Air Quality Annual Status Report 2020 (Environmental Services – Helen Clark)

Synopsis of report:

To inform Members that Runnymede Borough Council's 2020 Air Quality Annual Status Report (ASR) was recently submitted to the Department for Environment, Food & Rural Affairs (Defra) and to have a discussion on air quality within Runnymede and outline of measures to improve it.

Recommendations:

i) The Committee receive and note the 2020 Air Quality Annual Status Report (ASR); and

ii) The Committee note that Air Quality Monitoring is now a key indicator in the Climate Change Strategy approved on the 21 April 2022

1. Context of report

1.1 The report provides Members with updated Air Quality information in the form of Runnymede's 2020 ASR which was recently submitted to Defra.

2. Report

2.1 Members are made aware that Runnymede's 2020 Air Quality ASR was recently submitted to Defra for their consideration. The report fulfils Runnymede's obligations with respect to managing the Air Quality Management Areas (AQMAs) within Runnymede's area and reporting on the general air quality within the Borough.

2.2 Whilst there is a requirement for local authorities to submit their ASRs to Defra in June, Members are made aware that, as is the case for a number of local authorities, the RBC submission occurs after that date as Officers seek to apply the 'bias correction factor' once it is finally published in September.

2.3 Runnymede's monitoring capability is totally reliant on diffusion tubes to monitor the air quality within the Borough. Diffusion tubes are a relatively inexpensive way to monitor for nitrogen dioxide however their accuracy must be corrected at the end of each year. This adjustment process is called bias correction. Bias correction data is created by having similar diffusion tubes to those used in Runnymede located next to very accurate continuous nitrogen dioxide monitors (located in other parts of the country), data from which can be used by Defra to determine what adjustment factor must be applied to the diffusion tubes in order calibrate them against the accurate monitors. These determinations are posted, at different times through the year, on Defra's national bias correction website.

2.4 Over the last 20 years Runnymede has seen a large variation in the bias correction factors which have been applied to the diffusion tube results. The range of the bias correction factor is from 0.83 to 1.28. By way of example, if the annual level from the diffusion tubes indicated a nitrogen dioxide reading of 31.3 ug/m3 (with 40ug/m3 being the national standard above which the Council would need to consider declaring an area as an AQMA), then applying a bias correction of 1.28 to 31.3ug/m3 would produce a result of nitrogen dioxide

levels being greater than 40 ug/m3. Hence it can be shown that having a 28% correction factor plays a very significant part in the final determination.

2.5 To ensure that the correct bias correction figure has been applied the monitoring data in the Runnymede Borough Council annual status report is presented one year in arrears.

3. Overall conclusion

3.1 Air quality within the Borough has over the last 20 years generally seen a slow decline in nitrogen dioxide levels (principal source; traffic) across the Borough.

3.2 However, when directly comparing the nitrogen dioxide levels of 2018 to 2019, the air quality situation within the Borough in 2020 showed a slight deterioration with 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.

3.3 There was, however, one particular 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 results show that the level of nitrogen dioxide at the facade of a residential property increased by 2.8 µg/m^3. Further discussion with SCC highway team have been entered into to explore possibilities as to highway improvement at that specific junction.

4. Resource Implications

4.1 There are no staffing or financial resource implications arising from this report.

5. Legal Implications

5.1 There is an obligation to provide Defra with an annual status report on air quality. This has been achieved.

6. Equality Implications

6.1 There are no Equality Implications arising from this report.

7. Environmental implications

7.1 Monitoring and reporting on air quality issues indicated a slight increase in nitrogen dioxide levels within the Borough resulting in a negative impact for the local environment and for resident's health.

(To resolve)

Background papers

ASR report is at **Appendix 'A'** and online at https://www.runnymede.gov.uk/airquality

Appendix 'A'

Runnymede BOROUGH COUNCIL

Air Quality Annual Status Report (ASR) 2020

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date; February 2022

Information	Runnymede BC Details
Local Authority Officer	Duncan Carins.
Department	Environmental Health & Licensing.
Address	Civic Centre, Station Road, Addlestone, Surrey KT15 2AH
Telephone	01932 838383.
E-mail	duncan.carins@runnymede.gov.uk
Report Reference Number	RBC/ASR/2020
Date	**February 2022.**

Executive Summary: Air Quality in Our Area

- **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, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas[1,2].

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

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.

[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017
[2] Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Air quality appraisal: damage cost guidance, July 2020
[4] Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

The 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 back up to almost the objective level for nitrogen dioxide and hence the consideration of removing this area from the AQMA was postponed. However, in 2020 it has been discovered that in this covid hit year the levels have fallen and hence should these current levels be maintained next year then further consideration will be made to revoking this extended AQMA.

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 the Covid hit year of 2020, when compared to 2019 the level for 2020 have shown an **increase** of 0.9 μg/m^3 (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.

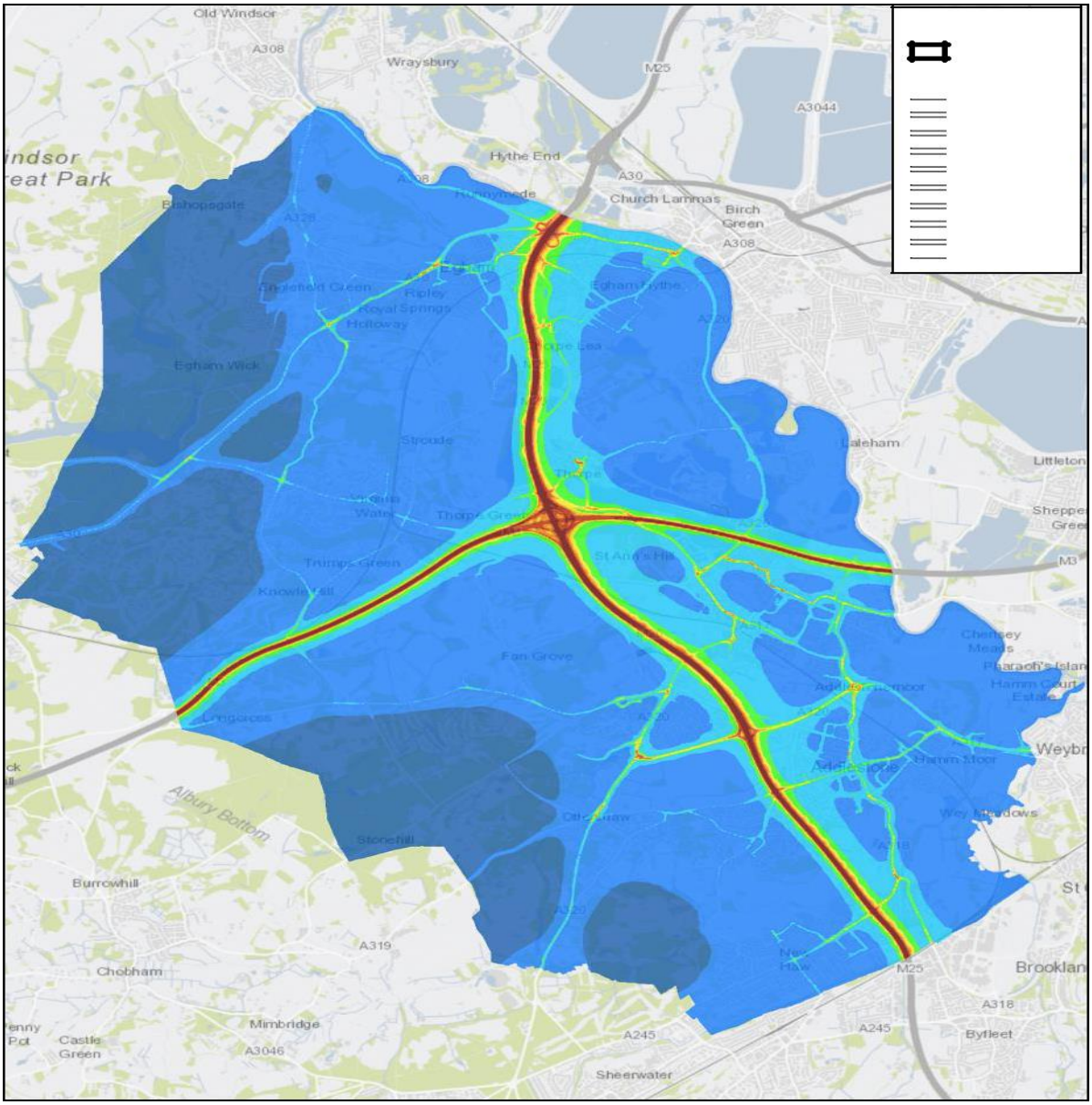
Picture 1 AQMA Addlestone traffic light junction – tube location

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 2020 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 across all of Surrey 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 however it is understood that there are fresh discussions starting to take place as to resurrecting expansions plans.

