EBC), in partnership with SCC, participated in a consortium bid led by Hertfordshire County Council and Global Action Plan (GAP) for air quality funding from DEFRA. The bid proposed a public information campaign around an autumnal 'Clean Air Night' with consistent branding and messaging to raise awareness of the changes brought about by the Air Quality (Domestic Solid Fuels Standards) Regulations 2020 and contribution of wood burning stoves to local air pollution and adverse health impacts. The bid was unsuccessful; however, this topic remains a priority for EBC, and work is ongoing with SCC and GAP to seek funding to support the 'Clean Air Night' project and public information campaign.

Encouraging uptake of Sustainable Travel Modes

Elmbridge was one of the first boroughs in Surrey to have a Local Cycling and Walking Infrastructure Plan (LCWIP) completed. Dated March 2022, the Elmbridge LCWIP Report

was prepared through a process of joint working between SCC and Borough Councils and the SCC appointed consultants, Atkins. The report includes the following:

- identification of where good walking and cycling facilities would be most beneficial;
- identify what improvements are required at these locations; and
- plan how these improvements can be delivered, and which to prioritise first.

SCC's is currently in the process of undertaking a Feasibility Study for all Phase 1 Walking and Cycling Routes and in March 2023, Elmbridge Borough Council agreed a financial contribution towards the implementation of the Cobham Walking Route and the Hampton Court Cycle Route/Path.

Encouraging Uptake of Electric Vehicles

The Council's Environmental Enforcement Officers continue to use an electric pool car for work travel. The Council's Parking Enforcement Contractor also has the use of electric vehicle and mopeds.

The Council's work to become carbon neutral by 2030 and support a sustainable Elmbridge continues with the Green Fleet Strategy 2030 which sets out the plan to decarbonise the Council's fleet vehicles by 2030.The Green Fleet Strategy and phased vehicle replacement programme will see eight vehicles replaced in 2023/24: that's 28% of the current fleet moving to electric within the first year. An interim measure from the strategy, will be transferring our Community Support Services diesel fleet to 'Green BioFuel'.

The Council also is increasing the provision of electric vehicle charging points within the Borough.

As part of an upgrade to Holly Hedge car park in Cobham, the Office for Low Emission Vehicles (OLEV) funded rapid charger was replaced in 2021 with four fast charging points and infrastructure for a further two - a significant increase in charging provision. The new chargers are now fully operational. Similar upgrades of four fast charging points in Churchfield Car Park, Weybridge and the Civic Centre Car Park, Esher were completed in August 2022 and Drewitts Court Car Park Walton on Thames are planned to be completed in Summer 2023. Five fast charging points will also be fitted in the Xcel Leisure Car Park Waterside Drive, Walton on Thames by the end of 2023. Charging points for staff (pay to use) and Council fleet usage will be installed in the Civic Centre and Centres for the Community in Summer 2023. Also, for late Summer 2023, three electric pool car vehicles

will be available for staff to book and use for meetings and site visits. There is also a SCC project to install a Surrey network of EV chargers to fill the gaps in SCC on street provision, as well as to increase charging points in car parks.

In July 2020, the Council adopted a new taxi and private hire licencing policy 2020 – 2025 that came into force on 1 September 2020. The new policy recognises the need to ensure the health and wellbeing of residents and aims to improve local air quality by encouraging the use of low and ultra-low emissions taxi and private hire vehicles such as electric, hybrid or liquified petroleum gas (LPG). From 1 September 2020, the Council will not issue new licences for diesel vehicles unless they meet the latest Euro Standards currently Euro 6. All new petrol vehicles must also meet the latest Euro emission standards. By 1 January 2026 the Council will phase out the use of all diesel vehicles, and petrol vehicles that do not meet the latest Euro emission standards.

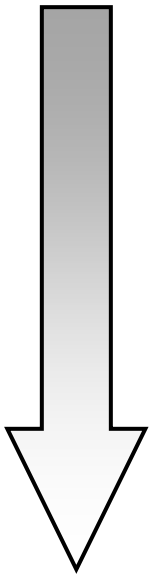
Conclusions and Priorities

Air quality monitoring has shown a general decrease in NO_2 concentrations across the Borough during the 2018 to 2022 monitoring period. Monitoring in the Borough shows that there were no breaches of the annual mean objective for NO_2 in 2022 at any of the monitoring sites. It should be noted that measured NO_2 concentrations in 2020 and 2021 were much lower than previous years due to the impact of COVID-19 on road traffic levels. Further action is still required as there is uncertainty surrounding future trends in air quality following the return of traffic flows to pre-pandemic levels. Furthermore, the Council is committed to targeting $PM_{2.5}$ pollution through a range of interventions with the aim of achieving a concentration of less than 10 $\mu g/m^3$ by 2030 across the Borough. Achieving this target will require a move towards the use of more active travel modes across the Borough.

Since 2020, concentrations have remained below the annual mean NO_2 objective at monitoring sites in all the AQMAs declared by Elmbridge. Furthermore, NO_2 annual mean concentration levels within the Elmbridge AQMAs have been more than 10% below the NO_2 objective for three consecutive years. However, monitoring results from 2020 and 2021 are not considered representative due to COVID-19 restrictions and therefore do not provide a suitable basis for revoking any AQMAs. Therefore, monitoring will continue in the AQMAs until it can be demonstrated that concentrations have been more than 10% below the annual mean NO_2 objective for a minimum of three consecutive years (from 2021) under normal conditions.

Measured annual mean NO_2 concentrations within the former Cobham High Street AQMA (Cobham 1 and Cobham 7) have been more than 10% below the annual mean NO_2 objective for several years. The revocation of the Cobham High Street AQMA was approved by DEFRA in 2020.

The areas prioritised for action in 2022/2023 are:



- **Priority 1 – reducing NO_2 levels within the Borough's AQMAs to below the objective in the shortest time practicable.**
- **Priority 2 – targeting $PM_{2.5}$ through a range of interventions with the aim of reaching the World Health Organisations recommended level of 10µg/m^3 by 2030 within the Borough.**
- **Priority 3 – modal shift to more sustainable transport.**
- **Priority 4 – ensuring air quality is a priority within the Council's policies and those of SCC and assist in delivering the projects and actions.**
- **Priority 5 – partnership working as part of the SAA to improve Surrey's air quality.**

Local Engagement and How to get Involved

As part of the approach of local engagement we will use messages such as the following:

- As the majority of air pollution is associated with traffic, consider alternatives to using your car; public transport, walking or cycling will help reduce emissions.
- When purchasing a new car, consider vehicles with lower exhaust emissions, such as hybrid or electric vehicles. Information on electric car grants is available at https://www.gov.uk/government/collections/government-grants-for-low-emission-vehicles
- If you are carrying out building works, consider future-proofing your home by installing an electric vehicle charge point. A fast (7kW) charger is recommended and there are grants available which can bring the cost down to under £300. More information can be found at: https://www.gov.uk/government/collections/government-grants-for-low-emission-vehicles.

- If installing or replacing an existing wood burning stove, consider purchasing one that has been approved for use in smoke control areas by DEFRA or an Eco-design ready stove to help reduce emissions. More information can be found at: https://www.elmbridge.gov.uk/pollution/local-air-quality/
- Air pollution can cause short term (acute) and long term (chronic) health problems. The most sensitive groups are adults and young children with respiratory conditions and adults with heart conditions. If you feel that you are in one of the higher risk groups or have particular concerns regarding air quality, you can sign up to our airAlert information service. For more information visit the airAlert website at: http://www.airalert.info/Surrey/Default.aspx.

Local Responsibilities and Commitment

This ASR was prepared by the Planning and Environmental Health Team of Elmbridge Council with the support and agreement of the following officers and departments:

- Elmbridge Borough Council – Planning and Environmental Health, Assets Management and Property Services and Climate Change and Sustainability.
- Members of the Surrey Air Alliance (SAA made up from the 11 Surrey Districts and Boroughs, Surrey County Council Public Health and Highways Teams).

This ASR has been approved by:

- Kim Tagliarini, Head Planning and Environmental Heath at Elmbridge Borough Council
- Cllr Robin Stevens, Portfolio Holder for Planning, Enterprise and Local Economy and Cllr David Young Portfolio Holder for Climate Change and Sustainability both

support the ASR. Cllr David Young approved the ASR at Individual Cabinet Member Decision Making (ICMDM) on 9 August 2023.

- Ruth Hutchinson, Director of Public Health Surrey County Council - On behalf of the Surrey County Council Director of Public Health, the Public Health team work closely with the SAA including District and Borough Council partners responsible for submitting ASR's on air quality within their area; to develop initiatives and implement actions to improve air quality across the county of Surrey.

If you have any comments on this ASR please send them to Paul Leadbeater at:

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Figures

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1 Local Air Quality Management

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

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by the Council can be found in Table 2.1. The table presents a description of the six AQMAs that are currently designated within Elmbridge. Appendix D: Maps of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The AQMAs have all been declared due to exceedances of the annual mean NO_2 objective.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Walton-on-Thames High Street	01/11/2013	NO_2 Annual Mean	An area encompassing part of the High Street, Walton-on-Thames, between its junction with Hepworth Way/Church Street and Ashley Road/Herhsam Road	YES	42.3	29.6	6 years	Air Quality Action Plan for Elmbridge Borough 2021 - 2026	https://www.elmbridge.gov.uk/pollution/local-air-quality/
Weybridge High Street	17/11/2008	NO_2 Annual Mean	An area encompassing Balfour Road, Church Street, High Street and Monument Hill, Weybridge.	YES	62.0	32.8	2 years	Air Quality Action Plan for Elmbridge Borough 2021 - 2027	https://www.elmbridge.gov.uk/pollution/local-air-quality/
Hampton Court	17/11/2008	NO_2 Annual Mean	An area encompassing parts of Hampton Court Way and Riverbank.	NO	50.7	28.0	2 years	Air Quality Action Plan for Elmbridge Borough 2021 - 2028	https://www.elmbridge.gov.uk/pollution/local-air-quality/

Hinchley Wood	17/11/2008	NO_2 Annual Mean	An area encompassing part of the A309 Kingston Bypass between Littleworth Road and Manor Road North.	YES	57.7	32.6	6 years	Air Quality Action Plan for Elmbridge Borough 2021 - 2029	https://www.elmbridge.gov.uk/pollution/local-air-quality/
Esher High Street	17/06/2005	NO_2 Annual Mean	An area extending along the High Street, Church Street and including parts of Esher Green and Lammas Lane.	YES	62.1	32.0	2 years	Air Quality Action Plan for Elmbridge Borough 2021 - 2030	https://www.elmbridge.gov.uk/pollution/local-air-quality/
Walton Road, Molesey	18/06/2005	NO_2 Annual Mean	An area extending 50m either side of the centre line of Walton Road, Molesey between its junction with Tonbridge Road and Esher Road/Bridge Road.	NO	55.8	27.4	2 years	Air Quality Action Plan for Elmbridge Borough 2021 - 2031	https://www.elmbridge.gov.uk/pollution/local-air-quality/

☒ **Elmbridge Borough Council confirm the information on UK-Air regarding their AQMAs is up to date.**

☒ **Elmbridge Borough Council confirm that all current AQAPs have been submitted to Defra.**

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

DEFRA's appraisal of last year's 2022 ASR concluded the report is well structured, detailed and provided the information specified in the Guidance. DEFRA appreciated and welcomed that the Council responded to and addressed comments raised in last year's appraisal. Furthermore, the following comments were provided by DEFRA to help inform future reports:

- D01 indicator was included within the report as well as an explanation of what this means in relation to Elmbridge which was appreciated.
- Maps included within the report were clear and easy to read, it is useful that there is both a zoomed in and out view to gain context of the wider area.
- Inclusion of Appendix F 2022 ASR (Stantec Particulate Location Review) is well thought out and complements the entire report, showing the Council's further commitment to improving air quality and their further plans to install a new PM monitoring location within the Borough.
- The use of the local bias adjustment factor over the national bias adjustment factor isn't well justified, further detail on why it has been used would be appreciated, particularly as the national bias adjustment factor is more in line with previously calculated local bias adjustment factors.
- The trends are presented in Appendix A for Annual Mean NO_2 concentrations are clear and easy to read, it is helpful that each area has been broken down into multiple graphs for easy reading.

The 2023 ASR has addressed these comments by conducting the following:

- The D01 indicator with an explanation of what this means in relation to Elmbridge has been included within the report, please see section 2.5 for more information.
- A rationale has been provided on why the local bias adjustment factor has been applied over the national bias adjustment factor, please refer to Appendix C 'Diffusion Tube Bias Adjustment Factors'.
- Maps and trends presented in Appendix of the ASR 2023 report have been included with the same format as previous years.

The Council has taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in

progress or planned are set out in Table 2.2. Thirty-two measures are included within Table 2.2, with the type of measure and the progress Elmbridge have made during the reporting year of 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in their respective Action Plans. Key completed measures are:

- Progress on the development of LCWIP for Elmbridge.
- The Council agreed on financial contributions towards the implementation of Cobham Walking Route and the Hampton Court Cycle Route/ Path.
- Installation of electrical vehicle charging points at Holly Hedge Car Park Cobham, Civic Centre Weybridge, Churchfield Car Park, Weybridge.
- Continued funding and promotion of the airAlert pollution warning service.
- Continued support for the successful engagement and behaviour change programme in Surrey Schools.
- Responding to the 'Climate Emergency', included as a priority in the Council Plan 2020/2021 and 2022/2023, and implementation of the Council Carbon Management and Reduction Plan.
- Development of the Councils Vision 2030.
- DEFRA air quality grant bid Clean Air Night
- Progress on the DEFRA air quality grant – electric taxi project.

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

- Increasing the number of electric vehicles charging points in Drewitts Car Park Walton.
- Investigate and adopt Air Quality Positive principles in the Climate Change & Renewables SPD and / or Elmbridge Design Code. Adoption of a Healthy Environment SPD
- Installation of an automatic roadside particulate monitor within the Borough.
- Supporting Transport for South East including the publication of the Strategic Investment Plan.
- Air Quality appropriately considered within the Local Transport Plan 4 (LTP4).
- Implementation of the LCWIP for Elmbridge.
- Continued progress on DEFRA air quality grant projects.

The Council's priorities for the coming year remain:

- Priority 1 – reducing NO_2 levels within the Borough's AQMAs to below the objective in the shortest time practicable.
- Priority 2 – targeting $PM_{2.5}$ through a range of interventions with the aim of reaching the World Health Organisations recommended level of 10µg/m^3 by 2030 within the Borough.
- Priority 3 – modal shift to more sustainable transport.
- Priority 4 – ensuring air quality is a priority within the Council's policies and those of SCC and assist in delivering the projects and actions.
- Priority 5 – partnership working as part of the SAA to improve Surrey's air quality.

The Council has worked to implement these measures in partnership with the following stakeholders during 2022:

- SAA (includes all Surrey Districts and Boroughs, SCC Public Health and Highways Teams);
- SCC Trading Standards Team; and
- SCC Safer Travel Team.

The principal challenges and barriers to implementation that the Council anticipates facing are:

- As part of the Governments Road Investment Strategy 2015 to 2020, improvements will be made to the M25 Junction 10/A3 Wisley Interchange. As part of the improvements this will reroute traffic within Elmbridge whilst the works are ongoing resulting in anticipated traffic delays and congestion. For more information, please refer to Appendix C, new or changed sources.
- Action EBC 13 - Progress on the installation of the particulate monitor has been delayed due to site approval and the contractual changes. The cost of the monitor and installation has increased and therefore additional CIL funding has been sought. July 2023 additional CIL funding approved, with a new anticipated installation date of Winter 2023.
- Action EBC5 - Investigating options for a cargo bike scheme has been delayed until 2023/4 due to resources and Covid recovery of high street businesses.

