CLIMATE CHANGE Richmond

LONDON BOROUGH OF RICHMOND UPON THAMES

Air Quality Action Plan | 2019-2024

LONDON BOROUGH OF RICHMOND UPON THAMES

This new Air Quality Action Plan will cover the actions we intend to take to tackle air pollution in the Borough over the next 5 years. The final published plan will be a unique and interactive approach to delivering an Air Quality Action Plan and built in partnership with key organisations within the borough. It is intended to be informative, educational and interactive.

We chose to deliver the Plan in this format to make it simple for the user to navigate, whilst still being able to provide the level detail that some may appreciate. The Plan has been split into navigable categories all of which are equally important to delivering clean air in the borough. We want this document to be the core repository for Air Quality in the Borough and build overtime with links and information that can be accessible by all.

This plan will be a live ‘online’ document updated at least every three months to show how we are measuring up to our commitment. This will help provide complete transparency to the actions we are taking in the borough.

We will actively promote a ‘Community Page’ as part of the Plan where the community can show the actions that they are taking and how they are contributing to delivering clean air.

OUR PLEDGE

From the Deputy Leader of the Council and Chair of the Transport and Air Quality Committee – Councillor Alexander Ehmann

Air pollution is a serious public health emergency in Richmond upon Thames that affects everybody, especially our most vulnerable residents including children. Tackling this issue and improving air quality across the borough is a priority for the Council, as we know it is for the communities we serve.

The Council will be bold in its actions. This Air Quality Action Plan sets out those difficult steps that are within our control and which we will take to create a borough that is healthy, vibrant and fit for the future.

We hope you will support us to do this.

As a Council, we pledge:

- To be a Leading Borough in tackling Pollution
- To place this as a key priority for the Council
- To create an environment that is welcoming to sustainable transport and aimed at the pedestrian.
- To involve and work in partnership with the community in our actions and commitments.
- To tackle the most polluted areas of our borough and take firm action to reduce traffic and create a healthy environment.
- To prioritise those most vulnerable to the impacts of air quality in our community by focusing on schools, parks and public spaces.

AIR POLLUTION IN THE BOROUGH

Pollution in Richmond exceeds the legal objectives for both nitrogen dioxide (NO2) and PM10 (particles less than 10 microns) levels. In 2017 in some locations in the borough these were double the legal objectives and in 2018 were still too high. There are a number of sources of pollution including sources from outside the borough. Those inside the borough include domestic heating, construction and vehicles.

The overwhelming contributor to pollution in the borough is from road transport. All exceedances of our borough are along our main roads and highways and in our town centres.

MONITORING OF AIR QUALITY

We monitor air quality to comply with our legal responsibility as an Air Quality Management Area (AQMA). By monitoring air quality around the borough, we can assess our compliance with the air quality objectives, evaluate the effectiveness of policies and projects. This can also be used to help provide information and alerts for residents, workers and visitors when pollution levels are elevated.

Monitoring also provides highly detailed information on long-term trends in pollution levels. Sharing air quality data beyond our borough is an important contribution to identifying national and regional trends.

The world of air quality monitoring is constantly changing with new initiatives, new focuses and improved science. Keeping up to date with changes in technology and current thinking around health impacts is vital, it gives us opportunities to review monitoring and techniques that may improve the delivery, impact of air pollution and performance of services.

The move towards smarter modern cities also provides a great opportunity to use the power of personal mobile technology; to inform and influence behaviour around pollution hot spots and during episodes of poor air quality, as well as providing accurate, up-to-date information.

Summary of Actions (Monitoring Air Quality)

Maintain our extensive monitoring regime in the borough
Present quarterly updates through the air quality action plan in a simple to use format and ensure complete transparency
Continuous review and improvement of the Air Quality Network throughout the borough
Positively encourage and support citizen science activities where these actively contribute to identifying and tackling air pollution in the borough. Including the provision of Diffusion Tubes and hand held monitoring
Roll out monitoring to schools in areas of high pollution
Investing in new monitoring equipment as new technology moves forward. This could see enhancement to the diffusion tube network with real time data

CHANGING OUR ENVIRONMENT

The most effective way to reduce pollution is to move towards more sustainable and active modes of transport, such as cycling, walking and cleaner public transport. This also has positive health and lifestyle benefits beyond reducing pollution.

We need to create an environment that is welcoming and promotes walking and cycling as our preferred means of travel.

