Elmbridge Borough Council

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2017 Air Quality Annual Status Report (ASR)

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

September, 2017

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Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SCC	Surrey County Council
SO_2	Sulphur Dioxide

Executive Summary: Air Quality in Our Area

This report is designed to provide a summary for those living and working in the borough of Elmbridge of the state of air quality in the area and progress on the actions that Elmbridge Borough Council (the Council) and others, including the public, are taking or could take to improve air quality.

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart and lung disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions.

It is estimated that outdoor air pollution contributes to around 40,000 premature deaths in the UK each year[1]. The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[1].

Air Quality in Elmbridge

Air quality is generally good across the borough but with some poorer areas in the town centres, next to busy roads. Previous Review and Assessments have concluded that concentrations of carbon monoxide, benzene, 1,3-butadiene, lead, sulphur dioxide and PM_{10} are compliant with the relevant legal objectives.

Air Quality Management Areas (AQMAs) have however been declared at seven locations for exceedances of the annual mean nitrogen dioxide objective.

Monitoring carried out in 2016 confirms that nitrogen dioxide concentrations outside of the AQMAs are below the objectives. There is a slight decrease in nitrogen dioxide concentrations at locations that are located within the AQMAs. Overall, between 2012 and 2016, concentrations have remained relatively stable at all long-term sites, with a slight decrease in 2016. This status report has not identified any significant new emissions sources within the Borough.

[1] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

Actions to Improve Air Quality

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 within the Borough's seven Air Quality Management Areas.

Elmbridge Borough Council works to manage local air quality through an extensive monitoring network within the Council area.

The Surrey Air Quality Study Group, formed in May 2016, has developed into the Surrey Air Quality Alliance (SAA) made up of representatives from all 11 districts and borough Councils and SCC Highways and Public Health, with a clear remit to work towards improving air quality across the County. The SAA are working on a number of projects, one of which is to carry out modelling of NO_2, PM_{10} and $PM_{2.5}$ in all boroughs to establish a clear baseline and to target resources.

The Council continues to maintain the rapid electric vehicle charger in Hollyhedge carpark in Cobham, the installation of which was part-funded through an Office for Low Emissions (OLEV) grant scheme. The Council is currently reviewing charges for this unit to reduce costs, making it more accessible to members of the public.

The Council's Environmental Services Department also continues to offer three electric vehicles for staff use, use the planning regime to increase the provision of electric vehicle charge points and promote the airAlert pollution warning service for residents.

Conclusions and Priorities

Air quality has shown slight improvements at a majority of monitoring locations across the Borough. However, further improvement is required. The areas prioritised for action are:

- To work in partnership with the SAA to carry out modelling of pollutants to generate a current picture of air quality in Surrey;
- Provision of infrastructure through the planning process for the promotion and support of low emission vehicle usage and development management control within the Borough's AQMAs to avoid introducing new receptors to poor air quality or additional sources of pollution;

- Working collaboratively with other Surrey authorities, SCC Public Health teams and Clinical Commissioning Groups and SCC Local Highway and Transport authority, and actively participating in the SAA.

Local Engagement and How to get Involved

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, or petrol cars instead of diesel, to lower NO_x emissions. Information on electric cars grants is available at www.gov.uk/plug-in-car-van-grants.

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. www.gov.uk/government/collections/plug-in-vehicle-chargepoint-grants

Air pollution impacts on people's health, especially those with heart or respiratory conditions such as asthma and COPD. 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.

The airAlert system is a free text, voicemail, e-mail and web service. The service sends you air pollution alerts when levels in your area increase to a moderate level or above; thereby giving you up to date information to enable you to be prepared and make the right choices to minimise potential impacts on your health. For more information visit the airAlert website at http://www.airalert.info/Surrey/Default.aspx and start to take advantage of this innovative service.

Real-time air quality monitoring information from the Council's two automatic air quality monitors can be viewed at http://www.elmbridge.gov.uk/pollution/local-air-quality/.

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1 Local Air Quality Management

This report provides an overview of air quality in Elmbridge Borough Council during 2016. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act 1995 and the relevant Policy and Technical Guidance documents.

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

The statutory air quality objectives applicable to LAQM in England can be found in Table D.1 in Appendix D.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by the Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=98 .

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date Declared	Pollutants and Air Quality Objectives	City / Town	Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure) µg/m^3		Action Plan (inc. date of publication)
						At Declaration	Now (2016)	
Walton-on-Thames High Street	01/11/2013	NO_2 Annual Mean	Walton-on-Thames	An area encompassing part of the High Street, Walton-on-Thames, between its junction with Hepworth Way/Church Street and Ashley Road/Hersham Road	YES	42.3	35.6	AQAP for Elmbridge Borough Council 2011
Weybridge High Street	17/11/2008	NO_2 Annual Mean	Weybridge	An area encompassing Balfour Road, Church Street, High Street and Monument Hill, Weybridge.	YES	62	45	AQAP for Elmbridge Borough Council 2011
Hampton Court	17/11/2008	NO_2 Annual Mean	Molesey	An area encompassing parts of Hampton Court Way and Riverbank.	NO	50.7	38.7	AQAP for Elmbridge Borough Council 2011

AQMA Name	Date Declared	Pollutants and Air Quality Objectives	City / Town	Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure) µg/m^3		Action Plan (inc. date of publication)
						At Declaration	Now (2016)	
Cobham High Street	17/11/2008	NO_2 Annual Mean	Cobham	An area along the High Street, Cobham,	YES	39.5	34.1	AQAP for Elmbridge Borough Council 2011
Hinchley Wood	17/11/2008	NO_2 Annual Mean	Hinchley Wood	An area encompassing part of the A309 Kingston Bypass between Littleworth Road and Manor Road North.	YES	57.7	38.3	AQAP for Elmbridge Borough Council 2011
Esher High Street	17/06/2005	NO_2 Annual Mean	Esher	An area extending along the High Street, Church Street and including parts of Esher Green and Lammas Lane.	YES	62.1	44.9	AQAP for Elmbridge Borough Council 2011
Walton Road, Molesey	17/06/2005	NO_2 Annual Mean	Molesey	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	36.8	AQAP for Elmbridge Borough Council 2011

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

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

The Council has taken forward a number of direct measures during the current reporting year of 2016 and 2017 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Key completed measures are:

- The formation of the Surrey Air Alliance (SAA) with a clear remit to work towards improving air quality in Surrey;
- The production of the draft 2017 AQAP in-line with LAQM Technical Guidance 2016 (TG.16) and the draft UK Air Quality Plan for tackling nitrogen dioxide;
- The provision of electric vehicle charging infrastructure through the maintenance of the Cobham car park rapid electric charger, which was accessed 106 times during 2016.

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

- Modelling of target pollutant levels to be carried out as part of a Surrey-wide exercise (likely to include PM_{10}, $PM_{2.5}$ and NO_2);
- Adoption of the 2017 AQAP;
- Provision of the infrastructure for a rapid electric vehicle charger to be installed at the new Xcel Leisure Centre Development;
- Consideration of an anti-idling campaign in Esher High Street in partnership with SCC Highways;
- Production of a shared Surrey Air Quality Action Plan through the SAA.

Progress on the production of an Electric Vehicle Strategy for Surrey, through partnership working with the SAA, has been limited due to the unsuccessful bid for government funding for the Strategy.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	To establish the Surrey Air Quality Study Group (now Surrey Air Quality Alliance (SAA))	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area-wide Strategies to reduce emissions and improve air quality	SAA	2015	2016	Formation of Group	-	Formation of SAA with clear remit to work towards improving air quality.	Ongoing	
2	Support through the SAA, an electric vehicle strategy for Surrey.	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	SAA	2017		SCC draft strategy	Reduction of NO_2 emissions	EBC supported SCC in a bid for Government funding to support the strategy.	Mar 2018	Bid for Government funding unsuccessful
3	Produce a Surrey Air Quality Action Plan	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area-wide Strategies to reduce emissions and improve air quality	SAA	2017	2018-2021	Adoption of Action Plan	Reduction of NO_2 emissions	Draft Action Plan produced for consultation	Dec 2017	
4	Determine through the SAA the feasibility of Surrey-wide modelling for key pollutants.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	SAA	2016	2017	Modelling completed		Commitment from all LAs for funding	Dec 2017	
5	Revised Surrey Parking Planning Strategy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	SCC	2017	2017	Amended standards for EV charge points	Reduction of NO_2 emissions	Draft strategy	Dec 2017	Loss of Travel Smart Team

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
6	Produce Surrey-wide guidance for Private Hire Vehicles and Taxi Licensing policy to encourage lower emission vehicles	Promoting Low Emission Transport	Taxi Licensing conditions	SAA/SAA	2017	2018	Adoption of policy	Reduction of NO_2 emissions		Dec 2018	
7	Maintain the EV charger in council Cobham car park and review costs to customers	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	EBC	2015	Ongoing	Charger accessed >15 times a month	Reduction of NO_2 emissions	Charger accessed 106 times in 2016	Review of charges to be agreed and implemented by 31 Oct 2017	
8	Install a rapid EV charger for public use at the new Waterside Drive Sports Hub.	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	EBC	2016	Build to be completed end Sept 2017	Charger accessed >15 times a month	Reduction of NO_2 emissions	Charger included as informative in planning permission	Charger to be operational by 31 Dec 2017	
9	Lease of three electric vehicles for use by staff visiting the Borough	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	EBC	2015	2016	Usage of >1525 miles/month to be cost effective	Reduction of NO_2 emission	Average 1540 miles/month during 2016	Ongoing	
10	Ensure the Elmbridge AQAP is compatible with the Local Plan and Development Management Plan.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	EBC	2015	Jul-17	Development control consultation on AQAP		Draft AQAP produced	Ongoing	

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
11	Use the consultation process to seek to incorporate air quality considerations within the revised Core Strategy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	EBC	2016	Dec-17	Amended Core Strategy Produced		Consultation on draft Core Strategy	Dec-17	
12	Use of a tiered fee structure for taxi licensing to benefit operators with lower emission vehicles	Promoting Low Emission Transport	Taxi emission incentives	EBC	2017		Inclusion in Hackney carriage and private hire licensing policy	Reduction of NO_2 emissions	Consultation with Licensing Team	Dec-17	Inconsistency across Surrey; objection from drivers
13	Use of the EBC website to promote public awareness of the Elmbridge AQMAs and air quality in general.	Public Information	Via the Internet	SCC and Surrey Local Authorities	2017	Ongoing	Latest ASR available on website			Ongoing	
14	Promotion of airAlert text service for residents.	Public Information	Via other mechanisms	EBC	2014	2015	250 subscribers by the end of 2017		252 subscribers by end June	Jun-17	
15	Production of an AQAP in-line with LAQM Technical Guidance 2016 (TG.16)	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	EBC	2016	2017	AQAP published		Draft AQAP out for consultation	Nov-17	Defra NO2 draft Action Plan needs to be incorporated
16	Investigate the feasibility of an anti-idling campaign for Esher High Street	Public Information	Via other mechanisms	SCC / EBC	2017	2017-2018	Campaign implemented	Reduction of NO2 emissions	Initial suitability assessment by SCC	Jun-18	Loss of Travel Smart team at SCC

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

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

Given the implementation of the Technical Guidance LAQM.TG16 and Policy Guidance LAQM.PG16, the Council is still working towards defining a strategy to reduce emissions or concentration of $PM_{2.5}$. However, existing measures to improve air quality already in place can help reduce levels of $PM_{2.5}$, such as:

- Promoting travel alternatives;
- Promoting low emission transport;
- Surrey County Council's Transport Plan (LTP3) and Air Quality Strategy (January 2016).

