Reigate & Banstead
BOROUGH COUNCIL
Banstead | Horley | Redhill | Reigate

# 2021 Air Quality Annual Status Report (ASR)

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

May 2022

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| Report Reference number | J12734A_D1 |
| Date | 12th May 2022 |
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# Executive Summary: Air Quality in Our Area

## Air Quality in Reigate and Banstead 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[1,2].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

Reigate and Banstead Borough is located in South East England, within the county of Surrey. To the south lies Crawley Borough, to the east Tandridge District, to the west Mole Valley District and to the north Epsom and Ewell Borough and the London Boroughs of Croydon and Sutton. The M25 runs through the borough. The main air quality issues identified are in relation to road traffic, particularly within the towns of Reigate and Horley and close to major roads (the A23 Brighton Road, as it passes through the village of Hooley and Junction 8 of the M25).

There are currently nine AQMAs, of varying size, declared in the towns of Reigate, Horley, Redhill, Banstead, and in Merstham, Hooley, and along the M25 (see http://uk-air.defra.gov.uk/aqma/list for further information). A specific action plan is currently in place for the M25 and Horley, which includes emissions from Gatwick Airport, and is considered in this report. An action plan for road traffic across the borough is also being developed. The action plan is being informed by a Surrey wide air quality modelling project, which has provided an updated set of model results and source apportionment, on which to base the measures within the plan. Table 2.2 outlines both local and borough wide measures which are currently being implemented, with further measures being developed. Reigate and Banstead Borough Council is actively working to improve air quality in its area through the implementation of these measures, as well as implementation of their Local

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

Transport Plan and through working in partnership with Planning and Public Health colleagues.

The previous ASR report (2017 – 2019) concluded that, as a whole, there appears to be a downward trend in air pollution levels, i.e. improvement in air quality throughout Reigate and Banstead, particularly when evaluated over a number of years (graphs of 3-year rolling averages (included in section 3.3 of this report from 2004). It is difficult to continue to draw this conclusion for 2020, due to the effect of the COVID-19 pandemic. Nitrogen dioxide concentrations continue to be below the 1-hour mean at all real time sites. In 2020, there was one exceedance of the annual mean nitrogen dioxide objective, in AQMA 13.

All relevant objectives are met outside AQMAs. Measured concentrations of $PM_{10}$ and benzene continue to be below the relevant air quality objectives at all locations.

As a result of the ongoing improvements Reigate and Banstead Borough Council is planning on revoking the M25 AQMA.

## Actions to Improve Air Quality

Reigate and Banstead Borough Council has taken forward a number of measures during the reporting year of 2020 in pursuit of improving local air quality. Since the last ASR a number of measures have been completed, and the Council has continued to progress other measures to both directly improve the borough's air quality through improved traffic management and promotion of lower emissions transport, promotion of lower emission energy plant and on-going air quality monitoring, as well as to provide evidence for further air quality work.

Recently completed measures include the installation of a rapid charging point for electric vehicles within the borough, this project aims to evaluate the demand for rapid electric charging in the borough and how this changes with time and to understand the practicalities and costs of running such equipment. An ongoing complementary project is investigating demand and usage, and complete costings for fast chargers in council car parks. A study to examine the practicalities of linking UTC (traffic lights) to pollution monitoring, enabling gating of traffic outside of a street canyon when pollution levels are increasing has also been completed. Ongoing measures including maintaining the current taxi licensing scheme, encouraging EV

taxi uptake through the licensing process, promotion of cycling within schools, promotion of low NOx boilers, ground and air source heat pumps and discouragement of biomass and wood burning stoves. Collaborative work includes a number of Surrey wide projects with the Surrey Air Alliance, including a major project on engagement and behaviour change at 40 schools across Surrey and the production of borough wide mapping of $PM_{2.5}$ and $NO_2$ including a health impact assessment (published in April 2020). The mapping project is to be used as a policy tool to quantify changes in health impact of pollution on residents with time and inform County health funding priorities. Details of measures are included in Table 2.2.

## Conclusions and Priorities

Monitoring results for 2017 to 2019 show that air quality within Reigate and Banstead continued to exceed the annual mean nitrogen dioxide objective at locations within AQMA 3 and AQMA 13, the latter having a detailed network of diffusion tubes. Overall, there appears to be a downward trend in air quality throughout the borough since 2004. This downwards trend is also reflected in 2020 concentrations throughout the borough, however, due to the impact of COVID-19 on travel behaviour, 2020 concentrations should be treated with caution.

The borough wide air quality plan, which is currently in development, is already, to a large extent, being implemented through a number of measures outlined above.

## Local Engagement and How to get Involved

Members of the public can help improve air quality in Reigate and Banstead by travelling using sustainable transport options, such as walking, cycling, and using public transport. Car sharing is also a relatively easy way to reduce private car use (https://surrey.liftshare.com/), and, if members of the public are considering buying a car, consider a hybrid or electric vehicle as an alternative to a pure petrol or diesel vehicle.

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# 1 Local Air Quality Management

This report provides an overview of air quality in Reigate and Banstead Borough Council in 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 Reigate and Banstead Borough Council to improve air quality, and any progress that has been made.

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

# 2 Actions to Improve Air Quality 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 must 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.

The AQMAs declared by Reigate and Banstead Borough Council are shown in Figure 2.2.1 to Figure 2.2.7 and found in Table 2.1. Also, see Appendix D: Maps of Monitoring Locations and AQMAs, which provides a map of air quality monitoring locations in relation to the AQMAs.

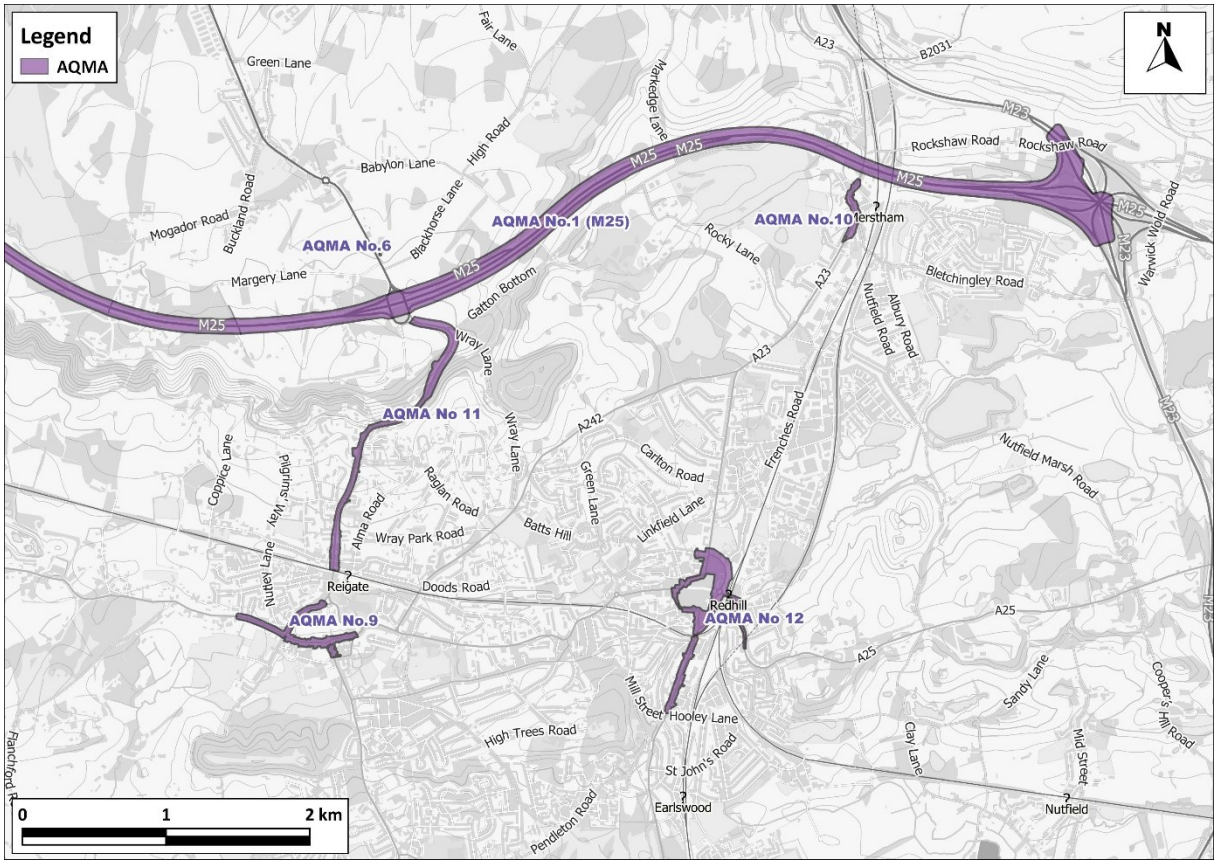


**Figure 2.2.1: AQMAs No.1 (M25), No. 6 (Blackhorse Lane), No.9 (Reigate High St / West St / Bell St), No. 10 (Merstham), No. 11 (Reigate Hill) and No. 12 (Redhill)**

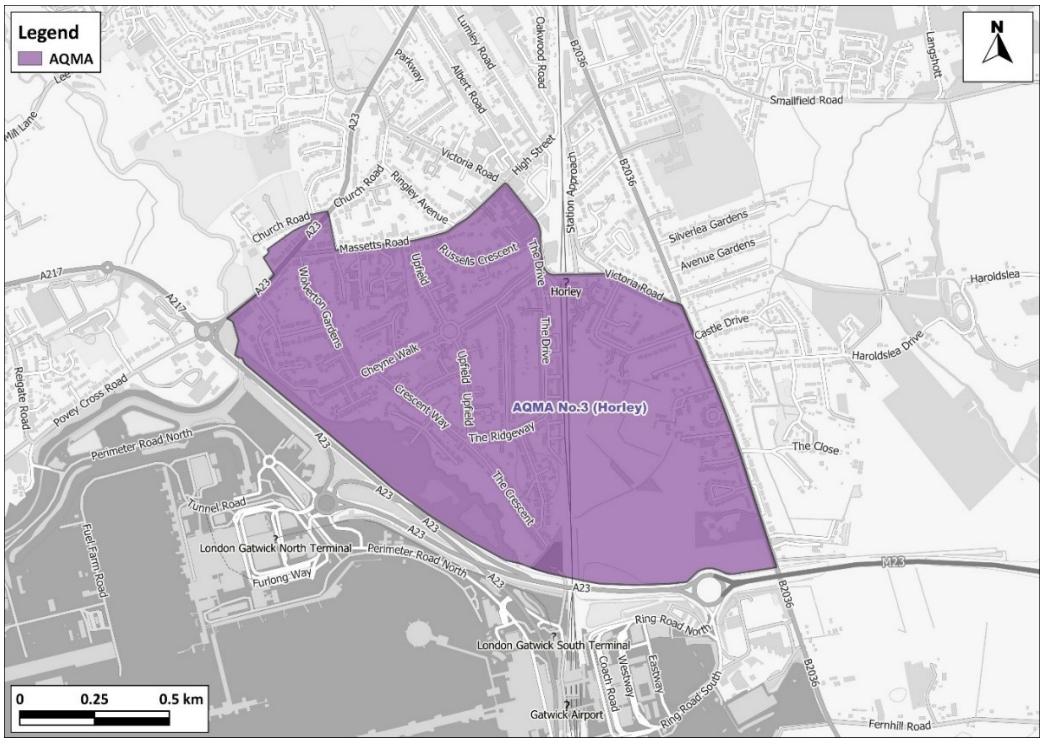


**Figure 2.2.2: AQMA No.3 (Horley)**

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**Figure 2.2.3: AQMAs No.1 (M25) and No. 6 (A217 / Blackhorse Lane)**

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**Figure 2.2.4: AQMA No. 8 (Drift Bridge)**

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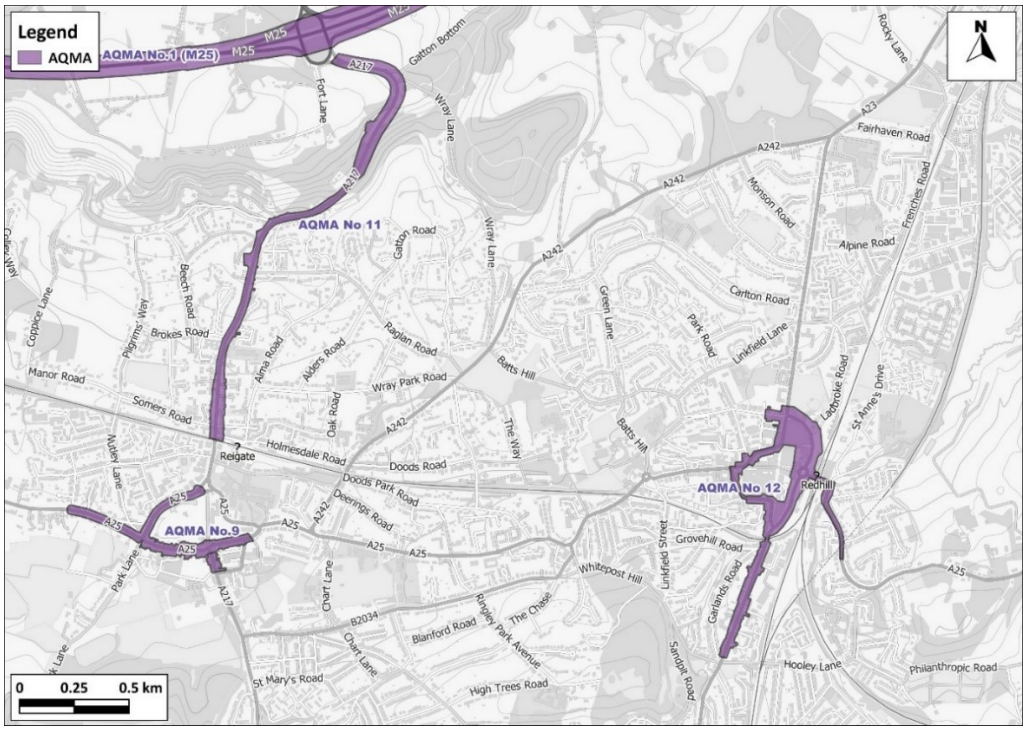


**Figure 2.2.5: AQMAs No. 1 (M25), No. 9 (Reigate High St / West St / Bell St), No. 11 (Reigate Hill) and No. 12 (Redhill)**

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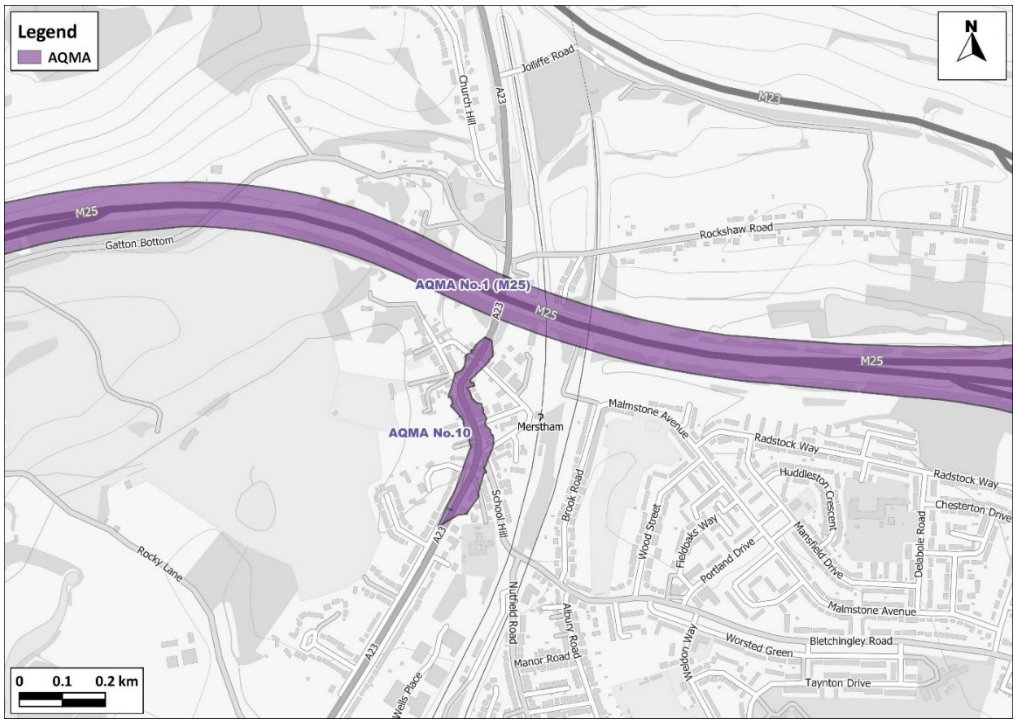


**Figure 2.2.6: AQMAs No. 1 (M25) and No. 10 (Merstham)**

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**Figure 2.2.7: AQMA No. 13 (Hooley)**

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## Table 2.1 – Declared Air Quality Management Areas [a]

| 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 |
| No. 1: M25 | 30/04/2002 | Nitrogen dioxide – annual mean | Merstham, South Merstham, Margery, Mogador, Walton on the Hill | The length of the M25 to a distance 30m either side of the carriageway between Junction 7 and the point to the west of Junction 8 where the motorway meets the borough boundary. | Yes: M25 | 43 | µg/m$^3$ | No exceedances measured | | As no current exceedances, under long term monitoring with a view to revocation.<br><br>Action Plan available at: https://www.reigate-banstead.gov.uk/downloads/file/1587/action_plan_for_the_m25_air_quality_management_area | | |
| No. 3: Horley | 30/04/2002 | Nitrogen dioxide – annual mean | Horley | An area of the south-west quadrant of Horley near to Gatwick airport. | Yes: Airport Way (A23) | 43 | µg/m$^3$ [b] | 43.5 at RB149 in 2019 | µg/m$^3$ | Air Quality Action Plan for the Non Airport sources of nitrogen dioxide within the Horley Air Quality Management Area | 2007 | Available at: http://www.reigate-banstead.gov.uk/downloads/file/1588/action_plan_for_non_airport_pollution_within_the_horley_air_quality_management_area_jan_2007 |

| 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 |
| No. 6: A217 / Blackhorse Lane | 24/05/2006 | Nitrogen dioxide – annual mean | Margery | An area encompassing the house "Highlands" near the junction of the A217 Brighton Road with Margery Lane and Blackhorse Lane | No | 63 | µg/m$^3$ | No measured exceedances<br><br>26.2 µg/m$^3$ at RB50 | As no current exceedances, under long term monitoring with a view to revocation. Revised borough wide measures in development – see measures 1 to 21 | | |
| No. 8: Drift Bridge | 05/11/2007 | Nitrogen dioxide – annual mean | Banstead | An area encompassing a couple of residential properties immediately to the north of the junction of the A240 (Reigate Road) and A2022 (Fir Tree Road). | No | 48 | µg/m$^3$ | No measured exceedances | As no current exceedances, under long term monitoring with a view to revocation. Revised borough wide measures in development – see measures 1 to 21 | | |

| 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 |
| No. 9: Reigate High St / West St / Bell St | 05/11/2007 | Nitrogen dioxide – annual mean | Reigate | An area encompassing Reigate High Street, the section of Church Street between the High Street and Bancroft Road, properties with a frontage to Bell Street (between the High Street and the southern end of Bancroft Road) and land and properties within 15m of either side of West Street (between High St and Evesham Rd) and along London Road | No | 47 | µg/m$^3$ | No measured exceedances | As no current exceedances, under long term monitoring with a view to revocation. Revised borough wide measures in development – see measures 1 to 21 | | |

| 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 |
| | | | | (between West St and Castlefield Rd). | | | | | | | |
| No. 10: Merstham | 30/04/2008 | Nitrogen dioxide – annual mean | Merstham | An area encompassing all properties facing on to part of the A23 in Merstham. The area commences on London Road South (south of the junction with School Hill) and extends north along Merstham High Street and then just to the north of the junction with Station Road North. | No | 52 | µg/m$^3$ | No measured exceedances | As no current exceedances, under long term monitoring with a view to revocation. Revised borough wide measures in development – see measures 1 to 21 | | |

| 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 |
| No. 11: Reigate Hill | 24/06/2011 | Nitrogen dioxide – annual mean | Reigate | Properties within the area of Reigate Hill covering either partially or entirely properties between the level crossing in Reigate Town and J8 of the M25. | No | 43 | µg/m$^3$ | No measured exceedances | As no current exceedances, under long term monitoring with a view to revocation. Revised borough wide measures in development – see measures 1 to 21 | | |
| No. 12: Redhill | 24/06/2011 | Nitrogen dioxide – annual mean | Redhill | Properties within the Redhill area covering either partially or entirely Cromwell Road, Queensway, A25 Redstone Hill between the junction with the A23 and the junction with Hillfield Road, A23 between | No | 48 | µg/m$^3$ | No measured exceedances | As no current exceedances, under long term monitoring with a view to revocation. Revised borough wide measures in development – see measures 1 to 21 | | |

| 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 |
| | | | | the junction of Hooley Lane and Mill St and the A23 junction with Gloucester Road. | | | | | | | | |
| No. 13: Hooley | 04/09/2013 | Nitrogen dioxide – annual mean | Hooley | Properties within the Hooley area covering either partially or entirely properties of the following roads, A23 Brighton Road, Star Lane and Church Lane | Yes: Brighton Road (A23) | 77 | µg/m$^3$ | 54.2 in 2019 | µg/m$^3$ | Revised borough wide measures in development – see measures 1 to 21. Highways England announced plans to widen the A23 in Hooley from one to two lanes in both directions with a narrowing to one lane within the village southbound. Consultation on the scheme ran into 2019, but no dispersion modelling was undertaken as part of the plans by Highway England. Work is ongoing in trying to fully engage with Highways England at this location | | |

[a] **Does not include revoked AQMAs**

☒ **Reigate and Banstead Borough Council confirm the information on UK-Air regarding their AQMAs is up to date**

## 2.1 Progress and Impact of Measures to address Air Quality in Reigate and Banstead Borough Council

Defra's appraisal of the 2017 - 2019 ASR confirmed that the conclusions were acceptable for all sources and pollutants. No exceedances of the annual mean nitrogen dioxide objective were observed in areas outside of the AQMAs, as well as for concentrations of particulate matter ($PM_{10}$) and benzene. Defra noted that there have been no attempts from the Council to review the status of AQMAs where no exceedances have been observed for an extended period.

To date, the authority has held back from revoking its AQMAs as based on past experience, if an AQMA is revoked too early, it may need to be redeclared.

Therefore, before considering the revocation of an AQMA the authority is looking for the following:

i) Clear evidence of a long-term downward trend in pollutant concentrations.

ii) Ideally concentrations of nitrogen dioxide below 32 µg/$m^3$ (20% below the standard) for a period of five years – to allow for any modelling / measurement uncertainties.

iii) No potential future plans for further development that may impact on air quality within the AQMA, e.g. increasing the number of road lanes, runways, or other developments that would lead to an increase in emissions of the pollutant of concern.

The council is also mindful of the fact that the health impacts of air pollution do not stop just because a legal limit / objective level has been met, and that there are health risks associated with a consistent low level of exposure[4], as recognised by the World Health Organisation (WHO) in setting an annual average air quality standard for nitrogen dioxide of 10 µg $m^3$.

In the event that an AQMA is revoked, monitoring will remain in place, though at some sites with a number of diffusion tubes, the number of monitoring locations may be reduced. This is to ensure ongoing compliance with current and any future air

[4] Chief Medical Officers Report 2017. Recommendations 5 and 7.

quality standards, to enable ongoing trend analysis, i.e. to ensure no deterioration in air quality, and to provide scientifically robust data for concerned local residents.

Once revoked, the authority expects to see continuing improvements in nitrogen dioxide concentrations, and the headroom created is not to be used by a specific industry sector to increase its pollution output.

Other issues identified within Defra's appraisal have been addressed in this report, including: detailed work on $PM_{2.5}$ and an in-depth and comprehensive discussion of trends in $NO_2$ concentrations has been included, good QA of monitoring data has continued. In relation to updating their Air Quality Action Plans, as no current exceedances in the majority of the AQMAs, Reigate and Banstead Borough Council is keeping long term monitoring under review with a view to revocation. In the AQMAs which have had recent exceedances (Hooley and Gatwick (Horley)) traffic levels and resulting pollutant concentrations will be reviewed annually to identify post-Covid levels to ascertain whether further specific local measures will be required. In the meantime, actions in Table 2.2 represent the current status of the emerging action plan.

Reigate and Banstead Borough Council has taken forward a number of direct measures during the reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

Since the last ASR a number of measures have been completed, and the Council has continued to progress other measures to both directly improve the borough's air quality through improved traffic management and promotion of lower emissions transport, promotion of lower emission energy plant and on-going air quality monitoring, as well as to provide evidence for further air quality work.

Recently completed measures include the installation of a rapid charging point for electric vehicles across the borough; this project aims to evaluate the demand for rapid electric charging in the borough and how this changes with time and to understand the practicalities and costs of running such equipment. An ongoing complementary project is investigating demand and usage, and complete costings for fast chargers in council car parks. Ongoing measures including maintaining the current taxi licensing scheme, encouraging EV uptake through the licensing process, promotion of cycling within schools, promotion of low NOx boilers, ground and air source heat pumps and

discouragement of biomass and wood burning stoves. Collaborative work includes a number of Surrey wide projects with the Surrey Air Alliance, including a major project on engagement and behaviour change at 40 schools across Surrey and the production of borough wide mapping of $PM_{2.5}$ and $NO_2$ including a health impact assessment (published in April 2020). The mapping project is to be used as a policy tool to quantify changes in health impact of pollution on residents with time and inform County health funding priorities. Details of measures are included in Table 2.2.

The principal challenges and barriers to implementation that Reigate and Banstead Borough Council anticipates facing relate in part to funding, and in relation to AQMA 13 (Hooley) certain partners not recognising the air quality issue associated with road traffic.

Progress on finalising the borough-wide Action Plan has been slower than expected due to delays (now resolved) to the Surrey wide modelling project and latterly in order to understand the long term impact of COVID and the transition to hybrid working. The modelling work (completed in April 2020) will be used to inform the borough-wide plan given the inclusion of health costs and more importantly updated source apportionment data that more accurately reflect the real-world performance of diesel vehicles. This will assist in better targeting measures to achieve the air quality objectives at the remaining locations of exceedance. Reigate and Banstead Borough Council has also been focussing on implementing measures, as described above, as well as working collaboratively with local public health practitioners, Surrey County Council and others, including Gatwick Airport.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Reigate and Banstead Borough Council anticipates that further additional measures, not yet prescribed, may be required in subsequent years to achieve compliance and enable the revocation of the remaining AQMAs.

Within the Hooley AQMA the London mayor's plan to extend the Ultra Low Emission Zone to the boundary of greater London in 2023 is likely to have a significant impact, as the AQMA is only 600 m from the Greater London boundary. As this AQMA is on a road managed by Highways England as part of the strategic road network, this move by TfL is likely to have a far bigger impact than anything possible at a local level. In addition, once announced, this is likely to lead to a shift to newer and cleaner vehicles

in the lead up to the scheme being implemented as people bring forward purchases of newer vehicles in anticipation of the change.

Within the Horley AQMA (near Gatwick) the airport is planning on significant expansion of the airport with aircraft movements up by 32 % from 285,000 (2019) to 378,000 by 2032, with the number of passengers increasing from 46.5 mppa in 2019 to 74 mppa in 2032, representing a 54% increase. Consequently, until the airport undertakes its final modelling work on the air quality impact of this expansion it is difficult to produce a revised action plan for this area, and the majority of any air quality measures would be best addressed via the DCO process rather than LAQM.

## Table 2.2 – Progress on Measures to Improve Air Quality Summary of Interim Actions for Borough wide road traffic action plan.

| Measure No. | Measure | Cost(a) | Air Quality Improvement (b) | Person / organisation responsible | Indicator | Start Date | Completion Date | Actual Completion Date / or Progress | Outcome | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Trial of Rapid Charging point (50 kWh) for electric vehicles. | Low to medium (1 to 2) | Variable, depending on uptake of electric vehicles. | RBBC – Env. Health | Steady growth in number of charges and kWh of electricity supplied. | Oct 2015 | Oct 2018<br><br>Extended to Oct 2025 (using new kit installed below) | On going.<br>Jan – Jun '16<br>total charges 37 (396.9 kWh)<br><br>Jan – June '17 total charges 217 (3366.2 kWh)<br><br>Jan – June '20 total charges 287 (5,269 kWh)<br><br>Jan – June 21 total charges 28 (404.7 kwh | Equipment installed and running. Data collection in progress. | Trial project to look at<br>- demand for rapid electric vehicle charging in the borough, and how this changes with time.<br>- to understand the practicalities and costs of running such equipment.<br><br>Ultimately aim is to see if one or more rapid chargers are needed in the borough. Note between 2017 and 2020 three new rapids opened in the vicinity of the current unit.<br><br>Low usage for 2021 due to site works. In period July to Sept 21 (3 months) 189 charges 3,171 kWh. |
| 2 | Replacement of existing rapid charger with a permanent installation | Low (1) | 1+ µg $m^{-3}$ (1) and much higher as fleet goes electric. | RBBC – Env. Health | Steady growth in number of charges and kWh of electricity supplied. | Nov 2019 | Jan 2021 (installation)<br><br>Then on going. | Funding secured and initial prep work completed March 2020. Final commissioning July 2021. | Installed and operational from July 2021. | Charger capable of delivering power at up to 920v (at 43kW) for the newer battery packs on the market. Unit has contactless payment rather than the need for apps. |
| 3 | Trial of destination charging of electric vehicles using fast (7 -22 kWh) chargers. | Low (1) | Variable, depending on uptake of electric vehicles. | RBBC – Env. Health | Installation of charge points.<br><br>Steady growth in number of charges and kWh of electricity supplied. | 2017 (Subject to funding) | End 2021 | Victoria Road car park (22kW) installed April 2018.<br><br>Reigate Town Hall installed Aug 2018.<br><br>Victoria Road Extension March 2020. | On going.<br><br>At all sites seeing increasing demand. | Complementary project to rapid charging project, to look at demand and usage pattern of destination chargers and gain practical experience of running such equipment including costs.<br><br>Demand at Victoria Road was such that additional two sockets installed March 2020. |
| 4 | Evaluation of fast charger installation costs (22kW) at the main council car parks<br>- Bell St / Bancroft Rd, Reigate<br>- High St Banstead<br>Gloucester Rd, Redhill | Low (1) to Medium (2) | 1+ µg $m^{-3}$ (1) and much higher as fleet goes electric. | RBBC – Env. Health | Completion of costings | Jan 2021 | Nov 2021 | On going – potential funding sources identified. | On going. | Desktop exercise so that have costings in place as funding becomes available.<br><br>Funding now agreed for installation of points in High St. Banstead car park in 2021/22. |
| 5 | Gridserve EV charging hub at Gatwick.<br>(Horley) | Low (1) to RBBC. | 1+ µg $m^{-3}$ (1) | RBBC – Env. Health | Completion of works and operational. | From 2020 | Late 2022 | On going | On going | Assist the airport with introductions to contacts / landowners associated with the mains grid connection.<br><br>Site will accommodate 36 chargers up to 350 kW. Important for both the Horley AQMA, and also encouraging EV uptake amongst the local taxi fleet who operate on the airport run as lack of charging has been an issue. |
| 6 | On street charge point provision - evaluation project. | Low (1) to RBBC. | 1+ µg $m^{-3}$ (1) | RBBC – Env. Health / Sustainability | Project completion | March 2021 | Late 2021 | On going – contractor appointed | On going | Work is to draw up a priority list of areas where charging is needed on street as there is no off road parking, and feasible to go on street. Work also to take account of socio economic factors so areas are not left behind, and to examine council car parks that might be prioritised for overnight charging by local residents with no off road or no charging point. |
| 7 | | Low (1) | | | i) Data collection | Jan 2018 | Jan 2020 | Complete Jan 2020. | Complete | |

| Measure No. | Measure | Cost(a) | Air Quality Improvement (b) | Person / organisation responsible | Indicator | Start Date | Completion Date | Actual Completion Date / or Progress | Outcome | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | Study to examine the practicalities of linking UTC (traffic lights) to pollution monitor enabling gating of traffic outside of street canyon when pollution levels are rising. | | Up to 1 µg $m^{-3}$ (1), and potentially higher. | RBBC – Env. Health / SCC (Tim Brown) | ii) Data analysis to determine if workable option.<br><br>iii) Scheme implementation | | | | | Trial project centred on Reigate High Street now complete. Work not taken forward as AQ objectives on High St now met. |
| 8 | Changes in Physical Road Layouts to improve air quality (Redhill). | High (3) | Up to 1 µg $m^{-3}$ (1), and potentially higher. | RBBC – Env. Health / Planning Policy | Road Layout changes and building development complete. | April 2013 | Final Phase starts 2020 | On track – changes in road layout complete.<br><br>Marketfield carpark redevelopment began in 2020 as part of the final phase of works and is on track (2021). | On going. | Aim of work is to ensure that residential housing built as part of redevelopment of Redhill town centre is set back from the road to minimise pollution, while existing housing benefits from moving traffic away from building facades via pavement widening schemes.<br><br>Nitrogen dioxide concentrations in Redhill AQMA now meeting relevant objectives. |
| 9 | Changes in Physical Road Layouts to improve air quality (Hooley). | Low (1) to Medium (2) | Up to 1 µg $m^{-3}$ (1), and potentially higher. | RBBC – Env. Health, HA. | i) Micro-simulation scoping study.<br><br>ii) implementation of scheme (if appropriate) | Jan 2018 subject to funding, and availability of suitable emissions data set. | Jan 2024 | Funding sources being sought.<br><br>Lack of up to date instantaneous emissions database identified as possible problem in 2017. However following discussion with Leeds Uni. and others (Dec 2019) workable data set now exists.<br><br>2018 and 2019 HE looking to make layout changes without AQ modelling. | On going | Work is to focus on the A23 Hooley AQMA. Aim of the microsimulation study is to look at changes in the physical road layout especially in the vicinity of the Star Lane Junction, with a view to reducing pollution levels by moving the road away from residential properties, along with the impact of speed changes following on from similar work at Drift Bridge Banstead.<br><br>Lack of funding to date (Apr 2021) remains an issue, plus unwillingness of HE / National Highways to consider a microsimulation approach. |
| 10 | 'High Quality Bus Corridors' (Bus priority routes) within borough. | Medium (2) to High (3) | Variable, depending on scheme, and buses operating on that route. | SCC / RBBC – Planning Policy (Peter Boarder, SCC Alison Houghton / David Ligertwood) | Completion of Redhill to Salfords route | April 2015 | April 2018 | April 2018 | Work focused on Redhill area now complete. | New sites will be introduced as funding becomes available and include:<br><br>- A217 north of M25 (Sutton / Epsom)<br>- A23 Merstham / Hooley (Croydon)<br>- A25 Reigate / Redhill (Dorking / Oxted).<br><br>To date (2021) no new funding has been secured for these projects. A review of the Reigate / Redhill bus priority strategy has been commissioned was due April 2021, but had not been delivered July 2021. |
| 11 | Introduction of Hydrogen Fuel Cell busses on Fastway 20 route. | High (3) | <0.1 µg $m^{-3}$ (3) at borough level. But potentially 0.1 to 1 µg $m^{-3}$ (2) at RB149. | Metrobus | Introduction of retrofitted buses. | April 2018 | April 2020 | Company supplying fuel cells went into administration but now back. Thus project delayed from April 2020 to April 2022 - otherwise on track. | On going. Buses are due for delivery June 2022. | Once complete 50 % of all bus movements past the RB149 site in the Horley AQMA will be via a hydrogen fuel cell bus. Project is a demonstrator for Metrobus - if operational savings as forecast remaining high frequency bus service past RB149 is likely to also be converted to $H_2$ fuel cell. |
| 12 | Electrification of the council's vehicle fleet. | High (3) | <0.1 µg $m^{-3}$ (3) at borough level. | RBBC – Fleet Anthony Hathaway / RBBC - Env Health Leon Hibbs | Change in fleet from Diesel / Petrol to Electric | April 2018 | Late 2028 – but will be a staged approach. | In Progress.<br>Pool cars replaced Oct 2019.<br><br>On site charging installed Sept 2020.<br><br>Van fleet replaced Mar 2021. | On going. | Fleets does around 450,000 miles annually - all on local road network.<br><br>Depot charging infrastructure phase I Sept 20.<br><br>Initial phase of van fleet due to be replaced 2020/21.<br><br>Progression to larger vans, more specialist fleet from 2022.<br><br>Initial bin lorry trials 2021/22.<br><br>Heavy EV charging infrastructure design 2022 (provisional). |

| Measure No. | Measure | Cost(a) | Air Quality Improvement (b) | Person / organisation responsible | Indicator | Start Date | Completion Date | Actual Completion Date / or Progress | Outcome | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Project for AQ and $CO_2$ savings. |
| 13 | Maintain current taxi licensing regime. | Low (1) | <0.1 µg $m^{-3}$ (3) | RBBC Licensing. | Taxi standards maintained | On going | On going | On going | On going | Current scheme means that entire taxi fleet is replaced every 9 years, with majority replaced within 7 years.<br><br>Important in wider AQ context as fleet has grown two fold since 2005 from c.500 to 907 (2020). |
| 14 | Encourage EV uptake via taxi licensing regime. | Low (1) | Variable depending on uptake. | RBBC Licensing. | No. of pure EVs in the taxi fleet. | Apr 2019 | On going | First phase of the work complete June 2020.<br><br>Planned event with Energy Saving trust to run though EV Taxi ownership and test drives Sept 2021. | On going | First phase of the work complete with agreement for 5 dedicated pure electric taxi licences.<br><br>Aim is to get EVs into the local fleet so drivers can assess the practical benefits and issues with EV taxi ownership and share with other drivers.<br><br>Initial work with energy saving trust due in Sept 2021. |
| 15 | EV Taxi trial project. | Low (1) (to RBBC) | <0.1 µg $m^{-3}$ (3) at borough level | SAA / SCC / RBBC for local aspect | No. of vehicles taken up by drivers | Apr 2022 | April 2024 | Funding in place (July 21) | On going | Final form of the project is still in discussion with DEFRA, but will essentially enable taxi drivers to lease an EV for private hire or Hackney carriage work at a discounted rate.<br><br>Seven boroughs in Surrey (including RBBC) involved. Project intended to help the 'early adopter' drivers so that they are able to feedback to other drivers the good and bad aspects of EV taxi ownership. |
| 16 | Continued Promotion of Surrey Car Share. | Low (1) (to RBBC) | <0.1 µg $m^{-3}$ (3) | Contact at SCC – Heidi Auld. | Steady Growth in number of participants. (1300 users at start of 2006). | On going | On going | On going.<br>Currently 4809 (2020) active members.<br>4979 (2017)<br>3500 (2011) | On going. | Measurable improvements in air quality unlikely in the short medium term unless significant increase in users.<br><br>Surrey scaled back promotion after closure of travelSMART (June 2017), thus possible explanation for limited growth to 2020. |
| 17 | Promotion of cycling within schools. | Low (1) (to RBBC) | <0.1 µg $m^{-3}$ (3) | Sustrans SE - Lalage Chatfield.<br><br>RBBC - Health & Wellbeing. Patrick Alexander. | Continuation of existing promotional work and training. | Sept 2015 | Subject to funding will be on going. | On going. | On going. | Existing programme is well established. Main need is to keep programme running as new children start and others leave.<br><br>Promotional work also done on cycling under the R&Be active scheme.<br><br>31 schools involved in the program in 2019 with between 2 and 6 days per school per term.<br><br>No work in 2020 due to COVID which has continued in early 2021. |
| 18 | Promotion of low NOx boilers, ground and air source heat pumps. | Low (1) | 0.1 to 1 µg$m^{-3}$ (2) | RBBC Leon Hibbs | Measure adopted by developers. | On going since June 2005 | On going. | On going. | On going. | Aim is to minimise growth in background pollution / reduce if possible. Increasingly seeing equipment specified in commercial sector, less so in small scale residential developments. |
| 19 | Discourage use of biomass / wood burning stoves. | Low (1) | <0.1 µg $m^{-3}$ (3) at borough level. | RBBC Leon Hibbs | No specific measure – impact conveyed via talks, planning, and calls regarding smoke control areas. | On going | On going. | On going. | On going. | Use of biomass in a commercial setting considered on merits i.e. setting / nearby receptors.<br><br>Surrey Air Alliance undertook a promotional campaign as part of clean air day in Oct 2020 on this topic. |
| 20 | Continue to Work with Surrey Air Alliance (SAA) on Surrey wide Projects. | Low (1) | Variable depending on project. | RBBC Leon Hibbs | Projects in progress | On going | On going. | On going. | On going. | Successful application under the DEFRA AQ grant programme 2020/21 for £256K for EV taxi project, which will be implemented from mid 2022. |