We must have policies that promote active travel and push modal shift as a priority for the borough. Our parks need to be protected to ensure safe clean havens for our residents and visitors.

The newly built environment needs to support our ambitions for a clean healthy borough and we will deliver policies and actions that promote regeneration that contributes positive air quality to the borough.

Summary of Actions (Changing our Environment)

The introduction of a borough wide 20MPH speed limit. This will help create an environment that is welcoming and safer for pedestrians and cyclists
Additional speed reduction measures at A310 Kingston Bridge to Twickenham, A305 Stains Road Corridor A308 Hampton Court Corridor
Richmond Town centre is the most polluted location in our borough and a hot spot for through traffic. We will tackle this by introducing a new Clean Air zone with the ambition of reducing polluting vehicles and dissuading vehicles from unnecessarily using our town centre as a through route (subject to funding)
Focus our policies and Local Implementation Plan on prioritising cycling and walking in the borough
New buildings and development. We have embedded air quality in our Local Plan and will produce a Supplementary Planning Document that will help to deliver our aspirations for cleaner air in the borough. This document will cover all areas of planning and ensure developers focus on air quality throughout the build and for the life of the development
Continuing roll out of Electric Vehicle Charging in the borough
Investing in cycling infrastructure to promote cleaner transport throughout the borough
Provide an independent assessment of the air quality impact of a new 20MPH speed limit

CHANGING BEHAVIOUR

To impact local pollution, we must change our behaviour, we need to understand our own personal impact on air quality and what we can individually do to contribute to minimising or mitigating poor air. We must have an engaging and active communication plan that speaks to all people in the borough. It needs to raise awareness through honest and clear messages and not only explain what we and other authorities are doing, but actively involves and engages with the community.

We are determined to play a leading role in campaigns, new initiatives and public events that increase awareness and connect with people. We want to actively work with our community and partners to help deliver cleaner air and drive change.

Some behaviour change can be influenced by local policy, if we are serious about tackling poor air we need to explore these areas, even if they are controversial.

We will lead by example as a local authority and make sure that procurement and internal policy making contributes to the reduction in pollution.

For those areas that we cannot influence, we will actively lobby and push for change at the highest level.

Summary of Actions (Changing Behaviour)

A new communications strategy developed in partnership with the community and updated regularly to highlight initiatives and campaigns. Our new Air Quality Action Plan will actively seek community involvement and will have designated pages updated by the community on initiatives that are being delivered.

We will actively lead in important campaigns and initiatives that raise awareness within the borough, including clean air day, car free day, airTEXT, Walk-it and idling action campaign events, as well as proactive measures such as use of Road closures and Park-lets

As a commitment to our priorities we will create a new Air Quality & Transport Committee specifically to look at Air Quality and actively engage with the community

We need to lead by example so will be developing a ‘benchmark test’ for air quality to gage the impact of internal decision making around factors such a procurement

Develop a plan to promote campaigns and awareness of pollution in the borough, such as wood burning, Car Free Day, Clean Air Day and airTEXT
This new plan will be interactive and updated every quarter to provide transparent and concise updates to measure our performance as a borough
Continue to raise awareness of the fact that the whole borough is covered by a smoke control order and provide information to suppliers of solid fuels on the restrictions within the borough. We will also activity press for more regulatory powers to cover the impact of wood burning appliances
We will create a joint action working group that will actively involve communities in the air quality agenda and that reports to the Chair of the new Air Quality & Transport Committee
We will commission a Diesel Levy paper and options around parking for the borough. The implementation and the scope of that implementation will be considered at the Air Quality & Transport Committee. We will also benchmark against other leading boroughs that have considered and are implementing charges linked to vehicle emissions

TACKLING POLLUTION

As a Local Authority we have a number of direct legislative and regulatory controls we can use to tackle poor air quality. These cover a number of service areas including; Environmental Health/ Regulatory Services, Public Health, Planning, Parking, Licencing and Highways.

We have an effective and responsive Pollution Team that deals with complaints and takes action to tackle local air pollution including smoke, dust, fumes and other emissions.

Some industrial processes also contribute to air pollution. We have a statutory duty to regulate emissions to air from some industrial processes in accordance with the Environmental Permitting Regulations.

Anti-idling is a priority action for us. Not only does it directly tackle polluting vehicles, it helps raise awareness and engages directly with people on the subject of air quality.

The regulation of construction is a priority area and as well as being leaders on tackling emissions from construction plants across London, we have powers that we can use through planning that make a significant contribution to the air quality agenda.

