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

2020 Air Quality Annual Status Report (ASR)

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

November, 2020

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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 recently 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

[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

implementation of these measures, as well as implementation of their Local Transport Plan and in partnership with Planning and Public Health colleagues.

This report confirms that, as a whole, there appears to be a downward trend, i.e. improvement in air quality throughout Reigate and Banstead, particularly when evaluated over a number of years (graphs of 3-year rolling averages are included in section 3.3 from 2004). Nitrogen dioxide concentrations are below the 1-hour mean at all real time sites. There are a reducing number of exceedances of the annual mean nitrogen dioxide objective in some of the AQMAs, which are discussed in detail in section 3.3. In the reporting period, exceedances were measured in AQMAs 3, 6 and 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 consideration is being given to revoking the M25 AQMA.

Actions to Improve Air Quality

Reigate and Banstead Borough Council has taken forward a number of measures during the reporting years of 2017 to 2019 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 a pollution monitoring, enabling gating of traffic outside of a street canyon when pollution levels are increasing has also been completed, as well as the completion of a high quality bus corridor from Redhill to Salfords. Ongoing measures including maintaining the current taxi licensing scheme, encouraging EV

uptake through the licensing process, promotion of cycling within schools (31 schools involved in the programme in 2019 with between 2 and 6 days per school per term input), 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 continues 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. 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 between 2017 and 2019. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by 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 F.1 in Appendix F.

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. Alternatively, see Appendix E: Maps of Monitoring Locations and AQMAs, which provides a map of air quality monitoring locations in relation to the AQMAs.

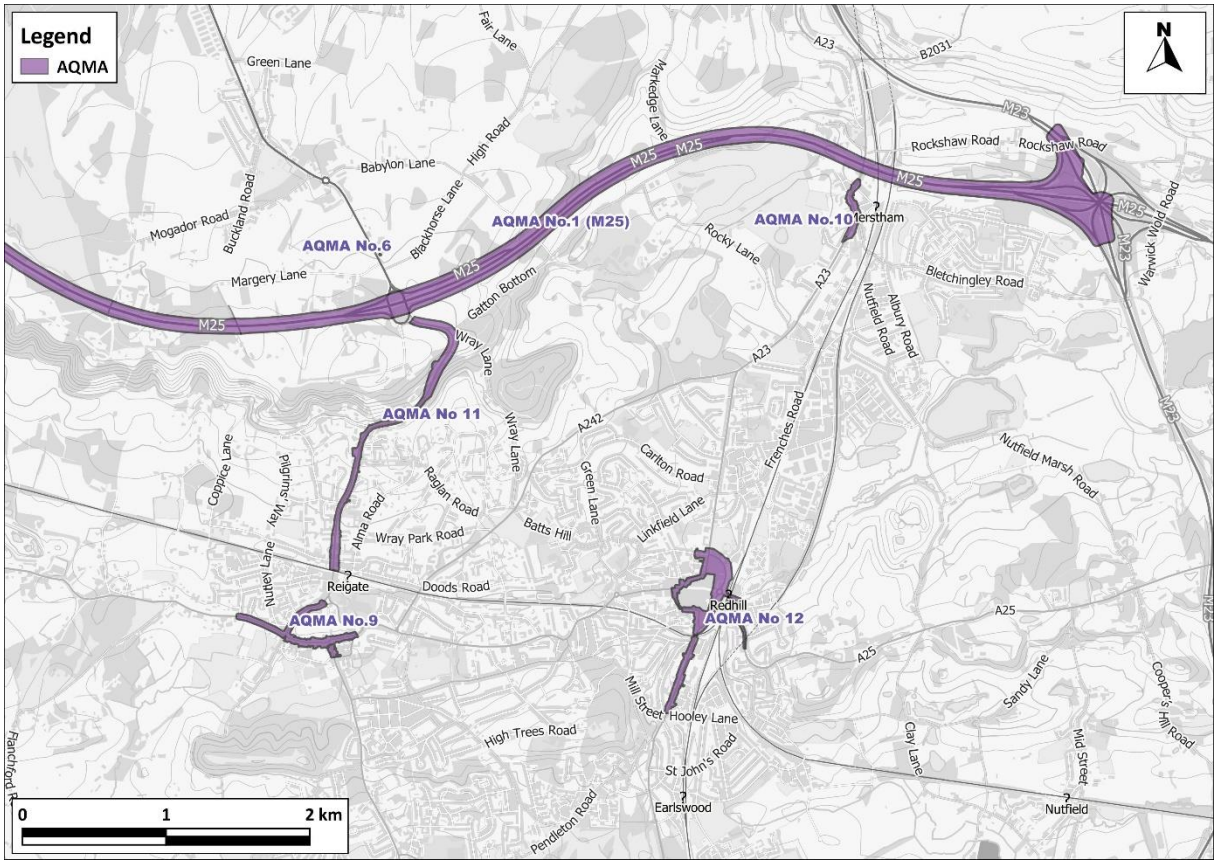

Figure 2.2.1: AQMAs No.1 (M25), No. 6 (Blackhorse Lane), No.9 (Reigate High St / West St / Bell St), No. 10 (Merstham), No. 11 (Reigate Hill) and No. 12 (Redhill)

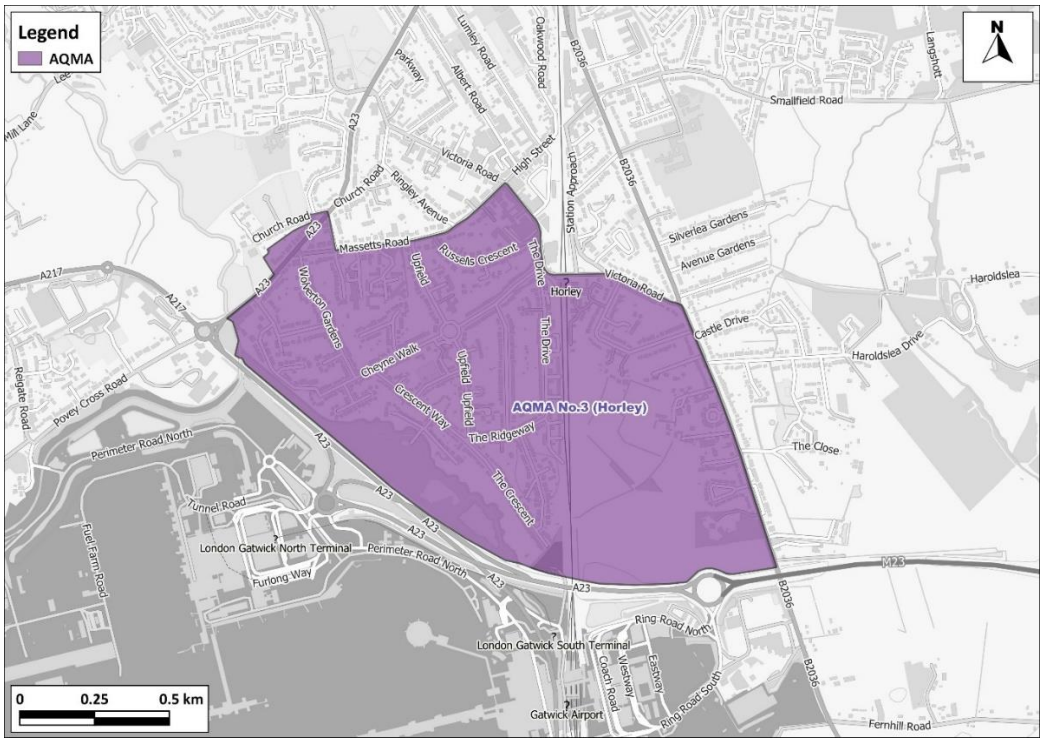

Figure 2.2.2: AQMA No.3 (Horley)

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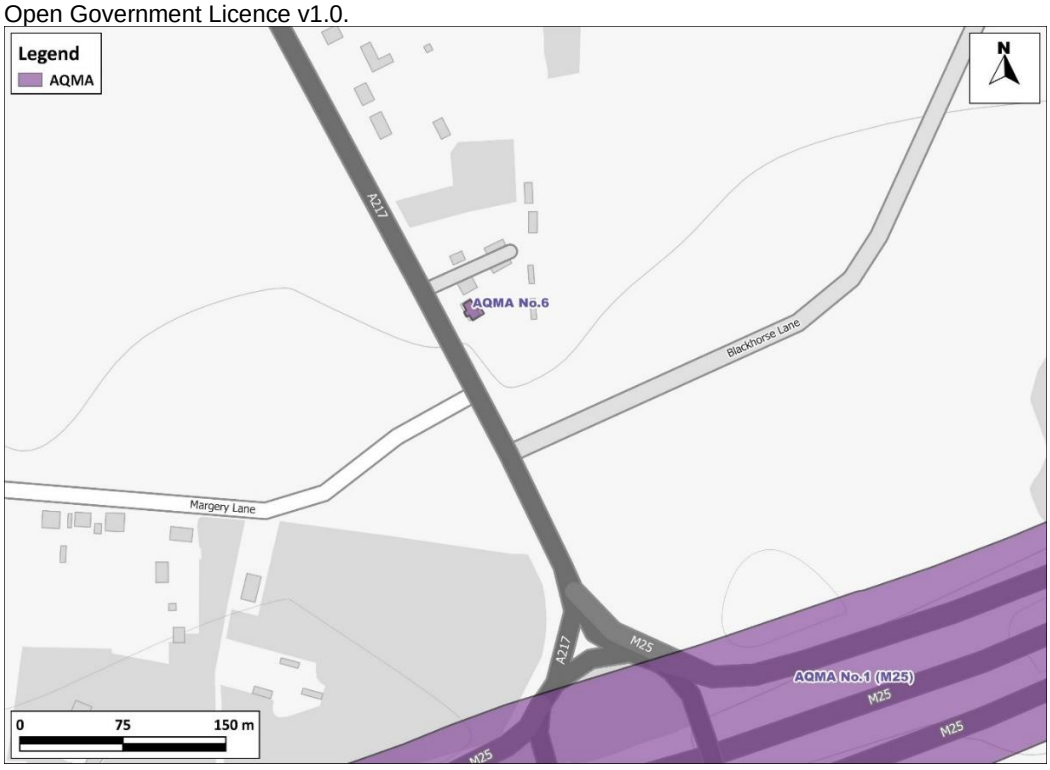

Figure 2.2.3: AQMAs No.1 (M25) and No. 6 (A217 / Blackhorse Lane)

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Figure 2.2.4: AQMA No. 8 (Drift Bridge)

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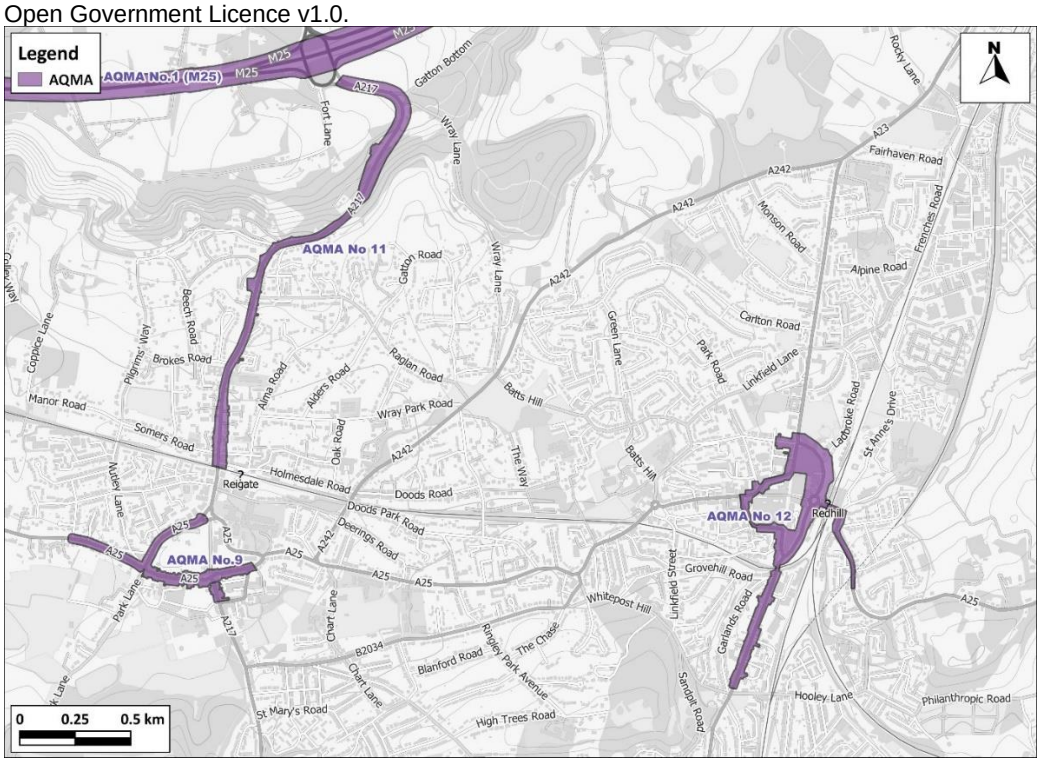

Figure 2.2.5: AQMAs No. 1 (M25), No. 9 (Reigate High St / West St / Bell St), No. 11 (Reigate Hill) and No. 12 (Redhill)

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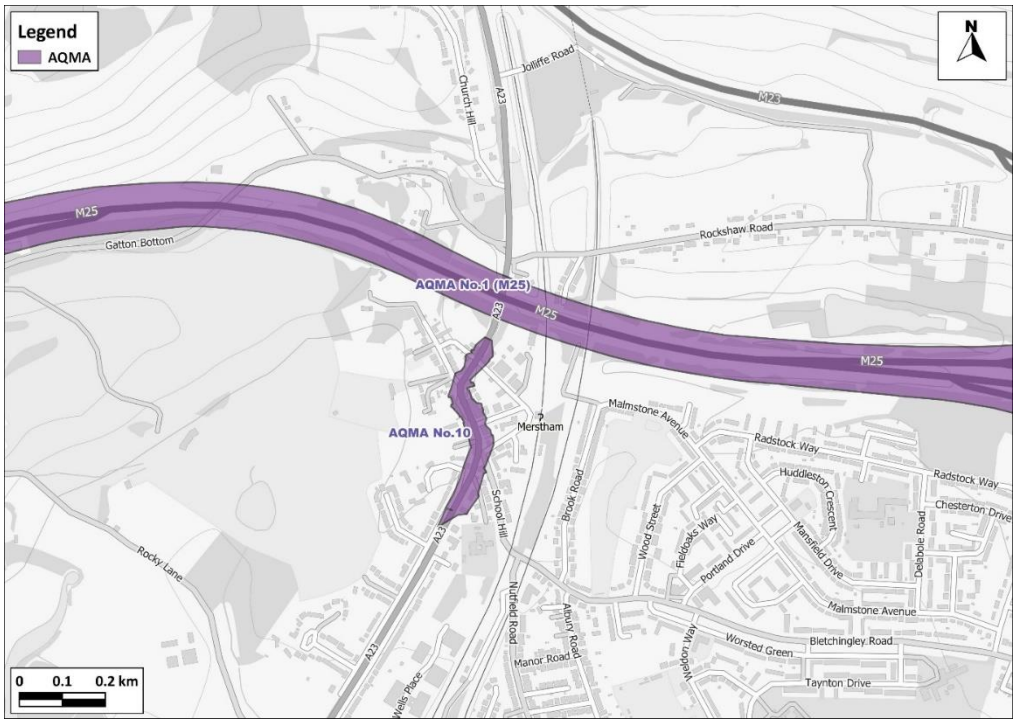

Figure 2.2.6: AQMAs No. 1 (M25) and No. 10 (Merstham)

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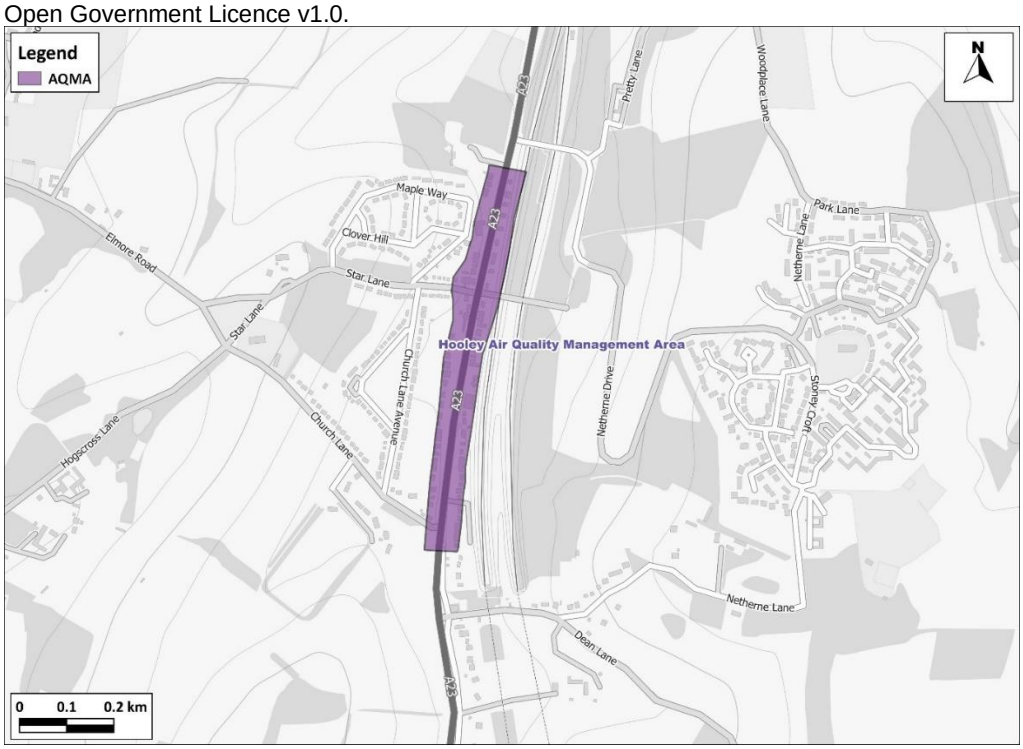

Figure 2.2.7: AQMA NO. 13 (Hooley)

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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. 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 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	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
				the junction with Station Road North.							
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		

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. 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 the junction of Hooley Lane and Mill St and the A23 junction with Gloucester 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. 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	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 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 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].

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 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.

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

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: results tables following the standard (template) format, distance corrections applied where necessary (i.e. where concentrations are within 10% of the objective at sites which are not representative of exposure), detailed work on $PM_{2.5}$, including quantification of health impacts, has been undertaken, and further details about the action plan process are included.

The appraisal also noted that results tables should be separated by AQMA. This has not been undertaken as it is judged that consistency with previous reports for comparison of monitoring data is important. However, a section is included which reviews each AQMA, in detail, including long term trends, monitoring data and underlying traffic data for that AQMA.

Reigate and Banstead Borough Council has taken forward a number of direct measures during the reporting years of 2017 to 2019 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 (31 schools involved in the programme in 2019 with between 2 and 6 days per school per term input), 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 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. This now completed (April 2020) work 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.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure [a]	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Trial of Rapid Charging point (50 kWh) for electric vehicles.	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging, gas fuel recharging	October 2015	RBBC – Env. Health	Local Authority / SCC	Steady growth in number of charges and kWh of electricity supplied.	Variable, depending on uptake of electric vehicles.	On going. Jan – Jun '16 total charges 37 (396.9 kWh) Jan – June '17 total charges 217 (3366.2 kWh) Jan – June '20 total charges 287 (5,269 kWh)	Oct 2018 Extended to Oct 2020	Trial project to look at - demand for rapid electric vehicle charging in the borough, and how this changes with time. - to understand the practicalities and costs of running such equipment. Ultimate aim is to see if one or more rapid chargers are needed in the borough. Note between 2017 and 2020 three new rapid units opened in the vicinity of the current unit.
2	Replacement of existing rapid charger with a permanent installation	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging, gas fuel recharging	November 2019	RBBC – Env. Health	Local Authority / SCC	Steady growth in number of charges and kWh of electricity supplied.	1+ µg m^{-3} (1) and much higher as fleet goes electric.	Funding secured and initial prep work completed March 2020. On track.	Jan 2021 (installation) Then ongoing.	Charger will be capable of delivering power at up to 920v (at 43kW) for the newer battery packs on the market. Unit will also have contactless payment rather than the need for apps.
3	Trial of destination charging of electric vehicles using fast (7 kWh) chargers.	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging, gas fuel recharging	2017 (Subject to funding)	RBBC – Env. Health	Local Authority / SCC	Installation of charge points. Steady growth in number of charges and kWh of electricity supplied.	Variable, depending on uptake of electric vehicles.	Victoria Road car park (22kW) installed April 2018. Reigate Town Hall installed Aug 2018. Victoria Road Extension March 2020.	End 2021	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. 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 -Bell St / Bancroft Rd, Reigate -High St Banstead -Gloucester Rd, Redhill	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging, gas fuel recharging	Jan 2021	RBBC – Env. Health	Local Authority / SCC	Completion of costings	1+ µg m^{-3} (1) and much higher as fleet goes electric.	Ongoing – potential funding sources identified.	Nov 2021	Desktop exercise so that have costings in place as funding becomes available.

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure [a]	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
5	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.	Traffic Management	UTC, Congestion management, traffic reduction	Jan 2018	RBBC – Env. Health / SCC (Tim Brown)	Local Authority / SCC	i) Data collection ii) Data analysis to determine if workable option. iii) Scheme implementation	Up to 1 µg m^{-3} (1), and potentially higher.	Complete Jan 2020.	Jan 2020	Trial project centred on Reigate High Street now complete. Work not taken forward as AQ objectives on High St now met.
6	Changes in physical road layouts to improve air quality (Hooley).	Traffic Management	Strategic Highway Improvements	Jan 2018 subject to funding, and availability of suitable emissions data set.	RBBC – Env. Health, HE.	Local Authority / SCC	i) Micro-simulation scoping study. ii) implementation of scheme (if appropriate)	Up to 1 µg m^{-3} (1), and potentially higher.	Funding sources being sought. 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. 2018 and 2019 HE looking to make layout changes without AQ modelling.	Jan 2022	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. Lack of funding to date (Apr 2020) remains an issue, plus unwillingness of HE to consider a microsimulation approach.
7	Changes in physical road layouts to improve air quality (Redhill).	Traffic Management	Strategic Highway Improvements	April 2013	RBBC – Env. Health / Planning Policy	Local Authority / SCC	Road Layout changes and building development complete.	Up to 1 µg m^{-3} (1), and potentially higher.	On track – changes in road layout complete. Marketfield carpark redevelopment began in 2020 as part of the final phase of works.	Final Phase starts 2020	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. Nitrogen dioxide concentrations in Redhill AQMA now meeting relevant objectives.

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure [a]	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
8	'High Quality Bus Corridors' (bus priority routes) within borough.	Transport Planning and Infrastructure	Bus Route Improvements	April 2015	SCC / RBBC – Planning Policy (Peter Boarder, SCC Alison Houghton / David Ligertwood)	Local Authority / SCC	Completion of Redhill to Salfords route	Variable, depending on scheme, and buses operating on that route.	Initial sites completed April 2018	Dependant on funding	New sites will be introduced as funding becomes available and include: - A217 north of M25 (Sutton / Epsom) - A23 Merstham / Hooley (Croydon) - A25 Reigate / Redhill (Dorking / Oxted). To date (2020) no new funding has been secured for these projects. A review of the Reigate / Redhill bus priority strategy has been commissioned and due April 2021.
9	Introduction of hydrogen fuel cell buses on Fastway 20 route.	Promoting Low Emission Transport	Company vehicle procurement- prioritising uptake of low emission vehicles	April 2018	Metrobus	GAL / Metrobus	Introduction of retrofitted buses.	<0.1 µg m^{-3} (3) at borough level. But potentially 0.1 to 1 µg m^{-3} (2) at RB149.	Company supplying fuel cells went into administration but now back. Thus project delayed from April 2020 to April 2021 - otherwise on track.	April 2020	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.
10	Electrification of the council's vehicle fleet.	Promoting Low Emission Transport	Company vehicle procurement- prioritising uptake of low emission vehicles	April 2018	RBBC – Fleet Anthony Hathaway / RBBC - Env Health Leon Hibbs	Local Authority / SCC	Change in fleet from diesel / petrol to electric	<0.1 µg m^{-3} (3) at borough level.	In Progress. Pool cars replaced Oct 2019	Late 2028 – but will be a staged approach.	Fleet does around 450,000 miles annually - all on local road network. Depot charging infrastructure phase I Sept 2020. Initial phase of van fleet due to be replaced 2020/21. Progression to larger vans, more specialist fleet from 2022. Initial bin lorry trials 2021/22. Heavy EV charging infrastructure design 2022 (provisional). Project for AQ and CO2 savings.
11	Maintain current taxi licensing regime.	Promoting Low Emission Transport	Taxi licensing conditions	Ongoing	RBBC Licensing.	Local Authority / SCC	Taxi standards maintained	<0.1 µg m^{-3} (3)	Ongoing	Ongoing	Current scheme means that entire taxi fleet is replaced every 9 years, with majority replaced within 7 years.

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure [a]	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
											Important in wider AQ context as fleet has grown two fold since 2005 from c.500 to 907 (2020).
12	Encourage EV uptake via taxi licensing regime.	Promoting Low Emission Transport	Taxi emissions incentives	Apr 2019	RBBC Licensing.	Local Authority / SCC	No. of pure EVs in the taxi fleet.	Variable depending on uptake.	First phase of the work complete June 2020.	Ongoing	First phase of the work complete with agreement for 5 dedicated pure electric taxi licences. 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.
13	Continued Promotion of Surrey Car Share.	Alternatives to private vehicle use	Car & lift sharing schemes	On going	Contact at SCC – Heidi Auld.	Local Authority / SCC	Steady growth in number of participants. (1300 users at start of 2006).	<0.1 µg m^{-3} (3)	Ongoing. Currently 4,809 (2020) active members. 4,979 (2017) 3,500 (2011)	Ongoing	Measurable improvements in air quality unlikely in the short to medium term unless significant increase in users. Surrey scaled back promotion after closure of travelSMART (June 2017), thus possible explanation for limited growth to 2020.
14	Promotion of cycling within schools.	Promoting Travel Alternatives	Promotion of Cycling	Sept 2015	Sustrans SE - Lalage Chatfield. RBBC - Health & Wellbeing. Patrick Alexander.	Local Authority / SCC	Continuation of existing promotional work and training.	<0.1 µg m^{-3}	Ongoing.	Subject to funding will be ongoing.	Existing programme is well established. Main need is to keep programme running as new children start and others leave. Promotional work also done on cycling under the R&Be active scheme. 31 schools involved in the program in 2019 with between 2 and 6 days per school per term.
15	Promotion of low NOx boilers, ground and air source heat pumps.	Promoting Low Emission Plant	Other Policy	Ongoing since June 2005	RBBC Leon Hibbs	Local Authority / SCC	Measure adopted by developers.	0.1 to 1 µgm^{-3} (2)	Ongoing.	Ongoing.	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.
16	Discourage use of biomass / wood burning stoves.	Promoting Low Emission Plant	Other Policy	Ongoing	RBBC Leon Hibbs	Local Authority / SCC	No specific measure – impact conveyed via talks, planning, and calls regarding smoke control areas.	<0.1 µg m-3 (3) at borough level.	Ongoing.	Ongoing.	Use of biomass in a commercial setting considered on merits i.e. setting / nearby receptors. Surrey Air Alliance are planning a promotional campaign as part of clean air day in Oct 2020 on this topic.

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure [a]	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
17	Continue to Work with Surrey Air Alliance (SAA) on Surrey wide Projects.	Policy Guidance and Development Control	Regional Groups Coordinating programmes to develop area wide strategies to reduce emissions and improve air quality	Ongoing	RBBC Leon Hibbs	Local Authority / SCC	Projects in progress	Variable depending on project.	Ongoing	Ongoing	Major project on an engagement and behaviour change at 40 schools across Surrey within 2km of an Air Quality Management Area including 7 schools within Reigate and Banstead. Schools air quality summit held in the borough – July 2019.
18	Air Pollution Warning Service for vulnerable groups.	Policy Guidance and Development Control	Regional Groups Coordinating programmes to develop area wide strategies to reduce emissions and improve air quality	Oct 2013	RBBC – Env. Health	Local Authority / SCC	Steady Growth in number of participants (up to a total of 1000 users).	<0.1 µg m-3 (3)	Ongoing. Currently 978 active users (April 2020). 809 active users (April 2017).	Oct 2023 – though looking at continuing subject to funding.	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. Founding East Surrey boroughs joined by Woking and Spelthorne in April 2015, and Runnymede in Dec 2019.
19	Production of borough wide mapping of $PM_{2.5}$ and NO_2 including health impact assessment.	Policy Guidance and Development Control	Regional Groups Coordinating programmes to develop area wide strategies to reduce emissions and improve air quality	April 2017	RBBC – Env. Health	Local Authority / SCC	Production of map and health calculations	N/A	Complete. Final draft Nov 2019. Published April 2020.	April 2018	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. Also used to inform action planning, if appropriate, at a local level.
20	Monitoring.	Public Information	Other	Ongoing	RBBC Leon Hibbs	Local Authority / SCC	Data capture > 90 %.	N/A	Ongoing.	Ongoing	Sites are important for examining trends in measured pollutant concentrations, compliance monitoring, and also model validation. Ultrafine particulate monitoring campaign from June 2018 to Sept 2019 indicates significant impact from aviation on residents' exposure to ultrafine particles.
21	Ultrafine Particle monitoring within the vicinity of Gatwick Airport,	Public Information	Other	Subject to funding.	RBBC Leon Hibbs	Local Authority / SCC	Equipment installed and then data capture > 90 %.	N/A	Have approached DfT, DEFRA, and Gatwick for funding (Aug 2019). But all have been unable to fund the work, even for a specified period.	Equipment would be installed within 12 months of funding.	Recent work (reported in section 2.2.1in this report) 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.

