Runnymede BOROUGH COUNCIL

2019 Air Quality Annual Status Report (ASR)

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

February 2021.

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Executive Summary: Air Quality in Our Area

The summary is designed to provide an overview for people who reside and work within the area of Runnymede Borough Council as to the air quality that was present within the Borough during 2019. The report also provides detail of how the issue of air quality is being addressed within the Borough and the intentions of the Council in determining any future action.

The main conclusions of the report are the following; -

1. Air quality within the Borough has generally seen a slow decline in nitrogen dioxide levels across the Borough over the time period that the Council has been monitoring the levels of nitrogen dioxide.
2. When directly comparing the nitrogen dioxide levels of 2018 to 2019, the air quality situation within the Borough has overall seen a slight deterioration year on year in so much that 15 out of the 26 monitoring points where comparable measures were taken these showed an increase in levels of nitrogen dioxide. The other 11 sites where there is comparison to the previous year data showed a slight improvement in air quality.
3. The levels of nitrogen dioxide are in the main generated by vehicular transport and problems can occur in areas with high volumes of traffic.
4. It was interesting to note that the area which was declared as an extension to the Air Quality Management Areas (AQMA) in Egham that had previous showed an indication that the situation was improving over the last 2 years, unfortunately showed levels at the facade of residential building which have risen back up towards the objective level and hence the Council will now not be in a position to consider revoking this AQMA as was hoped.
5. The difficulties that were reported last year at the area held under a "watching brief" in relation to an area adjacent to a road junction controlled by traffic lights in Chertsey due to the fact that during 2018 there was a spate of diffusion tubes going missing, prior to collection. However, it was decided to move some of the tubes to less prominent positions and in some of them were moved closer to the highway in an attempt to make the unauthorised removal more difficult. Following the introduction of these measures, it appears that this has helped to improve the security of the tubes since all of the exposed diffusion tubes were recovered.

6. In 2019, there was one notable area of concern within the Borough where annual average nitrogen dioxide levels exceeded the national air quality objective of 40µg/m^3. The area being the four-way traffic light-controlled junction at Addlestone. This is a declared AQMA in Addlestone. In 2019 the result show that the level of nitrogen dioxide at the facade of a residential property was 48.3 µg/m^3 The previous year the result was 45.5 µg/m^3. Hence this has resulted in a yearly increase of 2.8 µg/m^3
7. RBC continues to work in close collaboration with colleagues at Surrey County Council within such networks as the Surrey Air Alliance (SAA).

Air Quality in Runnymede Borough Council

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 and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often the less affluent areas.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion.

Previous Reviews and Assessments within Runnymede Borough Council have concluded that concentrations of carbon monoxide, benzene, 1,3-butadiene, lead, sulphur dioxide and PM_{10} are compliant with the relevant national and European objectives.

Air Quality Management Areas (AQMAs) have however been declared at two locations in Runnymede Borough Council for exceedances of the annual mean nitrogen dioxide objective, namely land adjacent to the M25 and at a traffic light-controlled junction in Addlestone town centre.

Details of the current AQMA can be found on the Defra UK Air website (www.uk-air.defra.gov.uk) or via the following link: https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=26 .
The highways authorities for Runnymede are Highways England for the major strategic network roads (M25, M3) and Surrey County Council (SCC) for the other roads within the Borough. The SCC Local Transport Plan (LTP3) includes a number

of supporting strategies including the Surrey Air Quality Strategy and the Surrey Climate Change Strategy.

The aim of the air quality strategy is to improve air quality in AQMAs on the county road network such that Surrey's Borough and District Councils can undeclared these areas as soon as possible.

M25

Monitoring carried out in 2013/2014 confirmed that nitrogen dioxide concentrations adjacent to the M25 AQMA in Egham at the Pooley Green railway level-crossing were above the air quality objective at relevant locations and as a result the M25's AQMA was extended to include the area adjacent to the level-crossing. Hence, in 2015 the department's available resource for air quality at that time was dedicated to declaring an extension of the AQMA to include the area adjacent to the crossing. It had been noted from the latest annual monitoring results that the levels of nitrogen dioxide within this area had been falling in line with national trends and were thought to be consistently lower that the objective level. However, in 2019 it was discovered that the levels of nitrogen dioxide had risen and hence had risen up to almost the objective level for nitrogen dioxide and hence the prospect of removing this area from the AQMA can no longer take place for the time being.

Addlestone

There is an area associated with a four-way traffic light-controlled junction in Addlestone town centre which has been declared an AQMA. The general trend indicates a decrease in nitrogen dioxide concentrations, to below objective levels, at locations that are located on the roads leading up to the actual 4-way junction where the traffic lights are located.

However, it is interesting to note that the area immediately adjacent to the traffic light-controlled junction at the centre of the AQMA, where there is a monitor located on the façade of a residential premise, this location continues to indicate a level above the air quality objectives. In terms of the levels found at this location for 2019 when compared to 2018 the level for 2019 have shown an increase of 2.8 $\mu g/m^3$ o(see graph RY14)**.** It appears that because of the congested nature of traffic flow and the high sided building close to the road then it is proving difficult to obtain any improvements in air quality and since the problem relates specifically to road

transport and highway issues then it is suggested that SCC should further consider highway improvements to this area in order to seek to achieve a reduction in Nitrogen dioxide level produced by traffic on the highway

A photograph has been provided which depicts the proximity of the diffusion tube to the façade of the building at the traffic light-controlled junction to provide an indication of the type of situation that is encountered with properties directly abutting the footway.

Picture 1 AQMA Addlestone traffic light junction – tube location

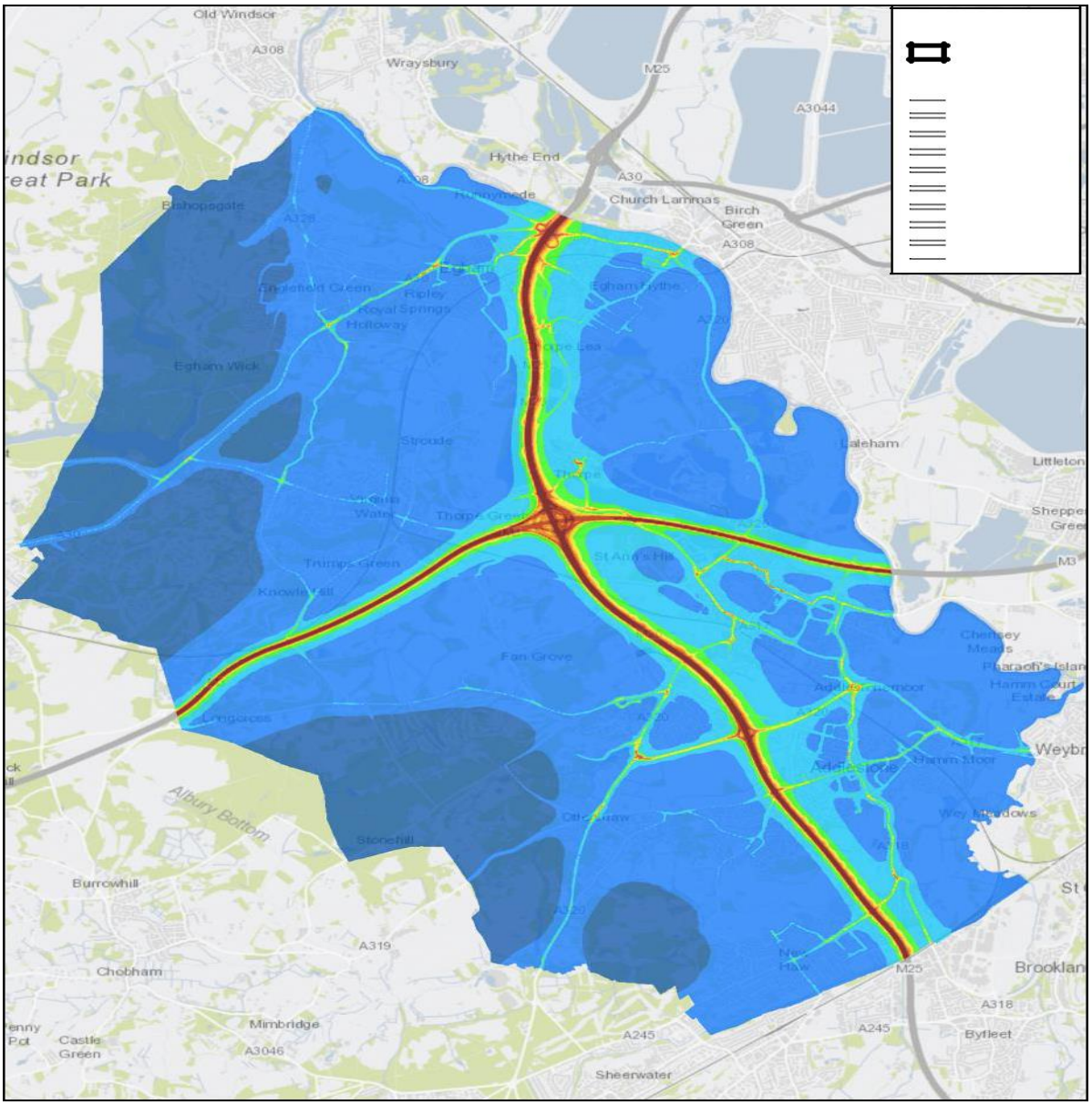
Investigation for a potential AQMA at Chertsey

At a busy roadside junction controlled by traffic lights in Chertsey it has been shown that there were exceedances in the air quality objective at the kerbside, however once all the necessary correction factors had been applied then the levels at the closest residential facades were within the objective limits. The Council is attempting to keep a “watching brief” at this location however in 2018 there had been a spate of missing diffusion tubes. As a result, measures were taken such as moving some of the monitors closer to the highway and to a less prominent position then it appears

that these measures have helped in providing more reliable returns of the diffusion tubes. For 2019 it is again discovered that at the facades of residential properties within the area, after making the appropriate adjustments for bias and distance, the level of nitrogen dioxide is fairly close to the prescribed objective level and hence the determination is that this area will remain under the “watching brief”.

Source of Air Pollution

Road;- Modelling of annual nitrogen dioxide levels shows the influence of road traffic on levels across the Borough, with major trunk routes such as the M25 and M3 motorways. Modelling was undertaken in association with the Council’s planning department in relation to the now approved Local Plan. Further air quality modelling work has been commissioned on a county wide scale by Surrey Air Alliance.



Runnymede's modelling exercise was based on road traffic information for 2015. The modelling was done in order to consider proposed traffic pollution with regards to the future areas of development. This information was submitted to the Planning Inspector as evidence for the now approved Local Plan. The actual modelling work was undertaken by Cambridge Environmental Research consultants (CERC). See above; Map of the Bourgh which depicts nitrogen dioxide levels.

It is abundantly clear from the modelling work that the main sources of nitrogen dioxides emanate from the road networks.

Runnymede also continues to support Surrey Air Alliance (SAA), a working group of air quality officers from across the Surrey Districts and Boroughs, which is also attended by officers from Surrey County Council and Surrey Public Health. Further air quality modelling work was commissioned by SAA.