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).
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 and consultation over the finer detail is ongoing. The consented project could start in 2022.

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

4. 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. . Information is available from Surrey County Council here:https://news.surreycc.gov.uk/2021/06/10/major-river-thames-flood-alleviationproject-passes-key-milestone/ and the Environment Agency here:https://www.gov.uk/government/publications/river-thames-scheme

Executive Summary

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 2020. 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. Nitrogen dioxide is the main air pollutant of concern within the Borough since there are small areas within the Borough where the level of nitrogen dioxide levels exceed prescribed limits. The levels of nitrogen dioxide are in the main generated by vehicular transport and problems can occur in areas with high volumes of traffic
2. 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 with some notable exceptions.
3. When directly comparing the nitrogen dioxide levels of 2019 to 2020, the air quality situation within the Borough has overall seen an improvement in air quality year on year in so much that 26 out of the 30 monitoring points where comparable measures were taken these showed a decrease in levels of nitrogen dioxide. The other 4 sites where there is comparison to the previous year data showed slight deteriorations in air quality.
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, unfortunately 2019 showed levels at the facade of residential building which have risen back up towards the objective level. However, 2020 showed a fall in levels and if current levels are maintained then this AQMA will be revoked.
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 2020, 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. For 2020 yet again there has been a yearly increase of 0.9 µg/m^3 which therefore means that the levels of nitrogen dioxide at the façade of the nearest property are 49.2 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).

- **Actions to Improve Air Quality**

Whilst air quality has improved significantly in recent decades and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy[5] sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero[6] sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

- 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.

[5] Defra. Clean Air Strategy, 2019
[6] DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

- Approval of the Council's Local Plan.
- Bid to Defra in 2019 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 (see the 2018 and 2019 Annual Status Reports for further details). 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. The majority of the project was run in the 2018/19 academic year with further work in 2020.

Following the success of the Defra Grant Funded Surrey schools AQ programme, the Surrey Air Alliance worked with the Surrey County Council Safer Travel Team to continue the programme as a self-funded initiative by seven of the Surrey districts and boroughs, including Runnymede. This programme was for the continuance of three measures in the 2019/20 academic year: Theatre in Education, school workshops including air quality monitoring by pupils using diffusion tubes, and anti-idling events however due to the Covid -19 pandemic in 2020 it was not possible to undertake class workshops, air quality monitoring by pupils, school assemblies, anti-idling workshops or pedestrian and cycle training. The Surrey County Council Safer Travel Team continued to work with Global Action Plan who undertook the production of online materials and videos for use in the virtual classroom. Prior to the initial 2020 lockdown period Theatre in Education workshops were undertaken in several Primary Schools within the Borough. Post June 2020 online workshops and assemblies were delivered by Global Action Plan.

From September 2021 Surrey County Council created a temporary post for a dedicated Eco Schools Engagement Officer, to encourage and promote the Eco Schools agenda in Surrey and to increase the number of Green Flag schools within the county. Resources will be on offer to all schools across Surrey including Modeshift STARS Travel Plans, Bikeability cycle training, Golden Boot/ Green boot Challenge, Global Action Plan resources, Anti-Idling Equipment to loan to schools and there will be a return to school/ anti idling campaign in September 2021.

Surrey County Council have undertaken an analysis of Surrey Primary School travel and Secondary School travel based on surveys of parents/carers and pupils in Surrey undertaken in November and December 2020. The purpose of the analysis was to better understand the travel patterns of Surrey school populations in both a pre Covid-19 landscape and during the pandemic, to understand pinch points and barriers to active travel, and to understand what might incentivise parents to favour active travel methods. By having a better understanding of these factors Surrey County Council who are the Transport Authority within Spelthorne aim to reduce congestion, improve the roads around schools and confront barriers to active travel. 13095 survey responses were received for Primary Schools and 7253 responses were received from Secondary Schools. Runnymede Council Officers continue to work with Surrey County Council to give local knowledge and local air quality expertise.

In October 2020, the Surrey Air Alliance, applied for a Defra 2020/21 Air Quality Grant to fund a project to encourage a greater uptake of Electric Vehicles as Taxi's across 7 eligible Boroughs and Districts in Surrey. Taxis were selected as the target vehicles given the high mileage and multiple trips the vehicles make within Surreys Air Quality Management Areas and the nature of the journeys which take the vehicles into areas frequented by the members of our communities who are most sensitive to air pollution such as to hospitals, care facilities and schools. In March 2021, the project was awarded £256.686 from the Defra AQ Grant. It is since become evident that the proposed scheme which the grant was awarded for is not feasible and hence a very different scheme has been suggested. Runnymede did not support the original bid since it was evident that there were fundamental issues with the original scheme however Runnymede Council has expressed its desire to be part of the new proposal.

In November 2018, Surrey County Council adopted an Electric Vehicle Strategy setting out how SCC will support and promote the uptake of electric vehicles in Surrey. Surrey is an

area that is well-suited to adopting electric vehicles. The document will be key in ensuring a coordinated approach across the County and to place Surrey in the best possible position to bid for external funding for projects. In Autumn 2019 a funding award was made by the M3 Local Enterprise Partnership for a wide-ranging trial programme of on-street EV charging technologies by Surrey County Council in partnership with Spelthorne, Woking, Guildford and Waverley Borough Councils.

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Runnymede Council are supporting energy efficiency measures in fuel poor homes through the Energy Company Obligation (ECO) scheme. The Government launched the Green Homes Grant Local Authority Delivery Scheme in 2020 making funding available to support fuel poor and low energy inefficient homes. In partnership with other Surrey Boroughs and working with Action Surrey £6.2million was secured from the Local Authority Delivery Scheme, to support up to 600 fuel poor homes in Surrey. A second phase of funding under was released and another £3million was secured to support a further 300 homes in Surrey. This work is currently progressing having experienced significant delays due to the Covid-19 pandemic.

The National Clean Air Day was delayed until October 2020 due to the Covid19 pandemic. Following government restrictions promotions were predominantly pushed out via online platforms. The Surrey Air Alliance produced a short animation on good practice in using and maintaining domestic wood burning stoves.

- **Conclusions and Priorities**

Overall, 2020 was seen as a difficult year to quantify, mostly due to the covid and its implications on travelling. There were areas that showed encouraging signs that the levels of nitrogen dioxide within the Borough decreasing however it seems that there are still some areas of concern most notably within the AQMAs at Addlestone and its worrying trend of yearly increases in pollution levels even with covid related levels of transportation. 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. 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 day and Air Alert. Information such as the following; -

- Clean air day

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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Figures

Tables

Local Air Quality Management

This report provides an overview of air quality in Runnymede Borough Council during 2020. 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 are presented in **Table E.1**.

Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 12 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**. The table presents a description of the two AQMAs that are currently designated within Runnymede Borough Council **Appendix D: Map(s) of Monitoring Locations and AQMAs** provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO_2 annual mean;

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
AQMA M25	Declared 3/12/2001 Amended 20/10/2015	NO_2 annual mean	Entire length of M25 within the Borough and an extended area in December 2016 to include area in Egham near to railway crossing	Yes	<40µg/m^3	Greater than 40 ug/m3 at some locations	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	Yes	<40µg/m^3	49µg/m^3	April 2014	https://www.runnymede.gov.uk/CHttpHandler.ashx?id=5497&p=0

☒ **Runnymede BC confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **Runnymede BC confirm that all current AQAPs have been submitted to Defra.**

- **2.3Progress 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 continued into the 2019/20/21 academic years. 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.

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 aimed at primary school children and their parents 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 either in person or on line. 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.