Progress on the following measures has been slower than expected due to:

- Reduction of staff resources caused by post vacancy and recruitment process.

- Long term staff sickness across the team.
- Limited support from other services due to competing work demands to assist in project work.

The Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in all the Council's six AQMAs.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
EBC-1	Use of, and exploration of possibilities for increasing use of, Council electric vehicles for journeys within the Borough and supporting electric vehicle use by Council contractors	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2020	2025	EBC	EBC	NO	Partially Funded	£10k - 50k	Implementation	Reduced vehicle emissions	Environmental Enforcement officer's new electric vehicle	Environmental Enforcement officers use an electric pool car for visit visits within the borough. Parking enforcement contractor has a reduced fleet, including green vehicles.	The Carbon Management and Reduction Plan includes actions that will assist in the implementation of this measure including: • Review of the Council's internal purchases, working towards the ambition of an ultra-low carbon fleet. • Replace and review existing electric vehicle fleet and increase number of electric pool cars. The full Carbon Management and Reduction Plan can be viewed at: Elmbridge Borough Council - Our approach
EBC-2	Increasing the number of electric vehicles charging points in Council car parks	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging, gas fuel recharging	2020	2022	EBC	EBC	NO	Partially Funded	£10k - 50k	Implementation	Reduced vehicle emissions	No. of charging points installed	Rapid Charger in Holly Hedge Car Park Cobham replaced with four fast charging points. Fast charging points to Esher Civic Centre, Churchfield Weybridge and Drewitts Court Walton car parks completed. Five charging points to the Xcel Leisure Centre Walton to be implemented this year.	A requirement for all developments to implement electric vehicle charging points in accordance with the standards set out in the Parking Supplementary Planning Document (SPD) has been included in the emerging Local Plan. The Council adopted the Parking SPD in July 2020. The document includes standards that new developments are expected to meet in relation to electric vehicle charging infrastructure. The Parking SPD is available at: Elmbridge Borough Council - Supplementary planning documents The Parking SPD will be reviewed following the adoption of the new Local Plan.

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EBC-3	Use of a tiered fee structure for taxi licensing to benefit operators with lower emission vehicles	Promoting Low Emission Transport	Taxi Licensing conditions	2020	2026	EBC	N/A	NO	Funded		Implementation	Reduced vehicle emissions	Percentage/ type diesel vehicles remaining	New EBC Taxi and Private Hire Licensing Policy adopted in September 2020 on going implementation	The EBC Taxi and Private Hire Licensing Policy 2020 – 2025 includes a commitment to phase out use of all diesel-fuelled vehicles and petrol-fuelled vehicles that do not meet the latest Euro standard. From September 2020, new licences will not be issued for diesel-fuelled vehicles or petrol- fuelled vehicles that do not meet the latest Euro standard. Furthermore, if a licence holder wishes to replace their vehicle, the replacement vehicle must meet a higher Euro emission standard that the existing vehicle. The Taxi and Private Hire Licensing Policy is available at: Elmbridge Borough Council - Policies and information for passengers Also see SCC-3, SAA DEFRA grant from Taxi project.
EBC-4	Reducing Council staff and fleet transport emissions as part of the Council's Carbon Reduction Strategy	Promoting Travel Alternatives	Workplace Travel Planning	2020	2030	EBC	EBC	NO	Partially Funded	£10k - 50k	Implementation	Reduced vehicle emissions	Latest carbon reduction action plan updates.	Initial assessment of emissions completed	The Carbon Management and Reduction Plan (CRMP) includes actions that will assist in the implementation of this measure including: • Review of the Council's internal purchases, working towards the ambition of an ultra-low carbon fleet. • Replace and review existing electric vehicle fleet and increase number of electric pool cars. The full Carbon Management and Reduction Plan can be viewed at: Elmbridge Borough Council - Our approach

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EBC-5	Investigate options for a pilot cargo bike scheme for local businesses	Promoting Travel Alternatives	Promotion of cycling	2021	2023	EBC			Not Funded		Implementation	-	-		High streets are where the Borough's AQMAs are located. Exploring alternate delivery options for high street businesses could help reduce emissions within AQMAs. SCC to implement measure through the Local Transport Plan 4 (LTP4). Investigating options for a cargo bike scheme has been delayed until 2023/4 due to resources and Covid recovery of high street businesses.
EBC-6	Work towards fulfilling the Council's pledge to be carbon neutral by 2030	Promoting Travel Alternatives	Other	2020	2030	EBC	EBC	NO	Partially Funded	£10k - 50k	Implementation	-	-	Key priority in the Council's Service and Delivery Plan. Carbon Management and Reduction Plan adopted.	The Carbon Management and Reduction Plan contains actions aimed at fulfilling the Council's Carbon neutral pledge. Such actions that will also be beneficial to air quality include: • Seeking strategic direction on enabling remote working for Council staff. • Replacement of gas-fired boilers with electric or other state-of-the- art technologies at the Civic Centre. • Planning for future replacement of gas-fired boilers at community centres. The full Carbon Management and Reduction Plan can be viewed at: Elmbridge Borough Council - Our approach The emerging Local Plan will also seek to encourage more sustainable development through the implementation of policies regarding energy usage etc. One of the key principles of the plan is Tackling Climate Change

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EBC-7	Embed air quality in the Local Plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2021	2023	EBC	EBC	NO	Funded	< £10k	Implementation	Reduced vehicle and building emissions	Adoption of the Local Plan and the Climate Change & Renewables SPD, Healthy Environment SPD and Elmbridge Design Code	Ongoing	The emerging Local Plan will seek to encourage more sustainable development through the implementation of policies regarding matters such as energy efficiency, renewable and low carbon energy; minimising waste and promoting a circular economy; promoting high standards of sustainable design; encouraging sustainable transport modes and, the delivery of electric vehicle charging, etc. Specific guidance relating to air quality in terms of standards and design is to be covered in the Climate Change & Renewables SPD, Elmbridge Design Code and Healthy Environment SPD The latest information regarding the emerging Local Plan can be found at: Elmbridge Borough Council - Local Plan: current and emerging policy and guidance
EBC-8	Indoor air quality to be considered as part of the planning process for new development in the AQMAs	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2020	2026	EBC	N/A	NO			Planning	N/A	Number of planning applications in AQMA with indoor air quality considered	Ongoing	Housing within existing high streets is on the increase. The six AQMA's are all high street locations. While indoor air quality is not the primary focus of an AQAP it is included as an action on the grounds of public health. Consideration will be given to inclusion within an SPD on air quality.

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EBC-9	Investigate including Air Quality Positive principles in a Design and Renewables SPD	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2021	2023	EBC	EBC	NO	Partially Funded	< £10k	Implementation	Reduced vehicle and building emissions	Number of planning applications considered to be air quality positive	Ongoing	Details on how this can be achieved to be provided within SPD's covering design and renewables. The Publication London Plan (December 2020), published in 2021, requires large-scale developments to consider how air quality can be improved across the area through an Air Quality Positive approach. The Air Quality Positive approach requires new development proposals to consider ways in which the development could maximise benefits to local air quality, as well as what measures and design features that will be put in place to reduce exposure to air pollution.
EBC-10	Encouraging residents to refrain from garden bonfires	Public Information	Via the Internet		2026	EBC	EBC	NO	Funded	< £10k	Implementation	Reduced stationary source emissions	Reduction in the number of "bonfire" complaints received	Ongoing	Use of the Council's website and social media to promote changes in behaviour to move away from burning.
EBC-11	Promoting approved wood- burning stoves and burning of approved products and encouraging recycling of waste	Promoting Low Emission Plant	Shift to installations using low emission fuels for stationary and mobile sources	2020	2022	EBC	EBC	NO	Funded	< £10k	Implementation	-	-	Animation video on wood burning stoves produced with the SAA.	Wood burning stove animation video. In, 2022 EBC in partnership with SCC participated in a bid led by Hertfordshire Council and Global Action Plan for DEFRA air quality grant for a public information campaign around particulates from solid fuel burning – Clean Air Night . The bid was unsuccessful. Consideration for further bid in 2023.

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EBC-12	Ensure appropriate and effective monitoring is undertaken across Elmbridge to meet statutory review and assessment duties	Other	Other	2021	2026	EBC	EBC	NO	Funded	< £10k	Implementation	-	Production of Air Quality Annual Status Report	Annual reports produced.	The Council seeks to maintain and run and efficient monitoring network. That includes monitoring for nitrogen dioxide via passive diffusion tubes and two monitoring stations. Full monitoring continued throughout 2022.
EBC-13	Installation of a $PM_{2.5}$ monitor in Elmbridge	Other	Other	2020	2023	EBC	Community Infrastructure Levy (CIL)	NO	Not Funded	£10k - 50k	Planning	-	Installation of a $PM_{2.5}$ monitoring site	Location of the monitor has been finalised , power supply secured . Additional CIL funding agreed July 2023.	Stantec reviewed locations for $PM_{2.5}$ monitor which was completed in November 2021 (Appendix F of the 2022 ASR) delays in site approvals and securing an electricity supply; additional funding secured to cover increased costs. A new target installation date of Winter 2023.
EBC-14	CERC Surrey-wide air quality modelling update	Other	Other	2022	2024	EBC in partnership with SAA	SAA	NO	Not Funded	£10k - 50k	Planning	-	Air quality modelling undertaken		To undertake updated borough modelling in 2024.
EBC-15	Review of diffusion tube locations across the Borough following CERC modelling update	Other	Other	2019	2025	EBC	EBC	NO	Not Funded	< £10k	Planning	N/A	Report on diffusion tube location review produced	Review of diffusion tube locations in accordance with CERC modelling undertake in 2019 and new locations added as a result. Review reported in 2022 ASR appendix F.	Once updated Borough-wide modelling has been undertaken in 2024/5, a further review of diffusion tube locations will be carried out.
EBC-16	Monitor impact of London Low Emission Zones in Elmbridge AQMAs	Other	Other	2020	2026	EBC in partnership with SAA	EBC	NO	Funded	< £10k	Implementation	N/A	Results of traffic surveys and reported in air quality annual status reports	SAA to monitor the situation as the ULEZ is implemented in Greater London.	Potential for negative impacts in Esher and Hampton Court with traffic rerouting around LEZ and ULEZ. Identification of any issues will allow further actions to be targeted in these areas. May 2022, Transport for London (TfL) launch consultation on expanding the Ultra-Low Emissions Zone (ULEZ) London-wide. https://haveyoursay.tfl.gov.uk/cleanair?cid=clean-air

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EBC-17	Continuation of the Schools Air Quality Programme	Public Information	Via other mechanisms		2026	EBC in partnership with SAA	DEFRA, SAA	YES	Partially Funded	< £10k	Implementation	Reduced vehicle and building emissions	No. children/schools reached by promotional / engagement activities	Ongoing	The SAA jointly work with the Safer Travel Team at SCC to deliver Modeshift STARS in schools. 11schools within Elmbridge have reached Modeshift STARS accreditation. 63 Schools within the County, 7 within Elmbridge have signed up to Lets Go Zero by 2030 initiative.
EBC-18	Use of the EBC website to promote public awareness of the Elmbridge AQMAs and air quality in general	Public Information	Via the Internet			EBC	EBC	NO	Funded	< £10k	Implementation	2022 ASR is on website	Latest ASR available on website	Ongoing	The Council's website publishes the ASRs back to 2017, provides a link to the CERC modelling map, plus links to both real time monitors along with a range of advice https://www.elmbridge.gov.uk/environment/air-quality
EBC-19	Continue to promote the AirAlert service	Public Information	Via other mechanisms			EBC	EBC	NO	Funded	< £10k	Implementation	N/A	Number of residents subscribed in Elmbridge	284 subscriptions May 2023	Elmbridge continues to have the highest number of subscriptions within Surrey as of May 2023. AirAlert promoted via social media and website and within NHS Asthma campaign
EBC-20	Clean Air Day Activities	Public Information	Via other mechanisms	2020	2026	EBC	EBC	NO	Partially Funded	< £10k	Implementation	-	-	-	Support the annual Clean Air Day (CAD). CAD 2023, 15 June social media campaign drawing attention to air quality
EBC-21	Raise awareness of indoor air pollution through the EBC website and social media	Public Information	Via the Internet	2021		EBC	EBC	NO	Partially Funded	< £10k	Implementation	N/A	Information available on website	Ongoing	Consideration is also given to planning applications for residential development with AQMAs and the likely impacts on indoor air quality
EBC-22	Remain an active member of the Surrey Air Alliance and contributors to Work Plan	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2016		EBC	EBC	NO	Funded	< £10k	Implementation	Reduced vehicle and building emissions	Adoption of Work Plan	Constitution adopted and workplan produced. Regular meetings held.	The SAA facilitates Surrey Authorities, and SCC working together to improve air quality in Surrey. Examples of large projects include CERC County wide modelling project, DEFRA grant for school's project and the recent DEFRA grant for Electric Taxi fleet trial see measure SCC 3 plus the 2022 DEFRA grant application for Clean Air Night.

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EBC-23	Work with the Surrey Authorities to achieve the former WHO Guideline Values for PM_{10} and $PM_{2.5}$ in the Elmbridge Borough by 2030 and any further UK Government targets introduced	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2020	2030	EBC in partnership with Surrey Authorities	N/A				Implementation	Reduction in $PM_{2.5}$ concentrations	Achievement of WHO Guideline Values across Elmbridge	AQAP completed and published on website.	Various measures within the AQAP will assist in quantifying particulate levels within the Borough and seek to reduce PM levels within a local authority sphere of control.
SCC-1	Supporting Transport for South East	Policy Guidance and Development Control	Other policy	2021	2023	GLA, SCC and EBC	Developers & highway infrastructure funding	NO	Partially Funded	> £10 million	Planning	Reduced vehicle emissions	-	Transport Strategy adopted in Summer 2020	Elmbridge is located within two of the five study areas (the inner orbital and southwest radial). The outcome of these studies will form the basis of the Transport for South East Strategic Investment Plan for new transport schemes, initiatives, and policies. In March 2023, the Transport Strategic Investment Plan received approval which includes almost 300 multi-modal transport interventions which will be delivered across the south east over the next 27 years. Further information on Transport for South East can be found at: Home - Transport for the South East and Transport body gets green light to proceed with ambitious investment plan - Transport for the South East

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SCC-2	Implementation of the Low Emission Transport Strategy for Surrey	Policy Guidance and Development Control	Low Emissions Strategy	2018	2026	SCC and EBC	Developers & highway infrastructure funding	NO	Partially Funded	> £10 million	Implementation	Reduced vehicle emissions	Suite of indicators associated with quantum and distribution of air pollution, travel behaviour and delivery of infrastructure for low emission transport options	Strategy in use	The Low Emissions Transport Strategy will be superseded by implementation of the LTP4. Covered within the LTP4 are the following relevant policy areas which, as the Low Emissions Strategy did, will contribute to lower emissions and therefore improved air quality. LTP4 was adopted in in July 2022, the plan can be viewed on the following website; https://www.surreycc.gov.uk/roads-and-transport/policies-plans-consultations/transport-plan
SCC-3	Support an electric vehicle strategy for Surrey	Policy Guidance and Development Control	Other policy	2018	2026	SCC and EBC	Developers & highway infrastructure funding	NO	Partially Funded	£100k - £500k	Implementation	-	-	Electric Vehicle Strategy produced and adopted by Elmbridge Borough Council	In March 2023 SCC announced an investment of 60 million pounds with Connect Kerb with the aim of delivering 10,000 public EV charging points by 2030 across the County. SCC EV strategy has been enshrined into SCC LTP4. The SAA has also submitted a grant application to DEFRA for an electric taxi fleet trial including telemetric devices in vehicles. In March 2021, the project was awarded £256,868 from the DEFRA Air Quality Grant Fund. May 2022 the project is reconfigured to accommodate longer vehicle trials. DEFRA has approved new project however as of June 2023 awaiting confirmation of match funding.