| Measure No. | Measure | Cost(a) | Air Quality Improvement (b) | Person / organisation responsible | Indicator | Start Date | Completion Date | Actual Completion Date / or Progress | Outcome | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 21 | Air Pollution Warning Service for vulnerable groups. | Low (1) | <0.1 µg $m^{-3}$ (3) | RBBC – Env. Health | Steady Growth in number of participants (up to a total of 1000 users). | Oct 2013 | Oct 2023 – though looking at continuing subject to funding. | On going.<br><br>Currently 1010 active users (April 2021)<br><br>978 active users (April 2020).<br><br>809 active users (April 2017). | On going. | Service for pollutants either compliant with LAQM standards ($PM_{10}$) or outside the regime ($O_3$), but which reach levels capable of having an acute health impact.<br><br>Founding East Surrey boroughs joined by Woking and Spelthorne in April 2015, and Runnymede in Dec 2019. |
| 22 | Production of borough wide mapping of $PM_{2.5}$ and $NO_2$ including health impact assessment. | Low (1) | N/A | RBBC – Env. Health | Production of map and health calculations | April 2017 | April 2018 | Complete.<br>Final draft Nov 2019.<br>Published April 2020. | Complete. | Mapping is to be used as a policy tool to quantify changes in health impact of pollution on residents with time, and inform county health funding priorities.<br><br>Also used to inform action planning, if appropriate, at a local level.<br><br>Modelling and mapping work will be refreshed in 2024. |
| 23 | Monitoring. | Low (1) to Medium (2) depending on time scale | N/A | RBBC<br>Leon Hibbs | Data capture > 90 %. | On going | On going | On going. | Data capture consistently in excess of 90 %. | Sites are important for examining trends in measured pollutant concentrations, compliance monitoring, and also model validation.<br><br>Ultrafine particulate monitoring campaign from June 2018 to Sept 2019 indicates significant impact from aviation on residents' exposure to ultrafine particles.<br><br>Replacement station for RG1 due to be installed in April 2022. |
| 24 | Ultrafine Particle monitoring within the vicinity of Gatwick Airport. | Medium (2) | N/A | RBBC<br>Leon Hibbs | Equipment installed and then data capture > 90 %. | Subject to funding. | Equipment would be installed within 12 months of funding. | Have approached DfT, DEFRA, and Gatwick for funding (Aug 2019). But all have been unable to fund the work, even for a specified period.<br><br>Discussions currently underway with academic partner on further ultrafines work. If agreed work likely to commence June 2022. | | Recent work (report in 2020 ASR) indicates residential exposure to ultrafine particles in the vicinity of Gatwick is significantly higher than that seen in a comparable residential setting. When winds are off airport concentrations are higher than those seen 1m from the roadside in central London despite the residential monitor being over 600 m from the airport.<br><br>Aim is to install equipment to monitor this emerging pollutant to characterise residential exposure (number and size distribution) and examine long term trends in exposure. |
| **Summary of Actions to date for the Non Airport Sources of Pollution within the Horley AQMA.** | | | | | | | | | | |
| 25 | Limit Road Transport Growth to 5.5 % by 2011 from 2004/5 levels. (Annex 9 LTP2). | High (3) | c.0.1 µg $m^{-3}$ (2) at RB59[(c)] | SCC<br>(via LTP 6). | For current traffic flows see note 'd' at end of table. | April 2006 | Original:<br>April 2011<br><br>Revised:<br>On going as monitoring measure | April 2011<br><br>Now on going. | Target met given growth to end of 2008, and recession. Note without recession projections suggest target would still have been met. | No current target on traffic growth in new Local transport plan (LTP3). New transport plan (LTP4) out for consultation (July to Oct 21) and will be implemented 2022.<br><br>However growth on roads monitored varies from -1.8 % A23 (2005-19), +8.6% M23 (2006 to 18), to +18% A217 (2004 to 19), although on the A217 2004 to 18 the increase was 6.4 %. Figures for 2020 only reflect COVID and not long term trends e.g. A217 traffic down by c.26% on 2019. |
| 26 | Fastway Route (Horley to Crawley via Gatwick). | High (3) | <0.1 µg $m^{-3}$ (3) | SCC / RBBC/ HTC/ GAL.<br>RBBC Carrie Burton | Reduction in peak hour traffic flow. | Jan 2006 | April 2011 (Phase 1)<br><br>April 2021 (Final NW sector) | Fastway 20 running in NE sector. Link road to NW sector due 2020 – but finally completed 2021. | Completed - April 2021. | Now complete. |
| 27 | Fastway Interchange at Horley Station. | High (3) | <0.1 µg $m^{-3}$ (3) at RB59 | SCC / RBBC for information contact Emily Mottram Policy & Regeneration (RBBC). | Project Completion | April 2006 | April 2011 | Completed (as of Sept 2008) | Interchange complete | Impact on air quality of this individual project is negligible. However this is one part of a wider project that should help minimise any growth in $NO_2$ concentrations from the new housing developments in Horley. |

| Measure No. | Measure | Cost(a) | Air Quality Improvement (b) | Person / organisation responsible | Indicator | Start Date | Completion Date | Actual Completion Date / or Progress | Outcome | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 28 | Bus Priority Lanes on A23 (p105 5.43 in LTP2). | Medium (2) | <0.1 µg $m^{-3}$ (3) at RB59 | SCC / RBBC contact Peter Boarder Policy & Regeneration (RBBC). David Ligertwood (SCC). | Project Completion | April 2015 | April 2018 | Funding secured for scheme centred on greater Redhill area reaching as far as Salfords, including improved foot and cycle path provision. (Now Complete - April 2018). | Works Complete. | LTP2 now superceded, this is variation on original scheme.<br><br>Minimal benefit to air quality within Horley AQMA, but potential benefit for current breach on A23 on edge of AQMA. |
| 29 | Extension of Fastway to Redhill and Reigate. (LTP2 aspiration). | High (3) | <0.1 µg $m^{-3}$ (3) at RB59 | SCC / RBBC contact Peter Boarder Policy & Regeneration. | Project Completion | Unknown | April 2015 (if implemented) | Extension to Redhill completed in 2008 | Route extended to Redhill only. | Extension of route to Reigate was still under consideration (2011), but subsequently dropped. Work now focused primarily on cycling improvements (2020). |
| 30 | Maintain current taxi licensing regime. | Low (1) | <0.1 µg $m^{-3}$ (3) at RB59 | RBBC Licensing. | Taxi standards maintained | On going | On going | On going | On going | Current scheme means that entire taxi fleet is replaced every 9 years. Minimal impact on Horley AQMA. However important in wider AQ context as fleet has grown two fold since 2005 from c.500 to 907 in 2020. Plans also underway to help drivers considering a switch to Electric vehicles (late 2021) see main air AQ measures document. |
| 31 | Public Service Agreement to reduce Congestion on the A217 and A23 (Horley Road). | Low (1) (to RBBC) | <0.1 µg $m^{-3}$ (3) at RB59 | SCC / RBBC/ ODPM. Contact Linden Mendes SCC. | 5 % reduction in average vehicle delay by March 2008. | March 2005 | March 2008 | March 2008 | The 5% reduction target was met, but due to traffic signal changes alone, and not signal changes and greater car sharing combined as originally intended. | Project had no bearing on Horley AQMA. Intention was to note reasons for success / failure of project, and bear these in mind – if appropriate – for future reference if congestion becomes a problem within the Horley AQMA.<br><br>The results suggest that there is still scope for improvements in traffic flows based on the timings of traffic signals. |
| 32 | Travel Plans (Work). (LTP / STP indicator TP2). | Low to medium (1 to 2) | <0.1 µg $m^{-3}$ (3) at RB59 | RBBC / Local employers Contact Lynne Howard (SCC). | 4 to 5 plans to be completed per annum. | On going | On going | Scheme to closed in 2017 due to closure of TravelSMART at Surrey county council. | Scheme closed in 2017. Travel planning now addressed solely through planning. | Most major employers in Horley had a travel plan in place so impact on AQMA itself was limited. Horley NW sector housing development have completed travel plan for the development (2016), money for actions in plan will be phased over next 10 years. |
| 33 | Travel Plans (Schools) (LTP / STP indicator TP1). | Low to medium (1 to 2) | <0.1 µg $m^{-3}$ (3) at RB59 | SCC - (Lynne Howard / Rebecca Harrison). | All Horley schools have, and have implemented, a travel plan. | On going | On going | On going. Concern at number of schools that appear not to have a current plan. | Note impact from scheme on concentrations within AQMA is very limited. | SCC now have an updated system that requires the online submission of travel plans. Horley Infants plan shows a reduction in pupil car use over the past 3 years (2020). However 8 of the 11 schools at present (August 2021) do not have an up to date plan. This is up on 2020 (5) with further plans expiring. |
| 34 | Continued Promotion of Surrey Car Share. | Low (1) (to RBBC) | <0.1 µg $m^{-3}$ (3) at RB59 | Contact at SCC – Heidi Auld | Steady Growth in number of participants. (1300 users at start of 2006). | On going | On going | On going.<br>Currently (2020) 4,807 active members, (2017) 4979 compared to 3500 (2011). | Surrey scaled back promotion after closure of travelSMART (June 2017), thus possible explanation for limited growth to 2020. | Measurable improvements in air quality unlikely in the short term, minimal if any impact on air quality within the AQMA, but possible wider AQ benefits.<br><br>Trial of electric vehicles as part of the car share scheme in Guildford is still ongoing. |
| 35 | Implementation of Council Travel Plan. | Low to medium (1 to 2) | <0.1 µg $m^{-3}$ (3) at RB59 | RBBC Raymond Dill Policy & Regeneration. | Implementation of plan. | Jan 2006 | Implemented end 2008 | Complete (Q3, 2009). | Work place parking charges introduced for all. Pool cars introduced, plus other incentives to use public transport or cycle. | Implementation allows council to encourage other employers to implement their own plans, with possible benefits for Horley, especially with airport travel plan. |
| 36 | Incorporation of Sustainable | Low (1) to RBBC, | | RBBC | Incorporation of policy | Current | Jan 2007 | Complete. | Document now included. | |

| Measure No. | Measure | Cost(a) | Air Quality Improvement (b) | Person / organisation responsible | Indicator | Start Date | Completion Date | Actual Completion Date / or Progress | Outcome | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | energy policy into local development framework document. | possibly Medium (2) to High (3) to developers. | Variable, depending on scheme. | Policy & Regeneration Raymond Dill. | | | | | | Benefit to Horley AQMA marginal in short term. However, may help reduce growth in background $NO_2$ concentrations from new developments in area, which would be of benefit. |
| 37 | Horley Design Guide:<br>- Low $NO_x$ boilers.<br>- Minimum of 10 % of energy from renewable sources.<br>- Home Zone. | Low (1) | <0.1 µg $m^{-3}$ (3) at RB59 | RBBC Leon Hibbs | Measure adopted by developers. | June 2005 | Jan 2007 (1st phase)<br>Jan 2025 (Final) | Initial stage complete Jan 2007.<br>1st phase of NW sector started 2015 and on going 2017. | Measure is now in the design guide. | Aim is to minimise growth in background, but will not reduce existing pollution. |
| 38 | | Medium (2) | <0.1 µg $m^{-3}$ (3) at RB59, but potential increase for local 'hot spots' depending on source. | RBBC Policy & Regeneration Raymond Dill. | Scheme up and running. | On going | Jan 2007 for local development framework policy | Initial stage complete Jan 2007. | Measure now in design guide. | Measure adopted by developers (2010/11). Aim is to use a mix of solar heating and air source heat pumps, so no risk of NOx 'hot spots'. |
| 39 | | Medium (2) | <0.1 µg $m^{-3}$ (3) at RB59 | RBBC Planning | New developments completed as home zones. | On going | Jan 2007 | Jan 2007. | Policy in design guide. | Impact on air quality potentially low. However, may encourage walking over short distances and avoid car use. |
| 40 | Monitoring. | Low (1) to Medium (2) depending on time scale | N/A | RBBC Leon Hibbs | Data capture > 90 %. | On going | On going | On going. | Data capture consistently in excess of 90 %. | Sites are important for examining trends in measured pollutant concentrations, compliance monitoring, and also model validation.<br>Significant reduction in $NO_2$ seen across Horley AQMA (2005 to 2019) driven by non airport sources, which masks an underlying upward trend from airport sources 2012 – 2016. Current breaches limited to A23 on edge of AQMA (2019) but as might be expected significant falls in 2020 with levels typically 40 % lower where aviation is a significant contribution. |
| 41 | Local Forums / Policy:<br>- AQ Working Group with GAL.<br>- New section 106 agreement and sustainable development strategy. | Low (1) to RBBC | 1 µg $m^{-3}$ (1) at RB59 | RBBC Pollution Team | No specific measure, but will include Gatwick AQ plan implemented, on going predictive modelling work. | On going | On going | Meetings are on going. | On going | AQ work on use of the emergency runway / DCO process will resume in Sept 2021. With extra runway 378,000 movements by 2032 compared to 284,987 in 2019. (c.32 % increase).<br>Progress on the airport's action plan is subject to quarterly monitoring - all measures of note are currently on track (April 2021).<br>However monitoring suggests airport $NO_2$ contribution is back to where it was 15 years ago (2019), and up considerably on 2012. |
| 42 | | Low (1) to RBBC | 1 µg $m^{-3}$ (1) at RB59 | RBBC Planning and Env. Health. Others: GAJA, GOG, GATCOM. | Agreement and Implementation of new agreement and strategy. | On going | End 2018 | S106 agreement rolled forward to 2024. (provisional currently in discussion with GAL). | On going | Only if the measures in the agreement are completed, and the outcome of any studies in the agreement acted upon, will any improvement in air quality occur. Have seen improvements in AQ over past 10 years, but none due to airport itself by 2016. There were improvements to 2019 that bring the airport contribution back to levels seen 15 years ago. |
| 43 | National / EU measures:<br>- Tighter vehicle emissions standards.<br>- Tighter aircraft engine emissions standards. | Low (1) to RBBC, but very high (3+) to industry. | Up to 1 µg $m^{-3}$ (1) at RB59 | UK Government via EU. | Higher standards in place. | ? | ? | Euro 6 real world emissions significant improvement on Euro 5. | - | Current breach on A23 heavily dependent on emissions improvement, but are seeing improvements in practice (April 2020). During 2020 levels fell by c.28 % due to COVID. |
| 44 | | Low (1) to RBBC, but very high | Aim is to reduce the rate of growth | UK Government via EU. | Higher standards in place. | ? | ? | Discussed informally with DfT representative on 16/10/07, especially the need initially for | - | APU emissions are also a source of concern, and the lack of manufacturers' data on emissions makes assessing the scale of |

| Measure No. | Measure | Cost(a) | Air Quality Improvement (b) | Person / organisation responsible | Indicator | Start Date | Completion Date | Actual Completion Date / or Progress | Outcome | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | | (3+) to industry. | of aircraft emissions. | | | | | better and publicly available data on APU emissions. | | the impact difficult. Thus in the first instance emissions testing of APUs needs to be introduced.<br><br>Still limited work in this area that is in public domain (April 2021). However APU running times at Gatwick have reduced significantly since 2010. |

**Notes:**

[a] (1) Low £<100K, (2) Medium £100K to £1 million, (3) High £1 million to £10 million.

[b] (1) improvement of 1 µg $m^{-3}$, (2) 0.1 to 1 µg $m^{-3}$, (3) <0.1 µg $m^{-3}$.

RBBC: Reigate and Banstead Borough Council.
SCC: Surrey County Council.
SAA: Surrey Air Alliance – represents the districts and boroughs across Surrey on Air Quality.

[c] as used mid line forecast in original TEMPRO model equivalent to a 10 % increase in traffic 2005 to 2010.

[d] The current traffic flows as measured on roads in the area are as follows:

| | Site ID | AADT 2004 | AM weekday peak flow 2004 | PM Weekday peak flow 2004 |
|---|---|---|---|---|
| A217 (Mill Lane / Nursery Lane) | A0217 (04063A) | 18,061 | 2036 (8 to 9am) | 1703 (17 to 18:00) |
| A23 (just before Massetts Rd / Woodroyd Av.) | A0023 (04082C) | 29,392 | 2217 (8 to 9am) | 2493 (17 to 18:00) |
| M23 Gatwick Spur* (contact Margaret King at: area4@interroutejv.co.uk) | 6009 & 6010 (TRADS 2 Ref) (529427, 141683) and 529498, 141694) | 65,964 (2% HGV) | 1702 (9 to 10am) to M23<br>3172 (9 to 10am) to Gatwick | 2691 (18 to 19:00)<br>1665 (14 to 15:00) |

***Note these are the revised figures (2008) for 2004.**
**Sites 6009 and 6010 were subsequently closed at the end of 2008. Two new counters were installed mid 2006.**
**In 2006 (the first year for which data is available) the figures for this site were:**

| | | | | |
|---|---|---|---|---|
| | 5980/1 east bound alt ref 4/30015253 (529950, 141730) | 32,851 | 1746 (9 to 10am) to M23 | 2480 (18 to 19:00) |
| | 5981/1 west bound alt ref 4/30015254 (530240, 141693) | 31,553 | 2917 (9 to 10am) to Gatwick | 1509 (13 to 14:00) |

**2020 Figures:**

| | | | |
|---|---|---|---|
| A217 (Mill Lane / Nursery Lane) | A0217 (04063A) | 15,824 | (2019 figure 21,446 which was up 18 % on 2004. Note 2018 up 6.4 % on 2004). 2020 reflects COVID. |
| A23 (just before Massetts Rd / Woodroyd Av.) | A0023 (04082C) | 19,136 | Loop damage 2018 and 2019. 2017: 30,270. Equivalent DfT site 78232 shows 1.8 % traffic fall 2005 to 2019). |
| M23 Gatwick Spur (2018 Data) Website not returning data for 2019 or 2020. | 6009 & 6010 (TRADS 2 Ref) | Site closed end 2008 | |
| | 5980/1 alt ref 4/30015253 | 35,602 (4.1% HGV) (up 8.4% on '06) | N/A (9 to 10am) to M23 N/A (18 to 19:00)<br>Peak hour traffic data no longer available following website redesign |
| | 5981/1 west bound 4/30015254 | 34,355 (4.0% HGV) (Up 8.9% on '06) | N/A (8 to 9am) to Gatwick N/A (18 to 19:00)<br>Peak hour traffic data no longer available following website redesign |

RB59 is the worst case receptor within the Horley Air Quality Management Area (AQMA).
GAJA: Gatwick Airport Joint Local Authorities. GAL: Gatwick Airport Limited GATCOM: Gatwick Consultative Committee. GOG: Gatwick Officers Group.
HTC: Horley Town Council. ODPM: Office of the Deputy Prime Minister. RBBC: Reigate and Banstead Borough Council. SCC: Surrey County Council.

## 2.2 $PM_{2.5}$ – 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.

At present, the Council does not monitor $PM_{2.5}$ directly using an approved measurement technique, although long term monitoring of $PM_{10}$ concentrations suggest that levels have been falling over a number of years. However, given the new focus on levels of $PM_{2.5}$, the Council will begin monitoring $PM_{2.5}$ in 2022 to examine long-term trends in this pollutant.

The Council undertook borough wide modelling of $PM_{2.5}$ concentrations (Figure 2.2.8 shows the 2017 base year) including source apportionment at selected sites (Table 2.3) as part of a county wide modelling exercise led by Reigate and Banstead Borough Council, in conjunction with Elmbridge and Spelthorne Borough Councils.

The purpose of this work was to inform future policy at the Council around reducing residents' exposure to $PM_{2.5}$ and other pollutants. The key point to note here is that, unlike with nitrogen dioxide, road traffic is responsible for a relatively small component of residents' exposure to $PM_{2.5}$ – up to 14% but typically under 10%, and that in the traffic derived fraction the bulk of the exposure is from a combination of brake, tyre and road wear rather than exhaust emissions.

At present, the Council plans to continue with work around vehicle electrification given the significant benefit around NOx reduction, the removal of combustion derived particulates, and the potential reduction in brake wear via regenerative braking. However, given that electric vehicles at present are potentially heavier than the petrol / diesel equivalent the authority is mindful of the potential increase in emissions from increased tyre and road wear.

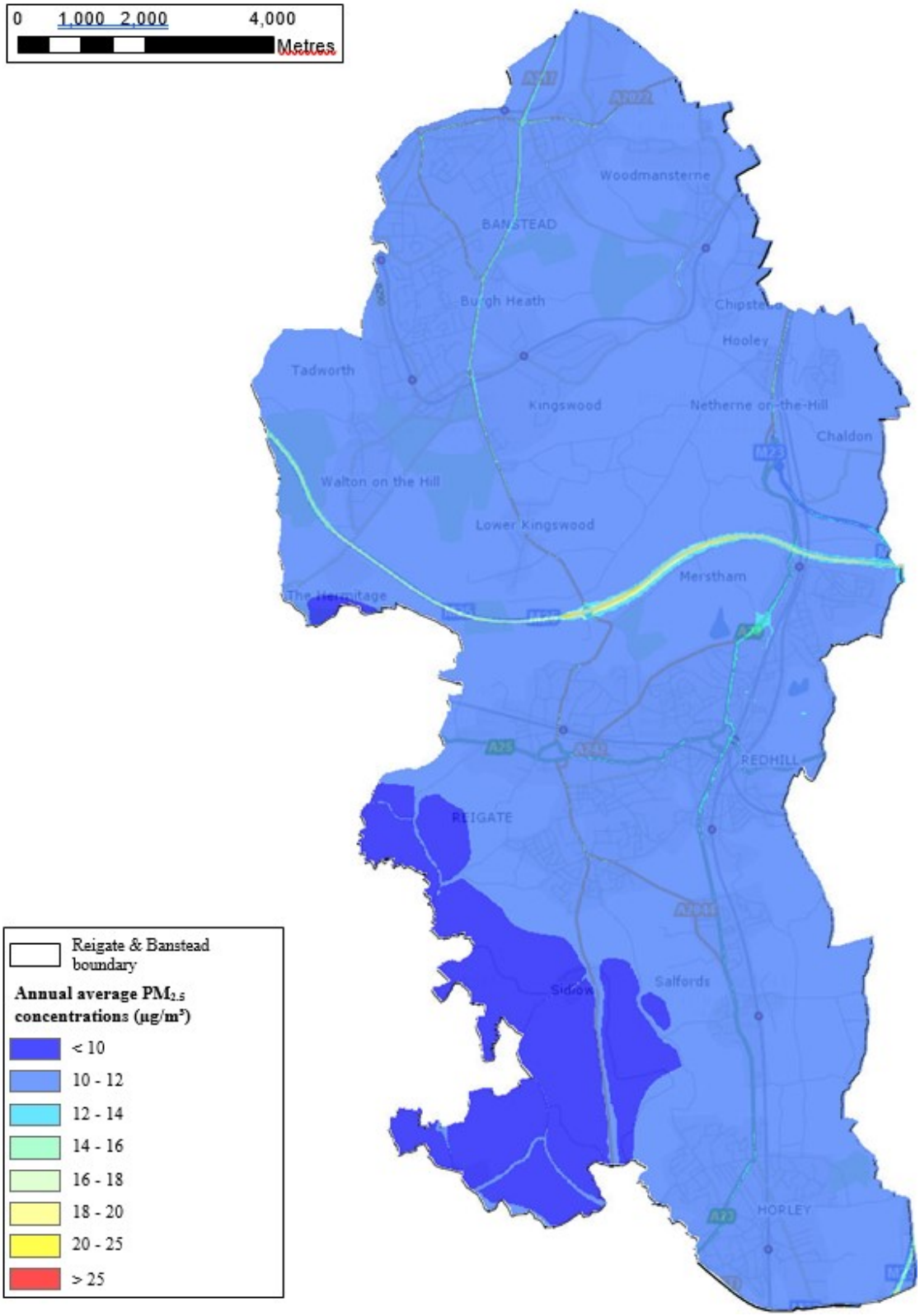



**Figure 2.2.8 Annual Average $PM_{2.5}$ Concnetrations in Reigate and Banstead in 2017 (µg/m³)**

## Table 2.3 – Summary of $PM_{2.5}$ concentration source apportionment in Reigate and Banstead ($\mu g/m^3$)

| PM2.5 | Type of source apportionment | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Source type | | | | Road transport - exhaust by vehicle type | | | | | | Road transport - non-exhaust | | |
| Receptor | Road sources | Other sources | Background | Large industrial sources | Petrol Cars & Motorcycles | Diesel Cars | LGVs | Buses & Coaches | Rigid HGVs | Artic HGVs | PM2.5 Brake wear | PM2.5 Tyre wear | PM2.5 Road wear |
| RB009 | 0.3 | 1.9 | 8.8 | <0.1 | <0.01 | 0.02 | 0.02 | <0.01 | <0.01 | <0.01 | <0.1 | <0.1 | <0.1 |
| RB023 | 0.4 | 2.0 | 8.8 | <0.1 | <0.01 | 0.03 | 0.03 | <0.01 | <0.01 | <0.01 | <0.1 | 0.1 | <0.1 |
| RB034 | 1.0 | 1.0 | 8.8 | <0.1 | 0.01 | 0.08 | 0.09 | <0.01 | 0.02 | 0.03 | 0.3 | 0.3 | 0.2 |
| RB039 | 1.9 | 1.4 | 8.8 | <0.1 | 0.02 | 0.15 | 0.15 | <0.01 | 0.03 | 0.05 | 0.5 | 0.6 | 0.4 |
| RB050 | 1.2 | 1.1 | 8.8 | <0.1 | 0.02 | 0.10 | 0.08 | <0.01 | 0.02 | 0.01 | 0.3 | 0.4 | 0.2 |
| RB059 | 0.4 | 1.9 | 8.8 | <0.1 | <0.01 | 0.03 | 0.03 | <0.01 | 0.01 | <0.01 | <0.1 | 0.1 | <0.1 |
| RB102 | 0.7 | 1.1 | 8.8 | <0.1 | <0.01 | 0.07 | 0.06 | <0.01 | 0.01 | <0.01 | 0.2 | 0.2 | 0.1 |
| RB104 | 0.9 | 1.6 | 8.8 | <0.1 | 0.02 | 0.11 | 0.06 | 0.01 | 0.03 | <0.01 | 0.2 | 0.3 | 0.2 |
| RB106 | 1.2 | 1.9 | 8.8 | <0.1 | 0.02 | 0.13 | 0.07 | <0.01 | 0.02 | <0.01 | 0.3 | 0.4 | 0.2 |
| RB109 | 0.5 | 1.7 | 8.8 | <0.1 | <0.01 | 0.06 | 0.03 | <0.01 | 0.01 | <0.01 | 0.1 | 0.2 | 0.1 |
| RB110 | 1.7 | 1.5 | 8.8 | <0.1 | 0.03 | 0.17 | 0.11 | 0.02 | 0.03 | 0.02 | 0.4 | 0.5 | 0.3 |
| RB116 | 1.2 | 1.6 | 8.8 | <0.1 | 0.02 | 0.13 | 0.07 | <0.01 | 0.03 | <0.01 | 0.3 | 0.4 | 0.3 |
| RB117 | 0.8 | 1.6 | 8.8 | <0.1 | 0.01 | 0.09 | 0.05 | <0.01 | 0.02 | <0.01 | 0.2 | 0.3 | 0.2 |
| RB120 | 0.9 | 1.9 | 8.8 | <0.1 | 0.01 | 0.09 | 0.05 | 0.01 | 0.02 | <0.01 | 0.2 | 0.3 | 0.2 |
| RB124 | 1.2 | 1.6 | 8.8 | <0.1 | 0.02 | 0.13 | 0.08 | 0.02 | 0.02 | 0.01 | 0.3 | 0.4 | 0.3 |
| RB125 | 1.0 | 1.4 | 8.8 | <0.1 | 0.02 | 0.10 | 0.07 | <0.01 | 0.03 | 0.01 | 0.2 | 0.3 | 0.2 |
| RB126 | 0.6 | 2.0 | 8.8 | <0.1 | <0.01 | 0.04 | 0.04 | 0.04 | 0.01 | <0.01 | 0.1 | 0.2 | 0.1 |
| RB136 | 1.9 | 1.3 | 8.8 | <0.1 | 0.03 | 0.16 | 0.11 | 0.01 | 0.04 | 0.02 | 0.5 | 0.6 | 0.4 |
| RB137 | 1.2 | 1.3 | 8.8 | <0.1 | 0.02 | 0.10 | 0.07 | <0.01 | 0.03 | 0.01 | 0.3 | 0.4 | 0.3 |
| RB140 | 0.8 | 2.1 | 8.8 | <0.1 | 0.01 | 0.09 | 0.05 | 0.02 | 0.02 | <0.01 | 0.2 | 0.3 | 0.2 |
| RB145 | 1.5 | 2.1 | 8.8 | <0.1 | 0.03 | 0.15 | 0.08 | 0.02 | 0.03 | <0.01 | 0.4 | 0.5 | 0.3 |
| RB146 | 1.8 | 1.3 | 8.8 | <0.1 | 0.03 | 0.15 | 0.10 | 0.01 | 0.04 | 0.02 | 0.5 | 0.6 | 0.4 |
| RB147 | 0.4 | 1.3 | 8.8 | <0.1 | <0.01 | 0.03 | 0.03 | <0.01 | 0.01 | <0.01 | <0.1 | 0.1 | <0.1 |
| RB148 | 0.8 | 1.7 | 8.8 | <0.1 | 0.01 | 0.08 | 0.04 | <0.01 | 0.01 | <0.01 | 0.2 | 0.3 | 0.2 |
| RB149 | 0.8 | 1.7 | 8.8 | <0.1 | 0.01 | 0.08 | 0.04 | <0.01 | 0.01 | <0.01 | 0.2 | 0.3 | 0.2 |
| RB150 | 0.7 | 1.6 | 8.8 | <0.1 | 0.01 | 0.07 | 0.04 | <0.01 | 0.02 | <0.01 | 0.2 | 0.2 | 0.2 |
| RB151 | 0.3 | 2.1 | 8.8 | <0.1 | <0.01 | 0.03 | 0.03 | 0.01 | <0.01 | <0.01 | <0.1 | 0.1 | <0.1 |

### 2.2.1 Ultrafine Particles in the Vicinity of Gatwick

Globally, airports have been identified as a significant source of ultrafine particulate pollution[5,6], i.e. particles that are under 0.1 µm in aerodynamic diameter, and that a large proportion of these particles are generated during take-off with the resulting 'spike' in ultrafine particles detected at least 600 m from the airport based on studies at Los Angeles Airport (LAX).

As research over the past 10 to 15 years has continually indicated that the finer combustion derived particle fractions, including particles under 0.1 µm in (aerodynamic) diameter, tend to have the greatest biological effects, and as an initial 'look / see' study by the Council in late 2011 indicated a significant source of ultrafine particles in the vicinity of Gatwick, the Council has sought academic partners to look at ultrafine particle concentrations in the vicinity of Gatwick in greater detail.

Work with King's College, Imperial College, and Leicester University during 2018 and 2019 to better characterise the impact of ultrafines on local residents was reported on in the 2020 ASR. The key findings from this work were:

- Residents exposure at what would be classed a suburban background site on the Horley Gardens Estate are around double those seen at a background site in London.
- The average size (geometric mean) of the particles is smaller in the Horley Gardens estate compared to the London background site.
- While particle number concentrations at the background Horley Gardens site (RG1) on average are lower than those measured roadside at Marylebone Road in central London it is worth noting that:
    - the Marylebone Road site is only 1.5 m from the road edge compared to 350 m at RG1 or 610 m from the airport itself.
    - as the RG1 monitor is located towards the centre of the Horley Gardens Estate a significant number of residential premises are also far closer to the airport e.g. RG2(6) and RB59, than the RG1 site and so are likely to see higher exposures than recorded at RG1.

[5] Atmospheric Environment 45 (2011) pp.6526 - 6533
[6] Atmospheric Environment 50 (2012) pp.328 - 337

- When winds are off airport, residents' exposure to ultrafines is far higher than that seen 1.5m from a six lane road in central London, and the size of those particles is significantly smaller than seen at the London site.

The data from the 2019 monitoring campaign at RG1 is shown below in Table 2.4.

**Table 2.4 – Mean Particle Number Concentrations 25th January to 10th September 2019**

| Site | Distance from Source | Data Capture (%) | Mean Particle Count (Particles / cm$^3$) | Geometric Mean Diameter (nm) |
|---|---|---|---|---|
| London – Background (Honor Oak) | n/a | 54 % | 4,521 | 55 |
| RG1 Horley | 350 m A23 / 610 m Airport | 91 % | 8,953 | 50 |
| London – Marylebone Road | 1.5 m | 27% | 11,587 | 46 |
| RG1 Horley (Southerly winds only) | As above | As above | 14,498 | 36 |

To date no additional work has been undertaken in this area as the airport feels unable to fund an ultrafines monitoring program, despite this being in line with measures proposed in the Government's draft aviation strategy[7], and the recommendations of the Government's air quality expert group (AQEG)[8].

However, the council is looking at other potential projects in this area with academic partners which will be reported on in due course.

### 2.2.2 Health Impact of Air Pollution in the Borough

Historically the Council has focused much of its air quality work on local hot spots that have been declared AQMAs, although within the past five years the general approach has been to focus on measures that have air quality benefits across the borough e.g. electric vehicle charging infrastructure trials.

While it is important to focus on localised hot spots where a straight forward solution is possible e.g. realignment of a road in relation to houses so that in effect the houses are moved away from the road to meet the air quality standards, it is

[7] Aviation 2050: The Future of UK Aviation. pp.82.
[8] AQEG Ultrafine Particles (UFP) in the UK. – July 2018. pp.11, and pp.94 Section 7.1 Paragraph 2.

also important to realise that while the majority of the borough meets the relevant air quality standards there is still a health cost associated with the lower levels of pollution that exist across the borough.

As reported on in the 2020 ASR the most recent borough (and county) wide modelling[9] examined the current health costs of air pollution (nitrogen dioxide and PM) across the borough to inform future policy at the council around reducing residents exposure air pollution

The work suggests that in 2017 air pollution across the borough had an economic cost of £37 to £45 million, with the number of life years lost in the region of 880 to 1,060 years.

As the health impact is a function of both the pollution levels and the number of people affected, while the borough had the third highest average nitrogen dioxide exposure in Surrey and the 6$^{th}$ highest $PM_{2.5}$ exposure, as a consequence of its relatively large population compared to the other Surrey boroughs Reigate and Banstead suffers from the largest health impact / cost in Surrey.

[9] CERC 2018 Detailed air quality modelling and source apportionment for Surrey Local Authorities.

# 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

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

Reigate and Banstead Borough Council undertook automatic (continuous) monitoring at four sites in 2020 (RG1, RG3, RG6 and RG7). RG7 started monitoring in August 2018. Table A.1 in Appendix A shows the details of the sites.

National monitoring results for the AURN site RG1 (Horley) are available at https://uk-air.defra.gov.uk/networks/network-info?view=aurn. National monitoring results for the AURN site RG1 (Horley), and the other three sites which are not AURN but are operated to AURN standards (i.e. RG3 (Poles Lane, between Crawley and Gatwick Airport) and RG6 (Horley South East)) and RG7 (Hooley) are available at https://www.londonair.org.uk/london/asp/data-download.asp.

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

### 3.1.2 Non-Automatic Monitoring Sites

Reigate and Banstead Borough Council undertook non- automatic (passive) monitoring of $NO_2$ at 149 sites in 2020. Table A.2 in Appendix A shows the details of the 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 include\ed in Appendix C.

## 3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias[10], "annualisation" (where the data capture falls below 75%), and distance correction[11]. Further details on adjustments are provided in Appendix C.

### 3.2.1 Nitrogen Dioxide ($NO_2$)

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

Table A.4 in Appendix A compares the ratified continuous monitored $NO_2$ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m$^3$, not to be exceeded more than 18 times per year.

Automatic monitoring results indicate that for both the annual mean and 1-hour mean objectives there were no breaches at any of the monitoring locations in 2020.

There was only measured exceedance of the annual mean nitrogen dioxide objective at diffusion tube monitoring site RB148 in 2020, which required distance correcting and was well below the obejctive at a relevant location (31.9µg/m$^3$). There were no other measured exceedences, meaning all relevant objectives were met within the Borough.

### 3.2.2 Particulate Matter ($PM_{10}$)

Table A.5 in Appendix A compares the ratified and adjusted monitored $PM_{10}$ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m$^3$.

[10] https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html
[11] Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)

Table A.6 in Appendix A compares the ratified continuous monitored $PM_{10}$ daily mean concentrations for the past 5 years with the air quality objective of 50µg/$m^3$, not to be exceeded more than 35 times per year.

There have been no exceedances of either $PM_{10}$ objective in any of the years monitored.

### 3.2.3 Particulate Matter ($PM_{2.5}$)

No $PM_{2.5}$ monitoring was undertaken by Reigate and Banstead Borough Council in 2020.

### 3.2.4 Sulphur Dioxide ($SO_2$)

No $SO_2$ monitoring was undertaken by Reigate and Banstead Borough Council in 2020.

### 3.2.5 Benzene

Table A.7 in Appendix A compares the ratified monitored benzene annual mean concentrations for the past five years with the annual mean air quality objective of 5 µg/$m^3$. Measured concentrations are consistently below the objective at all sites from 2016 – 2020.