- The introduction of a new Runnymede Air Quality Action Plan;-The old Action Plan is now some 7 year old and it is recommended that such documents are updated within such periods. Hence the updated Action Plan will set out measures to help Runnymede reduce concentrations of NO_2 in line with the Air Quality Standards objectives.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	AirAlert	Public Information	via other mechanisms	2018	On-going	LA's in Surrey	RBC	No	-	-	Implementation	Protection of public health by providing air quality information to vulnerable residents	Uptake by residents, Reduced hospital admissions	Publicised on Council's website and via Council's publication.	Hard to reach residents
2	Working In Partnership with neighbouring authorities -	Policy Guidance and Development Control	Regional Groups programmes to develop Area wide Strategies to reduce emissions and improve air quality	2015	On-going	LA's in Surrey	RBC	No	-	-	Implementation	Protection of public health Successful project implementation	Informed decision making	Officers actively participate in Surrey AQ Officers working group (Surrey Air Alliance),	
3	Surrey-wide Air Quality Modelling	Policy Guidance and	Other policy	2017	2020	LA's in Surrey	RBC	No	-	-	Completed	Scientific information to inform policy	Receipt of Surrey-wide air quality	Publication 2020–	
4	Runnymede Cycleways - upgrading existing routes	Transport Planning and Infrastructure	Cycle network LCWIP	2018	2021	Surrey County Council	partnership	No	-	-	Implementation	Improvement s to active travel infrastructure facilitating more non car journeys	Increased uptake in cycle journeys made.		
5	Land Use Planning	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2020	Ongoing	RBC	RBC	No	-	-	Planning	Reduced vehicle emissions, heat and energy plant emissions and construction dust emissions.	Measured Concentration of NO_2 at diffusion tube monitoring locations.	Policy EE2 requires consideration of air quality Assessments include construction phase impacts. Mitigation measures enforced by condition or requirement for Construction Environmental Management or Dust Management Plans..	
6	Alternatives to private vehicle at Thorpe Park	Alternatives to private vehicle use	Rail based Park & Ride	2005	Ongoing	Surrey County Council and Merlin	Thorpe Park	No	-	-	Implementation	Improved connectivity to Thorpe Park from the rail network.	Reduced congestion on Borough roads, , reduced emissions.	Rail & Ride service provided during theme park season.	
7	Encourage adoption minimum emissions standards into taxi licensing procedures	Promoting Low Emission Transport	Taxi Licensing conditions/incentives	2016	2020/21	Runnymede Borough Council	Reduce tailpipe emissions in AQMA							Air Quality officers representing the borough/district councils have suggested taxi licencing authorities for County wide policy on emissions	
8	Permitted premises	Environmental Permits	Other measure			Runnymede Borough							Ensuring that all permitted process operate within control limits		

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
			through permit systems & economic instruments			Council									
9	Air Quality Action Plan produced and approved by committee	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance		2014	Runnymede Borough Council				AQAP published		2014			County with 2 tier authority

- **$PM_{2.5}$ – 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 has taking the following measures to address $PM_{2.5}$:

  - The Council requires developments that trigger an Air Quality Assessment to assess the impact of construction dust emissions and the Local Planning Authority applies planning conditions to the developments requiring the developer to follow best practice guidance to mitigate dust impacts.
  - The Council will investigate and take enforcement action where open burning of commercial waste as a source of $PM_{2.5}$ is sufficiently evidenced.
  - The Council will investigate and take enforcement action where dust emissions can be sufficiently evidenced as to constitute a statutory nuisance.
- The Council has written to the Secretary of State for Business expressing concern surrounding small particulates in relation to the subsides that are provided by the Government for biomass fuel.
- Promoting low emission transport and provision of charging points and hydrogen refilling stations.●
- Surrey County Council's Transportation plans and strategies

It is well established that $PM_{2.5}$ exposure can have a significant impact on human health including premature mortality and the Public Health Outcomes Framework uses this parameter is an indicator of the fraction of mortality attributable to particulate air pollution. Although levels of particulate matter (PM_{10} and $PM_{2.5}$) within the Borough are within air quality objectives, it is recognised that action to reduce particulate emissions will benefit public health.

The air quality modelling works indicates that levels of $PM_{2.5}$ are likely to be higher closer to the motorway road network and the strategic road network..

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

This section sets out the monitoring undertaken within 2020 by Runnymede Borough Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2016 and 2020 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

Automatic Monitoring Sites

Runnymede Borough Council does not undertake automatic (continuous) monitoring within the Borough

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Non-Automatic Monitoring Sites

Runnymede Borough Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 32 sites during 2020 using diffusion tubes as supplied by Lambeth Scientific Services. . Error! Reference source not found. in Appendix A presents the details of the non-automatic sites.

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

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Error! Reference source not found. and **Table A.** in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2020 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in **Table B.1** includes distance corrected values, only where relevant.

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 2020, 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	49.2	49.2

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 2020 (bias corrected) to 2019 (bias corrected) the air quality situation within the Borough has overall seen an improvement in air quality year on year in so much that 26 out of the 30 monitoring points where comparable measures were taken these showed a decrease in levels of nitrogen dioxide. The other 4 sites where there is comparison to the previous year data showed slight deteriorations in air quality.

From the graphs produced in Appendix A, then these depict that, concentrations tend to show an 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.

3.2.2Particulate 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.

3.2.3Particulate 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

3.2.4Sulphur 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: Monitoring Results

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	Building new estate		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
RY71	185 Church Road adjacent to M25	Intermediate	X504209	Y164259	NO2	Y	23	20 (to M25)	N	2.4
RY72	Albany Place Egham adj to M25	intermediate	X501585	Y171489	NO2	Y	40	50 (to M25)	N	2.4

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 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2020(%) (2)	2016	2017	2018	2019	2020
RY1	Roadside	Diffusion Tube	100	67	39.5	29.8	29.1	30.8	24.3
RY4	Urban Background	Diffusion tube	100	75	22.7	17.8	20.2	19.4	14.8
RY8	Roadside	Diffusion Tube	100	67	24	20.5	22.5	20.5	17.4
RY14	Roadside	Diffusion Tube	100	75	**45.6**	**48.7**	**45.5**	**48.3**	**49.2**
RY19	Roadside	Diffusion Tube	100	75	33.7	31.5	32.3	32.1	28.4
RY21	Roadside	Diffusion Tube	100	75	35.9	31.5	33.4	34.3	24.7
RY23	Roadside	Diffusion Tube	100	75	**42.5**	33.8	**47.5**	**56.4**	**41.6**
RY25	Roadside	Diffusion Tube	100	67	30.6	28.5	33.5	31.6	25.4
RY26	Roadside	Diffusion Tube	100	67	**44**	36.7	36.5	**45.7**	38.2
RY33	intermediate	Diffusion Tube	100	n/a	30.6	34.1	34.5	n/a	n/a
RY34	Roadside	Diffusion Tube	100	n/a	24.9	22.7	n/a	n/a	n/a
RY39	Roadside	Diffusion Tube	100	58	25.7	23.9	28.4	26	22.5
RY40	Urban background	Diffusion Tube	100	75	16.9	16.5	18.1	14.9	12.7
RY43	Roadside	Diffusion Tube	100	75	35.2	26.7	36.9	38.4	29.4
RY44	Roadside	Diffusion Tube	100	n/a	29.3	25.9	n/a	n/a	n/a
RY45	Roadside	Diffusion Tube	100	68	33.3	32.5	36	37.7	39.4

RY52	Roadside	Diffusion Tube	100	n/a	30	31.6	n/a	n/a	n/a
RY53	Roadside	Diffusion Tube	100	75	**41.5**	32.2	35.8	**40.8**	34
RY54	Roadside	Diffusion Tube	100	68	33.4	28.1	29.6	32.4	26.9
RY55	Roadside	Diffusion Tube	100	75	34.1	28.7	32.7	34.4	26.3
RY56	Roadside	Diffusion Tube	100	75	**49.4**	**43**	**40.9**	**46**	33.4
RY57	Roadside	Diffusion Tube	100	75	30.8	**42**	30.5	35.3	24.3
RY58	Roadside	Diffusion Tube	100	68	31.7	34.9	52	**43.6**	**36.7**
RY59	Roadside	Diffusion Tube	100	75	34	30.3	34.7	33.8	36.3
RY60	Roadside	Diffusion Tube	100	68	36.3	28.9	33.3	32.9	28.3
RY61	Roadside	Diffusion Tube	100	75	32	30.1	30.1	29.1	23
RY62	Roadside	Diffusion Tube	100	75	32.7	31.3	32.8	32.1	27.7
RY63	Roadside	Diffusion Tube	100	75	22.5	30.8	21.6	25.5	20.7
RY64	Roadside	Diffusion Tube	100	75	25.5	22.4	24.1	26.5	16.5
RY65	Roadside	Diffusion Tube	100	75	26.1	22.4	26.7	32.2	21.5
RY66	Roadside	Diffusion Tube	100	n/a	28.7	22.1	26.2	n/a	n/a
RY67	Roadside	Diffusion Tube	100	68	n/a	n/a	n/a	**44.2**	**45.4**
RY68	Roadside	Diffusion Tube	100	75	n/a	n/a	n/a	38	27.8
RY69	Roadside	Diffusion Tube	100	75	**n/a**	**n/a**	**n/a**	32	26.4
RY70	Roadside	Diffusion Tube	100	75	**n/a**	**n/a**	**n/a**	25.1	19.3

RY71	intermediate	Diffusion Tube	100	68	n/a	n/a	n/a	n/a	25.6
RY72	intermediate	Diffusion Tube	100	75	n/a	n/a	n/a	n/a	18.2