Aircraft; Heathrow Airport expansion

Heathrow southern runway is at its nearest point some 4km from the boundary of Runnymede Borough Council. Parliament in 2018 passed the Airports National Policy Statement, being the policy that sets out the criteria under which consent will be given for expansion of the airport. Thereafter, Heathrow Airport commenced various discussions surrounding the expansion of the airport. A Judicial Review considered the decision regarding the Government's Airports National Policy Statement since it was suggested that the statement had not taken the Climate Change Convention, which the Government had become a signatory to, fully into account and hence any Airport expansion should not proceed until a new Policy Statement is published by the UK Government. The matter came before the Supreme Court and they came to the view that this is not the case.

With the Covid-19 pandemic continuing to have a profound impact on the aviation industry as well as the wider economy, and hence it is not currently abundantly clear as to the intensions of Heathrow with regards to expansion. The following information was taken from Heathrow's web site page;-

"*Demand for aviation will recover from COVID-19, and the additional capacity at an expanded Heathrow - the UK's only hub airport - would allow Britain as a sovereign nation to compete more effectively for trade. As passenger numbers recover, our immediate focus will be to continue to ensure the safe operation of the airport and to maintain our service levels while we consult with investors, government, airline customers and regulators on our next steps*."

In terms of air quality and over-flights within the Borough, according to information from DEFRA that once an aircraft in the process of taking off reaches an altitude of greater than 450m, then the on-ground contribution to air quality from aircraft overhead would be negligible. Hence, in terms of aircraft taking off from Heathrow airport, and maintaining the required climb gradient then it is expected that aircraft would be above 450m height when entering into airspace above the Borough of Runnymede and hence would produce negligible, direct, on ground air quality issues in relation to the current applicable air quality standards.

In should be noted that it has been suggested that there is to be a privately funded Heathrow Southern Railway line associated with an expanded Heathrow Airport. The proposed route of the new railway line would take it from the southern boundary to the northern boundary of the Borough and then link into Heathrow airport and hence create a railway feed from the South of the airport.

Major projects for consideration

1. Heathrow Airport expansion, (see above for discussion point)
2. South West railway line in support of a potentially expanded Heathrow Airport. (see above for discussion point).https://www.gov.uk/government/news/new-heathrow-rail-link-to-lead-the-way-for-future-transport-funding-schemes/
3. Southampton to London Pipeline – Esso are proposing to replace 56 miles of the 65-mile Southampton to London Pipeline. The existing underground pipeline enters into the Borough at Longcross and leaves the Borough at Chertsey where it crosses the River Thames. The preferred route of the new pipeline was consulted on in Autumn 2018, and a Development Consent

Order application was made in June 2019. If consented the project could start in 2022.

https://infrastructure.planninginspectorate.gov.uk/projects/south-east/southampton-to-london-pipeline-project/

5. Thames flood water relief scheme. Major engineering works at the River Thames in order to provide a series of measure that will help protect residents within the Borough from flooding. A major project of the Environment Agency and Local Authorities.

Actions to Improve Air Quality

- Consideration of how to improve air quality have been included in the Council's approved Air Quality Action Plan and this includes a raft of measures such as consideration for planning applications within or near the Borough's AQMA. Many planning applications have had conditions in relation to air quality requirements due to the fact that the development was close to or within a defined AQMA. For the full range of measures see Runnymede's Air Quality Action Plan.
- Runnymede Borough Council monitors local air quality through an extensive diffusion tube monitoring network within the Borough.
- Runnymede Borough Council, together with the other ten Surrey Local Authorities and representatives from Surrey County Council (Public Health and Transport) have established the SAA Group which aims to coordinate certain actions to reduce air pollution within Surrey. The group has commissioning a modelling exercise of air pollution.
- Approval of the Council's Local Plan.
- Bid to Defra for an air quality grant by Runnymede Borough Council for funding for an educational campaign to try to change drivers' behaviours toward switching their engines off at level crossings –[NB Grant not awarded].
- In order to meet the Borough's development needs and growth opportunities then the Local Planning Authority has to have in place a Local Plan. The new Local Plan was adopted in July 2020. Air quality modelling work was commissioned in 2018 in relation to the proposals within the emerging plan in

order to understand the potential impact that the policies and plans of the approved Local Plan would have on air quality.

- Schools Project.;- In Spring 2018, the SAA consortium was awarded £145,188 from the Defra's AQ Grant Fund to run an engagement and behaviour change programme at up to 40 schools across Surrey near to an AQMA.

  The project has run throughout the 2018/19 academic year and some activities will continue into the 2019/20 academic year following several District/ Borough Councils, including Runneymede each providing £7000 to ensure that the programme continued. The objective of the project was to give school children an increased awareness of the health impacts of poor air quality and where the Air Quality Management Areas are near their school, to understand what they could do to improve local air quality and reduce exposure, and ultimately to change behaviour.

  A total of 7 schools in Runnymede have benefitted from taking part in one or more of the following measures that were on offer:

  - 6 schools in Runnymede held a performance of a bespoke theatrical production on air quality and sustainable travel.
  - 5 schools in Runnymede took part in workshops and whole school assemblies run by a specialist contractor. The workshops included practical exercises in exposing nitrogen dioxide diffusion tubes to investigate pollutant levels with distance from school drop-off zones.
  - One school in Runnymede hosted an anti-idling awareness event during the school run, and
  - Over 2600 pupils across the County received additional subsidised cycle training

- Electric Vehicle Charging

  In November 2018, SCC adopted an Electric Vehicle Strategy setting out how SCC will support and promote the uptake of electric vehicles in Surrey. There also is a trial charging point project which is due to commence soon in order to ascertain the feasibility of providing on-street charging facilities. The pilot project will be trialled in 4 Boroughs within the County. Once the results of the pilot are assessed then SCC will bring forward further strategies as to what SCC intend to do with regards to charging provisions.

Conclusions and Priorities

Overall 2019 was seen as an “indifferent” year in that there were areas that showed encouraging signs that the levels of nitrogen dioxide within the Borough slowly reducing however it seems that there are still some areas of concern most notably within the AQMAs at Addlestone. In addition to the high-level national programmes. Policies and initiatives that are seeking to reduce levels of emissions there is sterling work being undertaken across the County due to the concerted effort of the SAA in such areas as schools air quality projects. This school’s project is being further sponsored by Runnymede Borough Council. Further to the SAA work then Runnymede Borough Council made a bid to Defra for funding for an educational campaign to try to change drivers’ behaviours toward switching their engines off at level crossings unfortunately Defra dot not award the requested grant funding. Runnymede Council has also joined the Air Alert scheme and hence provides this valuable service to people who have a need to know about poor air quality days. Currently there are over 1000 residents within Surrey’s air alert scheme.

Local Engagement and How to get Involved.

There is continual interest in air quality locally from Councillors, residents’ groups, consultants and individual residents. Information is displayed on the Councils web site to promote special events such as clean air week and Air Alert. Information such as the following; -

- Clean air week

As most air pollution of concern in the district is related to traffic, there are some easy changes we can make to all do our bit to reduce emissions:

1. Do you need to take the car? – consider alternatives to using your car; public transport, walking or cycling will help reduce emissions. For timetables, guides and maps visit the Travel Smart in Surrey website; -

   www.travelsmartsurrey.info/. There is also information there on car sharing and car clubs.

   Research has indicated that levels of air quality pollutants inside vehicles, even with the windows shut, can lead to higher exposure than pedestrians and

cyclists on the same streets. So, by walking or cycling you could reduce your exposure and improve your fitness and health.

2. Need to take the car? – Think about how you drive. Small changes improving your driving style can save lots of fuel, significantly reduce wear and tear, and improve the life of your vehicle:

- Regular maintenance improves fuel efficiency by as much as 10% plus underinflated tyres increase rolling resistance, further increasing fuel consumption.
- Reduce excess weight and wind resistance (caused by roof racks, open windows and boot clutter);
- Reduce engine idling – a modern engine is designed to be used 'from cold'. Warming up an engine whilst stationary wastes fuel and leads to undue engine wear.
- Avoid aggressive acceleration and braking – aggressive driving can raise fuel consumption by 37%;
- Change up gears as soon as possible.
- Review trip data after a journey to learn how to improve driving style, or to reinforce eco-driving lessons already learnt. A number of apps and satnavs can help with this. Only use such tools when it is safe and legal to do so.

3. Thinking about changing your car or van? – consider an ultra-low emission vehicle such as a plug-in electric or hybrid vehicle. More options are becoming available each year, technology is improving the range of vehicles, running and servicing costs are much lower, and grants are available to help towards their purchase.

- Air Alert

The Council has recently subscribed to Air Alert and has invited people suffering from asthma, chronic obstructive pulmonary disease (COPD) or a respiratory condition to sign-up for AirAlert, a free service provided by the Council to help those with respiratory conditions manage their health when air quality is poor. While air pollution levels in Runnymede are generally "*Low*", on

~20 days per year pollution levels are reached that are capable of causing short term health symptoms for people with pre-existing respiratory conditions.

People who register for the free service receive an email, text or voicemail message, informing them the day before of an expected elevation of air pollution in their area. This enables them to make choices about what they do and how they manage their medication, so they can stay in control of their own health.

Health advice in the AirAlert message is approved by UK experts and varies according to a simple air pollution index (low, moderate, high and very high). The index is based on the levels of five pollutants (nitrogen dioxide, sulphur dioxide, ozone, carbon monoxide and particles). For more information on the AirAlert service visit www.airalert.info/Surrey to register. For residents without internet access, please phone 01784 446 251 to sign up.

A survey of AirAlert users showed that 88% of survey respondents found AirAlert a useful or very useful service, and two thirds had recommended it to someone else. They found the service helped them manage their symptoms and reduce their exposure to air pollution. They also reported increased confidence to participate in social and recreational activities.

In addition to the phone/ email service, users of AirAlert and any other interested resident can also download the airAlert app to a Smartphone (android and iOS) from Google Play or the App Store.

It is envisaged that Air Alert will be a valuable addition to the promulgation of information to a receptive audience.

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1 Local Air Quality Management

This report provides an overview of air quality in Runnymede Borough Council during 2019. 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 Runnymede 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 Appendix E.

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 authority must prepare an Air Quality Action Plan (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 Runnymede Borough Council can be found in Table 2.1.Further information related to declared AQMAs, including maps of AQMA boundaries are available within this report see Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides for a map of air quality monitoring locations in relation to the AQMA(s). It should be noted that following the declaration of AQMAs then there is an air quality action plan put in place to ensure that there are measures in place which seek to reduce levels to be consistently below the air quality objectives. The AQMA within Addlestone has over the last few years shown slight decreases in levels of nitrogen dioxide at some of the measuring locations within the AQMA which are indicating levels below 40 μg/m^3 and hence it was thought that there was steady progress toward achieving levels below the objective. It is however interesting to note that in 2019 the level of nitrogen dioxide in and around the actual location of the traffic lights still shows a significant increase in levels above the objective levels. The level in this area have increased by 2.8ug/m3 (2018 level 45.5 2019 level 48.3 (NB 40 being the objective standard)) and that being the case then it shows that this area is not following national trends and stubbornly remains above the objective level and has shown signs or air quality becoming worse.