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SCC-4	Implementation of the Climate Change Strategy for Surrey	Policy Guidance and Development Control	Low Emissions Strategy	2020	2025	SCC and EBC	Central Government, developers, highways and infrastructure funding.	YES	Partially Funded	£1 million - £10 million	Implementation	Reduced vehicle and building emissions	Implementation of Strategy	Strategy in use	The Strategy has been considered by 11 Districts and Boroughs. The Strategy includes measures that will be beneficial for air quality. Air quality-related actions are provided in the section 'Transport and Air Quality' of the Strategy which can be viewed at: https://www.surreycc.gov.uk/people- and-community/climate-change/what-are-we-doing/climate-change-strategy/surreys-climate-change- strategy-2020
SCC-5	Development and implementation of a Local Cycling and Walking Infrastructure Plan (LCWIP) for Elmbridge Borough	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2020	2025	SCC and EBC	Central Government, developers, highways and infrastructure funding.	NO	Partially Funded	£50k - £100k	Implementation	Reduced vehicle emissions	Completion and adoption of the LCWIP	The LCWIP, for Elmbridge has been developed and will move to implementation. Prioritisation of the routes complete, with feasibility expected to commence in August 2023 March 2023, EBC agreed a financial contribution towards the implementation of the Cobham Walking Route and the Hampton Court Cycle Route/Path.	The LCWIP is a ten-year programme and would include the following: • Identification of where good walking and cycling facilities would be most beneficial. • Identify what improvements are required at these locations. Plan how these improvements can be delivered, and which prioritise first. The County LCWIP programme can be viewed at: https://www.surreycc.gov.uk/roads-and-transport/cycling-and-walking/plans

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SCC-6	Alteration of existing signalised pedestrian crossings on the High Street, Weybridge to reduce congestion	Traffic Management	Other	2020		SCC and EBC	Developers & highway infrastructure funding	NO	Partially Funded	£10k - 50k	Planning	-	-	Study on going to determine feasibility	Still at feasibility stage. Work brief was issued to SCC's Professional Services Highway Partner in August 2021, awaiting work programme. As of June 2023 – options have been developed and detail drawing have been produced for the project team to consider and comment on. No further information on implementation.
SCC-7	Improvements to the Hampton Court Roundabout / junction to reduce congestion	Traffic Management	Other	2020		SCC and EBC	Developers & highway infrastructure funding	NO	Partially Funded	£10k - 50k	Planning			The Planning application refusal was appealed and subsequently overturned.	An agreed scheme as part of a development proposal. Could be implemented either as part of development or a standalone scheme. The planning application was refused (July 2021). Applicant has appealed, and permission has been granted for the development. As of June 2023 the developers have not submitted to discharge any pre-commencement conditions, start times or whether they intend to implement the scheme.
SCC-8	Installation of additional pedestrian facilities on Esher High Street	Promoting Travel Alternatives	Promotion of walking	2020		SCC and EBC	Developers & highway infrastructure funding	NO	Partially Funded	£10k - 50k	Implementation	-	-	Feasibility study in progress	Feasibility study remains in progress. Following a recent LCWIP workshop, feedback received noted this location is a core walking area and needs a broader consideration of the local aspirations and the competing place vs. movement functions of the road. Significant improvements to achieve the 'place' objective and improve pedestrian facilities would likely require a reduction in capacity
SCC-9	Working with SCC to ensure that Air Quality is appropriately considered within the Local Transport Plan 4 (LTP4)	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2020	2022	SCC and EBC	N/A				Planning	-	-		See action SCC 2. LTP4 was adopted in July 2022, the plan can be reviewed on the following link; https://www.surreycc.gov.uk/roads-and-transport/policies-plans-consultations/transport-plan.

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

The Public Health Outcomes Framework data tool compiled by Public Health England quantifies the mortality burden of $PM_{2.5}$ within England, as well as on county and local authority scales. The tool is available online at:

https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/0/gid/1000049/pat/6/par/E12000008/ati/102/are/E10000030.

The latest available data for 2021 shows that the percentage of mortality attributable to $PM_{2.5}$ pollution (indicator D01) across England is 5.5%. The percentage within Surrey is 5.8% and within Elmbridge is 6.0%. Elmbridge has a higher percentage of mortality attributable to $PM_{2.5}$ pollution when compared to England and Surrey as a whole.

The modelling exercise undertaken by CERC also quantifies the mortality burden of $PM_{2.5}$, in terms of fraction of deaths attributable to $PM_{2.5}$ pollution, associated total life years lost and economic cost within Elmbridge, and the wider-Surrey area. The estimated total number of deaths attributable to $PM_{2.5}$ pollution in Surrey in 2017 was between 173 – 468, which equated to an estimated economic cost between £87,235,665 – £235,790,256. In Elmbridge, the estimated total number of deaths attributable to $PM_{2.5}$ pollution in 2017 was between 19 - 51, which equated to an estimated economic cost between £9,828,813 – £29,869,995[17].

The CERC modelling contour maps of predicted pollutant concentrations across Surrey and Elmbridge are available in an interactive format at the following website:

https://surreycc.maps.arcgis.com/apps/webappviewer/index.html?id=43910ffb100248ed972115b7a9b49d20

[17] CERC. Detailed Air Quality Modelling and Source Apportionment. Final Report. August 2019.

However, given the implementation of the Technical Guidance LAQM.TG22[1] and Policy Guidance LAQM.PG22, the Council is working towards defining a strategy to reduce emissions or concentrations of $PM_{2.5}$. Existing actions to gain a better understanding of the current situation and measures to improve air quality already in place which can help reduce levels of $PM_{2.5}$ include:

- Planned installation of an automatic monitoring station measuring $PM_{2.5}$ in the Borough;
- $PM_{2.5}$ dispersion modelling, funded by the Council, has been carried out and is expected to be updated in 2024/5;
- Discouraging wood-burning and promoting the use of only approved wood-burning stoves and burning of approved products if wood-burning is necessary. Consideration of a further bid for funding to deliver the Clean Air Night project;
- Encouraging residents to refrain from garden bonfires through awareness through the Council's website;
- Promoting travel alternatives through the development and implementation of the LCWIP, installation of additional pedestrian facilities, reducing the Council staff and fleet transport through the Carbon Reduction Strategy;
- Implementing the SAA Taxi project if match funding can be obtained
- Implementing the taxi and private hire licensing policy that came into force 1st September 2020;
- Promoting low emission transport through increasing the number of electric vehicles charging points in Council car parks, increasing the Council's electric vehicles for journeys in the Borough and supporting electric vehicle use by Council contractors;
- Implementing Surrey's Climate Change Strategy (April 2020)[18] which includes measures targeted at reducing vehicle emissions; and
- Implementing Surrey County Council's Low Emissions Transport Strategy (2018)[19]proposals now through LTP4.

[18] Surrey County Council. Surrey's Climate Change Strategy. 2020.

[19] Surrey County Council. Surrey Low Emission Transport Strategy. 2018.

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

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

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

The Council undertook automatic (continuous) monitoring at two sites during 2022, Hampton Court Parade and Weybridge High Street 2. Table A.1 in Appendix A shows the details of the automatic monitoring sites.

Live data is available on UK Air Quality website (https://www.ukairquality.net/).

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

3.1.2 Non-Automatic Monitoring

The Council undertook non-automatic (i.e. passive) monitoring of NO_2 at 41 sites during 2022. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

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.

3.1.3 Nitrogen Dioxide (NO_2)

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

For diffusion tubes, the full 2022 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

Automatic monitoring

During 2022, the Council undertook automatic monitoring of NO_2 concentrations at Hampton Court Parade and Weybridge High Street 2, within the Hampton Court and Weybridge High Street AQMAs. Annual mean NO_2 concentrations at both automatic monitoring sites were well below the objective, with an annual mean NO_2 concentration of 28 µg/m^3 measured at Hampton Court Parade and 25 µg/m^3 measured at Weybridge High Street 2. The NO_2 annual mean concentrations at the Hampton Court Parade site has increased by 1 µg/m^3 in 2022 in comparison to 2021. Whereas the NO_2 annual mean concentrations at Weybridge High Street 2 site has stayed the same from 2021 to 2022. Data capture during 2022 was good (>93%) at both automatic monitoring sites.

There were no measured exceedances of the hourly mean NO_2 objective of 200 µg/m^3 at the Hampton Court Parade or Weybridge High Street 2 monitoring sites in 2022.

Non-Automatic Monitoring

For diffusion tubes, the full 2022 dataset of monthly mean values is provided in Table B.1, in Appendix B. The diffusion tube data have been processed using the DEFRA Diffusion Tube Processing Tool (v3.0).

In 2022, all monitoring sites within Elmbridge Borough were below the annual mean NO_2 objective. Furthermore, during 2022, there were no measured annual mean NO_2 concentrations greater than 60 µg/m^3, and therefore it is considered unlikely that the hourly mean NO_2 objective is exceeded at monitoring locations within the Borough.

Distance correction has been carried out in order to estimate concentrations at the nearest location of relevant exposure in the vicinity of Cobham 11 and Esher 7 (as the measured concentration at these monitoring sites are within 10% of the objective, i.e >36 µg/m^3). Once distance corrected, the annual mean NO_2 concentration in 2022 for Cobham 11 was 30.7 µg/m^3 and for Esher 7 was 31.8 µg/m^3 at the nearest location of relevant exposure. As there is no predicted exceedance at the nearest location of relevant exposure for either monitoring sites (Cobham 11 and Esher 7), it is considered that further action (i.e. declaration of an AQMA) is not required at this time. However, concentrations at Cobham 11 and Esher 7 will continue to be closely monitored and further action taken in the future, if required.

The highest measured annual mean NO_2 concentrations in 2022 occurred at Cobham 11 (39.1 µg/m^3), located at on the lamp post outside West Lodge, Portsmouth Road, Cobham. This was followed by, Esher 7 (38.9 µg/m^3), Weybridge 7 (32.8 µg/m^3), Hinchley Wood 3 (32.6 µg/m^3) and Esher 1 (32.0 µg/m^3). During 2022, NO_2 concentrations have increased at 29 monitoring sites in comparison to 2021 concentrations. The greatest NO_2 concentration increase from 2021 to 2022 was 9 µg/m^3 at Esher 7. However, it should be noted that due to the impact of COVID-19 restrictions on traffic flows in 2020 and 2021, concentrations are likely to have been lower than under ‘normal’ conditions in these years. NO_2 concentrations have decreased at five monitoring locations in the Borough between 2021 and 2022. In addition, seven monitoring sites have not changed in NO_2 concentrations from 2021 to 2022. Data trends for all current sites for the past five years are provided in Appendix A, Figures A.1 – A.7. Overall, between 2017 and 2022, concentrations have fluctuated, however a general decrease in concentrations is evident across the majority of sites since 2018.

Concentrations have remained below the objective at monitoring sites in all the AQMAs declared by Elmbridge since 2020. Furthermore, NO_2 annual mean concentrations have been more than 10% below the NO_2 objective for three years in all of Elmbridge’s AQMAs. However, monitoring results from 2020 and 2021 are not considered representative due to COVID-19 restrictions in place during these years and their impact on traffic flows. Therefore, monitoring will continue in the AQMAs until it can be demonstrated that

concentrations have been more than 10% below the annual mean NO_2 objective for a minimum of three consecutive years under normal conditions.

3.1.4 Particulate Matter (PM_{10})

PM_{10} monitoring is not required and therefore is not currently carried out by Elmbridge Borough Council. However, the Council has funding for a PM_{10} automatic monitoring station to be installed in the Borough, by winter 2023.

PM_{10} has been included within the modelling exercise undertaken by CERC. Interactive contour maps of predicted pollutant concentrations produced from the CERC modelling exercise can be accessed via the following link:

https://surreycc.maps.arcgis.com/apps/webappviewer/index.html?id=43910ffb100248ed972115b7a9b49d20

The contour map for the predicted annual mean PM_{10} concentrations in 2017 shows no exceedances of the annual mean PM_{10} objective (40 µg/m^3) in Elmbridge. The contour map for the 90.41st percentile of 24-hour mean PM_{10} concentrations shows exceedances of the 24-hour mean concentration (50 µg/m^3) along the A3 Portsmouth Road and the M25. However, these exceedances occur within the road and are therefore not representative of relevant exposure.

3.1.5 Particulate Matter ($PM_{2.5}$)

$PM_{2.5}$ monitoring is not required and therefore is not currently carried out by Elmbridge Borough Council.

The Environmental Act 2021 has introduced two new targets including an annual mean concentration target for $PM_{2.5}$ of 10 µg/m^3 or below by 2040 and a population exposure reduction target of 35% by 2040 in comparison to 2019. In addition, the Government published an Environmental Improvement Plan 2023 which sets out the following interim $PM_{2.5}$ targets to be achieved by 2028; the highest annual mean concentration in the most recent full calendar year must not exceed 12 µg/m^3 of $PM_{2.5}$ and a reduction in population exposure to $PM_{2.5}$ in the most recent full calendar year must be 22% or greater when compared to 2018. Furthermore, the AQAP for Elmbridge sets out a target to reduce annual mean $PM_{2.5}$ concentrations to below 10 µg/m^3 by 2030.

The Council has obtained funding for a $PM_{2.5}$ automatic monitoring station to be installed in the Borough by winter 2023. This will establish a baseline for levels of particulate matter in

the Borough which can be used for comparison to monitor progress in reducing particulate concentrations in the future.

PM_{10} has been included within the modelling exercise undertaken by CERC. Interactive contour maps of predicted pollutant concentrations produced from the CERC modelling exercise can be accessed via the following link:

https://surreycc.maps.arcgis.com/apps/webappviewer/index.html?id=43910ffb100248ed972115b7a9b49d20

The contour map for the predicted annual mean $PM_{2.5}$ concentrations in 2017 shows no exceedances of the annual mean $PM_{2.5}$ objective (20 µg/m^3) in Elmbridge. However, a large proportion of Elmbridge does exceed the 10 µg/m^3 target value in 2017.