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure [a]	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
											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											
1	Limit Road Transport Growth to 5.5 % by 2011 from 2004/5 levels. (Annex 9 LTP2).	Policy Guidance and Development Control	Other policy	April 2006	SCC (via LTP 6).	Local Authority / SCC	For current traffic flows see note 'd' at end of table.	c.0.1 µg m^{-3} (2) at RB59(c)	April 2011 Now on going.	Original: April 2011 Revised: Ongoing as monitoring measure	No current target on traffic growth in new Local transport plan (LTP3). 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 %.
2	Fastway Route (Horley to Crawley via Gatwick).	Traffic Management	UTC, Congestion management, traffic reduction	Jan 2006	SCC / RBBC/ HTC/ GAL. RBBC Carrie Burton	Local Authority / SCC	Reduction in peak hour traffic flow.	<0.1 µg m^{-3} (3)	Fastway 20 running in NE sector. Link road to NW sector not yet complete – was due 2020 - but under construction. Now due to complete 2021.	April 2011 (Phase 1) April 2021 (Final NW sector)	Final stage of the route will be completed once construction of new link road complete. Work is underway originally due April 2020 but now delayed to April 2021.
3	Fastway Interchange at Horley Station.	Transport Planning and Infrastructure	Public Transport improvements – interchanges, stations and services	April 2006	SCC / RBBC for information contact Emily Mottram Policy & Regeneration (RBBC).	Local Authority / SCC	Project Completion	<0.1 µg m^{-3} (3) at RB59	Completed (as of Sept 2008)	April 2011	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.
4	Bus Priority Lanes on A23 (p105 5.43 in LTP2).	Transport Planning and Infrastructure	Bus Route Improvements	April 2015	SCC / RBBC contact Peter Boarder Policy & Regeneration (RBBC). David Ligertwood (SCC).	Local Authority / SCC	Project Completion	<0.1 µg m^{-3} (3) at RB59	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).	April 2018	LTP2 now superceded, this is variation on original scheme. Minimal benefit to air quality within Horley AQMA, but potential benefit for current breach on A23 on edge of AQMA.

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure [a]	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
5	Extension of Fastway to Redhill and Reigate. (LTP2 aspiration).	Traffic Management	UTC, Congestion management, traffic reduction	Unknown	SCC / RBBC contact Peter Boarder Policy & Regeneration.	Local Authority / SCC	Project Completion	<0.1 µg m^{-3} (3) at RB59	Extension to Redhill completed in 2008	April 2015 (if implemented)	Extension of route to Reigate was still under consideration (2011), but subsequently dropped. Work now focused primarily on cycling improvements (2020).
6	Maintain current taxi licensing regime.	Promoting Low Emission Transport	Taxi Licensing conditions	On going	RBBC Licensing.	Local Authority / SCC	Taxi standards maintained	<0.1 µg m^{-3} (3) at RB59	Ongoing	Ongoing	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.
7	Public Service Agreement to reduce Congestion on the A217 and A23 (Horley Road).	Traffic Management	UTC, Congestion management, traffic reduction	March 2005	SCC / RBBC/ ODPM. Contact Linden Mendes SCC.	Local Authority / SCC	5 % reduction in average vehicle delay by March 2008.	<0.1 µg m^{-3} (3) at RB59	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.	March 2008	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. The results suggest that there is still scope for improvements in traffic flows based on the timings of traffic signals.
8	Travel Plans (Work). (LTP / STP indicator TP2).	Promoting Travel Alternatives	Workplace Travel Planning	On going	RBBC / Local employers Contact Lynne Howard (SCC).	Local Authority / SCC	4 to 5 plans to be completed per annum.	<0.1 µg m^{-3} (3) at RB59	Scheme to closed in 2017 due to closure of TravelSMART at Surrey county council.	On going	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.
9	Travel Plans (Schools) (LTP / STP indicator TP1).	Promoting Travel Alternatives	School Travel Plans	On going	SCC - (Lynne Howard / Rebecca Harrison).	Local Authority / SCC	All Horley schools have, and have implemented, a travel plan.	<0.1 µg m^{-3} (3) at RB59	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.	On going	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. However 5 of the 11 schools at present (April 2020) do not have an up to date plan.
10	Continued Promotion of Surrey Car Share.	Alternatives to private vehicle use	Car & lift sharing schemes	On going	Contact at SCC – Heidi Auld	Local Authority / SCC	Steady Growth in number of participants. (1300 users at start of 2006).	<0.1 µg m^{-3} (3) at RB59	On going. Currently (2020) 4,807 active members, (2017) 4979 compared to 3500 (2011).	On going	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. Trial of electric vehicles as part of the car share scheme in Guildford is still ongoing.

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure [a]	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
									Surrey scaled back promotion after closure of travelSMART (June 2017), thus possible explanation for limited growth to 2020.		
11	Implementation of Council Travel Plan.	Promoting Travel Alternatives	Workplace Travel Planning	Jan 2006	RBBC Raymond Dill Policy & Regeneration.	Local Authority / SCC	Implementation of plan.	<0.1 µg m^{-3} (3) at RB59	Complete (Q3, 2009). Work place parking charges introduced for all. Pool cars introduced, plus other incentives to use public transport or cycle.	Implemented end 2008	Implementation allows council to encourage other employers to implement their own plans, with possible benefits for Horley, especially with airport travel plan.
12	Incorporation of Sustainable energy policy into local development framework document.	Policy Guidance and Development Control	Other policy	Current	RBBC Policy & Regeneration Raymond Dill.	Local Authority / SCC	Incorporation of policy	Variable, depending on scheme.	Complete. Document now included.	Jan 2007	Benefit to Horley AQMA marginal in short term. However, may help reduce growth in background NO2 concentrations from new developments in area, which would be of benefit.
13	Horley Design Guide: - Low NOx boilers.	Policy Guidance and Development Control	Other policy	June 2005	RBBC Leon Hibbs	Local Authority / SCC	Measure adopted by developers.	<0.1 µg m-3 (3) at RB59	Initial stage complete Jan 2007. 1st phase of NW sector started 2015 and on going 2017. Measure is now in the design guide.	Initial stage complete Jan 2007. 1st phase of NW sector started 2015 and on going 2017.	Aim is to minimise growth in background but will not reduce existing pollution.
	- Minimum of 10 % of energy from renewable sources.	Policy Guidance and Development Control	Other policy	On going	RBBC Policy & Regeneration Raymond Dill.	Local Authority / SCC	Scheme up and running.	<0.1 µg m-3 (3) at RB59, but potential increase for local 'hot spots' depending on source.	Initial stage complete Jan 2007. Measure now in design guide.	Jan 2007 for local development framework policy	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'.

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure [a]	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
	- Home Zone.	Policy Guidance and Development Control	Other policy	On going	RBBC Leon Hibbs	Local Authority / SCC	Data capture > 90 %.	N/A	Ongoing. Data capture consistently in excess of 90 %.	Ongoing	Sites are important for examining trends in measured pollutant concentrations, compliance monitoring, and also model validation. 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.
14	Monitoring.	Public Information	Other	On going	RBBC Leon Hibbs	Local Authority / SCC	Data capture > 90 %.	N/A	On going. Data capture consistently in excess of 90 %.	Ongoing.	Sites are important for examining trends in measured pollutant concentrations, compliance monitoring, and also model validation. 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.
15	Local Forums / Policy: - AQ Working Group with GAL.	Policy Guidance and Development Control	Regional Groups Coordinating programmes to develop area wide strategies to reduce emissions and improve air quality	Ongoing	RBBC Pollution Team	Local Authority / SCC	No specific measure, but will include Gatwick AQ plan implemented, on going predictive modelling work.	1 µg m^{-3} (1) at RB59	Meetings are on going.	Ongoing	AQ work on use of the emergency runway is underway (April 2020). Progress on the airport's action plan is subject to quarterly monitoring - all measures of note are currently on track (April 2020). However monitoring suggests airport NO_2 contribution is back to where it was 15 years ago, and up considerably on 2012.
	- New section 106 agreement and sustainable development strategy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	On going	RBBC Planning and Env. Health. Others: GAJA, GOG, GATCOM.	Local Authority / SCC	Agreement and Implementation of new agreement and strategy.	1 µg m^{-3} (1) at RB59	S106 agreement rolled forward to 2021. (April 2019). On going	End 2018	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.
16	National / EU measures:	Policy Guidance and Development Control	Other policy	?	UK Government via EU.	Local Authority / SCC	Higher standards in place.	1 µg m^{-3} (1) at RB59	Euro 6 real world emissions significant	?	Current breach on A23 heavily dependent on emissions improvement, but are seeing

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure [a]	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
	- Tighter vehicle emissions standards.								improvement on Euro 5.		improvements in practice (April 2020).
	- Tighter aircraft engine emissions standards.	Promoting Low Emission Transport	Other	?	UK Government via EU.	Local Authority / SCC	Higher standards in place.	Aim is to reduce the rate of growth of aircraft emissions.	Discussed informally with DfT representative on 16/10/07, especially the need initially for better and publicly available data on APU emissions.	?	APU emissions are also a source of concern, and the lack of manufacturers' data on emissions makes assessing the scale of the impact difficult. Thus in the first instance emissions testing of APUs needs to be introduced. Still limited work in this area that is in public domain (April 2020). However APU running times at Gatwick have reduced significantly since 2010.

Notes:
Greyed rows are completed actions.
[a] (1) improvement of 1 µg m^{-3}, (2) 0.1 to 1 µg m^{-3}, (3) <0.1 µg m^{-3}.

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 PM2.5 – 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, the council recently completed a borough wide model 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 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.

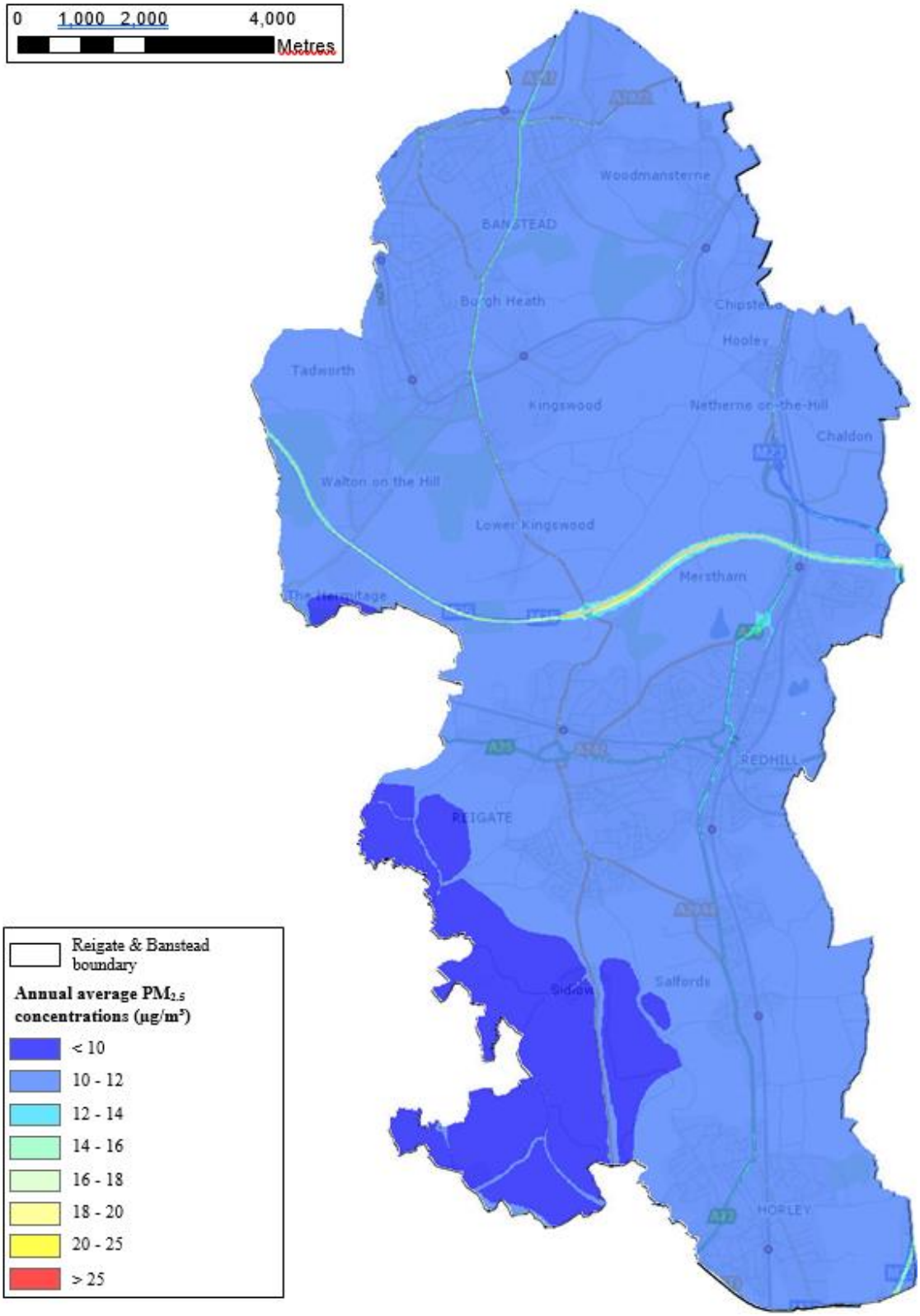


Figure 2.2.8 Annual Average $PM_{2.5}$ Concnetrations in Reigate and Banstead in 2017 (µg/m^3)

Table 2.3 – Summary of $PM_{2.5}$ concentration source apportionment in Reigate and Banstead (µg/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 biggest 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.

Following a successful research bid by King's College and Imperial College in 2017 measurements of ultrafine particle concentrations in the vicinity of Gatwick began in June 2018.

Measurements were made initially at the RG1 site for three months and then at the RG3 site to the SW of the airport for three months. Following discussions with the research groups Reigate and Banstead Borough Council along with Leicester University agreed to joint fund work for a further six months until early July 2019, which was subsequently extended to September 2019.

The university research project is still going as the Gatwick work is one component of a much larger project, and at present, the detailed data analysis from this work is likely to be published in 2021. However, the data from the 2019 monitoring campaign at RG1 is shown below in Table 2.4.

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

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

Table 2.4 indicates that particle number concentrations at the RG1 site on the Horley Gardens Estate are around double those seen at the background site in London, while the geometric mean particle diameter at RG1 is also smaller.

Particle number concentrations at RG1 on average are slightly lower than those measured at Marylebone Road in London, although 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. Also 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.

In addition to counting the number of particles in the atmosphere the equipment[7] also gives a size distribution for the particles in the range 14 to 661 nm (1 nm = 0.001 µm or 0.000001 mm). As shown in Table 2.4 the particle size on average at RG1 is smaller than that at the London background site, but slightly larger than those measured on Marylebone Road.

[7] TSI SMPS 3080 with DMA 3081, and TSI CPC 3775.

However, the average particle size and number varies quite markedly depending on the wind direction at RG1 (Table 2.5), with a significant increase in particle number and reduction in particle size when winds are from the airport.

Table 2.5 – Mean Particle Number Concentrations by Wind Direction – 25th January to 10th September 2019

Wind Direction	Hours	Mean Particle Count (Particles / cm^3)	Geometric Mean Diameter (nm)
North	631	6,149	63
East	1,150	6,018	68
South (from the airport)	1,689	14,498	36
West	1,550	6,123	48

While Reigate and Banstead was unable to secure sufficient funding from GAL or other sources to continue monitoring this pollutant in Horley, it is worth noting that work elsewhere is beginning to show potential health effects from exposure to ultrafine particulate pollution.

Research around Schiphol Airport[8] suggests children suffer more respiratory complaints on days with high exposures to ultrafine particles, while researchers in Canada[9] found a significant association between ultrafine particle exposure in general and an increase in incidence of brain tumours in adults.

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

[8] Janssen, N.A.H. *et al.* (2019) Research into the health effects of short-term exposure to ultrafine particles in the vicinity of Schiphol Airport. RIVM report 2019-0084 https://www.rivm.nl/en/bibcite/reference/323511
[9] Weichenthal, S. *et al.* (2020) Within-City Spatial Variations in Ambient Ultrafine Particle Concentrations and Incident Brain Tumors in Adults. *Epidemiology* v.31(2) pp.177-183.

the houses are moved away from the road to meet the air quality standards, as the majority of the borough meets the relevant air quality standards one of the purposes of the recent borough (and county) wide modelling exercise[10] was to examine 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 1060 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 6th 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 biggest health impact / cost in Surrey.

[10] 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 three sites between 2017 and 2019 (RG1, RG3 and RG6). It should be noted that during the 2016 monitoring period, it was necessary to relocate automatic monitoring site RG2, now called RG6, to a different location 44 m to the southeast. 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)) 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 E (Figures 31, 39 and 41). 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 109 sites in 2017, 148 sites in 2018 and 151 sites in 2019. Table A.2 in Appendix A shows the details of the sites.

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

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias[11], "annualisation" (where the data capture falls below 75%), and distance correction[12]. 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 2017, 2018 and 2019 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 between 2017 and 2019.

Exceedances of the annual mean nitrogen dioxide objective were measured at six diffusion tube monitoring sites in 2017, at thirteen sites in 2018 and at nine sites in 2019. Concentrations > 60 µg/m^3 were measured at one site (RB148), in 2017, indicating that an exceedance of the 1-hour mean objective at this site was possible. All relevant objectives are met outside AQMAs.

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.

[11] https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html
[12] 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 2017, 2018 and 2019.

3.2.4 Sulphur Dioxide (SO_2)

No SO_2 monitoring was undertaken by Reigate and Banstead Borough Council in 2017, 2018 and 2019.

3.2.5 Benzene

Table A.7 in Appendix A compares the ratified monitored benzene annual mean concentrations for the past three years with the annual mean air quality objective of 5 µg/m^3. Measured concentrations are consistently below the objective at all sites from 2017 – 2019. Discussion of pollutant monitoring data and traffic data in relation to currently declared AQMAs

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 2019. The traffic volumes were relatively stable between 2002 and

2010 on both sections of the M25. On the Junction 7 – Junction 8 section traffic volume 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.

In view of the air quality standards being ment, the relatively low concentrations measures 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.

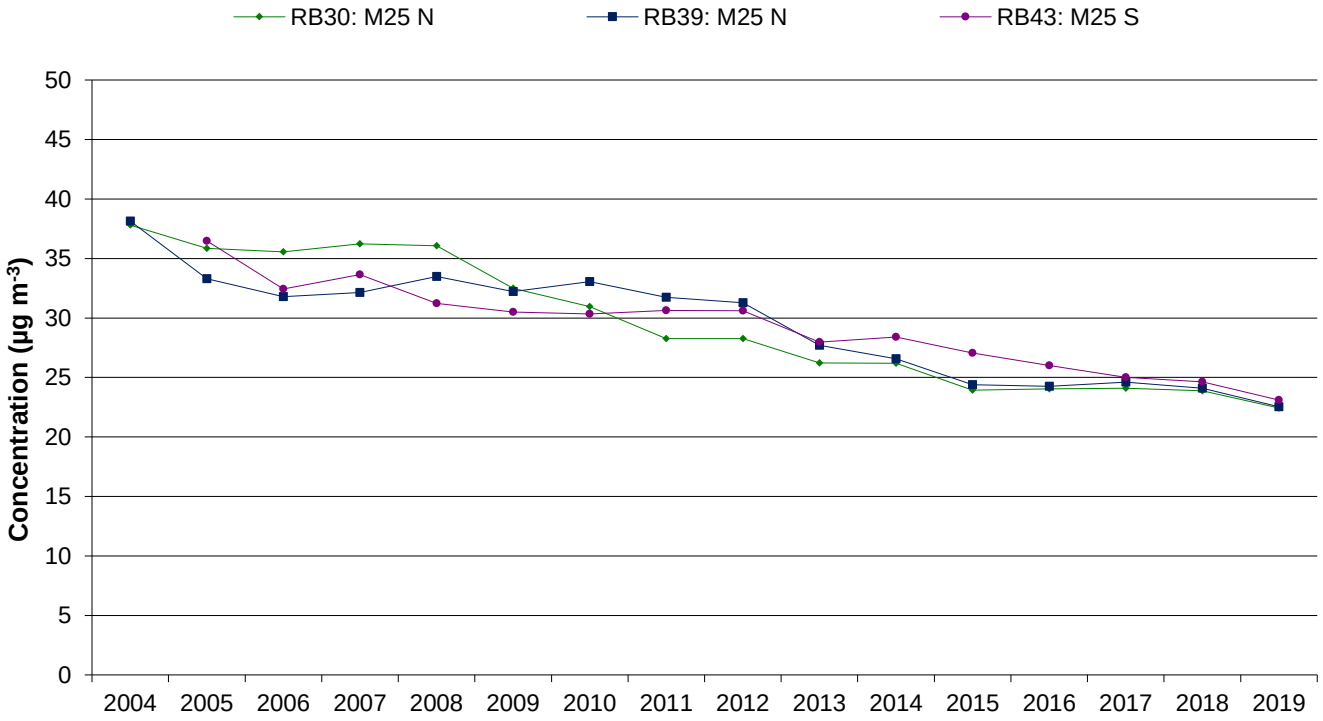


Figure 3.1 3 Year Rolling Annual Averages at Diffusion Tube Sites - M25 AQMA, 2004 – 2019

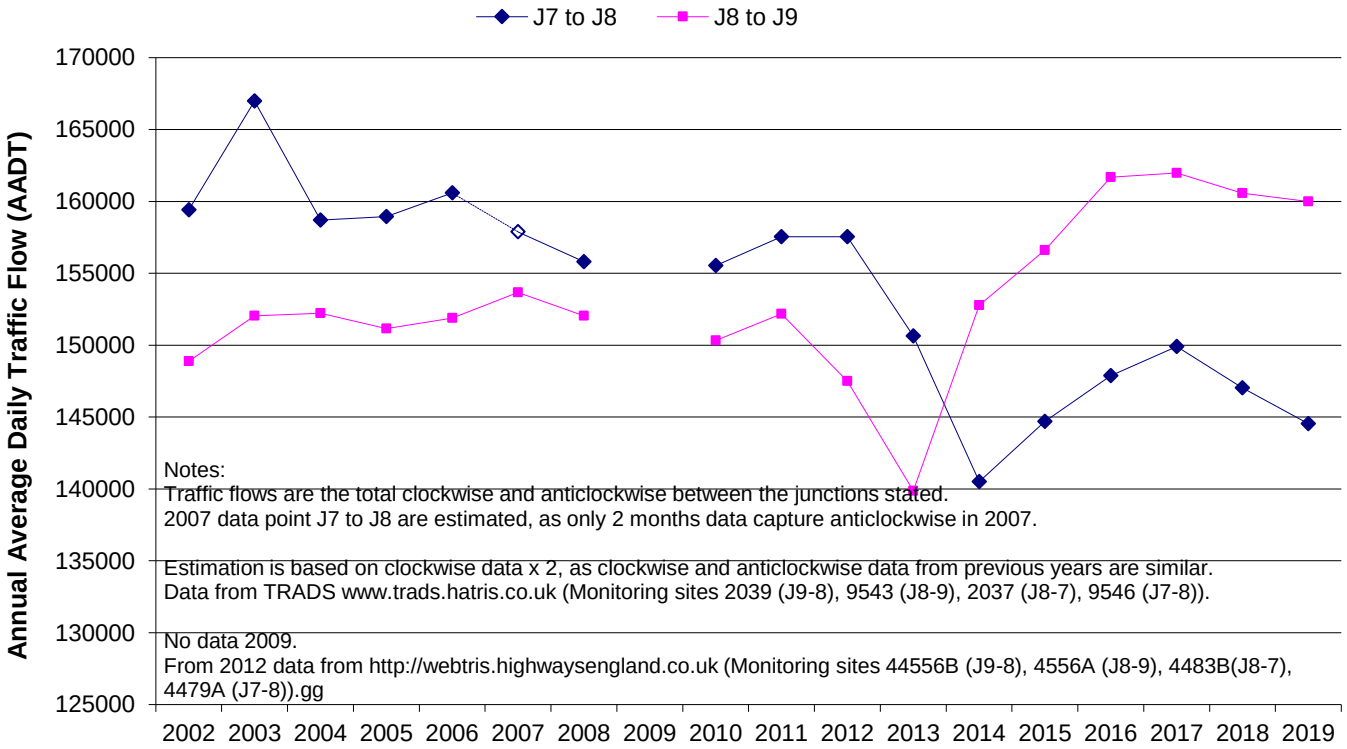


Figure 3.2 Annual Mean Daily Traffic Flows within the M25 AQMA, 2002 – 2019.

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).

Figure 3.6 below shows traffic flows along the A23 in Horley. Data for 2018 and 2019 at this site are unavailable, and so only data until 2017 are presented. The data suggest a slight trend of increasing annual mean daily traffic flows from 2012 to 2017. 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) 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.

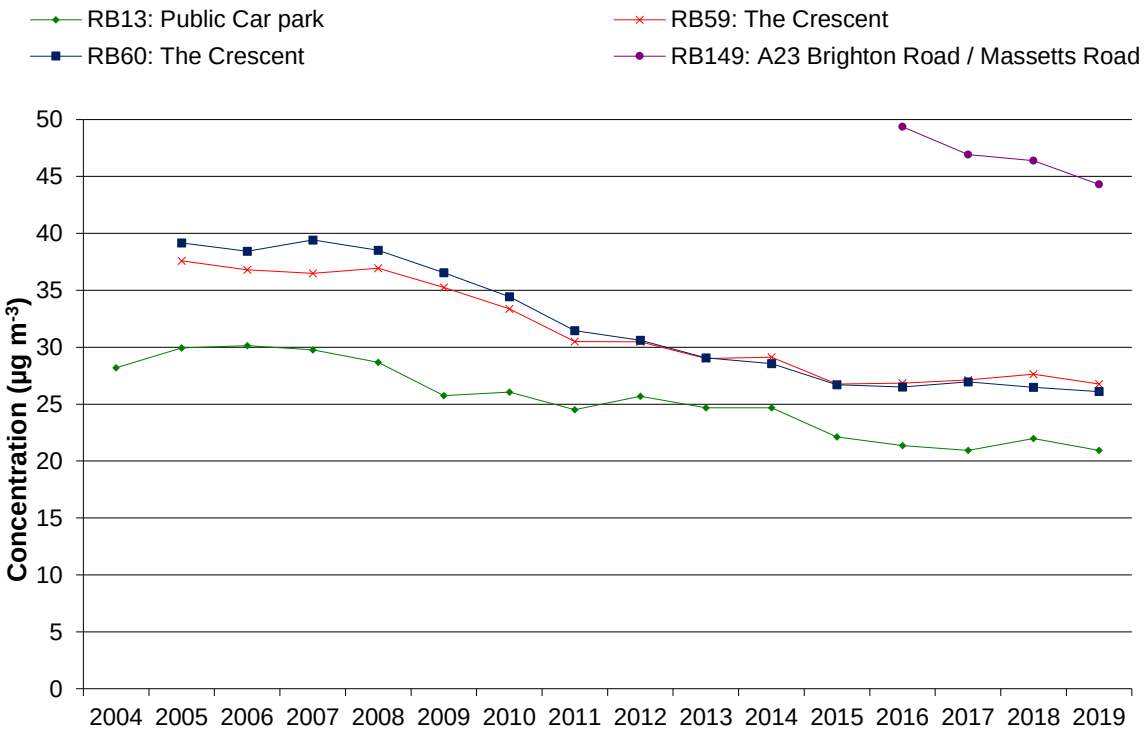


Figure 3.3 3-Year Rolling Annual Averages at Diffusion Tube Sites - Horley AQMA, 2004 – 2019.

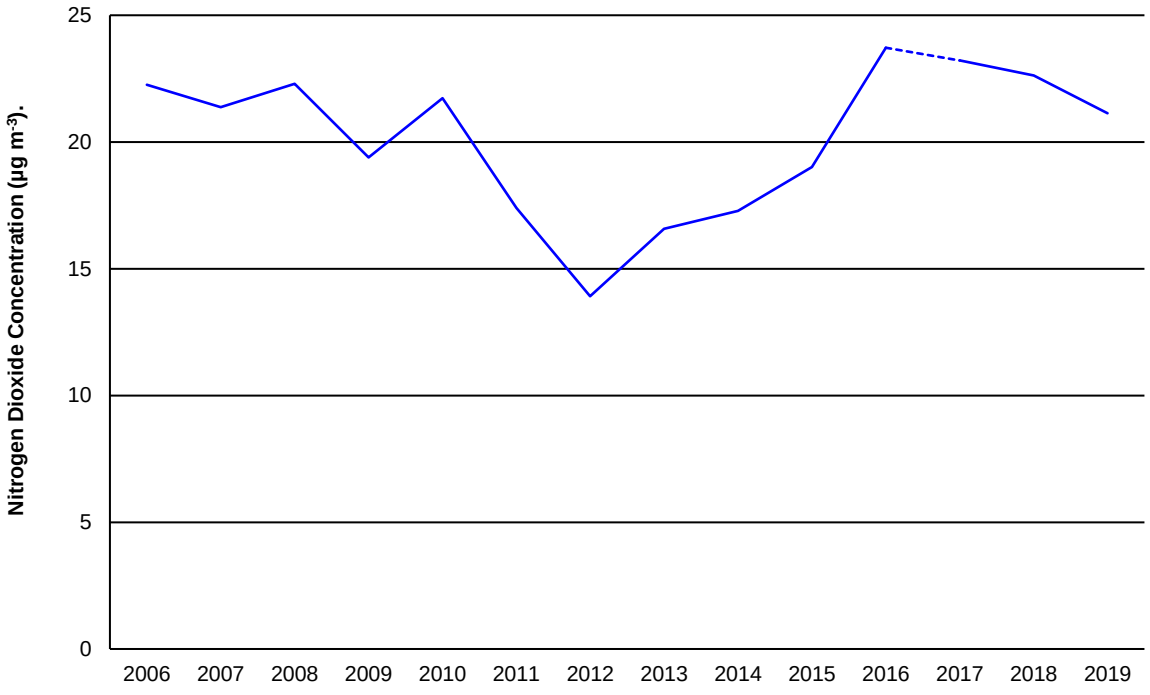
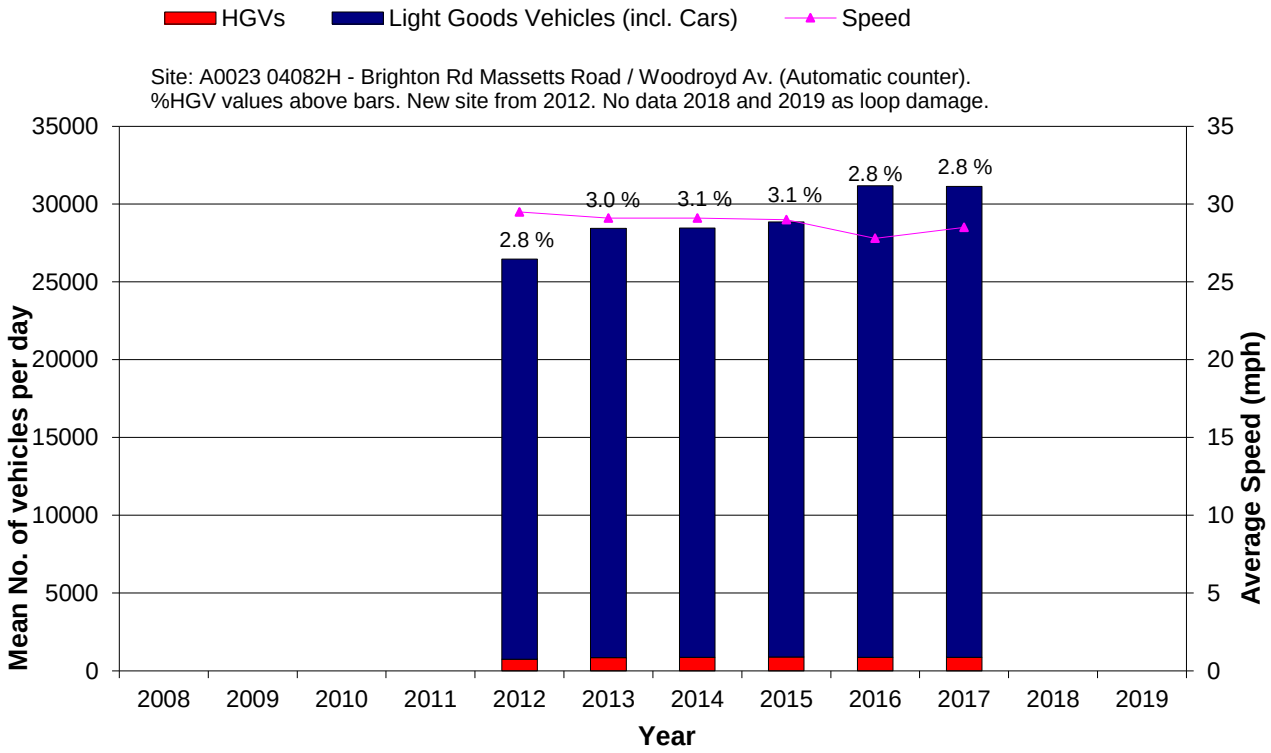


Figure 3.4: RG2 minus RG3 when wind on 202 to 248 degrees - Mean of hourly values 2006 – 2019.