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

3.1 Summary of Monitoring Undertaken

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

3.1.1 Automatic Monitoring Sites

The Council undertook automatic (continuous) monitoring at two sites during 2016, Weybridge High Street and Hampton Court Parade. Table A.1 in Appendix A shows the details of the sites.

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

3.1.2 Non-Automatic Monitoring Sites

The Council undertook non-automatic (passive) monitoring of NO_2 at 36 sites during 2016.Triplicate diffusion tubes are co-located with the Hampton Court Parade automatic monitoring station and at the Weybridge High Street monitor (from January 2013) Table A.1 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix E. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias and “annualisation”. Further details on adjustments are provided in Appendix C.

Reflecting feedback under the LAQM review process the UK Government has decided to retain Benzene, 1,3-Butadiene, Carbon Monoxide and Lead in regulations for England. However, in recognition of the fact that the objectives for these pollutants have been met for several years and are well below limit values, local authorities in England do not have to report on these pollutants unless local circumstances indicate otherwise.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3.

In 2016, the annual mean NO_2 concentrations at Weybridge High Street did not exceed the annual mean objective. However, the Hampton Court Parade NO_2 annual mean concentration exceeded the objective at 44 µg/m^3. The hourly mean objective was exceeded twice at Hampton Court Parade during 2016, however up to 18 exceedances per year are permitted. Hourly mean concentrations at Weybridge High Street were below the hourly mean objective throughout 2016. Data capture during 2016 was good at both analysers. There is a decreasing trend in the data for Weybridge High Street. Nitrogen dioxide concentrations at Hampton Court Parade have generally decreased since 2012, however an increase was evident between 2015 and 2016.

For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Table B.1, in Appendix B.

Table A.4 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.

In 2016, five exceedances of the annual mean objective were measured. Of these, four were measured at locations within existing and extended AQMAs. The only location where an exceedance was measured outside of the existing AQMAs is Esher 5. This site is not representative of relevant exposure.

The largest exceedance was recorded at the Weybridge 7 monitoring site (45µg/m^3). There are no measured concentrations greater than 60µg/m^3 in 2016, and therefore it is unlikely that the hourly mean objective is exceeded within the Borough.

In 2016, concentrations decreased at all locations, except for Weybridge 6, Weybridge 8, Weybridge 9 and Cobham 6. Data trends for all current sites for the past five years are provided in Appendix A, Figures A.1– A.6. Overall, between 2012 and 2016, concentrations have fluctuated, however a general decrease in concentrations is evident across the majority of sites since 2012.

3.2.2 Particulate Matter (PM_{10})

PM_{10} is not currently monitored within the Elmbridge Borough Council area.

3.2.3 Particulate Matter ($PM_{2.5}$)

$PM_{2.5}$ is not currently monitored within the Elmbridge Borough Council area.

3.2.4 Sulphur Dioxide (SO_2)

SO_2 is not currently monitored within the Elmbridge Borough Council area.

References

Department for Environment, Food and Rural Affairs (Defra), 2016. Local Air Quality Management Technical Guidance (LAQM.TG16). Available at: http://laqm.defra.gov.uk/supporting-guidance.html

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Department for Environment, Food and Rural Affairs (Defra), 2007. Air Quality Strategy for England, Scotland Wales and Northern Ireland, 2007.

Elmbridge Borough Council, 2016. 2016 Air Quality Annual Status Report (ASR). Available at: http://www.elmbridge.gov.uk/pollution/local-air-quality/

Spreadsheet of Diffusion Tube Bias Adjustment Factors, 2016. Available at: http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
Weybridge High Street	Weybridge High Street	Roadside	507480	164923	NO_2	YES	Chemiluminescence	6.5	0.6	1.8
Hampton Court Parade	Hampton Court Parade	Roadside	515388	168282	NO_2	YES	Chemiluminescence	10	2	1.8

Notes:

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

(2) N/A if not applicable.

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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
Esher										
Esher 1	Esher 1	Roadside	513840	164693	NO_2	YES	0.4	1.5	NO	2.6
Esher 4	Esher 4	Urban Centre	514058	164855	NO_2	YES	N/A	4.7	NO	2.4
Esher 5	Esher 5	Roadside	514150	162470	NO_2	NO	N/A	1.4	NO	2.4
Esher 7	Esher 7	Roadside	513982	164750	NO_2	YES	2.3	0.6	NO	2.3
Esher 8	Esher 8	Urban Centre	513832	164684	NO_2	YES	0.1	3.2	NO	2.4
Esher 9	Esher 9	Roadside	513821	164712	NO_2	YES	N/A	0.6	NO	2.6
Esher 10	Esher 10	Urban Centre	513886	164767	NO_2	YES	4.3	2.1	NO	2.4
Esher 11	Esher 11	Urban Centre	513893	164607	NO_2	YES	0.1	5.1	NO	2.6
Esher 13	Esher 13	Roadside	513736	164489	NO_2	YES	2.7	0.9	NO	2.4

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
Hinchley Wood										
Hinchley Wood 1	Hinchley Wood 1	Urban Centre	515248	165535	NO_2	YES	N/A	4.5	NO	2.4
Hinchley Wood 2	Hinchley Wood 2	Urban Centre	515218	165578	NO_2	YES	3.5	9.8	NO	1.9
Molesey										
Molesey 1	Molesey 1	Roadside	514450	168134	NO_2	YES	N/A	1.1	NO	2.5
Molesey 5	Molesey 5	Roadside	515329	168390	NO_2	YES	3.5	0.4	NO	2.4
Molesey 8	Molesey 8	Urban Centre	514716	167960	NO_2	YES	0.1	2.6	NO	2.5
Molesey 9	Molesey 9	Urban Centre	514507	168086	NO_2	YES	4.2	2.6	NO	2.4
Molesey 10	Molesey 10	Urban Centre	514169	168152	NO_2	YES	0.1	4.9	NO	2.4
Hampton Court 1	Hampton Court 1	Roadside	515379	167946	NO_2	YES	N/A	0.9	NO	2.2

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
Hampton Court 2	Hampton Court 2	Roadside	515338	168292	NO_2	YES	10	1.9	YES	1.7
Hampton Court 3	Hampton Court 3	Roadside	515338	168292	NO_2	YES	10	1.9	YES	1.7
Hampton Court 4	Hampton Court 4	Roadside	515338	168292	NO_2	YES	10	1.9	YES	1.7
Walton-on-Thames										
Walton 3	Walton 3	Urban Centre	510132	166336	NO_2	YES	2.7	0.4	NO	2.6
Walton 5	Walton 5	Urban Centre	510702	165471	NO_2	NO	N/A	0.9	NO	2.3
Walton 8	Walton 8	Urban Centre	510154	166281	NO_2	YES	2	2.9	NO	2.6
Walton 9	Walton 9	Urban Centre	510082	166379	NO_2	YES	2.2	2.6	NO	2.5
Walton 10	Walton 10	Urban Centre	510140	166522	NO_2	YES	2	3.3	NO	2.6
Walton 11	Walton 11	Urban Centre	510000	166401	NO_2	NO	N/A	2.3	NO	2.4

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
Weybridge										
Weybridge 1	Weybridge 1	Urban Centre	507448	164900	NO_2	YES	3.8	1	NO	2.5
Weybridge 4	Weybridge 4	Urban Centre	507705	164907	NO_2	YES	5	2	NO	2.4
Weybridge 5	Weybridge 5	Roadside	507609	164966	NO_2	YES	0.4	1.6	NO	2.3
Weybridge 6	Weybridge 6	Urban Centre	507511	164936	NO_2	YES	5.5	0.5	NO	2.3
Weybridge 7	Weybridge 7	Roadside	507199	164804	NO_2	YES	0.1	1.5	NO	2.4
Weybridge 8	Weybridge 8	Urban Centre	507150	164761	NO_2	YES	0.1	4.6	NO	2.4
Weybridge 9	Weybridge 9	Urban Centre	507065	164815	NO_2	YES	0.8	13.1	NO	1.6
Weybridge 10	Weybridge 10	Roadside	507480	164923	NO_2	YES	6.5	0.6	YES	1.8
Weybridge 11	Weybridge 11	Roadside	507480	164923	NO_2	YES	6.5	0.6	YES	1.8

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
Weybridge 12	Weybridge 12	Roadside	507480	164923	NO_2	YES	6.5	0.6	YES	1.8
Cobham										
Cobham 1	Cobham 1	Roadside	510828	159996	NO_2	YES	2.7	0.6	NO	2.4
Cobham 6	Cobham 6	Urban Centre	510814	160099	NO_2	NO	4	6	NO	2.4
Cobham 7	Cobham 7	Urban Centre	510861	159906	NO_2	YES	4.2	3.1	NO	2.4
Downside 3	Downside 3	Roadside	511429	157606	NO_2	NO	N/A	1.1	NO	2.3