☒**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.**

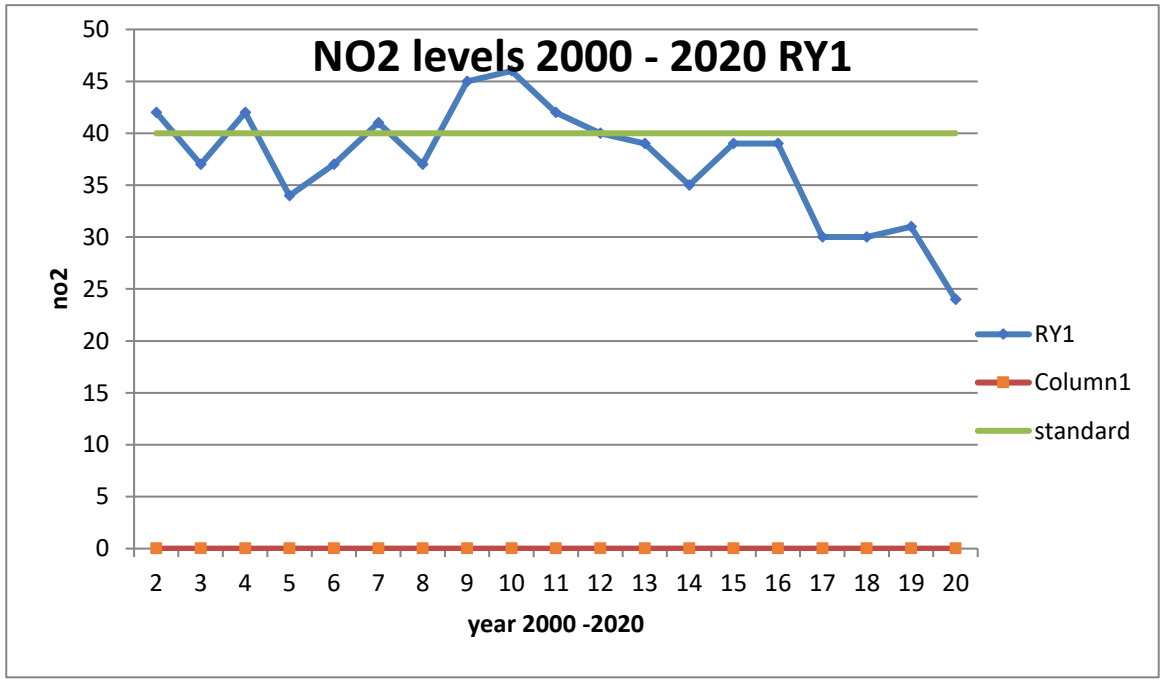
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(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%).

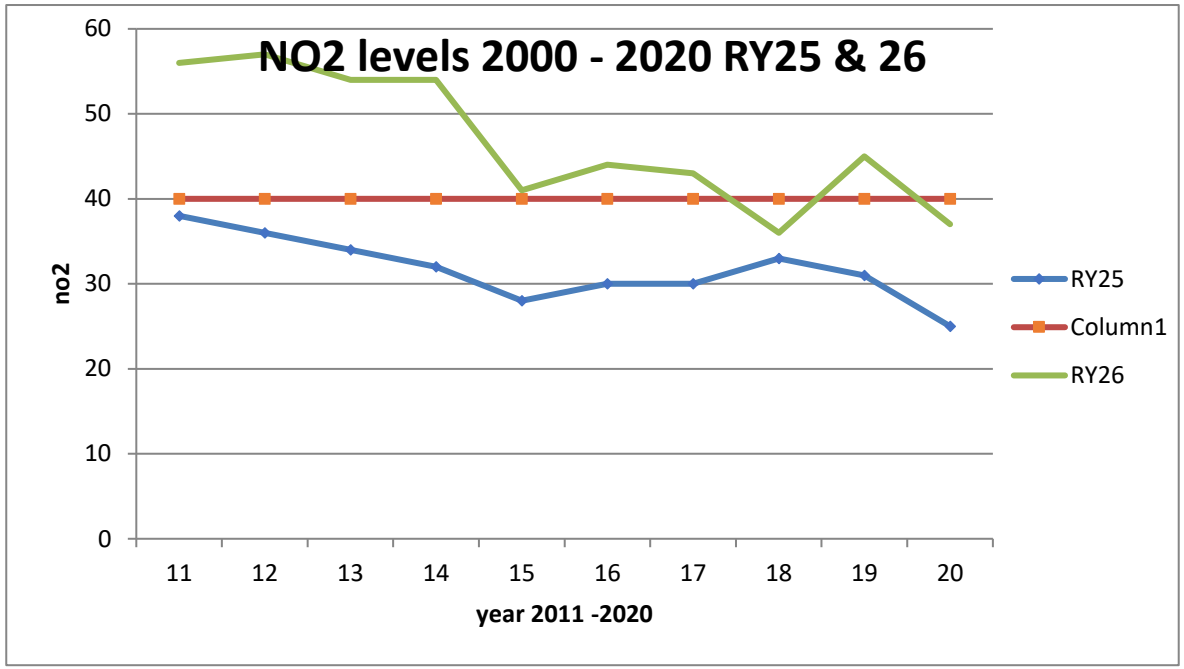
(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

Graph site RY 1 Addlestone centre (not corrected for distance (bias and annualised)).
Yr1 graph – showing 20 year trend.

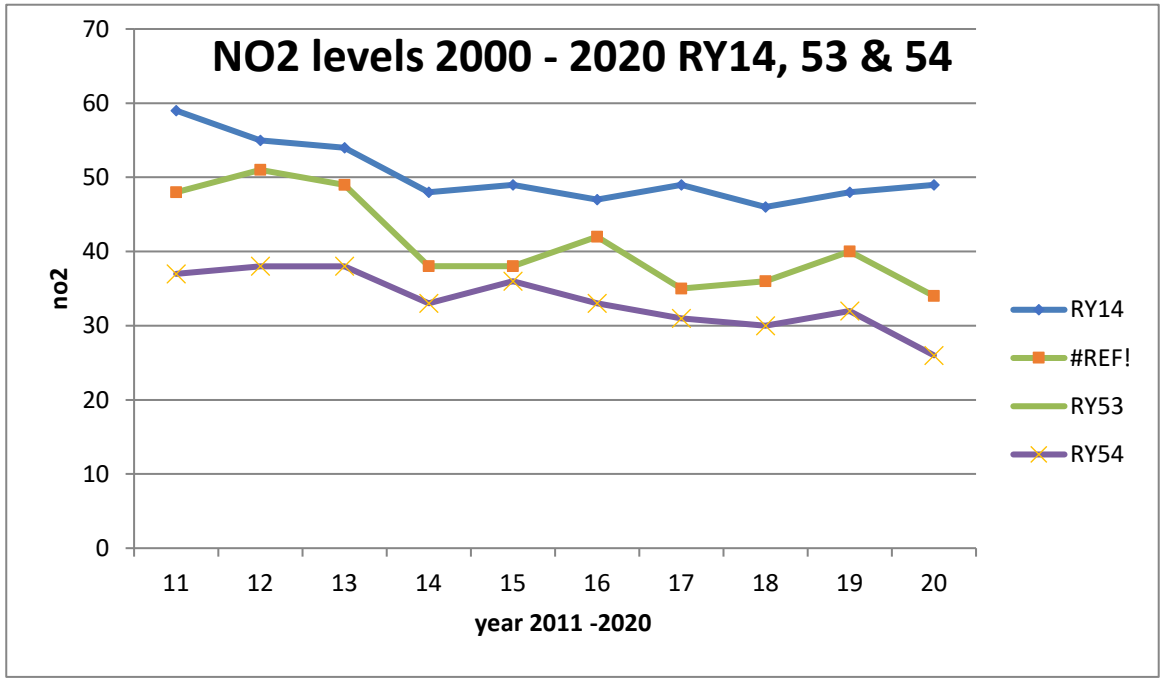


Graph sites RY25 and RY26;- Pooley Green level crossing AQMA(not corrected for distance(bias and annualised))



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

Ry14 ry53 ry54



Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO_2 2020 Diffusion Tube Results ($\mu g/m^3$)