3.1.6 Sulphur Dioxide (SO_2)

Monitoring of SO_2 is not required and is therefore not currently carried out by Elmbridge Borough Council.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Inlet Height (m)
Hampton Court Parade	Hampton Court Parade	Roadside	515338	168292	NO_2	YES	Chemiluminescence	10.0	1.9	1.6
Weybridge High Street 2	Weybridge High Street 2	Kerbside	507459	164909	NO_2	YES	Chemiluminescence	6.5	0.7	1.8

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
ESHER1	Church Street, Esher outside Cuvee	Roadside	513840	164693	NO_2	Yes - Esher	0.4	1.5	No	2.6
ESHER7	Outside Blink, 35-37 High Street, Esher	Roadside	513982	164750	NO_2	Yes - Esher	2.3	0.6	No	2.3
ESHER8	Outside 9 Church St	Roadside	513832	164684	NO_2	Yes - Esher	0.1	3.2	No	2.4
ESHER9	Lamp post next to Churchyard, Church St	Kerbside	513821	164712	NO_2	Yes - Esher	12.5	0.6	No	2.6
ESHER11	The Bear, 71 High St, Esher	Roadside	513895	164599	NO_2	Yes - Esher	1.6	5.1	No	2.6
ESHER13	Lamp post outside Panahar Tandoori, 124-126 High Street	Kerbside	513736	164489	NO_2	Yes - Esher	2.7	0.9	No	2.4
ESHER 14	Lamp post in Car Park, Sunrise Living off A3 Roundabout Esher	Roadside	514034	162282	NO_2	No	6.2	1.0	No	1.6
ESHER 15	Lamp post o/s Helix House, Esher Green/High St, Esher KT10 8AB	Roadside	513901	164779	NO_2	Yes - Esher	1.1	3.8	No	1.9
HINCHLEY WOOD 1	2 Portsmouth Road, Kingston Bypass opp. Fire Station	Roadside	515248	165535	NO_2	Yes - Hinchley Wood	20.8	4.5	No	2.4
HINCHLEY WOOD 3	Lamppost corner Kingston By	Roadside	515728	165191	NO_2	No	17.3	2.6	No	1.9

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)	Distance to kerb of nearest road (m)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
	Pass/Manor Rd Nth, Esher KT10 0AT									
HAMPTON COURT 1	Lamp post outside Yew Tree Croft, Hampton Ct Wa, North of Summer Road, (Bus Layby)	Kerbside	515379	167946	NO_2	Yes - Hampton Court	20.9	0.9	No	2.2
HAMPTON COURT 2, HAMPTON COURT 3, HAMPTON COURT 4	Air Quality Station, opposite Hampton Court Station, Hampton Court Way	Roadside	515338	168292	NO_2	Yes - Hampton Court	10.0	1.9	Yes	1.7
HAMPTON COURT5	Traffic Sign, 1 Creek Road	Roadside	515329	168390	NO_2	Yes - Hampton Court	13.7	0.4	No	2.4
MOLESEY1	Outside 113 Walton Rd.	Kerbside	514450	168134	NO_2	Yes - Walton Road, Molesey	3.5	1.1	No	2.5
MOLESEY8	44-46 Walton Rd	Roadside	514716	167960	NO_2	Yes - Walton Road, Molesey	0.1	2.6	No	2.4
MOLESEY9	Outside Tesco,114-118 Walton Road	Roadside	514507	168086	NO_2	Yes - Walton Road, Molesey	4.2	2.6	No	2.4
MOLESEY10	Molesey Mart 264 Walton Road	Roadside	514169	168152	NO_2	Yes - Walton Road, Molesey	0.1	4.9	No	2.4
OX 1	Parking Sign outside Birdshill Farmhouse, Warren Lane Oxshott	Roadside	514558	160621	NO_2	No	20.0	1.8	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
OX 2	Lamp post o/s Flats1/2, Braeside House, High Street, Oxshott	Roadside	514574	160493	NO_2	No	5.0	3.0	No	2.2
WALTON8	Leaders, 46 High St	Roadside	510154	166281	NO_2	Yes - Walton-on-Thames High Street	2.0	2.9	No	2.6
WALTON9	Traffic Sign, Café Nero, 18 High St	Roadside	510082	166379	NO_2	Yes - Walton-on-Thames High Street	2.2	2.6	No	2.5
WALTON10	Outside 34 Church Street, Walton	Roadside	510140	166522	NO_2	Yes - Walton-on-Thames High Street	2.0	3.3	No	2.6
WALTON11	Lamp post opposite Flour Cafe, The Heart, Hepworth Way	Roadside	510000	166401	NO_2	Yes - Walton-on-Thames High Street	21.0	2.3	No	2.4
WALTON 12	Lamp post o/s 60 High Street, Walton on Thames, KT12 1FL	Roadside	510185	166225	NO_2	Yes - Walton-on-Thames High Street	5.7	3.2	No	2.0
WEYBRIDGE4	Right of 6 Monument Hill	Roadside	507705	164907	NO_2	Yes - Weybridge High Street	5.0	2.0	No	2.4
WEYBRIDGE5	Pizza Express, 1 Monument Hill	Roadside	507609	164966	NO_2	Yes - Weybridge High Street	0.4	1.6	No	2.3
WEYBRIDGE 6A	Lamp post o/s 47 High St, Weybridge	Kerbside	507536	164952	NO_2	Yes - Weybridge High Street	3.0	0.7	No	3.3

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to kerb of nearest road (m)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
WEYBRIDGE7	Prezzo, 44 Church St	Roadside	507199	164804	NO_2	Yes - Weybridge High Street	0.1	1.5	No	2.4
WEYBRIDGE8	Lloyd Roberts Opticians, 60A Church St	Roadside	507150	164761	NO_2	Yes - Weybridge High Street	0.1	4.6	No	2.4
WEYBRIDGE 13, WEYBRIDGE 14, WEYBRIDGE15	Air Quality Station, outside 40a High Street, Weybridge	Kerbside	507459	164909	NO_2	Yes - Weybridge High Street	6.5	0.7	Yes	1.8
WEYBRIDGE16	Lamp post Junction Parvis Road /Brookland Road, Byfleet	Roadside	507190	161340	NO_2	No	10.4	1.6	No	1.9
WEYBRIDGE 17	CCTV Column o/s Lloyds Bank	Kerbside	507365	164831	NO_2	Yes - Weybridge High Street	2.6	0.6	No	3.2
COBHAM1	o/s The Lemon Tree	Roadside	510813	160048	NO_2	No	3.5	0.6	No	2.4
COBHAM6	Harlequin Dry Cleaners, 2 Anyards Road	Roadside	510814	160099	NO_2	No	2.2	6.0	No	2.4
COBHAM7	Exclusively Surrey, 38A High Street	Roadside	510861	159906	NO_2	No	4.2	3.1	No	2.4
COBHAM8	'No Loading Sign' outside Fieldgate Court, Between Streets, Cobham	Kerbside	510300	160375	NO_2	No	1.3	1.0	No	1.9
COBHAM9	Sign outside 71 Portsmouth Road, Cobham	Kerbside	510348	160417	NO_2	No	2.3	1.0	No	2.0
COBHAM10	Lamp post o/s 41 Portsmouth Road	Kerbside	510262	160454	NO_2	No	6.4	1.0	No	2.1

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)	Distance to kerb of nearest road (m)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
COBHAM 11	Lamp post outside West Lodge, Portsmouth Road, Cobham	Roadside	509623	160616	NO_2	No	7.1	1.5	No	2.2
COBHAM 12	'No Entry Sign', A3 East Bound off slip road, Portsmouth Road, Cobham	Roadside	509560	160720	NO_2	No	14.3	1.5	No	2.0
COBHAM 13	Railings on Footpath, adjacent to A3 East Bound Slip Rd Cobham	Roadside	509465	160640	NO_2	No	5.5	2.0	No	1.1

Table A.3 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
Hampton Court Parade	515338	168292	Roadside	97.7	97.7	38	**41**	26	27	28
Weybridge High Street 2	507459	164909	Kerbside	93.5	93.5	-	31	24	25	25

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

Notes:

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

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

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)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
ESHER1	513840	164693	Roadside	100	100	**43.2**	39.7	25.8	28.2	32.0
ESHER7	513982	164750	Roadside	75	75	**41.9**	**46.0**	31.1	30.2	38.9
ESHER8	513832	164684	Roadside	100	100	**41.9**	**42.4**	30.1	29.6	30.7
ESHER9	513821	164712	Kerbside	100	100	33.4	31.9	20.2	21.3	22.5
ESHER11	513895	164599	Roadside	91.6	91.6	33.7	35.0	23.1	24.9	27.3
ESHER13	513736	164489	Kerbside	100	100	31.5	35.7	24.8	23.1	25.4
ESHER 14	514034	162282	Roadside	100	100	-	-	16.8	18.1	20.7
ESHER 15	513901	164779	Roadside	75	75	-	-	25.5	24.7	22.9
HINCHLEY WOOD 1	515248	165535	Roadside	100	100	34.4	37.4	27.6	27.2	26.8
HINCHLEY WOOD 3	515728	165191	Roadside	100	100	-	-	34.7	29.6	32.6
HAMPTON COURT 1	515379	167946	Kerbside	91.6	91.6	32.1	34.4	23.7	22.7	27.6
HAMPTON COURT 2, HAMPTON COURT 3, HAMPTON COURT 4	515338	168292	Roadside	100	100	36.9	38.9	26.2	26.4	27.1

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2018	2019	2020	2021	2022
HAMPTON COURT5	515329	168390	Roadside	91.6	91.6	28.9	27.7	20.9	22.1	23.5
MOLESEY1	514450	168134	Kerbside	100	100	32.9	34.7	22.8	23.8	24.7
MOLESEY8	514716	167960	Roadside	100	100	35.7	39.2	27.6	27.1	27.4
MOLESEY9	514507	168086	Roadside	91.6	91.6	32.5	34.3	24.0	22.6	25.0
MOLESEY10	514169	168152	Roadside	100	100	28.5	28.1	19.8	20.4	20.7
OX 1	514558	160621	Roadside	100	100	-	-	19.7	19.6	21.9
OX 2	514574	160493	Roadside	100	100	-	-	20.4	24.8	24.5
WALTON8	510154	166281	Roadside	100	100	33.2	36.2	25.4	23.2	24.9
WALTON9	510082	166379	Roadside	75	75	32.4	33.6	23.1	23.0	23.5
WALTON10	510140	166522	Roadside	100	100	34.9	37.0	28.3	28.0	27.3
WALTON11	510000	166401	Roadside	58.3	58.3	35.9	39.4	24.2	24.4	29.6
WALTON 12	510185	166225	Roadside	100	100	-	-	24.5	22.5	23.4
WEYBRIDGE4	507705	164907	Roadside	83.3	83.3	32.1	35.5	29.9	27.7	26.3
WEYBRIDGE5	507609	164966	Roadside	100	100	34.0	36.2	28.4	26.3	28.0
WEYBRIDGE 6A	507536	164952	Kerbside	100	100	-	-	23.5	22.1	27.4
WEYBRIDGE7	507199	164804	Roadside	100	100	39.6	**45.6**	33.1	33.6	32.8
WEYBRIDGE8	507150	164761	Roadside	75	75	31.9	35.2	23.8	25.6	25.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2018	2019	2020	2021	2022
WEYBRIDGE 13, WEYBRIDGE 14, WEYBRIDGE15	507459	164909	Kerbside	100	100	-	31.5	24.3	25.4	25.7
WEYBRIDGE16	507190	161340	Roadside	100	100	-	-	23.1	22.8	23.5
WEYBRIDGE 17	507365	164831	Kerbside	83.3	83.3	-	-	25.4	23.3	23.7
COBHAM1	510813	160048	Roadside	91.6	91.6	33.3	32.2	18.3	21.6	26.5
COBHAM6	510814	160099	Roadside	100	100	27.0	28.1	18.9	19.6	21.3
COBHAM7	510861	159906	Roadside	91.6	91.6	31.6	33.6	22.7	22.8	23.9
COBHAM8	510300	160375	Kerbside	91.6	91.6	-	-	22.4	23.9	23.7
COBHAM9	510348	160417	Kerbside	100	100	-	-	21.3	22.1	27.8
COBHAM10	510262	160454	Kerbside	100	100	-	-	23.5	26.2	23.5
COBHAM 11	509623	160616	Roadside	83.3	83.3	-	-	**40.9**	39.2	39.1
COBHAM 12	509560	160720	Roadside	91.6	91.6	-	-	26.2	26.1	29.5
COBHAM 13	509465	160640	Roadside	91.6	91.6	-	-	24.0	25.2	26.1

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

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

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

Notes:

Diffusion tube monitoring data has been processed using the DEFRA Diffusion Tube Data Processing Tool (v3.0).

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**.