There are also a number of actions specific to our borough. These are around food vehicle emissions, burning in allotments, bonfires and wood burning appliances.

Summary of Actions (Tackling Pollution)

Anti-idling: is a priority action for the borough and we will be working tirelessly within given resources to ensure that this problem is addressed.
We receive regular complaints and concerns from residents about bonfires in the borough. We have banned bonfires on all LBRuT allotments and will consider restricting bonfires further throughout the borough. We will take swift enforcement action against unnecessary burning in the borough such as builders bonfires
The impact of burning unauthorised fuels and the use of wood burning appliances is becoming more of an issue and we will lobby Government for additional powers to control this activity.
The impact of demolition and construction can be a significant contributor to poor air quality. We will ensure that sites are regulated in accordance with the Mayor of London's Non Road Mobile Machinery where this is applicable. This project is currently being delivered throughout London by our joint regulatory service
We have a number of complaints in the borough about food and ice-cream vans that contribute to pollution when servicing certain areas. We will seek to restrict diesel emissions when serving ice cream and require all non-itinerant food vans with licensed pitches to plug into an electrical source. We will work with our partners in our Licensing Team to introduce conditions at annual license renewal that provide the above controls to tackle this idling
We will actively campaign and participate in the call for a Clean Air Policy that is fit for the future.

PROTECTING OUR SCHOOLS

We will place a special focus on protecting our schools. Children are a vulnerable group whose developing lungs make them particularly susceptible to air pollution.

As a local authority we need to ensure that we are continually assessing the impact on this vulnerable group and taking steps to minimise the effects of air pollution in our schools and during travel to and from school.

The key ways in which we will do this are:

- Audit those schools in areas of poor air quality and provide financial support for measures that tackle and reduce exposure for children in the borough.
- Have schools in areas of poor air quality incorporated into our monitoring and review regime.
- Work alongside our Public Health partners to deliver joint health benefits of active travel and healthy lifestyles.
- Tackle idling vehicles at schools as a priority.
- To reduce traffic around schools at drop off and pick up times we will be piloting 'School Streets' at selected schools with a view to extending these in the borough.

APPENDIX A: PROGRESS MATRIX

Team	Area	Action	Current Status	Timeframe	Target #	Locations (if applicable)	Reports
Pollution	Monitoring	Maintain our extensive monitoring regime in the borough		Ongoing	64 monitoring stations	Across borough	Quarterly
Pollution	Monitoring	Present quarterly updates through the air quality action plan in simple to use format and ensure complete transparency		Ongoing	4 reports per year	Across borough	Quarterly
Pollution	Monitoring	Continuous review and improvement of the Air Quality Network throughout the borough		Ongoing	1 Review per year	Across borough	Annually
	Monitoring	Positively encourage and support citizen science activities where these actively contribute to identifying and tackling air pollution in the borough. Including the provision of Diffusion Tubes and hand held monitoring		Ongoing	Support 4 projects including up to 150 Diffusion tubes for locations	TBC	Annually
Pollution	Monitoring	Roll out monitoring to Schools in high pollution areas to provide information		April 2020-Ongoing	up to 20 monitoring sites	Across borough	Quarterly
Pollution	Monitoring	Invest in new monitoring equipment as new technology moves forward. This could see enhancement to the diffusion tube network and help provide real time data		Ongoing	2 New monitors per year tested	Across borough	Quarterly
Highways and Transport	Environment	The introduction of a borough wide 20mph speed limit. This will help create an environment that is welcoming and safer for pedestrians and cyclists		24 segments Finish April 2020	3000 signs	Across borough	Quarterly
TBC Highways and Transport	Environment	Additional speed reduction measures at A310 Kingston Bridge to Twickenham, A305 Stains Road Corridor and A308 Hampton Court Corridor		April 2021	3 zones implemented	Across borough	Quarterly
Pollution	Environment	Independent assessment of the air quality impact of a new 20mph speed limit		Jan - April 2020	5 locations monitored before and after	Sheen Road, Hampton Road,	Quarterly