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 (factor) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
RY1	36	23	ns	ns	ns	23	16	ns	28	22	27	26	25.1	24.3	
RY4	23	16	ns	ns	ns	11	10	12	17	13	25	13	15.6	14.8	
RY8	22	ns	ns	ns	ns	16	11	19	21	15	20	18	17.7	17.4	
RY14	58	44	ns	ns	ns	42	36	41	48	95	48	54	51.8	**49.2**	**49.2**
RY19	30	29	ns	ns	ns	27	26	32	27	35	34	29	29.9	28.4	
RY21	40	23	ns	ns	ns	19	18	27	29	28	31	19	26.0	24.7	
RY23	64	34	ns	ns	ns	40	28	40	49	41	55	43	43.8	**41.6**	29.1
RY25	36	43	ns	ns	ns	19	20	ns	26	24	28	18	26.75	25.8	
RY26	56	42	ns	ns	ns	32	36	ns	43	39	39	35	40.25	38.9	33.0
RY39	28	26	ns	ns	ns	20	14	19	18	23	ns	ns	21.1	22.5	
RY40	14	11	ns	ns	ns	10	9	12	14	12	16	23	13.4	12.7	
RY43	40	28	ns	ns	ns	24	29	36	30	35	38	19	31.0	29.4	
RY45	44	37	ns	ns	ns	38	ns	44	42	44	43	45	42.1	39.4	
RY53	39	37	ns	ns	ns	32	28	38	37	37	41	33	35.8	34.0	
RY54	37	33	ns	ns	ns	21	21	ns	30	29	27	25	27.8	26.9	
RY55	33	27	ns	ns	ns	27	20	28	28	27	31	28	27.7	26.3	
RY56	45	44	ns	ns	ns	33	29	37	30	38	36	35	36.3	34.4	
RY57	41	32	ns	ns	ns	22	15	23	27	25	27	18	25.6	24.3	
RY58	40	38	ns	ns	ns	40	34	39	40	39	36	41	38.6	36.7	24.7
RY59	40	62	ns	ns	ns	24	21	26	27	32	59	35	36.2	36.3	30.1
RY60	38	ns	ns	ns	ns	24	18	34	32	27	32	26	28.9	28.3	
RY61	30	22	ns	ns	ns	19	20	24	25	30	24	24	24.2	23.0	
RY62	43	30	ns	ns	ns	23	20	28	26	30	32	31	29.2	27.7	
RY63	32	23	ns	ns	ns	15	15	18	23	21	28	21	21.8	20.7	
RY64	20	21	ns	ns	ns	12	16	20	20	20	26	2	17.4	16.5	
RY65	35	26	ns	ns	ns	20	17	24	22	25	32	2	22.6	21.5	
RY 67	51	ns	ns	ns	ns	45	26	41	37	40	85	45	46.2	**45.4**	32.6
RY68	48	28	ns	ns	ns	27	23	29	29	27	38	15	29.3	27.8	
RY69	43	29	ns	ns	ns	21	19	26	28	27	33	24	27.8	26.4	
RY70	26	18	ns	ns	ns	16	14	21	22	21	25	20	20.3	19.3	

RY71	27	ns	ns	ns	ns	22	22	27	26	24	35	26	26.1	25.6	
RY72	22	15	ns	ns	ns	15	10	22	17	21	28	23	19.2	18.2	

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

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 .**

☒ **National bias adjustment factor used .**

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

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

- **New or Changed Sources Identified Within Runnymede Borough Council During 2020**

Runnymede Borough Council has not identified any new sources relating to air quality within the reporting year of 2020.

- **Additional Air Quality Works Undertaken by Runnymede Borough Council During 2020**

Runnymede Borough Council has not completed any additional works within the reporting year of 2020.

- **QA/QC of Diffusion Tube Monitoring**

Diffusion Tube Annualisation

Due to covid annualisation was required for several of the non-automatic monitoring sites, the sites requiring annualisation have been clearly defined along with details of the calculation method undertaken provided in

Table C.3.(see below)..

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2020 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides

guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Runnymede Borough Council have applied a national bias adjustment factor of 0.95 to the 2020 monitoring data.

A summary of bias adjustment factors used by Runnymede

Table C.1 – Bias Adjustment Factor

Runnymede's diffusion tubes are supplied by Lambeth Scientific Services Limited.

50% triethanolamine (TEA) solution is the absorbent used to prepare the tubes. ***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.

Monitoring has been completed in adherence with the 2020 Diffusion Tube Monitoring Calendar.

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. https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

The selection of bias correction factors plays an important part in relation to air quality. There can be some debate in the selection of the bias correction factors. The bias correction factors that have been used since 2000 are produced in table C.1

Table C.1 Diffusion Tube Bias Adjustment Factors, 2000-2020 (all figures from last round of the national spreadsheet average figures for Lambeth SS tubes).

Year	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
2020	0.95

Bias correction factor 2020 = 0.95

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 2020 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%).

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.

NO_2 Fall-off with Distance from the Road

In an ideal situation a local authority should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure can be estimated using the Diffusion Tube Data Processing

Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in table B.1 and table C2.

Distance correction was undertaken at all monitoring site where the annual mean concentration is greater than 36µg/m^3 and the monitoring site is not located at a point of relevant exposure.

Table C.2 NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

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

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to MON SITE Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
RY23	1	15	41.6	18.7	29.1	
RY26	2	9	38.2	23.4	33	
RY45	0.6	6	39.4	18.7	30.7	
RY58	0.2	16	36.7	18.7	24.7	

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to MON SITE Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
RY59	3	15	36.3	21.3	30.1	
RY67	3	18	45.2	18	32.6	

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

For diffusion tube annualisation the Annualisation Tool has been used copy of summary page below

Annualisation Summary

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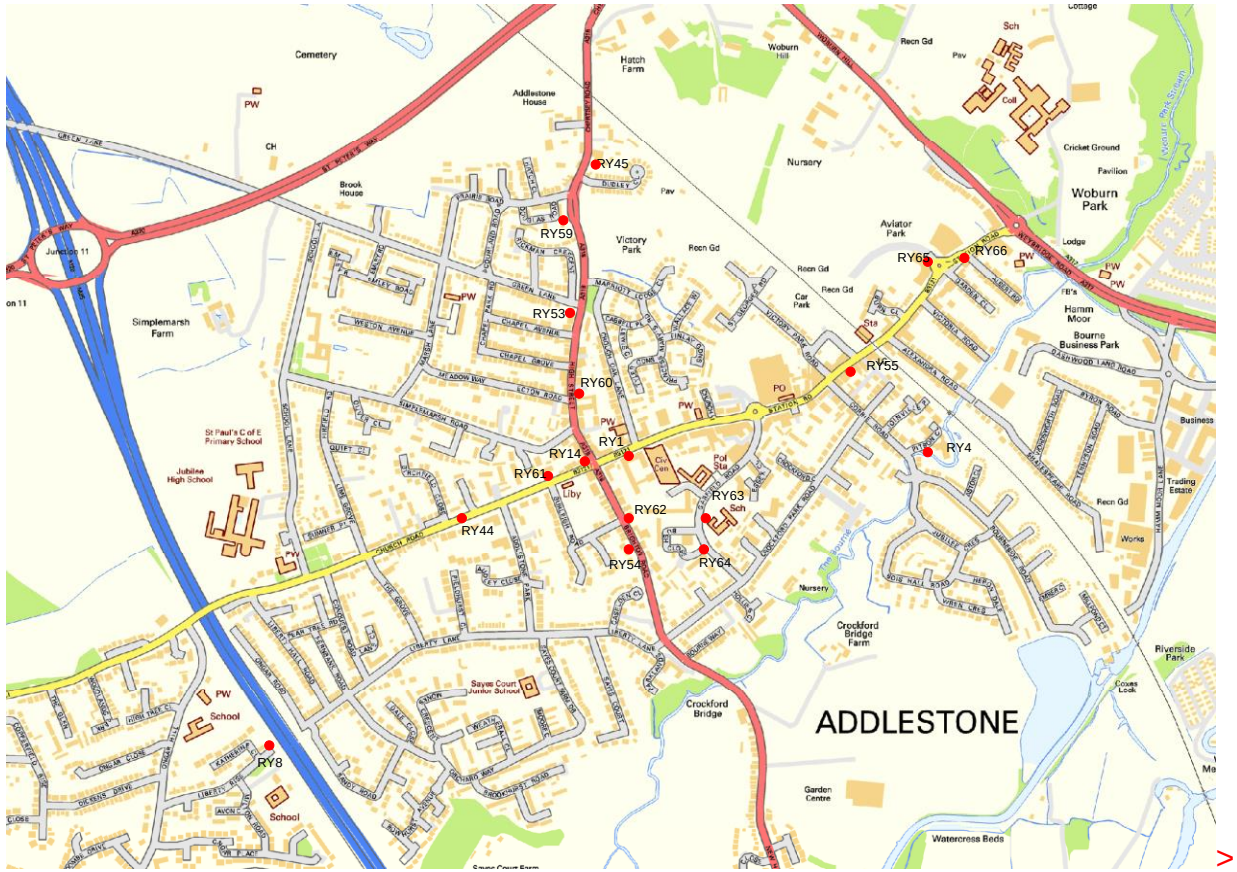
Diffusion Tube ID	Annualisation Factor 10.46613	Annualisation Factor hillingdon	Annualisation Factor Site 3 Name	Annualisation Factor Site 4 Name	Average Annualisation Factor	Raw Data Simple Annual Mean (µg/m3)	Annualised Data Simple Annual Mean (µg/m3)
RY1	1.0060	0.9263			0.9662	25.1	24.3
RY8	0.9914	0.9711			0.9812	17.8	17.4
RY25	1.0060	0.9263			0.9662	26.8	25.8
RY26	1.0060	0.9263			0.9662	40.3	38.9
RY39	1.1379	0.9918			1.0649	21.1	22.5
RY45	0.9660	0.9049			0.9354	42.1	39.4
RY54	1.0060	0.9263			0.9662	27.9	26.9
RY60	0.9914	0.9711			0.9812	28.9	28.3
RY 67	0.9914	0.9711			0.9812	46.3	45.4
RY71	0.9914	0.9711			0.9812	26.1	25.6