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

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

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

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

Figure A.1 – Trends in Annual Mean NO_2 Concentrations in Esher

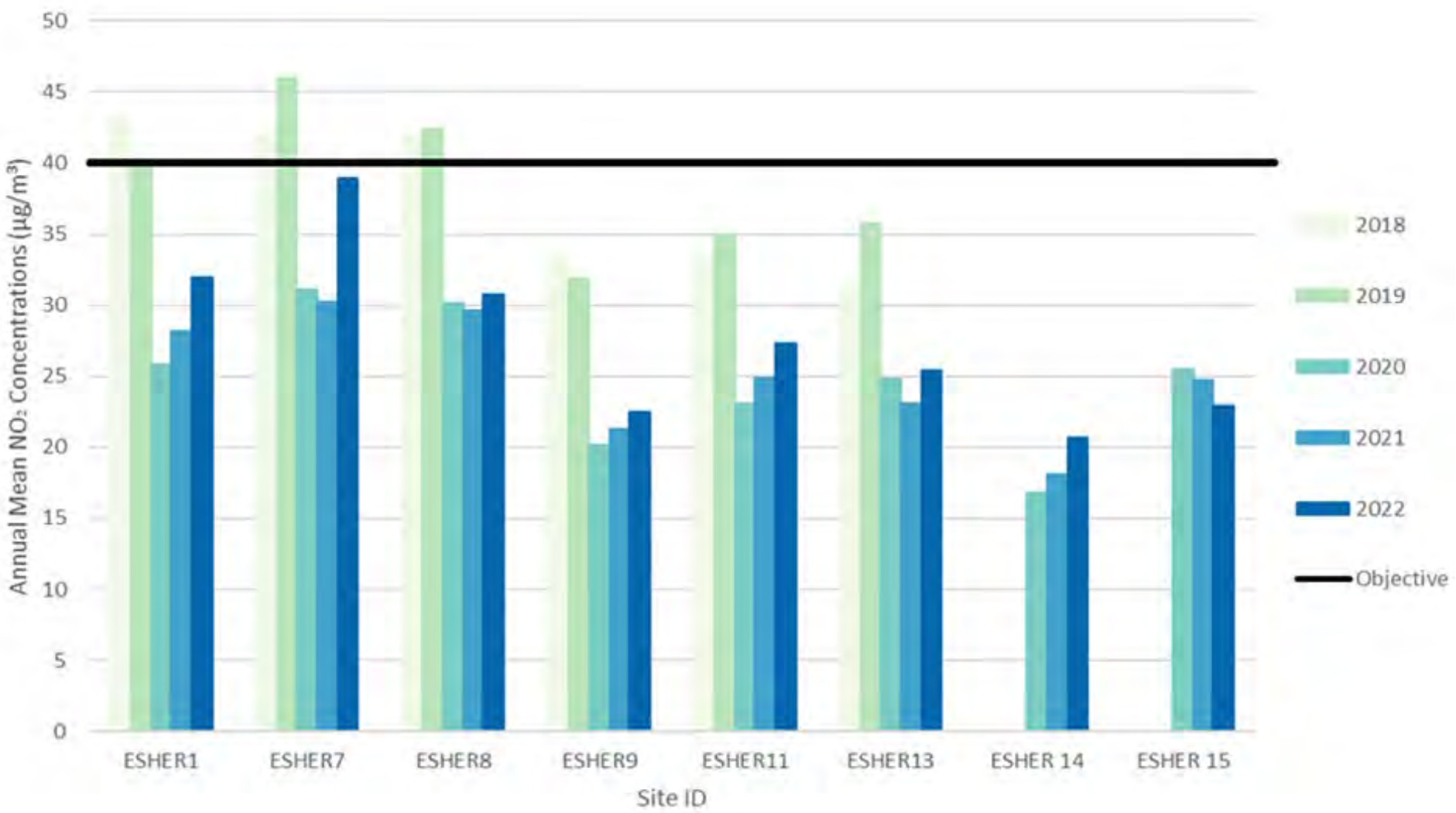


Figure A.2 – Trends in Annual Mean NO_2 Concentrations in Hinchley Wood

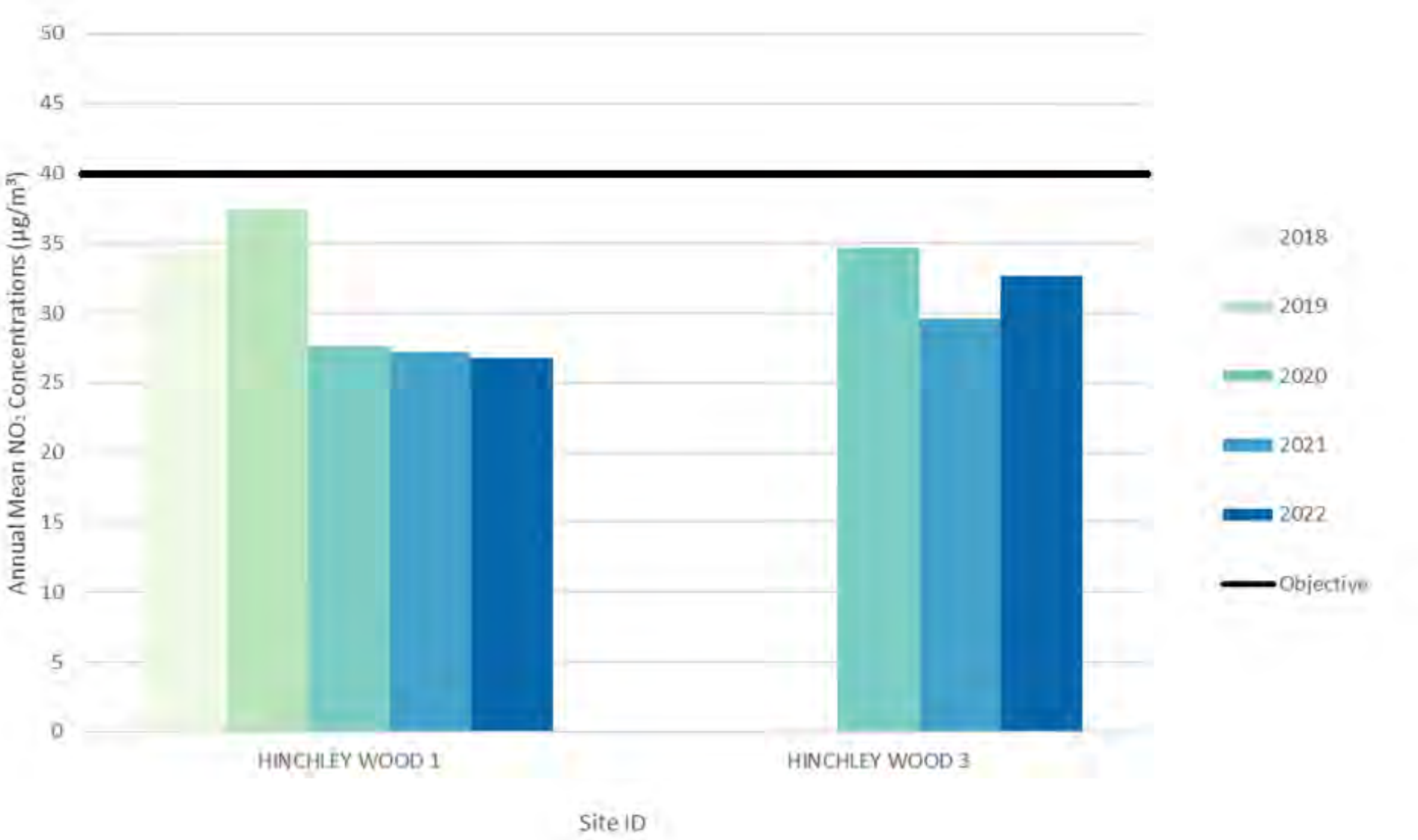


Figure A.3 – Trends in Annual Mean NO_2 Concentrations in Hampton Court

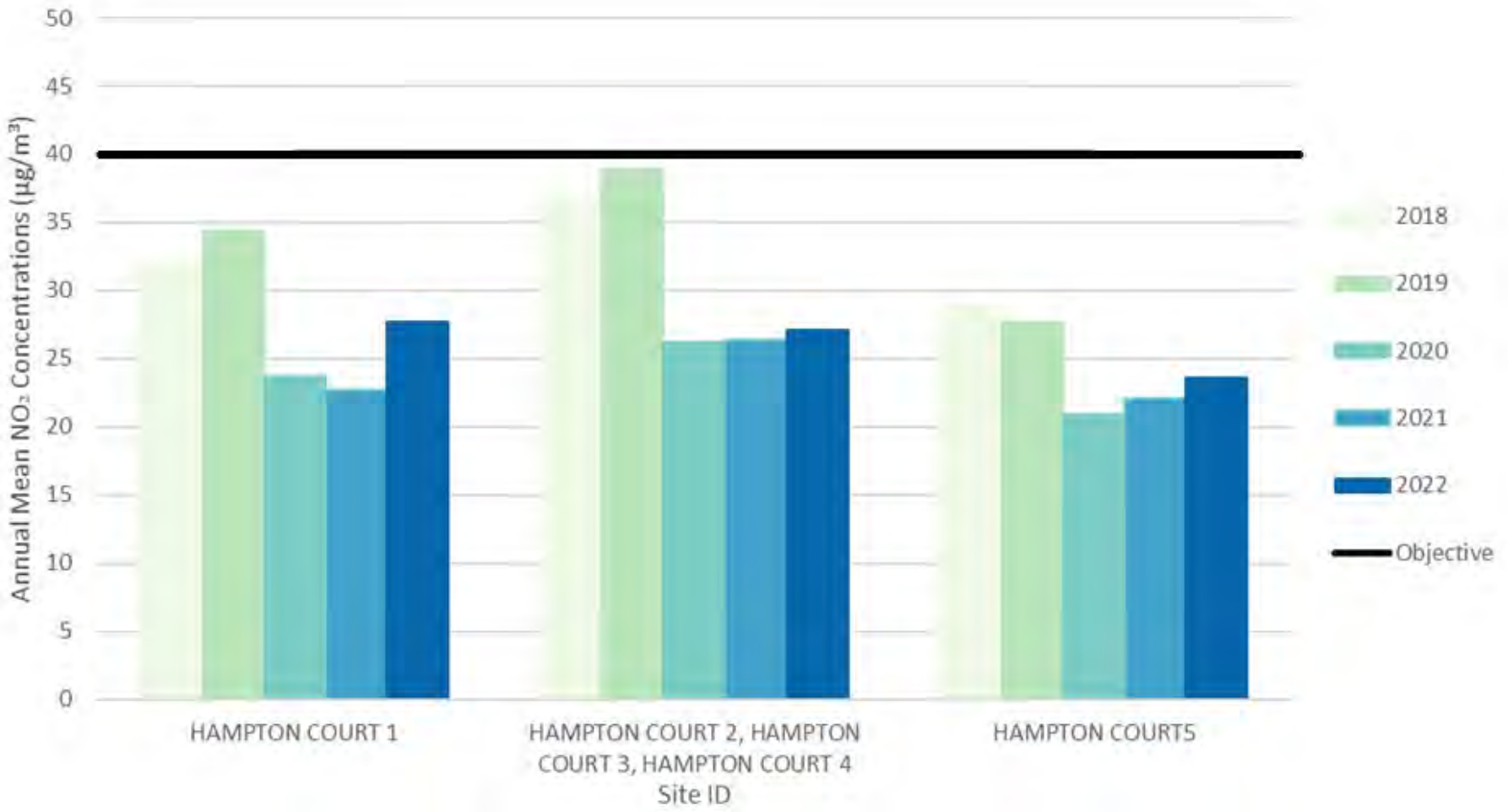


Figure A.4 – Trends in Annual Mean NO_2 Concentrations in Molesey

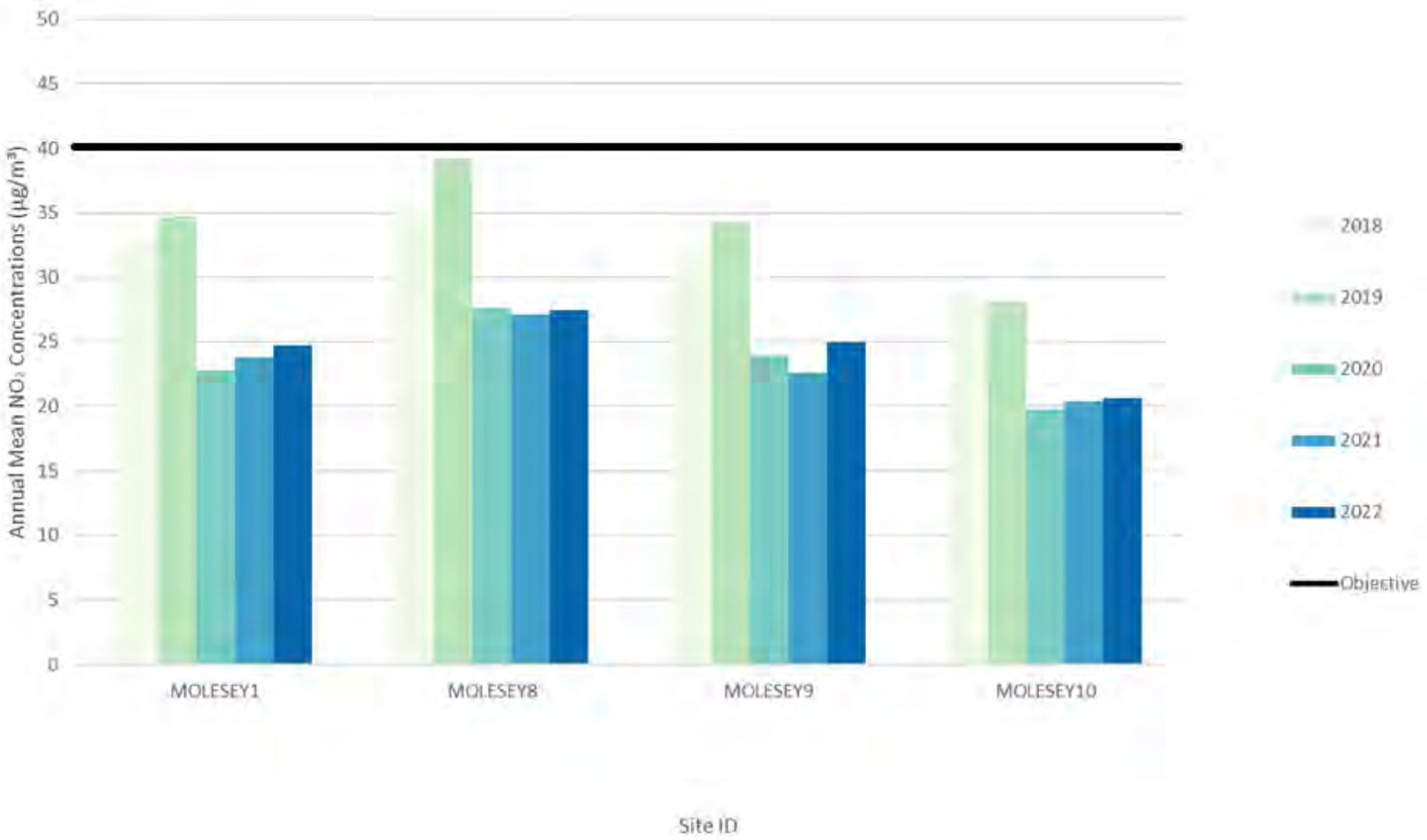


Figure A.5 – Trends in Annual Mean NO2 Concentrations in Walton-on-Thames

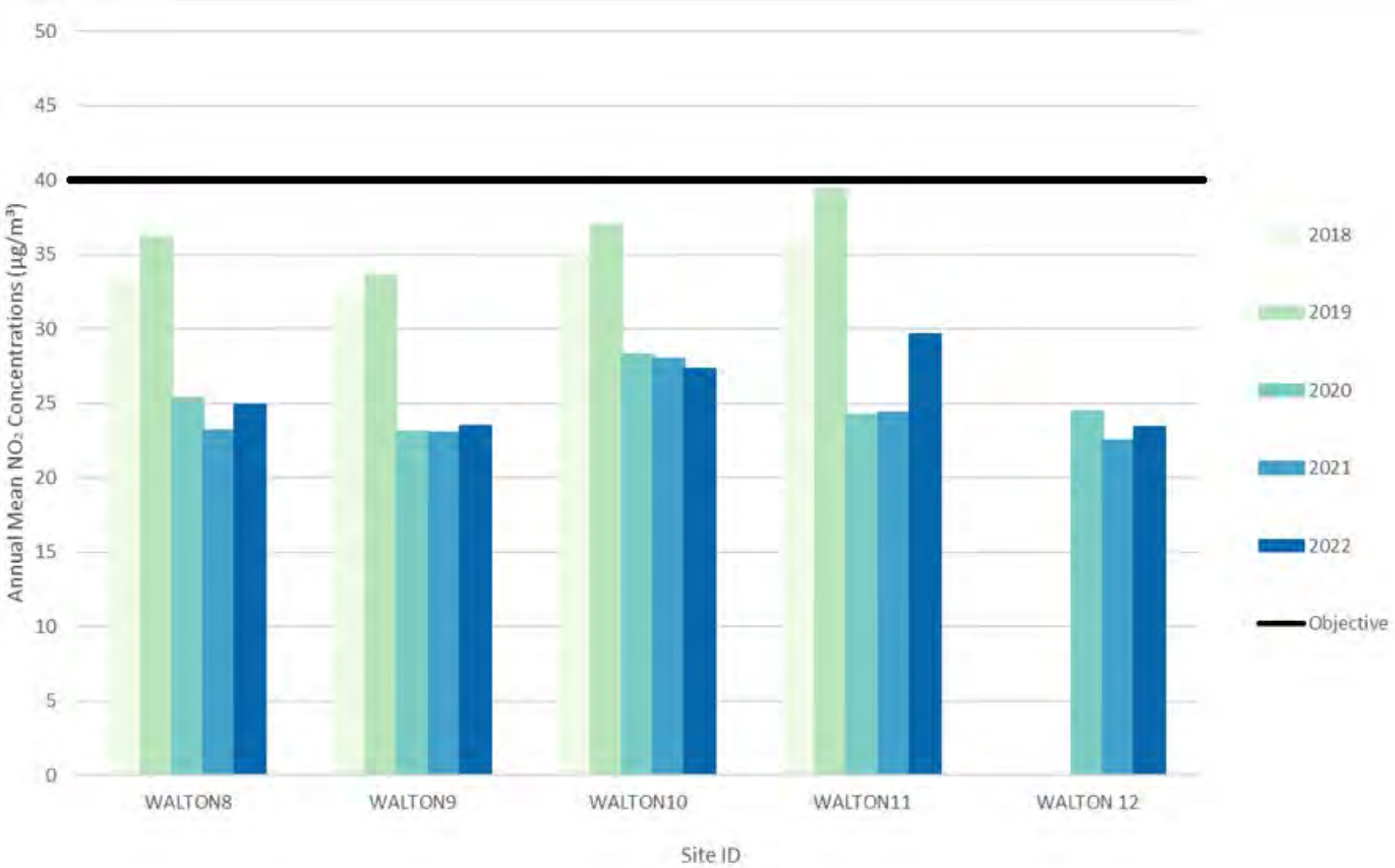


Figure A.6 – Trends in Annual Mean NO_2 Concentrations in Weybridge

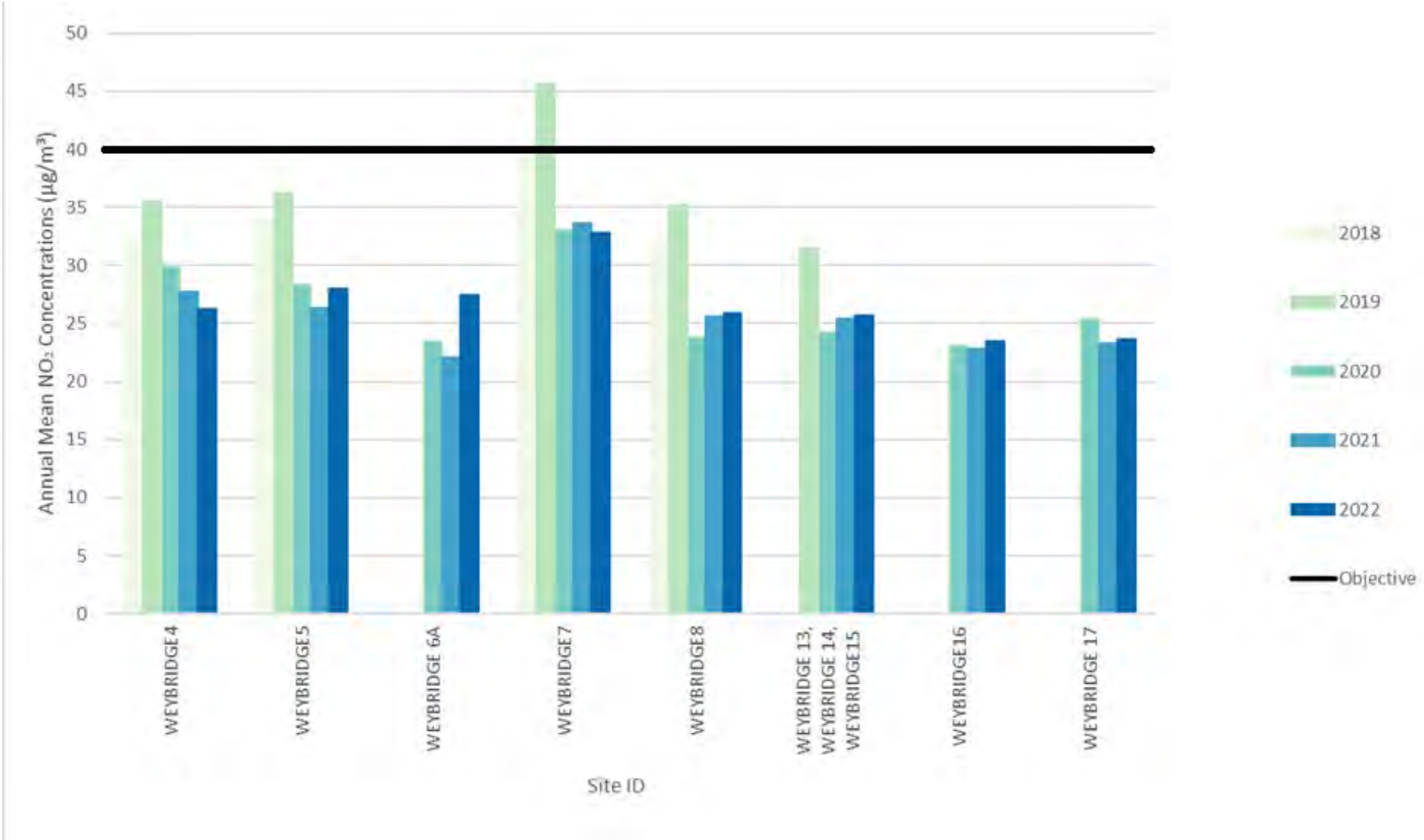


Figure A.7 – Trends in Annual Mean NO_2 Concentrations in Cobham and Oxshott

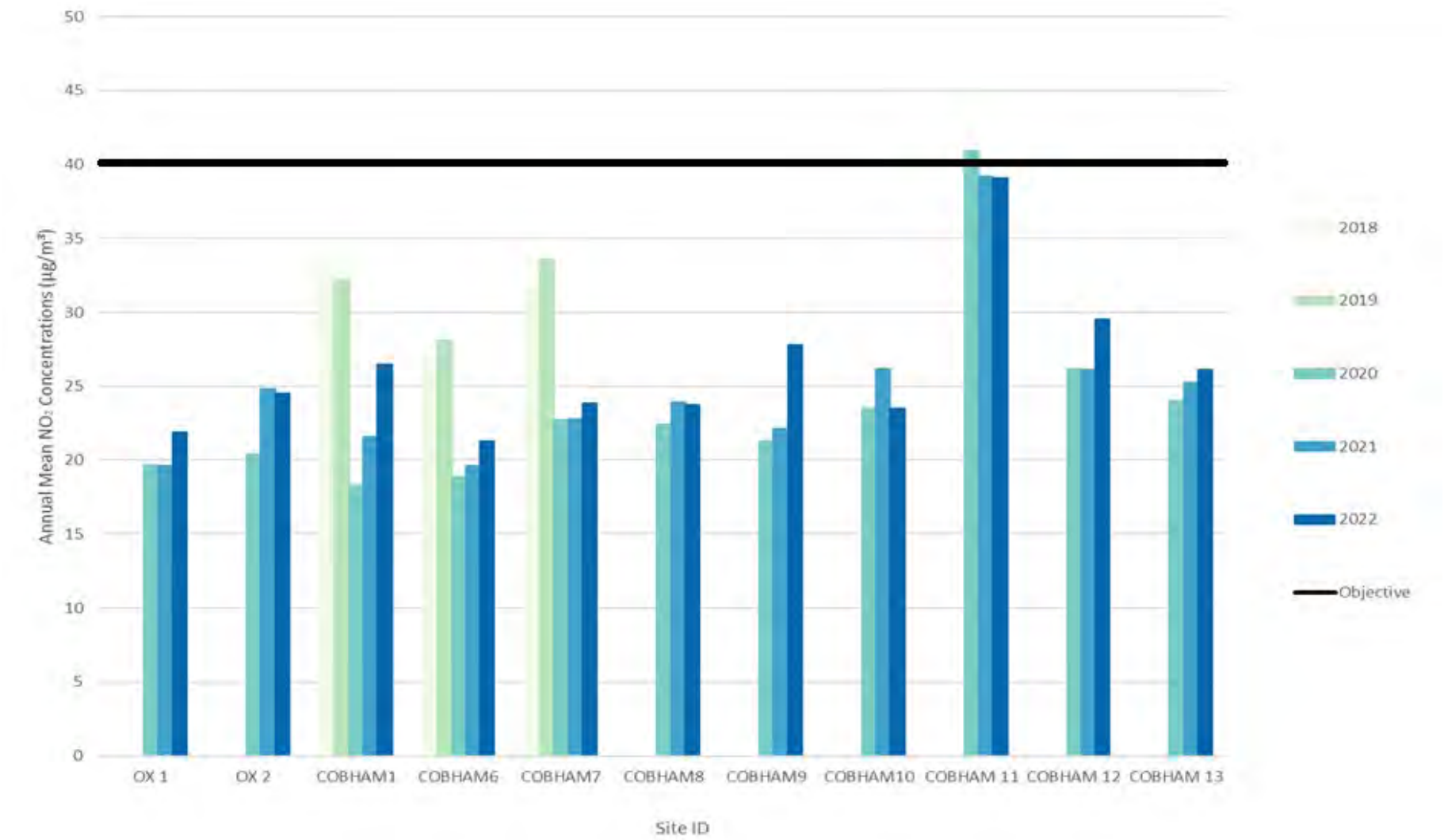


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
Hampton Court Parade	515338	168292	Roadside	97.7	97.7	0	0	0	0	0
Weybridge High Street 2	507459	164909	Kerbside	93.5	93.5	-	0	0	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m^3 have been recorded.

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO_2 2022 Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul [(a)]	Aug [(a)]	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.92)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
ESHER1	513840	164693	42.0	37.0	41.0	26.0	30.0	31.0	33.0	33.0	39.0	34.0	35.0	35.0	34.7	32.0		
ESHER7	513982	164750	53.0	30.0	33.0		33.0	41.0		67.0	38.0	39.0	46.0		42.2	38.9	31.8	
ESHER8	513832	164684	59.0	27.0	26.0	19.0	29.0	33.0	25.0	39.0	41.0	30.0	37.0	35.0	33.3	30.7		
ESHER9	513821	164712	29.0	28.0	26.0	11.0	19.0	21.0	26.0	31.0	32.0	25.0	27.0	18.0	24.4	22.5		
ESHER11	513895	164599	39.0	27.0	26.0		23.0	29.0	27.0	31.0	30.0	27.0	34.0	33.0	29.6	27.3		
ESHER13	513736	164489	36.0	20.0	25.0	16.0	24.0	30.0	25.0	27.0	29.0	29.0	35.0	35.0	27.6	25.4		
ESHER 14	514034	162282	46.0	21.0	22.0	16.0	16.0	18.0	22.0	26.0	21.0	20.0	20.0	21.0	22.4	20.7		
ESHER 15	513901	164779	31.0	22.0	25.0	15.0			22.0		26.0	27.0	26.0	30.0	24.9	22.9		
HINCHLEY WOOD 1	515248	165535	38.0	24.0	24.0	18.0	28.0	28.0	31.0	28.0	29.0	34.0	36.0	31.0	29.1	26.8		
HINCHLEY WOOD 3	515728	165191	41.0	30.0	35.0	23.0	24.0	42.0	34.0	45.0	35.0	39.0	43.0	34.0	35.4	32.6		
HAMPTON COURT 1	515379	167946	51.0	30.0	32.0	14.0	24.0	27.0	30.0	33.0	32.0	29.0	28.0		30.0	27.6		
HAMPTON COURT 2	515338	168292	34.0	29.0	33.0	19.0	22.0	32.0	24.0	34.0	33.0	34.0	32.0	31.0	-	-		Triplicate Site with HAMPTON COURT 2, HAMPTON COURT 3 and HAMPTON COURT 4 - Annual data provided for HAMPTON COURT 4 only
HAMPTON COURT 3	515338	168292	32.0	30.0	33.0	19.0	24.0	27.0	26.0	25.0	32.0	33.0	31.0	35.0	-	-		Triplicate Site with HAMPTON COURT 2, HAMPTON COURT 3 and HAMPTON COURT 4 - Annual data provided for HAMPTON COURT 4 only
HAMPTON COURT 4	515338	168292	37.0	29.0	31.0	18.0	26.0	26.0	22.0			34.0	37.0	34.0	29.4	27.1		Triplicate Site with HAMPTON COURT 2, HAMPTON COURT 3 and HAMPTON COURT 4 - Annual data provided for HAMPTON COURT 4 only
HAMPTON COURT5	515329	168390	52.0	27.0		13.0	15.0	20.0	20.0	33.0	26.0	21.0	26.0	28.0	25.5	23.5		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul [(a)]	Aug [(a)]	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.92)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
MOLESEY1	514450	168134	38.0	32.0	37.0	22.0	17.0	23.0	23.0	28.0	26.0	24.0	30.0	22.0	26.8	24.7		