### 3.2.6 AQMA No. 1: M25

The M25 AQMA consists of the length of the M25 to a distance of 30 m either side of the carriageway between Junction 7 and the point of the west of Junction 8 where the motorway meets with the borough boundary.

There are two nitrogen dioxide diffusion tube monitoring sites located within the M25 AQMA, and seven nitrogen dioxide diffusion tube monitoring sites located in close proximity (i.e. within 50 m) to the AQMA. Measured pollutant concentrations at all monitoring sites both within and up to 50 m distance from the AQMA have generally been decreasing since 2004 and were below the relevant air quality objectives in this reporting period (Figure 3.1).

Figure 3.2 below shows traffic flows between Junction 7 and Junction 8, and between Junction 8 and Junction 9 of the M25 motorway within the M25 AQMA, from 2002 to 2020. The traffic volumes were relatively stable between 2002 and 2010 on both sections of the M25. On the Junction 7 – Junction 8 section, traffic

volumes decreased between 2011 and 2014, then kept increasing sharply until 2017 and has been very slowly decreasing since. The Junction 8 – Junction 9 section has followed a similar trend albeit a year later than the neighbouring M25 section. Overall, traffic volumes between Junction 7 and Junction 8 have decreased since the early 2000s and increased between Junction 8 and Junction 9.

There was a sharp decrease in traffic volumes on the M25 in 2020 as a result of changing travel patterns due to the COVID-19 pandemic. This resulted in a decrease in concentrations at all monitoring sites in this year.

In view of the air quality objectives being met, the relatively low concentrations measured at relevant receptors for a number of years, and the long term downward trend, the Council will look to revoke the M25 AQMA in due course.

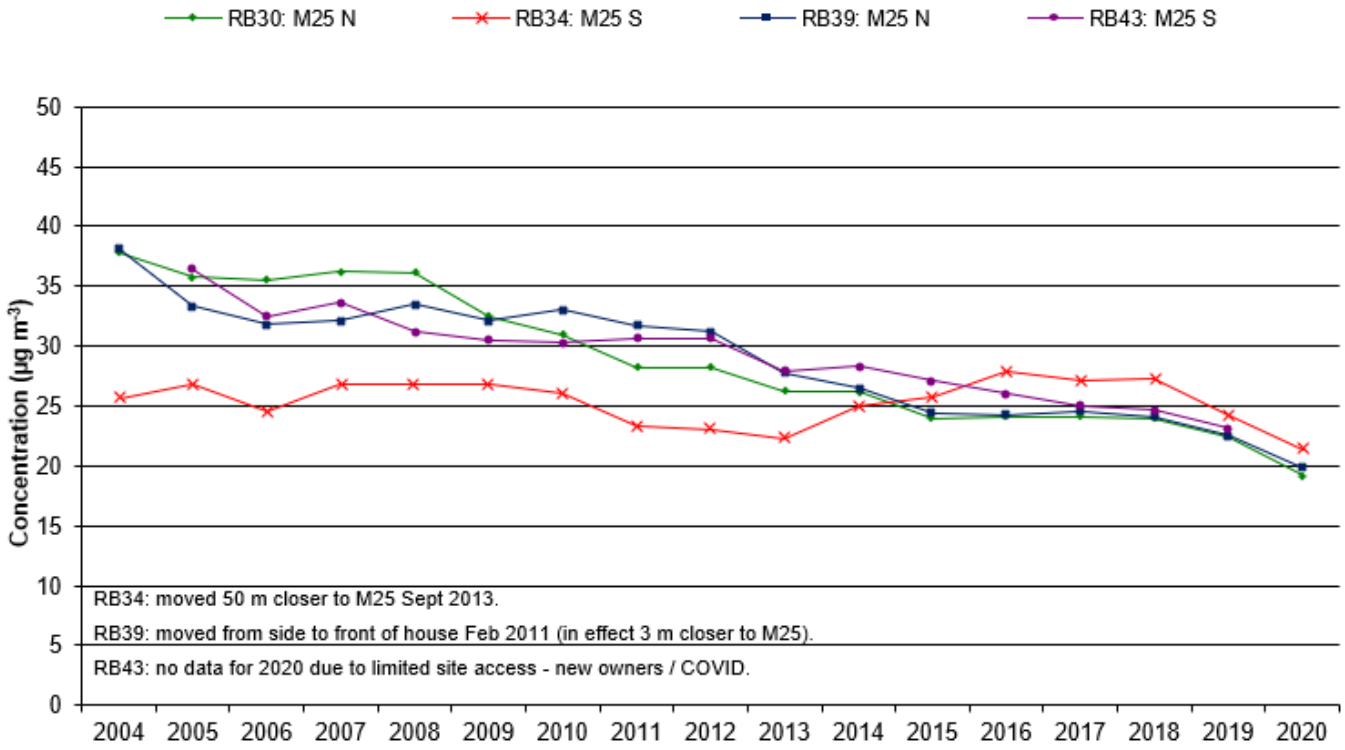



**Figure 3.1 3 Year Rolling Annual Averages at Diffusion Tube Sites - M25 AQMA, 2004 – 2020**

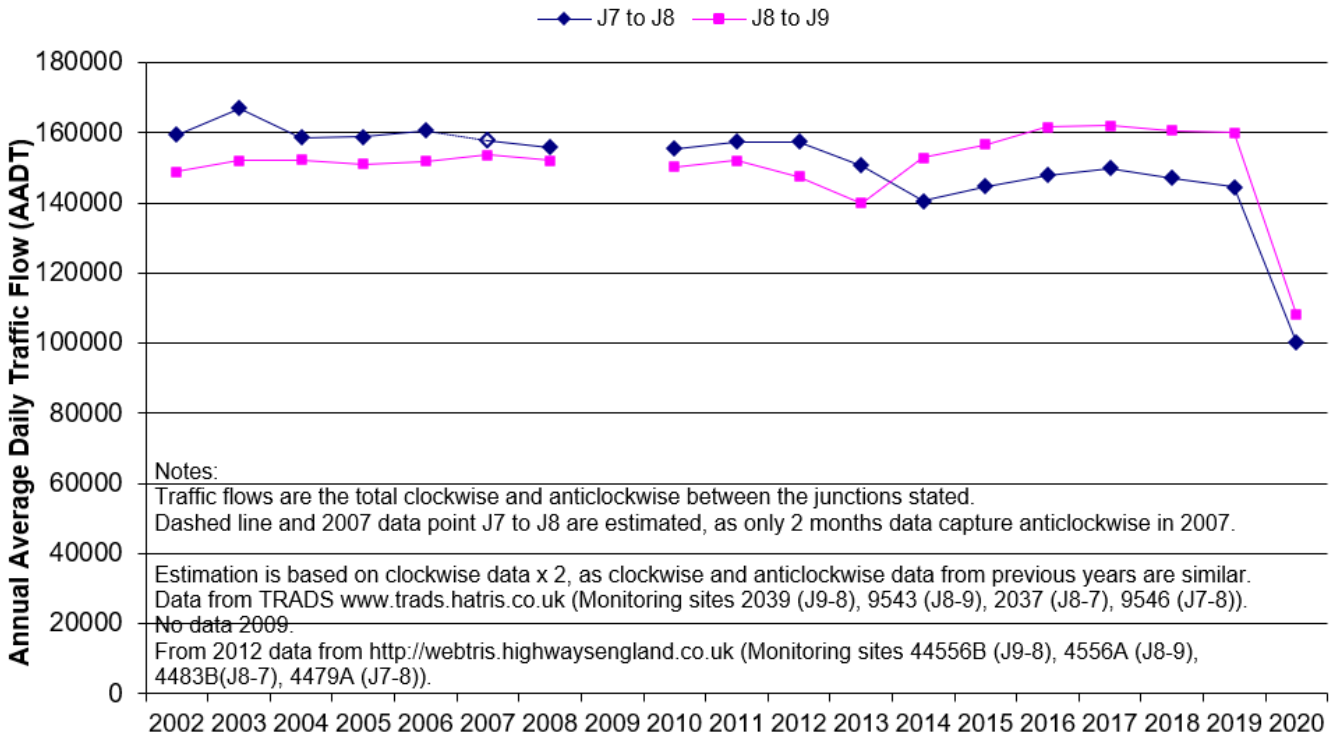



**Figure 3.2 Annual Mean Daily Traffic Flows within the M25 AQMA, 2002 – 2020.**

### 3.2.7 AQMA No. 3: Horley

Horley AQMA covers an area of the southwest quadrant of Horley near to Gatwick Airport.

The following monitoring sites are located within the AQMA:

- 37 diffusion tubes which monitor nitrogen dioxide concentrations;
- one diffusion tube which monitors benzene concentrations;
- one automatic monitoring site (RG1) which monitors nitrogen dioxide and $PM_{10}$ concentrations; and
- one automatic monitoring site (RG6) which monitors nitrogen dioxide concentrations.

Monitoring of nitrogen dioxide is also undertaken by the council at a further site (RG3), which is located to the southwest of Gatwick Airport in Crawley. One diffusion tube (RB149) located along Brighton Road, near to the boundary, but within the AQMA, measured exceedances of the nitrogen dioxide annual mean objective between 2017 and 2019, but when distance corrected fell below the objective in 2018. Site RB149 also measured exceedances from 2014 to 2015 (not distance corrected). There does, however appear to be a long-term downward trend at this location. Measured pollutant concentrations at all of the other monitoring sites were below the relevant air quality objectives in the reporting period (Figure 3.3). There were no measured exceedances in 2020.

Figure 3.5 below shows traffic flows along the A23 in Horley. The data suggest a slight trend of increasing annual mean daily traffic flows from 2014 to 2019; with a sharp decrease in 2020 as a result of the COVID-19 pandemic changing travel behaviour. Average speed is relatively consistent across the years.

While the overall trend in nitrogen dioxide concentrations is downwards in the vicinity of the airport, it is also possible to examine the trend in 'airport concentrations' using data selected based on wind direciton. These 'airport concentrations (Figure 3.4), which also include a road traffic component from the A23 Airport Way, have been calculated by subtracting pollutant concentrations measured upwind of the airport, from those on the other side when the winds are from the south West (i.e. RG2 / RG6 minus RG3). As can be seen from Figure 3.4,

while the underlying trend in concentrations in Horley is down (Figure 3.3), there is a different pattern in these airport sources. While there has been a reduction in these airport sources since 2016, it is worth noting that this airport component is currently unchanged on 10 years ago. A sharp decrease is seen in 2020 as a result of changing travel behaviour (including a significant decrease in number of flights) as a result of the COVID-19 pandemic.

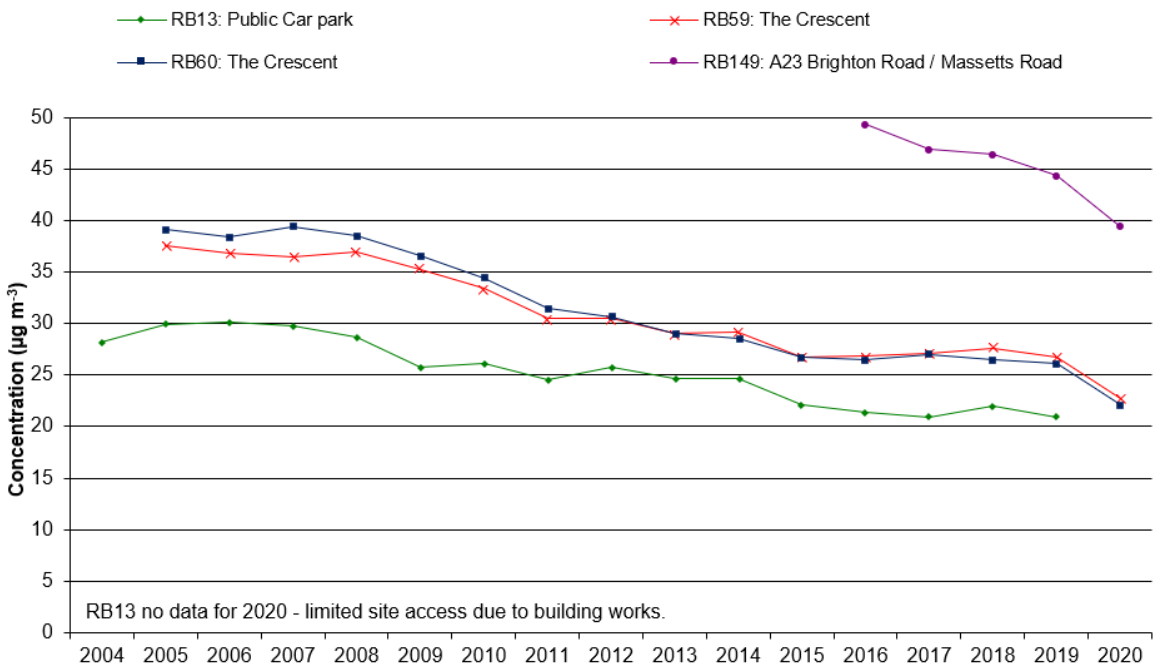



**Figure 3.3 3-Year Rolling Annual Averages at Diffusion Tube Sites - Horley AQMA, 2004 – 2020.**

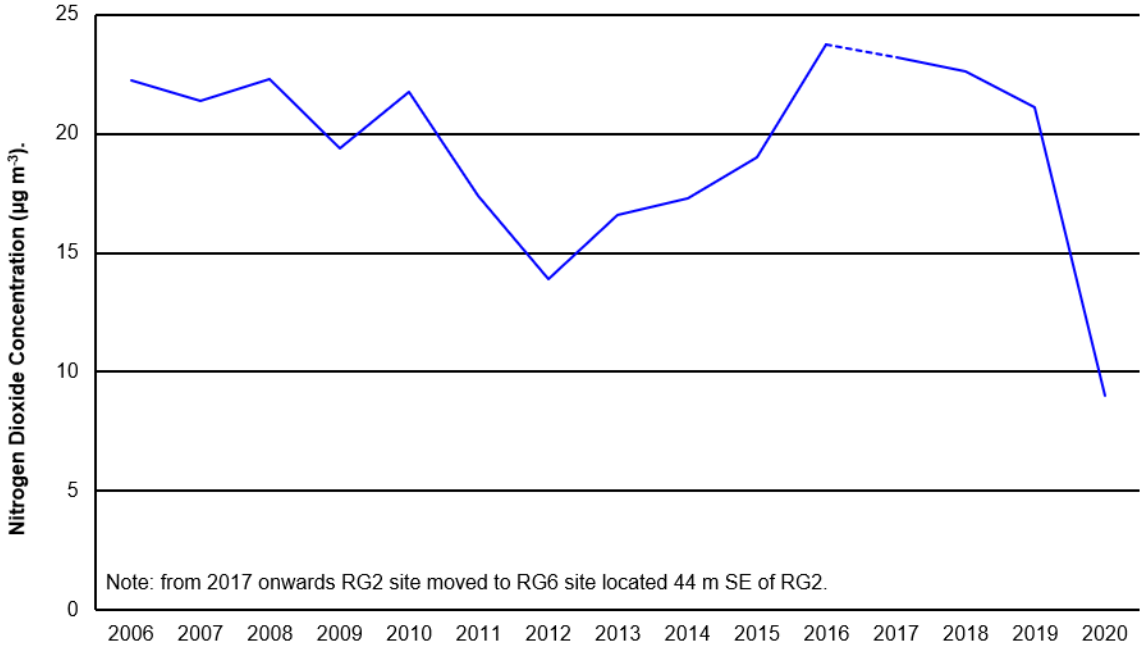



**Figure 3.4: RG2 minus RG3 when wind on 202 to 248 degrees - Mean of hourly values 2006 – 2020.**

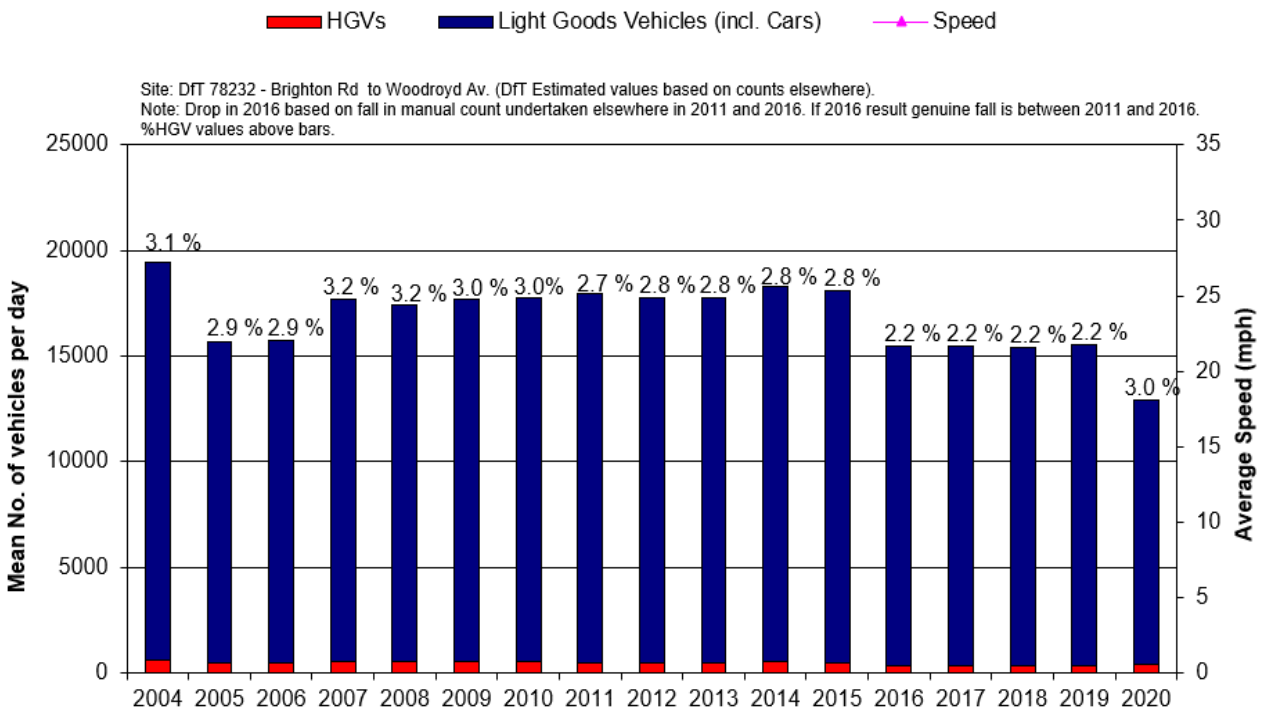



**Figure 3.5 A23, Horley, Annual Mean Daily Traffic Flows 2004 - 2020**

### 3.2.8 AQMA No. 6: A217 / Blackhorse Lane

The A217 / Blackhorse Lane AQMA covers an area encompassing one property near the junction of the A217 Brighton Road with Margery Lane and Blackhorse Lane.

Nitrogen dioxide monitoring takes place at one diffusion tube monitoring site, located within the AQMA (RB49) and one site located aproximately 15 m to the north of the AQMA (RB50). Measured concentrations at one of the monitoring sites (RB49) exceeded the annual mean nitrogen dioxide objective from 2015 – 2017, before falling below the objective during 2018 and 2019; monitoring site RB50 did not breach the objective in any of the years presented. Both monitoring sites show a small decreasing trend in concentrations which has almost levelled off in the case of site RB50 in recent years (Figure 3.6). There were no measured exceedances in 2020.

Figure 3.7 below shows traffic flows along the A217, near to Blackhorse Lane, in close proximity to Blackhorse Lane AQMA. Data for 2016 – 2018 and 2020 are unavailable, and so only data for 2004 -2009, 2011 – 2015 and 2019 are presented. The data suggest a gradual overall decrease in annual mean daily traffic flows over the period monitored.

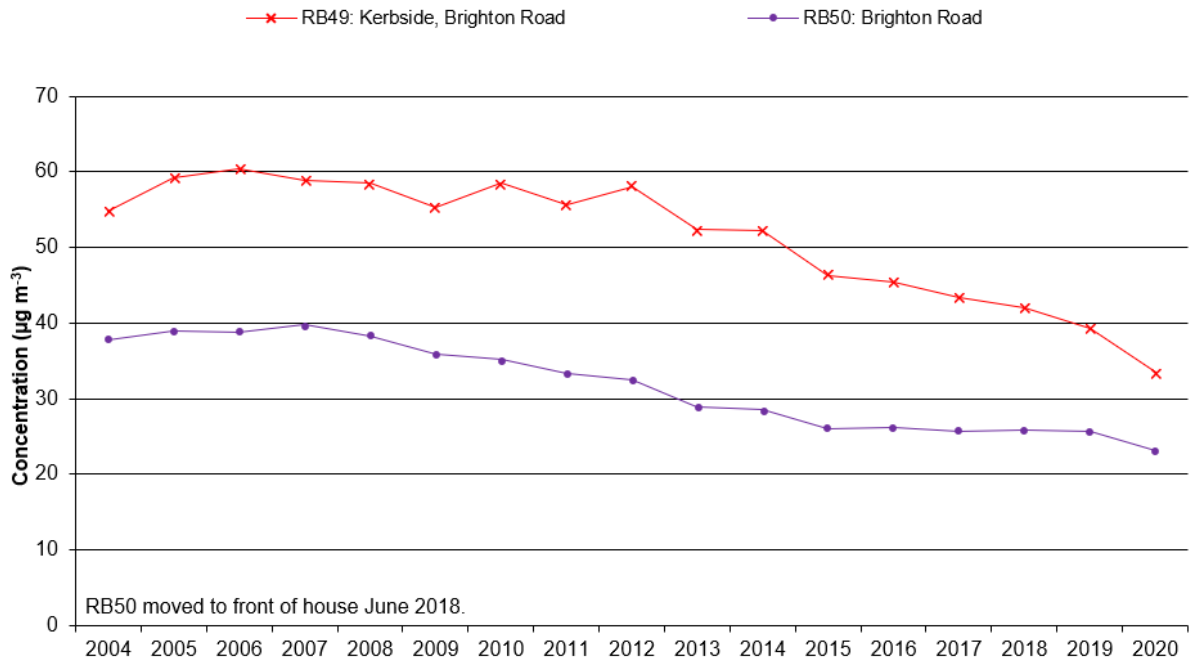



**Figure 3.6: 3-Year Rolling Annual Averages at Diffusion Tube Sites – Blackhorse Lane AQMA, 2004 – 2020.**

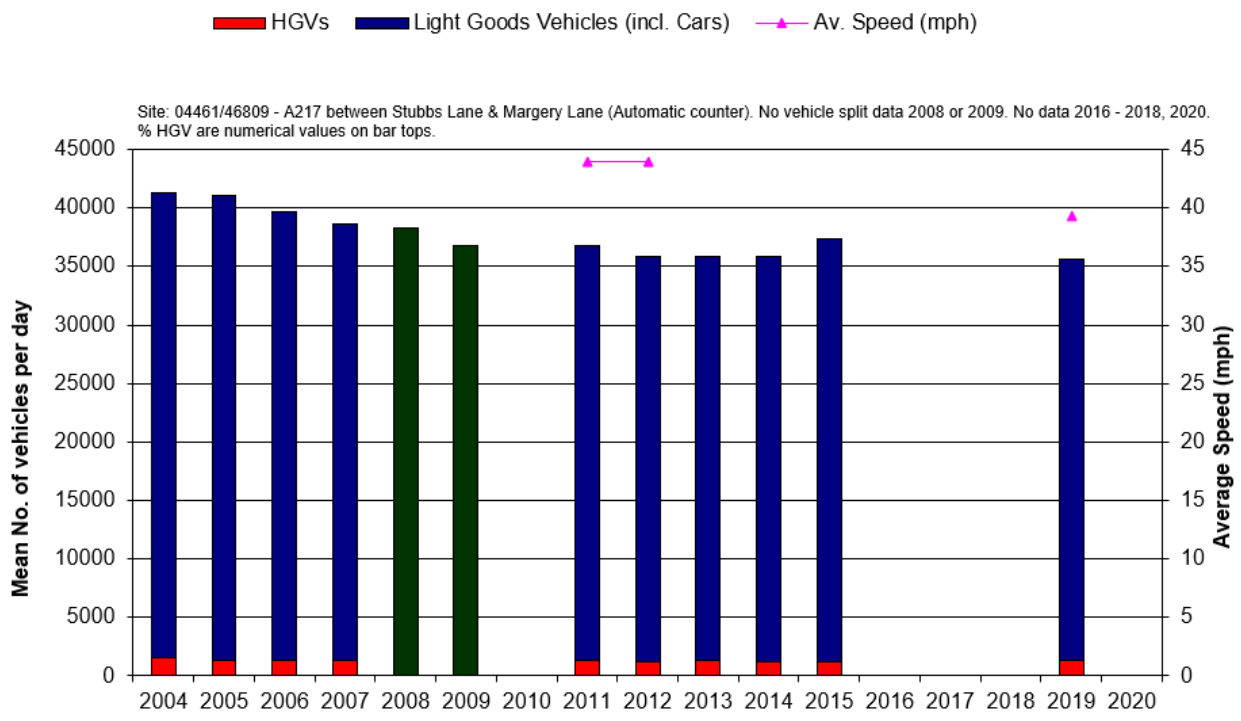



**Figure 3.7: A217 (Near to Blackhorse Lane) Annual Mean Daily Traffic Flows, 2004 – 2020.**

### 3.2.1 AQMA No. 8: Drift Bridge

The Drift Bridge AQMA covers an area encompassing two residential properties immediately to the north of the junction of the A240 (Reigate Road) and A2022 (Fir Tree Road).

Nitrogen dioxide diffusion tube monitoring takes place at one diffusion tube adjacent to the southeast corner of the AQMA. There are further two diffusion tubes monitoring sites within 50 m of the AQMA and another one approximately 400 m to the east of the AQMA. Concentrations at all of the monitoring sites have been decreasing or at worst remained steady since 2012 and have been below the air quality objectives since 2015 (Figure 3.8). There was a sharp decrease in concentrations in 2020, as a result of changing travel patterns due to the COVID-19 pandemic.

Figure 3.9 below shows traffic flows at three sites near to the Drift Bridge AQMA. Two (Sites A and B) are located along the A240 and one (Site C) is located along the A2022. Data at Site A suggests a decrease in annual mean daily traffic flow from 2004 to 2012, followed by an increase in 2013 after which the flow stabilizes for four years before decreasing again in 2017-2018. Data available from Site B does not suggest a clear trend in annual mean daily traffic. Data at Site C suggests decreasing annual mean daily traffic flow between 2005 and 2011, after which the trend in flow is relatively stable. A sharp decrease is seen in 2020 as a result of changing travel behaviour (including a significant decrease in number of flights) as a result of the COVID-19 pandemic.

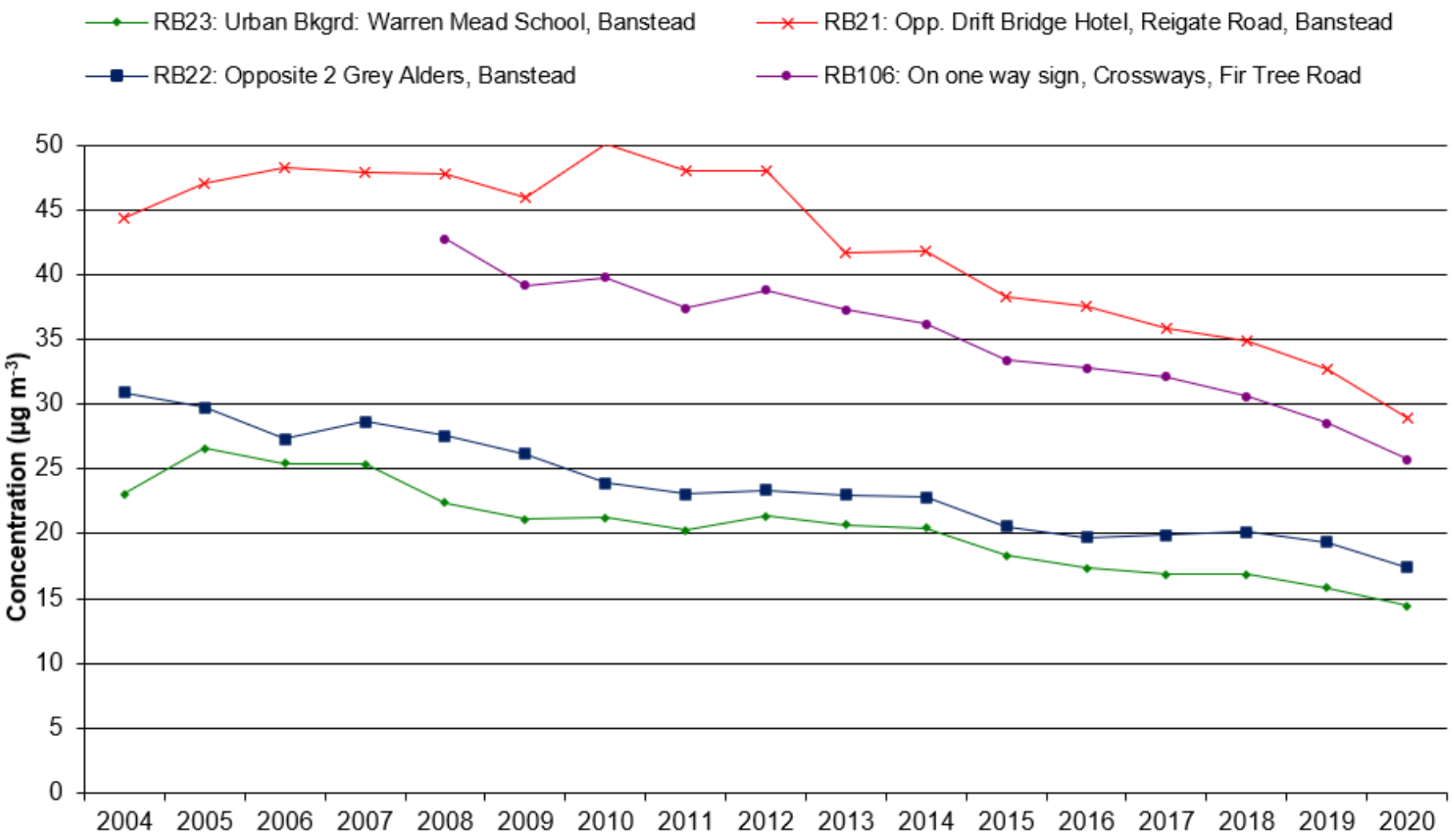



**Figure 3.8 3-Year Rolling Annual Average Nitrogen Dioxide at Diffusion Tube Sites – Drift Bridge AQMA, 2004 – 2020.**

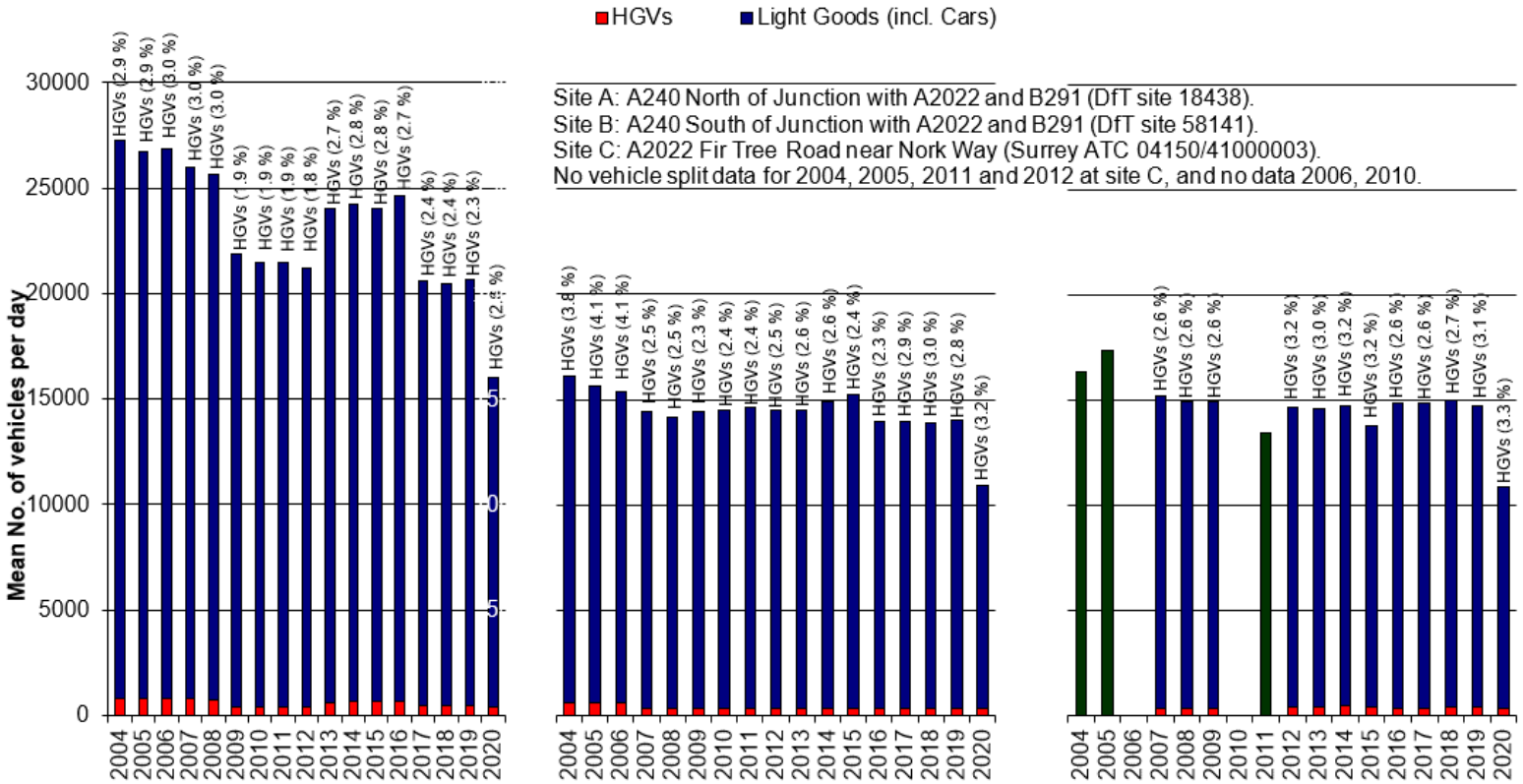



**Figure 3.9 Drift Bridge Annual Mean Daily Traffic Flows, 2004 – 2020 (Sites A-C).**

### 3.2.2 AQMA No. 9: Reigate High Street/ West Street/ Bell Street

The Reigate High Street / West Street / Bell Street AQMA covers an area encompassing Reigate High Street, the section of Church Street between the High Street and Bancroft Road, properties with a frontage to Bell Street (between the High Street and the southern end of Bancroft Road) and land and properties within 15m of either side of West Street (between High St and Evesham Rd) and along London Road (between West St and Castlefield Rd).

Nitrogen dioxide monitoring is undertaken by 15 diffusion tube monitoring sites within the AQMA. Benzene diffusion tube monitoring takes place at one location within the AQMA (note: the AQMA was declared for exceedances of the annual mean nitrogen dioxide objective). Measured concentrations of nitrogen dioxide at all monitoring sites have been steadily decreasing from their peak in 2008 and were below the relevant air quality objectives in 2019 (Figure 3.10). There were also no measured exceedances in 2020. Benzene concentrations were also below the objectives.

Figure 3.11 below shows traffic flows along Reigate High Street. Monitor 1 suggests a weak trend of reducing annual mean daily traffic flows from 2004 to 2013, and a weak trend of increasing annual mean daily traffic flows from 2013 to 2016. From 2016 traffic flows decreased again to around 2012-2013 levels. No data are available for 2019. Monitor 2 suggests a weak trend of reducing annual mean daily traffic flows from 2004 to 2010 and subsequent increasing between 2010 and 2012. Between 2012 and 2018 the traffic flows changed only marginally year on year, however in 2019 the observed traffic flows were the highest since the monitoring begun. A sharp decrease is seen in 2020 as a result of changing travel behaviour as a result of the COVID-19 pandemic.