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

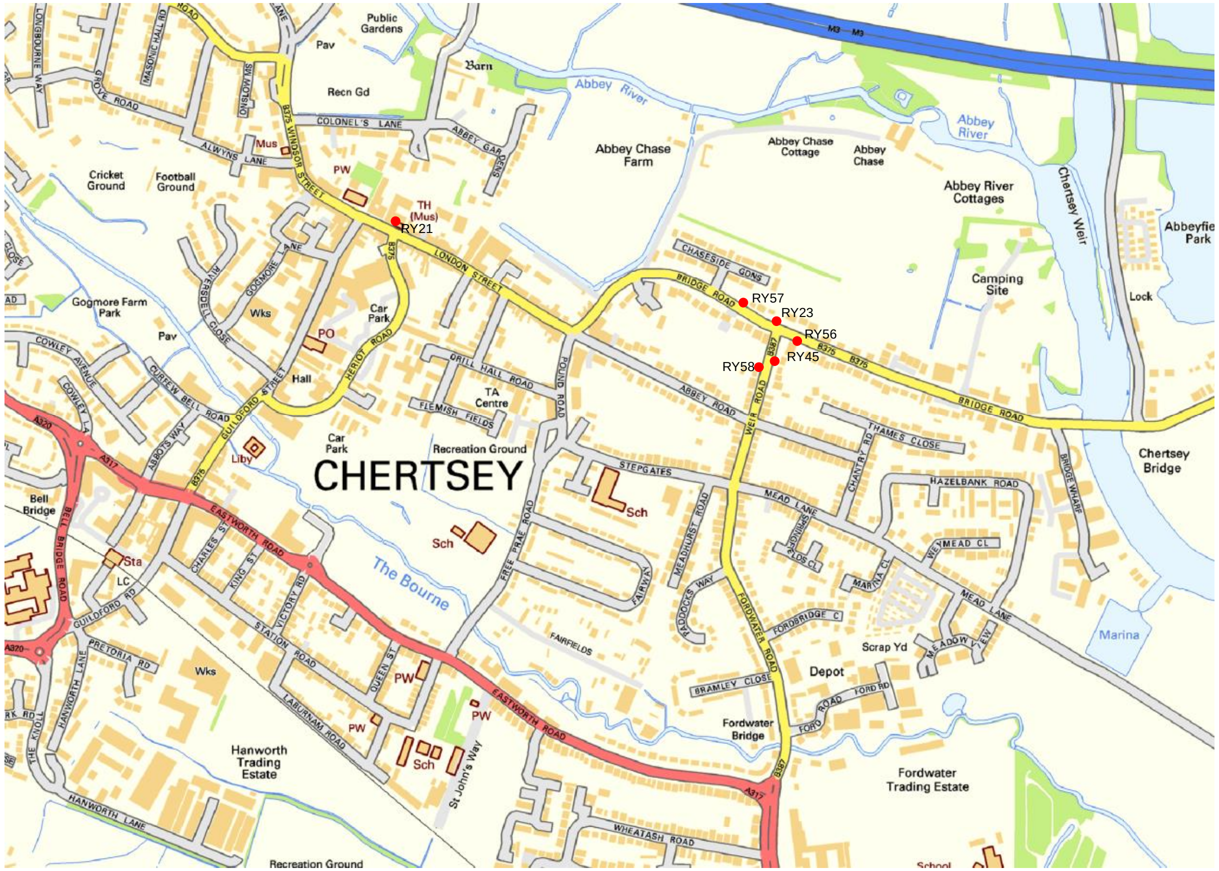
Figure D.1 – Map of Non-Automatic Monitoring Site

Map of monitoring points in and around Addlestone AQMA

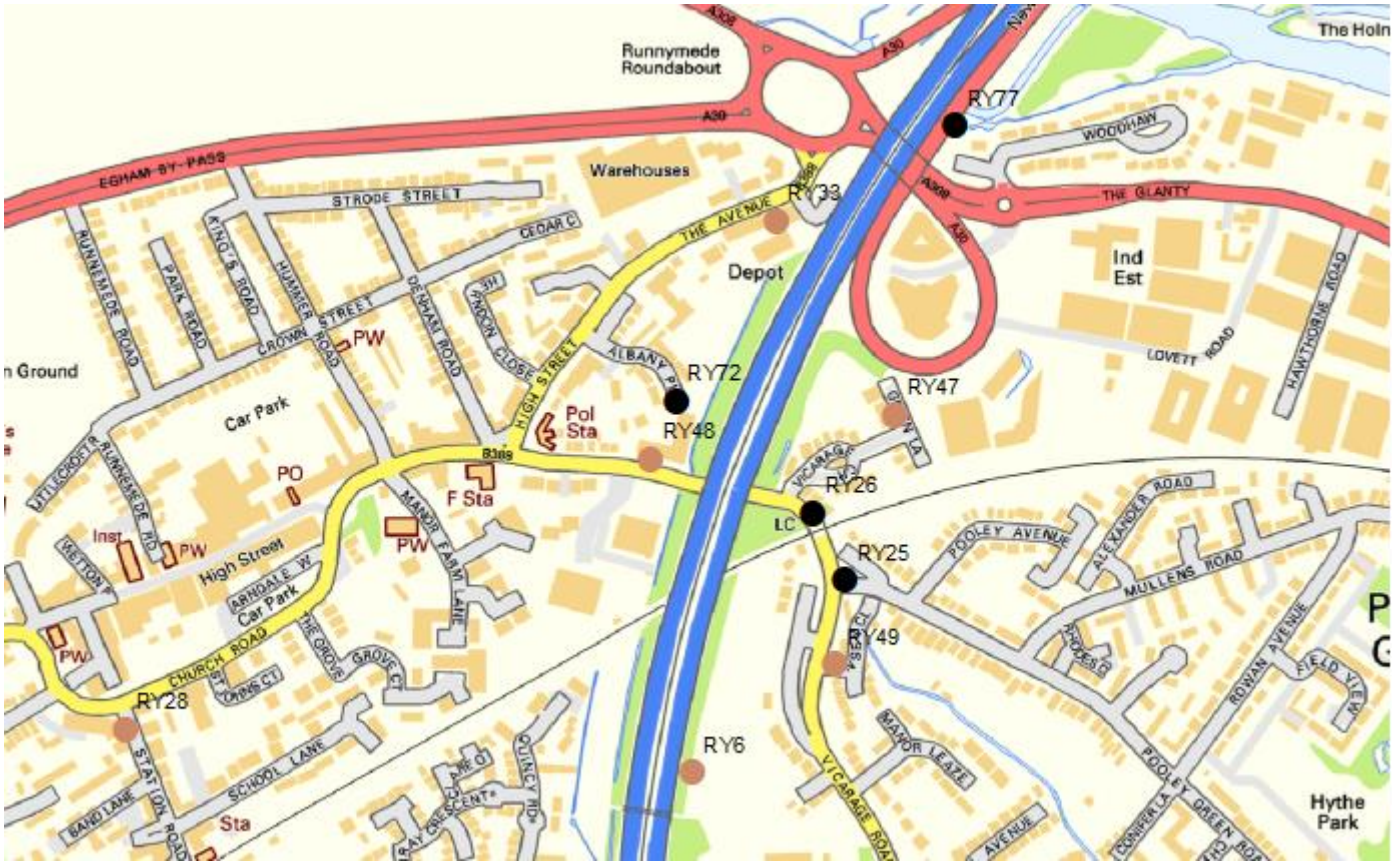
Monitoring sites located within Addlestone AQMA = RY1, RY14, RY54, RY60, RY62,



Map of monitoring locations at Weir Rd / Bridge Rd (watching brief)