MOLESEY8	514716	167960	36.0	24.0	24.0	18.0	24.0	31.0	24.0	38.0	33.0	33.0	39.0	33.0	29.8	27.4		
MOLESEY9	514507	168086	40.0		26.0	19.0	19.0	26.0	23.0	28.0	31.0	29.0	29.0	28.0	27.1	25.0		
MOLESEY10	514169	168152	40.0	23.0	25.0	13.0	20.0	16.0	16.0	24.0	20.0	23.0	22.0	27.0	22.4	20.7		
OX 1	514558	160621	31.0	26.0	29.0	15.0	22.0	20.0	24.0	30.0	22.0	21.0	21.0	24.0	23.8	21.9		
OX 2	514574	160493	34.0	24.0	26.0	14.0	25.0	25.0	23.0	30.0	30.0	28.0	29.0	31.0	26.6	24.5		
WALTON8	510154	166281	36.0	22.0	26.0	18.0	24.0	27.0	24.0	28.0	30.0	33.0	31.0	25.0	27.0	24.9		
WALTON9	510082	166379	34.0			19.0	19.0	22.0		26.0	21.0	28.0	31.0	29.0	25.4	23.5		
WALTON10	510140	166522	34.0	24.0	26.0	20.0	23.0	34.0	29.0	35.0	29.0	37.0	33.0	32.0	29.7	27.3		
WALTON11	510000	166401	52.0	29.0	33.0		14.0			32.0		34.0	31.0		32.1	29.6		
WALTON 12	510185	166225	36.0	17.0	21.0	17.0	23.0	21.0	21.0	31.0	30.0	27.0	31.0	30.0	25.4	23.4		
WEYBRIDGE 4	507705	164907	33.0	20.0	24.0	22.0	22.0		31.0	38.0	32.0	26.0		37.0	28.5	26.3		
WEYBRIDGE 5	507609	164966	41.0	21.0	20.0	18.0	29.0	35.0	27.0	34.0	32.0	32.0	41.0	34.0	30.3	28.0		
WEYBRIDGE 6A	507536	164952	50.0	29.0	32.0	17.0	20.0	29.0	30.0	34.0	27.0	31.0	33.0	25.0	29.8	27.4		
WEYBRIDGE 7	507199	164804	37.0	19.0	40.0	26.0	29.0	37.0	34.0	51.0	41.0	37.0	41.0	35.0	35.6	32.8		
WEYBRIDGE 8	507150	164761	35.0	35.0		13.0	25.0	21.0		32.0	33.0	27.0	32.0		28.1	25.9		
WEYBRIDGE 13	507459	164909	35.0	27.0	30.0	19.0	27.0	27.0	22.0	39.0	28.0	29.0	31.0	31.0	-	-		Triplicate Site with WEYBRIDGE 13, WEYBRIDGE 14 and WEYBRIDGE15 - Annual data provided for WEYBRIDGE15 only
WEYBRIDGE 14	507459	164909		25.0	25.0	21.0	24.0	27.0	24.0	34.0	31.0	25.0	33.0	28.0	-	-		Triplicate Site with WEYBRIDGE 13, WEYBRIDGE 14 and WEYBRIDGE15 - Annual data provided for WEYBRIDGE15 only
WEYBRIDGE 15	507459	164909	29.0	29.0	30.0	20.0	23.0	25.0	27.0	35.0	26.0	27.0	29.0	30.0	27.9	25.7		Triplicate Site with WEYBRIDGE 13, WEYBRIDGE 14 and WEYBRIDGE15 - Annual data provided for WEYBRIDGE15 only
WEYBRIDGE 16	507190	161340	30.0	29.0	28.0	23.0	19.0	22.0	18.0	34.0	28.0	23.0	26.0	26.0	25.5	23.5		
WEYBRIDGE 17	507365	164831	36.0	22.0	25.0	18.0	22.0		24.0	26.0	26.0	28.0		30.0	25.7	23.7		
COBHAM1	510813	160048	43.0	29.0	26.0	16.0		22.0	24.0	31.0	31.0	29.0	31.0	34.0	28.7	26.5		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul [(a)]	Aug [(a)]	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.92)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
COBHAM6	510814	160099	31.0	28.0	22.0	16.0	17.0	21.0	17.0	29.0	25.0	21.0	26.0	24.0	23.1	21.3		
COBHAM7	510861	159906	38.0	27.0		19.0	21.0	27.0	24.0	32.0	30.0	24.0	23.0	20.0	25.9	23.9		
COBHAM8	510300	160375	39.0	22.0	21.0	17.0	18.0	23.0	20.0	33.0	31.0	29.0		30.0	25.7	23.7		
COBHAM9	510348	160417	52.0	27.0	26.0	16.0	25.0	26.0	21.0	40.0	36.0	30.0	32.0	31.0	30.2	27.8		
COBHAM10	510262	160454	37.0	28.0	28.0	17.0	21.0	22.0	25.0	27.0	24.0	23.0	27.0	27.0	25.5	23.5		
COBHAM 11	509623	160616	52.0	27.0	35.0		38.0	45.0	30.0	57.0	47.0	48.0	45.0		42.4	39.1	30.7	
COBHAM 12	509560	160720	30.0	27.0	36.0		25.0	29.0	27.0	46.0	38.0	33.0	30.0	31.0	32.0	29.5		
COBHAM 13	509465	160640	38.0	23.0	23.0	17.0	20.0	25.0	26.0	40.0	30.0		37.0	33.0	28.4	26.1		

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

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

☒ **Local bias adjustment factor used.**

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

☒ **Elmbridge Borough Council confirm that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

See Appendix C for details on bias adjustment and annualisation.

(a) Diffusion tube exposure times are outside the DEFRA calendar and should not be compared to previous years.