Team	Area	Action	Current Status	Timeframe	Target #	Locations (if applicable)	Reports
Highways and Transport	Environment	A new Clean Air Zone (CAZ) for Richmond Town Centre, with a view to rolling this out in Twickenham. This is the most polluted location in our borough and a hot spot for through traffic. We will tackle this by introducing a new Clean Air Zone with the ambition of reducing polluting vehicles and dissuading vehicles from unnecessarily using our town centre as a through route (Subject to funding approvals)		Baseline data Autumn 2019, with a view to bring in the proposals for Richmond Town Centre in Spring 2020	Implementation Spring 2020	Richmond Town Centre	Quarterly
Highways and Transport	Environment	Focus our policies and Local Implementation Plan on prioritising cycling and walking in the borough		2019	New Active Travel Strategy containing clear targets for change in active travel and aspiration targets for 2024	Across borough	Quarterly
Pollution	Environment	New buildings and development. We have embedded air quality in our Local Plan and will produce a Supplementary Planning Document that will help to deliver our aspirations for cleaner air in the borough. This document will cover all areas of planning and ensure developers focus on air quality throughout the build and for the life of the development		Nov-19	Mar-20	Across borough	Quarterly
Highways and Transport	Environment	Continuing the roll out of Electric Vehicle Charging in the borough		2020	"86 more EV charging points 198 Lamp Post Conversion "	TBC	Quarterly

Team	Area	Action	Current Status	Timeframe	Target #	Locations (if applicable)	Reports
Highways and Transport	Environment	Investing in Cycling Infrastructure in the borough		2022	1000 Cycle stands 30 Cycle Hangers 200+ Cycle Racks"	• The A316 from Twickenham to Richmond Circus, through Ham from Teddington Lock to Richmond Park, from Kingston Bridge to Bushy Park • Twickenham to Brentford. • Hampton Court Bridge to Kingston Bridge, and Kingston Bridge to Twickenham town centre, • The A307 Kew Road from Richmond Circus to the junction with the South Circular	Quarterly
Pollution, Public Health and Communication	Behaviour	We will actively lead in important campaigns and initiatives that raise awareness within the borough, including Clean Air Day, Car Free Day, airTEXT, Walk-it and idling action campaign events, as well as proactive measures such as use of Road closures and Park-lets		April 2020	4 campaigns implemented a year	Across borough	Quarterly
Communications	Behaviour	A new communications strategy developed in partnership with the community and updated regularly to highlight initiatives and campaigns. This action plan needs to be owned by the community and not just the council. Many groups in our borough are actively tackling air pollution and raising awareness and we need to capture and promote this work		December 2019	New Communications plan updated quarterly	Across borough	Quarterly
Policy and Performance	Behaviour	As a commitment to our priorities we will create a new Air Quality & Transport Committee specifically to look at Air Quality and actively engage with the community		April 2021		Across borough	Quarterly

Team	Area	Action	Current Status	Timeframe	Target #	Locations (if applicable)	Reports
		We will work with our Public Health colleagues to link our work closely to the health agenda and look at the opportunities to provide information and join up our campaigns		2022		Across borough	
Procurement & Pollution	Behaviour	We need to lead by example so will be developing a 'benchmark test' to gage the impact of internal decision making around factors such a procurement		April 2020	Benchmark formulae drafted	Across borough	Annually
Pollution	Behaviour	We will work with our Communications Team to promote the use of low pollution, back roads via walkit.com for walking or cycling to reduce individual exposure to air pollution		April 2020	promotion of walkit.com	Across borough	Quarterly
Pollution	Behaviour	This new plan will be interactive and updated every quarter to provide transparent and concise updates to measure our performance as a borough		Dec 2019	New Plan	Across borough	Quarterly
Pollution	Behaviour	Continue to raise awareness of the fact that the whole borough is covered by a smoke control order and provide information to suppliers of solid fuels on the restrictions within the borough. We will also activity press for more regulatory powers to cover the impact of wood burning appliances		April 2020	20 businesses engaged with	Across borough	Quarterly
Pollution	Behaviour	We will create a joint action working group that will actively involve communities in the air quality agenda and that reports to the Chair of the new Air Quality & Transport Committee		January 2020	Terms of reference and Membership created	Across borough	Annually