Figure 3.5 A23, Horley, Annual Mean Daily Traffic Flows 2012 - 2019



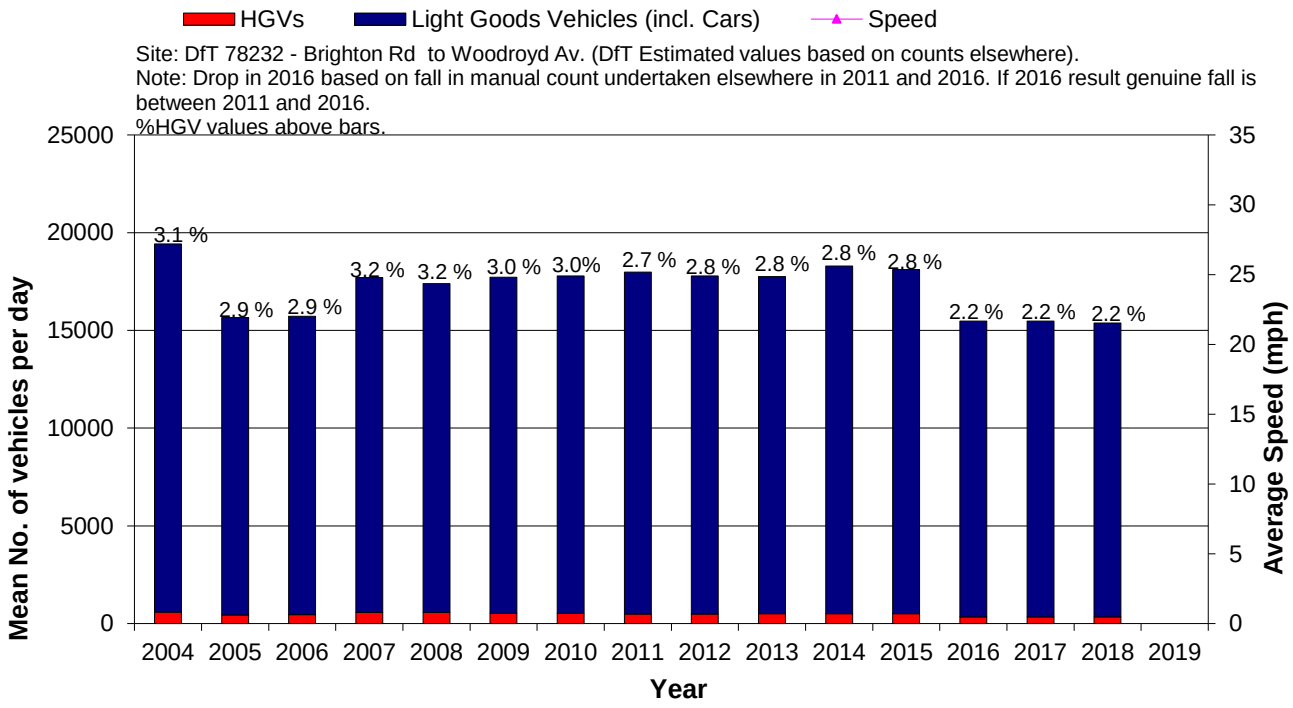


Figure 3.6 A23, Horley, Annual Mean Daily Traffic Flows 2012 - 2019

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 3.7).

Figure 3.8 below shows traffic flows along the A217, near to Blackhorse Lane, in close proximity to Blackhorse Lane AQMA. Data for 2016 – 2018 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. Measurements of average speed in 2011 and 2019 suggest that speeds have remained relatively constant.

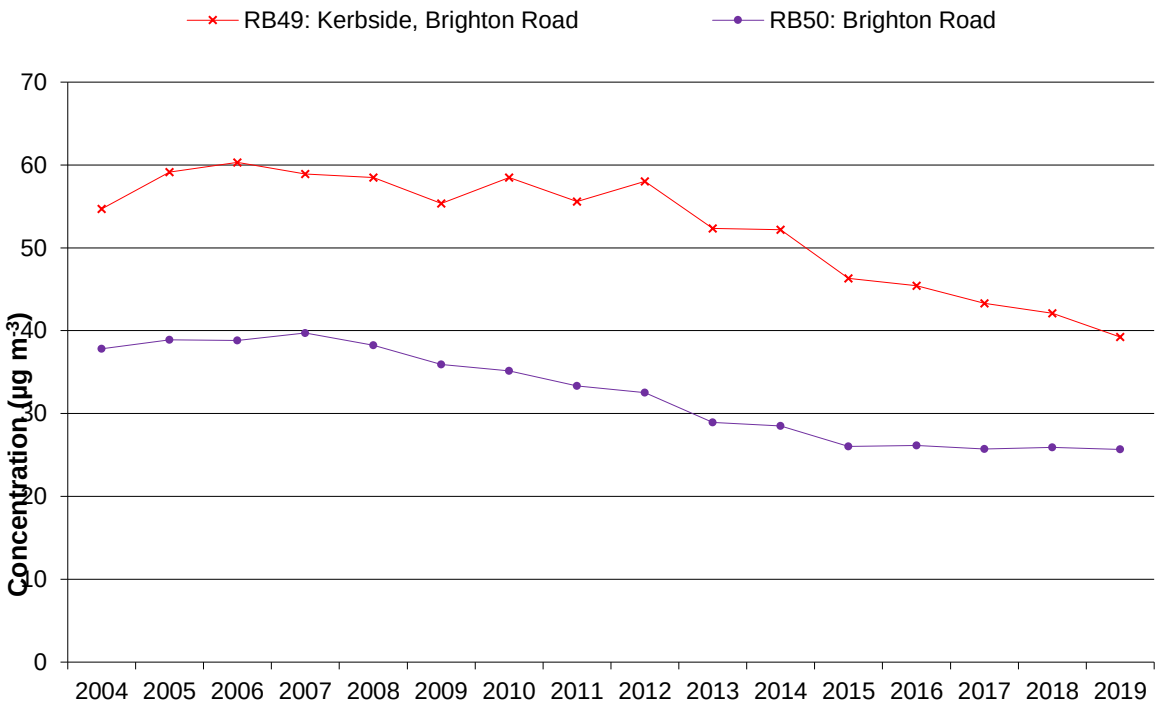


Figure 3.7: 3-Year Rolling Annual Averages at Diffusion Tube Sites – Blackhorse Lane AQMA, 2004 – 2019.

Site: 04461/46809 - A217 between Stubbs Lane & Margery Lane (Automatic counter). No vehicle split data 2008 or 2009. No data 2016 - 2018.
% HGV are numerical values on bar tops.

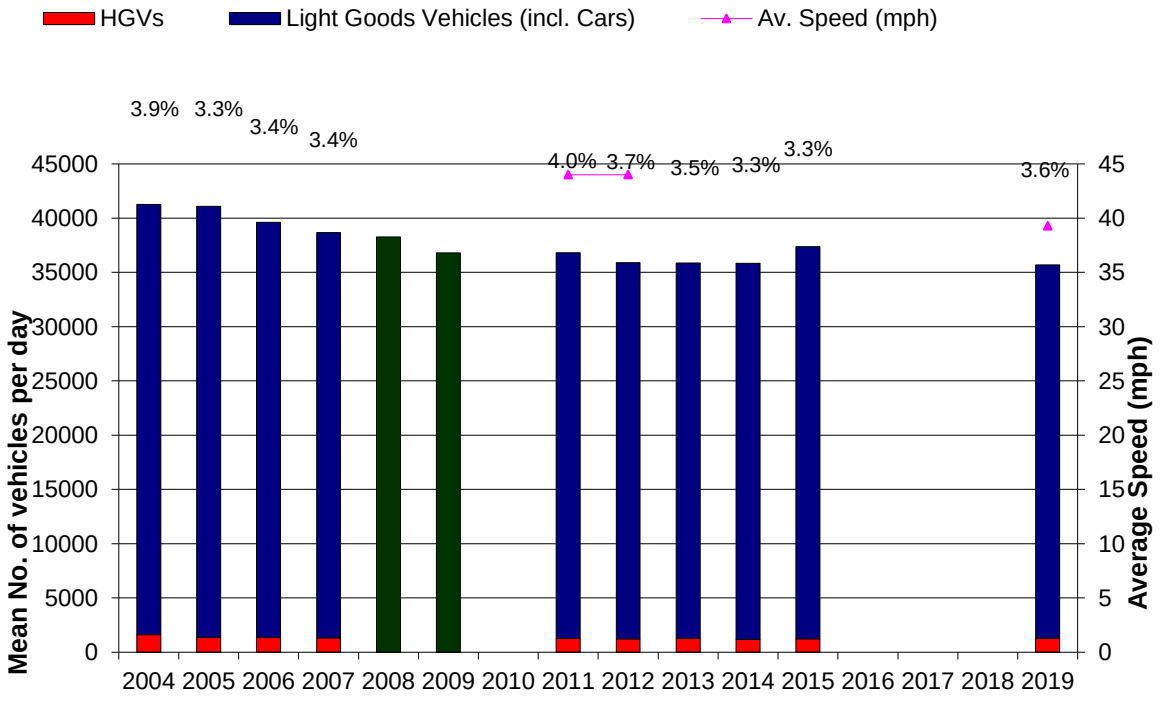


Figure 3.8: A217 (Near to Blackhorse Lane) Annual Mean Daily Traffic Flows,

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 3.9).

Figure 3.10 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.

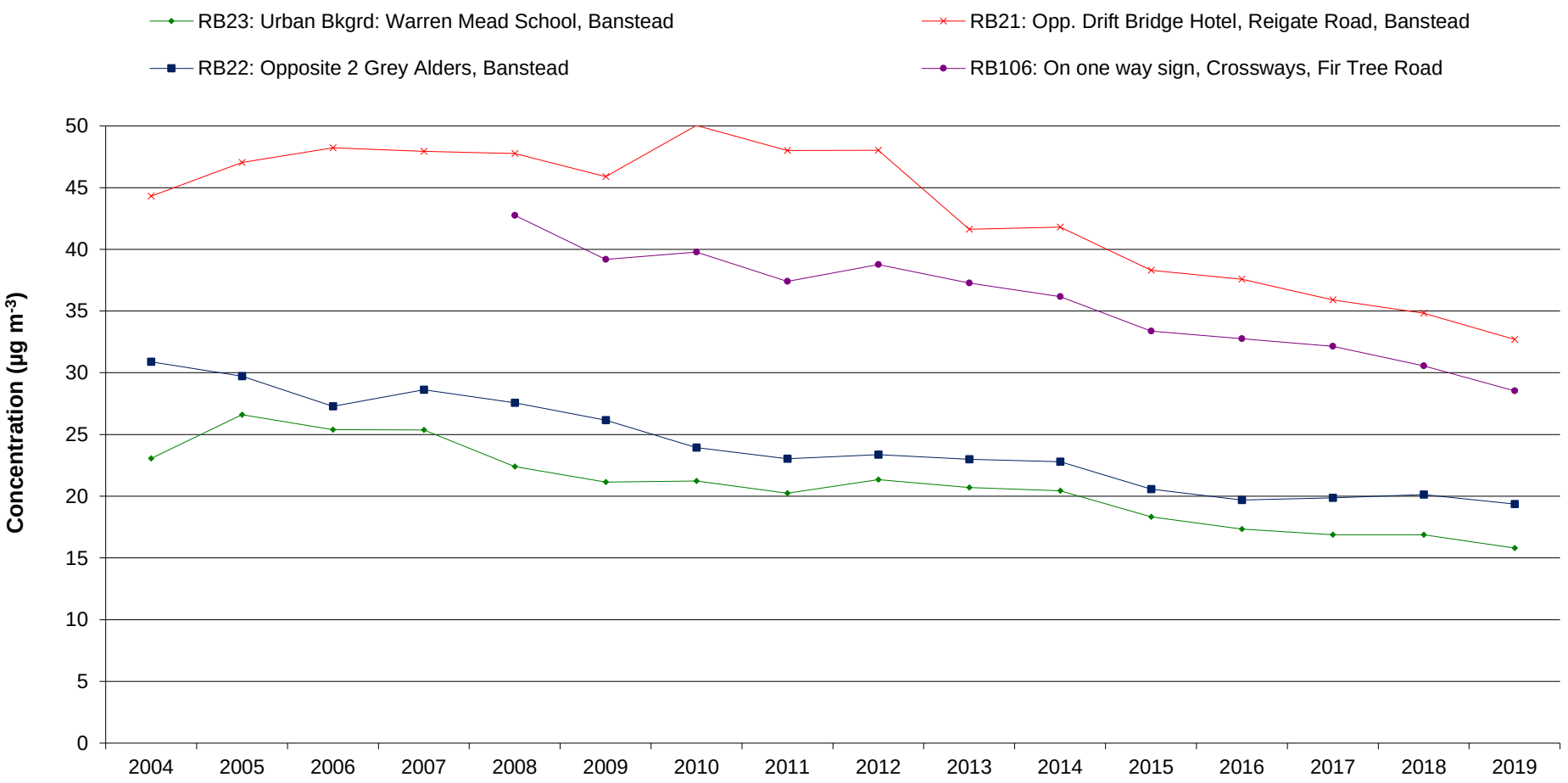


Figure 3.9 3-Year Rolling Annual Average Nitrogen Dioxide at Diffusion Tube Sites – Drift Bridge AQMA, 2004 – 2019.

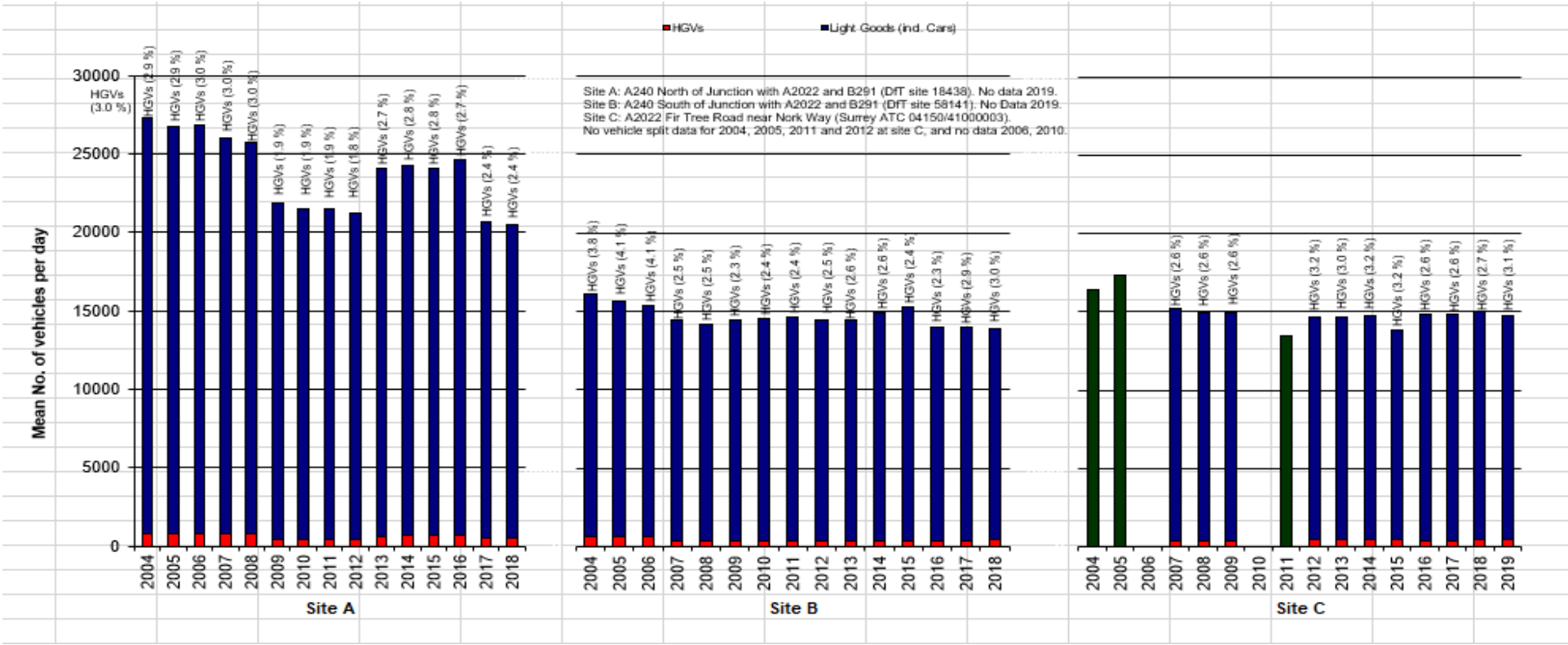


Figure 3.10 Drift Bridge Annual Mean Daily Traffic Flows, 2004 – 2019 (Sites A-C).

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 3.11). Benzene concentrations were also below the objectives.

Figure 3.12 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.

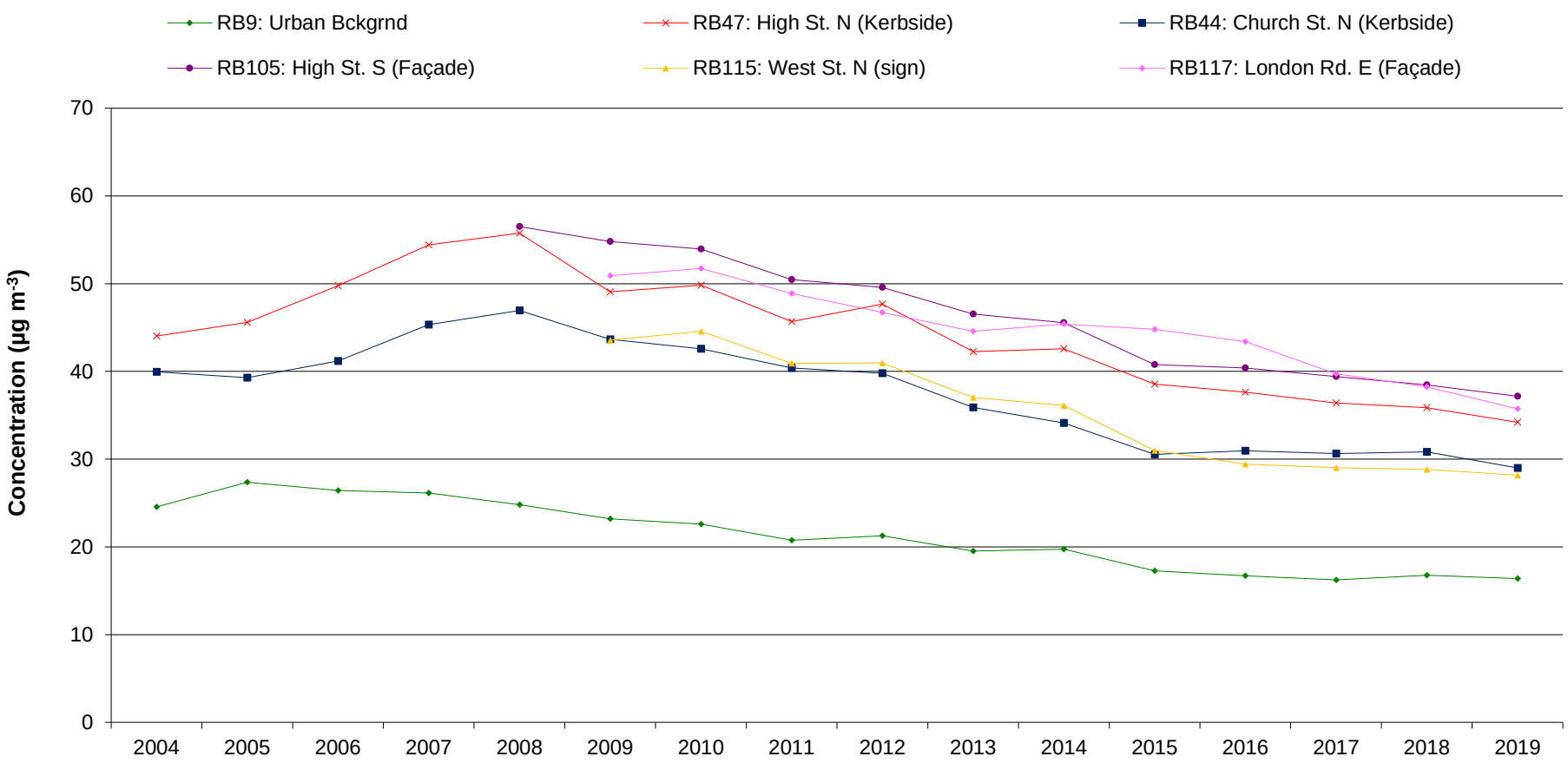


Figure 3.11 3 Year Rolling Annual Averages at Diffusion Tube Sites - Reigate High Street AQMA, 2004 – 2019.

Note RB115 from May 2013 moved 14 m west of original position

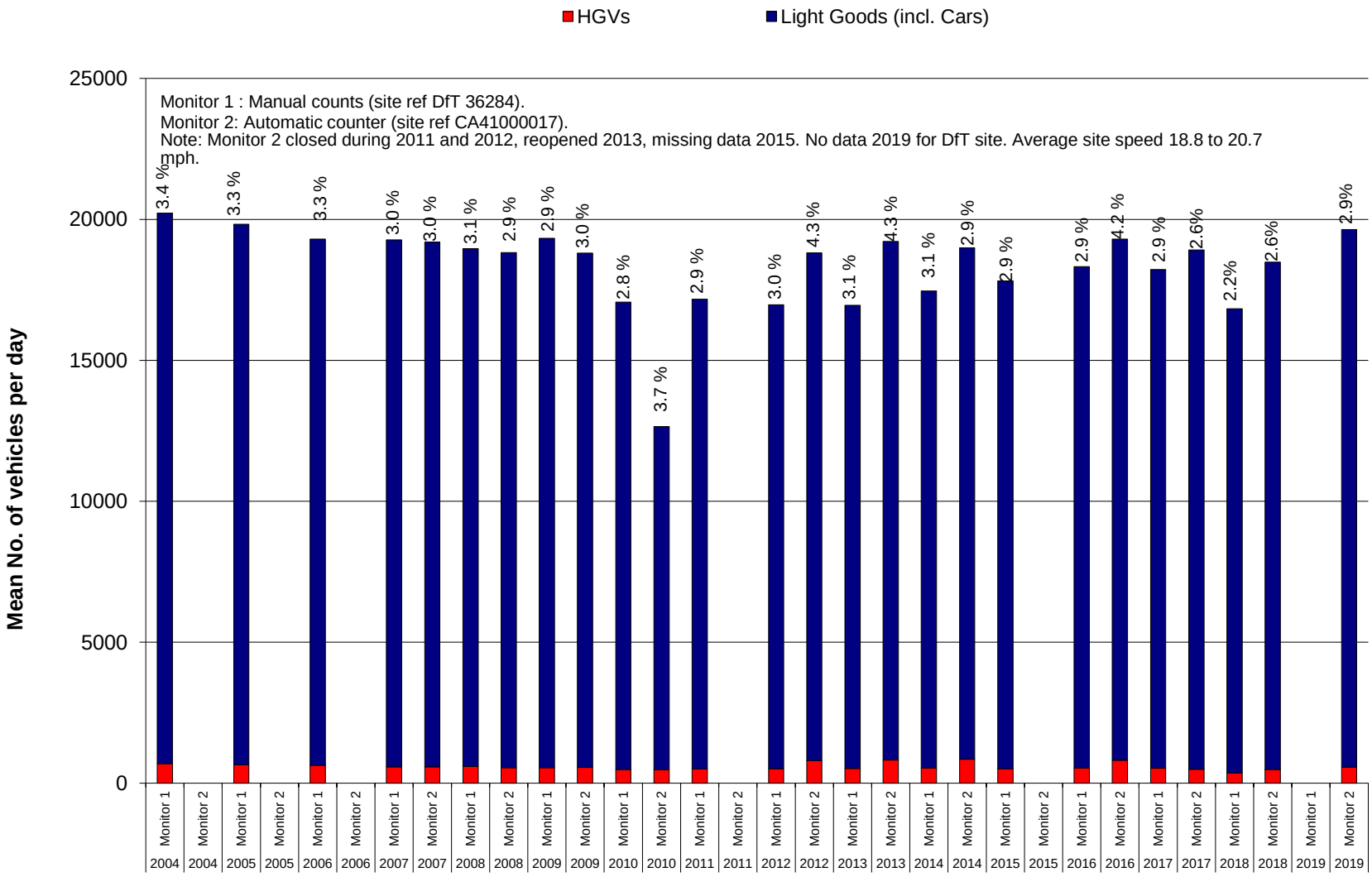


Figure 3.12 Reigate High Street Annual Mean Daily Traffic Flows, 2004 – 2019.

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 3.13).

Figure 3.14 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.

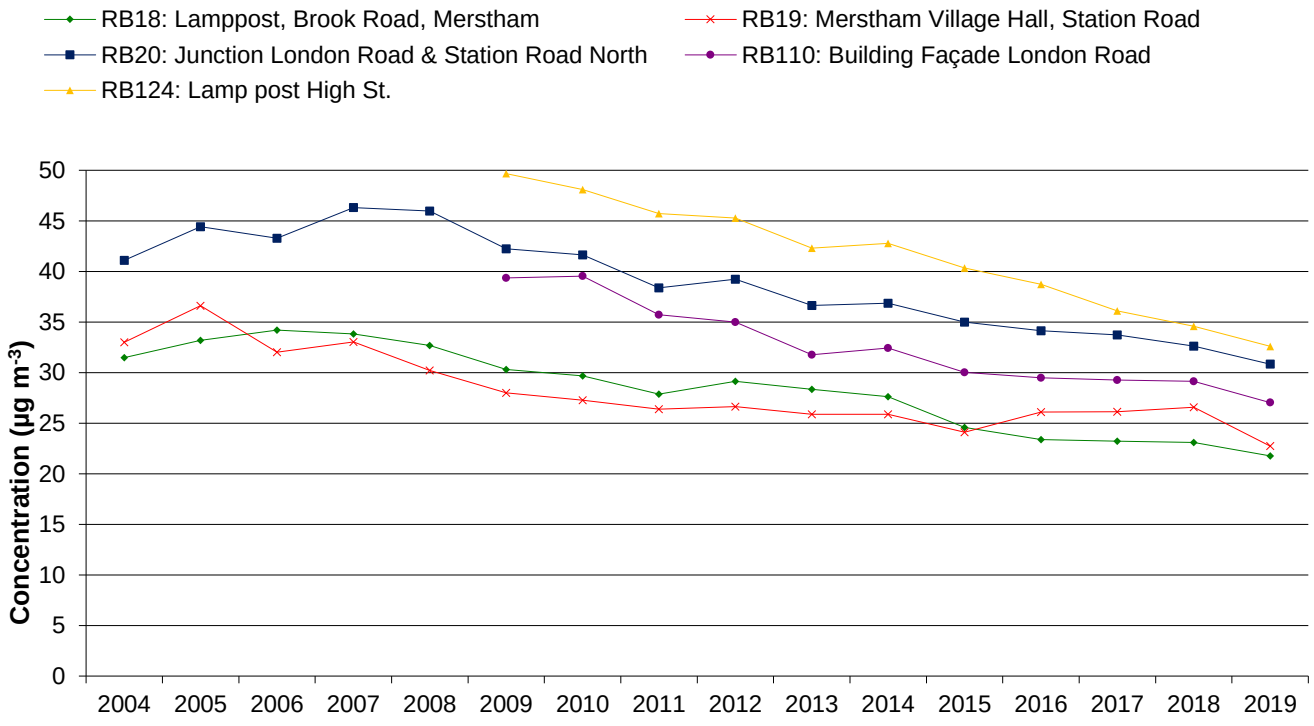


Figure 3.13 3-Year Rolling Annual Averages at Diffusion Tube Sites - Merstham AQMA, 2004 – 2019.