In terms of the most recently declared extension of the AQMA at the level crossing in Egham then the results pertaining to this area show that levels of nitrogen dioxide were mirroring national trends and were declining. However, during 2019 the situation is that the levels measured have shown an increase in nitrogen dioxide at measurement point RY26 at a value just below the objective level when the results are adjusted to pollution levels found at the façade of properties. It was envisaged that if further results showed that levels were consistently below the objective levels then the AQMA would have been revoked.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line 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)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
AQMA M25	Declared 3/12/2001 Amended 20/10/2015	NO_2 annual mean	Runnymede	Entire length of M25 within the Borough and an extended area in December 2016 to include area in Egham near to railway crossing .	Yes	unknown		Greater than 40 at some locations	µg/m^3	Runnymede approved air quality action plan	April 2014	https://www.runnymede.gov.uk/CHttpHandler.ashx?id=5497&p=0
AQMA Addlestone town	Declared 4/7/2008	NO_2 annual mean	Addlestone	Addlestone town centre traffic light 4 way junction- Brighton Road/Church Road/ Station Road/High Street	No	59	µg/m^3	46	µg/m^3	Runnymede approved air quality action plan	April 2014	https://www.runnymede.gov.uk/CHttpHandler.ashx?id=5497&p=0

☒ Runnymede Borough Council **confirms 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 Runnymede Borough Council

Defra acknowledged the receipt of last year's ASR however there was no appraisal or further comment made in relation to the content of the report.

Details of the Council's Air Quality Action Plan 2014 can be found at ;-

https://www.runnymede.gov.uk/CHttpHandler.ashx?id=5497&p=0

Key completed measures are:

- Consider planning applications near to or within the designated AQMAs to ensure that suitable measures are adopted in relation to air quality.
- Supporting SCC with plans and funding bids to assist with improving air quality within the Borough.
- Maintain a strong presence within Surrey Air Alliance group
- Joining the AirAlert scheme.

Progress on the following measures has been slower than expected in relation to;-

- Highway infrastructure improvements – Liaison with agencies with responsibilities for transportation networks within AQMAs to deal with ;--
  (i) improving the road layout and flow of traffic within AQMA.
  (ii) ensuring that any temporary road works to roads adjacent or within the AQMA's have strict conditions applied to any permit to minimise additional congestion within the AQMA.
- Attempted to maintain a close "watching brief" on the nitrogen dioxide levels at Bridge Road /Weir Road Chertsey but has been hampered due to missing tubes.
- Consider unification of an emissions policy for taxi licencing within all of Surrey to ensure continuity of approach to this matter.

In Spring 2018, the SAA consortium obtained £145,188 from the Defra AQ Grant Fund to run an engagement and behaviour change programme at up to 40 schools across Surrey within 2km of an Air Quality Management Area.

The project has run throughout the 2018/19 academic year and some activities will continue into the 2019/20 academic year. Since schools were selected which were close to Air Quality Management Areas the aim of the project was to give the pupils attending these school an increased awareness of the health impacts of poor air quality and, to understand what was possible to do to improve local air quality and reduce exposure, and ultimately to change behaviour.

7 schools within Runnymede Borough Council took part in one or more of the measures on offer, which included:

- Media Campaign – a multi-media campaign using bespoke positive messages (see Figure 2.1) aimed at primary school children and their parents that ran for 5 weeks just after the start of the 2018/19 academic year using posters on bus backs and ad-shells at bus stops, publications such as Primary Times and Surrey Matters, digital media e.g. electronic newsletters, Facebook, Twitter, and radio advertising.
- Theatre in Education – A bespoke theatre production designed for year 5 pupils to raise awareness of the health issues associated with poor air quality. The drama production also explored sustainable modes of transport.
- Bikeability Learn to Ride – subsidised scheme (on top of the cycle training already offered by Surrey County Council) to help over 2,500 trainee pupils ride without stabilisers.
- School Lessons and resources – a specialist provider produced toolkits and resources for both Primary and Secondary Schools and delivered workshops and whole school assemblies at over 30 schools across Surrey. The workshops included practical exercises in exposing nitrogen dioxide diffusion tubes to investigate pollutant levels with distance from school drop-off zones.
- Modeshift Stars – extra assistance to schools to help them gain accreditation under the ModeShift Stars scheme

The programme hosts an Air Quality Summit to further disseminate the messages and successes of the project across school representatives from across the County. The Summit will be a networking opportunity for Eco Co-ordinators from schools

across the county. Workshops and presentations will be provided by the London Sustainability Exchange on their school workshops and resource toolkits; a research fellow from the University of Surrey's Global Centre for Clean Air Research; a showcase school from the programme on their experiences; Living Streets and the SAA air quality modelling work.

In June each year Surrey County Council host a sustainable travel challenge called the Golden Boot. As part of the air quality schools programme it is proposed to include an air quality theme to the challenge, with a rebrand and upgrade. A Green Boot challenge will be introduced since it will be a more accessible scheme than the Golden Boot scheme. However, it is perceived that if the Green Boot scheme is a success then schools may go onto undertake the Golden Boot challenge.
With respect to the media campaign:

- There were over 16,000 views on the webpage making it the most viewed page on the Healthy Surrey website during the campaign period.
- Facebook was the most popular social media channel to reach and engage with parents. There were 41 Facebook posts during the campaign period which appeared 98,970 times, generated 1,253 link clicks and 600 engagements, such as comments, shares and likes.
- On Twitter, 54 posts appeared a total of 73,551 times with 193 engagements.
- Instagram posts and stories were used to engage with residents. They reached 3,306 people and around 250 engaged with content.
- Google advertisements were shown to parents in Surrey and generated 16,052 clicks through to the webpage.

Early feedback on the success of the campaign:

> "*Despite low awareness, the campaign has performed strongly: it is strongly liked, conveys new information, and is felt to discourage people from using their cars on the school run. The campaign scores very highly in terms of relevance, impact, clarity and*

information. It is also significantly more engaging than other campaigns (strong positive engagement, but low negative engagement). This all implies that the relatively low awareness is due to the low campaign spend, not any weakness in the creative executions."

This indicates that the creative design work will be evaluated strongly and that despite a low budget spend the campaign did successfully engage with residents of Surrey.

The successful Theatre in Education supplier, Performance in Education (PiE), developed a bespoke production on air quality: Abby Aire and the Shed of Science. The performance toured around 40 schools around Surrey with audiences totalling 2,156 year 5 students (age 9/10 year olds). A total of 6 schools in Runnymede Borough Council held Theatre performances.

Evaluation feedback of the Theatre activity indicted that 100% of 76 teaching staff surveyed thought the show was an effective or very effective way to communicate what causes poor air quality, how it impacts on health and what pupils can do to help improve the air quality around their school. The pupils were exposed to key terminology and vocabulary and were able to identify modes of transport which cause pollution.

Across Surrey, 31 schools have taken part in workshops and school assemblies provided by the specialist provider London Sustainability Exchange (LSx), equating to a total of 7,435 pupils. Tool kits and teaching resources were prepared and distributed to all schools in Surrey. 5 schools in Runnymede Borough Council took part in the workshops and school assemblies.

1 school within Runnymede Borough Council area hosted an anti-idling event.

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	Air Quality Action Plan produced and approved by committee	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Runnymede Borough Council		2014	AQAP published			2014	County with 2 tier authority
2	Established Surrey Air Alliance Group coordinating programmes to develop area wide strategies to reduce emissions and improve air quality	Policy Guidance and Development Control	Regional Groups	Surrey County Council and Surrey Local Authorities	2016	2016 Formation of group				Ongoing	
3	Permitted premises	Environmental Permits	Other measure through permit systems & economic instruments	Runnymede Borough Council			Ensuring that all permitted process operate within control limits			Ongoing	

4	Encourage adoption minimum emissions standards into taxi licensing procedures	Promoting Low Emission Transport	Taxi Licensing conditions/incentives	Runnymede Borough Council	2016	2020/21	Reduce tailpipe emissions in AQMA	yes	Air Quality officers representing the borough/district councils have suggested taxi licencing authorities for County wide policy on emissions.	2021	
5	Use of Planning regime to incorporate measures to reduce air pollution	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Runnymede Borough Council	2015			Air quality included in Development Planning			Ongoing
6	County and Borough modelling of key pollutants	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Surrey Air Alliance group	2016	2019	Modelling completed		Estimates obtained-tendering process to be followed	2019	
7	Support of bid to DEFRA re emission at schools	Promoting Low Emission Transport	Other	Surrey County Council and Surrey Local Authorities	2017	2017	Awareness raising			2019	
8	Bid to defra for – erecting of large format signs on lampposts close to level crossing – switch off engines	Public information	Via other mechanisms	Runnymede BC	2018/19	2020	Signage erected			rejected	
9	Adopted Local Plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Runnymede BC	2015	2020	Local Plan approved.		Central Government to consider	2020	ongoing

10	Reducing Emissions – School and Business Travel Plans: Golden Boot Challenge	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	Surrey County Council		Ongoing	Reduced dependency on car use for school journeys and number of people taking part in the scheme		Annual challenge for schools to increase the % of pupils walking, cycling, scooting / skateboarding, using public transport, car sharing or park-n-striding to school.	ongoing	Golden Boot to be rebranded to AQ theme in Oct 2019 as part of Schools AQ programme
11	Reducing Emissions from Council Activities	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	Runnymede BC		ongoing	Decreased emissions from council owned fleet		New Council fleet now EuroVI.Abilty to burn biofuels – no biofuel tank to be installed in council depot	2020	**progress on zero emission vehicle to be considered when current fleet lease expires in 2025**
12	Air alert	Public Information	via other mechanisms	Runnymede BC		2019	Uptake by residents, Reduced hospital admissions		subscribed	2020	Scheme operated by collaboration of Surrey LAs. Continuance relies upon co-funding of other LAs

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.

Runnymede Borough Council is taking the following measures to address $PM_{2.5}$: 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 recent implementation of the Technical Guidance LAQM.TG16 and Policy Guidance LAQM.PG16, Runnymede Borough Council is working towards defining a strategy to reduce emissions or concentration of $PM_{2.5}$. This work is being undertaken in close association with the Director of Public Health at Surrey County Council. It is further expected that the modelling exercises being promulgated will provide incisive and key information on $PM_{2.5}$ to assist with the production of a suitable strategy.

However, existing measures to improve air quality already in place can help reduce levels of $PM_{2.5}$, such as:

- Promoting low emission transport and provision of charging points and hydrogen refilling stations.
- Surrey County Council's Transportation plans and strategies.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Runnymede Borough Council did not undertake any automatic (continuous) monitoring within the Borough during 2019 nor is it planning to introduce continuous monitoring within the foreseeable future.

3.1.2 Non-Automatic Monitoring Sites

Runnymede Borough Council undertook non- automatic (passive) monitoring of NO_2 at 30 sites during 2019 using diffusion tubes as supplied by Lambeth Scientific Services. Table A.1.1 in Appendix A shows the details of the sites.

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

3.2 Individual Pollutants

It should be noted that the air quality monitoring results presented in this section are, where relevant, adjusted for bias and distance correction. “Annualisation” of the areas where sampling collection data was below 75% is undertaken where appropriate. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

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

Table A.22 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40 µg/m^3.

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B.