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2016 (%) [2]	NO_2 Annual Mean Concentration (µg/m³) [3]				
					2012	2013	2014	2015	2016
Weybridge High Street	Roadside	Automatic	100	100	**42.7**	**43.1**	**40**	37.5	38
Hampton Court Parade	Roadside	Automatic	94.2	94.2	**40.8**	**46.8**	**46.9**	39.7	**44**
Esher									
Esher 1	Urban Centre	Diffusion Tube	100	100	**48.6**	**51.7**	**48**	**48.8**	**44.9**
Esher 4	Urban Centre	Diffusion Tube	100	100	**47.2**	**45.2**	**45.5**	**43.4**	39.8
Esher 5	Urban Centre	Diffusion Tube	100	100	**52.7**	**49.6**	**51.8**	**50.6**	**44.4**
Esher 7	Urban Centre	Diffusion Tube	100	100	**53.2**	**48.2**	**53.1**	**48.4**	**40.5**
Esher 8	Urban Centre	Diffusion Tube	100	100	**54.7**	**47.4**	**51.1**	**44.4**	**42**
Esher 9	Urban Centre	Diffusion Tube	100	100	36.1	36.1	37.3	32.1	32.7
Esher 10	Urban Centre	Diffusion Tube	100	100	35.9	36	36.1	33	30.2

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2016 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2012	2013	2014	2015	2016
Esher 11	Urban Centre	Diffusion Tube	100	100	39.7	**42.1**	39.1	38.9	32.9
Esher 13	Urban Centre	Diffusion Tube	100	100	**42.2**	**40.6**	37.8	39.8	35.7
Hinchley Wood									
Hinchley Wood 1	Urban Centre	Diffusion Tube	100	100	**45.6**	**43.5**	**47.6**	**44.8**	38.3
Hinchley Wood 2	Urban Centre	Diffusion Tube	100	100	36.3	31.6	34.7	33	31.2
Molesey									
Molesey 1	Urban Centre	Diffusion Tube	100	100	38.4	39.1	37.1	34.2	32.1
Molesey 5	Urban Centre	Diffusion Tube	100	100	32.8	32.6	33.4	30.6	28.7
Molesey 8	Urban Centre	Diffusion Tube	100	100	**48.3**	**41.4**	**45.7**	**41.9**	35.6
Molesey 9	Urban Centre	Diffusion Tube	100	100	**40.2**	37.7	**40.9**	39.1	34.1

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2016 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2012	2013	2014	2015	2016
Molesey 10	Urban Centre	Diffusion Tube	100	100	34.7	32	33.3	28.5	26.6
Hampton Court 1	Urban Centre	Diffusion Tube	100	100	**43.4**	**41.6**	**45.4**	**42.2**	36.9
Hampton Court 2	Urban Centre	Diffusion Tube	100	100	44.1	44.9	45.7	43.1	38
Hampton Court 3	Urban Centre	Diffusion Tube	100	100	45.3	44.2	45.7	43	38.7
Hampton Court 4	Urban Centre	Diffusion Tube	100	100	**46.5**	**45.9**	**49.6**	**45.2**	38.7
Walton-on-Thames									
Walton 3	Urban Centre	Diffusion Tube	100	100	35.3	38	34.3	32.7	30.2
Walton 5	Urban Centre	Diffusion Tube	100	100	34.7	36	38.2	35.4	29.8
Walton 8	Urban Centre	Diffusion Tube	100	100	**40.8**	38.3	**43.7**	38	32.3
Walton 9	Urban Centre	Diffusion Tube	100	100	39.4	38.9	40.8	37.9	31.5

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2016 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2012	2013	2014	2015	2016
Walton 10	Urban Centre	Diffusion Tube	100	100	**46.3**	**42.3**	**47.2**	**43.8**	36.8
Walton 11	Urban Centre	Diffusion Tube	100	100	34.7	35.5	36	38.8	33.7
Weybridge									
Weybridge 1	Urban Centre	Diffusion Tube	100	100	**44.2**	39.2	39.2	36.1	31.9
Weybridge 4	Urban Centre	Diffusion Tube	100	100	**42.2**	**41.4**	**43.8**	36.6	32.4
Weybridge 5	Urban Centre	Diffusion Tube	91.6	91.6	**44.3**	**42.6**	**49.4**	**42.8**	36.4
Weybridge 6	Urban Centre	Diffusion Tube	100	100	36	35.3	36	30.1	30.9
Weybridge 7	Urban Centre	Diffusion Tube	100	100	**56.7**	**57.8**	**55.6**	**50.8**	**45**
Weybridge 8	Urban Centre	Diffusion Tube	100	100	39.3	**40.4**	**42**	37.2	37.4
Weybridge 9	Urban Centre	Diffusion Tube	100	100	29.6	30	28.9	25.1	25.8

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2016 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2012	2013	2014	2015	2016
Weybridge 10	Urban Centre	Diffusion Tube	100	100	-	**40.6**	39.8	35.8	34.4
Weybridge 11	Urban Centre	Diffusion Tube	100	100	-	39.4	39.9	36.6	34.9
Weybridge 12	Urban Centre	Diffusion Tube	100	100	-	39.2	**40.4**	35.8	34.2
Cobham									
Cobham 1	Urban Centre	Diffusion Tube	100	100	39.8	**40.4**	**42.3**	34.9	33.1
Cobham 6	Urban Centre	Diffusion Tube	100	100	34.3	33.2	32.8	28.4	28.6
Cobham 7	Urban Centre	Diffusion Tube	100	100	**41.9**	38	**42.5**	36.4	34.1
Downside 3	Rural	Diffusion Tube	100	100	30.3	32	31.4	26.3	21.3

Notes:

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

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

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

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

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

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

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

☒ **If applicable, all data has been distance corrected for relevant exposure**

Figure A.1: Trends in Annual Mean NO_2 Concentrations at Esher

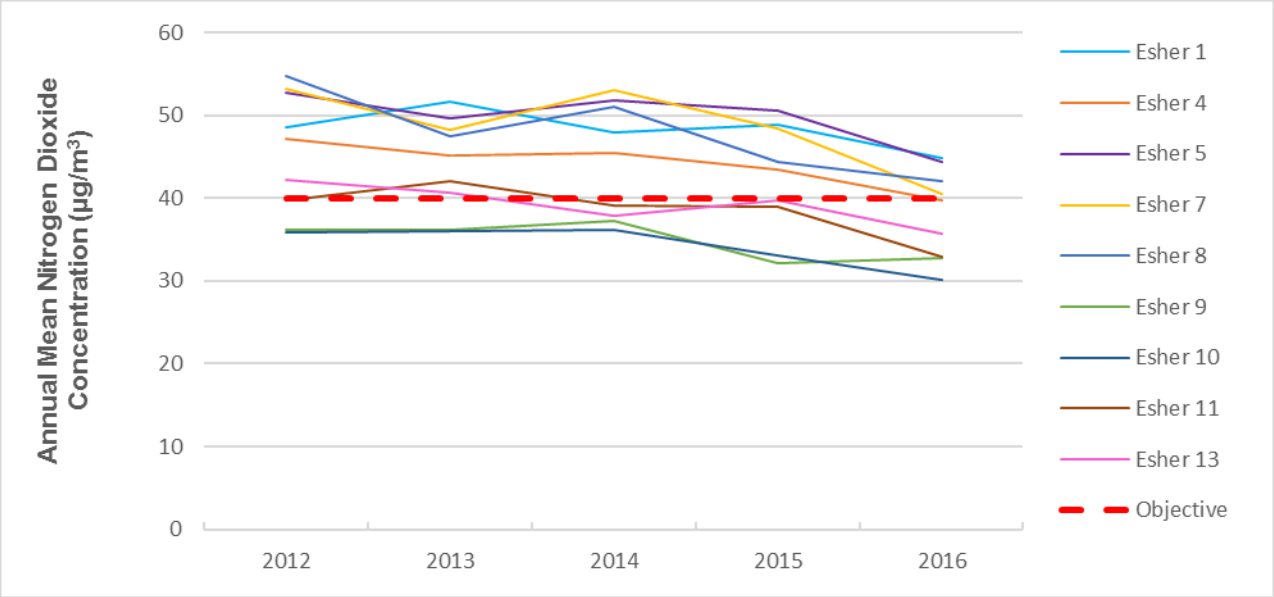

Figure A.2: Trends in Annual Mean NO_2 Concentrations at Hinchley Wood

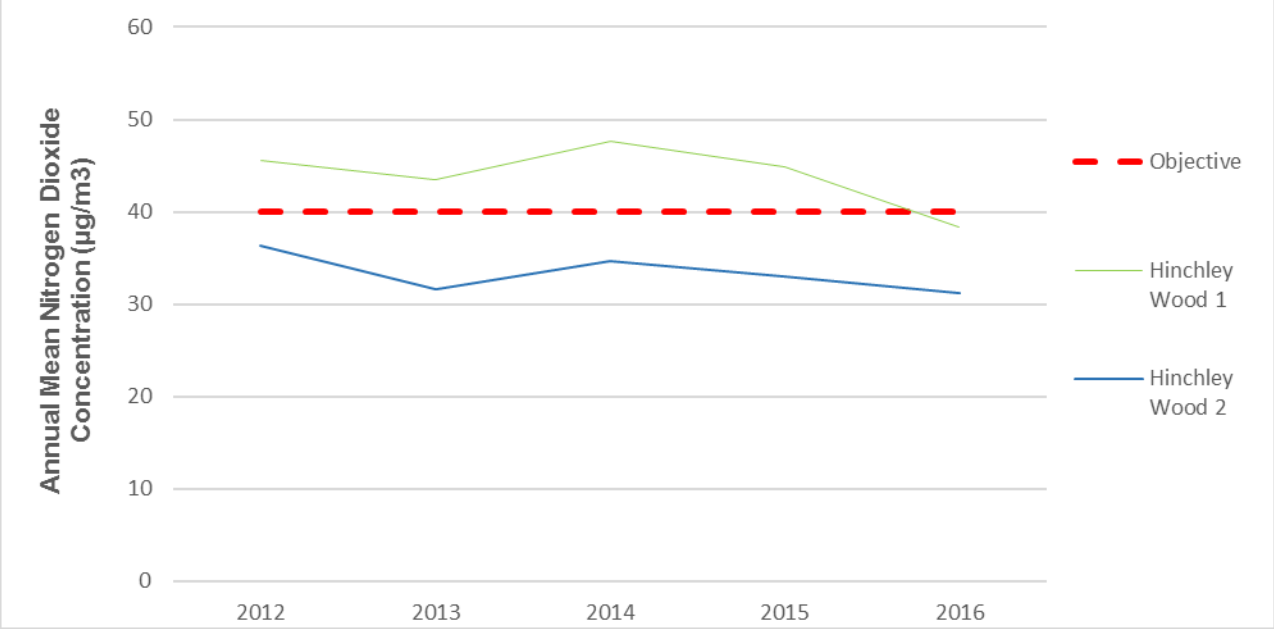

Figure A.3: Trends in Annual Mean NO_2 Concentrations at Molesey

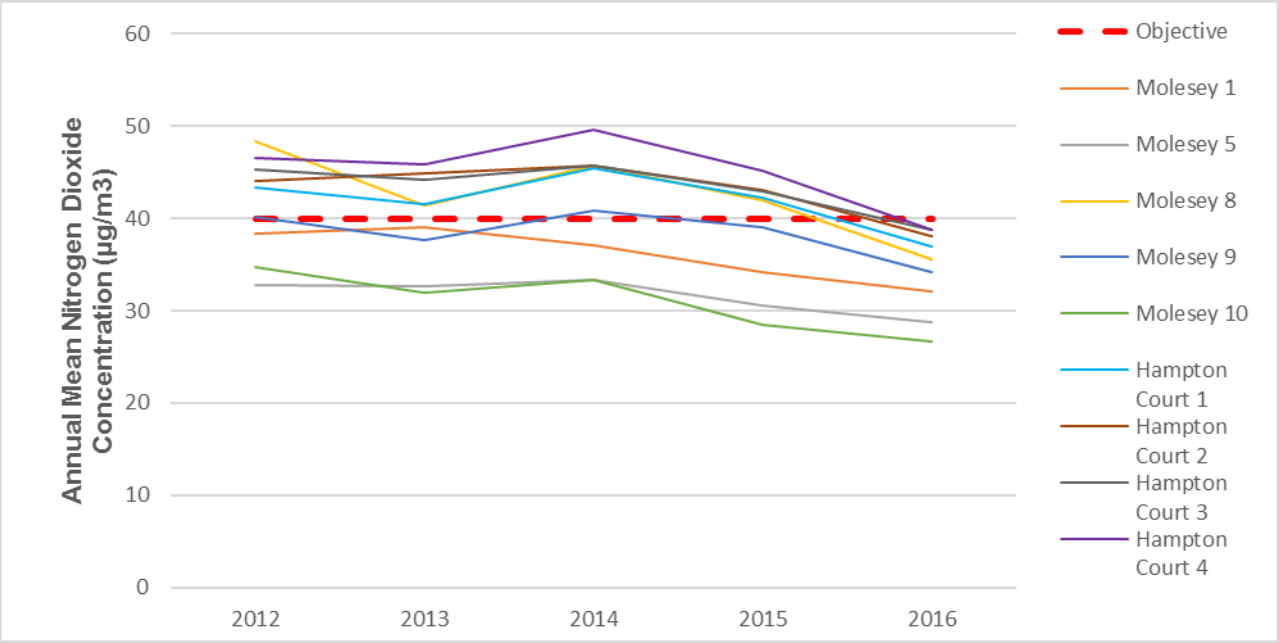

Figure A.4: Trends in Annual Mean NO_2 Concentrations at Walton

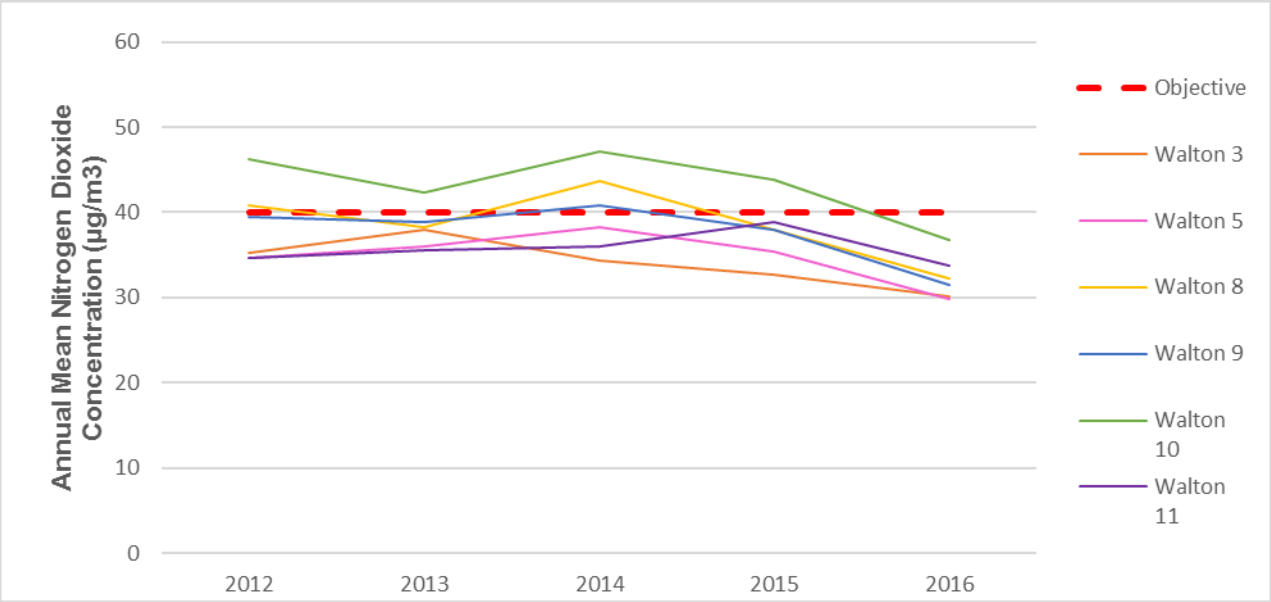

Figure A.5: Trends in Annual Mean NO_2 Concentrations at Weybridge

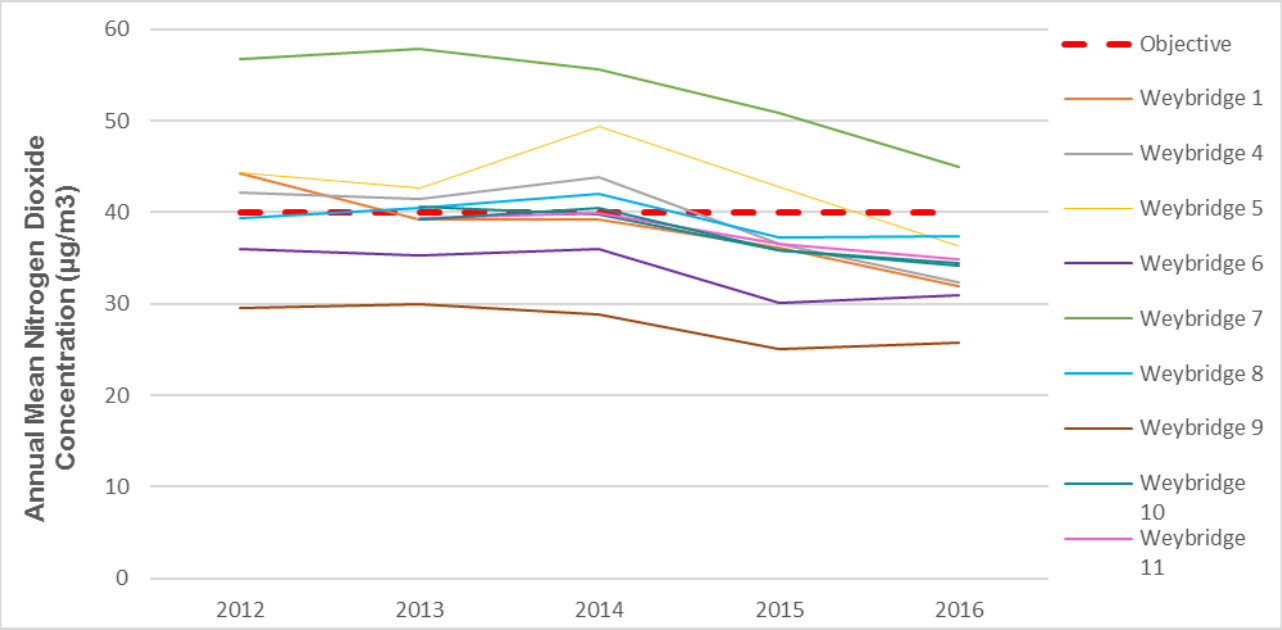

Figure A.6: Trends in Annual Mean NO_2 Concentrations at Cobham

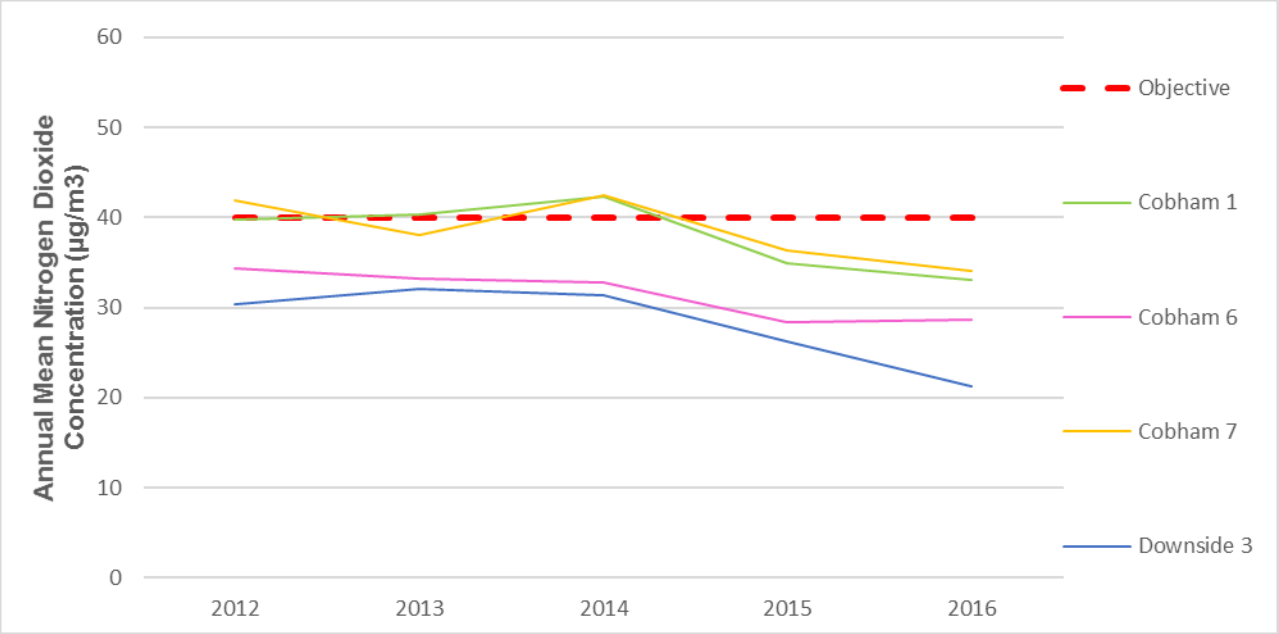

Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
					2012	2013	2014	2015	2016
Weybridge High Street	Roadside	Automatic	100	100	0	0	0	0	0
Hampton Court Parade	Roadside	Automatic	94.2	94.2	0	2	0	0	2