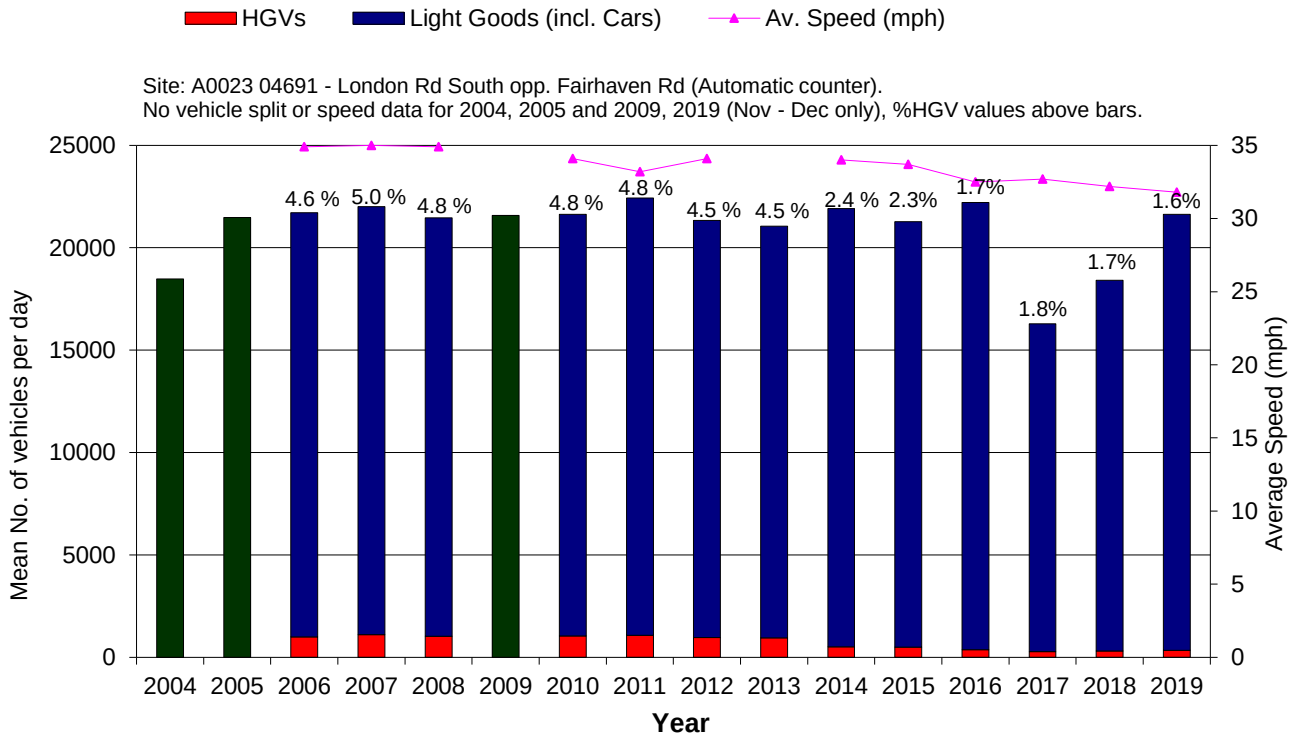


Figure 3.14 Merstham Annual Mean Daily Traffic Flows, 2004 – 2019.

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 2017-2019 period (Figure 3.15).

Figures 3.16 and 3.17 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.

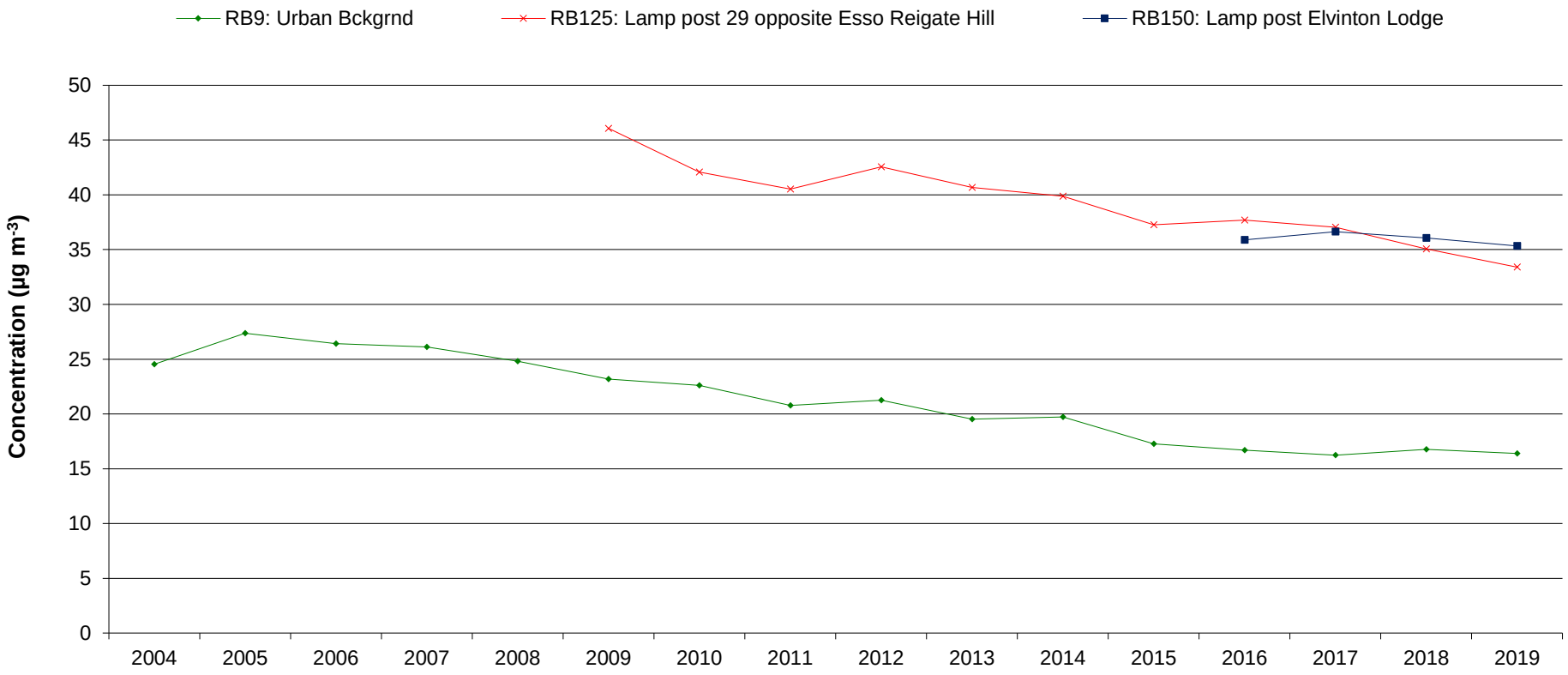


Figure 3.15 3 Year Rolling Annual Averages at Diffusion Tube Sites – Merstham Hill AQMA, 2004 – 2019

Site: A0217 04432 - A217 between Wray Lane and Raglan Road (Automatic counter).
% HGV values above bars. No data for 2016 - 2018.

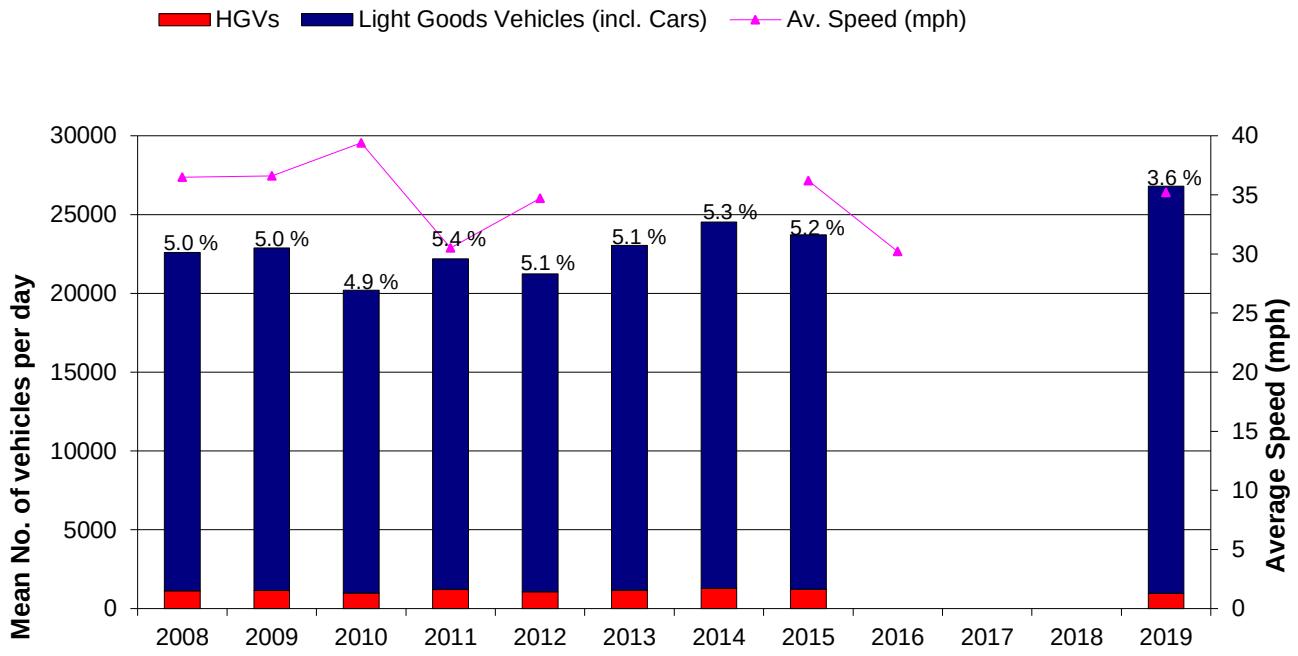


Figure 3.16 Reigate Hill, North of Raglan Road Annual Mean Daily Traffic Flows, 2004 – 2019.

Site: A0217 04433F - A217 between Raglan Road and Merrywood Park Road.
No data 2011 and 2013 to 2016. No vehicle split data for 2012.

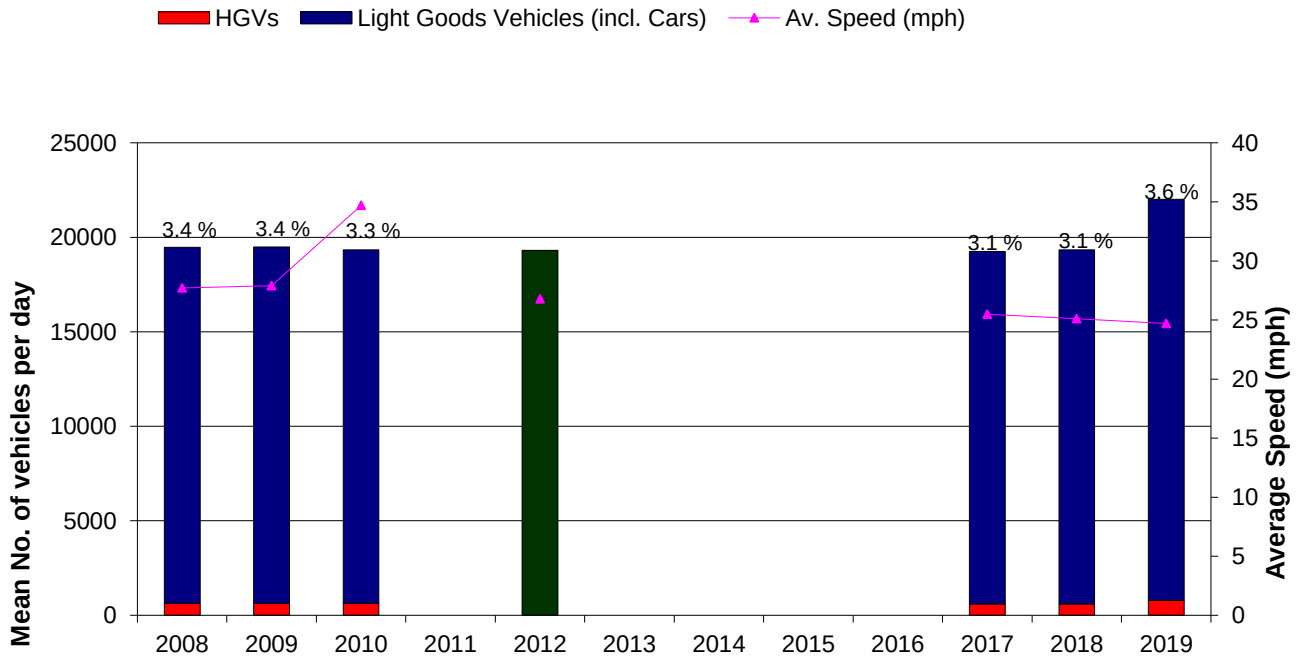


Figure 3.17 Reigate Hill, South of Raglan Road Annual Mean Daily Traffic Flows, 2004 – 2019.

Note no vehicle split data in 2012

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 2017-2019 period (Figure 3.18).

Figure 3.19 below shows traffic flows along the A23, south of Redhill. Data for 2018 and 2019 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.

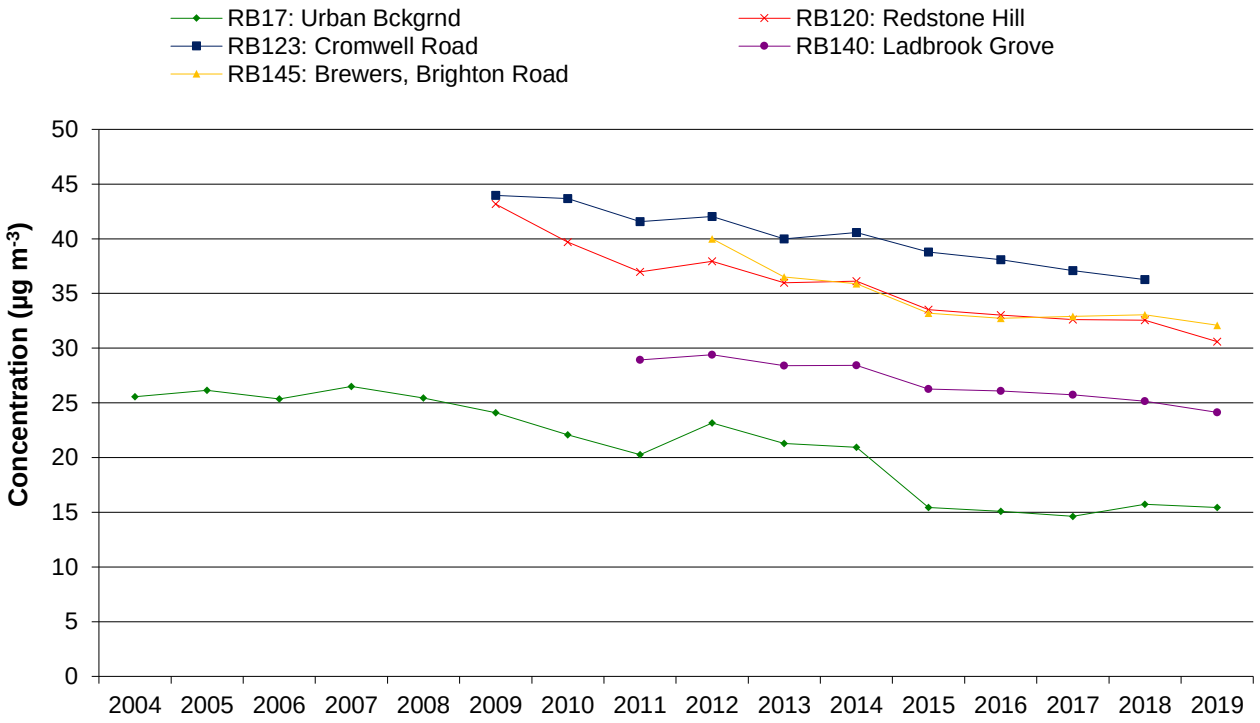


Figure 3.18 3-Year Rolling Annual Averages at Diffusion Tube Sites – Redhill AQMA, 2004 – 2019

Site: A0023 04652D - A23 Horley Road junction with Common Road (Automatic counter).
No data for 2018 or 2019. % HGV values above bars.

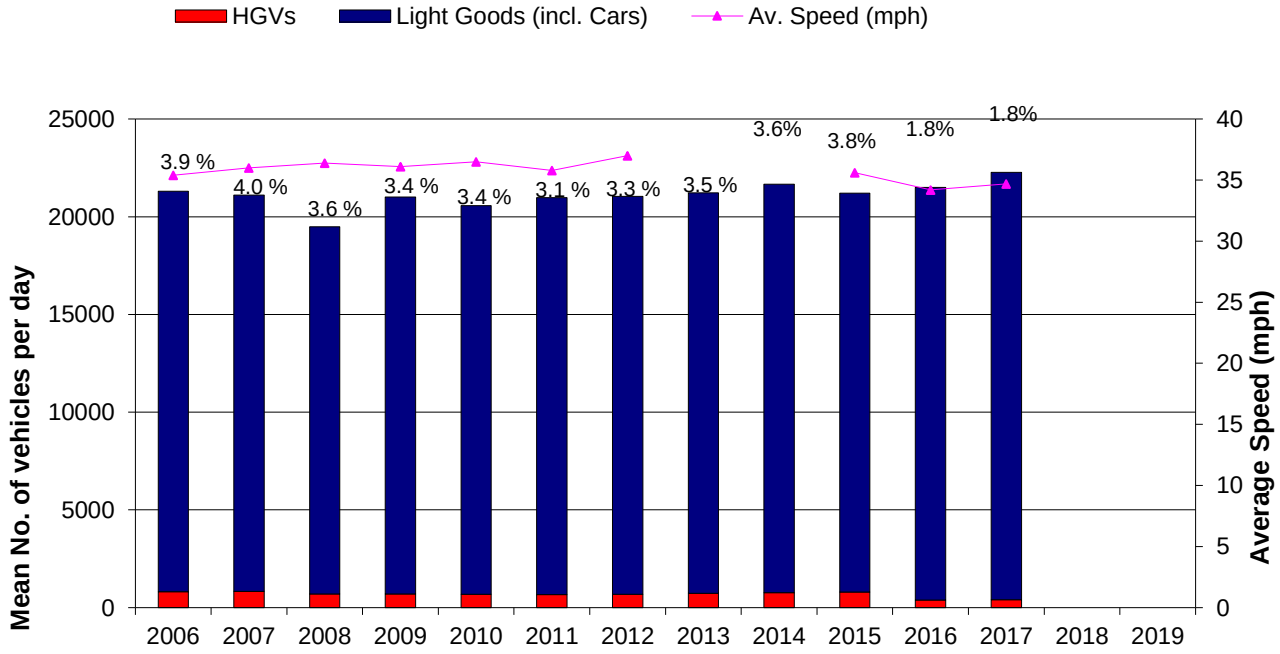


Figure 3.19 A23 South of Redhill Annual Mean Daily Traffic Flows, 2004 – 2019.

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, 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.

The monitoring data show a downward trend from 2011 at all sites (see Figure 3.20).

Figure 3.21 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.

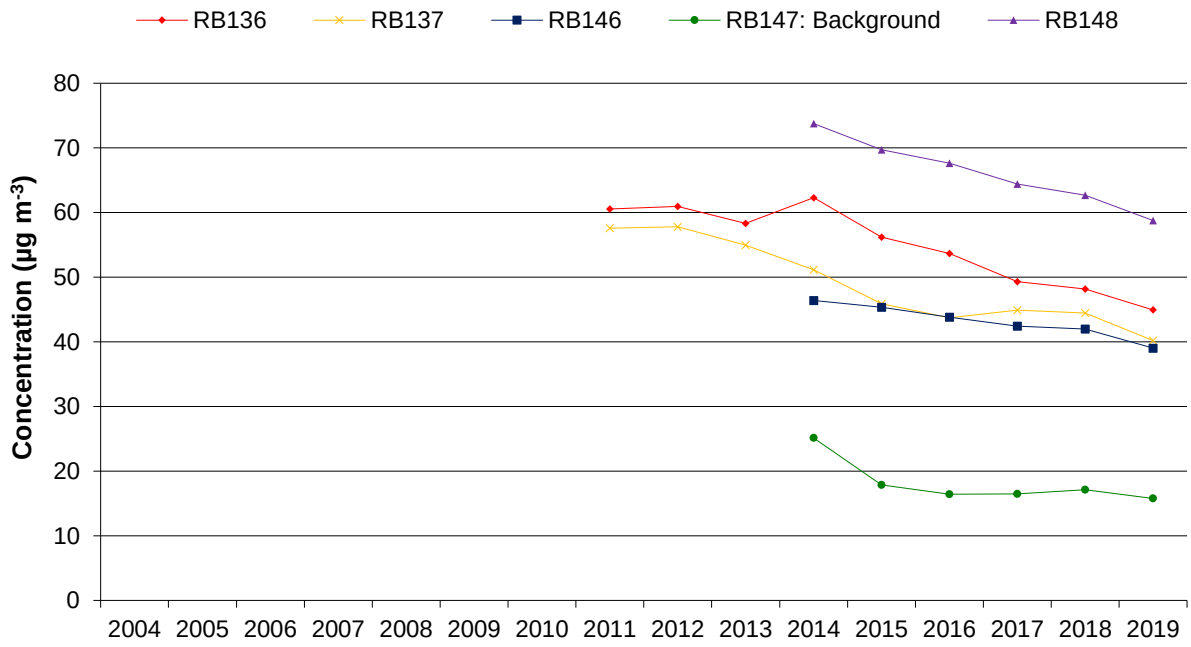


Figure 3.20 3-Year Rolling Annual Averages at Diffusion Tube Sites - Hooley AQMA, 2004 – 2019.

Site: 6032/3/26272 - A23 Hooley (Automatic counter). TAME Sites 30360664 and 30360665 from 2016.

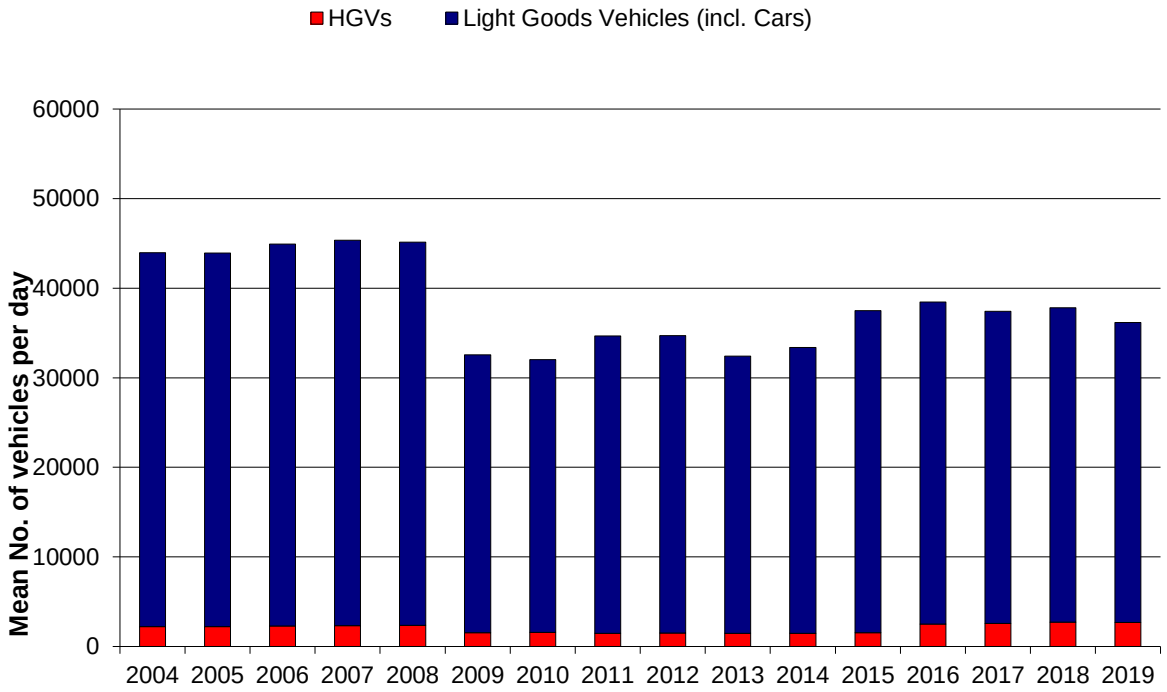


Figure 3.21 A23 Hooley Annual Mean Daily Traffic Flows, 2004 – 2019.

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 2019 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3] [4]				
							2015	2016	2017	2018	2019
RG1	528208	142337	Suburban	Automatic	99.1	99.1	21.1	20.3	20.4	18.8	19.1
RG3	526421	139639	Rural	Automatic	97.6	97.6	14.0	16.7	13.9	15.5	15.1
RG6	528592	141831	Suburban	Automatic	99.2	99.2	-	28.3	26.7	24.9	24.2
RG7	528804	156436	Roadside	Automatic	62.5	62.5	-	-	-	**47.4**	**45.0**
RB1	525246	150252	Roadside	Diffusion tube	100.0	100.0	30.6	33.6	32.4	30.6	29.5
RB3	524944	159630	Urban background	Diffusion tube	100.0	100.0	17.6	19.7	17.6	17.5	16.1
RB8	525246	150286	Urban Background	Diffusion tube	100.0	100.0	18.5	20.9	17.8	19.0	17.2
RB9	525750	149677	Urban background	Diffusion tube	100.0	100.0	14.8	17.3	16.6	16.4	16.2
RB11	528104	142226	Suburban	Diffusion tube	100.0	100.0	22.0	24.2	22.8	23.9	21.3
RB12	528424	142934	Roadside	Diffusion tube	100.0	100.0	23.2	26.8	28.3	25.3	25.8
RB13	528362	142983	Other	Diffusion tube	75.0	75.0	20.0	22.9	19.9	23.1	19.8
RB17	528511	149715	Urban background	Diffusion tube	100.0	100.0	13.0	16.9	14.0	16.3	16.0
RB18	529263	153156	Urban background	Diffusion tube	100.0	100.0	22.3	24.8	22.6	21.9	20.8
RB19	529067	153375	Suburban	Diffusion tube	100.0	100.0	21.8	33.1	23.5	23.1	21.6
RB20	529026	153420	Roadside	Diffusion tube	100.0	100.0	33.6	34.8	32.8	30.3	29.4
RB21	523198	160095	Roadside	Diffusion tube	100.0	100.0	35.6	38.0	34.1	32.4	31.5
RB22	523260	160111	Suburban	Diffusion tube	75.0	75.0	18.9	21.0	19.7	19.7	18.7
RB23	523612	159906	Urban background	Diffusion tube	100.0	100.0	16.2	18.2	16.2	16.2	15.0
RB24	528208	142337	Background	Diffusion tube	100.0	100.0	21.9	21.0	21.1	19.8	21.8
RB25	528208	142337	Background	Diffusion tube	100.0	100.0	20.8	21.4	21.8	21.6	21.2
RB26	528208	142337	Background	Diffusion tube	100.0	100.0	20.3	21.4	20.9	21.6	21.7
RB27	521873	153896	Roadside (near M25)	Diffusion tube	100.0	100.0	27.1	28.2	25.3	24.7	21.0
RB29	521921	153937	Roadside (near M25)	Diffusion tube	100.0	100.0	-	25.1	24.8	21.5	20.5

RB30	522112	153728	Roadside (near M25)	Diffusion tube	100.0	100.0	22.7	25.3	24.3	22.0	21.0
RB31	525506	152366	Roadside (near M25)	Diffusion tube	100.0	100.0	17.2	18.1	16.0	16.3	13.8
RB33	524081	152580	Roadside (near M25)	Diffusion tube	100.0	100.0	21.4	22.5	21.1	20.3	18.9
RB34	524177	152393	Roadside (near M25)	Diffusion tube	100.0	100.0	25.6	31.6	24.1	26.4	22.3
RB36	528887	153760	Roadside (near M25)	Diffusion tube	100.0	100.0	22.5	22.6	20.3	23.8	20.2
RB37	529217	153605	Roadside (near M25)	Diffusion tube	100.0	100.0	25.4	24.2	24.0	22.0	21.0
RB39	529205	153572	Roadside (Near M25)	Diffusion tube	100.0	100.0	23.6	25.1	25.1	22.1	20.4
RB40	529252	154291	Roadside (near M25)	Diffusion tube	100.0	100.0	19.8	21.9	20.3	19.0	19.1
RB43	528797	153612	Roadside (near M25)	Diffusion tube	100.0	100.0	24.9	26.8	23.3	23.8	22.2
RB44	525532	150316	Roadside	Diffusion tube	100.0	100.0	27.9	33.2	30.8	28.5	27.7
RB45	525431	150270	Roadside	Diffusion tube	100.0	100.0	28.7	32.2	28.0	29.2	29.4
RB46	525346	150241	Roadside	Diffusion tube	100.0	100.0	36.1	37.2	35.9	31.0	33.2
RB47	525114	150276	Roadside	Diffusion tube	100.0	100.0	36.4	37.8	35.0	34.8	32.8
RB49	525705	152947	Roadside (near A217)	Diffusion tube	91.7	91.7	**42.8**	**44.7**	**42.4**	39.2	36.1
RB50	525700	152964	Roadside (near A217)	Diffusion tube	100.0	100.0	24.1	27.0	26.1	24.7	26.2
RB51	527873	142606	Suburban	Diffusion tube	100.0	100.0	20.6	21.7	20.8	20.8	20.7
RB52	527892	142463	Suburban	Diffusion tube	100.0	100.0	36.0	24.7	24.7	25.0	24.6
RB53	528030	142373	Suburban	Diffusion tube	100.0	100.0	26.7	23.8	25.3	24.4	25.6
RB54	528112	142321	Suburban	Diffusion tube	100.0	100.0	22.9	22.7	23.4	24.5	22.9
RB55	528254	142196	Suburban	Diffusion tube	100.0	100.0	23.6	24.7	22.8	24.8	23.6
RB56	528386	142080	Suburban	Diffusion tube	100.0	100.0	22.0	24.5	24.0	22.2	24.7
RB57	528499	141953	Suburban	Diffusion tube	100.0	100.0	23.4	25.0	26.2	24.2	24.6
RB58	528538	141897	Suburban	Diffusion tube	100.0	100.0	24.4	26.0	26.8	24.7	25.9
RB59	528602	141789	Suburban	Diffusion tube	100.0	100.0	25.0	28.6	27.8	26.5	26.0
RB60	528607	141910	Suburban	Diffusion tube	91.7	91.7	26.4	27.2	27.3	24.9	26.1
RB61	528578	142006	Suburban	Diffusion tube	100.0	100.0	21.3	24.8	22.6	21.3	23.1