Team	Area	Action	Current Status	Timeframe	Target #	Locations (if applicable)	Reports
Parking & Pollution	Behaviour	We will commission a Diesel Levy options paper and impact baseline for the borough. The implementation and the scope of that implementation will be considered at the Air Quality & Transport Committee. We will also benchmark against other leading boroughs that have considered and are implementing charges linked to vehicle emissions		Jan 2020 April 2020	• Draft Diesel report to Committee Jan 2020 • Draft Benchmarking exercise to Committee	Across borough	Quarterly
Pollution	Schools	Audit all schools in areas of poor air quality and provide financial support for measures that tackle and reduce exposure to pollution		2020	3 schools per year	TBC	Annually
Pollution	Schools	All schools in areas of poor air quality to be incorporated into our air quality monitoring and review regime		2020	4 schools to be incorporated	Across borough	Quarterly
Pollution	Schools	Working alongside our Public Health partners to deliver joint health benefits of active travel and healthy lifestyles		Ongoing	N/A	Across borough	Annually
Pollution	Schools	Tackle idling vehicles at schools as a priority		Ongoing	Interventions reported quarterly	Across borough	Quarterly
Pollution	Schools	To reduce traffic around schools at drop off and pickup times we will be piloting 'School Streets' at selected schools with a view to extend these in the borough		Pilot 1 scheme 2020	further rollout 2021	Across borough	Quarterly
Pollution	Schools	Pilot internal air quality filtration in schools and prepare a report for committee into it's effectiveness		jan 2020	2 Schools	TBC	Quarterly
Pollution team & Parking services	Tackling	Anti-idling: This is a priority action for the borough and we will be working tirelessly within given resources to ensure that this is tackled		Ongoing	Interventions with Drivers , Number of signage	Across borough	Quarterly

Team	Area	Action	Current Status	Timeframe	Target #	Locations (if applicable)	Reports
Pollution & Policy	Tackling	Burning in the borough: We receive regular complaints and concerns from residents about bonfires in the borough. We have banned bonfires on all LBRuT allotments and will consider restricting bonfires further throughout the borough. We will take swift enforcement action against unnecessary burning in the borough such as builder's bonfires		Ongoing	• N/A	Across the borough wide	Quarterly
Pollution	Tackling	The impact of burning unauthorised fuel and the use of wood burning appliances is becoming more of an issue and we will lobby Government for additional powers to control this activity. We will take action to address any complaint regarding unaurthorised use		Ongoing	N/A	Across borough	Annually
Pollution, Planning Enforcement	Tackling	Delivering Cleaner Construction: demolition and construction can have a significant impact on local air quality. We will ensure that sites are regulated in accordance with the Mayor of London's Non Road Mobile Machinery LEZ where this is applicable. This project is currently being delivered throughout London by our joint regulatory service		Ongoing	• Conditions imposed on 100% • Compliance rates for NRMM equipment in the borough	Across the borough wide	Quarterly

Team	Area	Action	Current Status	Timeframe	Target #	Locations (if applicable)	Reports
Pollution	Tackling	Licensing & Idling: We have a problem in the borough with food and ice-cream vans that contribute to pollution when servicing certain areas. We will seek to ban diesel emissions when serving ice cream and require all non-itinerant food vans with licensed pitches to plug into an electrical source. We will work with our partners in our Licensing Team to introduce conditions at annual license renewal that provide the above controls to tackle this idling		Ongoing	"· Review of Policy April 2020 · Power Points installed"	Across the borough wide	Quarterly
Pollution	Tackling	Better Legislation: We will actively campaign and participate in the call for a new Clean Air Bill that is fit for the future.		Ongoing	N/A	Across the borough wide	Annually
Procurement & Pollution	Tackling	Richmond will upgrade its own fleet and that of our suppliers to the highest Euro Standards		2024	All fleet to be latest Euro standard	Across the borough wide	Annually
Highways and Transport	Schools	We will increase the number of schools with accredited travel plans by 20% per year with an aim to have at least 90% of all schools covered by 2024		2024	90%	Across borough	Quarterly

APPENDIX B:

Summary of current air quality in London Borough of Richmond upon Thames

The UK Air Quality Strategy (AQS), released in July 2007, provides the overarching strategic framework for air quality management in the UK and contains national air quality standards and objectives established by the Government to protect human health. The AQS objectives take into account EU Directives that set limit values which member states are legally required to achieve by their target dates.

The London Borough of Richmond upon Thames is meeting the national AQS objectives for all pollutants other than for Nitrogen Dioxide (NO2) and Particulate Matter (PM). Limited monitoring data for Particulate Matter (PM10 and PM2.5) indicates compliance with the objectives, however pollutant dispersion modelling indicates that levels of PM10 are likely to be exceeding the annual mean objective at specific locations. As both PM10 and PM2.5 are potentially damaging to health at any level, this remains a pollutant of concern.