Notes:

Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold.**

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

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2016

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2016

Site ID	NO_2 Mean Concentrations ($\mu g/m^3$)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.94) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
Esher															
Esher 1	48.0	50.0	57.0	46.0	40.0	42.0	40.0	30.0	48.0	53.0	49.0	70.0	47.8	**44.9**	**43.4**
Esher 4	55.0	45.0	48.0	36.0	36.0	32.0	32.0	33.0	43.0	46.0	46.0	56.0	42.3	39.8	n/a
Esher 5	64	51	51	43	56	39	37	33	40	46	51	56	47.3	**44.4**	n/a
Esher 7	60	46	47	-	47	34	34	31	48	53	57	60	43.0	**40.5**	33.7
Esher 8	59	57	50	42	42	31	42	29	39	40	53	52	44.7	**42.0**	**41.8**
Esher 9	38	29	35	32	32	31	27	24	32	42	41	54	34.8	32.7	n/a

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.94) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
Esher 10	41	32	37	34	29	31	25	21	25	38	29	44	32.2	30.2	n/a
Esher 11	-	42	47	34	30	35	29	18	35	34	33	48	35.0	32.9	n/a
Esher 13	42	46	44	30	40	34	31	24	41	36	46	42	38.0	35.7	n/a
Hinchley Wood															
Hinchley Wood 1	47	40	43	27	42	39	33	37	37	49	38	47	40.8	38.3	n/a
Hinchley Wood 2	39	34	36	21	37	27	24	29	36	35	38	42	33.2	31.2	n/a
Molesey															
Molesey 1	41	38	41	38	31	17	21	23	38	38	34	50	34.2	32.1	n/a
Molesey 5	36	28	38	26	29	31	16	21	32	33	32	45	30.6	28.7	n/a

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.94) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
Molesey 8	50	36	39	45	28	19	32	32	43	37	49	44	37.8	35.6	n/a
Molesey 9	50	56	42	21	35	26	23	16	38	32	42	54	36.3	34.1	n/a
Molesey 10	37	33	30	28	18	21	19	23	29	33	30	38	28.3	26.6	n/a
Hampton Court 1	50	45	41	37	42	38	35	25	39	45	34	40	39.3	36.9	n/a
Hampton Court 2	48	45	41	39	40	35	25	33	38	42	43	56	40.4	38.0	n/a
Hampton Court 3	52	46	41	38	41	35	27	31	42	40	44	57	41.2	38.7	n/a
Hampton Court 4	51	47	44	38	42	35	25	32	39	42	42	58	41.2	38.7	n/a
Walton-on-Thames															
Walton 3	32	45	48	21	31	35	17	18	26	36	30	47	32.2	30.2	n/a

Site ID	NO_2 Mean Concentrations ($\mu g/m^3$)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.94) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
Walton 5	40	32	39	26	37	24	21	21	33	26	38	44	31.8	29.8	n/a
Walton 8	46	36	49	39	33	34	25	22	19	31	38	40	34.3	32.3	n/a
Walton 9	44	29	43	33	34	30	32	26	22	26	36	47	33.5	31.5	n/a
Walton 10	42	29	39	40	37	36	25	33	37	43	46	53	39.2	36.8	n/a
Walton 11	45	28	40	36	46	22	20	26	39	36	39	53	35.8	33.7	n/a
Weybridge															
Weybridge 1	44	30	43	16	42	23	26	26	30	34	46	47	33.9	31.9	n/a
Weybridge 4	38	27	48	26	34	37	24	23	35	31	41	50	34.5	32.4	n/a
Weybridge 5	53	35	46	26	38	36	32	-	-	-	44	-	38.8	36.4	n/a

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.94) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
Weybridge 6	36	32	31	34	24	32	21	27	32	41	38	47	32.9	30.9	n/a
Weybridge 7	58	52	58	31	57	44	34	41	50	51	42	56	47.8	**45.0**	**44.6**
Weybridge 8	48	44	52	39	43	35	27	30	27	33	49	50	39.8	37.4	n/a
Weybridge 9	27	30	34	25	24	22	21	22	26	26	34	38	27.4	25.8	n/a
Weybridge 10	36	44	40	33	39	35	23	22	32	41	45	49	36.6	34.4	n/a
Weybridge 11	36	44	45	34	40	34	23	21	31	43	43	51	37.1	34.9	n/a
Weybridge 12	37	42	40	35	40	34	22	21	31	41	42	51	36.3	34.2	n/a
Cobham															
Cobham 1	45	39	46	38	35	32	29	28	42	6	39	44	35.3	33.1	n/a

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.94) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
Cobham 6	36	31	37	27	24	29	23	24	29	28	37	40	30.4	28.6	n/a
Cobham 7	47	39	38	32	36	29	27	32	36	33	41	45	36.3	34.1	n/a
Downside 3	29	24	26	24	15	17	17	15	17	25	30	33	22.7	21.3	n/a

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

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

Notes:

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

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

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

(2) Distance corrected to nearest relevant public exposure.

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

Nitrogen Dioxide Diffusion Tube QA/QC

Diffusion Tube Bias Adjustment Factors

The national bias adjustment factor for diffusion tubes supplied and analysed by Lambeth Scientific Services, 50% TEA in acetone is 0.94, based on two studies (spreadsheet version 03/17). In previous years, the national bias adjustment factor has been applied, for consistency, except in 2013 where the Weybridge High Street bias adjustment factor was used.

The national bias adjustment factor has been applied to all nitrogen dioxide diffusion tube data presented in this report.

WASP

Lambeth SS take part in the Workplace Analysis Scheme for Proficiency (WASP), operated by the Health and Safety Laboratory (HSL). During 2016, on average, 93.75% of samples were determined to have been satisfactory (1st quarter: 100% 2nd quarter: 100%; 3rd quarter: 100%, 4th quarter: 75%).

Automatic Monitoring QA/QC

All monitoring data are ratified by AQDM in accordance with the LAQM TG(16) standards.

Appendix D: Summary of Air Quality Objectives in England

Table D.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[2]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

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

Appendix E: Maps of Monitoring Locations

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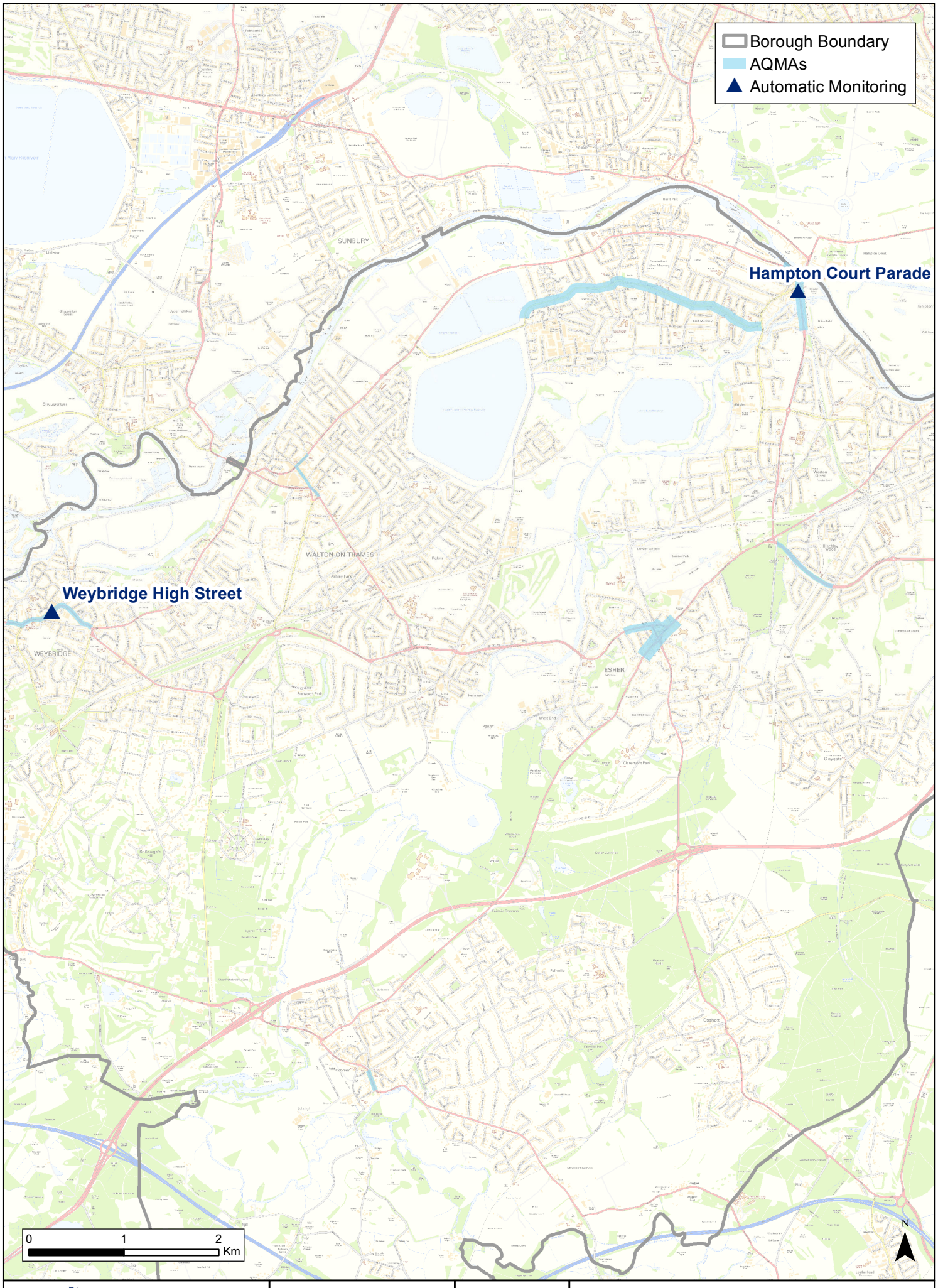