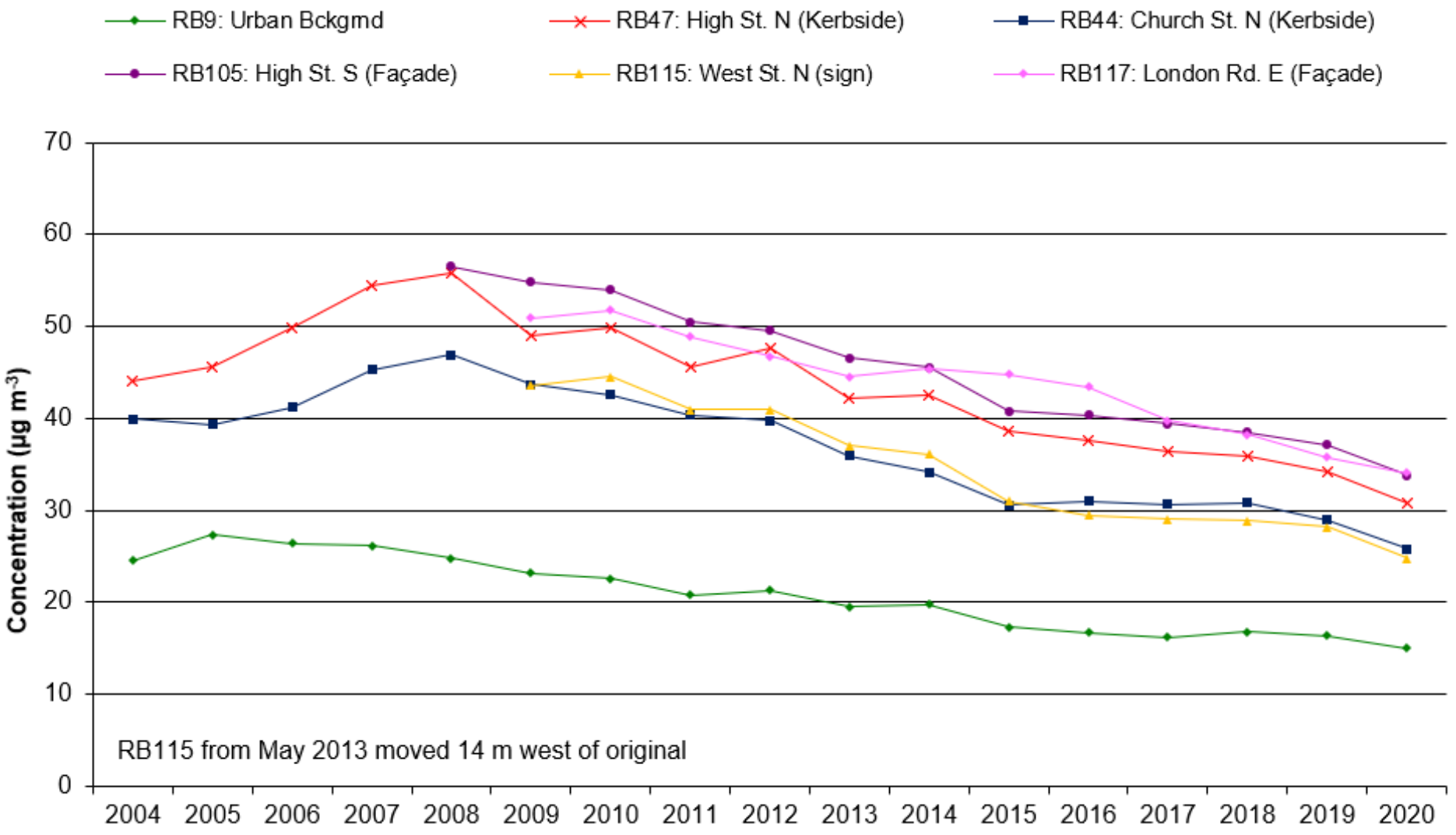



**Figure 3.10 3 Year Rolling Annual Averages at Diffusion Tube Sites - Reigate High Street AQMA, 2004 – 2020.**

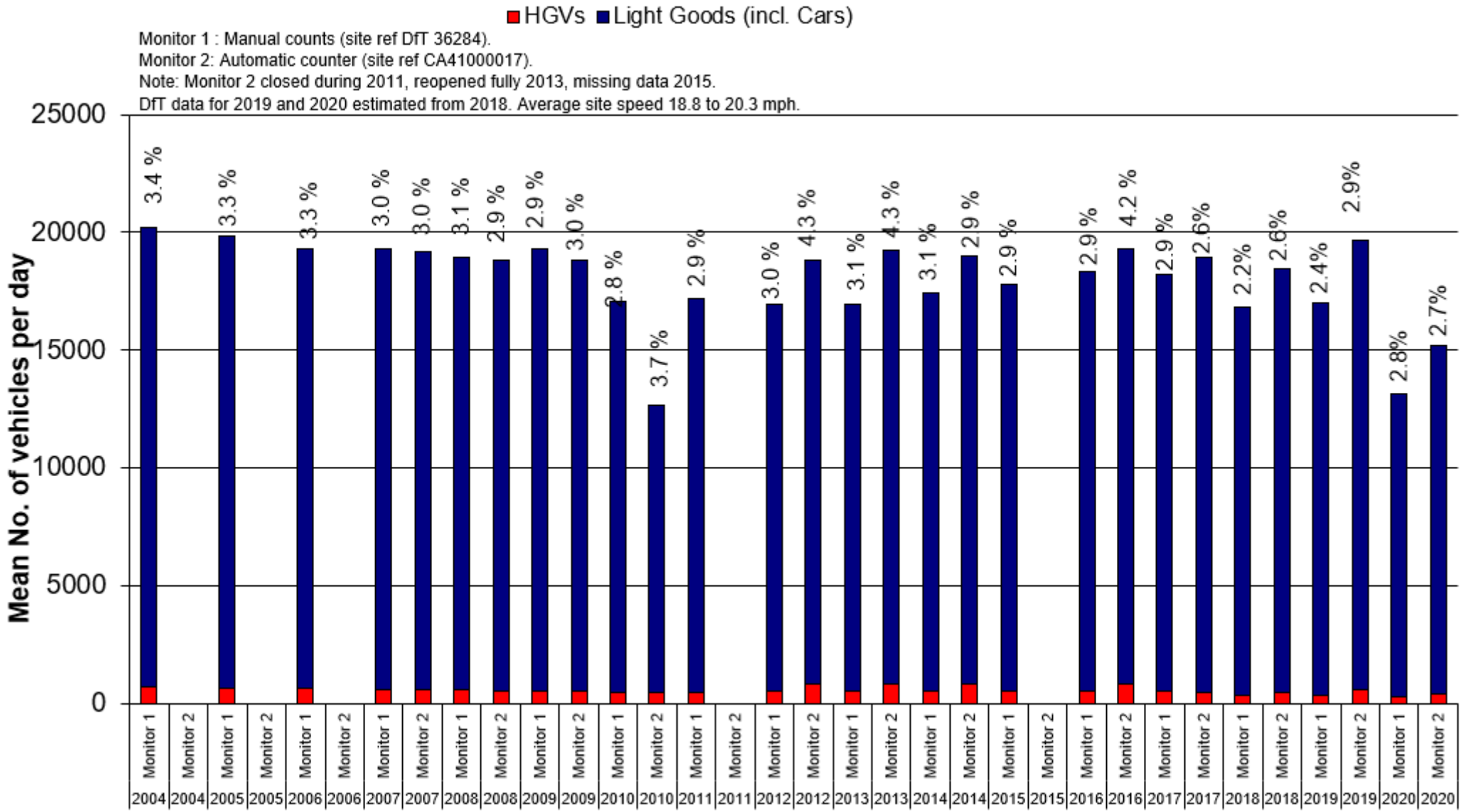



**Figure 3.11 Reigate High Street Annual Mean Daily Traffic Flows, 2004 – 2020.**

### 3.2.3 AQMA No. 10: Merstham

The Merstham AQMA covers an area encompassing all properties facing on to part of the A23 in Merstham. The AQMA runs from London Road South (south of the junction with School Hill) and extends north along Merstham High Street and then just to the north of the junction with Station Road North.

Nitrogen dioxide monitoring takes place at three diffusion tube sites located within the Merstham AQMA (RB20, 110 and 124), and at one further site just outside the AQMA. Benzene monitoring takes place at one diffusion tube site located within the AQMA (note: the AQMA was declared for exceedances of the annual mean nitrogen dioxide objective). Measured concentrations of all pollutants at all locations have been below the relevant air quality objectives since 2016 (Figure 3.12).

Figure 3.13 below shows traffic flows along the A23 as it passes through Merstham. The traffic flow was largely stable between 2005 and 2016 before a substantial drop in 2017. By 2019 the traffic flows increased to the previous levels, however. There is a weak decreasing trend in average traffic speed in recent years. A sharp decrease is seen in 2020 as a result of changing travel behaviour as a result of the COVID-19 pandemic, which is reflected in a decrease in concentrations in this year.

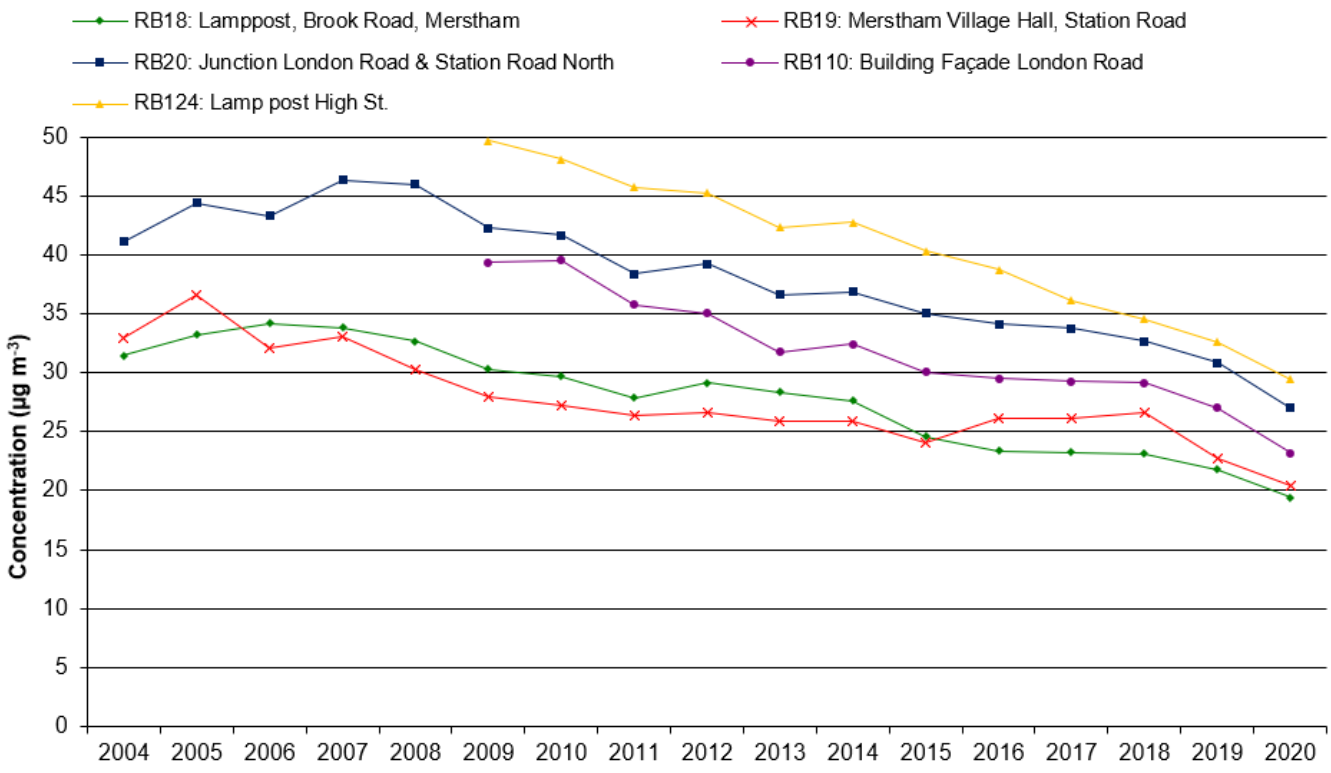



**Figure 3.12 3-Year Rolling Annual Averages at Diffusion Tube Sites - Merstham AQMA, 2004 – 2020.**

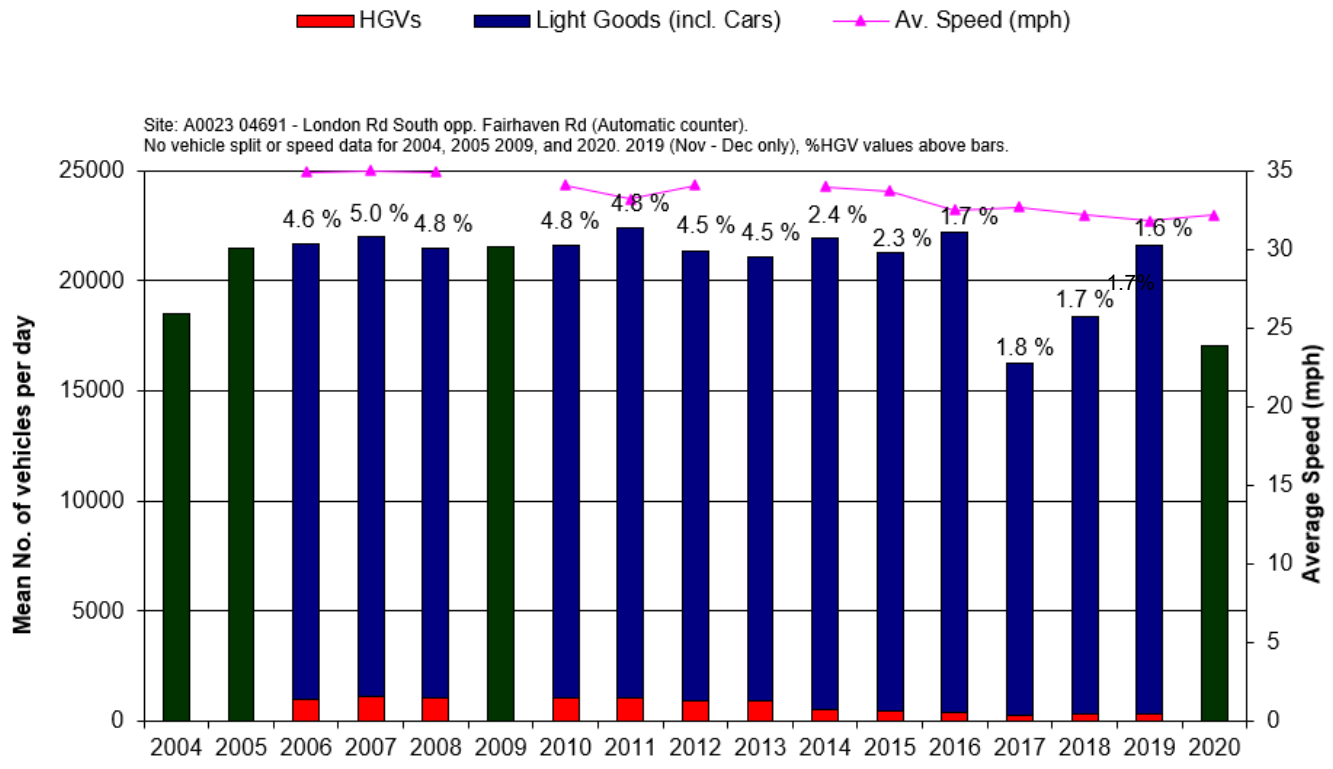



**Figure 3.13 Merstham Annual Mean Daily Traffic Flows, 2004 – 2020.**

### 3.2.4 AQMA No. 11: Reigate Hill

The Reigate Hill AQMA includes properties within the area of Reigate Hill between the level crossing in Reigate Town and J8 of the M25.

Nitrogen dioxide diffusion tube monitoring takes place at two locations within the AQMA, and one location outside of the AQMA. Concentrations at each of these monitoring sites were below the relevant air quality objectives throughout the 2017-2020 period (Figure 3.14).

Figures 3.15 and 3.16 show the traffic flows along the A217 north and south of Ragland Road, respectively. On both sections the observed traffic flows in 2019 are the highest recorded to date, however due to large gaps in the data it is not possible to infer any trends in the recent years. A sharp decrease is seen in 2020 as a result of changing travel behaviour as a result of the COVID-19 pandemic, which is reflected in a decrease in concentrations in this year.

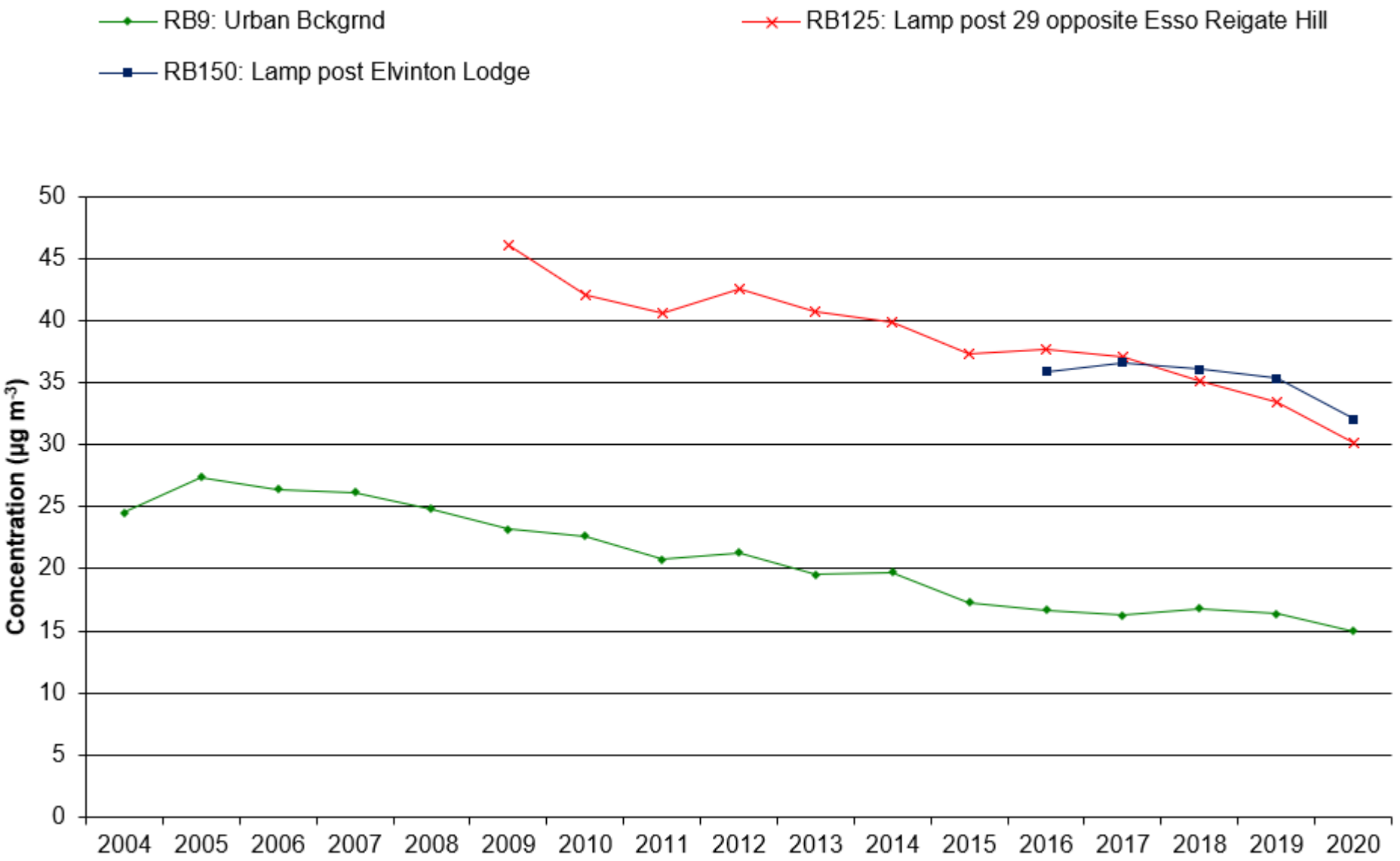



**Figure 3.14 3 Year Rolling Annual Averages at Diffusion Tube Sites – Reigate Hill AQMA, 2004 – 2020**

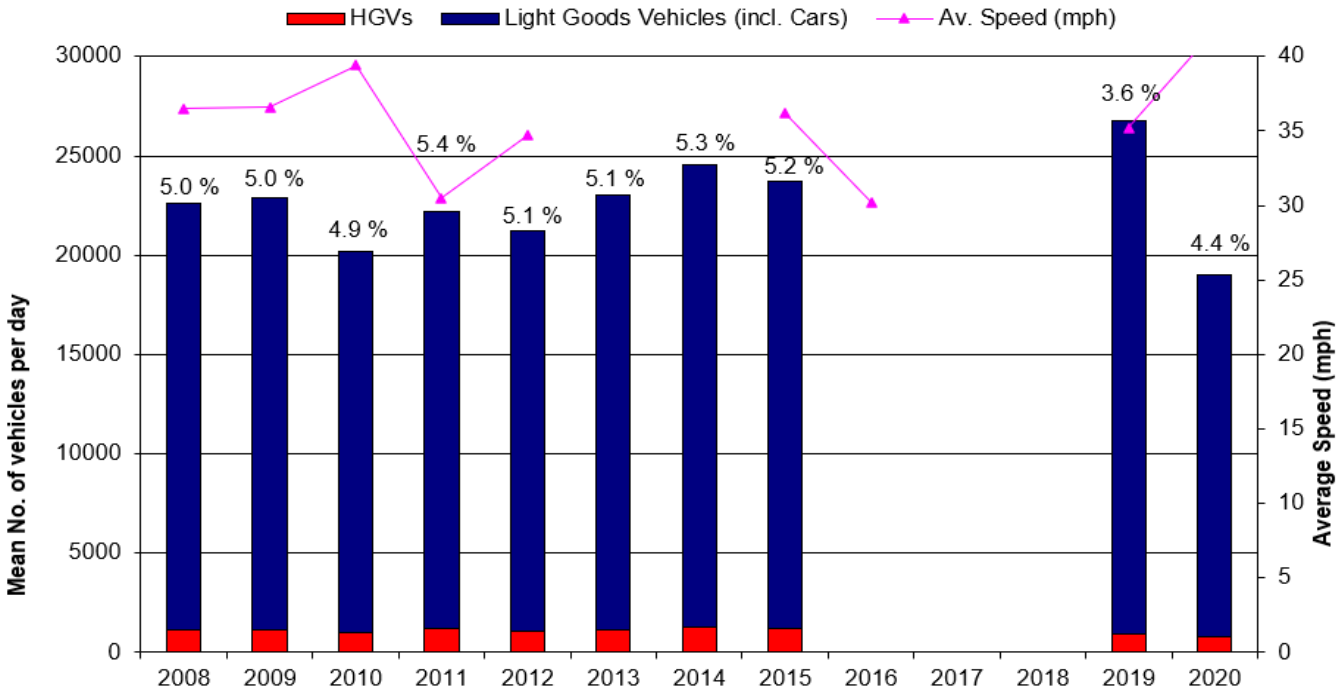



**Figure 3.15 Reigate Hill, North of Raglan Road Annual Mean Daily Traffic Flows, 2004 – 2020.**

### 3.2.5 AQMA No. 12: Redhill

The Redhill AQMA covers properties within the Redhill area covering either partially or entirely Cromwell Road, Queensway, the A25 Redstone Hill between the junction with the A23 and the junction with Hillfield Road, the A23 between the junction of Hooley Lane and Mill St, and the A23 junction with Gloucester Road.

Nitrogen dioxide diffusion tube monitoring takes place at seven sites located within the Redhill AQMA. Measured concentrations at each of these monitoring sites, where there is relevant exposure, was below the relevant air quality objective in the 2017-2020 period (Figure 3.16).

Figure 3.17 below shows traffic flows along the A23, south of Redhill. Data for 2018-2020 at this site are unavailable. Data from the previous years suggest that both traffic flows and average speed were remained relatively stable between 2006 and 2017.

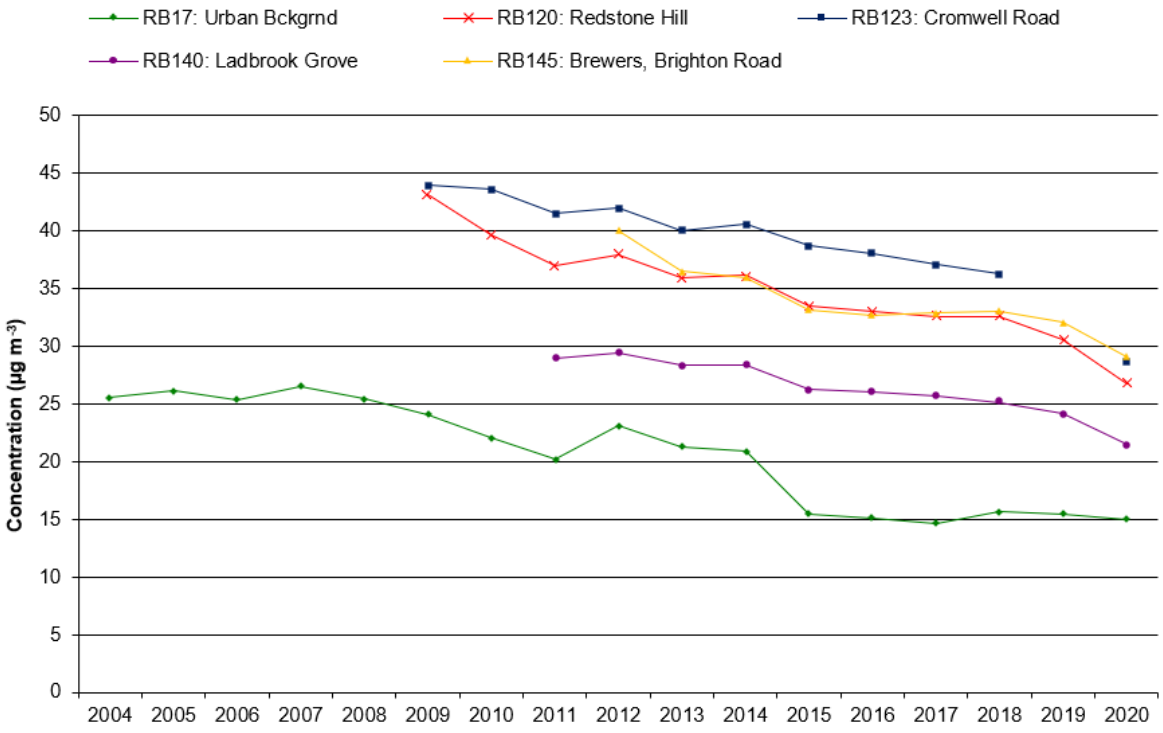



**Figure 3.16 3-Year Rolling Annual Averages at Diffusion Tube Sites – Redhill AQMA, 2004 – 2020**

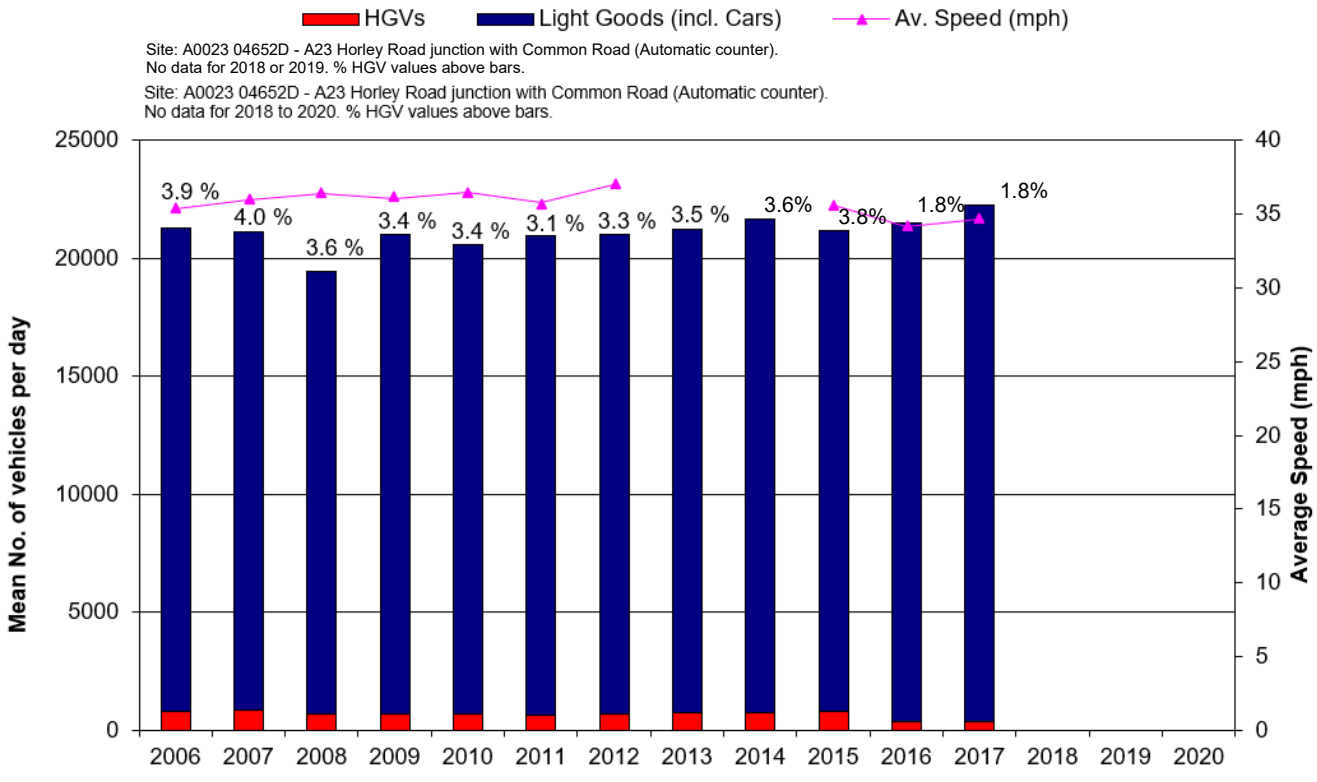



**Figure 3.17 A23 South of Redhill Annual Mean Daily Traffic Flows, 2004 – 2017.**

### 3.2.6 AQMA No. 13: Hooley

Hooley AQMA covers properties within the Hooley area covering either partially or entirely properties along the A23 Brighton Road, Star Lane, Forge Bridge Lane and Church Lane.

Nitrogen dioxide monitoring sites within the Hooley AQMA increased in 2018 with the addition of an extra 42 diffusion tubes and by an additional automatic site (RG7). The purpose of the additional monitoring is to provide a detailed data set for model validation and in response to the concerns of local residents regarding Highways England's plans for road expansion in the area. Measured concentrations at a number of the diffusion tube sites within the Hooley AQMA exceeded the annual mean nitrogen dioxide objective in all years reported. In 2019, numbers of tubes exceeding had reduced, but still included RB148, 181, 205, 208, 212, 217, 218 and 219. Of these, RB148, 181 and 208 and 218 were distance corrected. All of the sites which were distance corrected fell below the objective at sites of relevant exposure. There are, however, also sites at relevant locations (RB181, 205, 212, 217, 219) which are also exceeding the annual mean objective. Exceedances of the annual mean objective were also noted at RG7. There was one exceedance at site RB148 in 2020, which when distance corrected was well below the annual mean objective, with no exceedances at any other monitoring sites in this year.

The monitoring data show a downward trend from 2011 at all sites (see Figure 3.18). A sharp decrease in concentrations is seen at all sites as a result of changing travel behaviour due to the COVID-19 pandemic.

Figure 3.19 below shows traffic flows along the A23, in Hooley. These data suggest very slightly increasing annual mean daily traffic flows from 2004 to 2008, following which there is a significant decrease in 2009. Between 2009 and 2013 flows are relatively stable, increasing marginally to 2015 and staying relatively stable since then. Data for 2020 are not available.

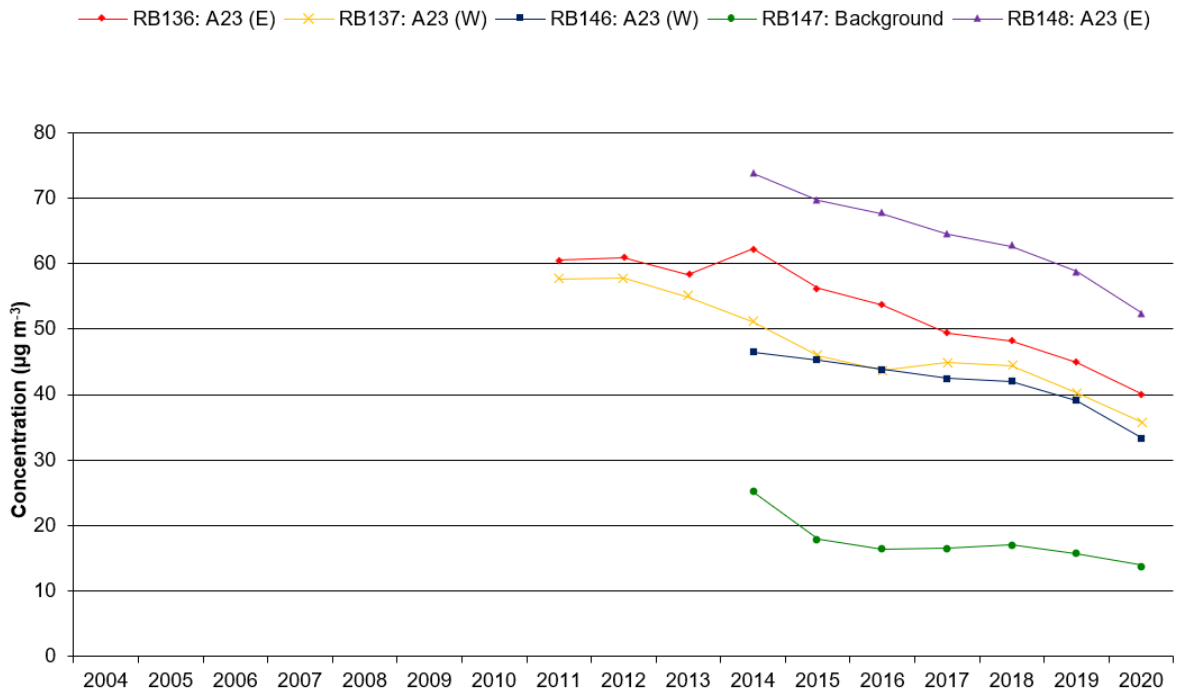



**Figure 3.18 3-Year Rolling Annual Averages at Diffusion Tube Sites - Hooley AQMA, 2004 – 2020.**

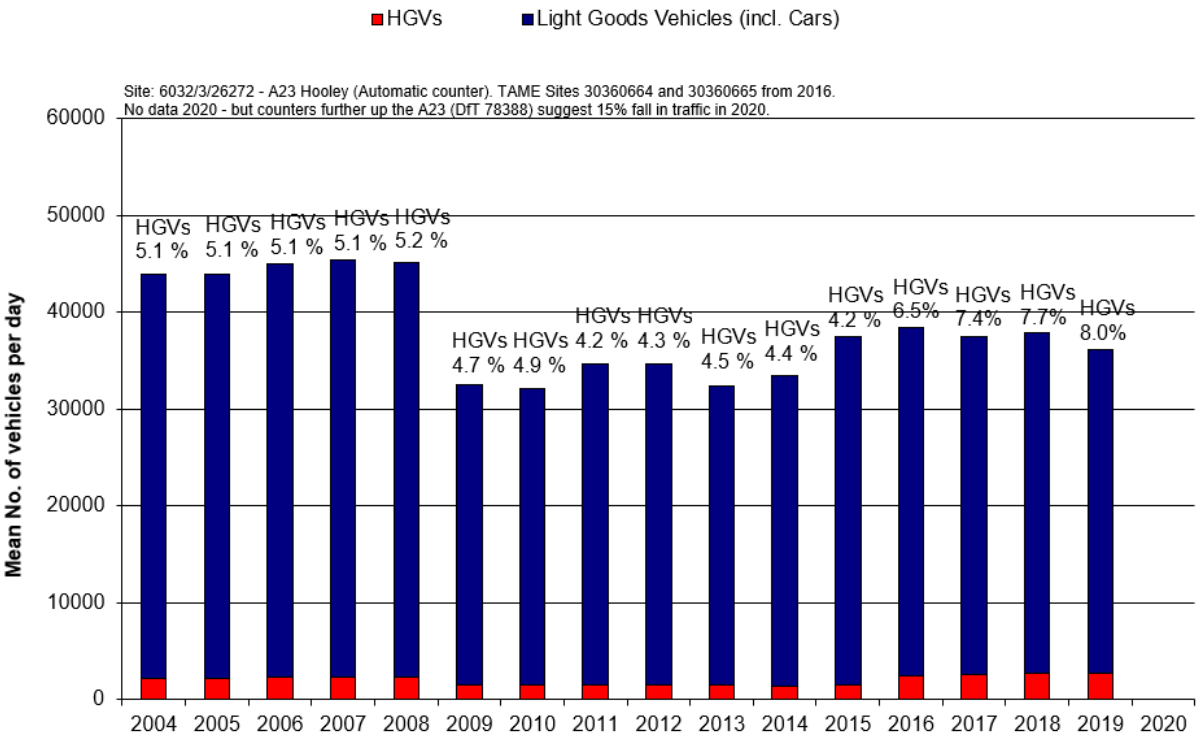



**Figure 3.19 A23 Hooley Annual Mean Daily Traffic Flows, 2004 – 2020.**

# Appendix A: Monitoring Results

## Table A.1 - Details of Automatic Monitoring Sites

| Site ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? | Monitoring Technique | Distance to Relevant Exposure (m) (1) | Distance to kerb of nearest road (m) | Inlet Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RG1 | RG1 – Michael Crescent, Horley | Suburban | 528208 | 142337 | $NO_2$, $PM_{10}$ | Y (AQMA No. 3) | Chemiluminescence, TEOM | 0.0 | 19.1 | 3.5 |
| RG3 (2) | RG3 - Poles Lane Pumping Station, Crawley | Rural | 526421 | 139639 | $NO_2$, ozone (not reported in this report) | N | Chemiluminescence | >50.0 | 12.6 | 2.0 |
| RG6 | RG6 – 106 The Crescent, Horley | Suburban | 528592 | 141831 | $NO_2$ | Y (AQMA No. 3) | Chemiluminescence | 0.0 | 0.7 | 1.5 |
| RG7 | RG7 Hooley Real time Site Garages 55-57 Brighton Road Hooley | Roadside | 528804 | 156435 | NO2 | Y (AQMA no. 13) | Chemiluminescence | 1.7 | 2.0 | 1.5 |

**Notes:**

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

(2) This automatic monitoring site is located outside Reigate and Banstead Borough, but is operated by Reigate and Banstead Borough Council.