RY21
RY57
RY23
RY56
RY45
RY58
CHERTSEY
Public Gardens
Recn Gd
Abbey River
Abbey Chase Farm
Abbey Chase Cottage
Abbey Chase
Abbey River Cottages
Chertsey Weir
Abbeyfie Park
Camping Site
Lock
Chertsey Bridge
Cricket Ground
Football Ground
Gogmore Farm Park
Car Park
TA Centre
Recreation Ground
Hall
Bell Bridge
Sch
The Bourne
Marina
Scrap Yd
Depot
Fordwater Bridge
Fordwater Trading Estate
Hanworth Trading Estate
Recreation Ground
COLONEL'S LANE
LONDON STREET
BRIDGE ROAD
ABBEY ROAD
GUILDFORD STREET
EASTWORTH ROAD
STEPGATES
WEIR ROAD
FORDWATER ROAD
MEAD LANE
HAZELBANK ROAD
THAMES CLOSE
WHEATASH ROAD
HANWORTH LANE
St John's Way

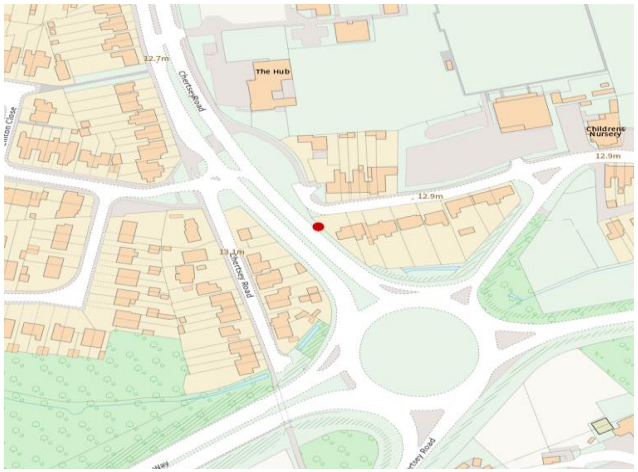
Monitoring sites located within M25(Egham) AQMA= RY25, RY26 ,RY72, RY77 (Current sites black circles sites where previous monitoring undertaken brown circles)