RB64	528608	142432	Suburban	Diffusion tube	100.0	100.0	22.8	23.6	22.1	21.6	23.1
RB65	528581	142635	Suburban	Diffusion tube	100.0	100.0	24.3	24.6	22.4	22.8	23.1
RB66	528499	142512	Suburban	Diffusion tube	100.0	100.0	20.8	22.7	21.8	22.5	21.6
RB68	528505	142246	Suburban	Diffusion tube	100.0	100.0	21.0	25.9	24.0	21.7	24.0
RB69	528335	142224	Suburban	Diffusion tube	100.0	100.0	23.0	24.3	26.5	24.7	25.2
RB70	528360	142384	Suburban	Diffusion tube	100.0	100.0	22.6	23.8	24.3	23.3	23.7
RB72	528220	142583	Suburban	Diffusion tube	100.0	100.0	22.4	25.4	22.2	25.1	23.6
RB73	528172	142679	Suburban	Diffusion tube	100.0	100.0	20.8	24.0	22.0	22.0	21.5
RB74	529149	141953	Suburban	Diffusion tube	100.0	100.0	20.6	24.7	22.5	22.3	21.2
RB75	529203	142192	Suburban	Diffusion tube	100.0	100.0	21.6	23.6	23.9	21.9	22.3
RB76	528958	142468	Suburban	Diffusion tube	100.0	100.0	19.6	20.6	20.1	19.6	19.9
RB77	528789	142570	Suburban	Diffusion tube	100.0	100.0	19.2	21.0	20.9	19.8	19.7
RB78	528553	141857	Suburban	Diffusion tube	100.0	100.0	26.1	27.0	27.0	25.5	25.0
RB79	528553	141857	Suburban	Diffusion tube	100.0	100.0	25.5	28.5	30.9	32.5	30.8
RB80	528553	141857	Suburban	Diffusion tube	100.0	100.0	25.1	26.5	33.8	31.4	29.1
RB81	527594	149236	Roadside (A23 AQMA)	Diffusion tube	100.0	100.0	27.5	32.8	2.5	2.3	2.2
RB82	528770	155797	Suburban (A23 AQMA)	Diffusion tube	100.0	100.0	35.0	33.7	3.0	2.2	2.0
RB95	525382	150639	Roadside	Diffusion Tube	100.0	100.0	23.9	25.2	25.2	25.1	22.0
RB98	527931	142231	Suburban	Diffusion Tube	100.0	100.0	24	25.1	25.8	24.7	24.2
RB99	526421	139639	Rural / Other	Diffusion tube	100.0	100.0	13.8	16.3	14.1	15.0	13.8
RB100	526421	139639	Rural / Other	Diffusion tube	100.0	100.0	13.4	17.3	13.7	15.8	13.8
RB101	526421	139639	Rural / Other	Diffusion tube	100.0	100.0	13.5	15.6	14.0	15.3	14.9
RB102	530936	144278	Rural / Other	Diffusion tube	100.0	100.0	22.0	22.4	20.9	23.4	19.3
RB104	525204	150254	Roadside	Diffusion tube	100.0	100.0	34.9	36.4	34.7	34.0	33.9
RB105	525203	150239	Roadside	Diffusion tube	100.0	100.0	37.8	41.4	39.0	35.0	37.5
RB106	523250	160056	Roadside	Diffusion tube	100.0	100.0	32.4	34.7	29.3	27.7	28.6
RB107	525467	150292	Roadside	Diffusion tube	100.0	100.0	25.7	32.0	26.1	27.0	25.0
RB109	525387	150178	Roadside	Diffusion tube	91.7	91.7	28.6	33.3	32.5	30.3	29.8
RB110	529016	153439	Roadside	Diffusion tube	100.0	100.0	27.5	31.0	29.3	27.1	24.7
RB111	525031	150291	Roadside	Diffusion tube	100.0	100.0	30.3	33.9	30.3	27.1	27.2
RB113	524795	150404	Roadside	Diffusion tube	100.0	100.0	26.7	29.7	27.1	24.9	23.0
RB114	524368	150477	Roadside	Diffusion tube	83.3	83.3	28.2	29.5	26.3	23.5	21.8
RB115	524751	150428	Roadside	Diffusion tube	83.3	83.3	26.9	29.7	30.5	26.3	27.7
RB116	525022	150317	Roadside	Diffusion tube	100.0	100.0	32.6	35.8	31.9	29.6	30.7

RB117	525076	150327	Roadside	Diffusion tube	91.7	91.7	40.8	43.3	35.1	36.3	35.8
RB118	525151	150467	Roadside	Diffusion tube	100.0	100.0	34.3	36.6	31.5	32.8	32.1
RB120	528196	150421	Roadside	Diffusion tube	100.0	100.0	31.6	33.3	32.9	31.5	27.4
RB121	528092	150786	Kerbside	Diffusion tube	91.7	91.7	-	-	-	**41.1**	39.9
RB122	528013	150475	Roadside	Diffusion tube	91.7	91.7	31.1	32.8	31.5	30.6	30.7
RB123	527838	150474	Kerbside	Diffusion tube	50.0	50.0	36.0	39.5	35.8	33.5	33.6
RB124	529013	153285	Roadside	Diffusion tube	100.0	100.0	36.3	37.5	34.5	31.7	31.5
RB125	525589	151655	Roadside	Diffusion tube	91.7	91.7	37.7	38.5	34.9	31.8	33.5
RB136	528810	156474	Roadside	Diffusion tube	91.7	91.7	**49.3**	**49.2**	**49.4**	**45.9**	39.5
RB137	528831	156648	Roadside	Diffusion tube	100.0	100.0	**44.5**	**47.9**	**42.3**	**43.2**	35.2
RB140	528122	150799	Roadside	Diffusion tube	100.0	100.0	24.3	27.4	25.5	22.6	24.3
RB141	527373	150596	Roadside	Diffusion tube	100.0	100.0	23.6	26.6	23.7	22.9	21.8
RB145	527852	150158	Kerbside	Diffusion tube	100.0	100.0	30.4	34.6	33.7	30.9	31.7
RB146	528759	156277	Kerbside	Diffusion tube	100.0	100.0	**41.8**	**44.6**	**40.9**	**40.4**	35.8
RB147	528732	156407	Background	Diffusion tube	100.0	100.0	15.2	17.8	16.5	17.0	13.8
RB148	528855	156674	Kerbside	Diffusion tube	100.0	100.0	**64.8**	**65.9**	**62.6**	**59.5**	**54.2**
RB149	525698	152940	Roadside	Diffusion tube	100.0	100.0	**45.0**	**49.8**	**46.0**	**43.4**	**43.5**
RB150	525397	150867	Roadside	Diffusion tube	100.0	100.0	34.8	37.5	37.5	33.1	35.3
RB151	528502	142952	Roadside	Diffusion tube	100.0	100.0	31.2	31.7	33.3	29.4	33.5
RB152	528599	152439	Roadside	Diffusion tube	100.0	100.0	34.0	39.8	33.4	32.4	32.4
RB153	527837	148046	Roadside	Diffusion tube	100.0	100.0	29.5	28.8	29.0	25.9	25.4
RB167	527830	150643	Roadside	Diffusion tube	100.0	100.0	24.0	28.5	24.9	24.7	24.3
RB174	527852	142841	Roadside	Diffusion tube	100.0	100.0	-	30.4	31.1	30.3	29.1
RB175	527955	142999	Roadside	Diffusion tube	100.0	100.0	-	26.7	30.6	27.5	29.8
RB176	527765	142777	Roadside	Diffusion tube	100.0	100.0	-	23.1	25.4	25.5	25.4
RB177	527754	142762	Roadside	Diffusion tube	100.0	100.0	-	23.9	24.9	23.8	25.1
RB178	528592	141831	Suburban	Diffusion tube	100.0	100.0	-	-	25.6	23.0	24.0
RB179	528592	141831	Suburban	Diffusion tube	100.0	100.0	-	-	25.3	23.4	23.2
RB180	528592	141831	Suburban	Diffusion tube	100.0	100.0	-	-	25.9	23.4	23.1
RB181	528852	156724	Roadside	Diffusion tube	100.0	100.0	-	-	-	**47.0**	**46.5**
RB182	528835	156728	Roadside	Diffusion tube	100.0	100.0	-	-	-	30.3	24.0
RB183	528813	156580	Roadside	Diffusion tube	100.0	100.0	-	-	-	36.4	37.0
RB184	528807	156555	Roadside	Diffusion tube	100.0	100.0	-	-	-	34.8	33.7
RB186	528790	156500	Roadside	Diffusion tube	100.0	100.0	-	-	-	30.8	31.3
RB187	528789	156488	Roadside	Diffusion tube	100.0	100.0	-	-	-	27.0	27.0
RB188	528792	156478	Roadside	Diffusion tube	91.7	91.7	-	-	-	32.2	29.0

RB189	528789	156465	Roadside	Diffusion tube	100.0	100.0	-	-	-	31.4	30.0
RB190	528788	156460	Roadside	Diffusion tube	100.0	100.0	-	-	-	30.7	29.1
RB191	528785	156448	Roadside	Diffusion tube	100.0	100.0	-	-	-	26.5	27.3
RB192	528784	156442	Roadside	Diffusion tube	100.0	100.0	-	-	-	28.5	27.1
RB193	528782	156430	Roadside	Diffusion tube	100.0	100.0	-	-	-	24.6	24.2
RB194	528779	156381	Kerbside	Diffusion tube	100.0	100.0	-	-	-	32.5	30.7
RB195	528772	156349	Kerbside	Diffusion tube	100.0	100.0	-	-	-	37.0	34.2
RB196	528797	156331	Roadside	Diffusion tube	100.0	100.0	-	-	-	26.8	25.2
RB197	528795	156373	Roadside	Diffusion tube	100.0	100.0	-	-	-	36.2	32.9
RB198	528796	156379	Roadside	Diffusion tube	91.7	91.7	-	-	-	38.2	38.8
RB199	528800	156390	Roadside	Diffusion tube	100.0	100.0	-	-	-	34.1	31.8
RB200	528799	156409	Roadside	Diffusion tube	100.0	100.0	-	-	-	**42.1**	39.4
RB201	528804	156414	Roadside	Diffusion tube	100.0	100.0	-	-	-	34.2	34.0
RB202	528808	156444	Roadside	Diffusion tube	100.0	100.0	-	-	-	37.7	37.7
RB203	528809	156454	Roadside	Diffusion tube	91.7	91.7	-	-	-	36.9	39.2
RB204	528810	156457	Roadside	Diffusion tube	91.7	91.7	-	-	-	36.8	39.3
RB205	528812	156466	Roadside	Diffusion tube	100.0	100.0	-	-	-	**44.0**	**42.2**
RB206	528816	156477	Roadside	Diffusion tube	100.0	100.0	-	-	-	34.5	33.1
RB207	528818	156486	Roadside	Diffusion tube	100.0	100.0	-	-	-	35.2	37.3
RB208	528825	156526	Roadside	Diffusion tube	100.0	100.0	-	-	-	**53.0**	**50.3**
RB209	528833	156547	Roadside	Diffusion tube	100.0	100.0	-	-	-	27.8	27.8
RB210	528833	156555	Roadside	Diffusion tube	100.0	100.0	-	-	-	39.3	36.3
RB211	528839	156577	Roadside	Diffusion tube	100.0	100.0	-	-	-	36.6	37.0
RB212	528840	156582	Roadside	Diffusion tube	100.0	100.0	-	-	-	39.3	**40.6**
RB213	528845	156604	Roadside	Diffusion tube	91.7	91.7	-	-	-	36.5	37.9
RB214	528848	156617	Roadside	Diffusion tube	100.0	100.0	-	-	-	33.1	33.5
RB215	528853	156646	Roadside	Diffusion tube	100.0	100.0	-	-	-	29.0	27.6
RB216	528862	156690	Roadside	Diffusion tube	100.0	100.0	-	-	-	**42.5**	39.3
RB217	528866	156712	Roadside	Diffusion tube	91.7	91.7	-	-	-	**43.2**	**45.2**
RB218	528869	156737	Kerbside	Diffusion tube	91.7	91.7	-	-	-	**42.6**	**40.7**
RB219	528877	156744	Roadside	Diffusion tube	100.0	100.0	-	-		39.2	**40.6**
RB223	528804	156435	Roadside	Diffusion tube	100.0	100.0	-	-			**42.3**
RB224	528804	156435	Roadside	Diffusion tube	100.0	100.0	-	-			36.5
RB225	528804	156435	Roadside	Diffusion tube	100.0	100.0	-	-			38.7

☒ 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 2019 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
							2015	2016	2017	2018	2019
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	99.2	99.2	-	(116)	0	0	0
RG7	528804	156436	Roadside	Automatic	62.5	62.5	-	-	-	(128)	(139)

Notes:

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

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

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

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

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 2019 (%) [3]	PM_{10} Annual Mean Concentration (µg/m^3) [4]				
						2015	2016	2017	2018	2019
RG1	528208	142337	Suburban	98.1	98.1	19.2	16.5	16.2	17.1	15.9

☒ **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

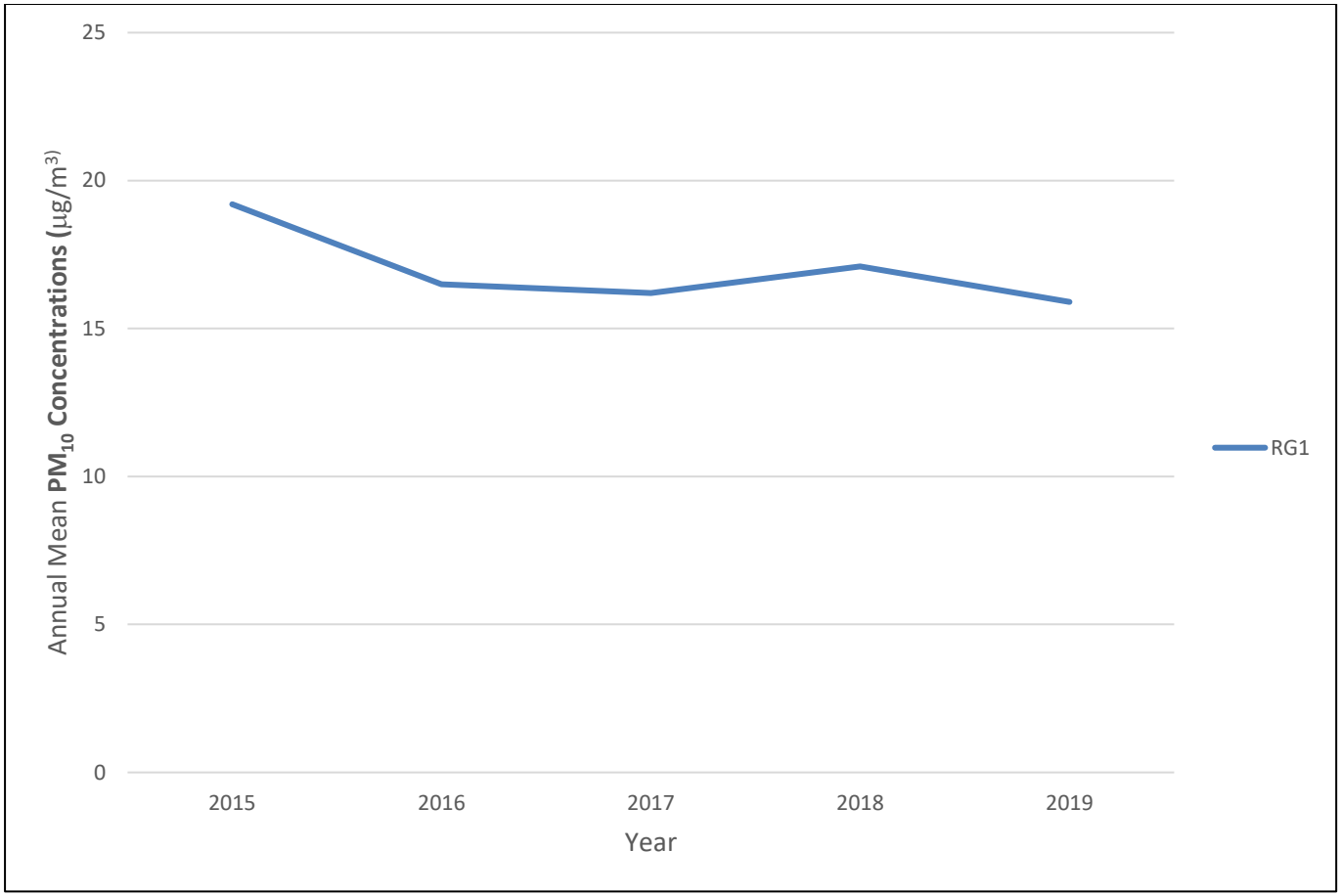


Table A.6 – 24-Hour Mean PM_{10} (VCM [1]) Monitoring Results

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]				
						2015	2016	2017	2018	2019
RG1	528208	142337	Suburban	98.1	98.1	3	3	2	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 90.4th 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

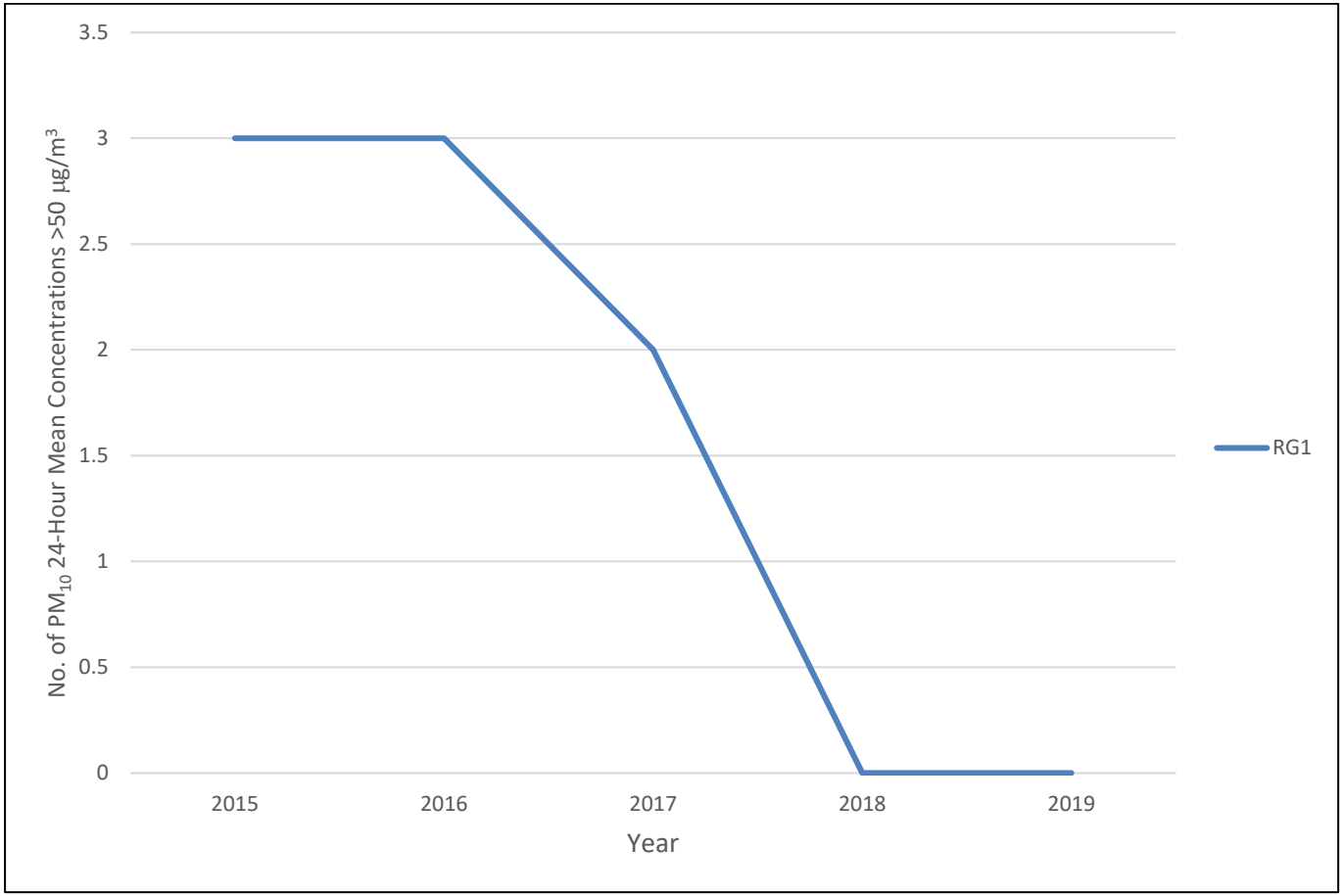


Table A.7 – Annual Mean Benzene Monitoring Results

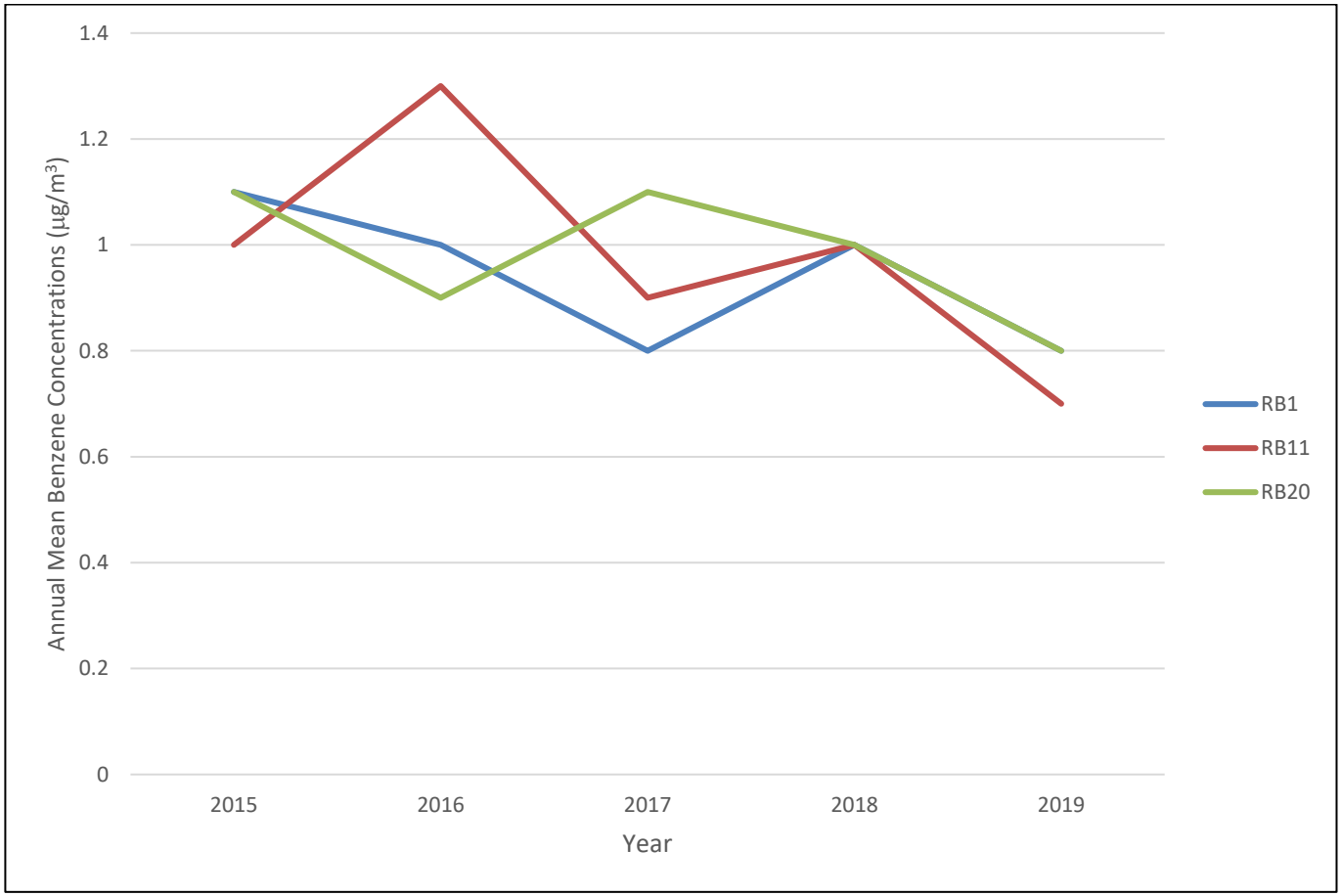
Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for monitoring Period (%) (1)	Valid Data Capture 2019 (%) (2)	Annual Mean Benzene Concentrations				
						2015	2016	2017	2018	2019
RB1	525246	150252	Roadside	100	100	1.1	1.0	0.8	1.0	0.8
RB11	528104	142226	Suburban	100	100	1.0	1.3	0.9	1.0	0.7
RB20	529026	153420	Roadside	100	100	1.1	0.9	1.1	1.0	0.8

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 2017 to 2019

Table B.1 - NO_2 Monthly Diffusion Tube Results - 2017

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations ($\mu g/m^3$)														
															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	52	38	40	38	32	25	31	31	34	31	41	34	35.6	32.4	
RB3	524944	159630	38	24	21	16	11	13	15	16	18	18	25	17	19.3	17.6	
RB8	525246	150286		24	24	18	17	16		16	18	17	26	20	19.6	17.8	
RB9	525750	149677	34	22	19	16	12	16	11	13	17	16	25	18	18.3	16.6	
RB11	528104	142226	33	33	22	23	15	24	23	18	25	28	28	28	25.0	22.8	
RB12	528424	142934	46	37	32	26	26	28	24	26	30	35	37	26	31.1	28.3	
RB13	528362	142983	24	28	23	18	16	19	19	19	23	26	30	18	21.9	19.9	
RB17	528511	149715	22	20	16	16	12	12	11	12	14	14	21	14	15.3	14.0	
RB18	529263	153156	42	30	26	24	16	19	18	23	22	21	34	23	24.8	22.6	
RB19	529067	153375	44	24	26	22	21	17	19	27	27	20	36	27	25.8	23.5	
RB20	529026	153420	60	40	31	34	24	33	32	37	34	36	45	26	36.0	32.8	
RB21	523198	160095	55	33	37	34	38	35	37	37	37	33	48	26	37.5	34.1	
RB22	523260	160111	39	25	23	21	15	11		17	20	20	26		21.7	19.7	
RB23	523612	159906	30	23	19	18	10	13	13	14	17	14	24	19	17.8	16.2	
RB24	528208	142337	37	26	24	16	15	17	23	22	21	27	26	24	23.2	21.1	

RB25	528208	142337	33	30	26	15	16	19	25	21	23	26	26	27	23.9	21.8	
RB26	528208	142337	33	28	26	17	12	19	20	22	19	27	26	26	22.9	20.9	
RB27	521873	153896	43	30	34	26	20	24	25	28	26	31	35	11	27.8	25.3	
RB29	521921	153937	36	34	32	27	19	24	16	26		27	32	27	27.3	24.8	
RB30	522112	153728	39	28	28	23	22	27	21	28	25	26	31	23	26.8	24.3	
RB31	525506	152366	29	21	21	19	16	12	13	15	16	14	24	11	17.6	16.0	
RB33	524081	152580	33	29	26	20	16	22	18	20	27	22	24	21	23.2	21.1	
RB34	524177	152393	39	26		29	31	19	23	24	32	19	32	17	26.5	24.1	
RB36	528887	153760	29	27	30	16	15	18	19	24	21	24	24	21	22.3	20.3	
RB37	529217	153605	35	30	30	18	16	24	23	24	25	29	31	31	26.3	24.0	
RB39	529205	153572	42	32	29	25	19	21	23	24	27	29	35	25	27.6	25.1	
RB40	529252	154291	37	28	25	17	14	17	19	22	21	22	26	20	22.3	20.3	
RB43	528797	153612	41	25	25	28	20	21	21	28	24	23	29	22	25.6	23.3	
RB44	525532	150316	42	36	31	24	25	33	32	37	33	36	43	34	33.8	30.8	
RB45	525431	150270		42	28	28	24	28	28	31	30	31	44	25	30.8	28.0	
RB46	525346	150241	51	39	46	29	31	44	34	32		42	46		39.4	35.9	
RB47	525114	150276	60		42	31	38	31	28	37	40	38	52	26	38.5	35.0	
RB49	525705	152947		52	43	52	32	39	50	51	44	55	51	44	46.6	**42.4**	
RB50	525700	152964	43	35	33	28	22	26	24	27	24	26	31	25	28.7	26.1	
RB51	527873	142606	35	28	26	12	12	17	22	20	25	25	27	25	22.8	20.8	
RB52	527892	142463	42	34	23	24	15	35	23	21	26	33	27	23	27.2	24.7	
RB53	528030	142373	42	36	31	14	16	21	29	30	23	28	33	30	27.8	25.3	
RB54	528112	142321	42	34	23	21	17	20	22	24	26	28	29	23	25.8	23.4	
RB55	528254	142196	40	35	27	12	19	20	26	15	25		30	26	25.0	22.8	
RB56	528386	142080	39	33	30	23	17	22	23	19	28	33	28	21	26.3	24.0	
RB57	528499	141953	41	32	33	20	16	25	25	24	26	34	36	33	28.8	26.2	

RB58	528538	141897	38	30	33	23	16	30	29	28	31	33	34	29	29.5	26.8	
RB59	528602	141789	40	36	28	23	25	27	29	30	31	36	30	32	30.6	27.8	
RB60	528607	141910	40	35	30	25	16	20	29	32	21	36	37	39	30.0	27.3	
RB61	528578	142006	38	19	26	13	18	14	27	25	24	30	32	32	24.8	22.6	
RB64	528608	142432	38	33	25	17	14	21	17	25	22	23	30	26	24.3	22.1	
RB65	528581	142635	39		26	24	17	17	21	26	21	25	25	30	24.6	22.4	
RB66	528499	142512	40	27	24	20	14	15	22	22	24	27	30	22	23.9	21.8	
RB68	528505	142246	37	30	26	23	17	23	18	31	26	29	27	29	26.3	24.0	
RB69	528335	142224	42	36	31	23	11	25	38	26	25	34	33	25	29.1	26.5	
RB70	528360	142384	38	34	26	19	16	22	23	25	29	31	27	30	26.7	24.3	
RB72	528220	142583	39	3	28	21	24	22	25	26	24	29	27	25	24.4	22.2	
RB73	528172	142679	39	24	26	22	14	19	21	22	22	28	28	25	24.2	22.0	
RB74	529149	141953	39	29	25	19	18	21	21	20	23	27	30	25	24.8	22.5	
RB75	529203	142192	43	26	24	21	15	22	24	26	21	29	34	30	26.3	23.9	
RB76	528958	142468	35	24	22	14	13	20	22	17	21	25	27	25	22.1	20.1	
RB77	528789	142570	35	28	22	19	8	16	17	21	31	26	27	26	23.0	20.9	
RB78	528553	141857	38	34	29	24	19	25	25	32	34	37	33	26	29.7	27.0	
RB81	528553	141857	52	42	34	27	19	25	30	25	33	32	52	36	33.9	30.9	
RB82	528553	141857	48	41	36	38	34	28	37	32	33	39	40	40	37.2	33.8	
RB95	525382	150639	41	31	29	26	28	24	21	23	26	23	32	28	27.7	25.2	
RB98	527931	142231	42	35	29	23	18	27	25	27	26	30	30	28	28.3	25.8	
RB99	526421	139639	27	19	16	14	11	11	14	13	15	13	19	14	15.5	14.1	
RB100	526421	139639	21	20	16	12	12	15	12	13	14	13	16	17	15.1	13.7	
RB101	526421	139639	23	24	14	14	11	12	12	13	16	12	18	16	15.4	14.0	
RB102	530936	144278	37	31	25	17	22	20	20	22	25	14	25	18	23.0	20.9	
RB104	525204	150254	61	40	37	37	35	37	34	40	34	35	37	30	38.1	34.7	

RB105	525203	150239	62	39	51	32	37	51	33	46	47	43	30	43	42.8	39.0	
RB106	523250	160056	52	30	35	28	27	26	32	31	32	31	36	26	32.2	29.3	
RB107	525467	150292	51	30	32	25	21	26	21	27	30	25		27	28.6	26.1	
RB109	525387	150178	53	37	37	28	30	38	26	35	36	35	39	34	35.7	32.5	
RB110	529016	153439	49	35	30	31	23	30	27	28	33	28	40	33	32.3	29.3	
RB111	525031	150291	53	39	37	23	29	31	25	35	32	34	36	26	33.3	30.3	
RB113	524795	150404	46	38	32	25	19	30	27	27	25	27	33	29	29.8	27.1	
RB114	524368	150477	48		32	26	25	29		21			33		30.6	26.3	
RB115	524751	150428	54	39	36	23	31	28	27	25	36	28	44	31	33.5	30.5	
RB116	525022	150317	47	40	33	30	33	30	30	32	38	34	38	35	35.0	31.9	
RB117	525076	150327		40	46	26	40	39	40	41	45	37	40	30	38.5	35.1	
RB118	525151	150467	49	40	37	29	31	39	31	28	33	36	34	28	34.6	31.5	
RB120	528196	150421	53	39	39	29	29	38	30	39	33	33	35	37	36.2	32.9	
RB121	528092	150786															
RB122	528013	150475	51	36	40	24	27	34	30	27	36	37	37	37	34.7	31.5	
RB123	527838	150474	66	40	40	32	34	31	35	37	40	35	42	40	39.3	35.8	
RB124	529013	153285	41	45	44	44	29	30	32	36	33	37	48	36	37.9	34.5	
RB125	525589	151655	50	41	44	31	36		42	28		42	38	31	38.3	34.9	
RB136	528810	156474	73	66	46	50	46	52	49	56	50	49	59	55	54.3	**49.4**	36.9
RB137	528831	156648	64	48	47	46	34	51	48	32	46	51	41	50	46.5	**42.3**	**41.7**
RB140	528122	150799	41	32	30	24	21	17	24	30	24	30	33	30	28.0	25.5	
RB141	527373	150596	40	30	26	23	19	25	24	24	25	25	27	25	26.1	23.7	
RB145	527852	150158	51	39	40	34	27	31	33	36	35	35	42	42	37.1	33.7	
RB146	528759	156277	62	50	42	40	43	43	37	46	43	46	45	42	44.9	40.9	26.8
RB147	528732	156407	34	22		15	10	16	14	17	17	16	21	17	18.1	16.5	
RB148	528855	156674	98	86	63	48	59	80	66	50	67	79	57	73	68.8	**62.6**	**44.5**

RB149	527737	142710	72	59	53	35	46	57	55	37	52	50	46	45	50.6	46.0	40.3
RB150	525397	150867	49	44	46	34	30	31	41	43	43	47	45	42	41.3	37.5	28.1
RB151	528502	142952	53	43		33	19	32	38	34	30	43	41	37	36.6	33.3	
RB152	528599	152439	57	36	30	24	26	40	31	44	40	37	42	34	36.8	33.4	
RB153	527837	148046	48	37	36	25	25		26	29	30	28	40	26	31.8	29.0	
RB167	527830	150643	39	34	29	23	27	24	21	24	25	27	31	25	27.4	24.9	
RB174	527852	142841	53	42	34	28	27	29	34	31	30	36	40	26	34.2	31.1	
RB175	527955	142999	56	44	35	21	18	31	28	37	32	35	36	31	33.7	30.6	
RB176	527765	142777	44	32	27	22	24	21	24	24	27	29	31	30	27.9	25.4	
RB177	527754	142762	44	39	25	16	23	23	30	23	27	30	25	24	27.4	24.9	
RB178	528592	141831	38	37	35	23	18	27	23	27	29	26	24	31	28.2	25.6	
RB179	528592	141831	41	36	34	20	16	29	22	24	27	30	30	25	27.8	25.3	
RB180	528592	141831	36	39	31	22	15	28	25	30	26	29	31	29	28.4	25.9	

☒ **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.