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

| Site ID | Site Name | Site Type | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored | In AQMA? | Distance to Relevant Exposure (m) [1] | Distance to kerb of nearest road (m) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Nitrogen Dioxide** | | | | | | | | | | |
| RB1 | Boots, 34 – 36 High Street, Reigate, RH2 9AT | Roadside | 525246 | 150252 | NO2 | Y (AQMA No.9) | 0.0 | 5.1 | N | 3.1 |
| RB3 | Nr Ambulance Station, The Horseshoe, Banstead | Urban background | 524944 | 159630 | NO2 | N | 24.4 | 0.7 | N | 3.0 |
| RB8 | Rear of Boots, Reigate | Urban background | 525246 | 150286 | NO2 | N | 0.0 | 39.2 | N | 3.7 |
| RB9 | Back of 63, St Mary's Road, Reigate | Urban background | 525750 | 149677 | NO2 | N | 0.0 | 24.9 | N | 2.5 |
| RB11 | Outside 38, Riverside, Horley | Suburban | 528104 | 142226 | NO2 | Y (AQMA No. 3) | 0.0 | 1.4 | N | 3.0 |
| RB12 | Horley Police Station, Massetts Road, Horley | Roadside | 528424 | 142934 | NO2 | Y (AQMA No. 3) | 5.5 | 0.4 | N | 2.9 |
| RB13 | Public Car Park, off Massetts Road, Horley | Other | 528362 | 142983 | NO2 | N | 0.0 | 30.0 | N | 2.9 |
| RB17 | 11, Sylvan Way, Redhill | Urban background | 528511 | 149715 | NO2 | N | 4.5 | 1.7 | N | 2.9 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB18 | 60, Brook Road, Merstham | Urban background | 529263 | 153156 | NO2 | N | 6.3 | 1.3 | N | 3.0 |
| RB19 | Village Hall, Station Road, Merstham | Suburban | 529067 | 153375 | NO2 | N | 9.0 | 0.7 | N | 2.9 |
| RB20 | Corner of London Road, Merstham | Roadside | 529026 | 153420 | NO2 | Y (AQMA No. 10) | 20.2 (Nearest relevant exposure is on opposite side of the road) (Difference between the distance of the site to the kerb and the receptor to the kerb is 2.9 m) | 2.6 | N | 2.9 |
| RB21 | Opposite Drift Bridge Hotel, Reigate Road, Banstead | Roadside | 523198 | 160095 | NO2 | N | 13.7 | 1.7 | N | 2.9 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB22 | Opposite 2 Grey Alders, Banstead | Suburban | 523260 | 160111 | NO2 | N | 13.2 (Nearest relevant exposure is on opposite side of the road) (Difference between the distance of the site to the kerb and the receptor to the kerb is 5.0 m) | 1.1 | N | 2.9 |
| RB23 | Outside Warren Mead School, Roundwood Way, Banstead | Urban background | 523612 | 159906 | NO2 | N | 9.5 | 2.3 | N | 2.7 |
| RB24 | Horley Air Monitoring Station | Background | 528208 | 142337 | NO2 | Y (AQMA No. 3) | 0.0 | 19.1 | Y | 3.5 |
| RB25 | Horley Air Monitoring Station | Background | 528208 | 142337 | NO2 | Y (AQMA No. 3) | 0.0 | 19.1 | Y | 3.5 |
| RB26 | Horley Air Monitoring Station | Background | 528208 | 142337 | NO2 | Y (AQMA No. 3) | 0.0 | 19.1 | Y | 3.5 |
| RB27 | White Lodge, Sturts Lane, WHO | Roadside (Near M25) | 521873 | 153896 | NO2 | Y (AQMA No. 1) | 0.0 | 5.6 | N | 3.0 |
| RB29 | April Cottage, Sturts Lane, WHO | Roadside (Near M25) | 521921 | 153937 | NO2 | N | 0.0 | 11.7 | N | 3.0 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB30 | Linden Lea, Chequers Lane, WHO | Roadside (Near M25) | 522112 | 153728 | NO2 | Y (AQMA No. 1) | 0.0 | 18.9 (27.5 m from the M25) | N | 3.0 |
| RB31 | Margery Hall, Reigate Hill | Roadside (Near M25) | 525506 | 152366 | NO2 | N | 0.0 | 19.5 | N | 3.0 |
| RB33 | Rose Cottage, Margery Grove, KT20 7EZ | Roadside (Near M25) | 524081 | 152580 | NO2 | N | 0.0 | 0.0 | N | 3.0 |
| RB34 | Stagholt, Merrywood Grove | Roadside (Near M25) | 524177 | 152393 | NO2 | N | 0.0 | 45.6 | N | 3.0 |
| RB36 | Old Church House, Gatton Bottom | Roadside (Near M25) | 528887 | 153760 | NO2 | N | 0.0 | 74.8 (Distance from the M25, closest road is a very minor access road) | N | 3.0 |
| RB37 | 14 Ashcombe Road, Merstham | Roadside (Near M25) | 529217 | 153605 | NO2 | N | 0.0 | 12.0 | N | 3.0 |
| RB39 | 17 Ashcombe Road, Merstham | Roadside (Near M25) | 529205 | 153572 | NO2 | N | 0.0 | 10.9 (32.3 m from the M25) | N | 3.0 |
| RB40 | Dilkusha, Shepherds Hill | Roadside (Near M25) | 529252 | 154291 | NO2 | N | 0.0 | 15.0 | N | 3.0 |
| RB43 | Glade House, Quality Street, Merstham | Roadside (Near M25) | 528797 | 153612 | NO2 | N | 0.0 | 52.4 | N | 3.0 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB44 | Outside Gunshop, 45 Church St, Reigate | Roadside | 525532 | 150316 | NO2 | Y (AQMA No. 9) | 0.0 | 14.6 | N | 3.0 |
| RB45 | Outside Anglian Windows Church Street, Reigate | Roadside | 525431 | 150270 | NO2 | Y (AQMA No. 9) | 2.4 | 0.1 | N | 3.0 |
| RB46 | Outside Gerrards Menswear, 5 High Street, Reigate | Roadside | 525346 | 150241 | NO2 | Y (AQMA No. 9) | 2.1 | 0.4 | N | 3.0 |
| RB47 | Outside Nationwide, 78 High Street, Reigate | Roadside | 525114 | 150276 | NO2 | Y (AQMA No. 9) | 2.0 | 0.5 | N | 3.0 |
| RB49 | Highlands, Brighton Road | Roadside (Near A217) | 525705 | 152947 | NO2 | Y (AQMA No. 6) | 6.1 | 2.0 | N | 3.0 |
| RB50 | Yew Cottage, Brighton Road | Roadside (Near A217) | 525700 | 152964 | NO2 | N | 0.0 | 24.0 | N | 3.0 |
| RB51 | Outside 17 Wolverton Gardens, Horley | Suburban | 527873 | 142606 | NO2 | Y (AQMA No. 3) | 0.0 | 15.1 | N | 3.5 |
| RB52 | Outside 20 Wolverton Gardens, Horley | Suburban | 527892 | 142463 | NO2 | Y (AQMA No. 3) | 0.0 | 13.7 | N | 3.5 |
| RB53 | Outside 66 / 68 Cheyne Walk, Horley | Suburban | 528030 | 142373 | NO2 | Y (AQMA No. 3) | 0.0 | 4.3 | N | 3.5 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB54 | Outside 7 / 9 Crescent Way, Horley | Suburban | 528112 | 142321 | NO2 | Y (AQMA No. 3) | 0.0 | 4.2 | N | 3.5 |
| RB55 | Outside 40a Crescent Way, Horley | Suburban | 528254 | 142196 | NO2 | Y (AQMA No. 3) | 0.0 | 1.1 | N | 3.5 |
| RB56 | Outside 8 / 10 The Crescent, Horley | Suburban | 528386 | 142080 | NO2 | Y (AQMA No. 3) | 0.0 | 2.6 | N | 3.5 |
| RB57 | Outside 29 / 31 The Crescent, Horley | Suburban | 528499 | 141953 | NO2 | Y (AQMA No. 3) | 0.0 | 2.6 | N | 3.5 |
| RB58 | Outside 39 / 41 The Crescent, Horley | Suburban | 528538 | 141897 | NO2 | Y (AQMA No. 3) | 0.0 | 2.6 | N | 3.5 |
| RB59 | Outside 92 / 94 The Crescent, Horley | Suburban | 528602 | 141789 | NO2 | Y (AQMA No. 3) | 0.0 | 2.2 | N | 3.5 |
| RB60 | Outside 120 / 122 The Crescent, Horley | Suburban | 528607 | 141910 | NO2 | Y (AQMA No. 3) | 0.0 | 2.8 | N | 3.5 |
| RB61 | Outside 79 / 81 The Crescent, Horley | Suburban | 528578 | 142006 | NO2 | Y (AQMA No. 3) | 0.0 | 1.0 | N | 3.5 |
| RB64 | Outside 16 / 22 The Drive, Horley | Suburban | 528608 | 142432 | NO2 | Y (AQMA No. 3) | 0.0 | 1.6 | N | 3.5 |
| RB65 | Outside 4 / 6 The Drive, Horley | Suburban | 528581 | 142635 | NO2 | Y (AQMA No. 3) | 0.0 | 16.8 | N | 3.5 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB66 | Outside 3a / 3b Fairfield Avenue, Horley | Suburban | 528499 | 142512 | NO2 | Y (AQMA No. 3) | 0.0 | 18.5 | N | 3.5 |
| RB68 | Outside 57 Fairfield Avenue, Horley | Suburban | 528505 | 142246 | NO2 | Y (AQMA No. 3) | 0.0 | 18.5 | N | 3.5 |
| RB69 | Outside 61 Upfield, Horley | Suburban | 528335 | 142224 | NO2 | Y (AQMA No. 3) | 0.0 | 14.0 | N | 3.5 |
| RB70 | Outside 58 / 60 Upfield, Horley | Suburban | 528360 | 142384 | NO2 | Y (AQMA No. 3) | 0.0 | 17.8 | N | 3.5 |
| RB72 | Outside 25 / 27 Upfield, Horley | Suburban | 528220 | 142583 | NO2 | Y (AQMA No. 3) | 0.0 | 19.2 | N | 3.5 |
| RB73 | Outside 9 / 11 Upfield, Horley | Suburban | 528172 | 142679 | NO2 | Y (AQMA No. 3) | 0.0 | 17.8 | N | 3.5 |
| RB74 | On Green, 30a / 30b Meadowcroft Close, Horley | Suburban | 529149 | 141953 | NO2 | Y (AQMA No. 3) | 0.0 | 15.1 | N | 3.5 |
| RB75 | On Roundabout, The Coronet, Horley | Suburban | 529203 | 142192 | NO2 | Y (AQMA No. 3) | 0.0 | 12.4 | N | 3.5 |
| RB76 | 33 Limes Avenue, Horley | Suburban | 528958 | 142468 | NO2 | Y (AQMA No. 3) | 0.0 | 20.7 | N | 3.5 |
| RB77 | Layby at Entrance to Staffords Place, Horley | Suburban | 528789 | 142570 | NO2 | Y (AQMA No. 3) | 0.0 | 13.0 | N | 3.5 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB78 | Outside 74 The Crescent, Horley | Suburban | 528553 | 141857 | NO2 | Y (AQMA No. 3) | 0.0 | 2.7 | Y | 3.5 |
| RB79 | Outside 74 The Crescent, Horley | Suburban | 528553 | 141857 | NO2 | Y (AQMA No. 3) | 0.0 | 2.7 | Y | 3.5 |
| RB80 | Outside 74 The Crescent, Horley | Suburban | 528553 | 141857 | NO2 | Y (AQMA No. 3) | 0.0 | 2.7 | Y | 3.5 |
| RB81 | Outside Flying Scud Public House, Brighton Road, Redhill | Roadside (A23 AQMA) | 527594 | 149236 | NO2 | N | 0.0 | 5.5 | N | 3.5 |
| RB82 | Outside 1 Deans Lane, Hooley | Suburban (A23 AQMA) | 528770 | 155797 | NO2 | N | 0.0 | 18.3 | N | 3.5 |
| RB95 | Flat 1, Tasboro House, Rushworth Road | Roadside | 525382 | 150639 | NO2 | N | 0.0 | 5.9 | N | 2.0 |
| RB98 | 16 / 17 Woodroyd Gardens | Suburban | 527931 | 142231 | NO2 | Y (AQMA No. 3) | 0.0 | 1.0 | N | 2.0 |
| RB99 [2] | Poles Lane Pumping Station, Cawley | Rural / Other | 526421 | 139639 | NO2 | N | 0.0 | 12.4 | Y | 2.0 |
| RB100 [2] | Poles Lane Pumping Station, Cawley | Rural / Other | 526421 | 139639 | NO2 | N | 0.0 | 12.4 | Y | 2.0 |
| RB101 [2] | Poles Lane Pumping Station, Cawley | Rural / Other | 526421 | 139639 | NO2 | N | 0.0 | 12.4 | Y | 2.0 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB102 [2] | In Field near Bridleway, Hathersham Farm, Horley | Rural / Other | 530936 | 144278 | NO2 | N | >50.0 | 19.1 | N | 2.0 |
| RB104 | ASK, High Street, Reigate | Roadside | 525204 | 150254 | NO2 | Y (AQMA No. 9) | 0.0 | 4.9 | N | 2.0 |
| RB105 | Finishing Touch, High Street, Reigate | Roadside | 525203 | 150239 | NO2 | Y (AQMA No. 9) | 0.0 | 2.8 | N | 2.0 |
| RB106 | Outside Crossways, Fir Tree Road, Banstead | Roadside | 523250 | 160056 | NO2 | Y (AQMA No. 8) | 5.0 | 2.1 | N | 2.0 |
| RB107 | Sussex Blinds, 29 Church Street | Roadside | 525467 | 150292 | NO2 | Y (AQMA No. 9) | 0.6 | 2.3 | N | 2.0 |
| RB109 | Male Territory, 27a Bell Street, Reigate | Roadside | 525387 | 150178 | NO2 | Y (AQMA No. 9) | 0.0 | 3.6 | N | 2.0 |
| RB110 | 204 London Road North opposite RB20 | Roadside | 529016 | 153439 | NO2 | Y (AQMA No. 10) | 0.0 | 4.3 | N | 2.0 |
| RB111 | Knotts Pine, 1 West Street, Reigate | Roadside | 525031 | 150291 | NO2 | Y (AQMA No. 9) | 0.0 | 4.3 | N | 2.0 |
| RB113 | Opposite Newbury Road | Roadside | 524795 | 150404 | NO2 | Y (AQMA No. 9) | 0.0 | 2.1 | N | 2.0 |
| RB114 | Outside 87, West Street, Reigate | Roadside | 524368 | 150477 | NO2 | N | 5.9 | 1.7 | N | 2.0 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB115 | Outside 36, West Street, Reigate | Roadside | 524751 | 150428 | NO2 | Y (AQMA No. 9) | 0.0 | 0.6 | N | 2.0 |
| RB116 | Outside 12, West Street, Reigate | Roadside | 525022 | 150317 | NO2 | Y (AQMA No. 9) | 0.0 | 2.3 | N | 2.0 |
| RB117 | Crossway House, 8 London Road, Reigate | Roadside | 525076 | 150327 | NO2 | Y (AQMA No. 9) | 0.0 | 2.9 | N | 2.0 |
| RB118 | 8 Burlington Place, Reigate | Roadside | 525151 | 150467 | NO2 | Y (AQMA No. 9) | 0.0 | 14.2 | N | 2.0 |
| RB120 | Outside 21 Redstone Hill, Redhill | Roadside | 528196 | 150421 | NO2 | Y (AQMA No. 12) | 9.7 | 2.2 | N | 2.0 |
| RB121 | Opposite Ladbrook Grove, Redhill | Kerbside | 528092 | 150786 | NO2 | Y (AQMA No. 12) | N/A | 1.5 | N | 2.0 |
| RB122 | Roundabout sign 5158 near carpark, Marketfield Way, Redhill | Roadside | 528013 | 150475 | NO2 | N (AQMA No. 12) | >50 | 2.9 | N | 2.0 |
| RB123 | Outside Age Concern Cromwell Road, Redhill | Kerbside | 527838 | 150474 | NO2 | N (AQMA No. 12) | 0.9 | 0.5 | N | 2.0 |
| RB124 | Outside 22 High Street, Merstham | Roadside | 529013 | 153285 | NO2 | Y (AQMA No. 10) | 1.3 | 1.8 | N | 2.0 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB125 | Opposite Reigate Hill Close, Reigate Hill | Roadside | 525589 | 151655 | NO2 | N (AQMA No. 11) | 4.7 | 2.7 | N | 2.0 |
| RB136 | Outside 45 Brighton Road, Hooley | Roadside | 528810 | 156474 | NO2 | Y (AQMA No. 13) | 4.9 | 1.0 | N | 2.0 |
| RB137 | Opposite 23 Brighton Road, Hooley | Roadside | 528831 | 156648 | NO2 | Y (AQMA No. 13) | 21.3 (Nearest relevant exposure is on opposite side of the road, relevant exposure is closer to the kerb than the monitoring site) (Difference between the distance of the site to the kerb and the receptor to the kerb is 0.4 m) | 6.0 | N | 2.0 |
| RB140 | Flat 2, 45 Ladbrook Grove, Redhill | Roadside | 528122 | 150799 | NO2 | Y (AQMA No. 12) | 0.2 | 7.2 | N | 2.0 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB141 | Near roundabout outside 105 Station Road, Redhill | Roadside | 527373 | 150596 | NO2 | N | 1.9 | 2.7 | N | 2.0 |
| RB145 | Outside Brewers, 33 Brighton Road, Redhill | Kerbside | 527852 | 150158 | NO2 | Y (AQMA No. 12) | 3.3 | 2.2 | N | 2.0 |
| RB146 | Opposite ESSO Garage, Brighton Road, Hooley | Kerbside | 528759 | 156277 | NO2 | Y (AQMA No. 13) | 21.0 | 3.2 | N | 2.0 |
| RB147 | Halfway down footpath by the side of 92 / 92b Brighton Road, Hooley | Background | 528732 | 156407 | NO2 | N | 26.3 (Relevant exposure is closer to the kerb than the monitoring site) | 51.0 | N | 2.0 |
| RB148 | 17 Star Cottages, Brighton Road, Hooley | Kerbside | 528855 | 156674 | NO2 | Y (AQMA No. 13) | 5.5 | 1.0 | N | 2.5 |
| RB149 | 6 Brighton Road, Horley | Roadside | 527737 | 142710 | NO2 | Y (AQMA No. 3) | 4.0 | 2.8 | N | 2.5 |
| RB150 | 8 Elvington Lodge, Reigate Hill | Roadside | 525397 | 150867 | NO2 | Y (AQMA No. 11) | 13.3 | 3.4 | N | 2.0 |
| RB151 | Between 83 and 85 Victoria Road, Horley | Roadside | 528502 | 142952 | NO2 | Y (AQMA No. 3) | 0.0 | 1.8 | N | 2.5 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB152 | A23 south of New Battlebridge Lane | Roadside | 528599 | 152439 | NO2 | N | 27.6 (Nearest relevant exposure is on opposite side of the road) (Difference between the distance of the site to the kerb and the receptor to the kerb is 7.8 m) | 1.6 | N | 2.5 |
| RB153 | 1 Horley Road junction with Three Arch Road | Roadside | 527837 | 148046 | NO2 | N | 6.7 | 2.9 | N | 2.5 |
| RB167 | Queensway, Redhill | Roadside | 527830 | 150643 | NO2 | Y (AQMA No. 12) | 0.0 | 3.1 | N | 3.0 |
| RB174 | Opposite 37 Brighton Road, Horley | Roadside | 527852 | 142841 | NO2 | Y (AQMA No. 3) | 2.3 | 3.0 | N | 2.0 |
| RB175 | 23 Brighton Road, Horley | Roadside | 527955 | 142999 | NO2 | N | 12.1 | 2.8 | N | 2.5 |
| RB176 | 15 Brighton Road, Horley | Roadside | 527765 | 142777 | NO2 | Y (AQMA No. 3) | 0.0 | 10.2 | N | 2.0 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB177 | 11 Brighton Road, Horley | Roadside | 527754 | 142762 | NO2 | Y (AQMA No. 3) | 0.0 | 8.6 | N | 2.0 |
| RB178 | RG6 co-location, 110 The Crescent, Horley | Suburban | 528592 | 141831 | NO2 | Y (AQMA No. 3) | 0.0 | 0.5 (from V quiet road, measuring emissions from Gatwick) | Y | 1.5 |
| RB179 | RG6 co-location, 110 The Crescent, Horley | Suburban | 528592 | 141831 | NO2 | Y (AQMA No. 3) | 0.0 | 0.5 (from V quiet road, measuring emissions from Gatwick) | Y | 1.5 |
| RB180 | RG6 co-location, 110 The Crescent, Horley | Suburban | 528592 | 141831 | NO2 | Y (AQMA No. 3) | 0.0 | 0.5 (from V quiet road, measuring emissions from Gatwick) | Y | 1.5 |
| RB181 | Outside 10D Brighton Road Hooley | Roadside | 528852 | 156724 | NO2 | Y (AQMA No. 13) | 15 | 2.3 | N | 2.3 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB182 | 10D Brighton Road Hooley | Roadside | 528835 | 156728 | NO2 | Y (AQMA No. 13) | 0 | 18.7 | N | 2 |
| RB183 | 58B Brighton Road Hooley | Roadside | 528813 | 156580 | NO2 | Y (AQMA No. 13) | 0 | 7.8 | N | 2.4 |
| RB184 | Lattice Wood Hooley News 66 Brighton Road Hooley | Roadside | 528807 | 156555 | NO2 | Y (AQMA No. 13) | 0 | 7.2 | N | 2.4 |
| RB186 | adjacent to 72Brighton Road | Roadside | 528790 | 156500 | NO2 | Y (AQMA No. 13) | In line with building facade to A23 i.e. 10.3 m. To star Lane tube to kerb 2m, tube to house 3.4m (house 5.4m from kerb) | 10.3 | N | 2.3 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB187 | 74 Brighton Road Hooley | Roadside | 528789 | 156488 | NO2 | Y (AQMA No. 13) | 0 | 10.2 | N | 1.7 |
| RB188 | 76 Brighton Road Hooley | Roadside | 528792 | 156478 | NO2 | Y (AQMA No. 13) | 0 | 5.1 | N | 1.6 |
| RB189 | 78 Brighton Road Hooley | Roadside | 528789 | 156465 | NO2 | Y (AQMA No. 13) | 0 | 5.6 | N | 1.8 |
| RB190 | 80B Brighton Road Hooley | Roadside | 528788 | 156460 | NO2 | Y (AQMA No. 13) | 0 | 5.7 | N | 1.9 |
| RB191 | 82 Brighton Road Hooley | Roadside | 528785 | 156448 | NO2 | Y (AQMA No. 13) | 0 | 6.2 | N | 2 |

| Site ID | Site Name | Site Type | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored | In AQMA? | Distance to Relevant Exposure (m) [1] | Distance to kerb of nearest road (m) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB192 | 84 Brighton Road Hooley | Roadside | 528784 | 156442 | NO2 | Y (AQMA No. 13) | 0 | 6.2 | N | 1.9 |
| RB193 | 86 Brighton Road Hooley | Roadside | 528782 | 156430 | NO2 | Y (AQMA No. 13) | 0 | 6.1 | N | 2 |
| RB194 | Outside 96 Brighton Road | Kerbside | 528779 | 156381 | NO2 | Y (AQMA No. 13) | 25 | 1 | N | 2.5 |
| RB195 | Outside flats 102 Brighton Road | Kerbside | 528772 | 156349 | NO2 | Y (AQMA No. 13) | 17 | Note 0.6 m to kerb but once layby included (2.8m) total 3.4m to road edge | N | 2.3 |
| RB196 | TopMarks Tyres 75 Brighton Road Hooley | Roadside | 528797 | 156331 | NO2 | Y (AQMA No. 13) | 0 | 16.8 | N | 2 |

| Site ID | Site Name | Site Type | X OS Grid Ref | Y OS Grid Ref | Pollutants Monitored | In AQMA? | Distance to Relevant Exposure (m) [1] | Distance to kerb of nearest road (m) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB197 | Drain pipe 67 Brighton Road Hooley | Roadside | 528795 | 156373 | NO2 | Y (AQMA No. 13) | 0 | 6.5 | N | 1.9 |
| RB198 | 65 Brighton Road Hooley | Roadside | 528796 | 156379 | NO2 | Y (AQMA No. 13) | 0 | 6.3 | N | 2 |
| RB199 | 63A Brighton Road Hooley | Roadside | 528800 | 156390 | NO2 | Y (AQMA No. 13) | 0 | 8.1 | N | 2 |
| RB200 | Outside 59 Brighton Road | Roadside | 528799 | 156409 | NO2 | Y (AQMA No. 13) | 4.4 | 3.6 | N | 2.6 |
| RB201 | Flat 1, 55 Brighton Road Hooley | Roadside | 528804 | 156414 | NO2 | Y (AQMA No. 13) | 0 | 7.1 | N | 1.9 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB202 | 53 Brighton Road Hooley | Roadside | 528808 | 156444 | NO2 | Y (AQMA No. 13) | 0 | 4.9 | N | 1.9 |
| RB203 | 51 Brighton Road Hooley | Roadside | 528809 | 156454 | NO2 | Y (AQMA No. 13) | 0 | 4.4 | N | 2.1 |
| RB204 | 49 Brighton Road Hooley | Roadside | 528810 | 156457 | NO2 | Y (AQMA No. 13) | 0 | 4.5 | N | 1.8 |
| RB205 | 47 Brighton Road Hooley | Roadside | 528812 | 156466 | NO2 | Y (AQMA No. 13) | 0 | 4 | N | 1.9 |
| RB206 | 45 Brighton Road Hooley | Roadside | 528816 | 156477 | NO2 | Y (AQMA No. 13) | 0 | 5.9 | N | 1.9 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB207 | 43 Brighton Road Hooley | Roadside | 528818 | 156486 | NO2 | Y (AQMA No. 13) | 0 | 6.1 | N | 1.9 |
| RB208 | outside 41 Brighton Road | Roadside | 528825 | 156526 | NO2 | Y (AQMA No. 13) | 2.9 | 1.1 | N | 2.7 |
| RB209 | 39 Brighton Road Hooley | Roadside | 528833 | 156547 | NO2 | Y (AQMA No. 13) | 0 | 7.7 | N | 1.9 |
| RB210 | 37 Brighton Road Hooley | Roadside | 528833 | 156555 | NO2 | Y (AQMA No. 13) | 0 | 6.7 | N | 1.8 |
| RB211 | 33 Brighton Road Hooley | Roadside | 528839 | 156577 | NO2 | Y (AQMA No. 13) | 0 | 7.3 | N | 1.7 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB212 | 29 Brighton Road Hooley | Roadside | 528840 | 156582 | NO2 | Y (AQMA No. 13) | 0 | 7.5 | N | 1.9 |
| RB213 | 27 Brighton Road Hooley | Roadside | 528845 | 156604 | NO2 | Y (AQMA No. 13) | 0 | 7.5 | N | 1.9 |
| RB214 | 25 Brighton Road Hooley | Roadside | 528848 | 156617 | NO2 | Y (AQMA No. 13) | 0 | 7.3 | N | 2 |
| RB215 | 21 Brighton Road Hooley | Roadside | 528853 | 156646 | NO2 | Y (AQMA No. 13) | 0 | 6.5 | N | 2 |
| RB216 | 15 Brighton Road Hooley | Roadside | 528862 | 156690 | NO2 | Y (AQMA No. 13) | 0 | 5.1 | N | 1.9 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB217 | Flat 2, 9-11 Brighton Road Hooley | Roadside | 528866 | 156712 | NO2 | Y (AQMA No. 13) | 0 | 3.4 | N | 1.9 |
| RB218 | 7 Brighton Road Hooley | Kerbside | 528869 | 156737 | NO2 | Y (AQMA No. 13) | 4 | 0.5 | N | 2 |
| RB219 | 5 Brighton Road Hooley | Roadside | 528877 | 156744 | NO2 | Y (AQMA No. 13) | 0 | 7.2 | N | 1.8 |
| RB223 | RG7 Hooley Real time Site Garages 55-57 Brighton Road Hooley | Roadside | 528804 | 156435 | NO2 | | 1.7 | 2 | Y | 1.5 |
| RB224 | RG7 Hooley Real time Site Garages 55-57 Brighton Road Hooley | Roadside | 528804 | 156435 | NO2 | | 1.7 | 2 | Y | 1.5 |

| 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) | Tube Collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| RB225 | RG7 Hooley Real time Site Garages 55-57 Brighton Road Hooley | Roadside | 528804 | 156435 | NO2 | | 1.7 | 2 | Y | 1.5 |
| **Benzene** | | | | | | | | | | |
| RB1 | Boots, 34 – 36 High Street, Reigate, RH2 9AT | Roadside | 525246 | 150252 | Benzene | Y (AQMA No. 9) | 0.0 | 5.1 | N | 3.1 |
| RB11 | Outside 38, Riverside, Horley | Suburban | 528104 | 142226 | Benzene | Y (AQMA No. 3) | 0.0 | 1.4 | N | 3.0 |
| RB20 | Corner of London Road, Merstham | Roadside | 529026 | 153420 | Benzene | Y (AQMA No. 10) | 20.2 (Nearest relevant exposure is on opposite side of the road) (Difference between the distance of the site to the kerb and the receptor to the kerb is 2.9 m) | 2.6 | N | 2.9 |

**Notes:**

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

[2] This diffusion tube monitoring site is located outside Reigate and Banstead Borough, but is operated by Reigate and Banstead Council

## Table A.3 – Annual Mean $NO_2$ Monitoring Results

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Monitoring Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2020 (%) (2) | $NO_2$ Annual Mean Concentration ($\mu g/m^3$) (3) (4) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 2016 | 2017 | 2018 | 2019 | 2020 |
| RG1 | 528208 | 142337 | Suburban | Automatic | 99.1 | 99.1 | 20.3 | 20.4 | 18.8 | 19.1 | 13.1 |
| RG3 | 526421 | 139639 | Rural | Automatic | 97.6 | 97.6 | 16.7 | 13.9 | 15.5 | 15.1 | 9.7 |
| RG6 | 528592 | 141831 | Suburban | Automatic | 99.5 | 99.5 | 28.3 | 26.7 | 24.9 | 24.2 | 14.6 |
| RG7 | 528804 | 156436 | Roadside | Automatic | 90.5 | 90.5 | - | - | **47.4** | **45.0** | 37.6 |
| RB1 | 525246 | 150252 | Roadside | Diffusion tube | 100.0 | 100.0 | 33.6 | 32.4 | 30.6 | 29.5 | 21.5 |
| RB3 | 524944 | 159630 | Urban background | Diffusion tube | 100.0 | 100.0 | 19.7 | 17.6 | 17.5 | 16.1 | 11.7 |
| RB8 | 525246 | 150286 | Urban Background | Diffusion tube | 76.9 | 76.9 | 20.9 | 17.8 | 19.0 | 17.2 | 11.5 |
| RB9 | 525750 | 149677 | Urban background | Diffusion tube | 100.0 | 100.0 | 17.3 | 16.6 | 16.4 | 16.2 | 12.2 |
| RB11 | 528104 | 142226 | Suburban | Diffusion tube | 100.0 | 100.0 | 24.2 | 22.8 | 23.9 | 21.3 | 14.6 |
| RB12 | 528424 | 142934 | Roadside | Diffusion tube | 100.0 | 100.0 | 26.8 | 28.3 | 25.3 | 25.8 | 20.7 |
| RB13 | 528362 | 142983 | Other | Diffusion tube | 65.4 | 65.4 | 22.9 | 19.9 | 23.1 | 19.8 | 13.3 |
| RB17 | 528511 | 149715 | Urban background | Diffusion tube | 100.0 | 100.0 | 16.9 | 14.0 | 16.3 | 16.0 | 12.3 |
| RB18 | 529263 | 153156 | Urban background | Diffusion tube | 100.0 | 100.0 | 24.8 | 22.6 | 21.9 | 20.8 | 15.3 |
| RB19 | 529067 | 153375 | Suburban | Diffusion tube | 92.6 | 92.6 | 33.1 | 23.5 | 23.1 | 21.6 | 16.3 |
| RB20 | 529026 | 153420 | Roadside | Diffusion tube | 100.0 | 100.0 | 34.8 | 32.8 | 30.3 | 29.4 | 21.1 |
| RB21 | 523198 | 160095 | Roadside | Diffusion tube | 100.0 | 100.0 | 38.0 | 34.1 | 32.4 | 31.5 | 22.3 |
| RB22 | 523260 | 160111 | Suburban | Diffusion tube | 82.7 | 82.7 | 21.0 | 19.7 | 19.7 | 18.7 | 13.7 |
| RB23 | 523612 | 159906 | Urban background | Diffusion tube | 100.0 | 100.0 | 18.2 | 16.2 | 16.2 | 15.0 | 11.9 |
| RB24 | 528208 | 142337 | Background | Diffusion tube | 100.0 | 100.0 | 21.0 | 21.1 | 19.8 | 21.8 | 14.2 |
| RB25 | 528208 | 142337 | Background | Diffusion tube | 100.0 | 100.0 | 21.4 | 21.8 | 21.6 | 21.2 | 13.4 |
| RB26 | 528208 | 142337 | Background | Diffusion tube | 100.0 | 100.0 | 21.4 | 20.9 | 21.6 | 21.7 | 15.0 |
| RB27 | 521873 | 153896 | Roadside (near M25) | Diffusion tube | 100.0 | 100.0 | 28.2 | 25.3 | 24.7 | 21.0 | 16.3 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RB29 | 521921 | 153937 | Roadside (near M25) | Diffusion tube | 100.0 | 100.0 | 25.1 | 24.8 | 21.5 | 20.5 | 14.3 |
| RB30 | 522112 | 153728 | Roadside (near M25) | Diffusion tube | 100.0 | 100.0 | 25.3 | 24.3 | 22.0 | 21.0 | 14.6 |
| RB31 | 525506 | 152366 | Roadside (near M25) | Diffusion tube | 100.0 | 100.0 | 18.1 | 16.0 | 16.3 | 13.8 | 9.8 |
| RB33 | 524081 | 152580 | Roadside (near M25) | Diffusion tube | 100.0 | 100.0 | 22.5 | 21.1 | 20.3 | 18.9 | 13.1 |
| RB34 | 524177 | 152393 | Roadside (near M25) | Diffusion tube | 100.0 | 100.0 | 31.6 | 24.1 | 26.4 | 22.3 | 15.3 |
| RB36 | 528887 | 153760 | Roadside (near M25) | Diffusion tube | 100.0 | 100.0 | 22.6 | 20.3 | 23.8 | 20.2 | 14.4 |
| RB37 | 529217 | 153605 | Roadside (near M25) | Diffusion tube | 100.0 | 100.0 | 24.2 | 24.0 | 22.0 | 21.0 | 16.0 |
| RB39 | 529205 | 153572 | Roadside (Near M25) | Diffusion tube | 100.0 | 100.0 | 25.1 | 25.1 | 22.1 | 20.4 | 16.8 |
| RB40 | 529252 | 154291 | Roadside (near M25) | Diffusion tube | 100.0 | 100.0 | 21.9 | 20.3 | 19.0 | 19.1 | 13.2 |
| RB43 | 528797 | 153612 | Roadside (near M25) | Diffusion tube | 67.0 | 67.0 | 26.8 | 23.3 | 23.8 | 22.2 | 14.9 |
| RB44 | 525532 | 150316 | Roadside | Diffusion tube | 82.7 | 82.7 | 33.2 | 30.8 | 28.5 | 27.7 | 21.0 |
| RB45 | 525431 | 150270 | Roadside | Diffusion tube | 90.4 | 90.4 | 32.2 | 28.0 | 29.2 | 29.4 | 19.6 |
| RB46 | 525346 | 150241 | Roadside | Diffusion tube | 82.7 | 82.7 | 37.2 | 35.9 | 31.0 | 33.2 | 22.0 |
| RB47 | 525114 | 150276 | Roadside | Diffusion tube | 80.8 | 80.8 | 37.8 | 35.0 | 34.8 | 32.8 | 24.3 |
| RB49 | 525705 | 152947 | Roadside (near A217) | Diffusion tube | 100.0 | 100.0 | **44.7** | **42.4** | 39.2 | 36.1 | 24.6 |
| RB50 | 525700 | 152964 | Roadside (near A217) | Diffusion tube | 100.0 | 100.0 | 27.0 | 26.1 | 24.7 | 26.2 | 18.2 |
| RB51 | 527873 | 142606 | Suburban | Diffusion tube | 90.4 | 90.4 | 21.7 | 20.8 | 20.8 | 20.7 | 13.1 |
| RB52 | 527892 | 142463 | Suburban | Diffusion tube | 100.0 | 100.0 | 24.7 | 24.7 | 25.0 | 24.6 | 16.1 |
| RB53 | 528030 | 142373 | Suburban | Diffusion tube | 100.0 | 100.0 | 23.8 | 25.3 | 24.4 | 25.6 | 16.3 |
| RB54 | 528112 | 142321 | Suburban | Diffusion tube | 100.0 | 100.0 | 22.7 | 23.4 | 24.5 | 22.9 | 15.0 |
| RB55 | 528254 | 142196 | Suburban | Diffusion tube | 100.0 | 100.0 | 24.7 | 22.8 | 24.8 | 23.6 | 16.0 |
| RB56 | 528386 | 142080 | Suburban | Diffusion tube | 100.0 | 100.0 | 24.5 | 24.0 | 22.2 | 24.7 | 14.6 |
| RB57 | 528499 | 141953 | Suburban | Diffusion tube | 100.0 | 100.0 | 25.0 | 26.2 | 24.2 | 24.6 | 15.2 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RB58 | 528538 | 141897 | Suburban | Diffusion tube | 100.0 | 100.0 | 26.0 | 26.8 | 24.7 | 25.9 | 15.6 |
| RB59 | 528602 | 141789 | Suburban | Diffusion tube | 100.0 | 100.0 | 28.6 | 27.8 | 26.5 | 26.0 | 15.3 |
| RB60 | 528607 | 141910 | Suburban | Diffusion tube | 82.7 | 82.7 | 27.2 | 27.3 | 24.9 | 26.1 | 15.0 |
| RB61 | 528578 | 142006 | Suburban | Diffusion tube | 100.0 | 100.0 | 24.8 | 22.6 | 21.3 | 23.1 | 15.6 |
| RB64 | 528608 | 142432 | Suburban | Diffusion tube | 100.0 | 100.0 | 23.6 | 22.1 | 21.6 | 23.1 | 15.0 |
| RB65 | 528581 | 142635 | Suburban | Diffusion tube | 100.0 | 100.0 | 24.6 | 22.4 | 22.8 | 23.1 | 16.4 |
| RB66 | 528499 | 142512 | Suburban | Diffusion tube | 100.0 | 100.0 | 22.7 | 21.8 | 22.5 | 21.6 | 14.4 |
| RB68 | 528505 | 142246 | Suburban | Diffusion tube | 100.0 | 100.0 | 25.9 | 24.0 | 21.7 | 24.0 | 14.8 |
| RB69 | 528335 | 142224 | Suburban | Diffusion tube | 100.0 | 100.0 | 24.3 | 26.5 | 24.7 | 25.2 | 16.2 |
| RB70 | 528360 | 142384 | Suburban | Diffusion tube | 100.0 | 100.0 | 23.8 | 24.3 | 23.3 | 23.7 | 14.2 |
| RB72 | 528220 | 142583 | Suburban | Diffusion tube | 100.0 | 100.0 | 25.4 | 22.2 | 25.1 | 23.6 | 15.7 |
| RB73 | 528172 | 142679 | Suburban | Diffusion tube | 100.0 | 100.0 | 24.0 | 22.0 | 22.0 | 21.5 | 15.4 |
| RB74 | 529149 | 141953 | Suburban | Diffusion tube | 100.0 | 100.0 | 24.7 | 22.5 | 22.3 | 21.2 | 14.3 |
| RB75 | 529203 | 142192 | Suburban | Diffusion tube | 100.0 | 100.0 | 23.6 | 23.9 | 21.9 | 22.3 | 14.5 |
| RB76 | 528958 | 142468 | Suburban | Diffusion tube | 100.0 | 100.0 | 20.6 | 20.1 | 19.6 | 19.9 | 13.4 |
| RB77 | 528789 | 142570 | Suburban | Diffusion tube | 100.0 | 100.0 | 21.0 | 20.9 | 19.8 | 19.7 | 13.7 |
| RB78 | 528553 | 141857 | Suburban | Diffusion tube | 100.0 | 100.0 | 27.0 | 27.0 | 25.5 | 25.0 | 15.9 |
| RB81 | 527594 | 149236 | Roadside (A23 AQMA) | Diffusion tube | 100.0 | 100.0 | 32.8 | 2.5 | 2.3 | 2.2 | 24.0 |
| RB82 | 528770 | 155797 | Suburban (A23 AQMA) | Diffusion tube | 100.0 | 100.0 | 33.7 | 3.0 | 2.2 | 2.0 | 22.4 |
| RB95 | 525382 | 150639 | Roadside | Diffusion Tube | 90.4 | 90.4 | 25.2 | 25.2 | 25.1 | 22.0 | 14.4 |
| RB98 | 527931 | 142231 | Suburban | Diffusion Tube | 100.0 | 100.0 | 25.1 | 25.8 | 24.7 | 24.2 | 15.9 |
| RB99 | 526421 | 139639 | Rural / Other | Diffusion tube | 100.0 | 100.0 | 16.3 | 14.1 | 15.0 | 13.8 | 9.3 |
| RB100 | 526421 | 139639 | Rural / Other | Diffusion tube | 100.0 | 100.0 | 17.3 | 13.7 | 15.8 | 13.8 | 9.0 |
| RB101 | 526421 | 139639 | Rural / Other | Diffusion tube | 100.0 | 100.0 | 15.6 | 14.0 | 15.3 | 14.9 | 9.2 |
| RB102 | 530936 | 144278 | Rural / Other | Diffusion tube | 100.0 | 100.0 | 22.4 | 20.9 | 23.4 | 19.3 | 13.6 |
| RB104 | 525204 | 150254 | Roadside | Diffusion tube | 73.1 | 73.1 | 36.4 | 34.7 | 34.0 | 33.9 | 24.5 |
| RB105 | 525203 | 150239 | Roadside | Diffusion tube | 90.4 | 90.4 | 41.4 | 39.0 | 35.0 | 37.5 | 28.5 |
| RB106 | 523250 | 160056 | Roadside | Diffusion tube | 100.0 | 100.0 | 34.7 | 29.3 | 27.7 | 28.6 | 20.5 |
| RB107 | 525467 | 150292 | Roadside | Diffusion tube | 90.4 | 90.4 | 32.0 | 26.1 | 27.0 | 25.0 | 18.5 |
| RB109 | 525387 | 150178 | Roadside | Diffusion tube | 82.7 | 82.7 | 33.3 | 32.5 | 30.3 | 29.8 | 20.1 |
| RB110 | 529016 | 153439 | Roadside | Diffusion tube | 82.7 | 82.7 | 31.0 | 29.3 | 27.1 | 24.7 | 17.5 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RB111 | 525031 | 150291 | Roadside | Diffusion tube | 72.8 | 72.8 | 33.9 | 30.3 | 27.1 | 27.2 | 23.1 |
| RB113 | 524795 | 150404 | Roadside | Diffusion tube | 100.0 | 100.0 | 29.7 | 27.1 | 24.9 | 23.0 | 16.6 |
| RB114 | 524368 | 150477 | Roadside | Diffusion tube | 50.0 | 50.0 | 29.5 | 26.3 | 23.5 | 21.8 | 17.8 |
| RB115 | 524751 | 150428 | Roadside | Diffusion tube | 100.0 | 100.0 | 29.7 | 30.5 | 26.3 | 27.7 | 20.1 |
| RB116 | 525022 | 150317 | Roadside | Diffusion tube | 100.0 | 100.0 | 35.8 | 31.9 | 29.6 | 30.7 | 21.2 |
| RB117 | 525076 | 150327 | Roadside | Diffusion tube | 100.0 | 100.0 | 43.3 | 35.1 | 36.3 | 35.8 | 29.5 |
| RB118 | 525151 | 150467 | Roadside | Diffusion tube | 100.0 | 100.0 | 36.6 | 31.5 | 32.8 | 32.1 | 25.7 |
| RB120 | 528196 | 150421 | Roadside | Diffusion tube | 92.6 | 92.6 | 33.3 | 32.9 | 31.5 | 27.4 | 21.1 |
| RB121 | 528092 | 150786 | Kerbside | Diffusion tube | 100.0 | 100.0 | - | - | **41.1** | 39.9 | 29.1 |
| RB122 | 528013 | 150475 | Roadside | Diffusion tube | 100.0 | 100.0 | 32.8 | 31.5 | 30.6 | 30.7 | 23.3 |
| RB123 | 527838 | 150474 | Kerbside | Diffusion tube | 90.4 | 90.4 | 39.5 | 35.8 | 33.5 | 33.6 | 23.6 |
| RB124 | 529013 | 153285 | Roadside | Diffusion tube | 100.0 | 100.0 | 37.5 | 34.5 | 31.7 | 31.5 | 24.6 |
| RB125 | 525589 | 151655 | Roadside | Diffusion tube | 83.0 | 83.0 | 38.5 | 34.9 | 31.8 | 33.5 | 24.8 |
| RB136 | 528810 | 156474 | Roadside | Diffusion tube | 100.0 | 100.0 | **49.2** | **49.4** | **45.9** | 39.5 | 34.3 |
| RB137 | 528831 | 156648 | Roadside | Diffusion tube | 100.0 | 100.0 | **47.9** | **42.3** | **43.2** | 35.2 | 28.5 |
| RB140 | 528122 | 150799 | Roadside | Diffusion tube | 100.0 | 100.0 | 27.4 | 25.5 | 22.6 | 24.3 | 17.4 |
| RB141 | 527373 | 150596 | Roadside | Diffusion tube | 100.0 | 100.0 | 26.6 | 23.7 | 22.9 | 21.8 | 15.6 |
| RB145 | 527852 | 150158 | Kerbside | Diffusion tube | 100.0 | 100.0 | 34.6 | 33.7 | 30.9 | 31.7 | 24.5 |
| RB146 | 528759 | 156277 | Kerbside | Diffusion tube | 100.0 | 100.0 | **44.6** | **40.9** | **40.4** | 35.8 | 23.5 |
| RB147 | 528732 | 156407 | Background | Diffusion tube | 100.0 | 100.0 | 17.8 | 16.5 | 17.0 | 13.8 | 10.9 |
| RB148 | 528855 | 156674 | Kerbside | Diffusion tube | 100.0 | 100.0 | **65.9** | **62.6** | **59.5** | **54.2** | **43.0** |
| RB149 | 525698 | 152940 | Roadside | Diffusion tube | 100.0 | 100.0 | **49.8** | **46.0** | **43.4** | **43.5** | 30.9 |
| RB150 | 525397 | 150867 | Roadside | Diffusion tube | 92.3 | 92.3 | 37.5 | 37.5 | 33.1 | 35.3 | 27.3 |
| RB151 | 528502 | 142952 | Roadside | Diffusion tube | 100.0 | 100.0 | 31.7 | 33.3 | 29.4 | 33.5 | 22.7 |
| RB152 | 528599 | 152439 | Roadside | Diffusion tube | 100.0 | 100.0 | 39.8 | 33.4 | 32.4 | 32.4 | 24.3 |
| RB153 | 527837 | 148046 | Roadside | Diffusion tube | 100.0 | 100.0 | 28.8 | 29.0 | 25.9 | 25.4 | 19.9 |
| RB167 | 527830 | 150643 | Roadside | Diffusion tube | 100.0 | 100.0 | 28.5 | 24.9 | 24.7 | 24.3 | 17.9 |
| RB174 | 527852 | 142841 | Roadside | Diffusion tube | 100.0 | 100.0 | 30.4 | 31.1 | 30.3 | 29.1 | 19.1 |
| RB175 | 527955 | 142999 | Roadside | Diffusion tube | 100.0 | 100.0 | 26.7 | 30.6 | 27.5 | 29.8 | 22.2 |
| RB176 | 527765 | 142777 | Roadside | Diffusion tube | 100.0 | 100.0 | 23.1 | 25.4 | 25.5 | 25.4 | 17.3 |
| RB177 | 527754 | 142762 | Roadside | Diffusion tube | 100.0 | 100.0 | 23.9 | 24.9 | 23.8 | 25.1 | 16.6 |
| RB178 | 528592 | 141831 | Suburban | Diffusion tube | 100.0 | 100.0 | - | 25.6 | 23.0 | 24.0 | 13.6 |
| RB179 | 528592 | 141831 | Suburban | Diffusion tube | 100.0 | 100.0 | - | 25.3 | 23.4 | 23.2 | 13.4 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RB180 | 528592 | 141831 | Suburban | Diffusion tube | 100.0 | 100.0 | - | 25.9 | 23.4 | 23.1 | 13.8 |
| RB181 | 528852 | 156724 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | **47.0** | **46.5** | 39.0 |
| RB182 | 528835 | 156728 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 30.3 | 24.0 | 19.6 |
| RB183 | 528813 | 156580 | Roadside | Diffusion tube | 92.3 | 92.3 | - | - | 36.4 | 37.0 | 28.5 |
| RB184 | 528807 | 156555 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 34.8 | 33.7 | 24.8 |
| RB186 | 528790 | 156500 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 30.8 | 31.3 | 24.3 |
| RB187 | 528789 | 156488 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 27.0 | 27.0 | 20.1 |
| RB188 | 528792 | 156478 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 32.2 | 29.0 | 22.1 |
| RB189 | 528789 | 156465 | Roadside | Diffusion tube | 92.3 | 92.3 | - | - | 31.4 | 30.0 | 21.0 |
| RB190 | 528788 | 156460 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 30.7 | 29.1 | 21.3 |
| RB191 | 528785 | 156448 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 26.5 | 27.3 | 20.3 |
| RB192 | 528784 | 156442 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 28.5 | 27.1 | 19.4 |
| RB193 | 528782 | 156430 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 24.6 | 24.2 | 17.7 |
| RB194 | 528779 | 156381 | Kerbside | Diffusion tube | 90.4 | 90.4 | - | - | 32.5 | 30.7 | 22.0 |
| RB195 | 528772 | 156349 | Kerbside | Diffusion tube | 100.0 | 100.0 | - | - | 37.0 | 34.2 | 24.7 |
| RB196 | 528797 | 156331 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 26.8 | 25.2 | 19.2 |
| RB197 | 528795 | 156373 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 36.2 | 32.9 | 25.1 |
| RB198 | 528796 | 156379 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 38.2 | 38.8 | 26.6 |
| RB199 | 528800 | 156390 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 34.1 | 31.8 | 23.9 |
| RB200 | 528799 | 156409 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | **42.1** | 39.4 | 31.4 |
| RB201 | 528804 | 156414 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 34.2 | 34.0 | 25.2 |
| RB202 | 528808 | 156444 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 37.7 | 37.7 | 29.6 |
| RB203 | 528809 | 156454 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 36.9 | 39.2 | 30.3 |
| RB204 | 528810 | 156457 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 36.8 | 39.3 | 30.4 |
| RB205 | 528812 | 156466 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | **44.0** | **42.2** | 32.7 |
| RB206 | 528816 | 156477 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 34.5 | 33.1 | 26.6 |
| RB207 | 528818 | 156486 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 35.2 | 37.3 | 26.1 |
| RB208 | 528825 | 156526 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | **53.0** | **50.3** | 36.0 |
| RB209 | 528833 | 156547 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 27.8 | 27.8 | 21.4 |
| RB210 | 528833 | 156555 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 39.3 | 36.3 | 28.5 |
| RB211 | 528839 | 156577 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 36.6 | 37.0 | 29.5 |
| RB212 | 528840 | 156582 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 39.3 | **40.6** | 30.1 |
| RB213 | 528845 | 156604 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 36.5 | 37.9 | 28.0 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RB214 | 528848 | 156617 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 33.1 | 33.5 | 22.4 |
| RB215 | 528853 | 156646 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | 29.0 | 27.6 | 22.6 |
| RB216 | 528862 | 156690 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | **42.5** | 39.3 | 39.9 |
| RB217 | 528866 | 156712 | Roadside | Diffusion tube | 100.0 | 100.0 | - | - | **43.2** | **45.2** | 33.8 |
| RB218 | 528869 | 156737 | Kerbside | Diffusion tube | 100.0 | 100.0 | - | - | **42.6** | **40.7** | 33.3 |
| RB219 | 528877 | 156744 | Roadside | Diffusion tube | 100.0 | 100.0 | - | | 39.2 | **40.6** | 33.8 |
| RB223 | 528804 | 156435 | Roadside | Diffusion tube | 100.0 | 100.0 | - | | | **42.3** | 32.9 |
| RB224 | 528804 | 156435 | Roadside | Diffusion tube | 100.0 | 100.0 | - | | | 36.5 | 32.5 |
| RB225 | 528804 | 156435 | Roadside | Diffusion tube | 100.0 | 100.0 | - | | | 38.7 | 32.3 |