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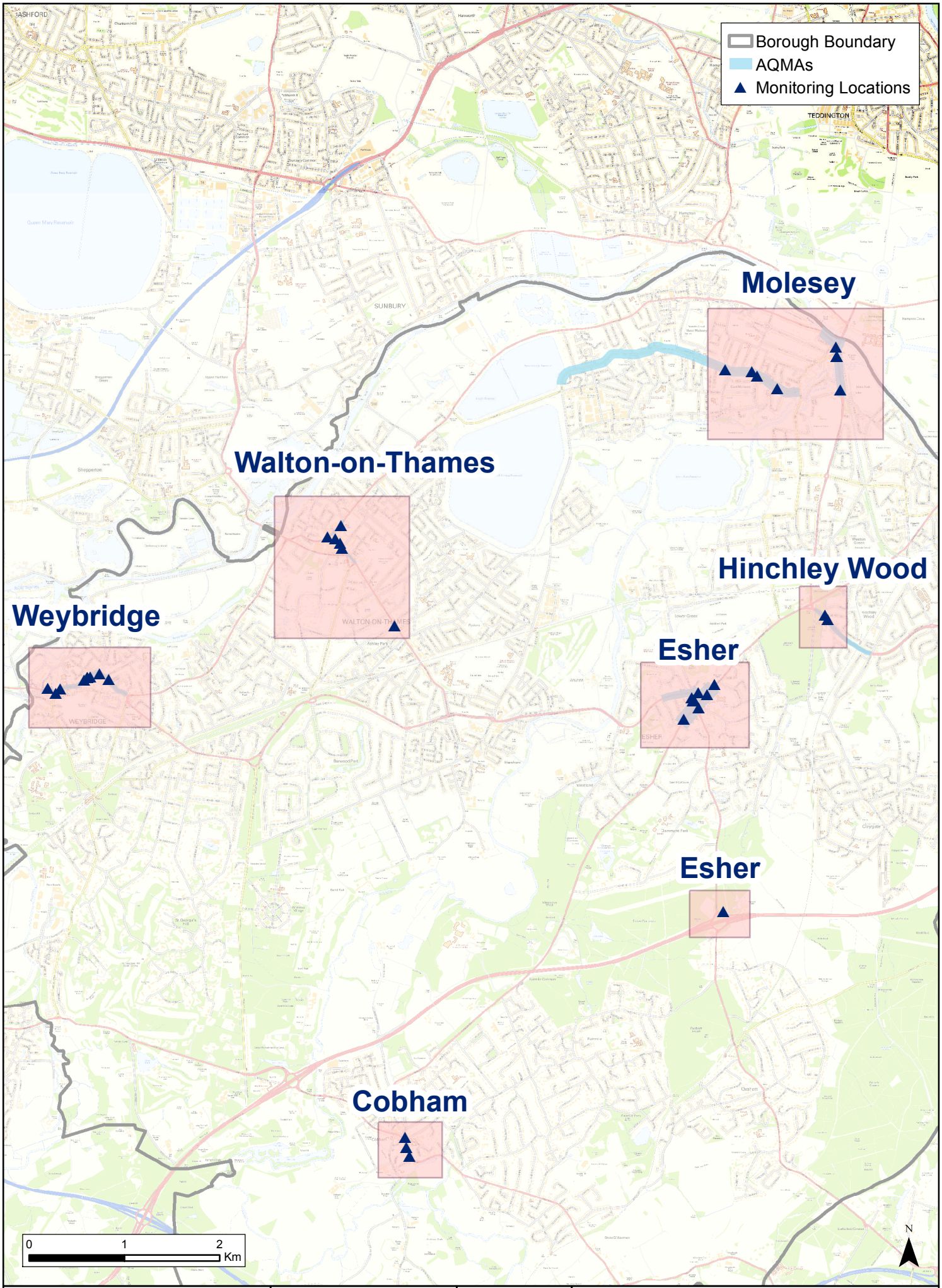

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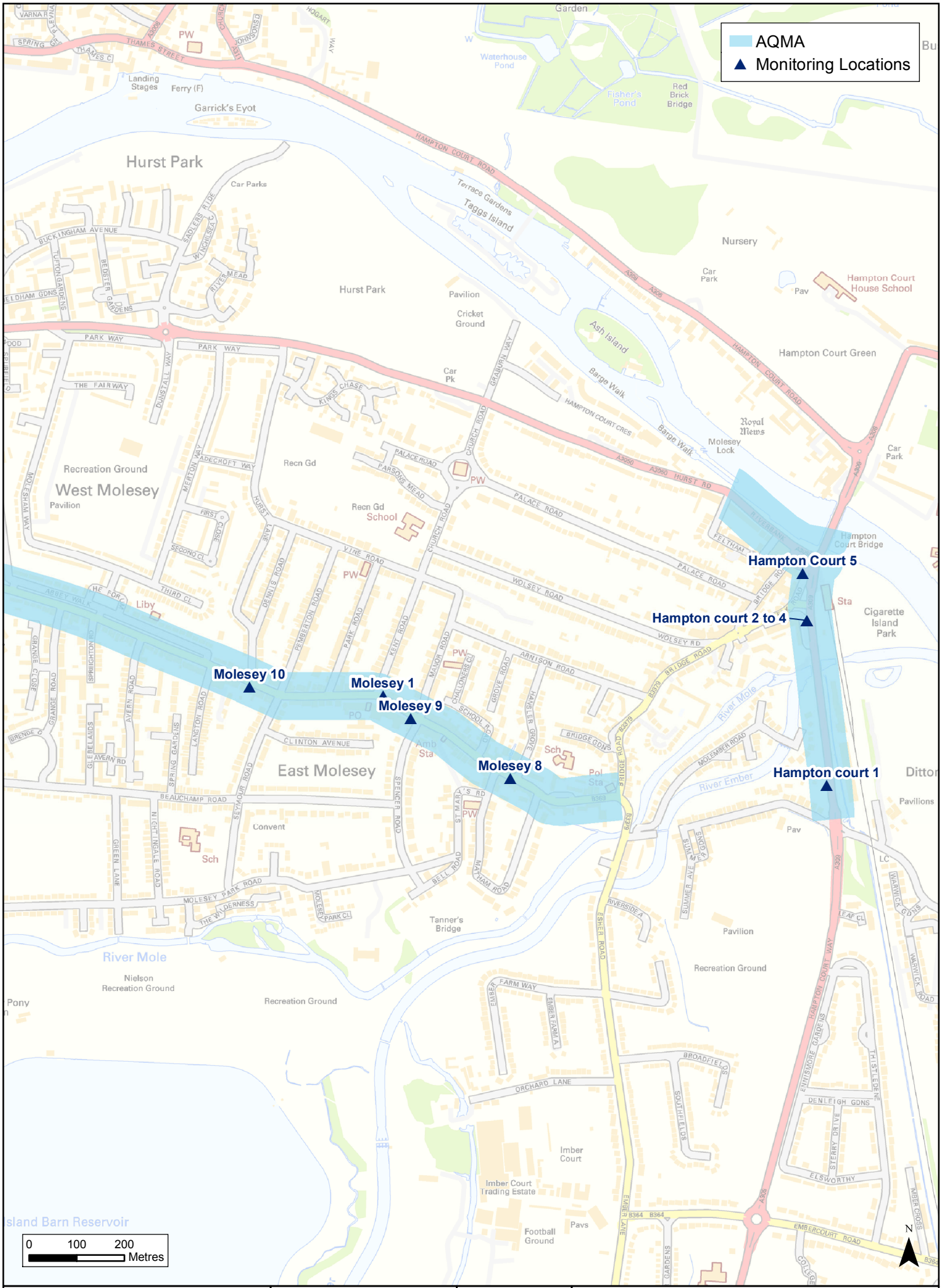

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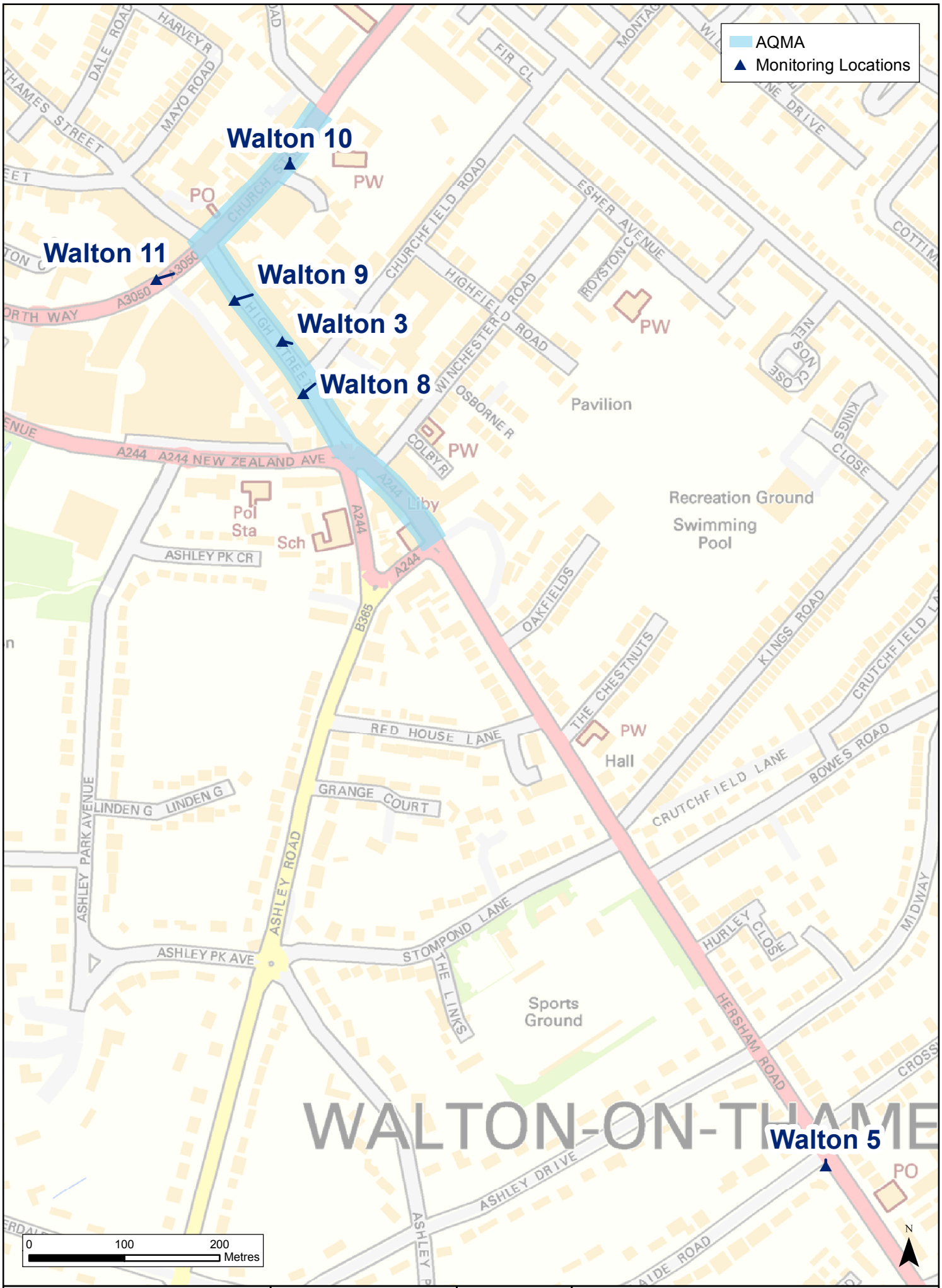
Molesey Non-Automatic Monitoring Sites