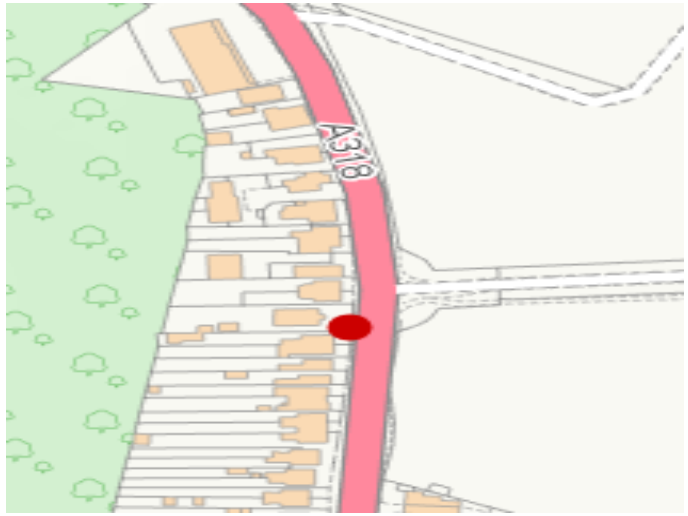
Monitoring locations added 2019

RY 67 Ottershaw Roundabout

RY68 Addlestonemoor



RY69 A318 New Haw Road

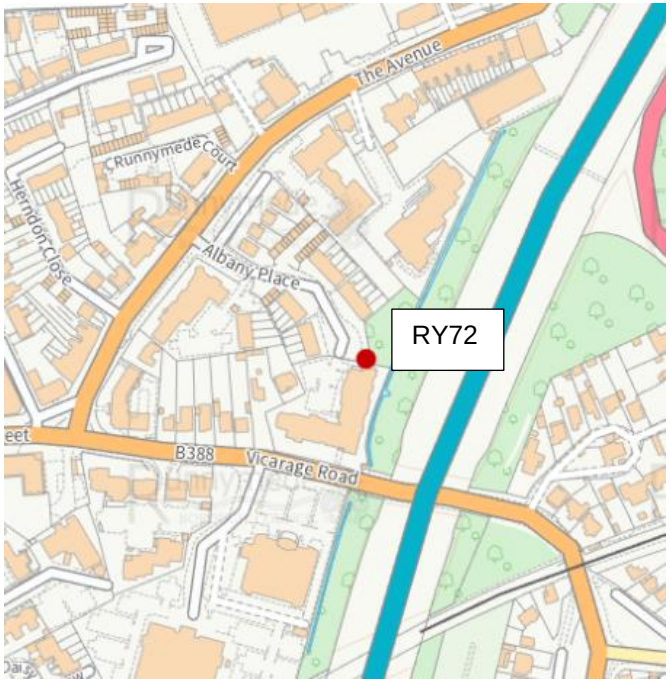


RY 70 Chertsey Lane

Monitoring locations added in 2020

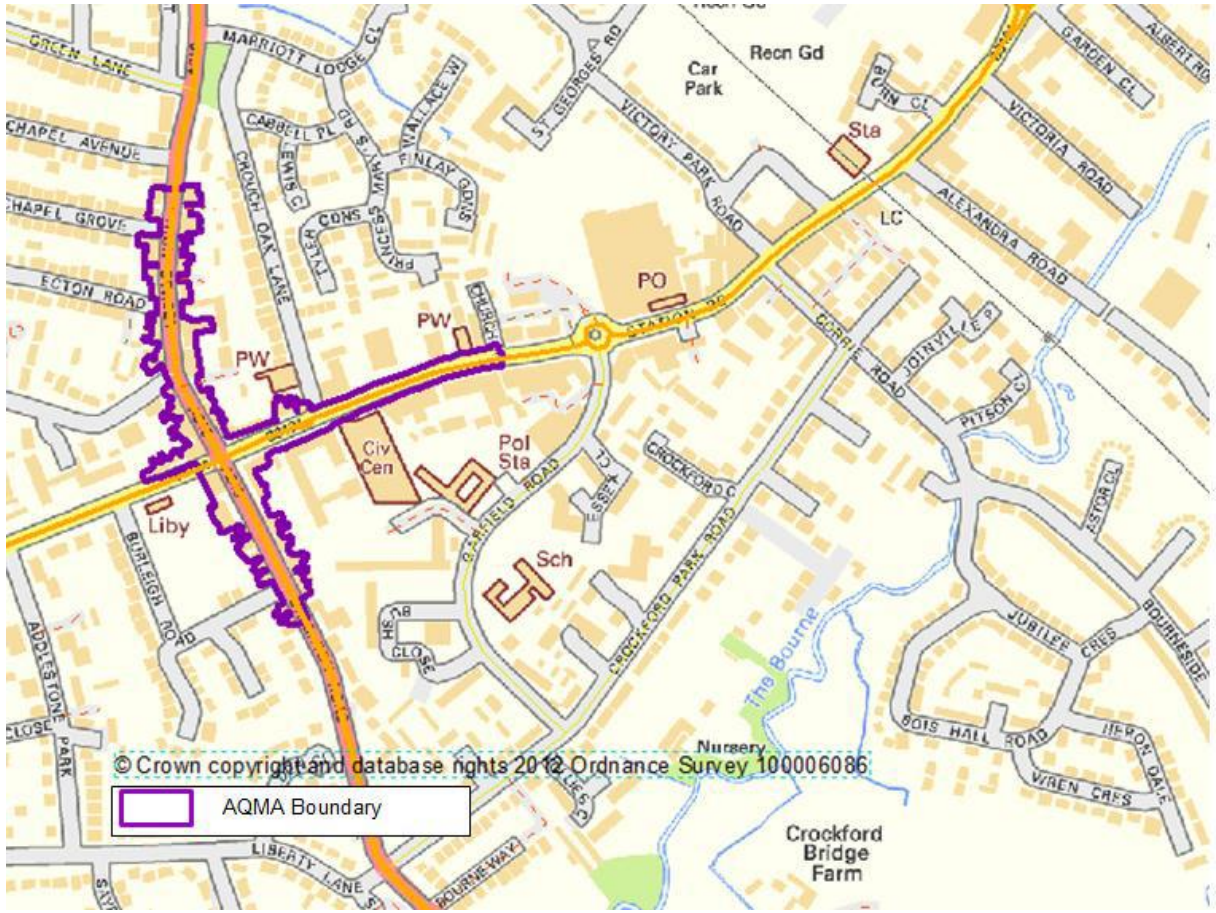
RY 71 185 Church Road

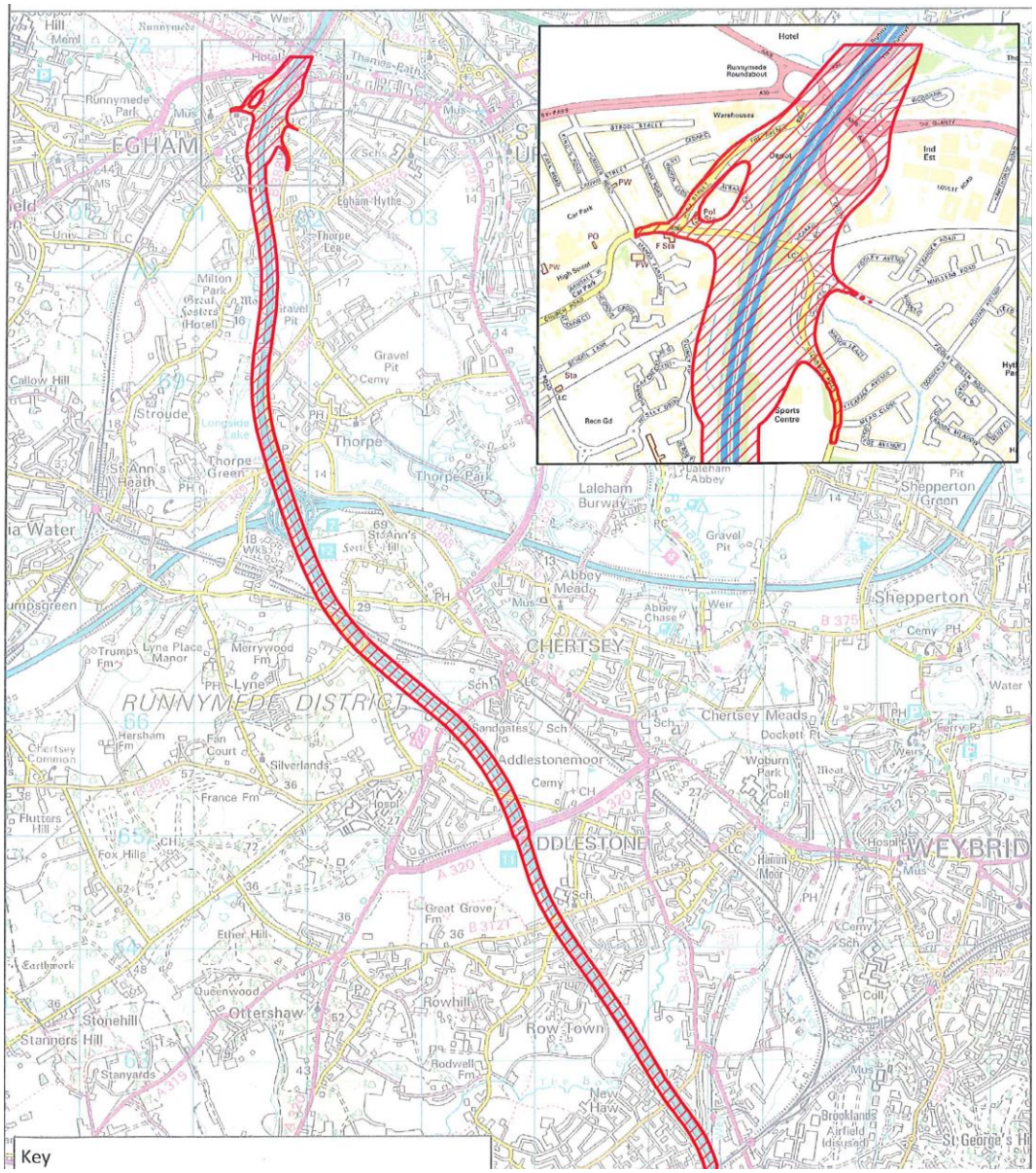
RY72 Albany Place Egham



Maps of AQMA within Runnymede BC

Map of Addlestone AQMA





M25 + Egham extension

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[7]

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

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

Appendix F: Impact of COVID-19 upon LAQM

COVID-19 has had a significant impact on society. Inevitably, COVID-19 has also had an impact on the environment, with implications to air quality at local, regional and national scales.

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO_2) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data[8] suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)[9] has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO_2 annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which represents an absolute reduction of between 10 to 20µg/m^3 if expressed relative to annual mean averages. During this period, changes in $PM_{2.5}$ concentrations were less marked

[8] Prime Minister's Office, COVID-19 briefing on the 31st of May 2020
[9] Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

than those of NO_2. $PM_{2.5}$ concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that $PM_{2.5}$ concentrations during the initial lockdown period are of the order 2 to 5µg/m^3 lower relative to those that would be expected under business-as-usual conditions.

As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

- **Impacts of COVID-19 on Air Quality within Runnymede Borough Council**

The pandemic has presented major barriers and constraints regarding air quality due to the fact that whatever limited officer resource that is allocated to air quality was quickly swept aside due the fact the Officers within the environmental health department spearheaded the Councils response in relation to the pandemic be that in offering welfare arrangements such as ensuring medicines and food parcels were supplied to vulnerable resident or the enforcement of the myriad of rules and regulations surrounding the lockdown requirements as well as direct involvement with public health teams on track and trace. Hence because of the duties and responsibilities places on officers then many routine items had to be postponed, be that food hygiene inspections (current backlog of inspections 425) or air quality duties. A decision was taken that it would not be appropriate to collect the diffusion tubes at a time when the direction is to work at home hence for a three-month period no diffusion tubes were.

It should also be recognised that during the pandemic the department suffered significant loss of staff since it appears that the pandemic was a catalyst for staff to reappraise their personal circumstances which resulted in 20% drop in staff levels Runnymede's Environmental Health department. There now appears to be severe difficulties in quickly finding suitably qualified staff to replace the staff that have left.

In terms of air quality, it seems that many commentators are advising of the large drop of in nitrogen dioxide levels. Data from the Department for Transport for Surrey indicates that the vehicle miles travelled in 2020 were considerably lower than any other year since the start of keeping available records 1993 due to the impact of the pandemic.

Based on this Department for Transport traffic data the greatest reduction in traffic was seen from the initial lockdown in March 2020 and throughout April 2020. The estimates of daily road traffic began to increase again from April returning to near to the February levels

in the late summer (July-August). The estimated traffic remained comparative to February 2020 until September 2020, when a slight reduction began because of the requirement to return to homeworking. Traffic estimates then gradually increased to the end of the year reaching close to 90% of the February 2020 estimates by the end of 2020. November 2020 with the second national lockdown there was a significant fall in traffic volumes.

The result of the monitoring shows a general reduction of NO_2 concentrations of at roadside and kerbside diffusion tube monitoring sites within the Borough during the various lockdown periods

However, it should be noted that there was a peculiar anomaly that even with such a drop in suggested road traffic volumes then the AQMA within Addlestone managed to increase its annual mean level.

During 2020, the aviation sector was significantly disrupted. Heathrow Airport Limited press releases revealed that passenger numbers in 2020 were only 28.3% of the passenger numbers in 2019. Cargo volumes remained relatively strong with only a reduction of 28.2%. Because of the loss of cargo space due to the lack of passenger flights there were over 19,000 cargo only flights in 2020, this including the use of converted passenger aircraft. Overall this resulted in a 57.8% reduction in aircraft movements at Heathrow Airport when compared to 2019 levels.

- **Opportunities Presented by COVID-19 upon LAQM within Runnymede Borough Council**

- The pandemic has presented several opportunities regarding air quality as follows.
    - The requirement to work from home and or self isolate throughout the pandemic will potentially look to consider working in various different or hybrid modes and its suggested will reduce the number of commuter journeys if workers travelling to their place of work less frequently.

- It is suspected that once there is a semblance of normality then many things will return to what was occurring before the pandemic struck and hence the opportunities may be seen as temporary ones.

Challenges and Constraints Imposed by COVID-19 upon LAQM within Runnymede

The pandemic has presented challenges and constraints regarding air quality as follows.

- The progress on the new Action Plan was delayed as Council resources were directed to the pandemic response. **High Impact**
- Advice regarding public transport in relation to Covid-19 does present the risk of a car led recovery. **High Impact**
- Online shopping has increased, particularly online grocery shopping. This may have increased the Light Duty Vehicle traffic, for example the number of delivery vans operating in the Borough. There are many large retailers operating on line services from within the Borough or very close to the boundary or the Borough for example Amazon and Ocado at Brooklands. **High Impact**

Table F 1 – Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: Large
Passive Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal	<25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019)	25-50% impact on normal number of available bias adjustment studies (2020 vs 2019)	>50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods
Passive Monitoring – Storage of Tubes	Tubes stored in accordance with laboratory guidance and analysed promptly.	Tubes stored for longer than normal but adhering to laboratory guidance	Tubes unable to be stored according to be laboratory guidance but analysed prior to expiry date	Tubes stored for so long that they were unable to be analysed prior to expiry date. Data unable to be used
AQAP – Measure Implementation	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP
AQAP – New AQAP Development	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by 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 or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

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