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

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

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

**Notes:**

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

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

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

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

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

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

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

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Monitoring Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2020 (%) (2) | $NO_2$ 1-Hour Means > 200µg/m$^3$ (3) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 2016 | 2017 | 2018 | 2019 | 2020 |
| RG1 | 528208 | 142337 | Suburban | Automatic | 99.1 | 99.1 | 0 | 0 | 0 | 0 | 0 |
| RG3 | 526421 | 139639 | Rural | Automatic | 97.6 | 97.6 | 0 | 0 | 0 | 0 | 0 |
| RG6 | 528592 | 141831 | Suburban | Automatic | 99.5 | 99.5 | (116) | 0 | 0 | 0 | 0 |
| RG7 | 528804 | 156436 | Roadside | Automatic | 90.5 | 90.5 | - | - | (128) | (139) | 0 |

**Notes:**

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

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

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

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

## Table A.5 – Annual Mean $PM_{10}$ (VCM [1]) Monitoring Results

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) [2] | Valid Data Capture 2020 (%) [3] | $PM_{10}$ Annual Mean Concentration (µg/m$^3$) [4] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 2016 | 2017 | 2018 | 2019 | 2020 |
| RG1 | 528208 | 142337 | Suburban | 94.1 | 94.1 | 16.5 | 16.2 | 17.1 | 15.9 | 15.1 |

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

**Notes:**

Exceedances of the $PM_{10}$ annual mean objective of 40µg/m$^3$ are shown in **bold.**

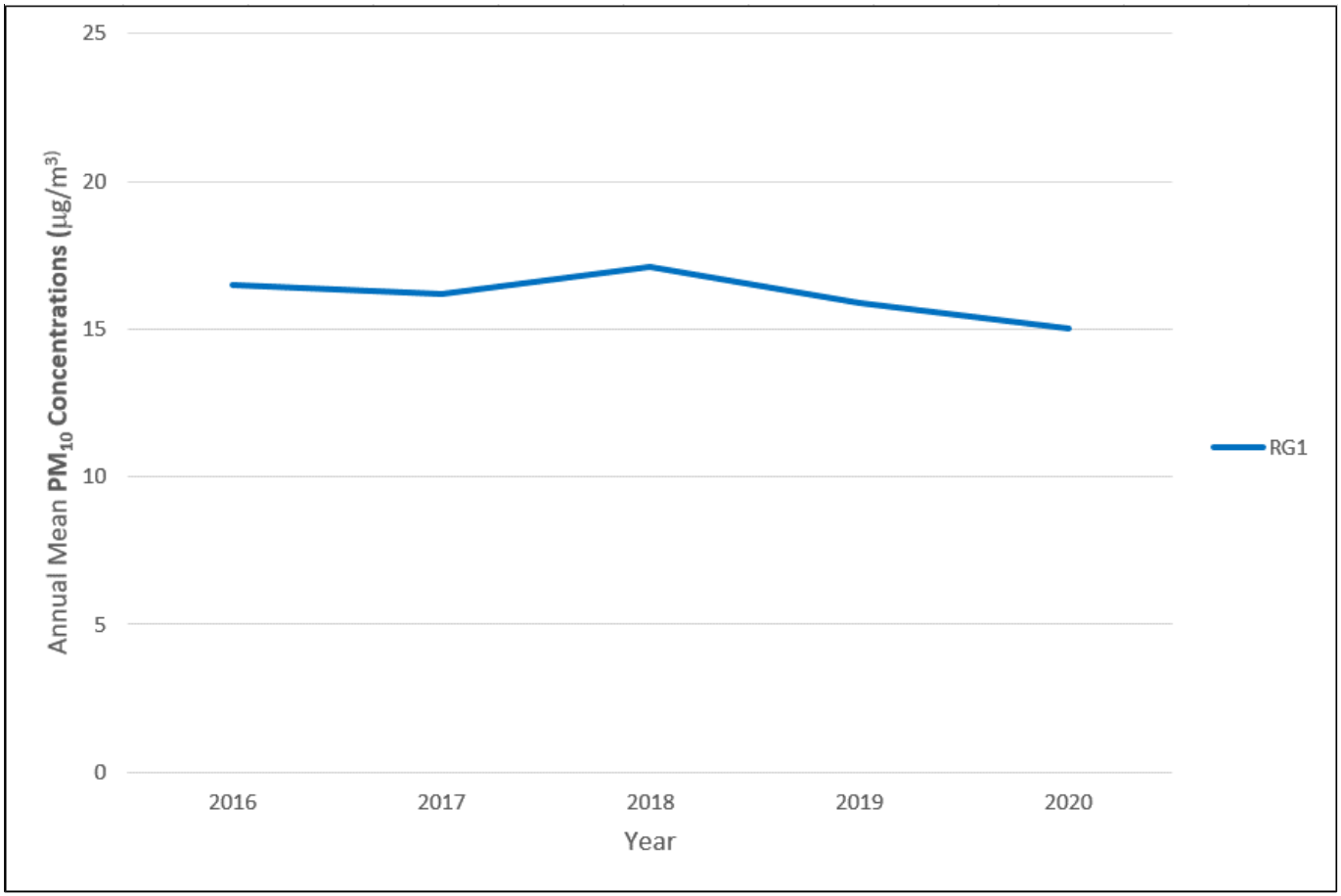
(1) Data have been adjusted using the Volatile Correction Model (www.volatile-correction-model.info).

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

(3) 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%).

(4) All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

## Figure A.1 – Trends in Annual Mean $PM_{10}$ Concentrations



## Table A.6 – 24-Hour Mean $PM_{10}$ (VCM [1]) Monitoring Results

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) [2] | Valid Data Capture 2019 (%) [3] | $PM_{10}$ 24-Hour Means > 50µg/m$^3$ [4] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 2016 | 2017 | 2018 | 2019 | 2020 |
| RG1 | 528208 | 142337 | Suburban | 94.1 | 94.1 | 3 | 2 | 0 | 0 | 0 |

**Notes:**

Exceedances of the $PM_{10}$ 24-hour mean objective (50µg/m$^3$ not to be exceeded more than 35 times/year) are shown in **bold.**

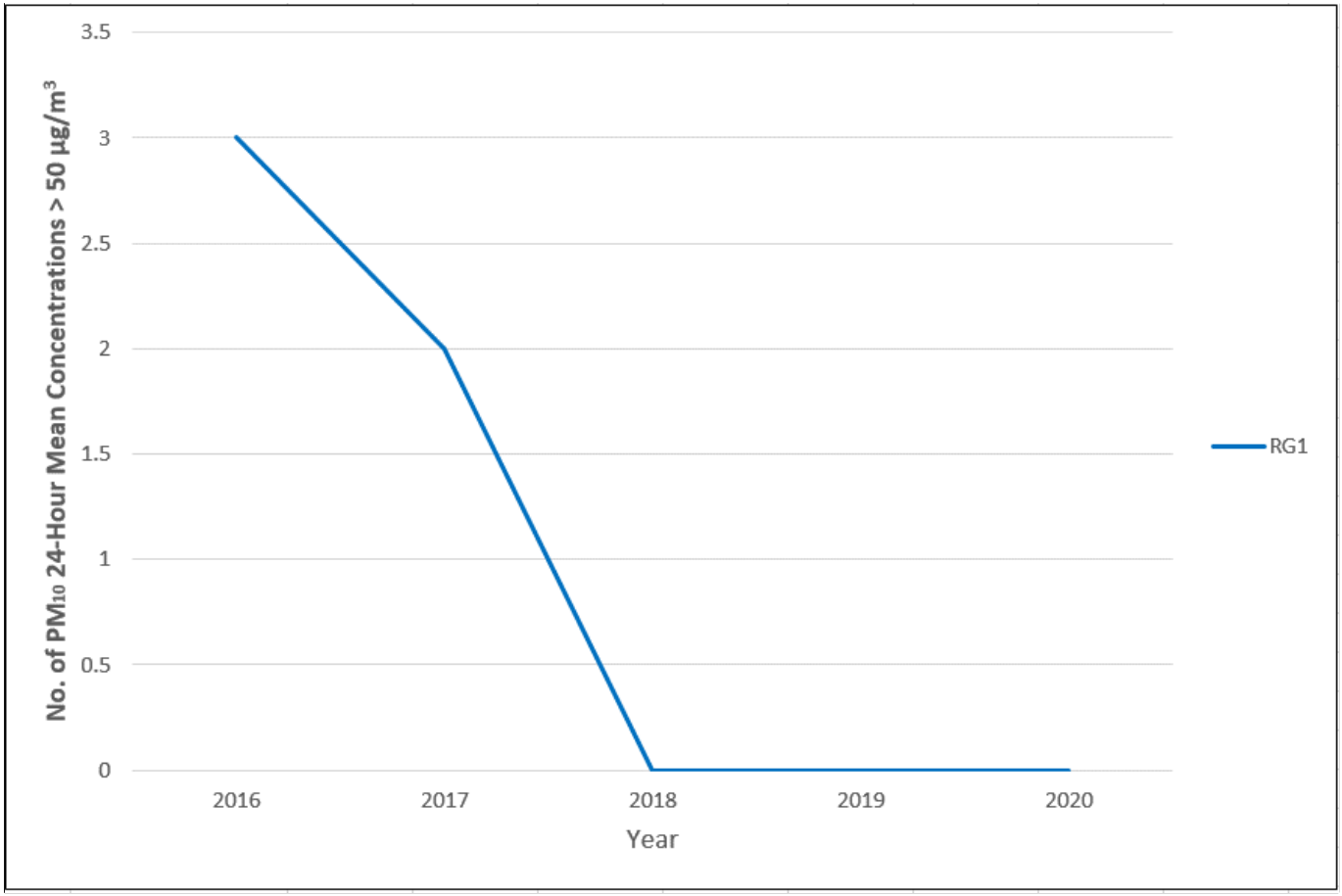
(1) Data have been adjusted using the Volatile Correction Model (www.volatile-correction-model.info).

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

(3) 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%).

(4) If the period of valid data is less than 85%, the 90.4$^{th}$ percentile of 24-hour means is provided in brackets.

**Figure A.2 – Trends in Number of 24-Hour Mean $PM_{10}$ Results >50µg/$m^3$**



## Table A.7 – Annual Mean Benzene Monitoring Results

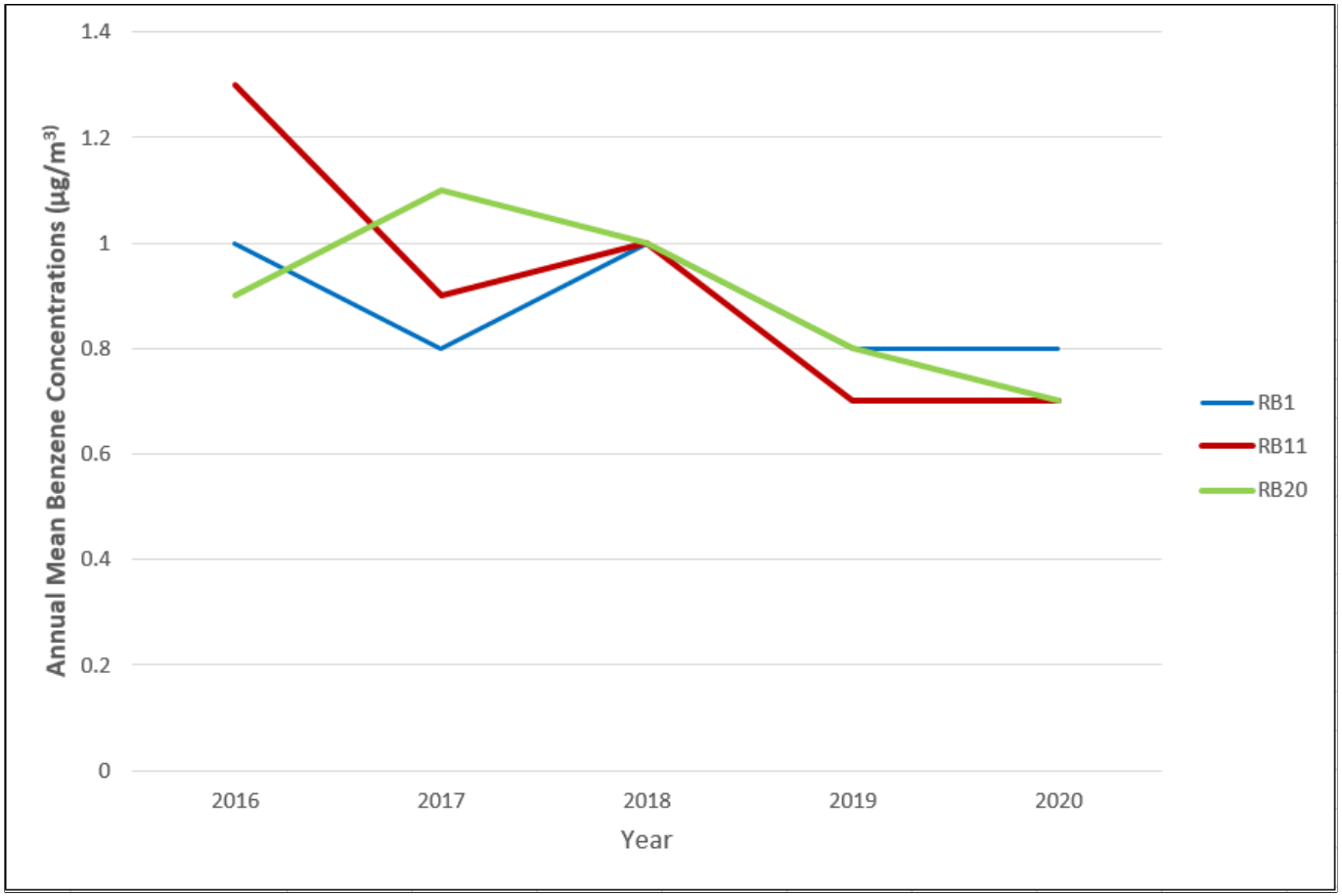
| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for monitoring Period (%) (1) | Valid Data Capture 2020 (%) (2) | Annual Mean Benzene Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 2016 | 2017 | 2018 | 2019 | 2020 |
| RB1 | 525246 | 150252 | Roadside | 92 | 92 | 1.0 | 0.8 | 1.0 | 0.8 | 0.8 |
| RB11 | 528104 | 142226 | Suburban | 92 | 92 | 1.3 | 0.9 | 1.0 | 0.7 | 0.7 |
| RB20 | 529026 | 153420 | Roadside | 92 | 92 | 0.9 | 1.1 | 1.0 | 0.8 | 0.7 |