Since Runnymede Borough Council do not have any continuous monitors then it is difficult to directly consider in detail the nitrogen dioxide hourly mean concentrations . The hourly mean air quality objective of 200 µg/m^3, is not to be exceeded more than 18 times per year. However, a comparison between the hourly objective and the annual mean objective can be made. It is understood that an **annual mean** of greater than than 60µg/m^3, provides an indication that an exceedence of the 1-hour mean objective could be likely at these sites.

Consideration of relevant exceedances

In 2019, following bias correction of the raw data and the application of distance correction, this showed one location in the Borough where there were exceedances of the annual mean objective. See table 3.1 below.

Table3.1 – Annual exceedances

Site number	Reading - bias corrected	Distance correction
RY14	45.5	45.5

RY14 being at the centre of Addlestone within the AQMA

It is noted that for the hourly objective to be exceeded then the annual mean would have to exceed 60µg/m^3. **No site** within the Borough had an **annual mean** greater than 60µg/m^3. **Hence there are no sites which exceed the hourly objective limit**.

When generally comparing the nitrogen dioxide levels of 2019 (bias corrected) to 2018 (bias corrected) the air quality situation within the Borough has overall seen a slight deterioration year on year in so much that at 15 out of the 26 monitoring points where comparable measures were taken these showed an increase in levels. The other 11 sites where there is comparison to the previous year data showed a slight improvement in air quality.

From the graphs produced in Appendix A, then these depict that, concentrations tend to show a slight overall decrease in line with the general national trend. Nevertheless, it is interesting to consider site RY14, which is located in the central point where the traffic lights are located, within the Addlestone AQMA. This location has been monitored over the last 9 years which shows that the levels of nitrogen dioxide at the returned to levels found 3 to 4 years ago.

Watching brief area in Chertsey. The traffic light-controlled junction at Weir Road/Bridge Road is being watched as a potential AQMA. Last year most of the diffusion tubes that were posted were not there when they were due to be replaced. It would appear that there was an active campaign to remove these tubes. As a result, in order to make it easier to spot any tampering and also making them less prominent the tubes were moved to locations closer to the highway and in a slightly elevated position. Because of the repositioning last year then this has proven very beneficial in so much that very few tubes posted out were not returned for analysis. However, by moving the tubes closer to the road then this resulted in elevations of the raw data readings. However once bias correction and distance to the facades of properties adjustments have been applied it shows that the area is still below the national the objective value. Nevertheless, it is still believed to be prudent to continue with the watching brief of the area.

3.2.2 Particulate Matter (PM_{10})

PM_{10} is not currently monitored within the Runnymede Borough Council area. However, modelling work for levels of particulate matter within the Borough has ascertained that particulate matter levels do not exceed air quality objectives.

3.2.3 Particulate Matter ($PM_{2.5}$)

$PM_{2.5}$ is not currently monitored within the Runnymede Borough Council area. However, modelling work for levels of particulate matter within the Borough has ascertained that particulate matter levels do not exceed current air quality target levels.

3.2.4 Sulphur Dioxide (SO_2)

Sulphur dioxide is not currently monitored within the Runnymede Borough Council area and it has previously been established that levels of sulphur dioxide do not exceed air quality objectives.

Appendix A:MonitoringResults

Table A.1–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)
RY1	Civic Centre, Station Road, Addlestone	Roadside	X 505065	Y 164610	NO2	Y	8	3	N	2.3
RY4	Riverside ,Pitson Close, Addlestone	Urban B/G	X 505727	Y 164624	NO2	N	43	43	N	2.0
RY8	Ongar Place First School, Milton Road, Addlestone	Suburban (near to M25)	X 504309	Y 163952	NO2	Y	28	21	N	1.9
RY14	1 High Street, Addlestone	Roadside	X 504991	Y 164601	NO2	Y	2	2	N	2.3
RY19	78 Woodham Lane, New Haw	Roadside	X 505223	Y162698	NO2	Y	11	3	N	2
RY21	London Street/Heriot Rd Chertsey	Roadside	X 504261	Y 166945	NO2	N	3	1	N	2
RY23	37 Bridge Rd, Chertsey	Roadside	X 504888	Y 166786	NO2	N	15	1	N	2.2
RY25	1 Pooley Green Rd, Egham	Roadside	X 501746	Y 171347	NO2	Y	23	12	N	2.4
RY26	19, Vicarage Road, Egham	Roadside	X 501707	Y 171391	NO2	Y	9	2	N	2.3

RY39	Chobham Lane, Longcross,	Roadside	X 498859	Y 166225	NO2	N	New house building		N	1.8
RY40	Homewood Park, Stonehill Road	Urban B/G	X 502062	Y 165101	NO2	N	68	68	N	2.5
RY43	New Court Chertsey Road Addlestone	Roadside	X 505000	Y 165303	NO2	N	19	2	N	2.3
RY45	27/29 Weir Rd Chertsey	Roadside Moved	X 504879	Y 166765	NO2	N	6	0.6	N	2.3
RY53	1-22 Wyvern Place, High St, Addlestone	Roadside	X 504967	Y 164924	NO2	N	7	3	N	2.4
RY54	23 Brighton Rd, Addlestone	Roadside	X 505070	Y 164477	NO2	Y	5	2	N	2.3
RY55	158 Station Rd, Addlestone	Roadside	X 505526	Y 164782	NO2	N	3	0.4	N	2.3
RY56	34/36 Bridge Rd Chertsey	Roadside	X 504911	Y 166765	NO2	N	8	1	N	2.3
RY57	29 Bridge Rd, Cherstey	Roadside	X 504834	Y 166814	NO2	N	9	2	N	2.3
RY58	39 Weir Road. Chertsey	Roadside moved	X 504891	Y 166773	NO2	N	16	0.2	N	2.3
RY59	Bus shelter Chertsey Rd Addlestone	Roadside	X 504949	Y 165140	NO2	N	15	3	N	2.3
RY60	Renaissance flats, High Street Addlestone	Roadside	X 504966	Y 164836	NO2	Y	5	3	N	2.4

RY61	Pine Court, Addlestone	Roadside	X 504907	Y 164559	NO2	N	5	2	N	2.4
RY62	26/28 Brighton Road Addlestone	Roadside	X 505078	Y 164527	NO2	Y	5	2	N	2.3
RY63	Garfield Road, (sign) Addlestone	Roadside	X 505250	Y 164390	NO2	N	9	3	N	2.5
RY64	Garfield Road, Hampshire Court Addlestone	Roadside	X 505259	Y 164403	NO2	N	11	0.5	N	2.4
RY65	268 Station Road Addlestone	Roadside	X 505803	Y 165036	NO2	N	12	3	N	2.3
RY66	223 Station Rd, Addlestone	Roadside	X 505704	Y164952	NO2	N	12	2	N	2.3
RY67	A320 roundabout Ottershaw	Roadside	X 502241	Y163887	NO2	N	18	3	N	2.2
RY68	Addlestonemoor roundabout	Roadside	X 504951	Y165772	NO2	N	15	6	N	2.4
RY69	New Haw Road	Roadside	X 505361	Y163912	NO2	N	4	2	N	2.3
RY70	Chertsey Lane Thorpe	Roadside	X 503412	Y171073	NO2	N	8	2	N	2.4

Notes:

(1) horizontal distance from kerbside to the nearest relevant exposure (eg residential property facade)

(2) horizontal distance from kerbside to where diffusion tube is exposed.

Table A.2–Annual Mean NO_2 Monitoring Results 2019

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2019(%) [2]	NO_2 Annual Mean Concentration (µg/m^3) [3]				
					2015	2016	2017	2018	2019
RY1	Roadside	Diffusion Tube	100	92	39	39.5	29.8	29.1	30.8
RY4	Urban Background	Diffusion tube	100	100	19.6	22.7	17.8	20.2	19.4
RY8	Roadside	Diffusion Tube	100	58	35.1	24	20.5	22.5	20.5
RY14	Roadside	Diffusion Tube	100	100	**48.6**	**45.6**	**48.7**	**45.5**	**48.3**
RY19	Roadside	Diffusion Tube	100	100	34.3	33.7	31.5	32.3	32.1
RY21	Roadside	Diffusion Tube	100	100	32.1	35.9	31.5	33.4	34.3
RY23	Roadside	Diffusion Tube	100	100	**42.2**	**42.5**	33.8	**47.5**	**56.4**
RY25	Roadside	Diffusion Tube	100	92	28.2	30.6	28.5	33.5	31.6
RY26	Roadside	Diffusion Tube	100	83	**41**	**44**	36.7	36.5	**45.7**
RY33	intermediate	Diffusion Tube	100	n/a	32.4	30.6	34.1	34.5	n/a
RY34	Roadside	Diffusion Tube	100	n/a	25.1	24.9	22.7	n/a	n/a
RY39	Roadside	Diffusion Tube	100	92	25.1	25.7	23.9	28.4	26
RY40	Urban background	Diffusion Tube	100	100	17	16.9	16.5	18.1	14.9
RY43	Roadside	Diffusion Tube	100	92	34.5	35.2	26.7	36.9	38.4
RY44	Roadside	Diffusion	100	n/a	23.3	29.3	25.9	n/a	n/a

		Tube							
RY45	Roadside	Diffusion Tube	100	100	37.2	33.3	32.5	36	37.7
RY52	Roadside	Diffusion Tube	100	n/a	34.	30	31.6	n/a	n/a
RY53	Roadside	Diffusion Tube	100	100	39.2	**41.5**	32.2	35.8	**40.8**
RY54	Roadside	Diffusion Tube	100	100	36.4	33.4	28.1	29.6	32.4
RY55	Roadside	Diffusion Tube	100	92	35.9	34.1	28.7	32.7	34.4
RY56	Roadside	Diffusion Tube	100	92	**48.7**	**49.4**	**43**	**40.9**	**46**
RY57	Roadside	Diffusion Tube	100	92	36.7	30.8	**42**	30.5	35.3
RY58	Roadside	Diffusion Tube	100	100	33.4	31.7	34.9	52	**43.6**
RY59	Roadside	Diffusion Tube	100	100	34	34	30.3	34.7	33.8
RY60	Roadside	Diffusion Tube	100	100	38.8	36.3	28.9	33.3	32.9
RY61	Roadside	Diffusion Tube	100	100		32	30.1	30.1	29.1
RY62	Roadside	Diffusion Tube	100	100		32.7	31.3	32.8	32.1
RY63	Roadside	Diffusion Tube	100	83		22.5	30.8	21.6	25.5
RY64	Roadside	Diffusion Tube	100	92		25.5	22.4	24.1	26.5
RY65	Roadside	Diffusion Tube	100	100		26.1	22.4	26.7	32.2
RY66	Roadside	Diffusion Tube	100	n/a		28.7	22.1	26.2	n/a
RY67	Roadside	Diffusion Tube	100	100					**44.2**

RY68	Roadside	Diffusion Tube	100	92					38
RY69	Roadside	Diffusion Tube	100	100					32
RY70	Roadside	Diffusion Tube	100	100					25.1

☒Diffusion tube data has been bias corrected

☒Annualisation has been conducted where data capture is <75% and it appropriate to carry out annualisation