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

New or Changed Sources Identified Within Elmbridge During 2022

As part of the Governments Road Investment Strategy 2015 to 2020, improvements will be made to the M25 Junction 10 / A3 Wisley Interchange. These works are scheduled to be completed in summer 2025. (National Highways - timeline)

As part of the improvements this will reroute traffic within Elmbridge. Improvement works have started in December 2022 and have included the removal of trees and other vegetation, temporary changes to road layout along the A3 and M25 junction 10 slips, narrowing of lanes along the A3 and speed limit reduction to 50 mph. There have also been night-time road closures during December 2022 along the A3 southbound from M25 junction 10 to Ockham roundabout which diverted motorway traffic onto the A24 south towards Leatherhead / Dorking and non-motorway traffic was diverted onto the Painshill Junction towards Cobham (A245) and Esher (A307) and then A309 towards A3 Hook and onto the A243 then onto A24 towards Leatherhead / Dorking. Further, night-time road closures were in place during December 2022 including the A3 southbound from Painshill junction to M25 junction which diverted motorway and non-motorway traffic along the A24 towards Cobham onto A307 towards Esher and towards A3 Hook along A309. For more information can be found on the following link; M25 junction 10 - National Highways.

The London Ultra Low Emission (ULEZ) zone extension was extended in October 2021. Whilst the ULEZ is not considered to be a new source of air pollution, it has the potential to displace traffic onto roads within Elmbridge through existing AQMAs. Another extension of the ULEZ will be expected to be implemented in August 2023, covering all of Greater London.

ULEZ Expansion 2023: What You Need to Know

Any increase in traffic flows and resulting NO_2 concentrations will be closely monitored in these areas.

Additional Air Quality Works Undertaken by Elmbridge Borough Council During 2022

Elmbridge has not completed any additional works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes in 2022 were prepared and analysed by Lambeth Scientific Services using a preparation method of 50% TEA in acetone.

In 2022, there was some divergence from the 2022 LAQM Diffusion Tube Monitoring Calendar, notably July and August which exceeded the ±2 days allowed either side of the calendar dates. As advised by the LAQM Helpdesk, advice was sought from the diffusion tube supplier (Lambeth Scientific Services Ltd.). The laboratory highlighted July samples were exposed for almost 5 weeks (813 hours) instead of 4 weeks (672 hours) and August for less than 4 weeks (577 hours) instead of 4 weeks (672 hours). They confirmed that given that the data is presented as an annual average, it is considered reliable, however they advised any particular data that appears much higher or lower than average should be considered as an outlier.

As such, analysis was conducted on the July and August diffusion tubes. This analysis identified that compared to previous years, August had higher concentrations than average. However, when comparing the diffusion tubes with the automatic sites the monitoring data within August were considered reliable and accurately defined. In addition, retaining the July and August monitoring data provided a higher annual mean concentration at the majority of diffusion tube monitoring sites and therefore it was considered worst-case to include the July and August data.

Lambeth Scientific Service take part in the analytical proficiency testing scheme (AIR-PT), formerly known as the WASP operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). During 2022, 50% of samples were determined to be satisfactory in the 1st quarter and 75% of samples were determined to be satisfactory in the 2nd quarter. The results from the 3rd and 4th quarters are not currently published.

Diffusion Tube Annualisation

Where data capture is less than 75% for a full calendar year, diffusion tube results were annualised following the methodology in LAQM TG (22). Annualisation was carried out at one site, Walton 11.

Continuous monitoring data from London Westminster, London Hillingdon, London North Kensington and London Harlington urban background sites, part of the Automatic Urban and Rural Network (AURN) were used. Details of the annualisation are provided in Table C.1 below.

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

Site ID	Annualisation Factor London Hillingdon	Annualisation Factor London North Kensington	Annualisation Factor London Westminster	Annualisation Factor London Harlington	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
WALTON11	1.0	1.0	1.0	1.0	1.0	32.1	32.1

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

A local bias adjustment factor of 0.92 has been applied to the 2022 monitoring data. A summary of bias adjustment factors used by Elmbridge over the past five years is presented in Table C.2.

There are two triplicate co-location sites within Elmbridge. A local bias adjustment factor of 0.9 has been derived from Weybridge High Street 2 co-location and a local bias adjustment factor of 0.95 has been derived from Hampton Court Parade co-location. As a result, the combined local bias adjustment factor is 0.92, as shown in Table C.3.

As highlighted in LAQM TG22, there are a number of factors which should be considered when deciding which bias-adjustment factor to use (local or national). It is considered that the locally bias adjustment factor is more representative due to the following factors:

- All co-located sites have “good overall precision”, and the laboratory (Lambeth Scientific Services) has predominately “good precision”, as set out on the LAQM Support Helpdesk website;
- Air quality measurements from the two automatic monitors have been validated and ratified by Air Quality Data Management (AQDM) to the standards set out within LAQM TG22;
- Data capture at the two automatic sites (Hampton Court Parade and Weighbridge High Street 2) are above 93% during 2022; and
- The local co-located monitoring sites (and automatic monitoring sites) are located at similar locations to the wider survey monitors. Generally, all monitoring locations are located at a similar height, at either roadside or kerbside locations and are not located within a street canyon.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	Local	-	0.92
2021	Local	-	0.93
2020	Local	-	1.01
2019	Local	-	0.99
2018	Local	-	1.11

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2
Periods used to calculate bias	11	10
Bias Factor A	0.9 (0.78 - 1.06)	0.9 (0.86 - 1.07)
Bias Factor B	12% (-6% - 29%)	5% (-6% - 16%)
Diffusion Tube Mean (µg/m^3)	27.7	30.5

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2
Mean CV (Precision)	8.1%	6.1%
Automatic Mean (µg/m^3)	24.8	29.1
Data Capture	100%	100%
Adjusted Tube Mean (µg/m^3)	25 (22 - 29)	29 (26 - 33)

Notes:

A combined local bias adjustment factor of 0.92 has been used to bias adjust the 2022 diffusion tube results.

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/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.

NO_2 fall-off distance from road has been calculated for monitoring sites which exceeded 36 µg/m^3 in 2022. The only sites which exceeded 36 µg/m^3 in 2022 was Esher 7 and Cobham 11 and therefore NO_2 fall-off with distance has been calculated for these sites. Table C.4 presents the inputs in the Diffusion Tube Processing Tool used to calculate NO_2 fall-off with distance for Cobham 11. The annual mean NO_2 background concentration at Esher 7 and Cobham 11 has been obtained from the latest 2018-based DEFRA background maps.

In 2022, the NO_2 concentrations predicted at receptor for Esher 7 is 31.8 µg/m^3 and for Cobham 11 is 30.7 µg/m^3, which are both below the NO_2 annual mean objective.

Table C.4 – NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
ESHER7	0.6	2.9	38.9	14.5	31.8	

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
COBHAM 11	1.5	8.6	39.1	17.2	30.7	

QA/QC of Automatic Monitoring

Air Quality Data Management (AQDM) provide the data management services and carry out Local Site Operator duties for the Hampton Court and Weybridge High Street 2 automatic monitors. All data has been validated and ratified to the standards outlined in LAQM TG.22. The data presented in the ASR for 2022 is fully ratified.

Automatic Monitoring Annualisation

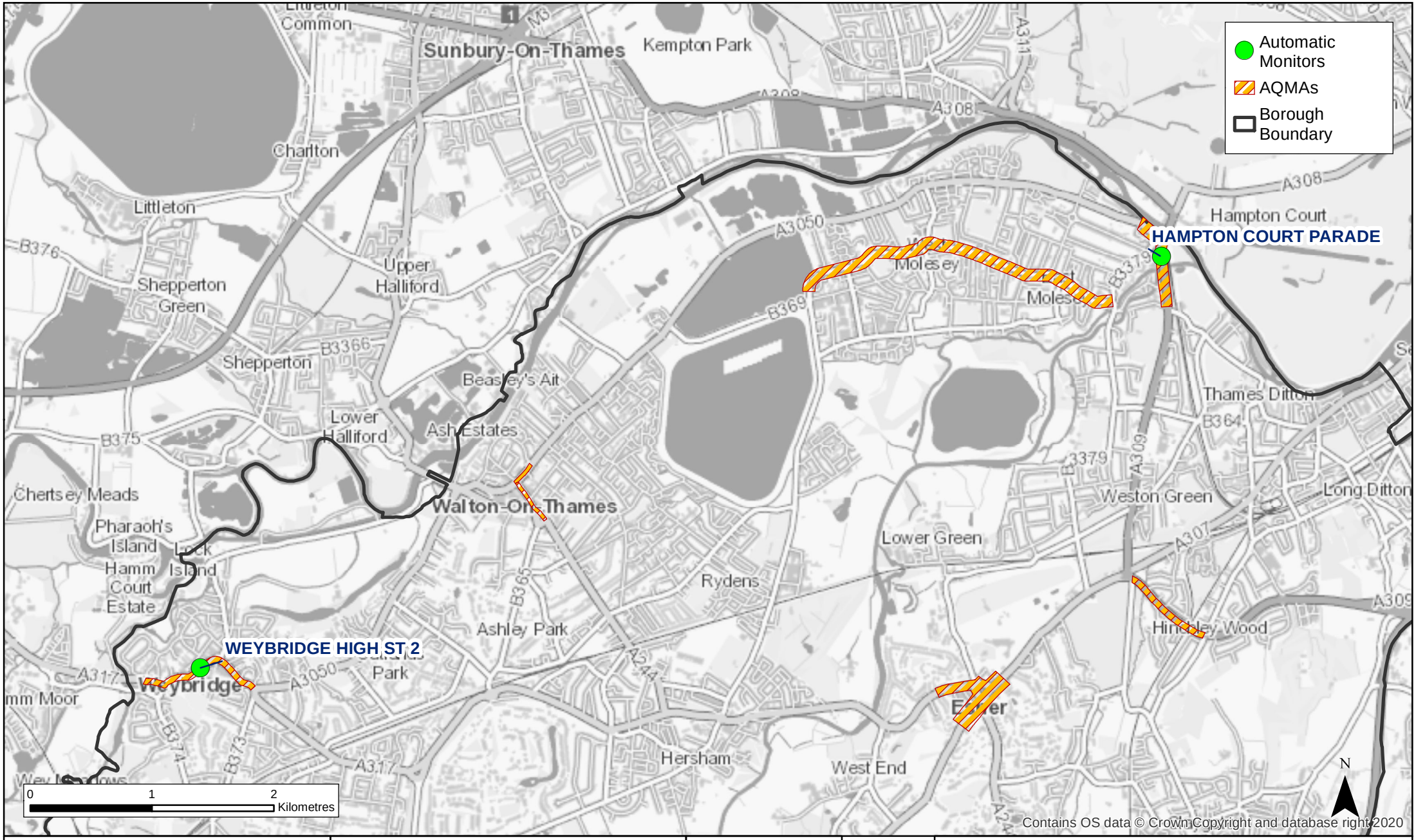
All automatic monitoring locations within Elmbridge recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

NO_2 Fall-off with Distance from the Road

No automatic NO_2 monitoring locations within Elmbridge required distance correction during 2022.

Appendix D: Maps of Monitoring Locations and AQMAs

Document Path: J:\47763 Elmbridge 2020 LAQM\Air Quality\Plans and Figures\ArcGIS\ASR 2022\Figure D.1(Automatic Monitoring).mxd



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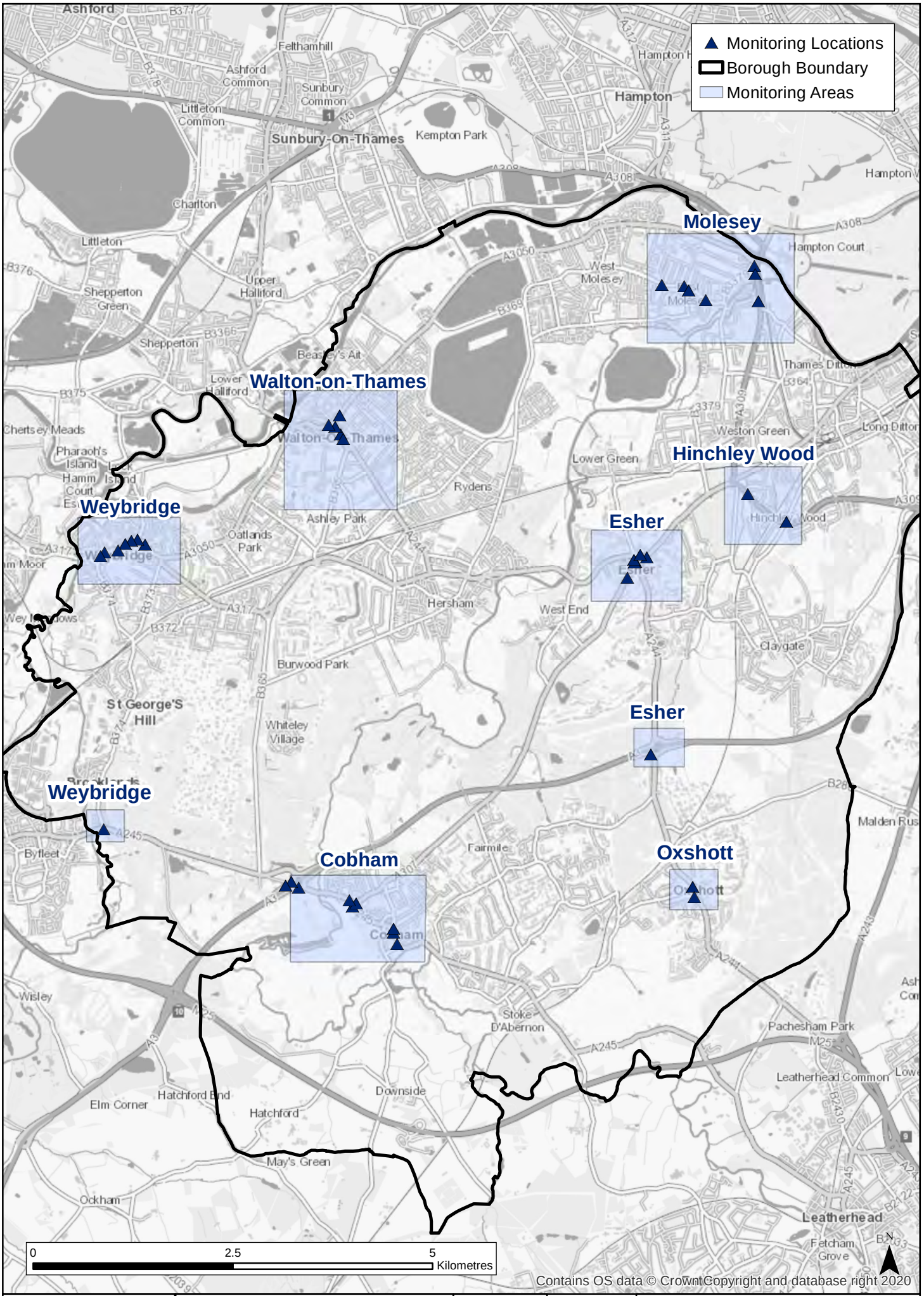
Automatic Monitoring Locations in Elmbridge

Figure D.1 | Rev A



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Monitoring Locations in Elmbridge