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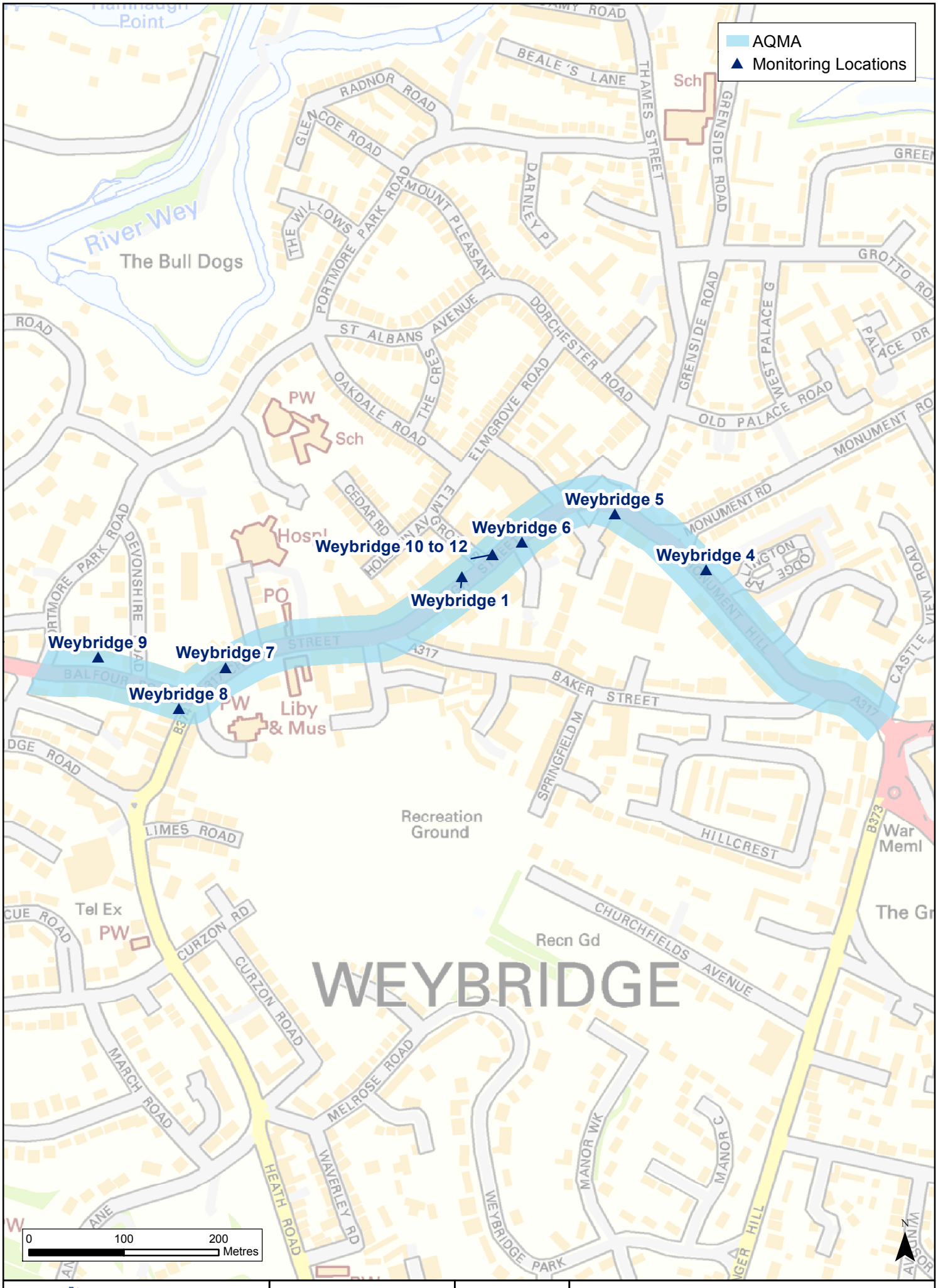
Walton-on-Thames Non-Automatic Monitoring Sites



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Weybridge Non-Automatic Monitoring Sites

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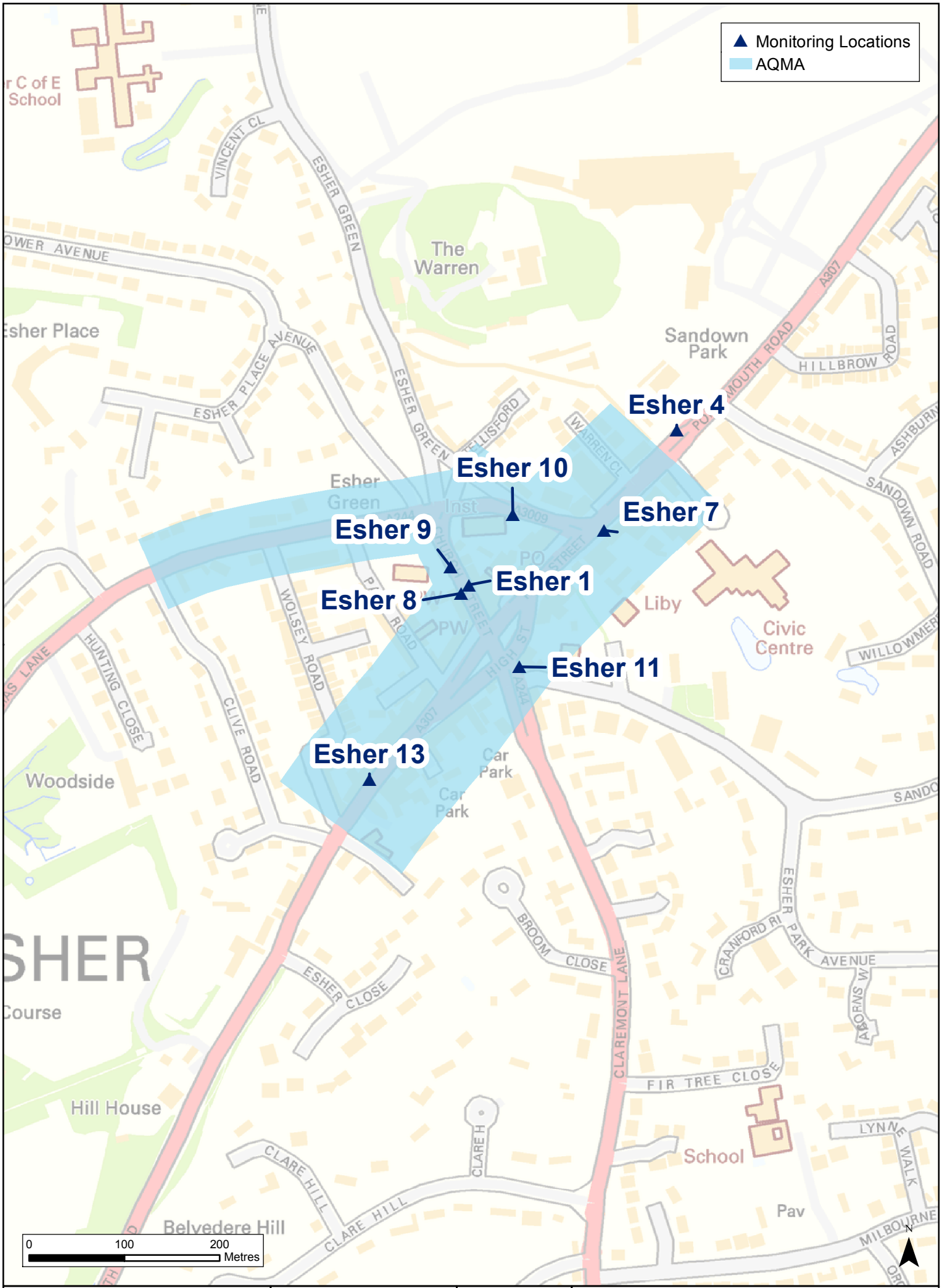
Hinchley Wood Non-Automatic Monitoring Sites