**Notes:**

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

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

## Figure A.3 – Trends in Benzene Concentrations



# Appendix B: Full Monthly Diffusion Tube Results for 2020

## Table B.1 - $NO_2$ Monthly Diffusion Tube Results – 2020

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | $NO_2$ Mean Concentrations (µg/m$^3$) | | | | | | | | | | | | Annual Mean | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Raw Data | Bias Adjusted (0.91) and Annualised (1) | Distance Corrected to Nearest Exposure (2) |
| RB1 | 525246 | 150252 | 30.0 | 34.0 | 22.0 | 24.0 | 12.0 | 17.0 | 18.0 | 26.0 | 31.0 | 26.0 | 28.0 | 16.0 | 23.7 | 21.5 | - |
| RB3 | 524944 | 159630 | 20.0 | 13.0 | 15.0 | 9.0 | 6.0 | 8.0 | 9.0 | 12.0 | 13.0 | 12.0 | 20.0 | 18.0 | 12.9 | 11.7 | - |
| RB8 | 525246 | 150286 | 19.0 | 17.0 | 13.0 | 13.0 | 5.0 | | | 13.0 | 10.0 | 13.0 | | 11.0 | 12.7 | 11.5 | - |
| RB9 | 525750 | 149677 | 16.0 | 14.0 | 10.0 | 14.0 | 6.0 | 9.0 | 9.0 | 13.0 | 13.0 | 13.0 | 20.0 | 25.0 | 13.5 | 12.2 | - |
| RB11 | 528104 | 142226 | 27.0 | 31.0 | 22.0 | 10.0 | 5.0 | 10.0 | 10.0 | 14.0 | 16.0 | 17.0 | 18.0 | 13.0 | 16.1 | 14.6 | - |
| RB12 | 528424 | 142934 | 34.0 | 33.0 | 17.0 | 13.0 | 9.0 | 16.0 | 12.0 | 21.0 | 21.0 | 32.0 | 33.0 | 33.0 | 22.8 | 20.7 | - |
| RB13 | 528362 | 142983 | 22.0 | 22.0 | 14.0 | 11.0 | | | | 14.0 | 13.0 | 15.0 | 20.0 | | 16.4 | 13.3 | - |
| RB17 | 528511 | 149715 | 19.0 | 12.0 | 10.0 | 12.0 | 6.0 | 10.0 | 9.0 | 13.0 | 14.0 | 16.0 | 20.0 | 22.0 | 13.6 | 12.3 | - |
| RB18 | 529263 | 153156 | 23.0 | 33.0 | 16.0 | 16.0 | 10.0 | 13.0 | 13.0 | 17.0 | 19.0 | 20.0 | 11.0 | 12.0 | 16.9 | 15.3 | - |
| RB19 | 529067 | 153375 | 25.0 | | 15.0 | 15.0 | 10.0 | 14.0 | 13.0 | 19.0 | 23.0 | 19.0 | 24.0 | 21.0 | 18.0 | 16.3 | - |
| RB20 | 529026 | 153420 | 30.0 | 16.0 | 26.0 | 16.0 | 12.0 | 20.0 | 21.0 | 28.0 | 35.0 | 33.0 | 30.0 | 12.0 | 23.3 | 21.1 | - |
| RB21 | 523198 | 160095 | 30.0 | 29.0 | 20.0 | 17.0 | 12.0 | 21.0 | 19.0 | 28.0 | 30.0 | 28.0 | 37.0 | 24.0 | 24.6 | 22.3 | - |
| RB22 | 523260 | 160111 | 20.0 | 18.0 | 12.0 | 14.0 | | 11.0 | 9.0 | 15.0 | 15.0 | 15.0 | | 22.0 | 15.1 | 13.7 | - |
| RB23 | 523612 | 159906 | 17.0 | 26.0 | 10.0 | 9.0 | 6.0 | 8.0 | 8.0 | 11.0 | 14.0 | 11.0 | 20.0 | 17.0 | 13.1 | 11.9 | - |
| RB24 | 528208 | 142337 | 29.0 | 26.0 | 16.0 | 10.0 | 5.0 | 9.0 | 10.0 | 14.0 | 15.0 | 17.0 | 19.0 | 18.0 | 15.7 | 14.2 | - |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RB25 | 528208 | 142337 | 26.0 | 24.0 | 14.0 | 11.0 | 5.0 | 10.0 | 10.0 | 15.0 | 16.0 | 17.0 | 17.0 | 12.0 | 14.8 | 13.4 | - |
| RB26 | 528208 | 142337 | 29.0 | 36.0 | 16.0 | 10.0 | 5.0 | 9.0 | 9.0 | 15.0 | 18.0 | 17.0 | 20.0 | 15.0 | 16.6 | 15.0 | - |
| RB27 | 521873 | 153896 | 22.0 | 22.0 | 18.0 | 11.0 | 9.0 | 14.0 | 15.0 | 20.0 | 19.0 | 18.0 | 23.0 | 25.0 | 18.0 | 16.3 | - |
| RB29 | 521921 | 153937 | 24.0 | 18.0 | 13.0 | 11.0 | 7.0 | 12.0 | 12.0 | 17.0 | 19.0 | 16.0 | 20.0 | 20.0 | 15.8 | 14.3 | - |
| RB30 | 522112 | 153728 | 20.0 | 20.0 | 14.0 | 12.0 | 8.0 | 13.0 | 13.0 | 19.0 | 17.0 | 16.0 | 19.0 | 22.0 | 16.1 | 14.6 | - |
| RB31 | 525506 | 152366 | 14.0 | 10.0 | 12.0 | 10.0 | 6.0 | 5.0 | 8.0 | 13.0 | 15.0 | 11.0 | 17.0 | 9.0 | 10.8 | 9.8 | - |
| RB33 | 524081 | 152580 | 20.0 | 27.0 | 11.0 | 11.0 | 6.0 | 12.0 | 11.0 | 14.0 | 17.0 | 14.0 | 11.0 | 19.0 | 14.4 | 13.1 | - |
| RB34 | 524177 | 152393 | 20.0 | 14.0 | 15.0 | 16.0 | 13.0 | 16.0 | 15.0 | 20.0 | 24.0 | 18.0 | 22.0 | 9.0 | 16.8 | 15.3 | - |
| RB36 | 528887 | 153760 | 22.0 | 20.0 | 12.0 | 12.0 | 7.0 | 12.0 | 11.0 | 16.0 | 18.0 | 18.0 | 23.0 | 20.0 | 15.9 | 14.4 | - |
| RB37 | 529217 | 153605 | 22.0 | 24.0 | 17.0 | 11.0 | 8.0 | 14.0 | 13.0 | 18.0 | 21.0 | 19.0 | 25.0 | 20.0 | 17.7 | 16.0 | - |
| RB39 | 529205 | 153572 | 23.0 | 32.0 | 12.0 | 11.0 | 8.0 | 14.0 | 13.0 | 19.0 | 19.0 | 17.0 | 25.0 | 30.0 | 18.6 | 16.8 | - |
| RB40 | 529252 | 154291 | 22.0 | 17.0 | 16.0 | 10.0 | 6.0 | 10.0 | 11.0 | 15.0 | 18.0 | 14.0 | 18.0 | 18.0 | 14.6 | 13.2 | - |
| RB43 | 528797 | 153612 | 22.0 | 17.0 | | | | | 16.0 | 21.0 | 23.0 | 14.0 | 21.0 | 11.0 | 18.1 | 14.9 | - |
| RB44 | 525532 | 150316 | 31.0 | 24.0 | 25.0 | 16.0 | 13.0 | 19.0 | | 25.0 | 29.0 | 25.0 | 25.0 | | 23.2 | 21.0 | - |
| RB45 | 525431 | 150270 | 36.0 | 27.0 | 18.0 | 17.0 | 10.0 | 19.0 | 17.0 | 24.0 | 22.0 | 25.0 | 23.0 | | 21.6 | 19.6 | - |
| RB46 | 525346 | 150241 | | 35.0 | 25.0 | 16.0 | 14.0 | 24.0 | 24.0 | 32.0 | 29.0 | 28.0 | 16.0 | | 24.3 | 22.0 | - |
| RB47 | 525114 | 150276 | 35.0 | 30.0 | 24.0 | 21.0 | 15.0 | 22.0 | 18.0 | 36.0 | 36.0 | | 31.0 | | 26.8 | 24.3 | - |
| RB49 | 525705 | 152947 | 37.0 | 33.0 | 24.0 | 15.0 | 15.0 | 25.0 | 28.0 | 30.0 | 34.0 | 38.0 | 28.0 | 19.0 | 27.2 | 24.6 | - |
| RB50 | 525700 | 152964 | 31.0 | 25.0 | 15.0 | 14.0 | 9.0 | 16.0 | 20.0 | 22.0 | 20.0 | 21.0 | 22.0 | 26.0 | 20.1 | 18.2 | - |
| RB51 | 527873 | 142606 | 25.0 | 22.0 | 12.0 | 9.0 | 6.0 | 8.0 | 10.0 | | 14.0 | 16.0 | 17.0 | 20.0 | 14.5 | 13.1 | - |
| RB52 | 527892 | 142463 | 30.0 | 26.0 | 17.0 | 12.0 | 6.0 | 11.0 | 11.0 | 19.0 | 17.0 | 18.0 | 21.0 | 25.0 | 17.8 | 16.1 | - |
| RB53 | 528030 | 142373 | 32.0 | 29.0 | 19.0 | 9.0 | 6.0 | 12.0 | 13.0 | 17.0 | 19.0 | 21.0 | 26.0 | 13.0 | 18.0 | 16.3 | - |
| RB54 | 528112 | 142321 | 30.0 | 28.0 | 16.0 | 11.0 | 5.0 | 9.0 | 11.0 | 16.0 | 16.0 | 18.0 | 19.0 | 19.0 | 16.5 | 15.0 | - |
| RB55 | 528254 | 142196 | 31.0 | 29.0 | 18.0 | 12.0 | 7.0 | 11.0 | 11.0 | 18.0 | 19.0 | 18.0 | 21.0 | 17.0 | 17.7 | 16.0 | - |
| RB56 | 528386 | 142080 | 33.0 | 31.0 | 15.0 | 10.0 | 5.0 | 9.0 | 10.0 | 16.0 | 18.0 | 18.0 | 17.0 | 11.0 | 16.1 | 14.6 | - |
| RB57 | 528499 | 141953 | 33.0 | 31.0 | 14.0 | 10.0 | 5.0 | 9.0 | 8.0 | 15.0 | 19.0 | 17.0 | 22.0 | 18.0 | 16.8 | 15.2 | - |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RB58 | 528538 | 141897 | 35.0 | 27.0 | 22.0 | 12.0 | 6.0 | 8.0 | 10.0 | 16.0 | 19.0 | 18.0 | 16.0 | 18.0 | 17.3 | 15.6 | - |
| RB59 | 528602 | 141789 | 31.0 | 33.0 | 14.0 | 10.0 | 6.0 | 9.0 | 9.0 | 15.0 | 17.0 | 17.0 | 20.0 | 21.0 | 16.8 | 15.3 | - |
| RB60 | 528607 | 141910 | | 35.0 | 17.0 | 9.0 | 6.0 | 8.0 | 11.0 | 17.0 | 19.0 | | 24.0 | 20.0 | 16.6 | 15.0 | - |
| RB61 | 528578 | 142006 | 33.0 | 31.0 | 21.0 | 12.0 | 6.0 | 9.0 | 10.0 | 14.0 | 17.0 | 17.0 | 17.0 | 20.0 | 17.3 | 15.6 | - |
| RB64 | 528608 | 142432 | 29.0 | 22.0 | 15.0 | 13.0 | 6.0 | 10.0 | 9.0 | 16.0 | 18.0 | 17.0 | 24.0 | 19.0 | 16.5 | 15.0 | - |
| RB65 | 528581 | 142635 | 30.0 | 26.0 | 16.0 | 13.0 | 7.0 | 12.0 | 11.0 | 18.0 | 21.0 | 18.0 | 21.0 | 24.0 | 18.1 | 16.4 | - |
| RB66 | 528499 | 142512 | 31.0 | 24.0 | 14.0 | 11.0 | 5.0 | 10.0 | 9.0 | 15.0 | 18.0 | 18.0 | 20.0 | 15.0 | 15.8 | 14.4 | - |
| RB68 | 528505 | 142246 | 26.0 | 24.0 | 14.0 | 12.0 | 5.0 | 10.0 | 10.0 | 15.0 | 20.0 | 17.0 | 23.0 | 20.0 | 16.3 | 14.8 | - |
| RB69 | 528335 | 142224 | 37.0 | 33.0 | 19.0 | 12.0 | 6.0 | 11.0 | 10.0 | 16.0 | 17.0 | 21.0 | 13.0 | 20.0 | 17.9 | 16.2 | - |
| RB70 | 528360 | 142384 | 30.0 | 26.0 | 12.0 | 10.0 | 6.0 | 9.0 | 9.0 | 16.0 | 18.0 | 17.0 | 21.0 | 14.0 | 15.7 | 14.2 | - |
| RB72 | 528220 | 142583 | 31.0 | 27.0 | 14.0 | 12.0 | 7.0 | 10.0 | 10.0 | 17.0 | 19.0 | 20.0 | 21.0 | 20.0 | 17.3 | 15.7 | - |
| RB73 | 528172 | 142679 | 29.0 | 25.0 | 17.0 | 12.0 | 6.0 | 11.0 | 10.0 | 16.0 | 17.0 | 18.0 | 24.0 | 19.0 | 17.0 | 15.4 | - |
| RB74 | 529149 | 141953 | 29.0 | 27.0 | 14.0 | 12.0 | 6.0 | 8.0 | 9.0 | 14.0 | 18.0 | 16.0 | 19.0 | 17.0 | 15.8 | 14.3 | - |
| RB75 | 529203 | 142192 | 30.0 | 24.0 | 13.0 | 14.0 | 7.0 | 10.0 | 8.0 | 16.0 | 16.0 | 16.0 | 23.0 | 15.0 | 16.0 | 14.5 | - |
| RB76 | 528958 | 142468 | 27.0 | 26.0 | 18.0 | 9.0 | 5.0 | 8.0 | 8.0 | 15.0 | 15.0 | 14.0 | 18.0 | 15.0 | 14.8 | 13.4 | - |
| RB77 | 528789 | 142570 | 24.0 | 22.0 | 18.0 | 11.0 | 6.0 | 9.0 | 10.0 | 14.0 | 17.0 | 15.0 | 19.0 | 16.0 | 15.1 | 13.7 | - |
| RB78 | 528553 | 141857 | 34.0 | 30.0 | 15.0 | 12.0 | 6.0 | 9.0 | 10.0 | 15.0 | 19.0 | 18.0 | 21.0 | 21.0 | 17.5 | 15.9 | - |
| RB81 | 528553 | 141857 | 39.0 | 30.0 | 29.0 | 20.0 | 10.0 | 20.0 | 18.0 | 29.0 | 28.0 | 25.0 | 34.0 | 36.0 | 26.5 | 24.0 | - |
| RB82 | 528553 | 141857 | 30.0 | 31.0 | 26.0 | 17.0 | 13.0 | 24.0 | 18.0 | 26.0 | 31.0 | 27.0 | 25.0 | 29.0 | 24.8 | 22.4 | - |
| RB95 | 525382 | 150639 | 26.0 | 17.0 | 14.0 | 11.0 | 9.0 | 13.0 | 13.0 | 19.0 | 16.0 | 18.0 | 19.0 | | 15.9 | 14.4 | - |
| RB98 | 527931 | 142231 | 36.0 | 29.0 | 14.0 | 10.0 | 6.0 | 10.0 | 12.0 | 16.0 | 20.0 | 20.0 | 23.0 | 14.0 | 17.5 | 15.9 | - |
| RB99 | 526421 | 139639 | 15.0 | 10.0 | 10.0 | 8.0 | 5.0 | 7.0 | 7.0 | 11.0 | 10.0 | 11.0 | 17.0 | 12.0 | 10.3 | 9.3 | - |
| RB100 | 526421 | 139639 | 13.0 | 12.0 | 12.0 | 4.0 | 5.0 | 6.0 | 7.0 | 11.0 | 12.0 | 11.0 | 14.0 | 12.0 | 9.9 | 9.0 | - |
| RB101 | 526421 | 139639 | 14.0 | 12.0 | 6.0 | 10.0 | 4.0 | 7.0 | 7.0 | 11.0 | 12.0 | 10.0 | 15.0 | 14.0 | 10.2 | 9.2 | - |
| RB102 | 530936 | 144278 | 23.0 | 16.0 | 10.0 | 14.0 | 8.0 | 10.0 | 9.0 | 17.0 | 17.0 | 18.0 | 22.0 | 16.0 | 15.0 | 13.6 | - |
| RB104 | 525204 | 150254 | 37.0 | 28.0 | 23.0 | 22.0 | | | 22.0 | 33.0 | 35.0 | 26.0 | 17.0 | | 27.0 | 24.5 | - |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RB105 | 525203 | 150239 | 42.0 | 41.0 | 24.0 | 22.0 | 17.0 | 31.0 | 26.0 | 38.0 | 35.0 | 33.0 | 37.0 | | 31.5 | 28.5 | - |
| RB106 | 523250 | 160056 | 31.0 | 26.0 | 30.0 | 22.0 | 14.0 | 17.0 | 16.0 | 25.0 | 27.0 | 23.0 | 25.0 | 16.0 | 22.7 | 20.5 | - |
| RB107 | 525467 | 150292 | 28.0 | 23.0 | 18.0 | 13.0 | 10.0 | 17.0 | 14.0 | 20.0 | 21.0 | 38.0 | 22.0 | | 20.4 | 18.5 | - |
| RB109 | 525387 | 150178 | 31.0 | 19.0 | 15.0 | 22.0 | 16.0 | 24.0 | 16.0 | 30.0 | 25.0 | 24.0 | | | 22.2 | 20.1 | - |
| RB110 | 529016 | 153439 | 23.0 | 21.0 | 16.0 | 15.0 | 12.0 | 17.0 | 16.0 | 25.0 | 27.0 | | | 21.0 | 19.3 | 17.5 | - |
| RB111 | 525031 | 150291 | 33.0 | 26.0 | | 21.0 | | 20.0 | 19.0 | 28.0 | 27.0 | 27.0 | 28.0 | | 25.4 | 23.1 | - |
| RB113 | 524795 | 150404 | 1.0 | 49.0 | 14.0 | 17.0 | 10.0 | 17.0 | 14.0 | 19.0 | 20.0 | 20.0 | 23.0 | 16.0 | 18.3 | 16.6 | - |
| RB114 | 524368 | 150477 | | | | 15.0 | | | 11.0 | 19.0 | 19.0 | 20.0 | 24.0 | | 18.0 | 17.8 | - |
| RB115 | 524751 | 150428 | 32.0 | 28.0 | 15.0 | 13.0 | 11.0 | 20.0 | 19.0 | 25.0 | 26.0 | 28.0 | 26.0 | 23.0 | 22.2 | 20.1 | - |
| RB116 | 525022 | 150317 | 30.0 | 23.0 | 23.0 | 18.0 | 14.0 | 20.0 | 16.0 | 28.0 | 32.0 | 29.0 | 32.0 | 16.0 | 23.4 | 21.2 | - |
| RB117 | 525076 | 150327 | 32.0 | 29.0 | 30.0 | 26.0 | 26.0 | 40.0 | 21.0 | 42.0 | 40.0 | 32.0 | 43.0 | 30.0 | 32.6 | 29.5 | - |
| RB118 | 525151 | 150467 | 38.0 | 32.0 | 21.0 | 21.0 | 16.0 | 29.0 | 20.0 | 34.0 | 31.0 | 31.0 | 36.0 | 31.0 | 28.3 | 25.7 | - |
| RB120 | 528196 | 150421 | 35.0 | | 15.0 | 19.0 | 13.0 | 21.0 | 15.0 | 30.0 | 29.0 | 28.0 | 31.0 | 20.0 | 23.3 | 21.1 | - |
| RB121 | 528092 | 150786 | 51.0 | 48.0 | 30.0 | 21.0 | 18.0 | 26.0 | 26.0 | 33.0 | 37.0 | 33.0 | 34.0 | 28.0 | 32.1 | 29.1 | - |
| RB122 | 528013 | 150475 | 38.0 | 33.0 | 22.0 | 25.0 | 15.0 | 23.0 | 19.0 | 14.0 | 30.0 | 26.0 | 31.0 | 32.0 | 25.7 | 23.3 | - |
| RB123 | 527838 | 150474 | 36.0 | 25.0 | 20.0 | 24.0 | 13.0 | 21.0 | 19.0 | | 32.0 | 35.0 | 33.0 | 28.0 | 26.0 | 23.6 | - |
| RB124 | 529013 | 153285 | 40.0 | 30.0 | 26.0 | 22.0 | 15.0 | 24.0 | 18.0 | 31.0 | 35.0 | 25.0 | 32.0 | 28.0 | 27.2 | 24.6 | - |
| RB125 | 525589 | 151655 | 40.0 | | 31.0 | 19.0 | 15.0 | 24.0 | 25.0 | 32.0 | 33.0 | | 32.0 | 23.0 | 27.4 | 24.8 | - |
| RB136 | 528810 | 156474 | 40.0 | 36.0 | 44.0 | 37.0 | 15.0 | 40.0 | 33.0 | 48.0 | 47.0 | 38.0 | 41.0 | 35.0 | 37.8 | 34.3 | - |
| RB137 | 528831 | 156648 | 43.0 | 47.0 | 29.0 | 24.0 | 19.0 | 28.0 | 25.0 | 39.0 | 33.0 | 32.0 | 25.0 | 34.0 | 31.5 | 28.5 | - |
| RB140 | 528122 | 150799 | 32.0 | 25.0 | 12.0 | 14.0 | 10.0 | 15.0 | 13.0 | 21.0 | 22.0 | 22.0 | 24.0 | 21.0 | 19.3 | 17.4 | - |
| RB141 | 527373 | 150596 | 30.0 | 22.0 | 12.0 | 16.0 | 9.0 | 14.0 | 11.0 | 18.0 | 17.0 | 20.0 | 23.0 | 15.0 | 17.3 | 15.6 | - |
| RB145 | 527852 | 150158 | 48.0 | 29.0 | 14.0 | 21.0 | 12.0 | 21.0 | 19.0 | 34.0 | 30.0 | 49.0 | 29.0 | 18.0 | 27.0 | 24.5 | - |
| RB146 | 528759 | 156277 | 36.0 | 30.0 | 31.0 | 28.0 | 19.0 | 28.0 | 21.0 | 14.0 | 37.0 | 35.0 | 5.0 | 27.0 | 25.9 | 23.5 | - |
| RB147 | 528732 | 156407 | 14.0 | 12.0 | 13.0 | 12.0 | 6.0 | 9.0 | 7.0 | 14.0 | 14.0 | 13.0 | 18.0 | 12.0 | 12.0 | 10.9 | - |
| RB148 | 528855 | 156674 | 67.0 | 57.0 | 38.0 | 31.0 | 25.0 | 47.0 | 43.0 | 59.0 | 64.0 | 52.0 | 52.0 | 34.0 | 47.4 | **43.0** | 31.9 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RB149 | 527737 | 142710 | 47.0 | 40.0 | 26.0 | 8.0 | 20.0 | 31.0 | 26.0 | 40.0 | 39.0 | 37.0 | 54.0 | 41.0 | 34.1 | 30.9 | - |
| RB150 | 525397 | 150867 | 41.0 | 40.0 | 36.0 | | 14.0 | 23.0 | 27.0 | 31.0 | 30.0 | 30.0 | 28.0 | 31.0 | 30.1 | 27.3 | - |
| RB151 | 528502 | 142952 | 41.0 | 34.0 | 16.0 | 14.0 | 8.0 | 20.0 | 18.0 | 28.0 | 31.0 | 30.0 | 31.0 | 30.0 | 25.1 | 22.7 | - |
| RB152 | 528599 | 152439 | 35.0 | 26.0 | 27.0 | 20.0 | 16.0 | 28.0 | 23.0 | 32.0 | 39.0 | 31.0 | 28.0 | 17.0 | 26.8 | 24.3 | - |
| RB153 | 527837 | 148046 | 34.0 | 23.0 | 16.0 | 14.0 | 12.0 | 18.0 | 13.0 | 29.0 | 26.0 | 22.0 | 31.0 | 25.0 | 21.9 | 19.9 | - |
| RB167 | 527830 | 150643 | 31.0 | 18.0 | 14.0 | 19.0 | 9.0 | 16.0 | 12.0 | 20.0 | 20.0 | 26.0 | 24.0 | 28.0 | 19.8 | 17.9 | - |
| RB174 | 527852 | 142841 | 32.0 | 33.0 | 21.0 | 14.0 | 12.0 | 16.0 | 16.0 | 23.0 | 25.0 | 26.0 | 16.0 | 19.0 | 21.1 | 19.1 | - |
| RB175 | 527955 | 142999 | 38.0 | 32.0 | 27.0 | 18.0 | 13.0 | 18.0 | 16.0 | 25.0 | 26.0 | 24.0 | 28.0 | 29.0 | 24.5 | 22.2 | - |
| RB176 | 527765 | 142777 | 30.0 | 24.0 | 14.0 | 12.0 | 8.0 | 16.0 | 13.0 | 21.0 | 15.0 | 24.0 | 29.0 | 23.0 | 19.1 | 17.3 | - |
| RB177 | 527754 | 142762 | 31.0 | 25.0 | 15.0 | 12.0 | 8.0 | 15.0 | 12.0 | 18.0 | 22.0 | 21.0 | 26.0 | 15.0 | 18.3 | 16.6 | - |
| RB178 | 528592 | 141831 | 28.0 | 27.0 | 13.0 | 8.0 | 5.0 | 9.0 | 9.0 | 15.0 | 18.0 | 15.0 | 17.0 | 16.0 | 15.0 | 13.6 | - |
| RB179 | 528592 | 141831 | 28.0 | 30.0 | 14.0 | 9.0 | 6.0 | 8.0 | 10.0 | 14.0 | 17.0 | 13.0 | 14.0 | 14.0 | 14.8 | 13.4 | - |
| RB180 | 528592 | 141831 | 27.0 | 28.0 | 13.0 | 10.0 | 6.0 | 8.0 | 9.0 | 14.0 | 16.0 | 17.0 | 18.0 | 17.0 | 15.3 | 13.8 | - |
| RB181 | 528852 | 156724 | 60.0 | 55.0 | 30.0 | 30.0 | 26.0 | 47.0 | 42.0 | 50.0 | 42.0 | 54.0 | 46.0 | 34.0 | 43.0 | 39.0 | 26.5 |
| RB182 | 528835 | 156728 | 27.0 | 22.0 | 13.0 | 12.0 | 11.0 | 22.0 | 17.0 | 32.0 | 23.0 | 27.0 | 27.0 | 27.0 | 21.7 | 19.6 | - |
| RB183 | 528813 | 156580 | 38.0 | 38.0 | 29.0 | | 19.0 | 28.0 | 30.0 | 38.0 | 45.0 | 34.0 | 32.0 | 15.0 | 31.5 | 28.5 | - |
| RB184 | 528807 | 156555 | 33.0 | 26.0 | 21.0 | 24.0 | 17.0 | 25.0 | 22.0 | 34.0 | 37.0 | 31.0 | 30.0 | 29.0 | 27.4 | 24.8 | - |
| RB186 | 528790 | 156500 | 35.0 | 29.0 | 20.0 | 19.0 | 16.0 | 25.0 | 21.0 | 32.0 | 30.0 | 27.0 | 33.0 | 35.0 | 26.8 | 24.3 | - |
| RB187 | 528789 | 156488 | 27.0 | 23.0 | 17.0 | 16.0 | 13.0 | 24.0 | 18.0 | 27.0 | 26.0 | 24.0 | 28.0 | 23.0 | 22.2 | 20.1 | - |
| RB188 | 528792 | 156478 | 32.0 | 25.0 | 24.0 | 19.0 | 14.0 | 24.0 | 21.0 | 29.0 | 27.0 | 28.0 | 26.0 | 24.0 | 24.4 | 22.1 | - |
| RB189 | 528789 | 156465 | 28.0 | 25.0 | 18.0 | 20.0 | 14.0 | 23.0 | 18.0 | 28.0 | 29.0 | 27.0 | | 25.0 | 23.2 | 21.0 | - |
| RB190 | 528788 | 156460 | 30.0 | 25.0 | 15.0 | 16.0 | 14.0 | 24.0 | 18.0 | 29.0 | 30.0 | 28.0 | 28.0 | 25.0 | 23.5 | 21.3 | - |
| RB191 | 528785 | 156448 | 28.0 | 23.0 | 19.0 | 15.0 | 15.0 | 24.0 | 19.0 | 27.0 | 25.0 | 24.0 | 24.0 | 26.0 | 22.4 | 20.3 | - |
| RB192 | 528784 | 156442 | 23.0 | 20.0 | 22.0 | 20.0 | 13.0 | 23.0 | 19.0 | 27.0 | 25.0 | 22.0 | 26.0 | 17.0 | 21.4 | 19.4 | - |
| RB193 | 528782 | 156430 | 24.0 | 16.0 | 15.0 | 15.0 | 13.0 | 19.0 | 14.0 | 24.0 | 25.0 | 22.0 | 23.0 | 24.0 | 19.5 | 17.7 | - |
| RB194 | 528779 | 156381 | 32.0 | 24.0 | 19.0 | 24.0 | 15.0 | 27.0 | 19.0 | | 21.0 | 25.0 | 33.0 | 28.0 | 24.3 | 22.0 | - |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RB195 | 528772 | 156349 | 38.0 | 27.0 | 22.0 | 25.0 | 14.0 | 28.0 | 21.0 | 32.0 | 37.0 | 31.0 | 33.0 | 19.0 | 27.3 | 24.7 | - |
| RB196 | 528797 | 156331 | 30.0 | 24.0 | 15.0 | 16.0 | 10.0 | 20.0 | 18.0 | 22.0 | 25.0 | 23.0 | 28.0 | 23.0 | 21.2 | 19.2 | - |
| RB197 | 528795 | 156373 | 34.0 | 28.0 | 25.0 | 22.0 | 16.0 | 28.0 | 22.0 | 35.0 | 38.0 | 21.0 | 33.0 | 30.0 | 27.7 | 25.1 | - |
| RB198 | 528796 | 156379 | 38.0 | 31.0 | 25.0 | 27.0 | 18.0 | 25.0 | 23.0 | 36.0 | 46.0 | 29.0 | 32.0 | 22.0 | 29.3 | 26.6 | - |
| RB199 | 528800 | 156390 | 32.0 | 31.0 | 23.0 | 19.0 | 14.0 | 26.0 | 24.0 | 29.0 | 36.0 | 30.0 | 24.0 | 28.0 | 26.3 | 23.9 | - |
| RB200 | 528799 | 156409 | 45.0 | 36.0 | 26.0 | 25.0 | 18.0 | 32.0 | 30.0 | 40.0 | 43.0 | 37.0 | 48.0 | 36.0 | 34.7 | 31.4 | - |
| RB201 | 528804 | 156414 | 33.0 | 26.0 | 26.0 | 25.0 | 17.0 | 27.0 | 23.0 | 30.0 | 35.0 | 29.0 | 33.0 | 30.0 | 27.8 | 25.2 | - |
| RB202 | 528808 | 156444 | 35.0 | 31.0 | 29.0 | 24.0 | 23.0 | 36.0 | 27.0 | 41.0 | 45.0 | 33.0 | 36.0 | 32.0 | 32.7 | 29.6 | - |
| RB203 | 528809 | 156454 | 42.0 | 28.0 | 29.0 | 32.0 | 23.0 | 39.0 | 30.0 | 38.0 | 38.0 | 34.0 | 40.0 | 28.0 | 33.4 | 30.3 | - |
| RB204 | 528810 | 156457 | 38.0 | 29.0 | 24.0 | 34.0 | 21.0 | 34.0 | 30.0 | 37.0 | 43.0 | 33.0 | 37.0 | 43.0 | 33.6 | 30.4 | - |
| RB205 | 528812 | 156466 | 42.0 | 35.0 | 27.0 | 27.0 | 24.0 | 38.0 | 32.0 | 46.0 | 48.0 | 38.0 | 37.0 | 39.0 | 36.1 | 32.7 | - |
| RB206 | 528816 | 156477 | 33.0 | 27.0 | 24.0 | 27.0 | 22.0 | 33.0 | 24.0 | 36.0 | 40.0 | 33.0 | 33.0 | 20.0 | 29.3 | 26.6 | - |
| RB207 | 528818 | 156486 | 31.0 | 30.0 | 21.0 | 22.0 | 21.0 | 26.0 | 28.0 | 37.0 | 39.0 | 29.0 | 30.0 | 31.0 | 28.8 | 26.1 | - |
| RB208 | 528825 | 156526 | 52.0 | 39.0 | 31.0 | 32.0 | 20.0 | 43.0 | 36.0 | 48.0 | 50.0 | 51.0 | 45.0 | 30.0 | 39.8 | 36.0 | 30.1 |
| RB209 | 528833 | 156547 | 32.0 | 26.0 | 17.0 | 17.0 | 13.0 | 22.0 | 19.0 | 28.0 | 32.0 | 25.0 | 21.0 | 31.0 | 23.6 | 21.4 | - |
| RB210 | 528833 | 156555 | 43.0 | 34.0 | 25.0 | 18.0 | 16.0 | 34.0 | 25.0 | 40.0 | 39.0 | 32.0 | 39.0 | 33.0 | 31.5 | 28.5 | - |
| RB211 | 528839 | 156577 | 40.0 | 36.0 | 23.0 | 26.0 | 18.0 | 32.0 | 16.0 | 42.0 | 39.0 | 36.0 | 41.0 | 42.0 | 32.6 | 29.5 | - |
| RB212 | 528840 | 156582 | 43.0 | 37.0 | 25.0 | 25.0 | 17.0 | 37.0 | 29.0 | 40.0 | 41.0 | 40.0 | 42.0 | 23.0 | 33.3 | 30.1 | - |
| RB213 | 528845 | 156604 | 42.0 | 29.0 | 25.0 | 25.0 | 18.0 | 28.0 | 29.0 | 39.0 | 38.0 | 37.0 | 26.0 | 35.0 | 30.9 | 28.0 | - |
| RB214 | 528848 | 156617 | 30.0 | 28.0 | 20.0 | 17.0 | 16.0 | 25.0 | 23.0 | 35.0 | 34.0 | 27.0 | 31.0 | 11.0 | 24.8 | 22.4 | - |
| RB215 | 528853 | 156646 | 33.0 | 30.0 | 23.0 | 22.0 | 13.0 | 20.0 | 20.0 | 27.0 | 31.0 | 26.0 | 27.0 | 27.0 | 24.9 | 22.6 | - |
| RB216 | 528862 | 156690 | 49.0 | 35.0 | 33.0 | 30.0 | 24.0 | 43.0 | 32.0 | 49.0 | 43.0 | 71.0 | 44.0 | 75.0 | 44.0 | 39.9 | - |
| RB217 | 528866 | 156712 | 45.0 | 38.0 | 27.0 | 27.0 | 21.0 | 35.0 | 33.0 | 42.0 | 51.0 | 43.0 | 44.0 | 42.0 | 37.3 | 33.8 | - |
| RB218 | 528869 | 156737 | 41.0 | 40.0 | 30.0 | 30.0 | 22.0 | 40.0 | 32.0 | 40.0 | 51.0 | 39.0 | 46.0 | 30.0 | 36.8 | 33.3 | - |
| RB219 | 528877 | 156744 | 46.0 | 38.0 | 29.0 | 27.0 | 21.0 | 36.0 | 32.0 | 41.0 | 44.0 | 44.0 | 43.0 | 46.0 | 37.3 | 33.8 | - |
| RB223 | 528804 | 156435 | 46.0 | 32.0 | 31.0 | 32.0 | 23.0 | 37.0 | 31.0 | 42.0 | 45.0 | 38.0 | 42.0 | 37.0 | 36.3 | 32.9 | - |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RB224 | 528804 | 156435 | 47.0 | 35.0 | 24.0 | 34.0 | 23.0 | 39.0 | 33.0 | 44.0 | 40.0 | 39.0 | 41.0 | 31.0 | 35.8 | 32.5 | - |
| RB225 | 528804 | 156435 | 44.0 | 37.0 | 28.0 | 24.0 | 23.0 | 32.0 | 29.0 | 48.0 | 48.0 | 39.0 | 39.0 | 37.0 | 35.7 | 32.3 | - |

☒ **Local bias adjustment factor used**

☐ **National bias adjustment factor used**

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

☒ **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.**

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

(2) Distance corrected to nearest relevant public exposure.

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

## New or Changed Sources Identified Within Reigate and Banstead

Reigate and Banstead Borough has not identified any new sources relating to air quality within the reporting year of 2020.

## Additional Air Quality Works Undertaken by Reigate and Banstead During 2020

Reigate and Banstead has not completed any additional works within the reporting year of 2021.

## QA/QC of Monitoring

### Diffusion Tube Nitrogen Dioxide Bias Adjustment Factors

Reigate and Banstead Borough Council use diffusion tubes prepared and analysed by Lambeth Scientific Services (50% TEA in acetone method). The local bias adjustment factors are presented in the table below for 2017 to 2020, which are based on orthogonal regression of the three sets of triplicate diffusion tubes co-located at automatic monitoring sites RG1, RG3 and RG6. For comparison, the national bias-adjustment factor for Lambeth Scientific Services is included in the table below (National Diffusion Tube Bias Adjustment Factor Spreadsheet (04/22)).

**Table C.1 – Local and National Bias Adjustment Factors**

| Year | Local Bias Adjustment Factor | National Bias Adjustment Factor |
|---|---|---|
| 2017 | 0.91 | 0.93 |
| 2018 | 0.97 | 1.04 |
| 2019 | 0.87 | 0.91 |
| 2020 | 0.91 | 0.96 |

For each year, the local bias adjustment factor has been used in order to be consistent with other air quality reports.

## $PM_{10}$ Monitoring Adjustment

The RG1 automatic monitoring station $PM_{10}$ data have been adjusted using the Volatile Correction Model (www.volatile-correction-model.info).

## Annualisation

Three diffusion tubes have lower than 75% data capture in 2020 (RB113, RB43 and RB114). Annualisation has been undertaken using the approach detailed within Box 7.10 within LAQM (TG16). The factor applied to diffusion tube results are detailed within Table C.3.

## Table C.3 –Diffusion Tube Annualisation

**Annualisation Summary - Information Only**

Go to STEP 3 - Bias Adjustment

| Diffusion Tube ID | Annualisation Factor RG1 | Annualisation Factor RG6 | Annualisation Factor RG3 | Annualisation Factor Site 4 Name | Average Annualisation Factor | Raw Data Simple Annual Mean (µg/m3) | Annualised Data Simple Annual Mean (µg/m3) | Comments |
|---|---|---|---|---|---|---|---|---|
| RB13 | 0.8787 | 0.8738 | 0.9310 | | 0.8945 | 16.4 | 14.6 | |
| RB43 | 0.8809 | 0.8954 | 0.9484 | | 0.9082 | 18.1 | 16.5 | |
| RB114 | 1.0682 | 1.1786 | 1.0272 | | 1.0913 | 18.0 | 19.6 | |

## Nitrogen Dioxide Distance Correction

A number of the roadside monitoring sites measuring nitrogen dioxide concentrations in 2020 were not located at sites of relevant public exposure. As such, it is necessary to distance correct the measured concentrations in order to estimate concentrations experienced at the nearest relevant exposure to these sites. This has been undertaken for sites which have measured concentrations of over 36 µg/$m^3$. These estimated concentrations can then be compared to the relevant air quality objectives to establish whether or not an exceedance is likely to have taken place.

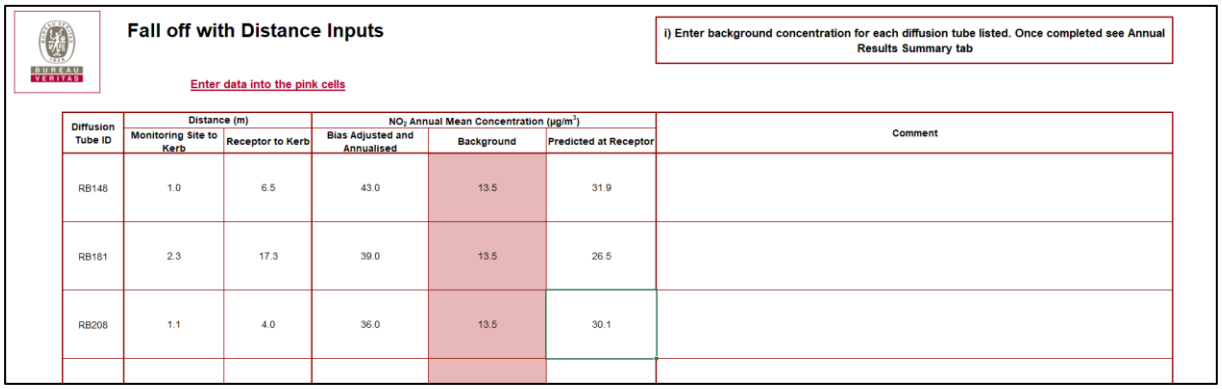
Distance correction calculations have been undertaken, which requires the following inputs:

- Distance from the monitoring site to the kerb (m);
- distance from the closest receptor to the kerb (m);

- the local annual mean background nitrogen dioxide concentration (µg/m$^3$) (determined using Defra's background maps (Defra, 2018)); and
- the measured annual mean nitrogen dioxide concentration (µg/m$^3$).

The distance corrected nitrogen dioxide annual mean concentrations are presented in Table B.1. The distance calculations for 2020 are reproduced below.

### Figure C.1 – $NO_2$ Fall Off with Distance 2020



**Fall off with Distance Inputs**

i) Enter background concentration for each diffusion tube listed. Once completed see Annual Results Summary tab

Enter data into the pink cells

| Diffusion Tube ID | Distance (m) | | $NO_2$ Annual Mean Concentration (µg/m$^3$) | | | Comment |
|---|---|---|---|---|---|---|
| | Monitoring Site to Kerb | Receptor to Kerb | Bias Adjusted and Annualised | Background | Predicted at Receptor | |
| RB148 | 1.0 | 6.5 | 43.0 | 13.5 | 31.9 | |
| RB181 | 2.3 | 17.3 | 39.0 | 13.5 | 26.5 | |
| RB208 | 1.1 | 4.0 | 36.0 | 13.5 | 30.1 | |

### QA/QC of Diffusion Tube Monitoring

Reigate and Banstead Borough Council use nitrogen dioxide diffusion tubes prepared and analysed by Lambeth Scientific Services, using the 50% TEA in acetone method.

Reigate and Banstead Borough Council also use diffusion tubes prepared and analysed by Lambeth Scientific Services to monitor benzene. AIRBTX Analysis was undertaken using a passive sampling method.

### QA/QC of Automatic Monitoring

The NOX analyser at RG1 is also part of the Automatic Urban and Rural Network (AURN); and has data verification and ratification undertaken by Kings ERG and bi-annual QA / QC undertaken by AEA Ricardo. All other data are ratified and verified by Kings ERG to AURN standards. QA/QC is carried out by NPL.

# Appendix D: Maps of Monitoring Locations and AQMAs

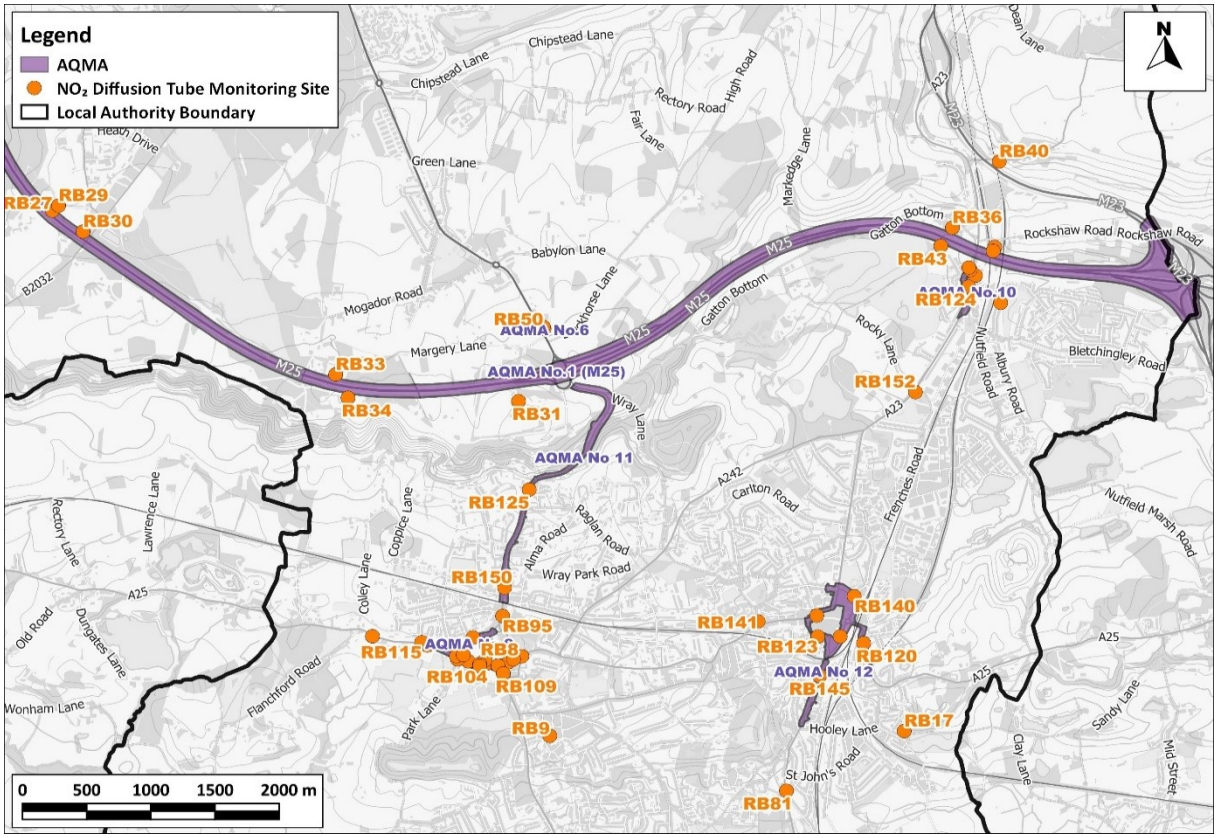



**Figure D.1 AQMA No. 1 (M25), AQMA 6 (A217 / Blackhorse Lane), AQMA 10 (Merstham), AQMA No. 11 (Reigate Hill), AQMA No. 12 (Redhill), Nitrogen Dioxide Diffusion Tube Monitoring Site Locations Within and Close to AQMA No. 1 and the Local Authority Boundaries.**

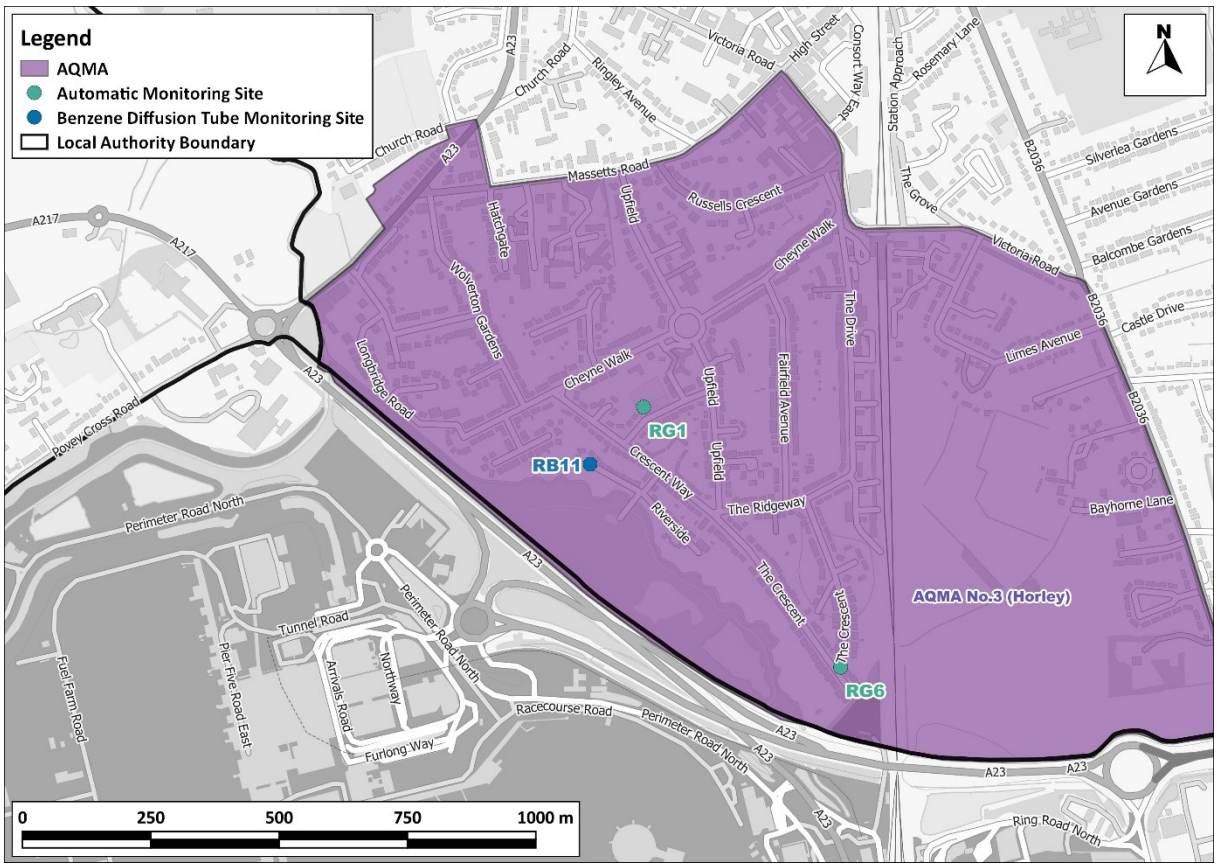



**Figure D.2 AQMA No. 3 (Horley), Automatic Monitoring Sites and Benzene Diffusion Tube Monitoring Site Locations Within the AQMA and Local Authority Boundaries.**

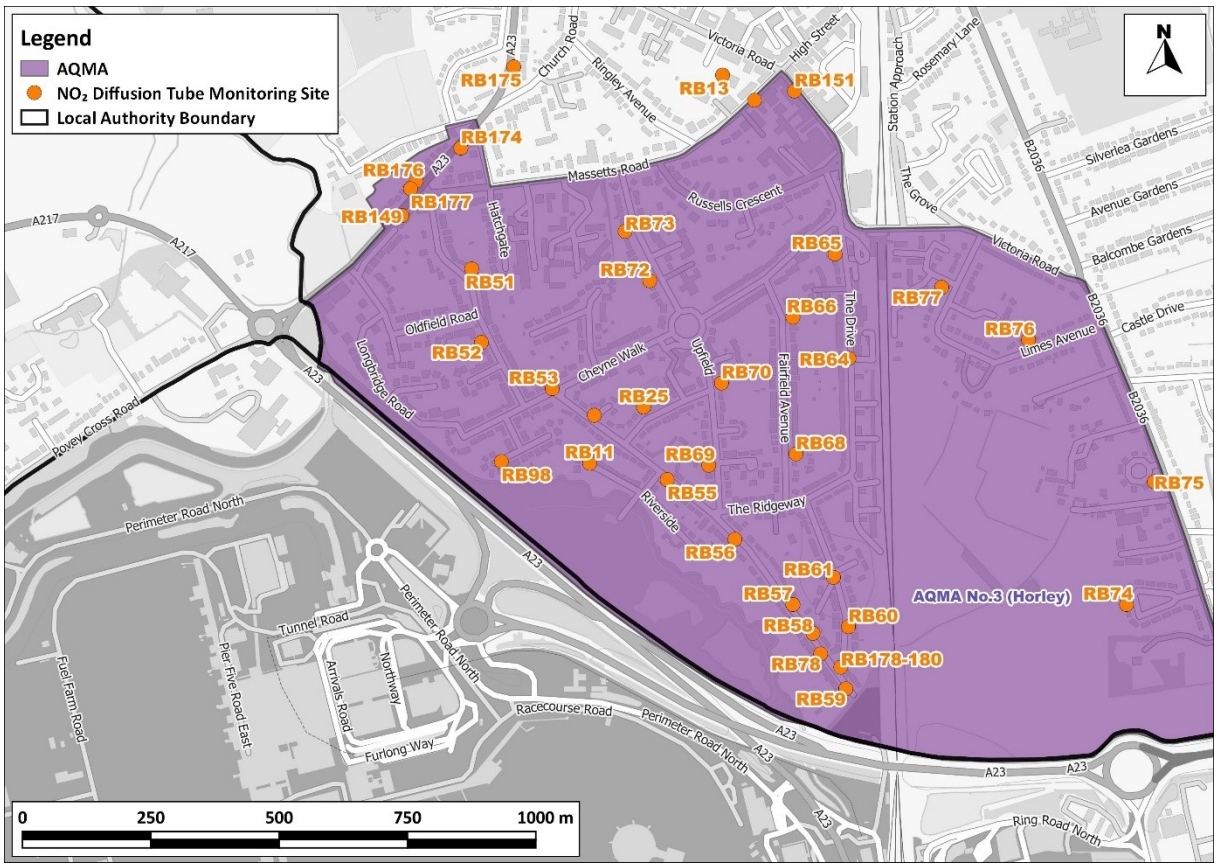



**Figure D.3 AQMA No. 3 (Horley), Nitrogen Dioxide Diffusion Tube Monitoring Site Locations Within and Close to the AQMA and Local Authority Boundaries.**