Table B.2 - NO_2 Monthly Diffusion Tube Results - 2018

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations ($\mu g/m^3$)														
															Annual Mean		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.97) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
RB1	525246	150252	35	37	43	29	24	24	32	27	23	40	28	36	31.5	30.6	
RB3	524944	159630	22	26	20	16	18	14	13	14	18	15	20	21	18.1	17.5	
RB8	525246	150286	22	25	22		16	15	18	16	18	21	22	21	19.6	19.0	
RB9	525750	149677	19	17	19	15	13	9	14	14	15	19	30	19	16.9	16.4	
RB11	528104	142226	29	26	23	24	15	17	25	23	29	28	26	31	24.7	23.9	
RB12	528424	142934	31	30	32	20	19	20	21	19	27	33	33	28	26.1	25.3	
RB13	528362	142983	23	29	27	20	19	18	25	22		27	28	24	23.8	23.1	
RB17	528511	149715	15	17	16	13	19	14	14	13	18	21	20	22	16.8	16.3	
RB18	529263	153156	22	31	24	16	21	19	21	20	24		27	23	22.5	21.9	
RB19	529067	153375	25	26	23	16	19	19	22	22	24	28	31	31	23.8	23.1	
RB20	529026	153420	40	35	34	28	23	27	27	28	26	39	33	35	31.3	30.3	
RB21	523198	160095	34	41	40	32	24	27	33	32	33	41	31	33	33.4	32.4	
RB22	523260	160111	24	24	24	20	17	15	19	17	18	25	20	21	20.3	19.7	
RB23	523612	159906	20	21	17	16	14	14	12	11	14	20	20	21	16.7	16.2	
RB24	528208	142337	26	21	16	21	14	15	22	19	27	18	23	23	20.4	19.8	
RB25	528208	142337	26	26	21	20	19	14	24	20	25	24	20	28	22.3	21.6	

RB26	528208	142337	28	24	25	18	16	15	21	21	26	25	25	23	22.3	21.6	
RB27	521873	153896	27	24	28	30	18	18	27	24	26	29	27	28	25.5	24.7	
RB29	521921	153937	30		25	18	18	14	20	23	24	25	23	24	22.2	21.5	
RB30	522112	153728	20	26	24	21	20	15	25	23	24	25	25	24	22.7	22.0	
RB31	525506	152366	15	22	17	14	21	18	14	12	13	20	17	19	16.8	16.3	
RB33	524081	152580	23	20	20	22	20	13	27	19	18	23	25	21	20.9	20.3	
RB34	524177	152393	15	38	27	23	26	31	27	24	26	32	30	28	27.3	26.4	
RB36	528887	153760	26	20	26	25	16	14	15	21	21	30	35	45	24.5	23.8	
RB37	529217	153605	23	26	28	26	15	15	22	21	22	23	26	25	22.7	22.0	
RB39	529205	153572	31	24	23	15	17	17	19	23	24	24	28	28	22.8	22.1	
RB40	529252	154291	23	21	24	17	18	14	18	17	20	26	14	23	19.6	19.0	
RB43	528797	153612	17	25	24	23	34	24	27	23	26	27	22	22	24.5	23.8	
RB44	525532	150316	27	26		23	33	29	32	31	28	35	27	32	29.4	28.5	
RB45	525431	150270	31	25	36	26	21	26	31	31	32	31	36	35	30.1	29.2	
RB46	525346	150241	33	28	42	18	28	29	27	39	40	28	36	36	32.0	31.0	
RB47	525114	150276	42	34	39	28	40	19	32	36	35	46	35	44	35.8	34.8	
RB49	525705	152947	51	37	48	41	28	31	41	38	40	47	39	44	40.4	39.2	
RB50	525700	152964	25	23	26	15	16	20	29	30	30	32	28	32	25.5	24.7	
RB51	527873	142606	23	25	23	16	15	16		17	20	26	29	26	21.5	20.8	
RB52	527892	142463	27	28	30	27	23	15	23	22	26	30	29	29	25.8	25.0	
RB53	528030	142373	26	29	30	20	14	19	26	18	34	29	26	31	25.2	24.4	
RB54	528112	142321	30	22	27	22	21		24	20	28	24	30	30	25.3	24.5	
RB55	528254	142196	24	27	27	23	16	18	21	27	30	28	38	28	25.6	24.8	
RB56	528386	142080	23	25	27	24	14	11	21	22	24	25	32	27	22.9	22.2	
RB57	528499	141953	30	25	21	27	19	14	21	24	32	27	30	29	24.9	24.2	
RB58	528538	141897	28	24	22		19	18	21	28	30	27	22	41	25.5	24.7	

RB59	528602	141789	36	25	28	21	20	19	29	29	34	28	28	31	27.3	26.5	
RB60	528607	141910	30	26	26	22	17	19	25	24	27	30	28	34	25.7	24.9	
RB61	528578	142006	34	30	23	17	17	13	17	19	15	28	25	26	22.0	21.3	
RB64	528608	142432	15	26	24	23	21	16	17	18	28	29	26	24	22.3	21.6	
RB65	528581	142635		27	24	21	21	19	21	20	25	28	28	25	23.5	22.8	
RB66	528499	142512	28	26	24	20	15	14	22	22	28	26	27	26	23.2	22.5	
RB68	528505	142246	27	24	14	19	17	18	16	22	29	28	24	30	22.3	21.7	
RB69	528335	142224	31	21	26	27	17	16	18	21	26	24	51	28	25.5	24.7	
RB70	528360	142384	22	27	30	24	19	17	19	23	29	28	26	24	24.0	23.3	
RB72	528220	142583	29	25	26	24	20	17	25	25	30	29	29	31	25.8	25.1	
RB73	528172	142679	26	21	26	21	20	17	22	22	28	25	17	27	22.7	22.0	
RB74	529149	141953	26	22	22	22	19	18	24	20	28	24	22	29	23.0	22.3	
RB75	529203	142192	28	25	21	20	18	13	21	23	22	27	24	29	22.6	21.9	
RB76	528958	142468	23	22	23	15	14	13	16	17	24	23	25	27	20.2	19.6	
RB77	528789	142570	28	15	22	17	20	16	20	16	25	21	17	28	20.4	19.8	
RB78	528553	141857	33	26	26	23	14	19	22	30	32	26	33	32	26.3	25.5	
RB81	528553	141857	43	39	39	30	19	26	27	26	35	41	36	41	33.5	32.5	
RB82	528553	141857	35	32	40	31	32	24	38	31	28	33	33	31	32.3	31.4	
RB95	525382	150639	27	31	25	20	27	24	20	23	25	30	26	32	25.8	25.1	
RB98	527931	142231	31	30	31	18	14	19	20	25	29	27	30	31	25.4	24.7	
RB99	526421	139639	18	21	13	14	13	13	11	12	16	18	19	18	15.5	15.0	
RB100	526421	139639	15	21	20	16	21	11	12	11	14	19	19	17	16.3	15.8	
RB101	526421	139639	16	23	13	14	15	15	10	12	15	20	18	18	15.8	15.3	
RB102	530936	144278	24	29	29	24	22		20		19	24	28	22	24.1	23.4	
RB104	525204	150254	41	35	44	28	30	16	35	38	38	42	30	43	35.0	34.0	
RB105	525203	150239	36	37	44	19	24	27	43	48	40	41	26	48	36.1	35.0	

RB106	523250	160056	36	33	26	22	25	19	35	21	31	27	37	31	28.6	27.7	
RB107	525467	150292	28	30	35		27	23	22	24	28	33		28	27.8	27.0	
RB109	525387	150178		38	33	24	24	31	24	30	29	40	36	35	31.3	30.3	
RB110	529016	153439	28	33	27	19	26	28	32	25	32	30	23	32	27.9	27.1	
RB111	525031	150291	37	36	35	24	19	16	29	25	33	38	11	32	27.9	27.1	
RB113	524795	150404	32	26	30	30	25	14	18	22	25	30	29	27	25.7	24.9	
RB114	524368	150477		32	26	20	20	20	24	23	20	29	25	27	24.2	23.5	
RB115	524751	150428	28		31	26	20	20	28	22	28	35	28	32	27.1	26.3	
RB116	525022	150317	35	42	27	23	22	21	24	30	30	43	34	35	30.5	29.6	
RB117	525076	150327	43	39	49	38	22	33	32	36	36	36	42	43	37.4	36.3	
RB118	525151	150467	33	35	38	25	33		34	35	31	35	42	31	33.8	32.8	
RB120	528196	150421	36			32		28	30	30	30	38	31	37	32.4	31.5	
RB121	528092	150786	45	56	50	47	30	19	51	34	49	38	38	51	42.3	**41.1**	
RB122	528013	150475	36	37	35	30	24	18	30		30	36	35	36	31.5	30.6	
RB123	527838	150474	40	44	41	21	24	27	23	37	28	39	49	41	34.5	33.5	
RB124	529013	153285	30	45	37	30	28	19		31	19	35	44	42	32.7	31.7	
RB125	525589	151655	42	33	32	30	19	27	30	37			37	41	32.8	31.8	
RB136	528810	156474	44	60	56	47	34	43	44	42	45	53	49	51	47.3	**45.9**	34.3
RB137	528831	156648	54	49	49	39	30	31	44	42	51	48	47	50	44.5	**43.2**	**42.6**
RB140	528122	150799	24	24	29	18	11	16	25	21	29	23	33	26	23.3	22.6	
RB141	527373	150596	25	30	25	18	22	15	22	22	23	30	22	29	23.6	22.9	
RB145	527852	150158	32	40	36	27	28	16	21	33	34	40	34	41	31.8	30.9	
RB146	528759	156277	47	46	49	46	39	35	35	36	32	47	49	39	41.7	**40.4**	26.1
RB147	528732	156407	19		21	17	16	17	15	12	15	21	20	20	17.5	17.0	
RB148	528855	156674	74	84	70	64	42		53	53	65	58	48	64	61.4	**59.5**	**42.2**
RB149	527737	142710	51	55	48	34	49	26	35	52	43	53	39	52	44.8	**43.4**	38.0

RB150	525397	150867	42	31	35	26	26	20	29	38	44	41	34	43	34.1	33.1	
RB151	528502	142952	34	34	31	24	25	18	25	34	29	35	31	44	30.3	29.4	
RB152	528599	152439	39	40	37	28	38	17	27		32	29	39	41	33.4	32.4	
RB153	527837	148046	31	32	32	18	19	16	18	29	30	32	26	37	26.7	25.9	
RB167	527830	150643	30	32	30	23	18	14	22	23	25	31	27	31	25.5	24.7	
RB174	527852	142841	37	30	33	34	24	20	24	28	31	37	38	39	31.3	30.3	
RB175	527955	142999	31	30	34	27	16	20	24	31	28	33	28	38	28.3	27.5	
RB176	527765	142777	27	30	31	28	17	27	22	25	24	29	27	29	26.3	25.5	
RB177	527754	142762	28	29	33	17	16	16	18	24	27	32	31	24	24.6	23.8	
RB178	528592	141831	25	21	22	22		16	23		28	26	26	28	23.7	23.0	
RB179	528592	141831	27	24	25	24	18	14	22	25	28	27	26	29	24.1	23.4	
RB180	528592	141831	31	19	24	20	17	19	22	23	31	26	27	30	24.1	23.4	
RB181	528852	156724	56	56	61	59	38	33	36	19	49	59	54	62	48.5	**47.0**	30.7
RB182	528835	156728	25	31	31	28	24	23	34	61	28	32	29	29	31.3	30.3	
RB183	528813	156580	37	49	41	37	36	19	46	28	35	44	31	47	37.5	36.4	
RB184	528807	156555	36	34	39	40	29	21	28	44	39	45	34	41	35.8	34.8	
RB186	528790	156500	31	37	32	38	24	35	26	32	32	22	37	35	31.8	30.8	
RB187	528789	156488	26	28	34	22	26	22	13	31	30	36	32	34	27.8	27.0	
RB188	528792	156478	32	39	38	25	36	23	35	32	31	38	35	34	33.2	32.2	
RB189	528789	156465	31	46	36	35	37	22	30	30	32	33	23	33	32.3	31.4	
RB190	528788	156460	32	40	29	27	32	25	25	31	28	40	35	36	31.7	30.7	
RB191	528785	156448	28	34	32	10	24	23	21	28	28	37	29	34	27.3	26.5	
RB192	528784	156442	30	27	34	30	29	26	24	29	29	33	31	30	29.3	28.5	
RB193	528782	156430	22	34	29	20	20	21	27	20	26	33	22	30	25.3	24.6	
RB194	528779	156381	33	38	39	35	28	26	37	25	32	38	33	38	33.5	32.5	
RB195	528772	156349	39	47	42	41	30	28	33	38	38	43	39	40	38.2	37.0	25.8

RB196	528797	156331	29	31	33	26	17	20	31	18	36	33	26	32	27.7	26.8	
RB197	528795	156373	36	58	41	31	29	20	36	34	42	43	36	42	37.3	36.2	
RB198	528796	156379	43	48	56	31	26	29	38	33	40	48	36	44	39.3	38.2	
RB199	528800	156390	36	35	43	41	24	23	37	34	38	33	40	38	35.2	34.1	
RB200	528799	156409	40	52	48	49	26	40	51	42	43	39	40	51	43.4	**42.1**	35.9
RB201	528804	156414	35	42	45	44	18	28	35	33	34	40	27	42	35.3	34.2	
RB202	528808	156444	36	43	50	42	18	25	48	37	44	41	41	41	38.8	37.7	
RB203	528809	156454	34	46	41	51	22	24	42	42	43	40	28	43	38.0	36.9	
RB204	528810	156457	42	41	45	31	24	30	38	35	45	37	45	42	37.9	36.8	
RB205	528812	156466	38	56	50	43	29	41	44	44	48	50	49	52	45.3	**44.0**	
RB206	528816	156477	37	39	40	40	30	38	34	35	36	37	24	37	35.6	34.5	
RB207	528818	156486	40	37	42	30	21	34	32	34	43	42	38	42	36.3	35.2	
RB208	528825	156526	54	61	66	52	52	33	63	50	56	54	60	55	54.7	**53.0**	**42.5**
RB209	528833	156547	30	35	33	28	26	16	30	24	30	32	30	30	28.7	27.8	
RB210	528833	156555	43	45	42	43	25	31	47	40	39	42	47	42	40.5	39.3	
RB211	528839	156577	33	43	32	39	28	28	45	35	40	45	44	41	37.8	36.6	
RB212	528840	156582	40	47	38	50	25	26	47	43	42	46	39	43	40.5	39.3	
RB213	528845	156604	36	43	41	33	27	26	42	34	39	48	39	44	37.7	36.5	
RB214	528848	156617	30	31	43	38	21	28	41	35	29	40	33	40	34.1	33.1	
RB215	528853	156646	37	34	27	27	28	23	33	23	27	33	33	34	29.9	29.0	
RB216	528862	156690	43	48	49	52	31	36	33	42	43	50	46	53	43.8	**42.5**	
RB217	528866	156712	49	58	42	48	34	36	44	54	39	56	39	36	44.6	**43.2**	
RB218	528869	156737		41	46	27	39	36	42	48	52	54	44	54	43.9	**42.6**	31.3
RB219	528877	156744	44		50	31	33	36	41	40	39	36	43	51	40.4	39.2	

☒ 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.

Table B.3 - NO_2 Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations (µg/m^3)														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (0.87) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
RB1	525246	150252	45	31	35	42	38	26	29	26	32	31	43	29	33.9	29.5	
RB3	524944	159630	30	20	18	19	14	17	12	14	17	18	24	19	18.5	16.1	
RB8	525246	150286	25	21	19	24		16	14	17	18		25	19	19.8	17.2	
RB9	525750	149677	28	21	16	22	15	15	14	17	16	16	25	18	18.6	16.2	
RB11	528104	142226	32	34	22	24	21	21	20	26	26	13	25	30	24.5	21.3	
RB12	528424	142934	38	32	26	29	27	25	18	27	24	32	43	35	29.7	25.8	
RB13	528362	142983		27	20	24	21		17	21	21		28	26	22.8	19.8	
RB17	528511	149715	30	19	17	23	15	14	11	14	16	18	27	16	18.3	16.0	

RB18	529263	153156	30	26	23	27	22	20	18	17	24	24	31	25	23.9	20.8	
RB19	529067	153375	35	26	25	30	24	19	16	22	24	24	32	21	24.8	21.6	
RB20	529026	153420	37	40	34	39	33	30	29	26	34	29	39	36	33.8	29.4	
RB21	523198	160095	49	40	36	42	38	31	29	27	36	28	49	30	36.3	31.5	
RB22	523260	160111	28	23		25			15	18	18	20	27	19	21.4	18.7	
RB23	523612	159906	23	20	15	23	16	12	11	14	14	16	26	17	17.3	15.0	
RB24	528208	142337	33	35	19	24	17	20	22	28	20	25	26	31	25.0	21.8	
RB25	528208	142337	31	30	21	22	20	20	21	28	23	24	24	28	24.3	21.2	
RB26	528208	142337	32	35	22	20	20	21	22	27	28	24	22	26	24.9	21.7	
RB27	521873	153896	33	23	24	21	23	21	22	26	23	21	27	25	24.1	21.0	
RB29	521921	153937	35	28	25	20	20	17	21	24	21	20	26	26	23.6	20.5	
RB30	522112	153728	30	29	25	20	21	21	21	26	24	21	28	24	24.2	21.0	
RB31	525506	152366	22	16	17	21	17	15	11	13	13	13	20	12	15.8	13.8	
RB33	524081	152580	26	25	21	16	31	18	18	25	19	18	23	21	21.8	18.9	
RB34	524177	152393	30	17	25	42	32		20	20	27	23	31	15	25.6	22.3	
RB36	528887	153760	36	31	25	23	19	17	17	22	21	19	25	23	23.2	20.2	
RB37	529217	153605	33	27	27	23	23	17	18	21	23	21	31	26	24.2	21.0	
RB39	529205	153572	25	30	24	22	21	21	17	23	23	20	29	26	23.4	20.4	
RB40	529252	154291	29	25	22	22	20	18	13	18	19	21	28	29	22.0	19.1	
RB43	528797	153612	31	23	25	37	28	25	19	22	23	22	30	21	25.5	22.2	
RB44	525532	150316	39	37	30	30	34	27	27	29	31	30	38	30	31.8	27.7	
RB45	525431	150270	41	35	32	35	29	29	29	36	32	33	41	34	33.8	29.4	
RB46	525346	150241	46	44	42	31	36	37	33	37	39	35	42	36	38.2	33.2	
RB47	525114	150276	52	37	44	37	42	37	28	28	35	34	48	30	37.7	32.8	
RB49	525705	152947	53	47	42	27	35	40	38	43	46		50	35	41.5	36.1	
RB50	525700	152964	40	37	32	24	29	25	25	31	27	28	34	29	30.1	26.2	

RB51	527873	142606	30	28	20	24	18	21	19	25	20	25	29	27	23.8	20.7	
RB52	527892	142463	32	37	25	34	21	22	22	27	25	27	32	35	28.3	24.6	
RB53	528030	142373	31	33	24	24	24	34	28	30	30	30	32	33	29.4	25.6	
RB54	528112	142321	34	37	25	24	22	18	19	26	24	25	29	33	26.3	22.9	
RB55	528254	142196	32	38	27	25	25	13	25	31	28	26	31	25	27.2	23.6	
RB56	528386	142080	36	36	24	22	22	25	24	32	26	28	30	35	28.3	24.7	
RB57	528499	141953	33	38	27	22	21	25	22	30	26	29	29	37	28.3	24.6	
RB58	528538	141897	35	39	27	23	23	25	27	34	27	31	27	39	29.8	25.9	
RB59	528602	141789	36	39	30	22	25	18	28	34	27	32	31	36	29.8	26.0	
RB60	528607	141910	38	40	29	25	25	23	26	33	24	31	29	37	30.0	26.1	
RB61	528578	142006	33	33	26	20	21	23	23	29	23	27	30	31	26.6	23.1	
RB64	528608	142432	34	36	25	23	21	21	22	28	26	26	30	26	26.5	23.1	
RB65	528581	142635	33	34		29	23	24	21	28	27	11	31	31	26.5	23.1	
RB66	528499	142512	33	33	25	19	20	22	20	22	20	25	29	30	24.8	21.6	
RB68	528505	142246	33	36	23	21	19	23	24	32	29	26	30	35	27.6	24.0	
RB69	528335	142224	36	38	29	21	23	26	26	30	24	30	29	35	28.9	25.2	
RB70	528360	142384	36	31	24	21	23	24	23	29	27	27	30	32	27.3	23.7	
RB72	528220	142583	34	33	24	23	22	23	25	27	29	22	32	31	27.1	23.6	
RB73	528172	142679	29	29	21	21	22	20	21	26	23	26	30	28	24.7	21.5	
RB74	529149	141953	29	31	25	20	20	17	22	26	23	25	27	27	24.3	21.2	
RB75	529203	142192	28	30	26	23	23	19	22	27	22	29	28	30	25.6	22.3	
RB76	528958	142468	29	33	22	19	18	19	17	20	23	24	25	25	22.8	19.9	
RB77	528789	142570	33	26	22	20	18	15	19	22	21	22	27	27	22.7	19.7	
RB78	528553	141857	38	40	30	25	26	22	27	19	25	30	30	33	28.8	25.0	
RB81	528553	141857	45	43	29	35	32	30	27	28	33	37	47	39	35.4	30.8	
RB82	528553	141857	44	42	34	26	32	28	29	31	34	28	37	36	33.4	29.1	

RB95	525382	150639	35	30	26	27	22	20	22	21	24	22	32	23	25.3	22.0	
RB98	527931	142231	35	32	26	23	23	22	28	30	27	27	27	34	27.8	24.2	
RB99	526421	139639	20	15	11	26	15	16	12	14	13	14	21	13	15.8	13.8	
RB100	526421	139639	19	18	13	20	14	14	12	15	13	15	24	14	15.9	13.8	
RB101	526421	139639	22	17	14	24	14	15	13	15	13	23	23	13	17.2	14.9	
RB102	530936	144278	28	23	20	28	20	17	15	23	19	23	28	22	22.2	19.3	
RB104	525204	150254	50	37	37	40	44	32	28	38	38	38	51	34	38.9	33.9	
RB105	525203	150239	51	46	43	41	44	42	31	41	40	43	52	43	43.1	37.5	
RB106	523250	160056	43	37	30	39	28	28	28	25	31	33	41	32	32.9	28.6	
RB107	525467	150292	32	32	30	32	28	26	20	25	26	27	38	29	28.8	25.0	
RB109	525387	150178	38	33	32	33	36	34	31	30	34	34	42		34.3	29.8	
RB110	529016	153439	33	36	26	32	27	22	24	28	27	27	33	26	28.4	24.7	
RB111	525031	150291	37	30	32	39	30	29	26	28	31	25	42	26	31.3	27.2	
RB113	524795	150404	38	27	25	32	23	23	18	23	23	28	33	24	26.4	23.0	
RB114	524368	150477	29	27		26	25	20	21	21	24	25	32		25.0	21.8	
RB115	524751	150428	42	34	33		31	23	26	26	29		42	32	31.8	27.7	
RB116	525022	150317	43	34	35	45	35	32	29	29	35	33	43	31	35.3	30.7	
RB117	525076	150327	45	42	42	50	48	43	34	33	36	40		40	41.2	35.8	
RB118	525151	150467	32	44	31	41	39	37	29	40	38	36	40	36	36.9	32.1	
RB120	528196	150421	39	39	2	37	28	34	33	32	32	32	38	32	31.5	27.4	
RB121	528092	150786		53	55	43	47	40	27	37	48	48	54	53	45.9	39.9	
RB122	528013	150475	42	41	49	34	25		29	28	33	33	38	36	35.3	30.7	
RB123	527838	150474							29	30	30	35	50	35	34.8	33.6	
RB124	529013	153285	39	45	41	44	29	35	26	30	36	34	41	35	36.3	31.5	
RB125	525589	151655	46	37		35	40	39	29	43	39	34	41	40	38.5	33.5	
RB136	528810	156474	61	24		59	58	53	18	48	51	25	53	50	45.5	39.5	30.0

RB137	528831	156648	45	55	38	39	44	31	37	31	34	38	46	47	40.4	35.2	
RB140	528122	150799	36	34	24	24	25	23	24	26	27	29	31	32	27.9	24.3	
RB141	527373	150596	35	30	26	28	23	22	18	23	24	26	32	14	25.1	21.8	
RB145	527852	150158	46	45	28	41	33	28	26	30	33	39	42	46	36.4	31.7	
RB146	528759	156277	48	49	39	51	41	41	26	35	34	43	49	38	41.2	35.8	
RB147	528732	156407	6	23	14	22	16	13	14	16	15	14	22	15	15.8	13.8	
RB148	528855	156674	75	76	41	45	69	72	52	57	59	63	70	69	62.3	**54.2**	38.7
RB149	527737	142710	52	60	43	42	51	47	48	49	52	52	58	46	50.0	**43.5**	38.0
RB150	525397	150867	49	45	43	30	41	39	32	49	40	35	43	41	40.6	35.3	
RB151	528502	142952	47	49	30	32	33	34	38	38	49	36	41	35	38.5	33.5	
RB152	528599	152439	49	33	37	41	35	32	38	32	34	40	44	32	37.3	32.4	
RB153	527837	148046	44	35	27	33	28	28	29	31	31	29	9	26	29.2	25.4	
RB167	527830	150643	34	28	27	32	25	24	22	24	25	24	37	33	27.9	24.3	
RB174	527852	142841	42	43	34	28	31	27	30	28	29	34	40	35	33.4	29.1	
RB175	527955	142999	42	39	32	35	33	27	29	29	32	34	41	38	34.3	29.8	
RB176	527765	142777	35	34	23	28	26	26	24	37	23	30	31	33	29.2	25.4	
RB177	527754	142762	32	41	26	30	26	20	26	27	26	26	33	33	28.8	25.1	
RB178	528592	141831	32	29	26	21	22	23	27	42	24	27	25	33	27.6	24.0	
RB179	528592	141831	28	35	23	23	22	25	23	31	24	26	27	33	26.7	23.2	
RB180	528592	141831	31	36	24	20	21	21	24	28	27	27	27	32	26.5	23.1	
RB181	528852	156724	63	71	40	50	37	58	44	50	56	51	58	63	53.4	**46.5**	30.1
RB182	528835	156728	30	30	25	29	27	25	27	26	29	26	31	26	27.6	24.0	
RB183	528813	156580	52	46	45	37	49	43	35	38	44	39	47	36	42.6	37.0	
RB184	528807	156555	40	40	32	44	35	38	34	44	45	35	45	33	38.8	33.7	
RB186	528790	156500	44	40	33	42	38	33	31	34	37	28	41	31	36.0	31.3	
RB187	528789	156488	35	29	29	30	33	32	27	31	28	31	37	31	31.1	27.0	

RB188	528792	156478	40	36	33	39	37	35	32	34	34	27	20		33.4	29.0	
RB189	528789	156465	41	32	31	43	38	34	24	33	32	29	41	36	34.5	30.0	
RB190	528788	156460	39	33	33	37	45	28	32	28	30	28	40	29	33.5	29.1	
RB191	528785	156448	38	29	29	33	36	30	28	29	32	28	36	28	31.3	27.3	
RB192	528784	156442	38	30	29	38	34	31	25	32	31	29	31	26	31.2	27.1	
RB193	528782	156430	36	26	27	32	30	30	24	24	25	25	30	25	27.8	24.2	
RB194	528779	156381	42	40	35	41	36	36	30	29	32	32	41	30	35.3	30.7	
RB195	528772	156349	38	43	35	40	43	44	38	38	37	35	45	36	39.3	34.2	
RB196	528797	156331	37	36	29	27	28	35	23	26	21	25	33	28	29.0	25.2	
RB197	528795	156373	49	47	39	41	42	40	32	35	37	17	41	34	37.8	32.9	
RB198	528796	156379	52	48	43	44	48	48	34	41	42		51	40	44.6	38.8	
RB199	528800	156390	43	44	40	35	38	33	32	34	29	32	43	35	36.5	31.8	
RB200	528799	156409	57	41	38	46	49	46	46	46	41	39	51	43	45.3	39.4	33.7
RB201	528804	156414	51	41	40	37	43	40	36	33	38	29	42	39	39.1	34.0	
RB202	528808	156444	53	48	33	44	48	47	33	39	42	41	49	43	43.3	37.7	
RB203	528809	156454	54	48	44	48	49	42	34	44	43	43	47		45.1	39.2	
RB204	528810	156457	52	55	44	45	47	44	40	38	43	40	49		45.2	39.3	
RB205	528812	156466	53	59	49	62	54	46	36	38	42	44	54	45	48.5	**42.2**	
RB206	528816	156477	42	44	39	39	44	36	32	36	38	39	44	23	38.0	33.1	
RB207	528818	156486	48	45	42	50	40	47	31	54	37	38	45	38	42.9	37.3	
RB208	528825	156526	66	67	56	55	51	55	50	58	57	54	65	60	57.8	**50.3**	**40.4**
RB209	528833	156547	37	33	34	35	23	31	29	34	29	31	34	34	32.0	27.8	
RB210	528833	156555	51	57	44	38	41	46	36	38	42	35	44	29	41.8	36.3	
RB211	528839	156577	51	52	39	43	38	46	44	43	37	40	49	28	42.5	37.0	
RB212	528840	156582	48	54	43	43	40	50	45	39	44	44	44	66	46.7	**40.6**	
RB213	528845	156604	54	49	38	47	30	45	44	44	43		44	41	43.5	37.9	

RB214	528848	156617	50	38	36	39	28	40	32	39	35	37	41	47	38.5	33.5	
RB215	528853	156646	41	38	35	30	29	22	22	31	29	27	43	34	31.8	27.6	
RB216	528862	156690	51	57	36	36	44	47	43	48	51	43	49	37	45.2	39.3	
RB217	528866	156712	64	59	49	47	51	61	46	46	45	48	55		51.9	**45.2**	
RB218	528869	156737	56	47	39	51	33	53	40	48	50	45	53		46.8	**40.7**	30.0
RB219	528877	156744	50	54	48	49	38	52	40	44	46	46	49	44	46.7	**40.6**	
RB223	528804	156435	54	47	52	60	50	52	39	48	43	42	51	45	48.6	**42.3**	35.4
RB224	528804	156435	58	54	50	36	46	53	31	37	36	39	17	46	41.9	36.5	
RB225	528804	156435	60	39	42	44	54	48	43	33	32	43	53	43	44.5	38.7	

☒ **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

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 2019, 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 (09/20).