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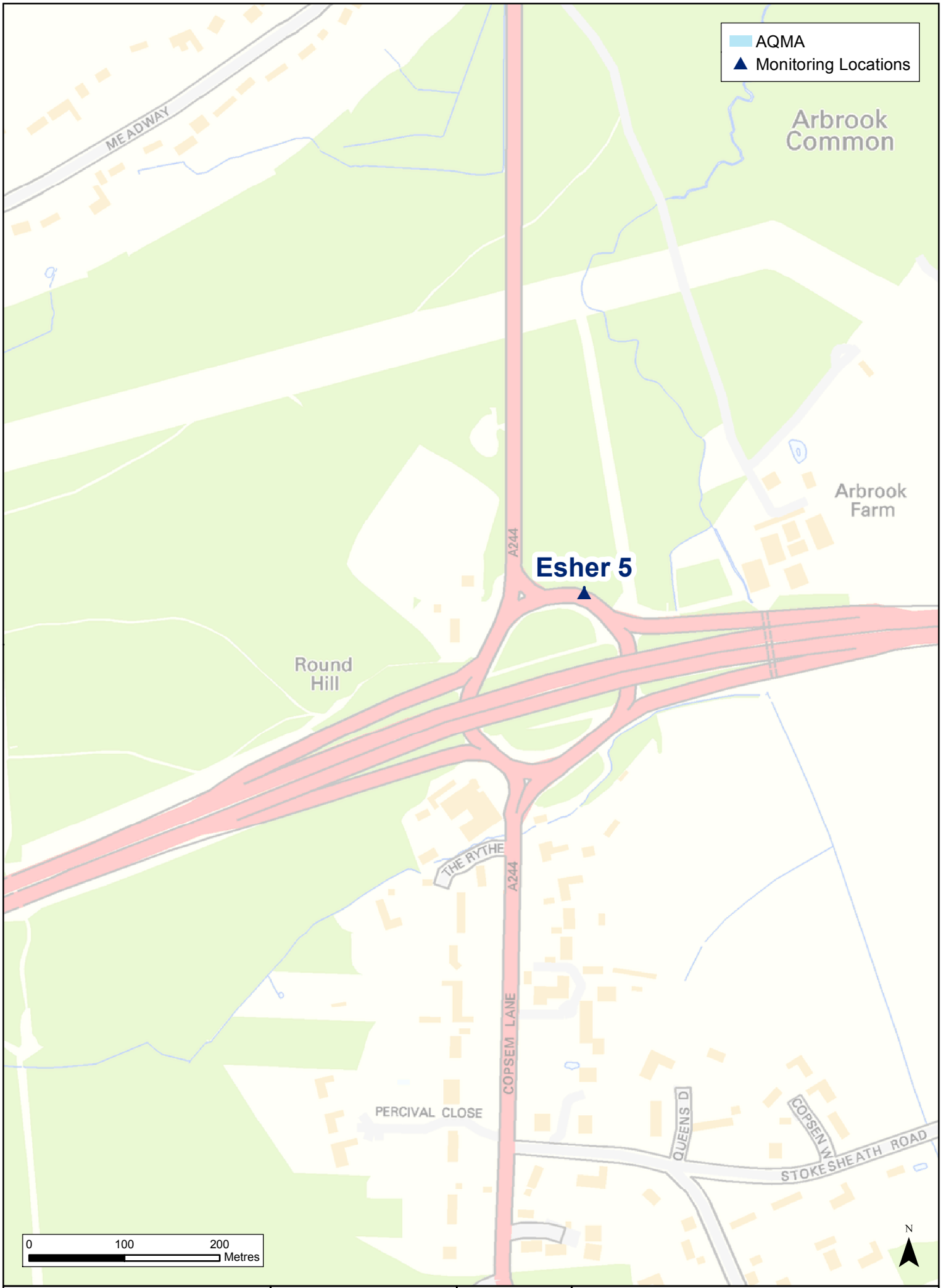
Esher Non-Automatic Monitoring Sites



Elmbridge Borough Council
... bridging the communities ...

Service Layer Credits:

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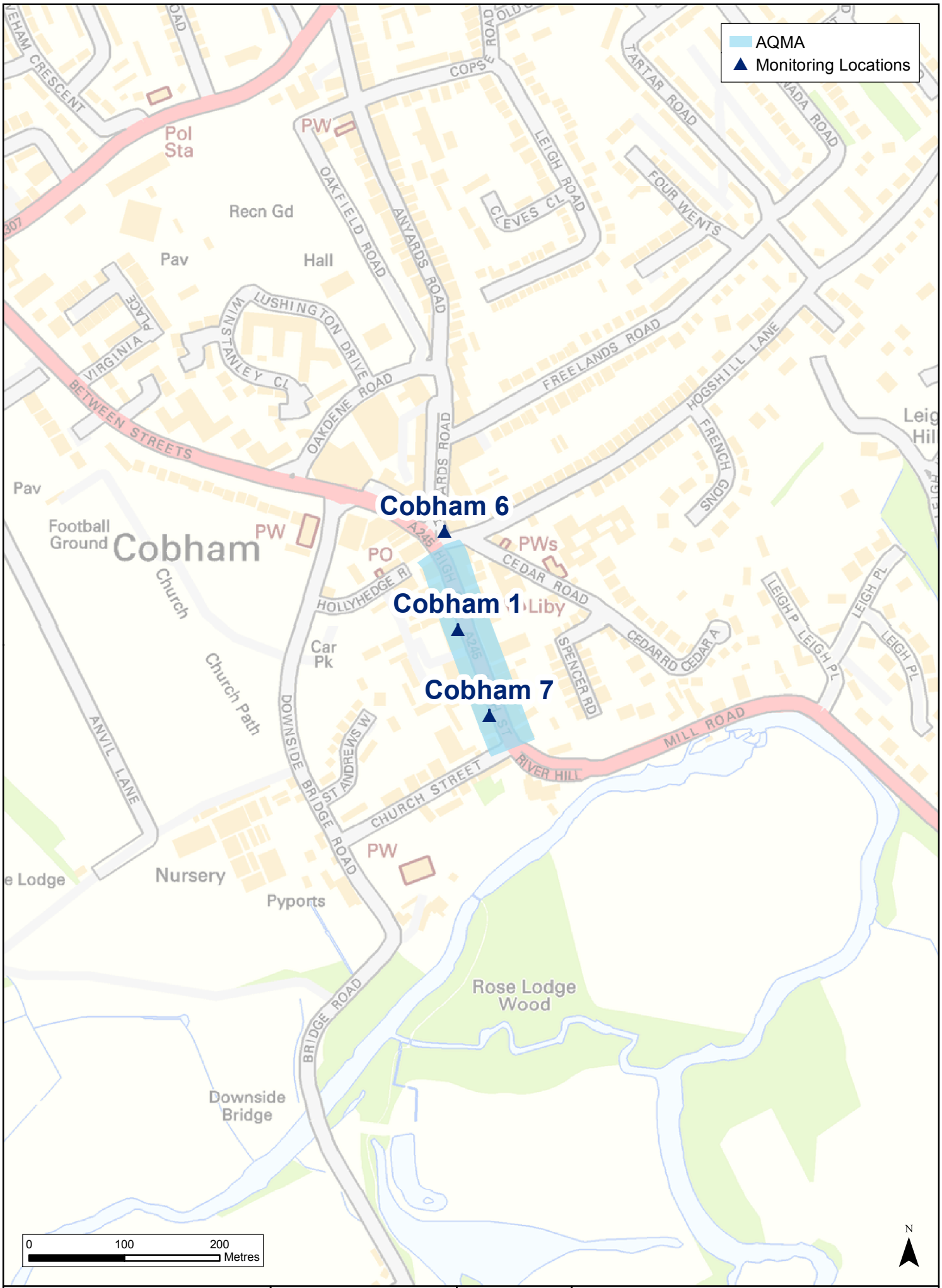
1:5,000 @ A4

2017 Annual Status Report

Esher Non-Automatic Monitoring Sites



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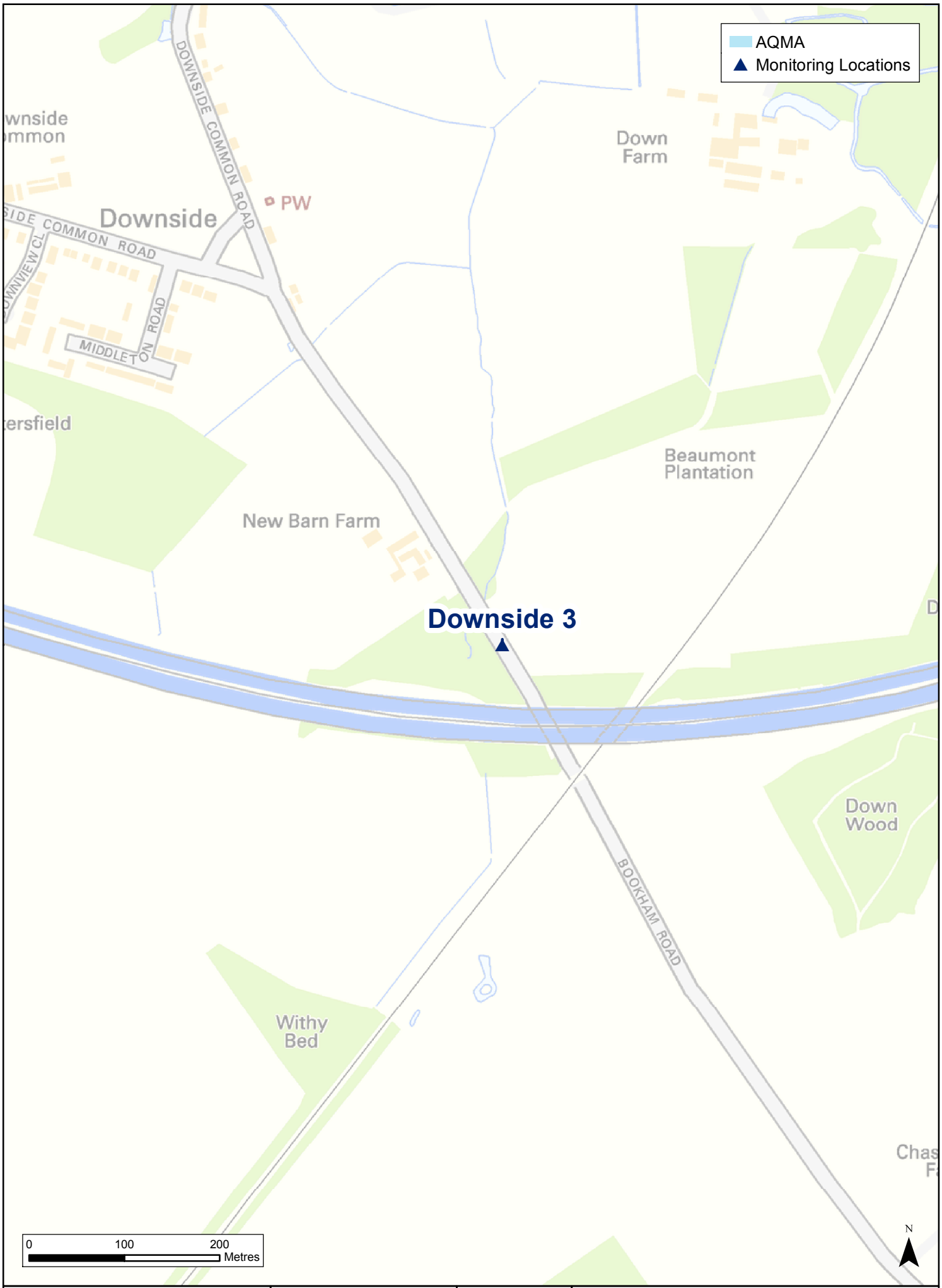
2017 Annual Status Report

Cobham Non-Automatic Monitoring Sites



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2017 Annual Status Report

Cobham Non-Automatic Monitoring Sites