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.**

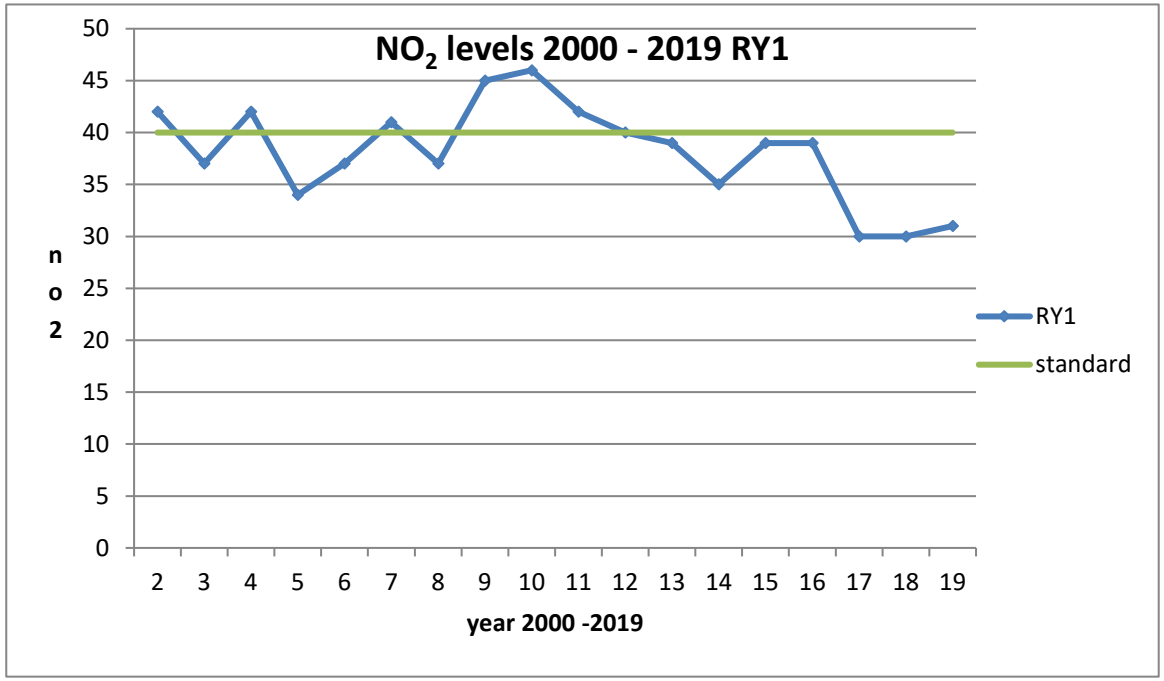
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(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%).

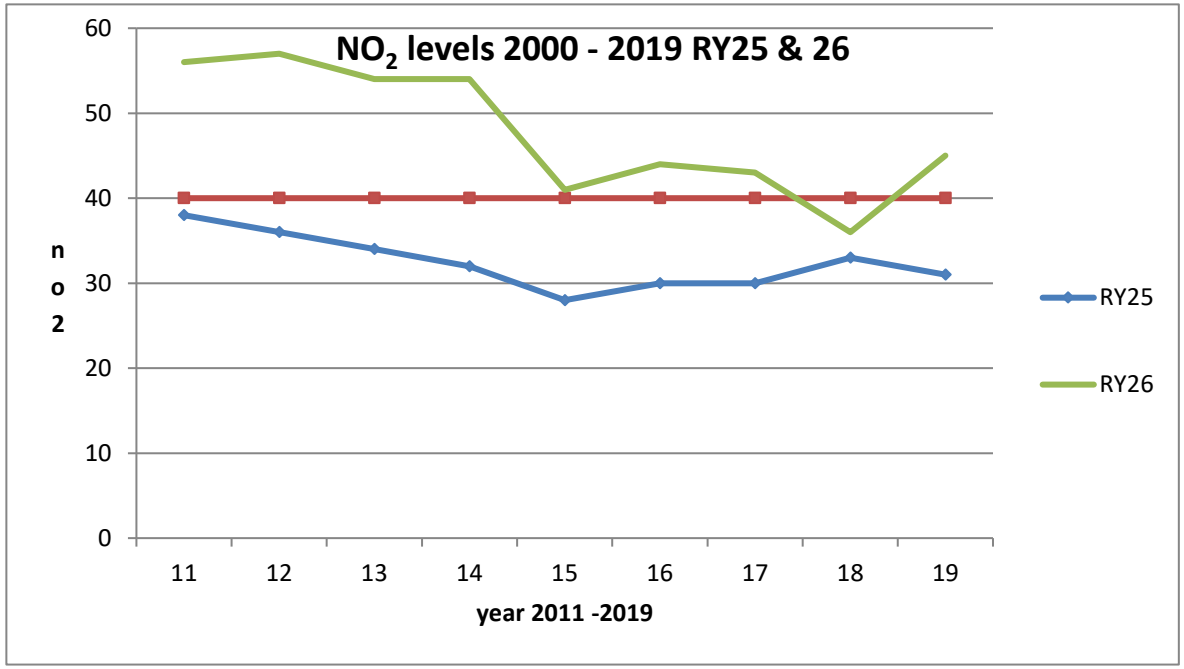
(3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

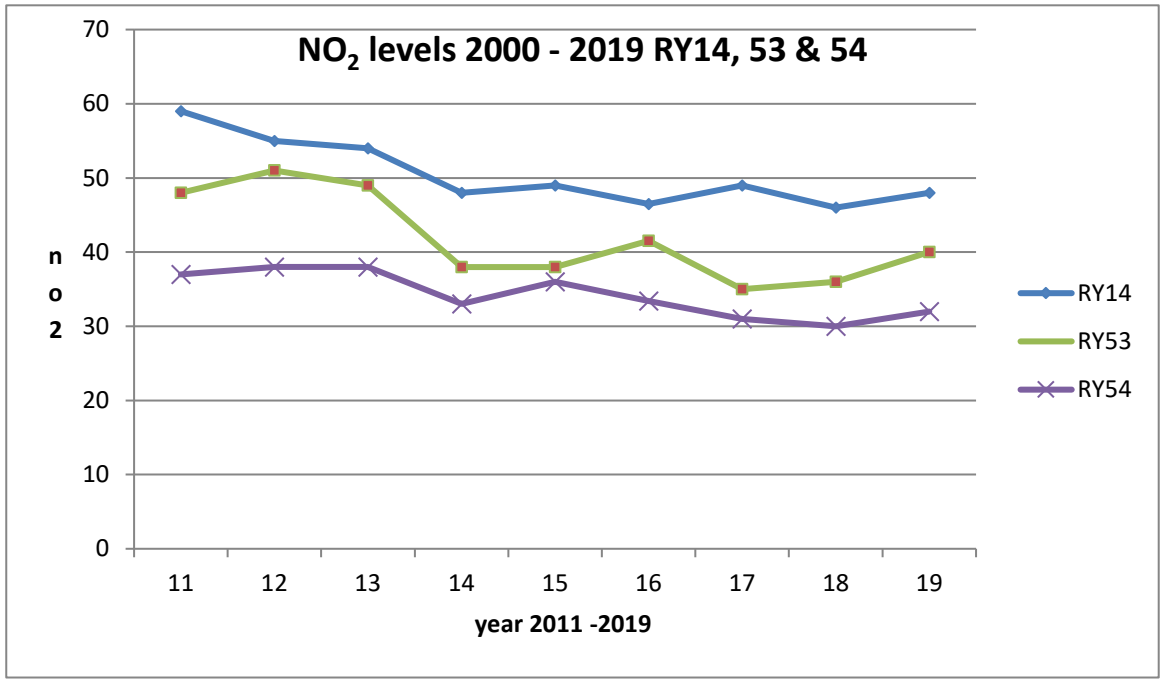
Graph site RY 1 Addlestone town centre (not corrected for distance)



Graph sites RY25 and RY26;- Pooley Green level crossing AQMA(not corrected for distance)



Graph of RY14, RY,53& RY54 – Addlestone AQMA (not corrected for distance)



Appendix B:Full Monthly Diffusion Tube Results for 2019

Table B.1–NO_2 Monthly Diffusion Tube Results - 2019

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 (factor) and Annualised (1)	Distance Corrected to Nearest Exposure(2)
RY1	**45**	ns	34	33	28	31	27	30	27	33	**46**	34	33.5	30.8	28.4
RY4	29	26	19	23	16	15	15	20	19	19	29	23	21.1	19.4	19.4
RY8	ns	20	21	30	ns	24	15	14	ns	ns	32	ns	22.3	20.5	20.3
RY14	**66**	**58**	**56**	**52**	**54**	**58**	39	**47**	**48**	**46**	**56**	**50**	**52.5**	**48.3**	**48.3**
RY19	**44**	36	**41**	33	36	33	33	38	31	30	33	35	35.3	32.1	27
RY21	**48**	40	39	53	27	30	31	31	30	34	**52**	32	37.3	34.3	31.2
RY23	**75**	**81**	**64**	**76**	**53**	**52**	**57**	**56**	**52**	**53**	**61**	**56**	**61.3**	**56.4**	35.8
RY25	**61**	**42**	29	33	27	29	23	32	ns	32	37	33	34.4	31.6	29.4
RY26	**43**	**62**	**60**	**45**	ns	47	ns	**47**	**45**	**47**	**58**	**43**	**49.7**	**45.7**	37.8
RY39	31	**44**	28	28	ns	27	22	27	28	28	18	30	28.3	26	26
RY40	21	19	14	23	7	15	12	14	15	15	24	15	16.2	14.9	14.9
RY43	**54**	**50**	**44**	ns	36	37	36	32	39	42	55	39	**42.2**	38.4	29.4
RY45	ns	**51**	**55**	**46**	**55**	**52**	**45**	**46**	**51**	**51**	**60**	**49**	**41**	37.7	29.7
RY53	**57**	**56**	**45**	**53**	**45**	32	31	35	40	41	56	42	**44.4**	**40.8**	36.5
RY54	**46**	**41**	34	**55**	32	31	25	28	25	31	**46**	29	35.3	32.4	30.2

RY55	**43**	**44**	37	34	33	38	25	ns	32	39	**47**	38	37.3	34.4	28.5
RY56	ns	**61**	**57**	**71**	**48**	**52**	35	**50**	**46**	**44**	**50**	36	**50**	**46**	34.6
RY57	ns	**41**	37	**41**	31	32	30	**41**	**47**	36	**49**	37	38.4	35.3	29.5
RY58	**63**	**60**	**52**	38	**55**	55	33	26	23	57	**53**	54	**47.4**	43.6	27
RY59	**45**	**45**	36	**43**	36	33	23	31	31	38	**45**	35	36.8	33.8	28.6
RY60	**44**	**45**	32	34	27	39	23	27	35	37	**51**	35	35.8	32.9	31.4
RY61	**42**	**38**	36	28	31	33	21	25	25	30	**41**	29	31.6	29.1	27.4
RY62	39	**48**	35	27	32	33	28	27	28	39	**47**	36	34.9	32.1	29.8
RY63	34	33	26	ns	25	24	ns	24	23	25	37	26	27.7	25.5	24.6
RY64	38	34	26	33	22	23	18	ns	20	24	34	23	28.8	26.5	24.2
RY65	36	36	29	**78**	28	27	21	30	27	31	**44**	33	35	32.2	27
RY67	**69**	**56**	**57**	40	27	**63**	**41**	37	32	**42**	**67**	47	**48.1**	**44.2**	29.8
RY68	**42**	**49**	**41**	**65**	28	34	ns	34	38	32	**42**	50	**41.4**	38	30.9
RY69	40	**41**	38	**43**	27	29	22	29	29	36	**47**	37	34.8	32	30.4
R770	35	32	1	38	34	25	19	27	23	30	**41**	23	27.3	25.1	23.2

xNational bias adjustment factor used

xAnnualisation has been conducted where data capture is <75%

xWhere applicable, data has been distance corrected for relevant exposure using DEFRAs latest version of drop off with the distance calculator.