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

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

Automatic Annualisation

The RG7 automatic monitoring site has lower than 75% data capture in both 2018 and 2019. Annualisation for both years has been undertaken using the approach detailed within Box 7.9 within LAQM (TG16). The factor applied to Automatic results are detailed within Table C.2.

Table C.2 – 2018 and 2019 RG7 Automatic Monitoring Site Annualisation

	2018			2019		
Automatic Monitoring Site used	Annual Mean	Period Mean	Ratio	Annual Mean	Period Mean	Ratio
WA9 - Wandsworth Putney	34.8	40.3	0.86	35.3	35.9	0.98
WA2 - Wandsworth Town Hall	38.4	42.6	0.90	40.7	41.3	0.99
LB6 - Lambeth Streatham Green	33.7	35.7	0.94	32.0	32.4	0.99
ZV1 - Sevenoaks Greatness Park	15.4	15.3	1.00	14.4	15.4	0.94
Average Ratio:	0.93			0.97		

Diffusion Tube Annualisation

Two diffusion tubes have lower than 75% data capture (RB114 in 2017 and RB123 in 2019). 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

		WA9 - Wandsworth Putney	WA2 - Wandsworth Town Hall	LB6 - Lambeth Streatham Green	ZV1 - Sevenoaks Greatness Park	London Bloomsbury	London Eltham	London N Ken
RB 114 (2017)	Annual Mean (µg/m^3)	n/a	39.8	n/a	n/a	37.7	19.3	32.7
	Period Mean (µg/m^3)	n/a	39.6	n/a	n/a	37.7	19.2	32.6
	Ratio		0.953			0.964	0.934	0.950
	Annualisation Factor	0.95						
RB 123 (2019)	Annual Mean (µg/m^3)	35.3	40.7	32.0	14.4	31.5	17.3	27.3
	Period Mean (µg/m^3)	35.1	39.9	31.7	14.2	31.2	17.2	27.1
	Ratio	1.121	1.177	1.115	1.120	1.111	1.094	1.062
	Annualisation Factor	1.114						

Nitrogen Dioxide Distance Correction

A number of the roadside monitoring sites measuring nitrogen dioxide concentrations in the three reporting years 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 are 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 for each nitrogen dioxide monitoring site that is not representative of relevant exposure using Defra's 'NO_2 fall off with Distance from Roads Calculator' tool (Defra, 2016), 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 each year 2017-2019 are reproduced below.

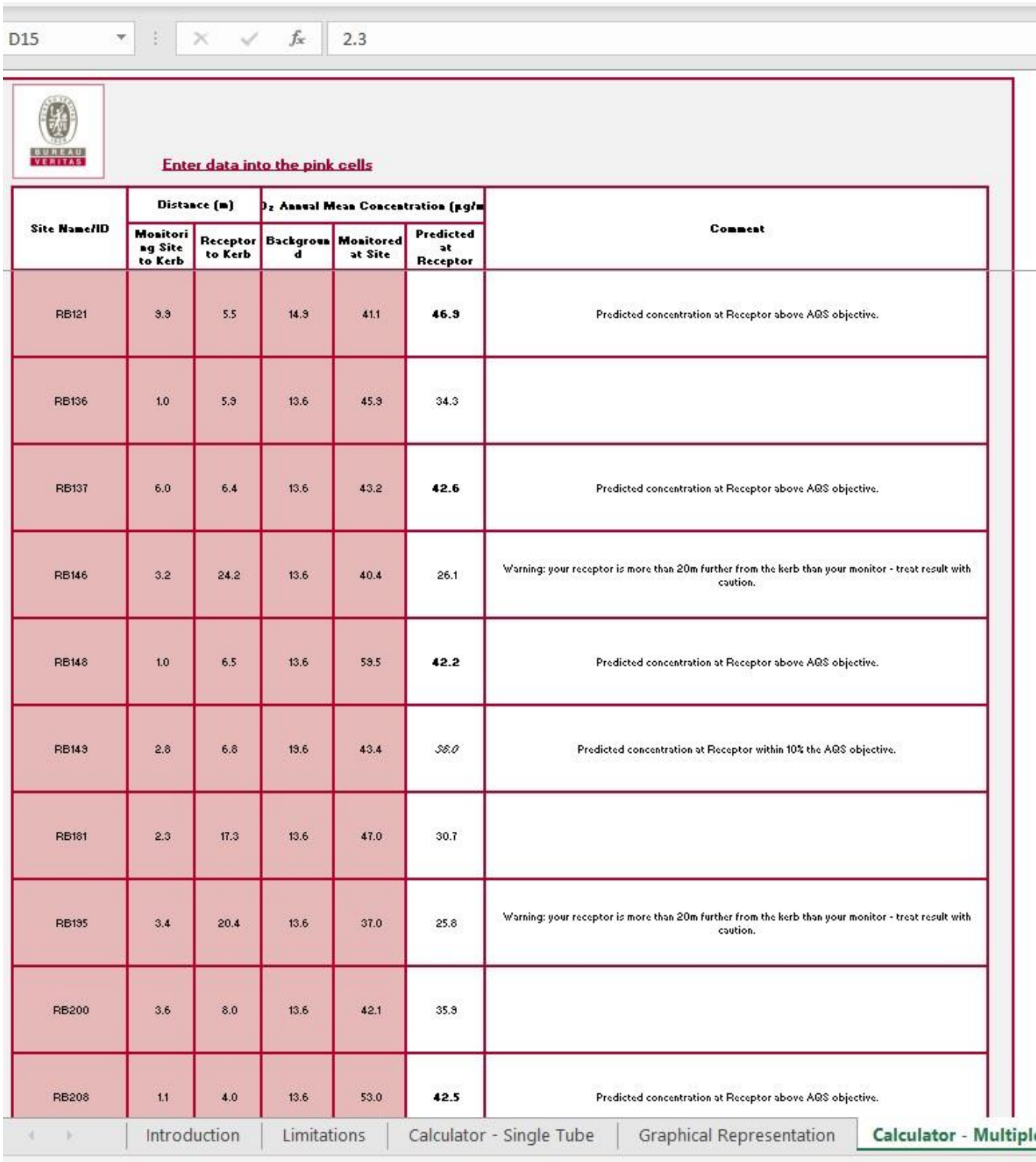
Figure C.1 – NO_2 Fall Off with Distance 2017

Enter data into the pink cells

Site Name/ID	Distance (m)		O_3 Annual Mean Concentration (µg/m			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
RB136	1.0	5.9	14.5	49.4	*36.9*	Predicted concentration at Receptor within 10% the AQS objective.
RB137	6.0	6.4	14.5	42.3	**41.7**	Predicted concentration at Receptor above AQS objective.
RB146	3.2	24.2	14.5	40.9	26.8	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
RB148	1.0	6.5	14.5	62.6	**44.5**	Predicted concentration at Receptor above AQS objective.
RB149	2.8	6.8	20.7	46.0	**40.3**	Predicted concentration at Receptor above AQS objective.
RB150	3.4	16.7	15.4	37.5	28.1	

Introduction | Limitations | Calculator - Single Tube | Graphical Representation | **Calculator - Multiple Tubes**

Figure C.2 – NO_2 Fall Off with Distance 2018



D15 | 2.3

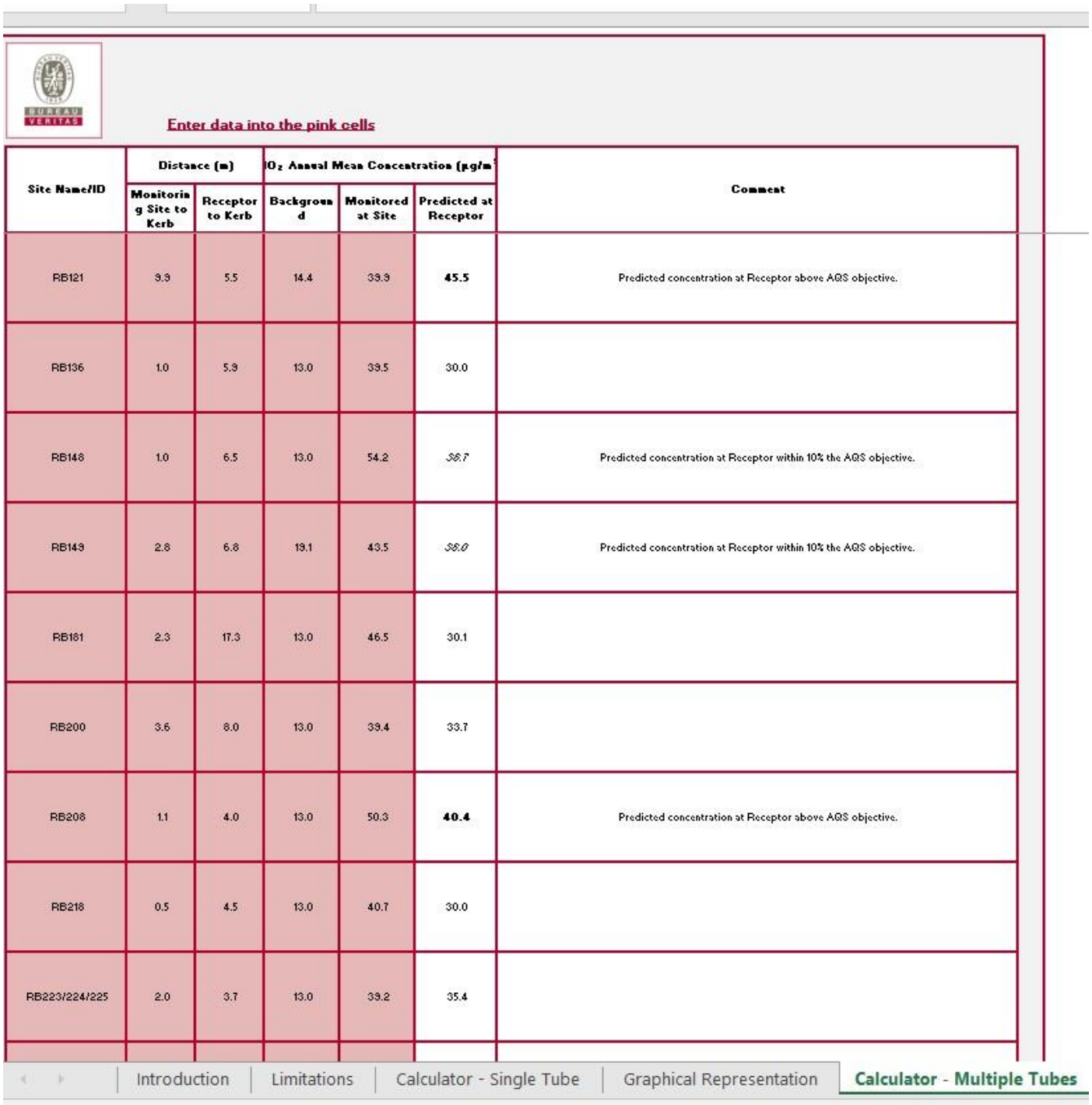
Enter data into the pink cells

Site Name/ID	Distance (m)		NO_2 Annual Mean Concentration (µg/m			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
RB121	3.9	5.5	14.3	41.1	**46.9**	Predicted concentration at Receptor above AQS objective.
RB136	1.0	5.9	13.6	45.9	34.3	
RB137	6.0	6.4	13.6	43.2	**42.6**	Predicted concentration at Receptor above AQS objective.
RB146	3.2	24.2	13.6	40.4	26.1	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
RB148	1.0	6.5	13.6	59.5	**42.2**	Predicted concentration at Receptor above AQS objective.
RB149	2.8	6.8	19.6	43.4	*38.0*	Predicted concentration at Receptor within 10% the AQS objective.
RB181	2.3	17.3	13.6	47.0	30.7	
RB135	3.4	20.4	13.6	37.0	25.8	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
RB200	3.6	8.0	13.6	42.1	35.9	
RB208	1.1	4.0	13.6	53.0	**42.5**	Predicted concentration at Receptor above AQS objective.

Introduction | Limitations | Calculator - Single Tube | Graphical Representation | Calculator - Multipl

NB: Site RB149 predicted concentration at receptor is 38.0 µg/m^3

Figure C.3 – NO_2 Fall Off with Distance 2019



Enter data into the pink cells

Site Name/ID	Distance (m)		NO_2 Annual Mean Concentration (µg/m³)			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
RB121	3.3	5.5	14.4	39.3	**45.5**	Predicted concentration at Receptor above AQS objective.
RB136	1.0	5.3	13.0	39.5	30.0	
RB148	1.0	6.5	13.0	54.2	38.7	Predicted concentration at Receptor within 10% the AQS objective.
RB149	2.8	6.8	13.1	43.5	38.0	Predicted concentration at Receptor within 10% the AQS objective.
RB161	2.3	17.3	13.0	46.5	30.1	
RB200	3.6	8.0	13.0	39.4	33.7	
RB208	1.1	4.0	13.0	50.3	**40.4**	Predicted concentration at Receptor above AQS objective.
RB218	0.5	4.5	13.0	40.7	30.0	
RB223/224/225	2.0	3.7	13.0	39.2	35.4	

Introduction | Limitations | Calculator - Single Tube | Graphical Representation | Calculator - Multiple Tubes

NB: Site RB148 predicted concentration at receptor is 38.7 µg/m^3 and RB149 is 38.0 µg/m^3

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: New Pollution Sources and New Developments

No new significant developments or pollution sources have become present within Reigate and Banstead Borough since the last Annual Status Report (ASR).

Appendix E: Maps of Monitoring Locations and AQMAs

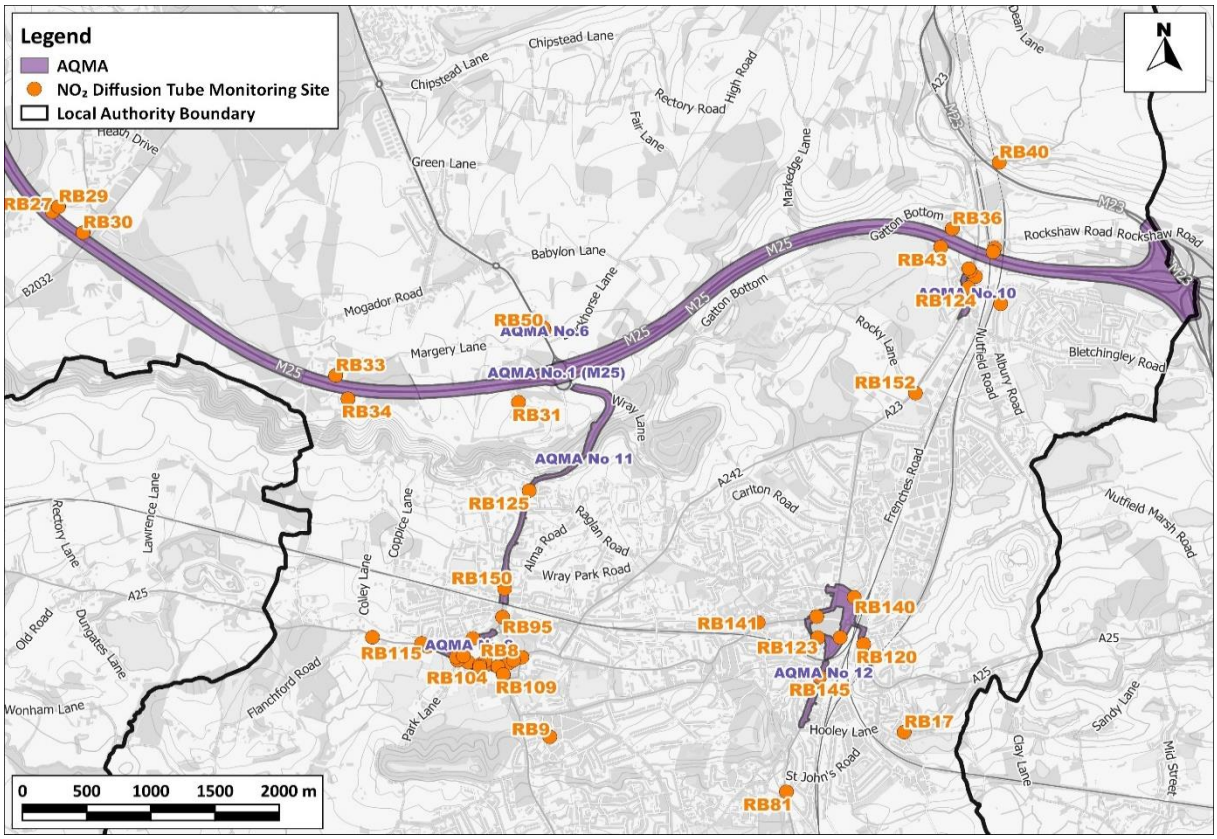


Figure E.1 AQMA No. 1 (M25), AQMA 6 (A217 / Blackhorse Lane), AQMA 10 (Merstham), AQMA No. 11 (Reigate Hill), AQMA No. 12 (Redhill), Nitrogen Dioxide Diffusion Tube Monitoring Site Locations Within and Close to AQMA No. 1 and the Local Authority Boundaries.

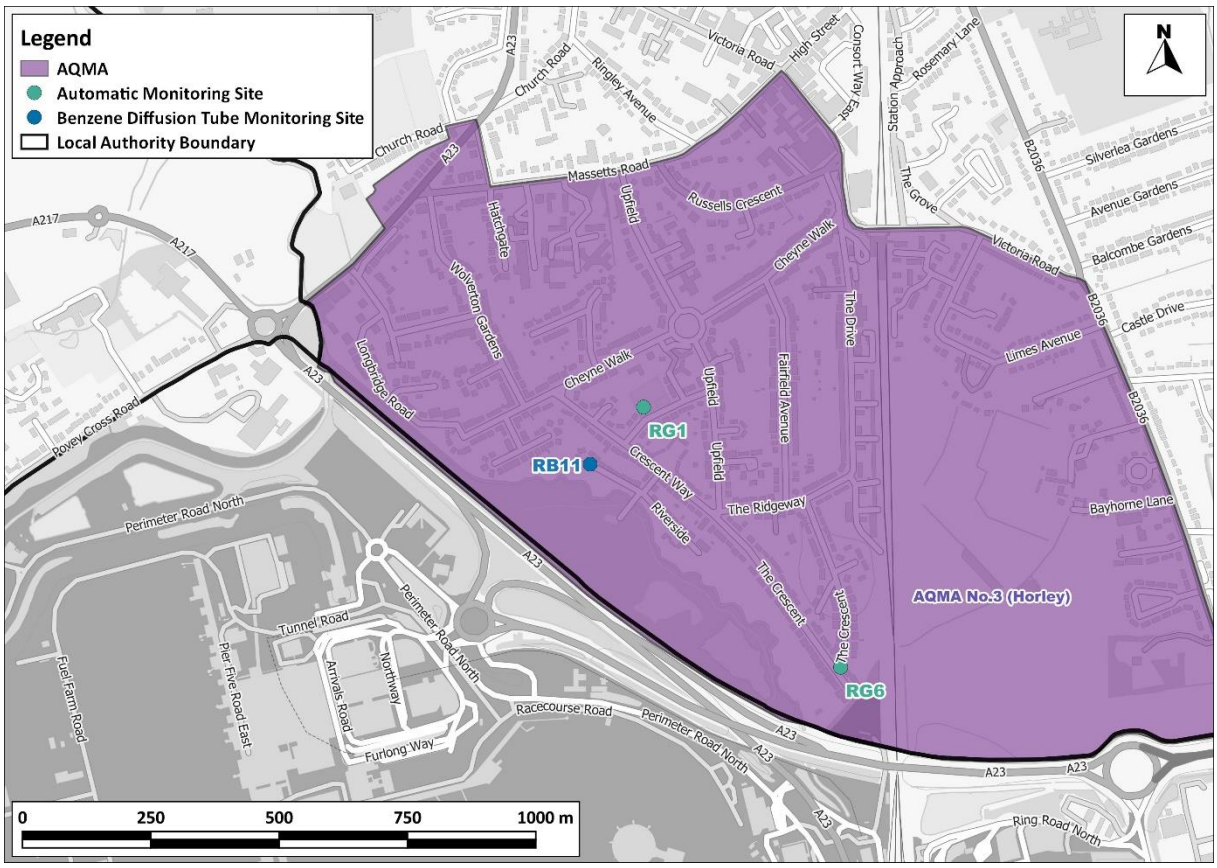


Figure E.2 AQMA No. 3 (Horley), Automatic Monitoring Sites and Benzene Diffusion Tube Monitoring Site Locations Within the AQMA and Local Authority Boundaries.

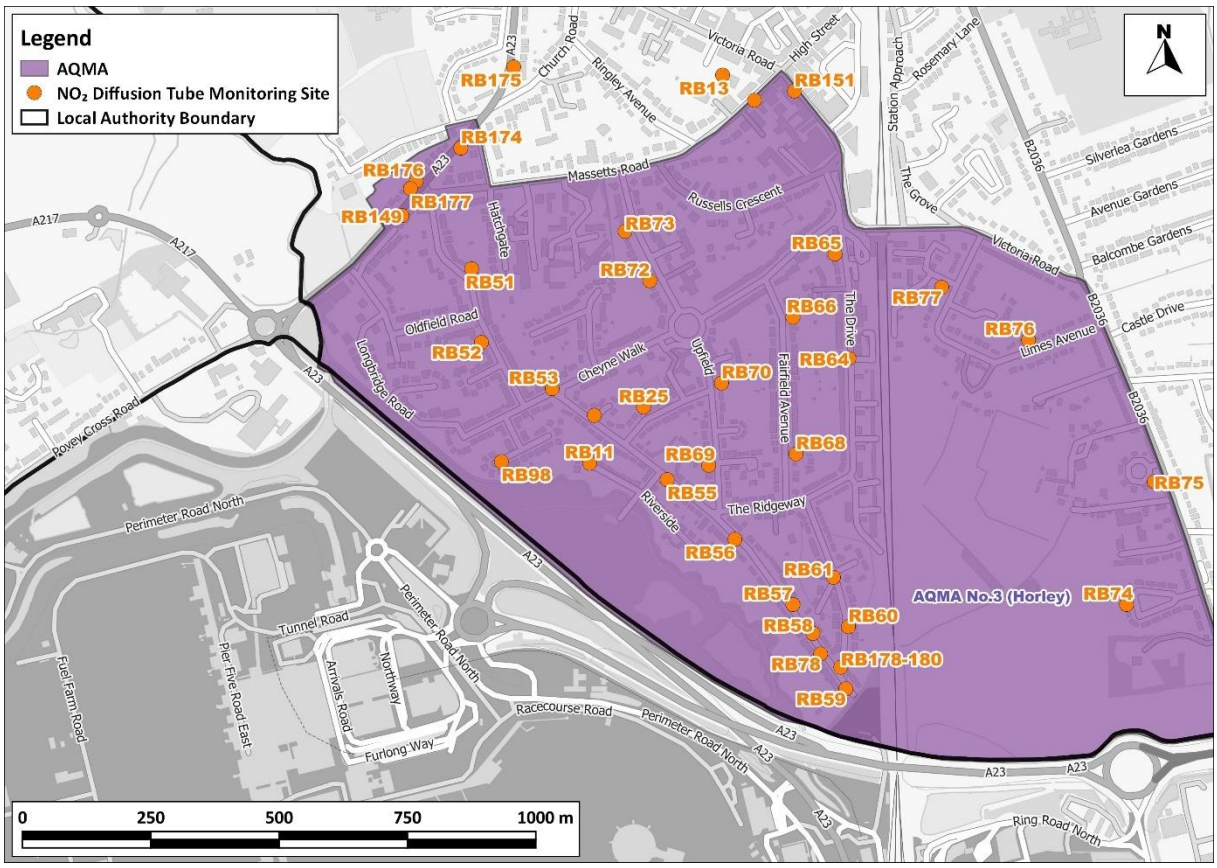


Figure E.3 AQMA No. 3 (Horley), Nitrogen Dioxide Diffusion Tube Monitoring Site Locations Within and Close to the AQMA and Local Authority Boundaries.

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

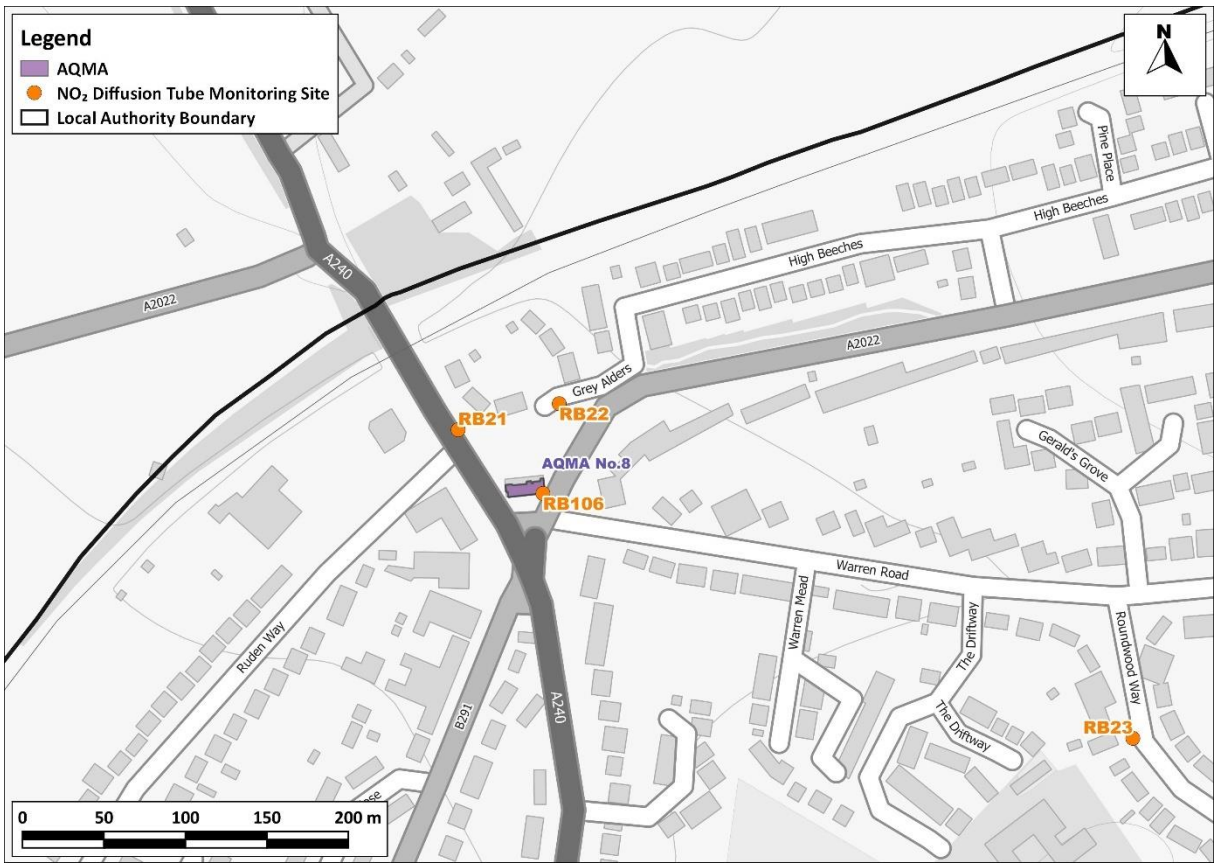


Figure E.5 AQMA No. 8 (Drift Bridge) and Nitrogen Dioxide Diffusion Tube Monitoring Site Locations Within and Close to the AQMA.