**Figure D.4 AQMA No. 6 (A217 / Blackhorse Lane) and Nitrogen Dioxide Diffusion Tube Monitoring Site Locations Within and Close to the AQMA.**

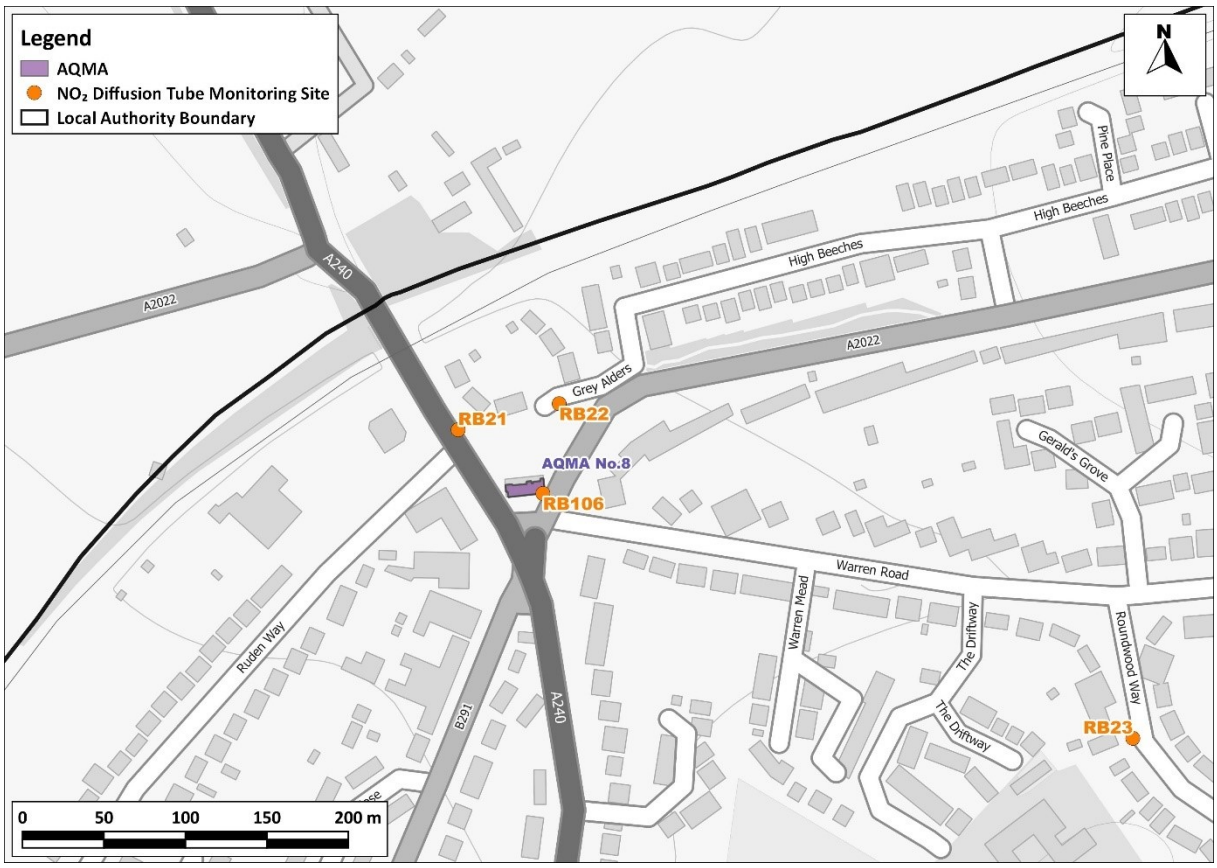



**Figure D.5 AQMA No. 8 (Drift Bridge) and Nitrogen Dioxide Diffusion Tube Monitoring Site Locations Within and Close to the AQMA.**

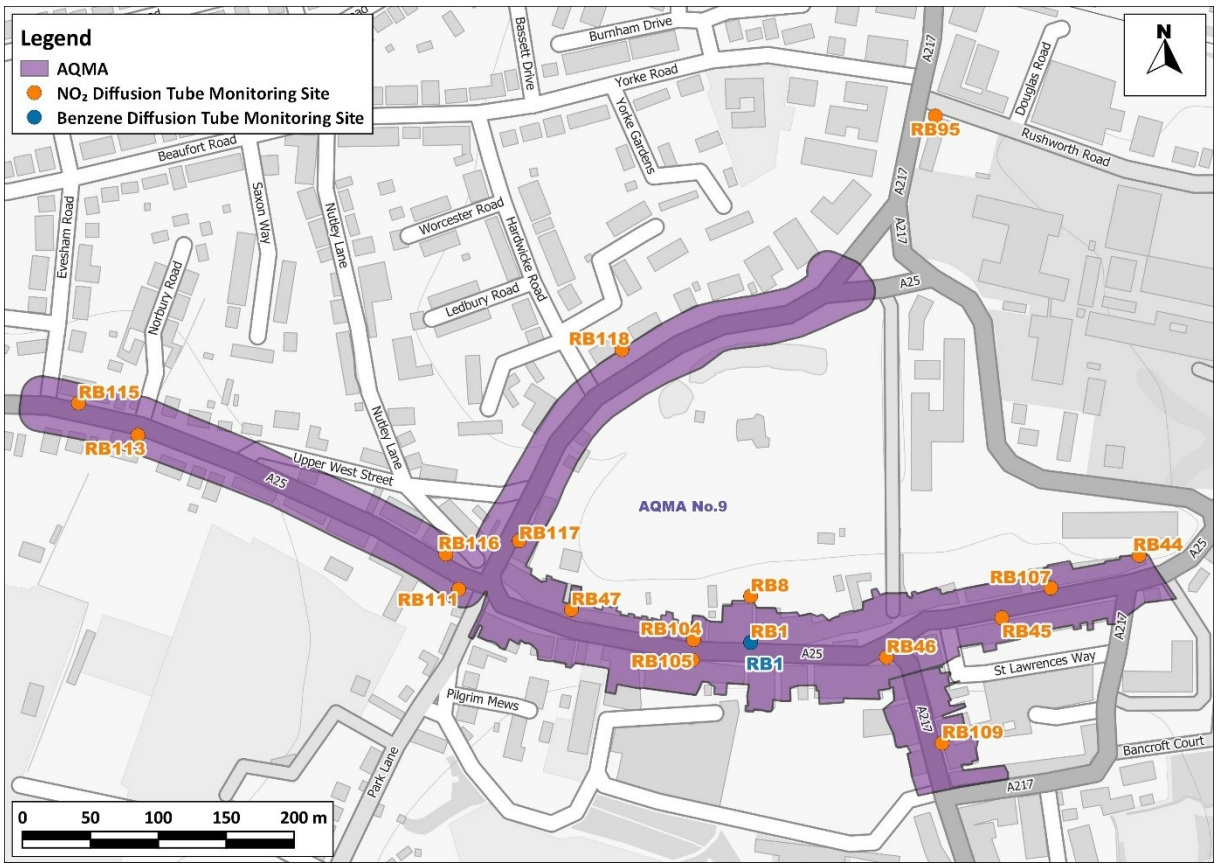



**Figure D.6 AQMA No. 9 (Reigate High Street / West St / Bell St) and Nitrogen Dioxide or Benzene Diffusion Tube Monitoring Site Locations Within and Close to the AQMA.**

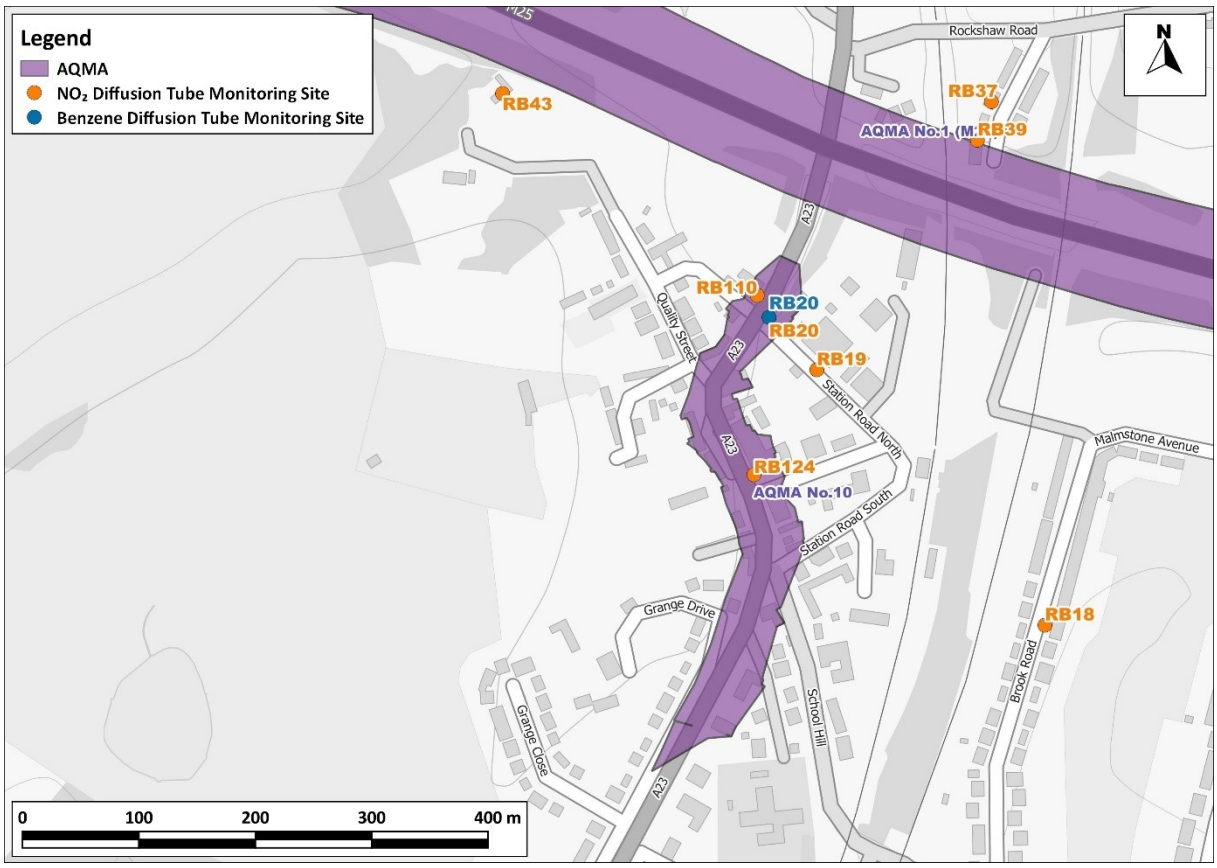



**Figure D.7 AQMA No. 10 (Merstham) and Nitrogen Dioxide or Benzene Diffusion Tube Monitoring Site Locations Within and Close to the AQMA Benzene.**

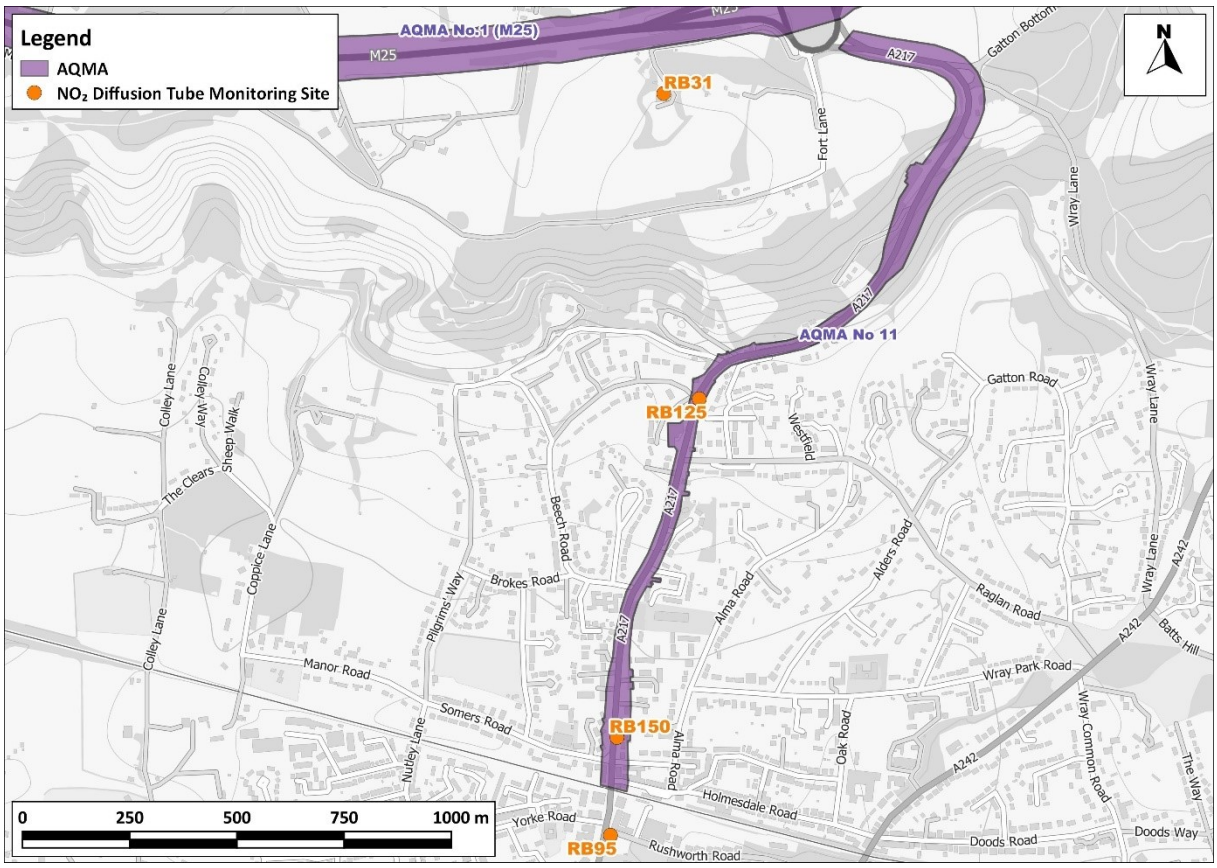



**Figure D.8 AQMA No. 11 (Reigate Hill), AQMA No. 1(M25) and Diffusion Tube Monitoring Site Locations Within and Close to AQMA No. 11.**

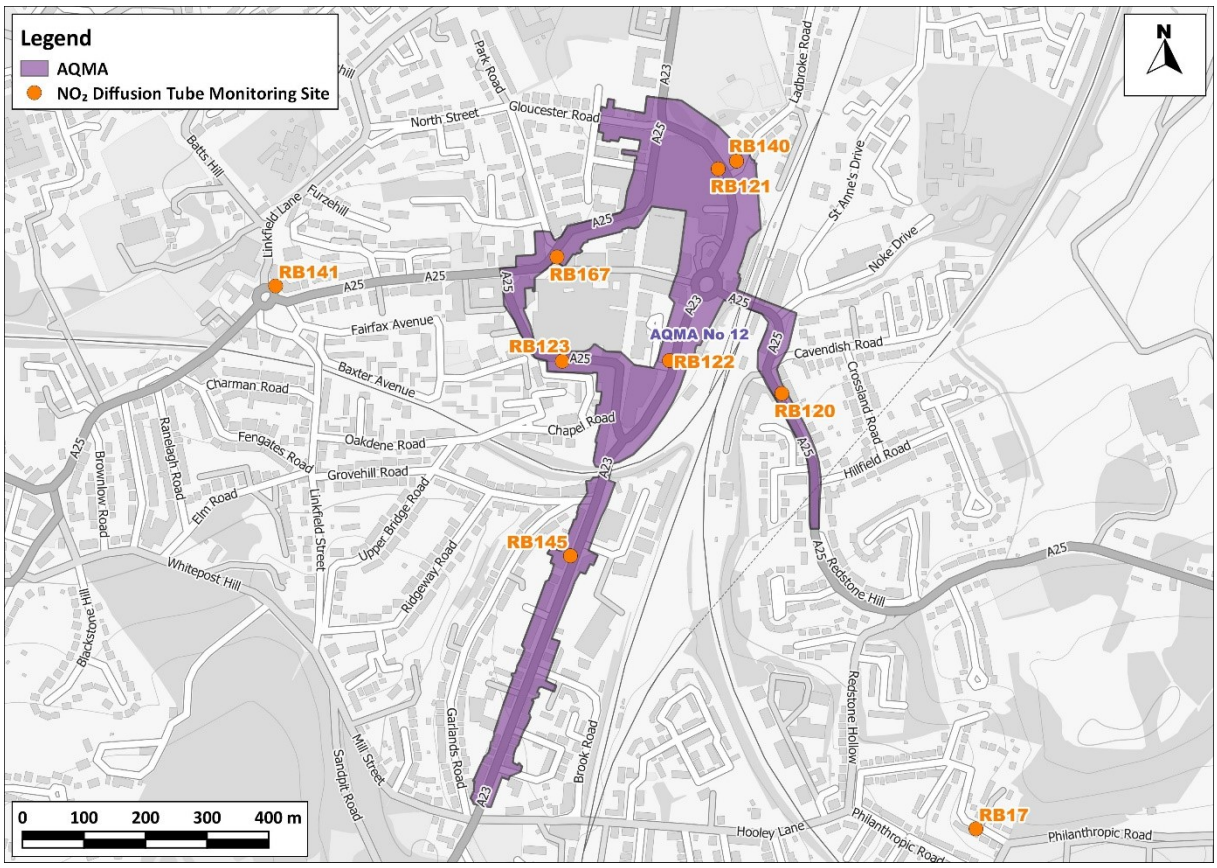



**Figure D.9 AQMA No. 12 (Redhill) and Diffusion Tube Monitoring Site Locations Within and Close to the AQMA.**

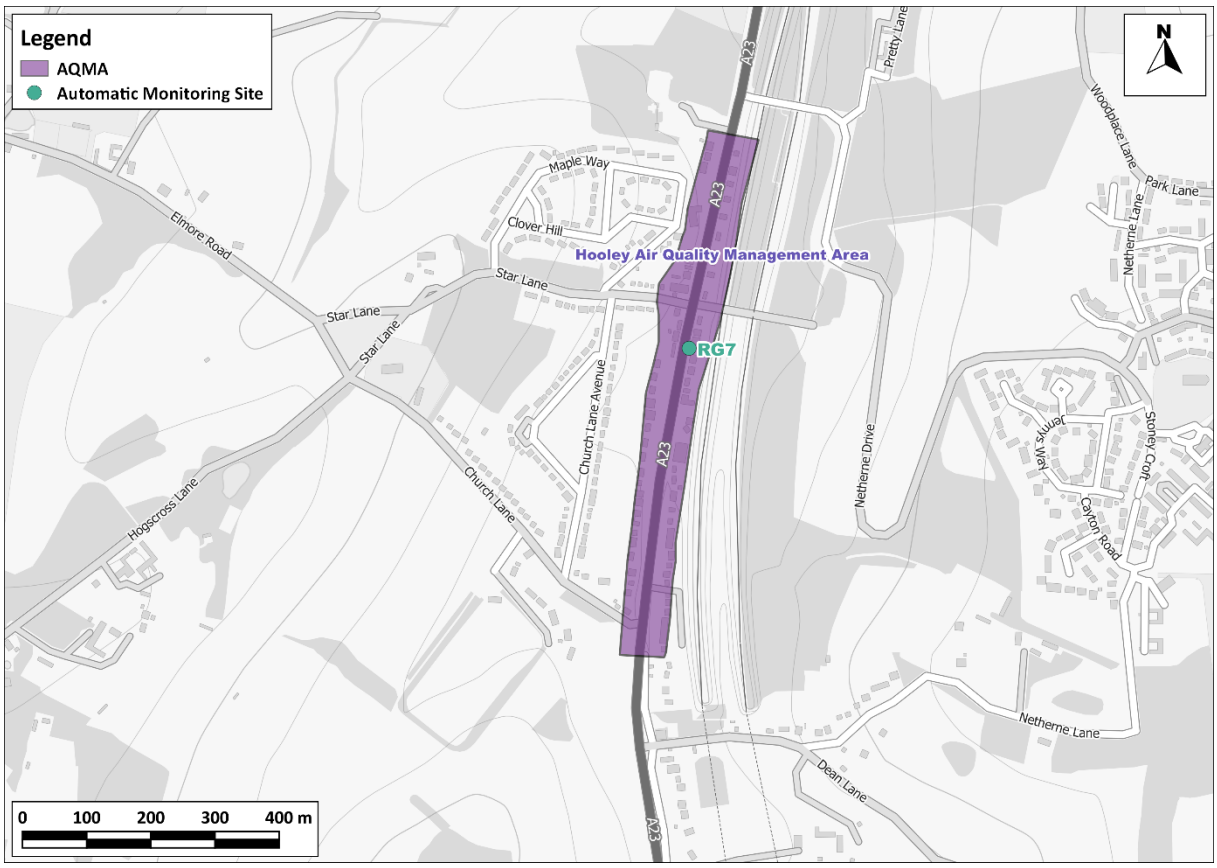



**Figure D.10 AQMA No. 13 (Hooley) and Automatic Monitoring Site Location Within the AQMA.**

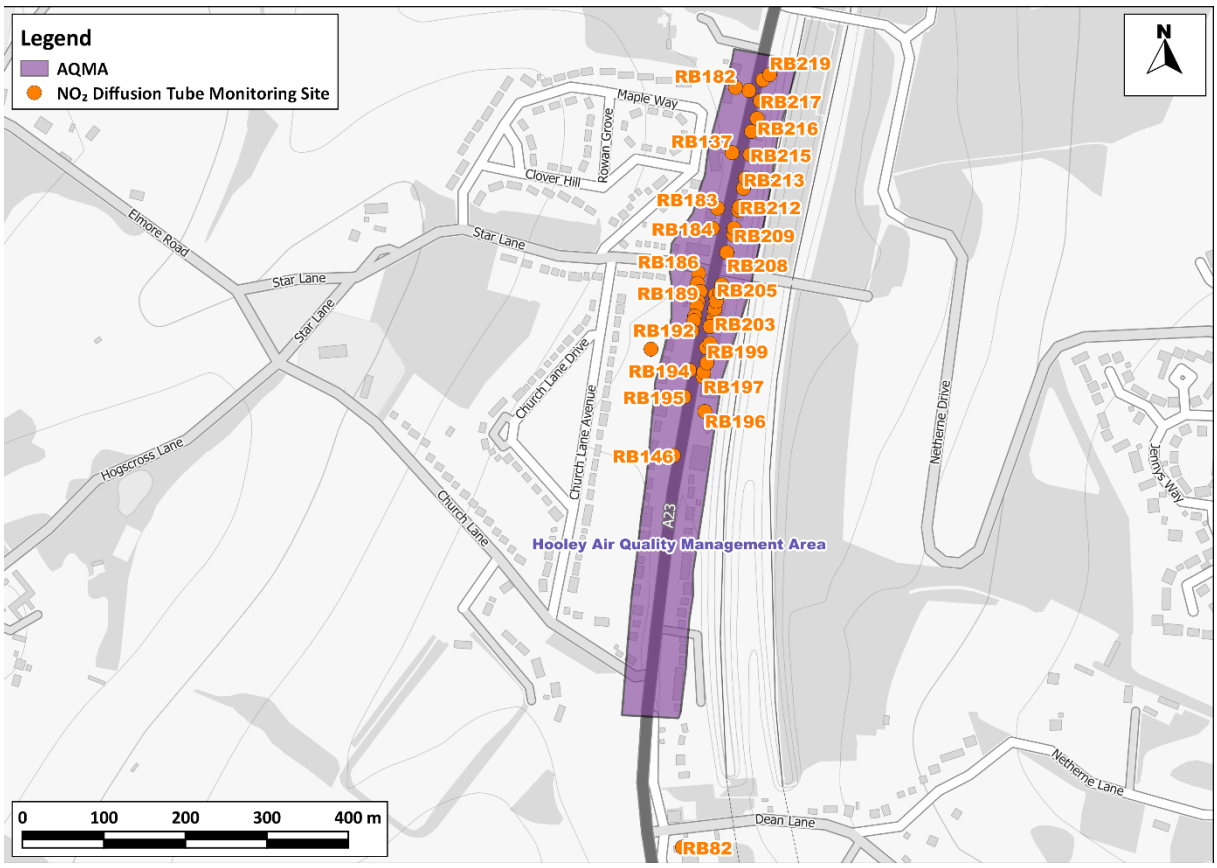



**Figure D.11 AQMA No. 13 (Hooley) and Diffusion Tube Monitoring Site Locations Within and Close to the AQMA.**

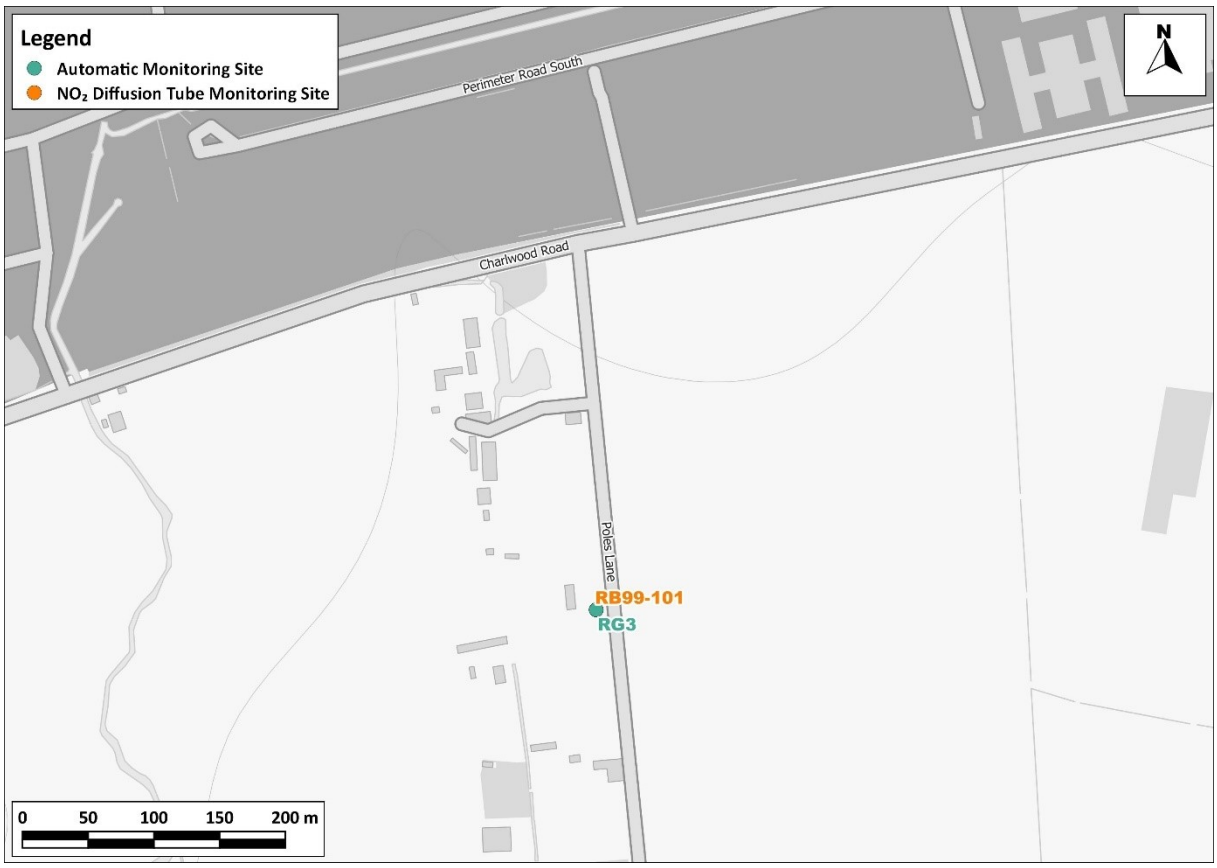



**Figure D.12 Automatic Monitoring Site and Nitrogen Dioxide Diffusion Tube Monitoring Site Locations (South of London Gatwick Airport, Crawley Borough).**

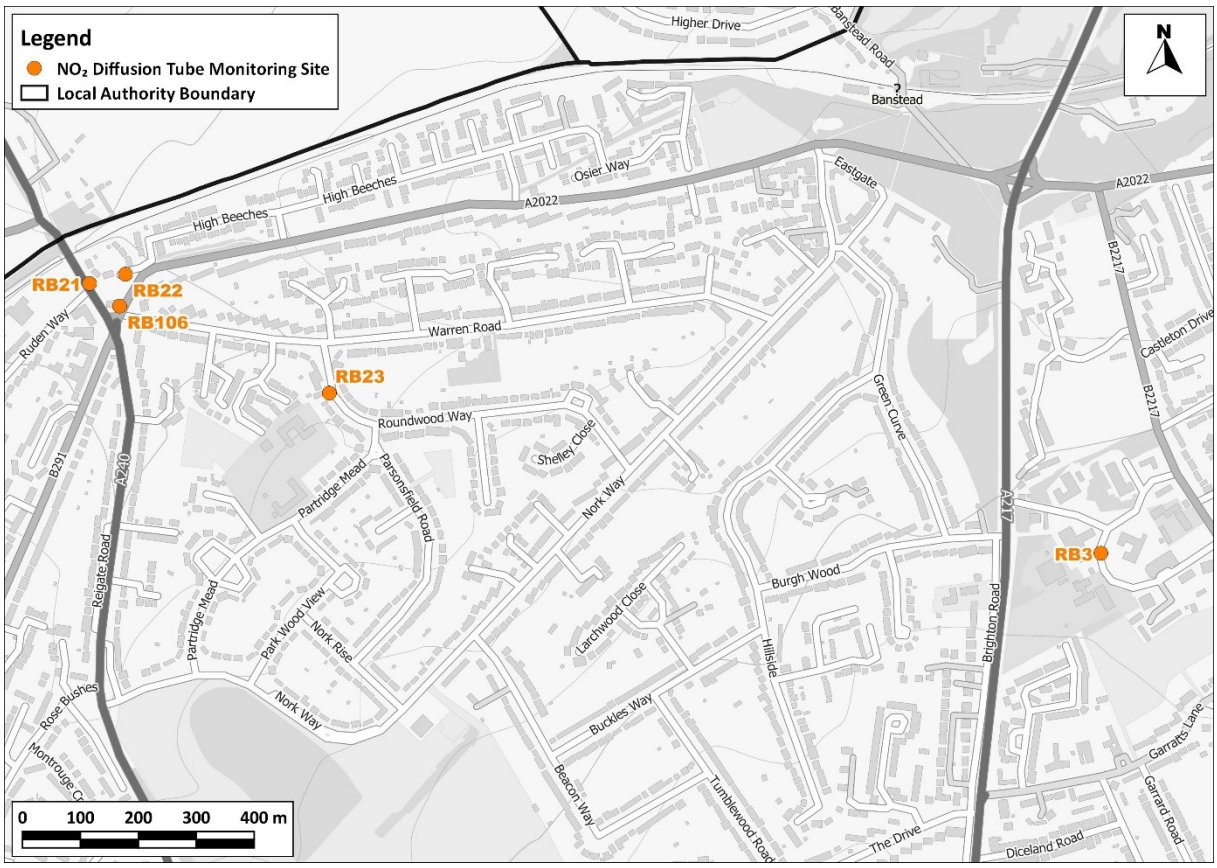



**Figure D.13 Nitrogen Dioxide Diffusion Tube Monitoring Site Locations (Banstead) and Local Authority Boundaries.**


**Figure D.14 Nitrogen Dioxide Diffusion Tube Monitoring Site Location (M23, Tandridge District).**

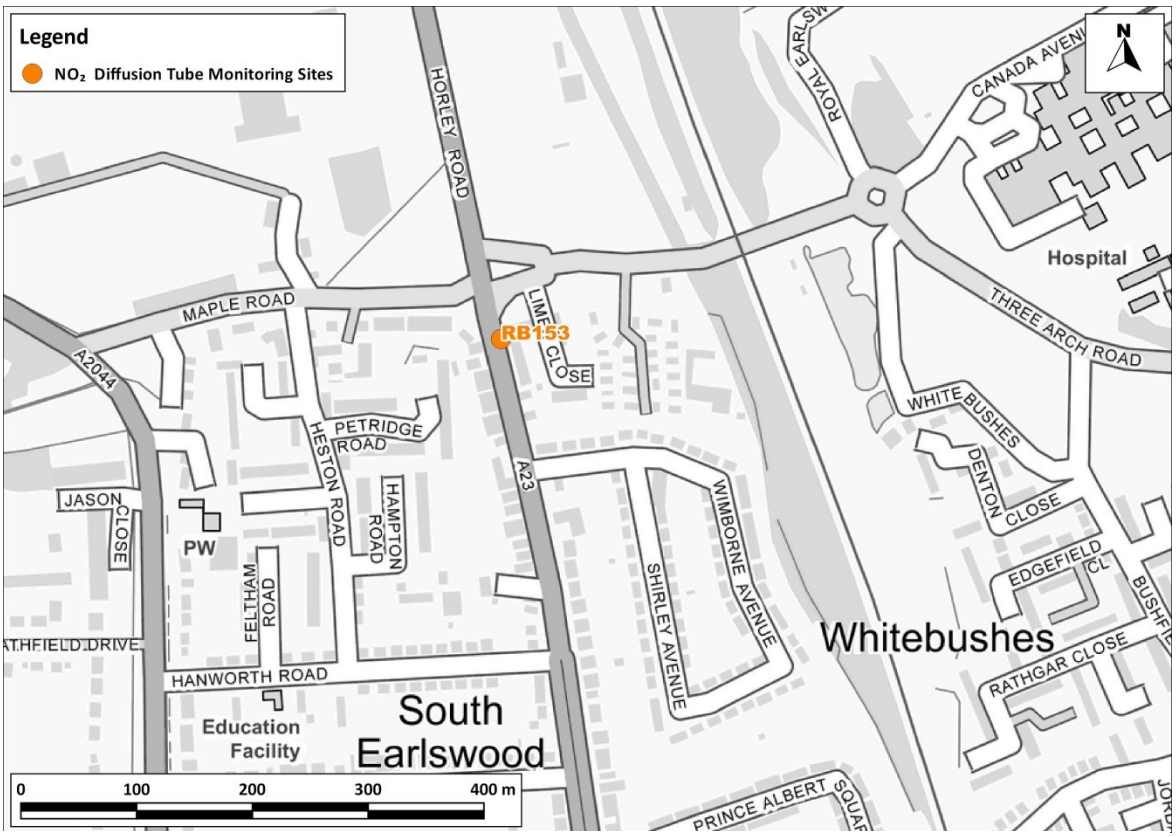



**Figure D.15 Nitrogen Dioxide Diffusion Tube Monitoring Site Location (South Earlswood).**

# Appendix E: Summary of Air Quality Objectives in England

### Table E.1 – Air Quality Objectives in England

| Pollutant | Air Quality Objective[12] | |
|---|---|---|
| | 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 |
| Benzene | 5 µg/m$^3$ | Annual mean |

[12] 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[13] 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)[14] 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-

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

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 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 Reigate and Banstead

Reductions of $NO_2$ concentrations of between 11% and 59% were experienced in 2020 at diffusion tube monitoring sites throughout the borough, when compared to 2019 concentrations. This resulted in 2020 concentrations being below the objective in all but one site (RB148).

## Opportunities Presented by COVID-19 upon LAQM within Reigate and Banstead

Throughout 2020, all diffusion tube and real-time monitoring work was unchanged from previous monitoring years. The authority considered that the information collected during lockdown would offer a unique insight into the real world impact of significant reductions in different pollution sources, notably road traffic and aircraft emissions, on overall pollution levels.

The impact of national restrictions on air travel and movement in general was clearly seen in the vicinity of Gatwick airport when looking at the contribution from the airport and road traffic on the A23 to residential exposure to nitrogen dioxide (Table F.1).

**Table F.1 – Airport & A23 Airport Way Contribution to Nitrogen Dioxide (µg $m^{-3}$) by Month (RG6 minus RG3 when winds 202 to 248 degrees).**

| Month | Range 2017 to 2019 | Average | 2020 |
|---|---|---|---|
| **January** | 22.7 to 24.1 | 23.4 | 21.0 |
| **February** | 24.0 to 27.2 | 25.4 | 18.1 |
| **March** | 20.9 to 26.6 | 24.4 | 19.5 |
| **April** | 15.9 to 24.7 | 21.5 | 3.7 |
| **May** | 17.0 to 21.8 | 19.6 | 2.2 |
| **June** | 20.8 to 21.4 | 21.1 | 2.4 |
| **July** | 20.2 to 21.5 | 20.7 | 2.8 |
| **August** | 20.4 to 22.6 | 21.3 | 5.0 |
| **September** | 21.4 to 22.9 | 22.1 | 7.3 |
| **October** | 21.5 to 25.3 | 23.1 | 6.2 |
| **November** | 17.3 to 24.2 | 21.3 | 4.6 |
| **December** | 20.8 to 28.1 | 24.3 | 7.1 |

As can be seen from the table during 2020 concentrations of nitrogen dioxide from the airport and A23 (Airport Way) fell by up to a factor of 9, and by November / December 2020 levels were still 3-4 times lower than would normally be expected.

There was little to no reduction in $PM_{10}$ concentrations as a result of the restrictions. There was also a significant uplift in the annual average concentration of ozone, most likely due to the fall off in $NO_2$ emissions.

# Challenges and Constraints Imposed by COVID-19 upon LAQM within Reigate and Banstead

No specific challenges or constraints relating to LAQM have arisen during 2020 as a consequence of COVID-19 within Reigate and Banstead.

# 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 |
| AURN | Automatic Urban and Rural Network |
| Defra | Department for Environment, Food and Rural Affairs |
| DfT | Department for Transport |
| EU | European Union |
| HE | Highways England |
| 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 |
| RBBC | Reigate and Banstead Borough Council |
| $SO_2$ | Sulphur Dioxide |

# References


- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.