Figure D.2 | Rev A

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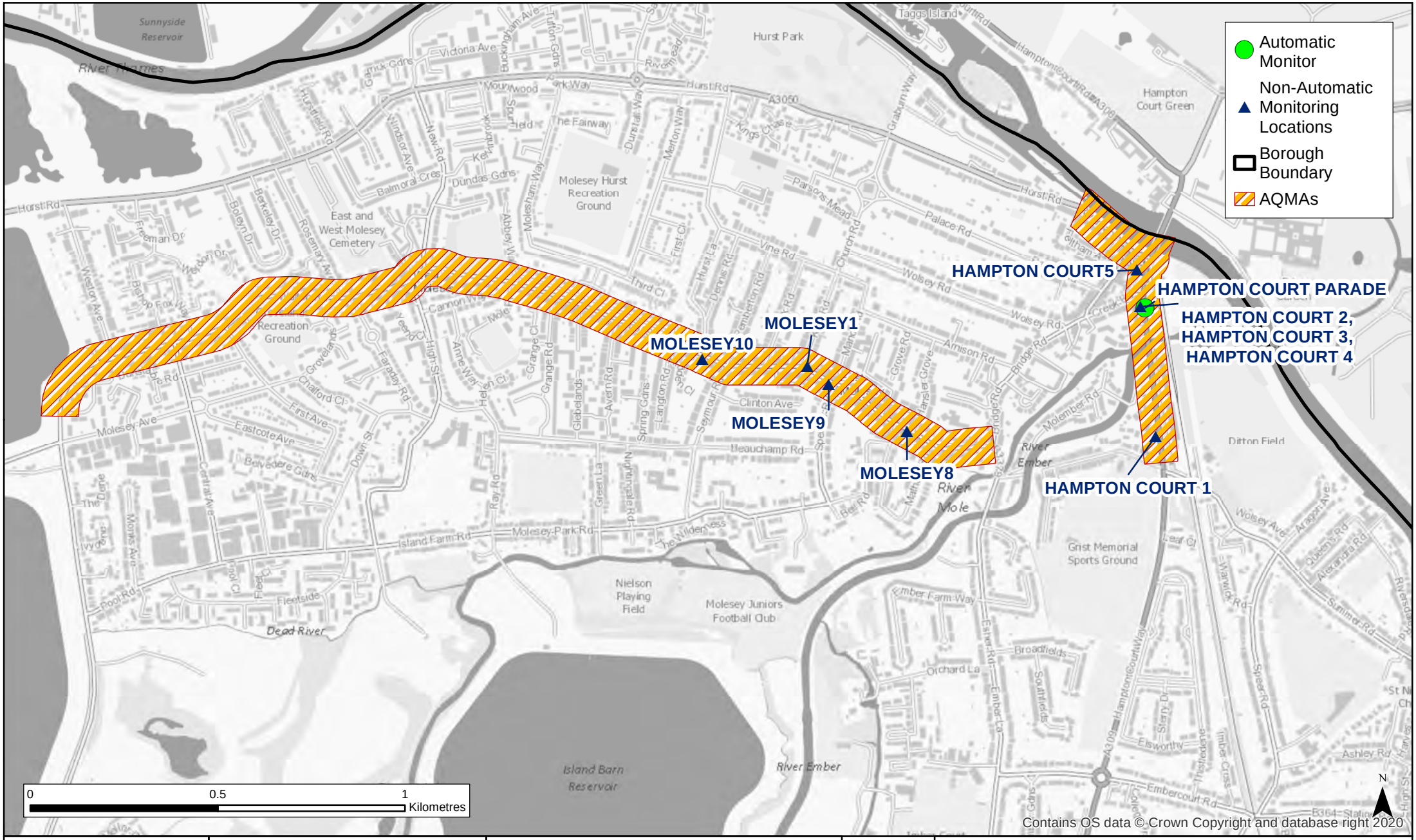

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Monitoring Locations in Molesey

Figure D.3 | Rev A

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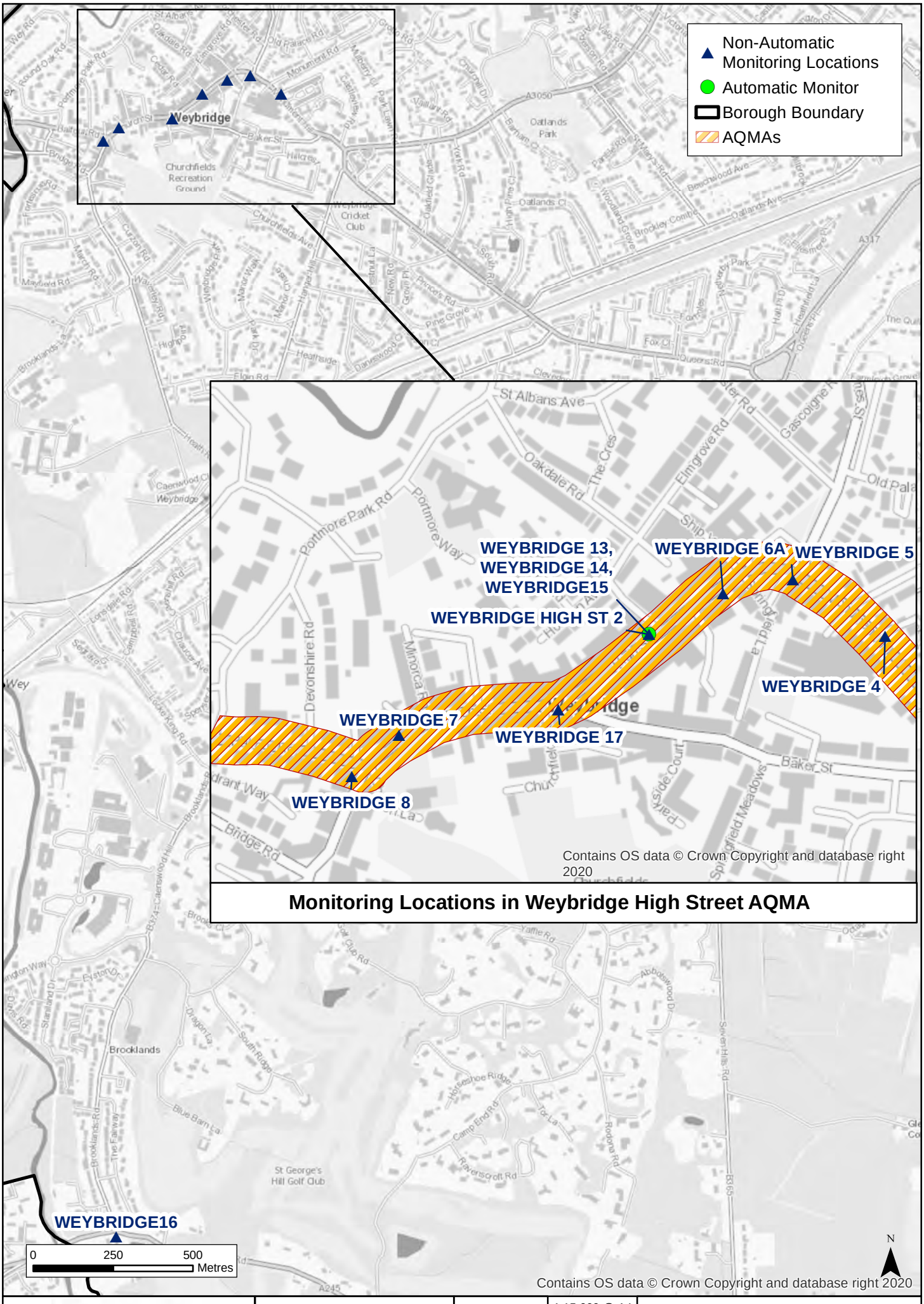
Monitoring Locations in Walton-on-Thames

Figure D.4 | Rev A



Monitoring Locations in Weybridge High Street AQMA

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Monitoring Locations in Weybridge

Figure D.5 | Rev A

Document Path: J:\47763 Elmbridge 2020 LAQM\Air Quality\Plans and Figures\ArcGIS\ASR 2023\Figure D.6(Hinchley Wood Monitoring).mxd

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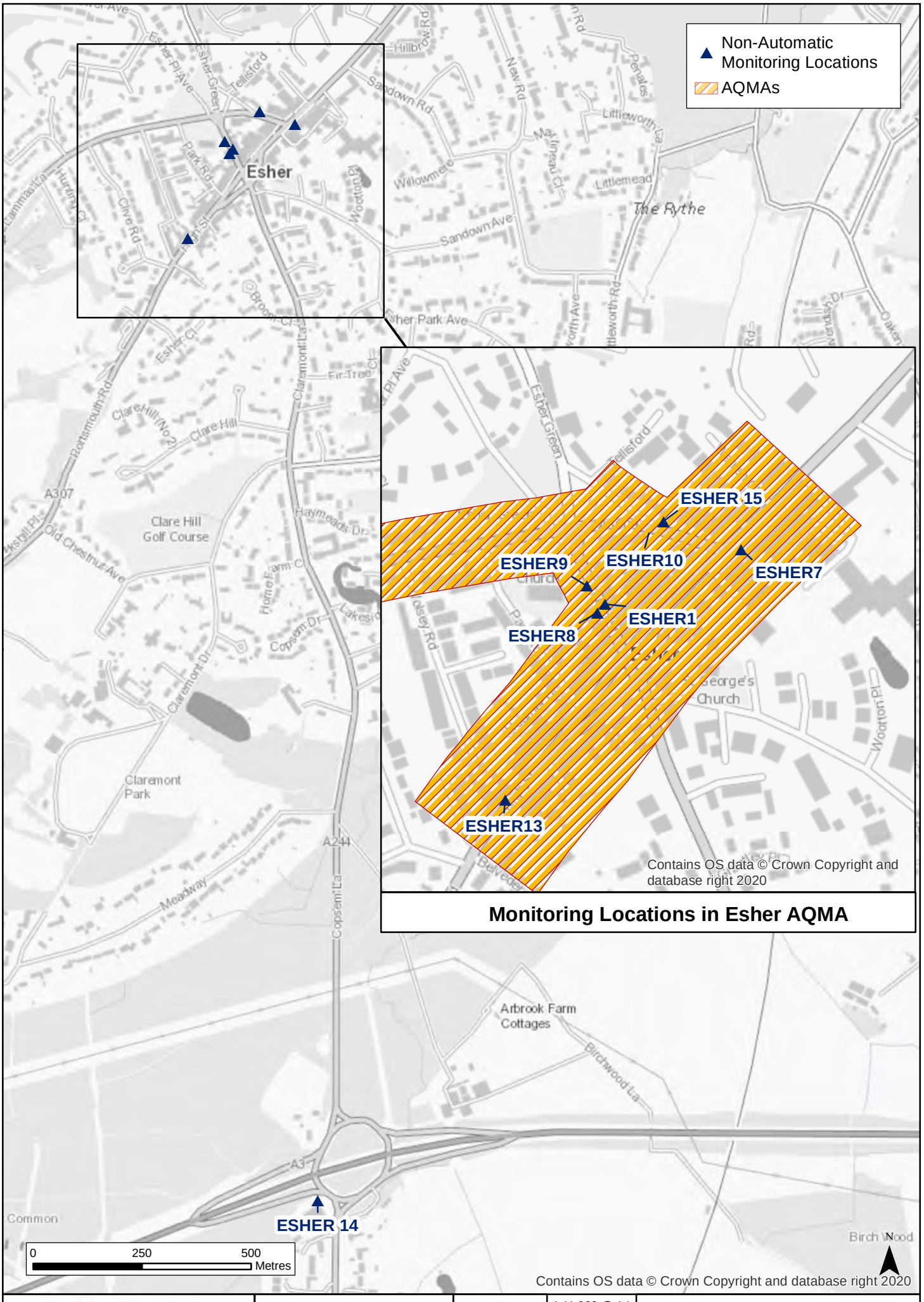
Monitoring Locations in Hinchley Wood

Figure D.6 | Rev A

Document Path: J:\47763 Elmbridge 2020 LAQM\Air Quality\Plans and Figures\ArcGIS\ASR 2023\Figure D.7\Esher Monitoring_1.mxd



Monitoring Locations in Esher AQMA

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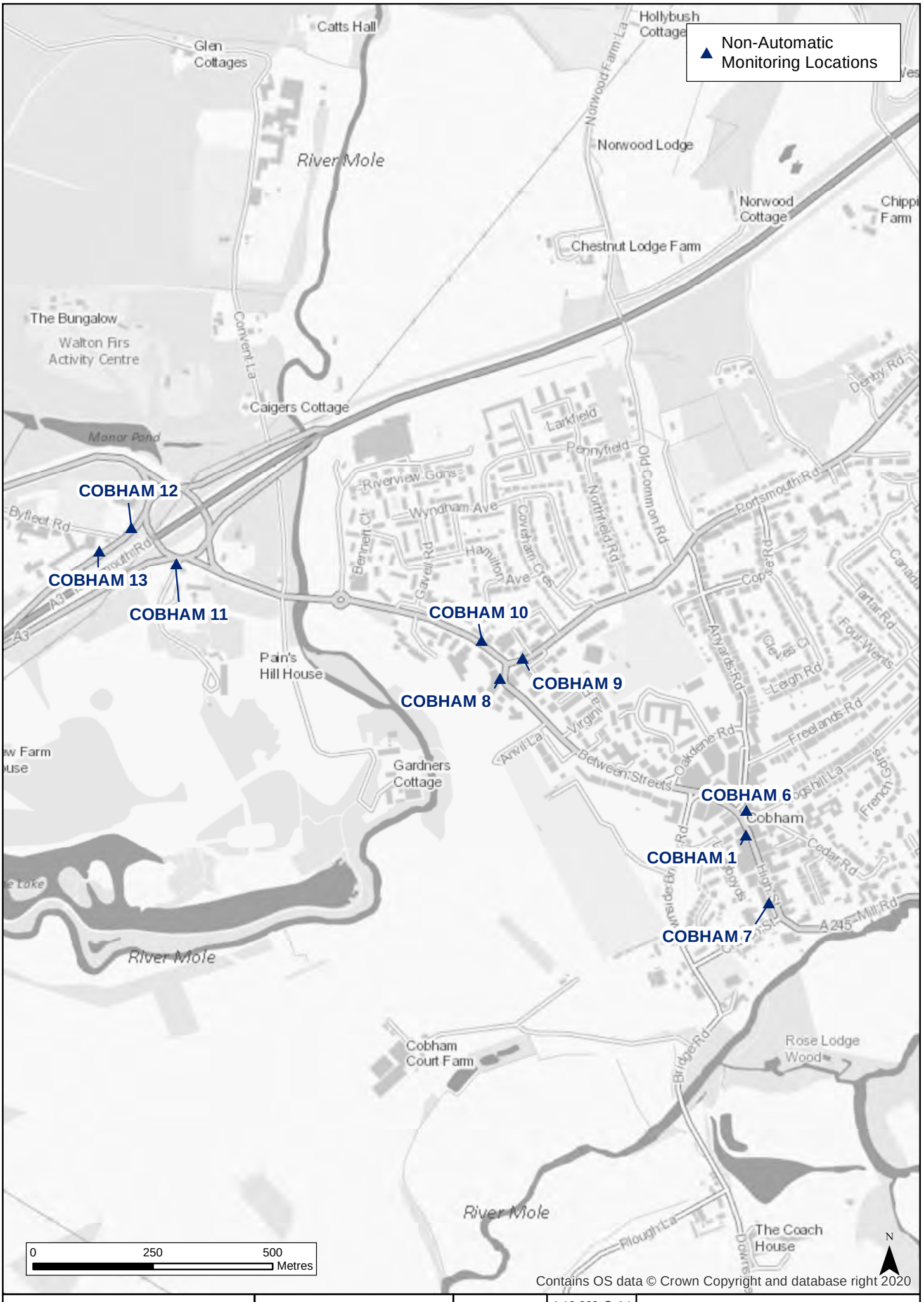
Monitoring Locations in Esher

Figure D.7 | Rev A



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Monitoring Locations in Cobham

Figure D.8 | Rev A

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Monitoring Locations in Oxshott

Figure D.9 | Rev A

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Monitoring Locations in Downside

Figure D.10 | Rev A

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[20]

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

[20] 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
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
LAQM	Local Air Quality Management
LCWIP	Local Cycling and Walking Infrastructure Plan
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
SAA	Surrey Air Quality Alliance
SCC	Surry County Council
SO_2	Sulphur Dioxide
The Council	Elmbridge Borough Council
TEA	Triethanolamine

References

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