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 Cfor 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

Diffusion Tube Bias Adjustment Factors

Runnymede's diffusion tubes are supplied by Lambeth Scientific Services Limited. 50% triethanolamine (TEA) solution is the absorbent used to prepare the tubes.
The bias adjustment factor applied is a combined bias adjustment factor derived from the national database of co-location studies, available from the LAQM Support Website.
The selection of bias correction factors plays an important part in relation to air quality. Currently there is local debate over the selection of such critical factors. The bias correction factors that have been used since 2000 are produced below in table C.1

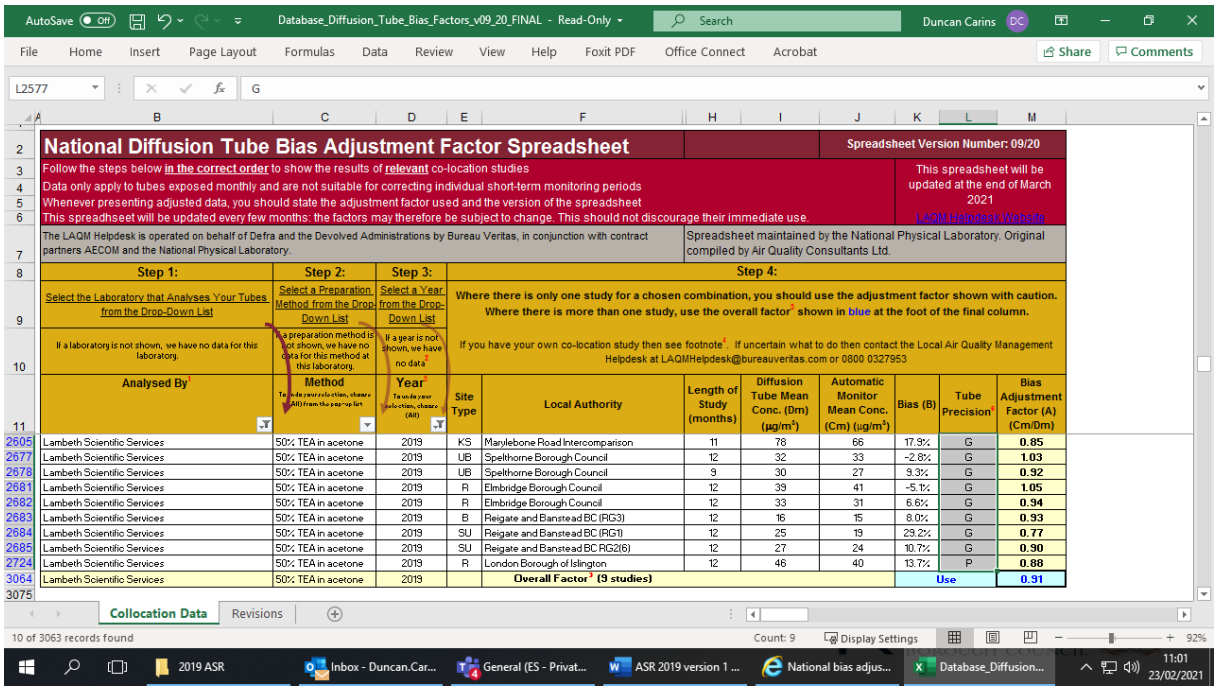
Table C.1 Diffusion Tube Bias Adjustment Factors, 2000-2019.

Year	Bias Adjustment Factor
2000	0.97
2001	1.09
2002	1.15
2003	1.05
2004	1.19
2005	1.24
2006	1.28
2007	1.07
2008	0.98
2009	1.03
2010	1.06
2011	1.06
2012	0.87
2013	0.83
2014	0.89
2015	0.97
2016	0.95
2017	0.93
2018	1.04
2019	0.92

Bias correction factor 2019 = 0.92

Considerations used for the selection of 2019 bias correction factor;-

Figure C.1 -Screenshot of national website bias correction factors



National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 09/20

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

This spreadsheet will be updated at the end of March 2021
LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

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

Step 1:	Step 2:	Step 3:	Step 4:
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[2] shown in blue at the foot of the final column.
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data[3]	If you have your own co-location study then see footnote[1]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[3] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
Lambeth Scientific Services	50% TEA in acetone	2019	KS	Marylebone Road Intercomparison	11	78	66	17.9%	G	0.85
Lambeth Scientific Services	50% TEA in acetone	2019	UB	Spelthorne Borough Council	12	32	33	-2.8%	G	1.03
Lambeth Scientific Services	50% TEA in acetone	2019	UB	Spelthorne Borough Council	9	30	27	9.3%	G	0.92
Lambeth Scientific Services	50% TEA in acetone	2019	R	Elmbridge Borough Council	12	39	41	-5.1%	G	1.05
Lambeth Scientific Services	50% TEA in acetone	2019	R	Elmbridge Borough Council	12	33	31	6.6%	G	0.94
Lambeth Scientific Services	50% TEA in acetone	2019	B	Reigate and Banstead BC (RG3)	12	16	15	8.0%	G	0.93
Lambeth Scientific Services	50% TEA in acetone	2019	SU	Reigate and Banstead BC (RG1)	12	25	19	29.2%	G	0.77
Lambeth Scientific Services	50% TEA in acetone	2019	SU	Reigate and Banstead BC RG2(6)	12	27	24	10.7%	G	0.90
Lambeth Scientific Services	50% TEA in acetone	2019	R	London Borough of Islington	12	46	40	13.7%	P	0.88
Lambeth Scientific Services	50% TEA in acetone	2019		Overall Factor[3] (9 studies)				Use		0.91

Collocation Data | Revisions

10 of 3063 records found

Selection of a bias correction factor

Precision versus accuracy is detailed within DEFRA web site and it states "*where results show poor precision then they should be treated with caution and may not be suitable for their intended purpose. The aim should be to use results from tubes that are giving "good" precision as this will improve the overall reliability of the annual mean concentrations derived from the diffusion tubes*".

Hence in selecting the bias correction factor for 2019 then the best quality data is sought and hence only the sites which could provide "good" precision and have followed the required methodology were selected to work out a "robust" bias correction factor. ((NB good precision is where the coefficient of variance (CV) of multiple exposed tubes collated with a continuous monitor for eight or more period during the year is less than 20% and the average CV of all monitoring periods is less than 10%).

9 studies were posted on the website. 8 of the 9 studies were considered to have good precision. The one result which had poor precision reported a result of 0.88 and hence this figure did not detract from the stated average. Therefore, the resultant

bias correction figure was calculated at 0.92 was selected as the most appropriate factor to be applied to the 2018 nitrogen dioxide results.

Annualisation

Annualisation in accordance with the technical guidance regarding the use of background reference diffusion tubes is undertaken were considered appropriate on the diffusion tubes results which had less than 75% capture.

Use of nationally posted bias correction factor.

Runnymede Borough Council is very much dependent on the national website to provide a justifiable bias correction factor to be applied to the diffusion tubes results. Since the last round of 3 posting events is in September, September normally being the time when the vast majority of respondents post their results on the national spreadsheet, it could be suggested that only after this point then there is a robust pool of results which can provide a reasonably suitable bias correction factor. Therefore, it becomes very difficult for local authorities who rely on this nationally sourced bias correction figure to be able to provide Defra with a validated ASR by June. It has been noted that there can be a significant difference in the bias correction over the course of the 3 rounds of submission to the bias correction website. Since these 3 rounds of posting data can produce significant difference in a bias correction values hence the accuracy of final report could therefore be affected. It would be good if there was an elegant solution to this potential lacuna.

QA/QC of diffusion tube monitoring

Nitrogen dioxide

Laboratory Performance and WASP scheme

Lambeth Scientific Services Limited follows the procedures set out in the Harmonisation Practical Guidance and participates in the WASP scheme operated by the Health and Safety Laboratory.

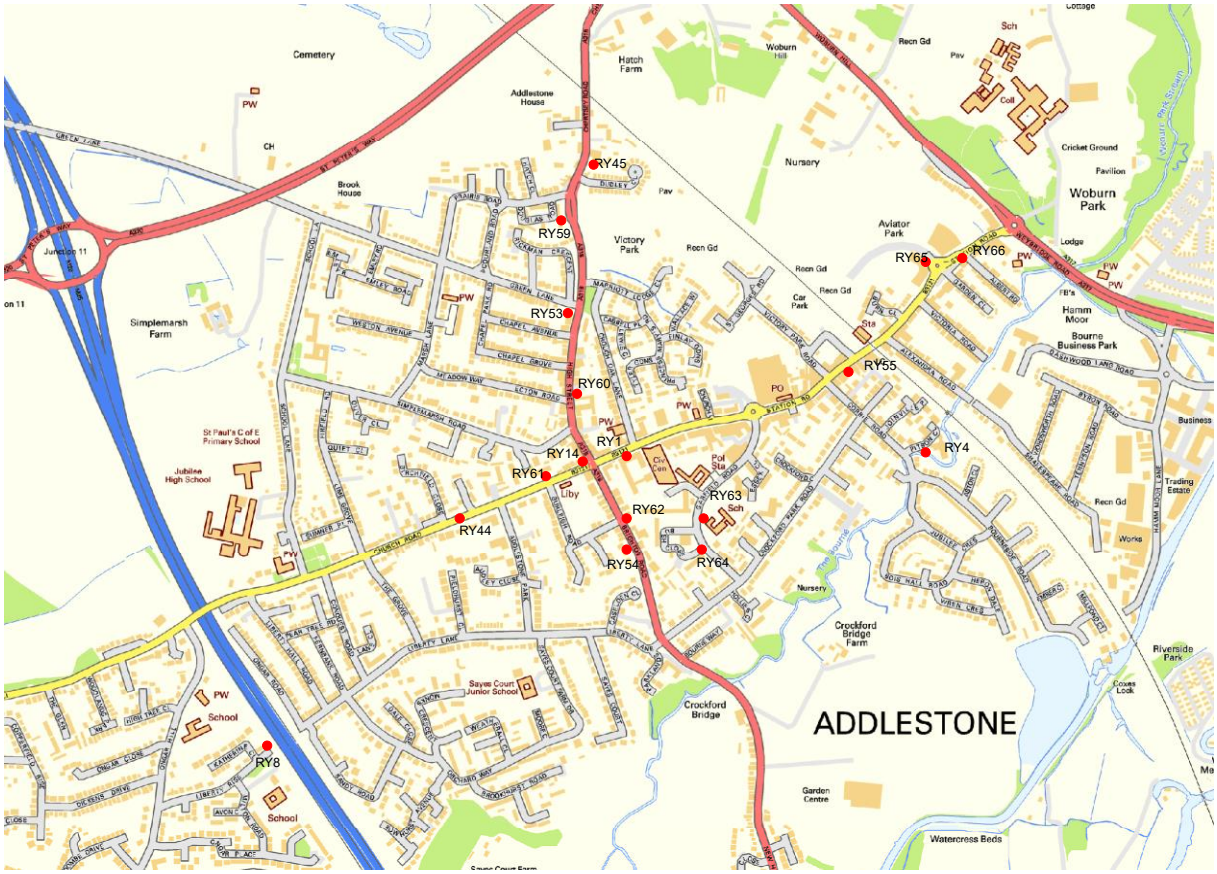
Nitrogen dioxide fall-off with distance

Use of DEFRAs on-line nitrogen dioxide fall-off with distance calculator – version v4.1 released April 2016.