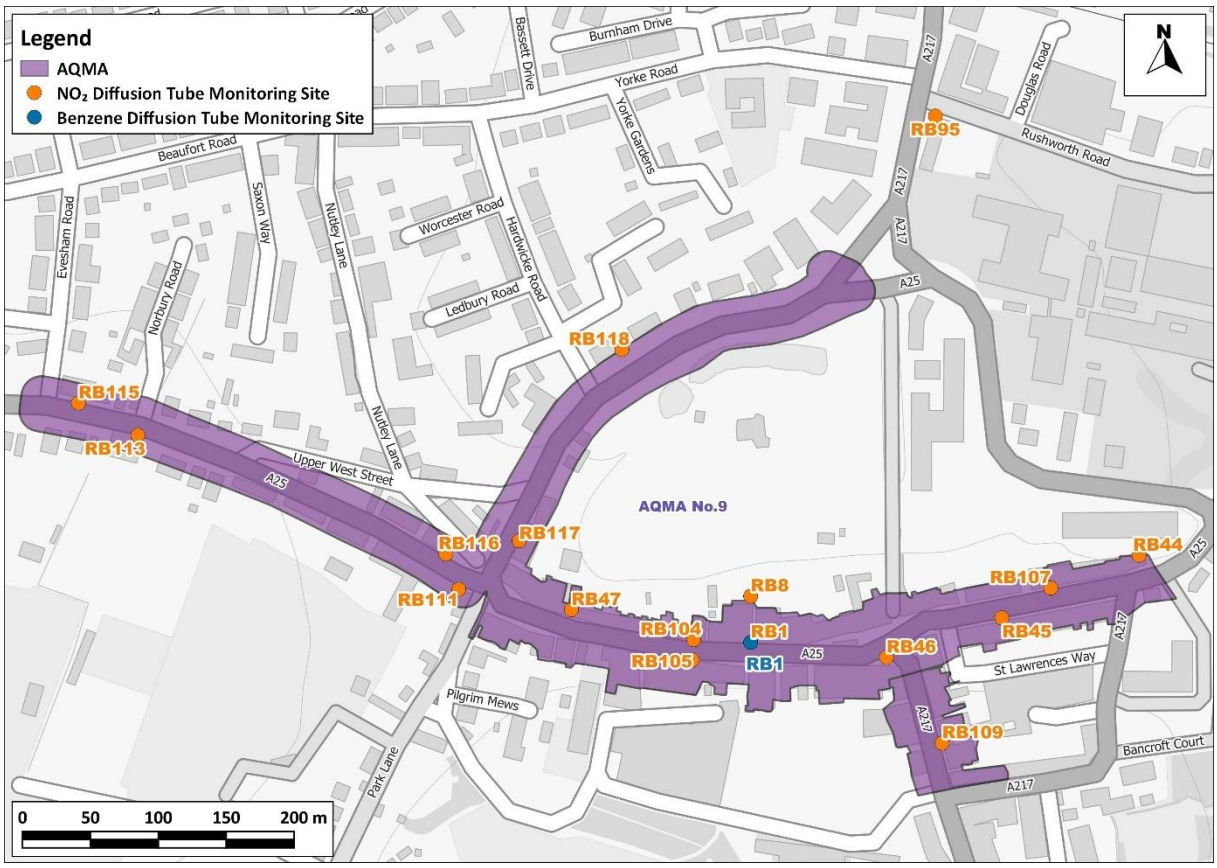


Figure E.6 AQMA No. 9 (Reigate High Street / West St / Bell St) and Nitrogen Dioxide or Benzene Diffusion Tube Monitoring Site Locations Within and Close to the AQMA.

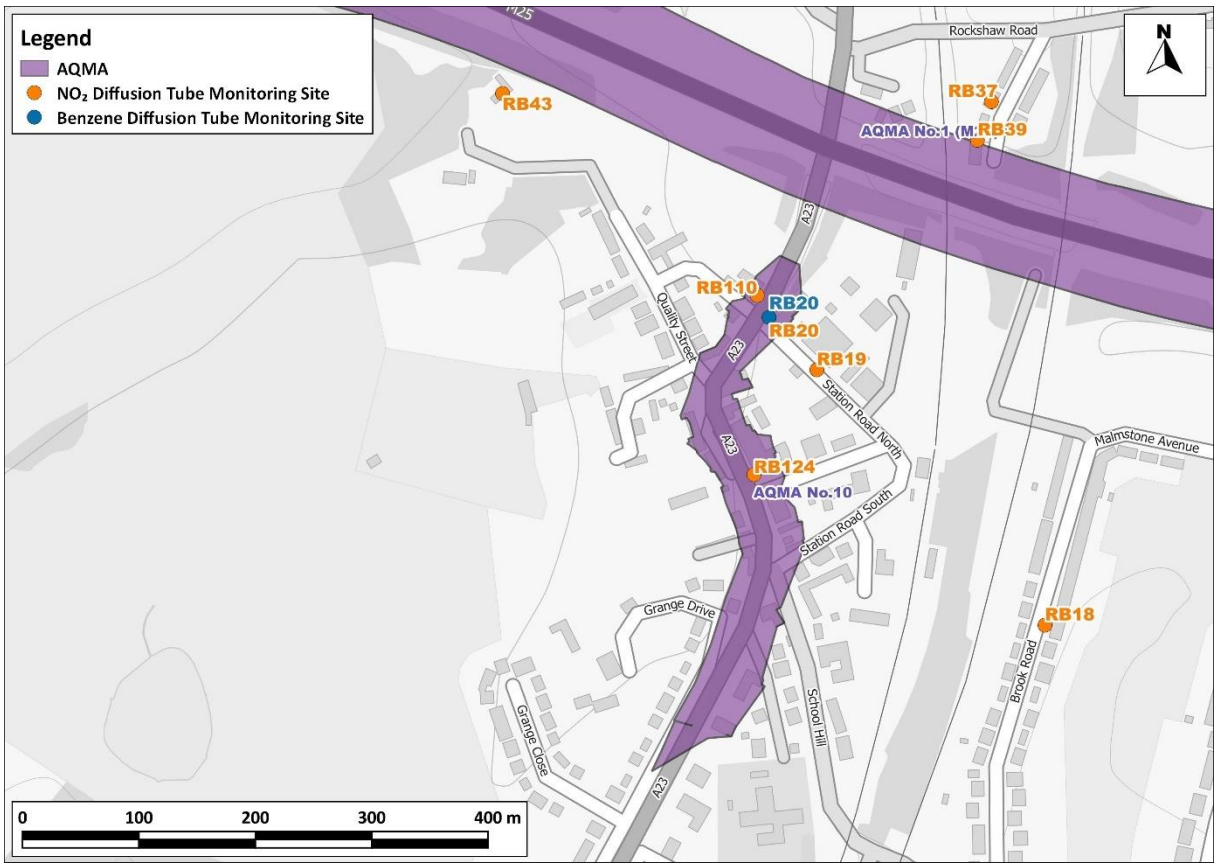


Figure E.7 AQMA No. 10 (Merstham) and Nitrogen Dioxide or Benzene Diffusion Tube Monitoring Site Locations Within and Close to the AQMA Benzene.

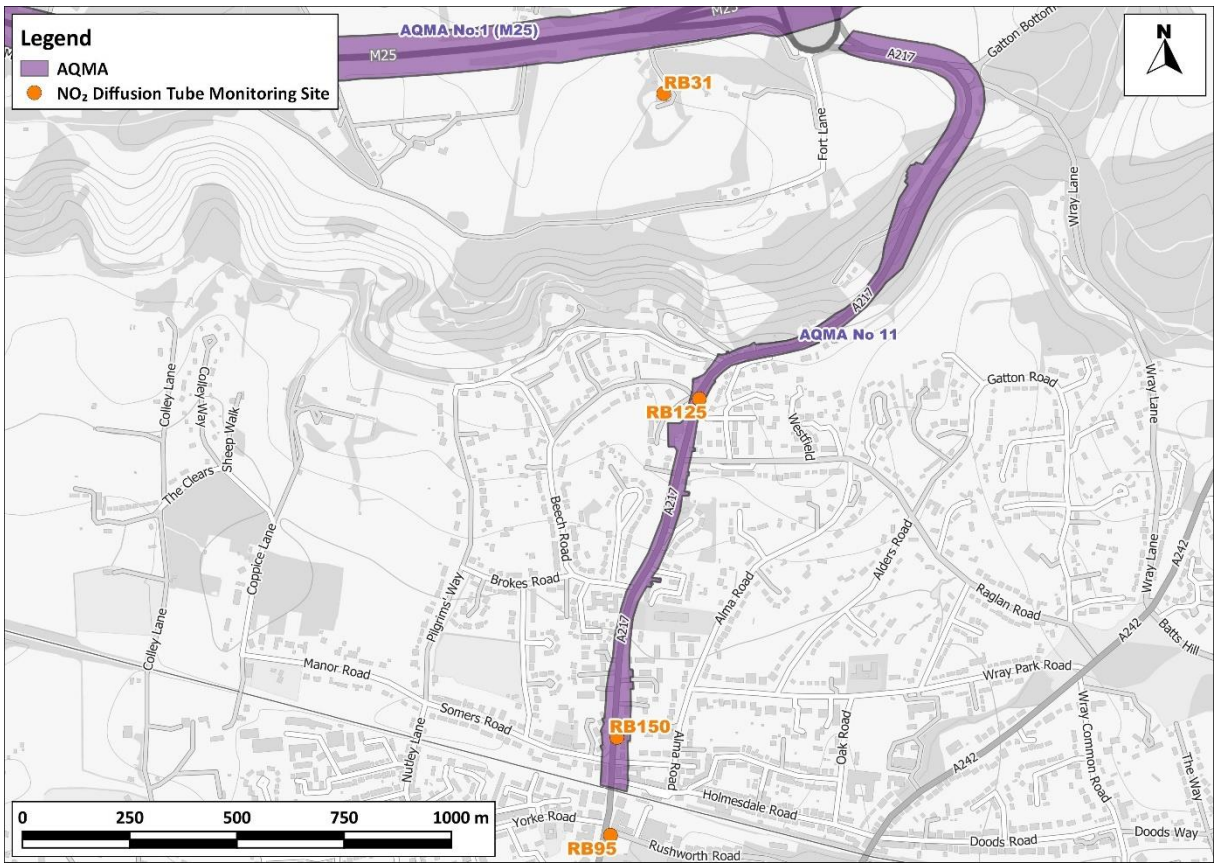


Figure E.8 AQMA No. 11 (Reigate Hill), AQMA No. 1(M25) and Diffusion Tube Monitoring Site Locations Within and Close to AQMA No. 11.

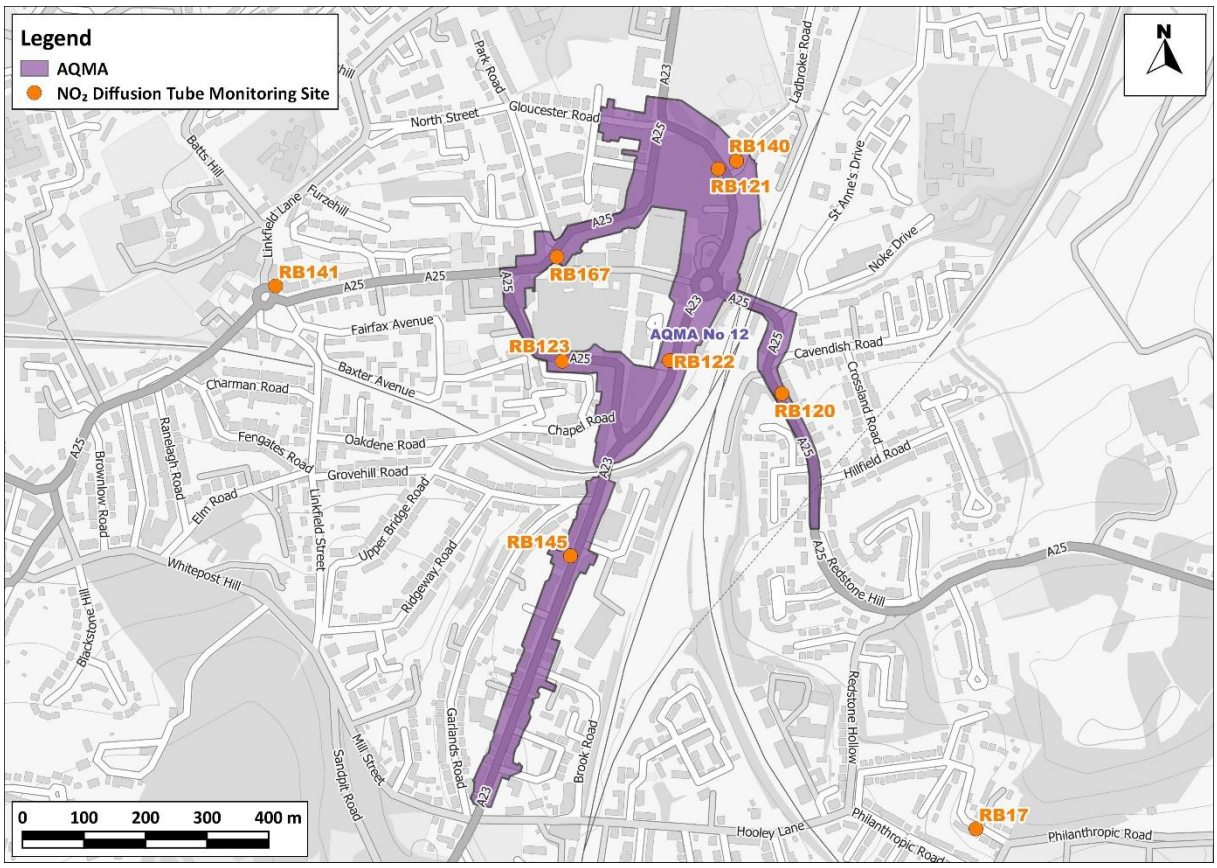


Figure E.9 AQMA No. 12 (Redhill) and Diffusion Tube Monitoring Site Locations Within and Close to the AQMA.

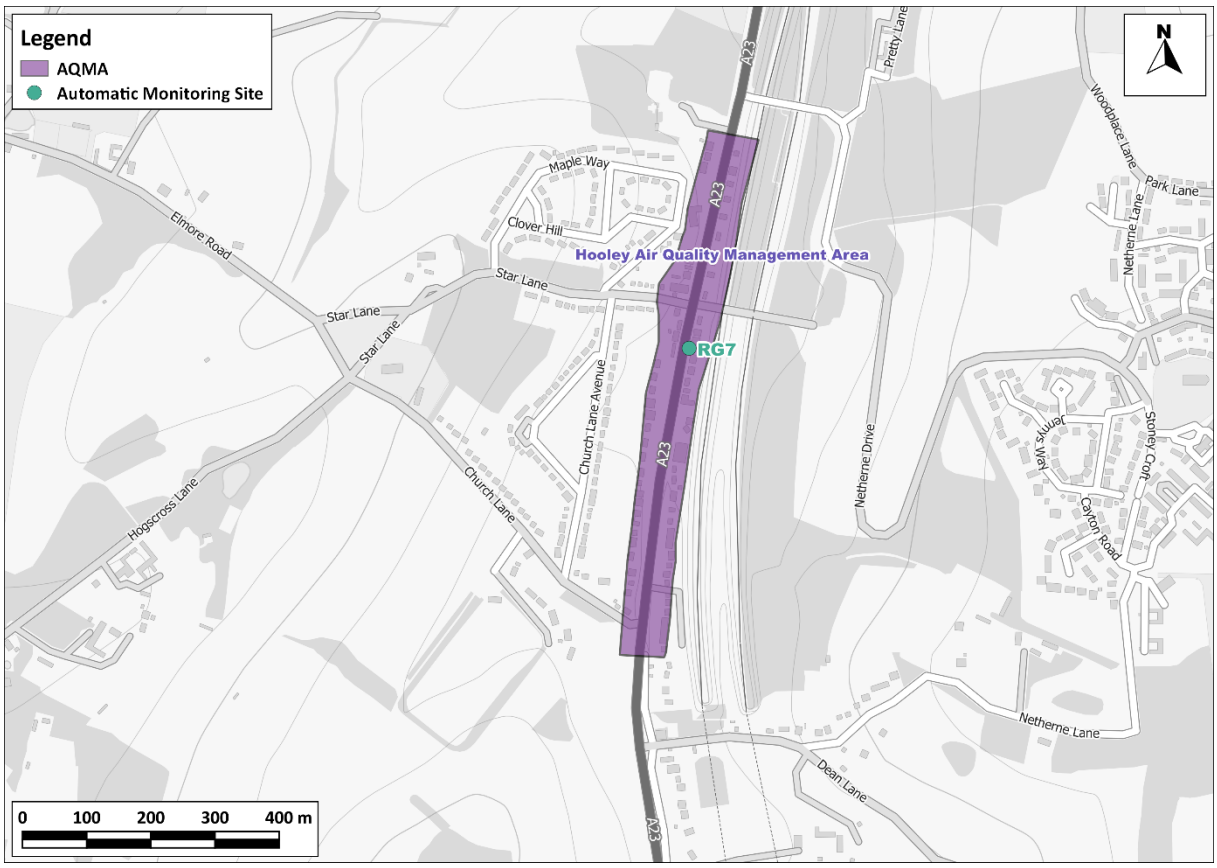


Figure E.10 AQMA No. 13 (Hooley) and Automatic Monitoring Site Location Within the AQMA.

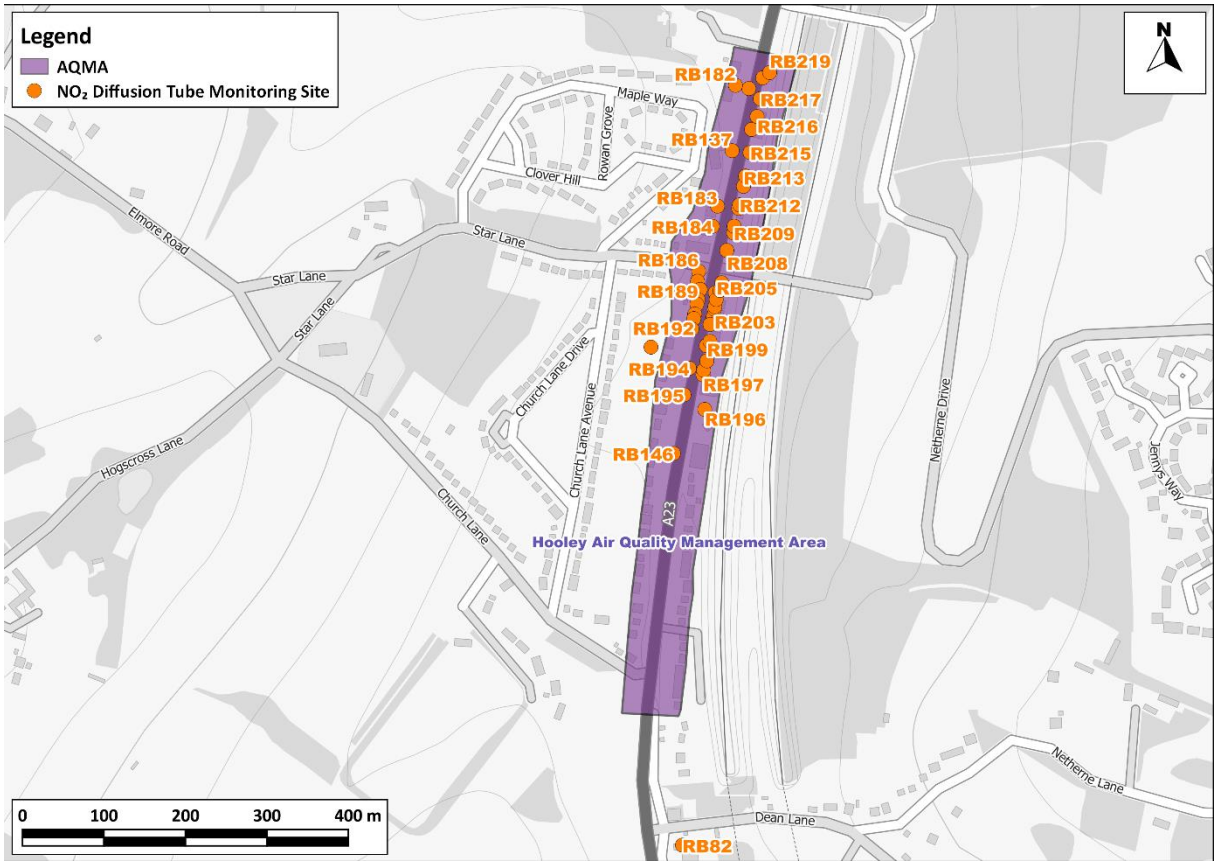


Figure E.11 AQMA No. 13 (Hooley) and Diffusion Tube Monitoring Site Locations Within and Close to the AQMA.

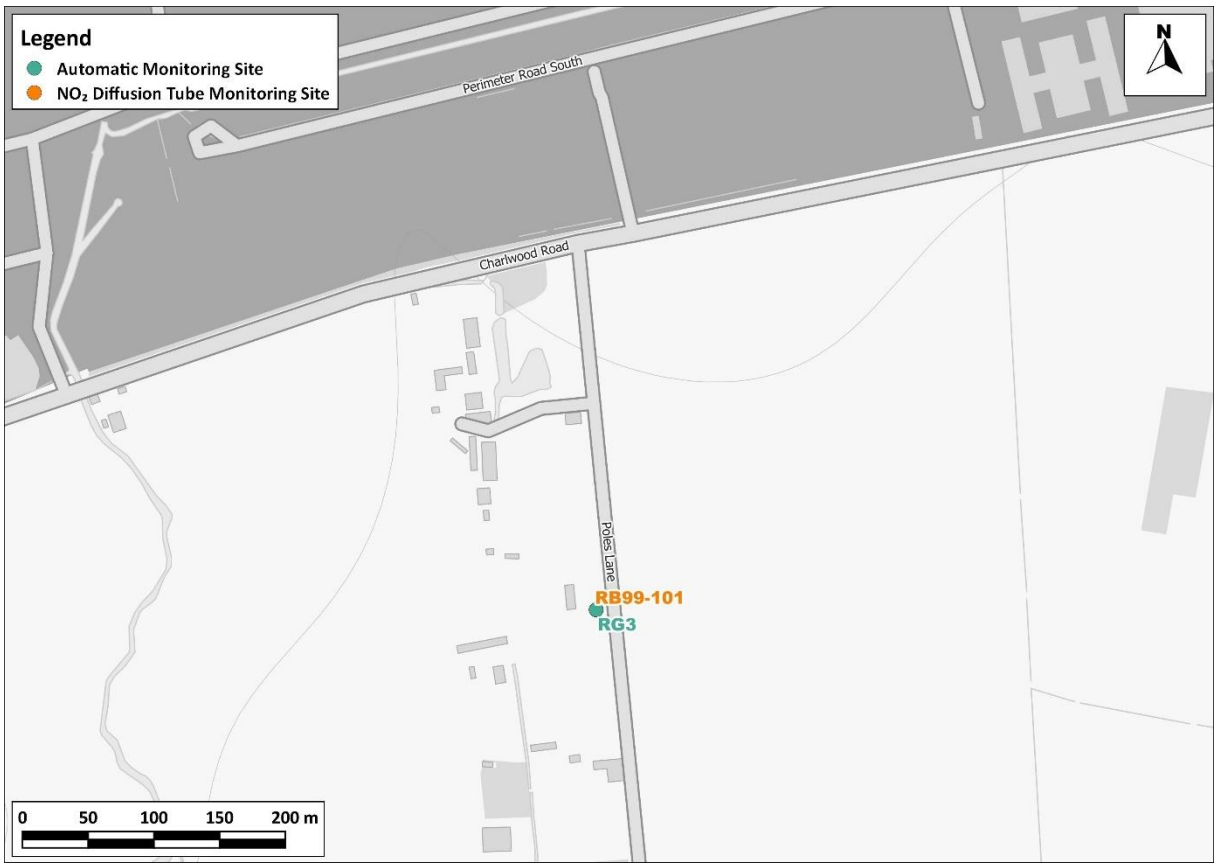


Figure E.12 Automatic Monitoring Site and Nitrogen Dioxide Diffusion Tube Monitoring Site Locations (South of London Gatwick Airport, Crawley Borough).

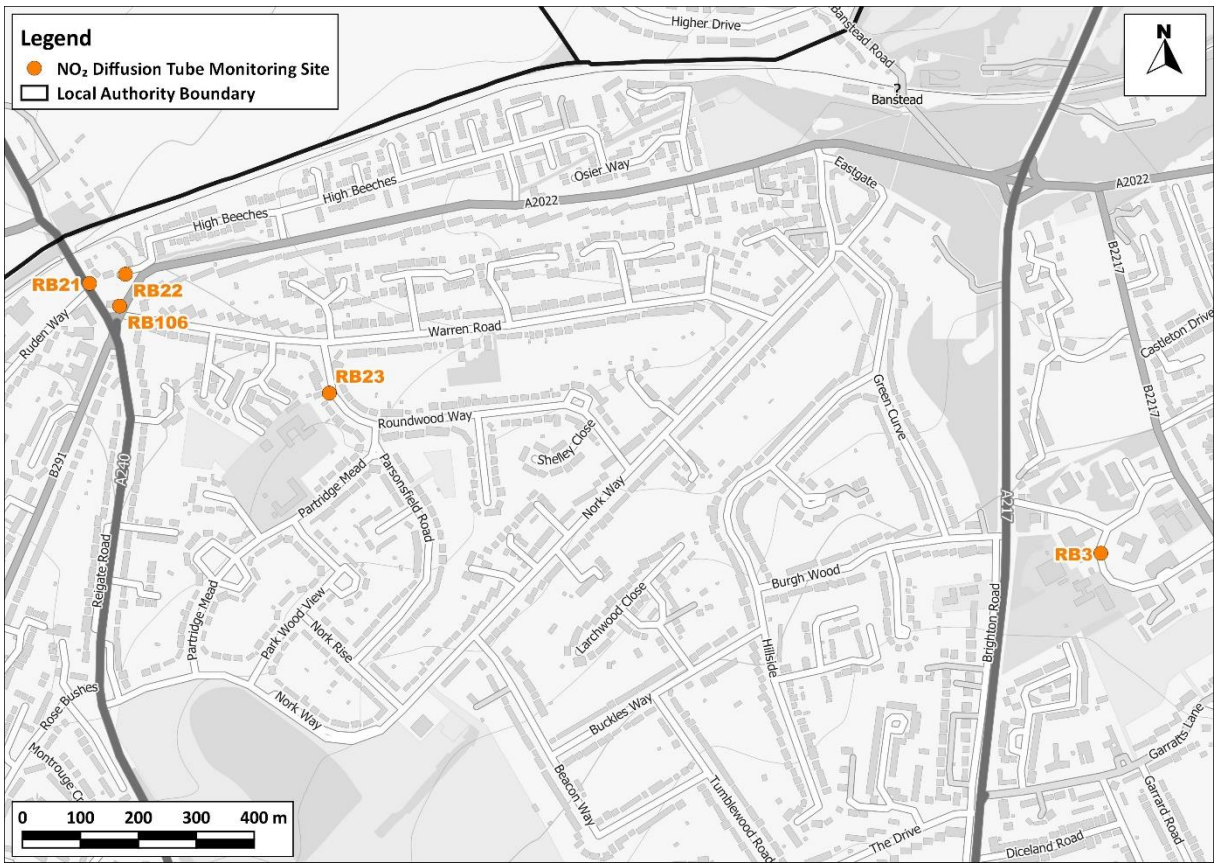


Figure E.13 Nitrogen Dioxide Diffusion Tube Monitoring Site Locations (Banstead) and Local Authority Boundaries.

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

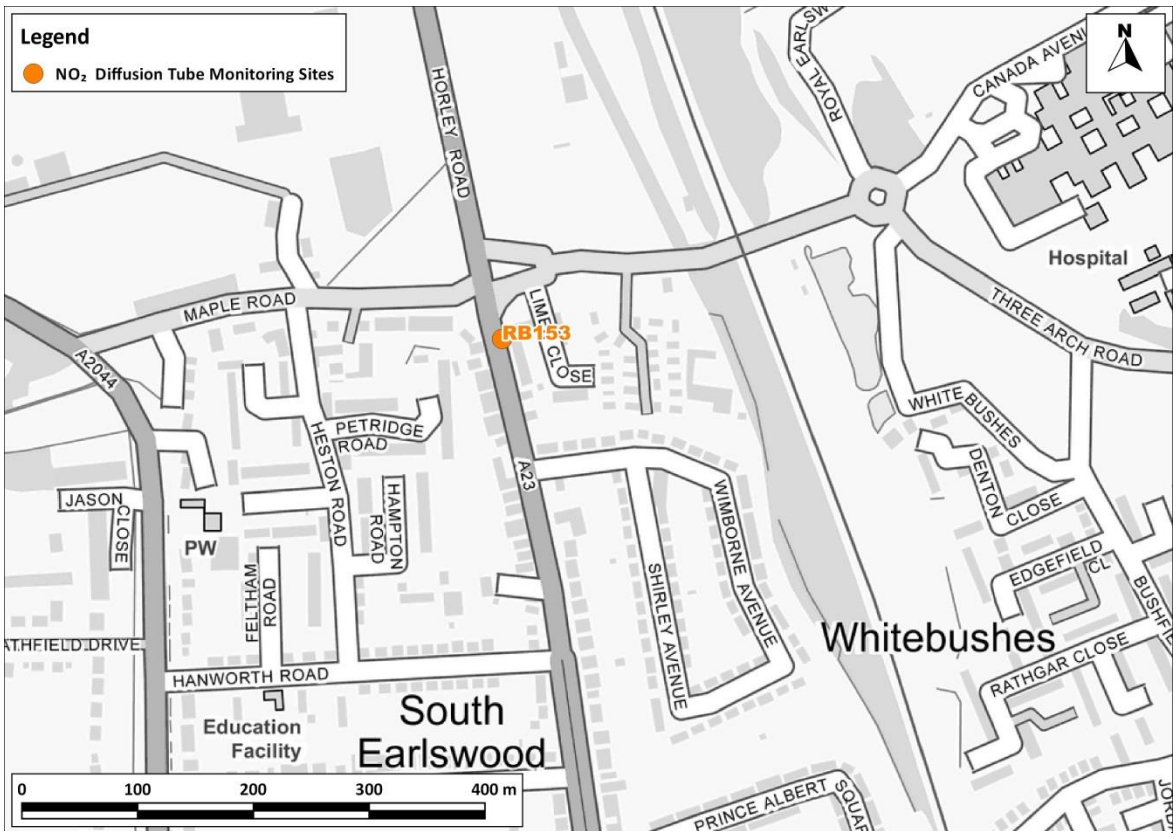


Figure E.15 Nitrogen Dioxide Diffusion Tube Monitoring Site Location (South Earlswood).

Appendix F: Summary of Air Quality Objectives in England

Table F.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[13]	
	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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
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