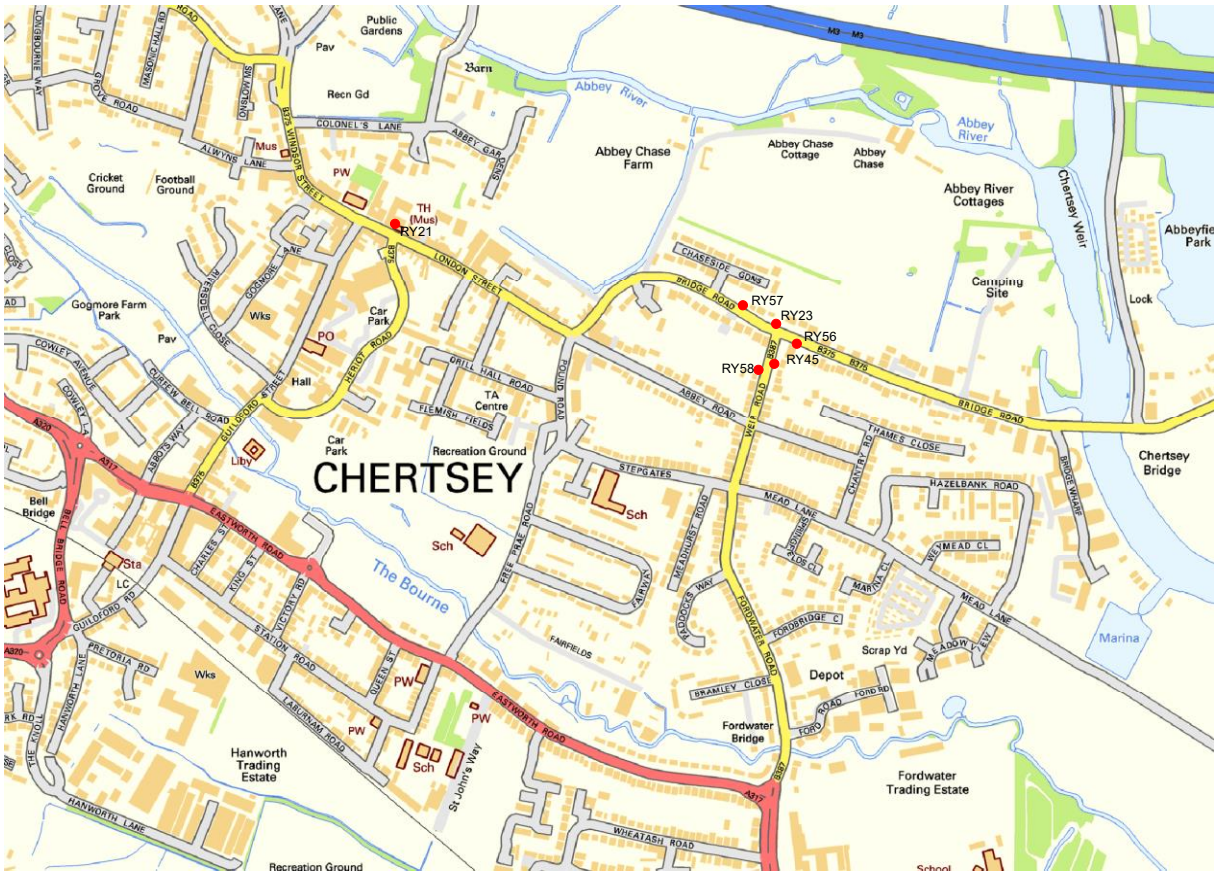
Appendix D: Map(s) of Monitoring Locations and AQMAs

Map of monitoring points in and around Addlestone AQMA

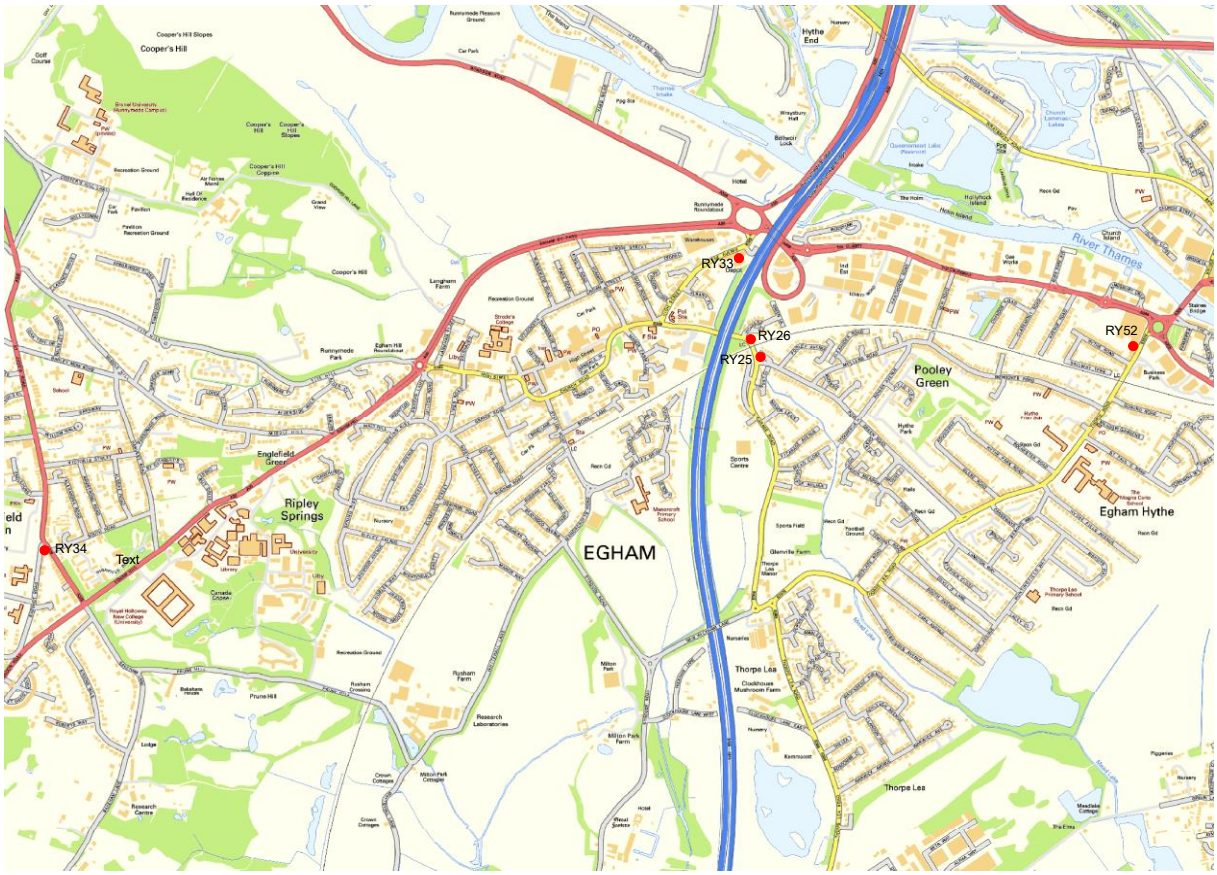
Monitoring sites located within Addlestone AQMA = RY1, RY14, RY54, RY60, RY62,



Map of monitoring locations at Weir Rd / Bridge Rd

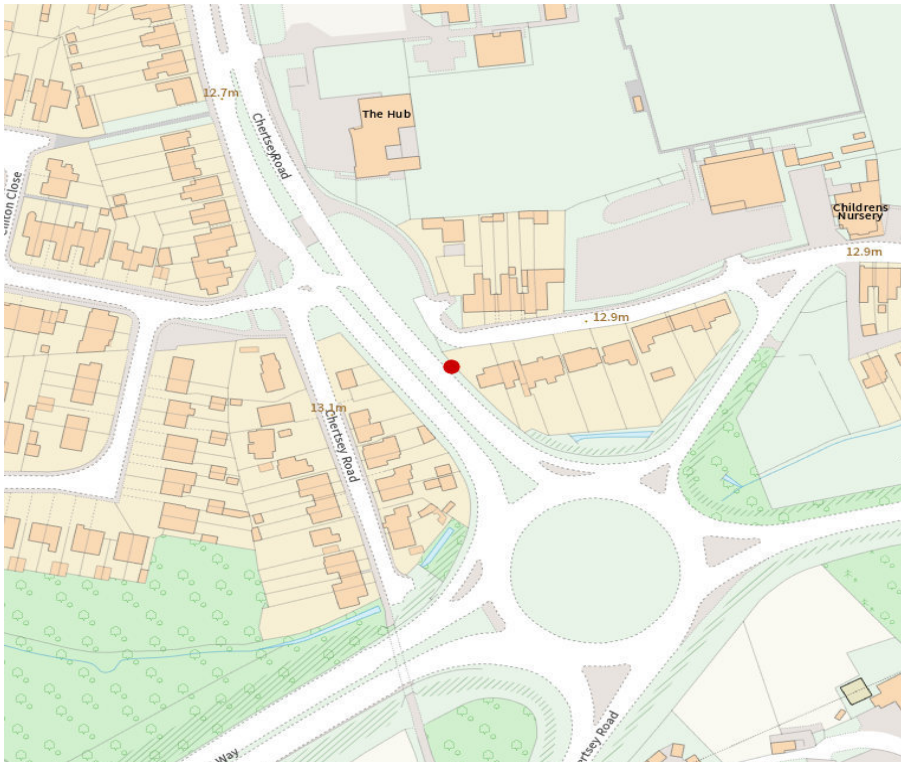


Monitoring sites located within M25(Egham) AQMA= RY25, RY26, RY33

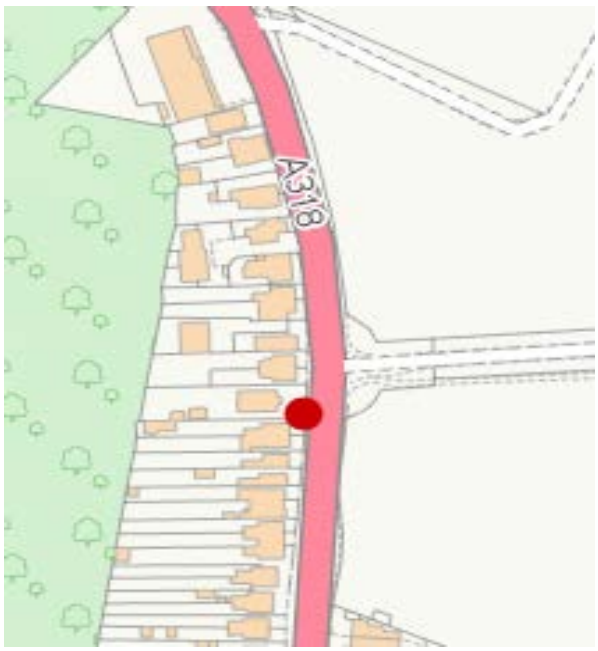


New monitoring locations added 2019

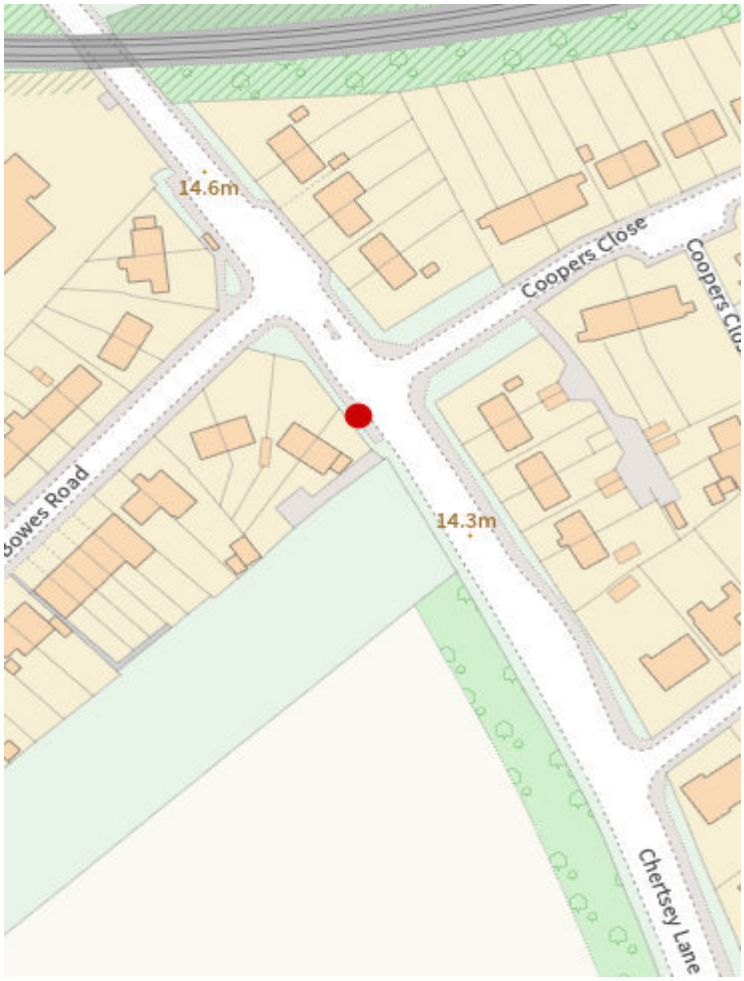
RY 67 Ottershaw Roundabout



RY68 Addlestonemoor



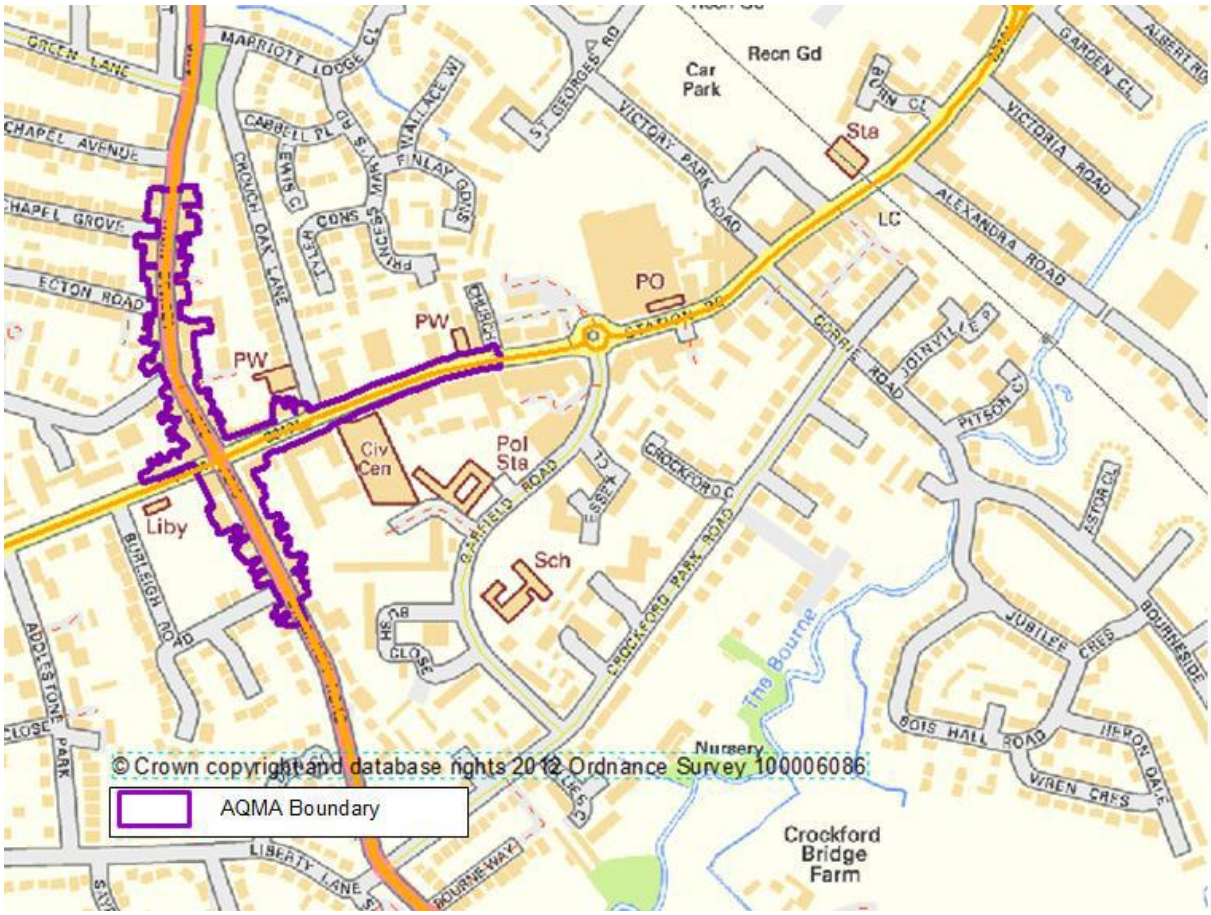
RY69 A318 New Haw Road



RY 70 Chertsey Lane

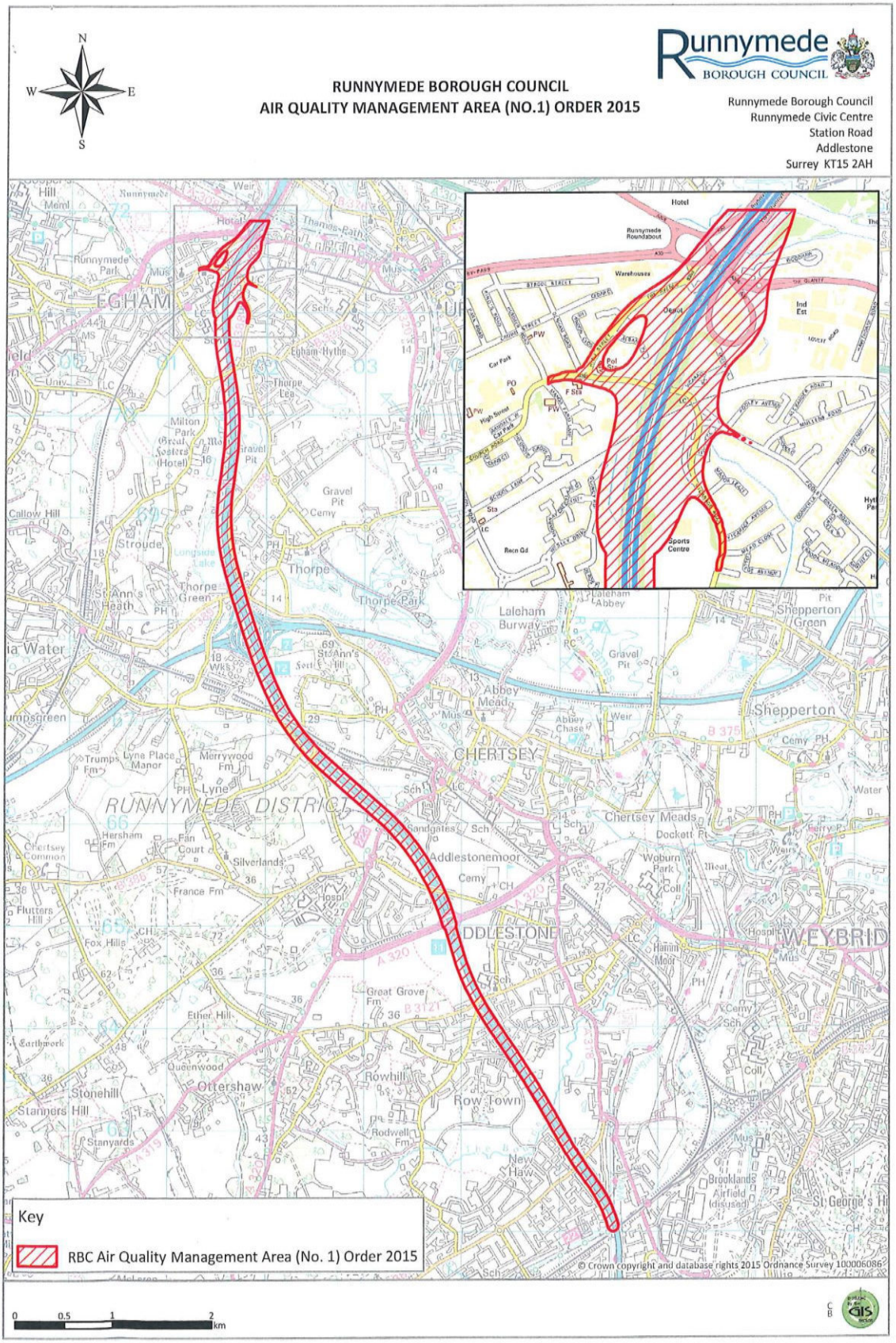
Maps of AQMA within Runnymede BC

Map of Addlestone AQMA



Monitoring sites located within Addlestone AQMA = RY1, RY14, RY54, RY60, RY62

M25 + Egham extension - AQMA



Appendix E:Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[1]	
	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

[1] 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	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
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
SO_2	Sulphur Dioxide
SAA	Surrey Air Alliance

References

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- Department for Environment Food & Rural Affairs [Defra], 2016 Local Air Quality Management: Technical Guidance (TG16) April 2016
- Department for Environment, Food and Rural Affairs [Defra] (April 2016) NO2 Fall-Off with Distance Calculator (Version 4.1).
- Department for Environment, Food and Rural Affairs [Defra] Spreadsheet of Diffusion Tube Bias Adjustment Factors, 2019.
- Department for Environment, Food and Rural Affairs [Defra] Summary of Laboratory Performance in AIR NO2 Proficiency Testing Scheme (January 2018 – November 2019).
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