The modelled NO2 concentrations clearly identify the contribution of road traffic emissions with exceedance of the NO2 annual mean objective closely correlated with the main transit routes and busy junctions within the borough.

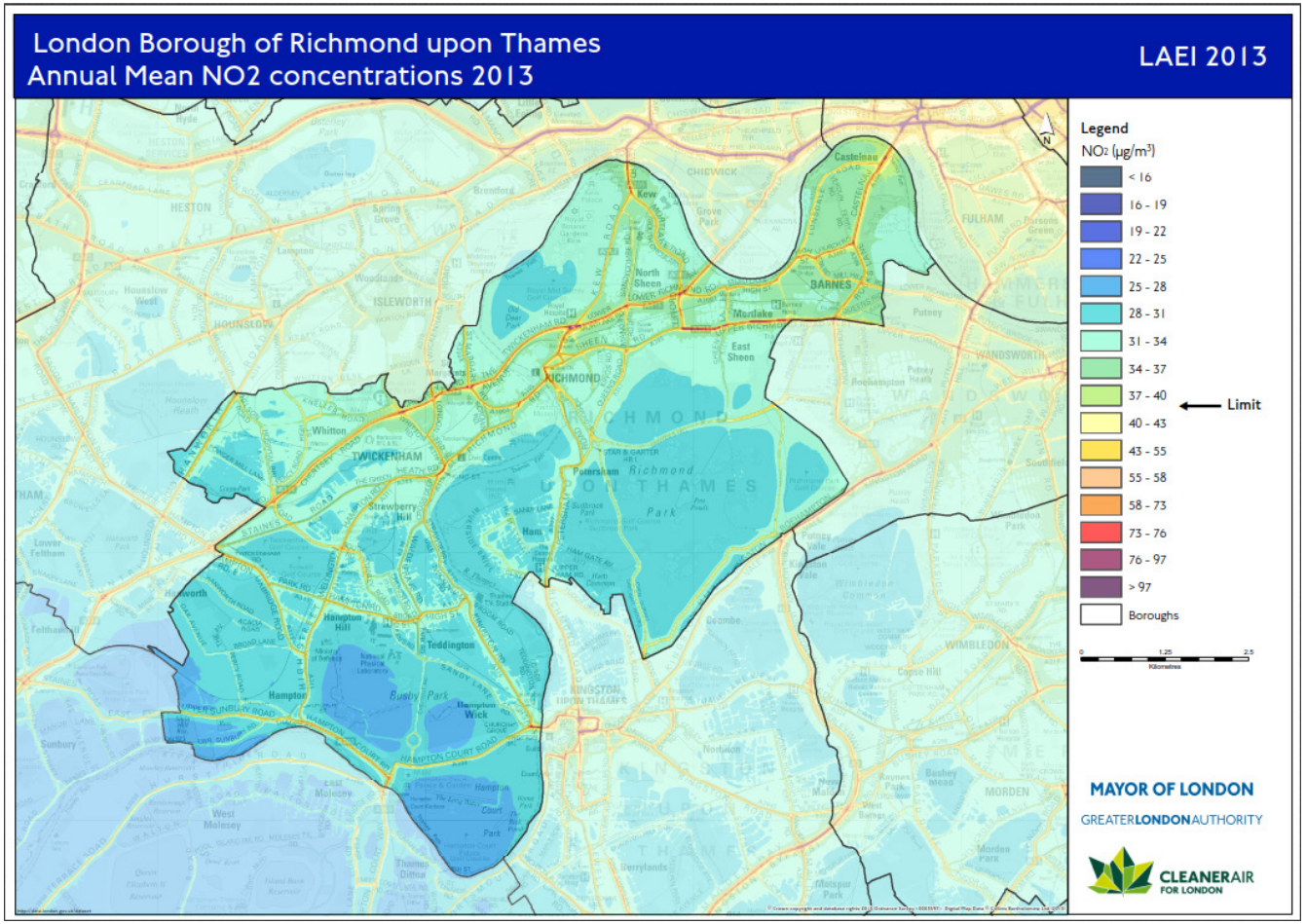


Figure 1: Modelled map of annual mean NO2 concentrations (from the LAEI 2013)

Exceedance of the PM10 annual mean objective also extends along the main transport links. The main areas of concern are the A316 where it passes through Richmond town centre and North Sheen, King Street, Twickenham, Hampton Wick near Kingston Bridge, and A306 at Castelnau.

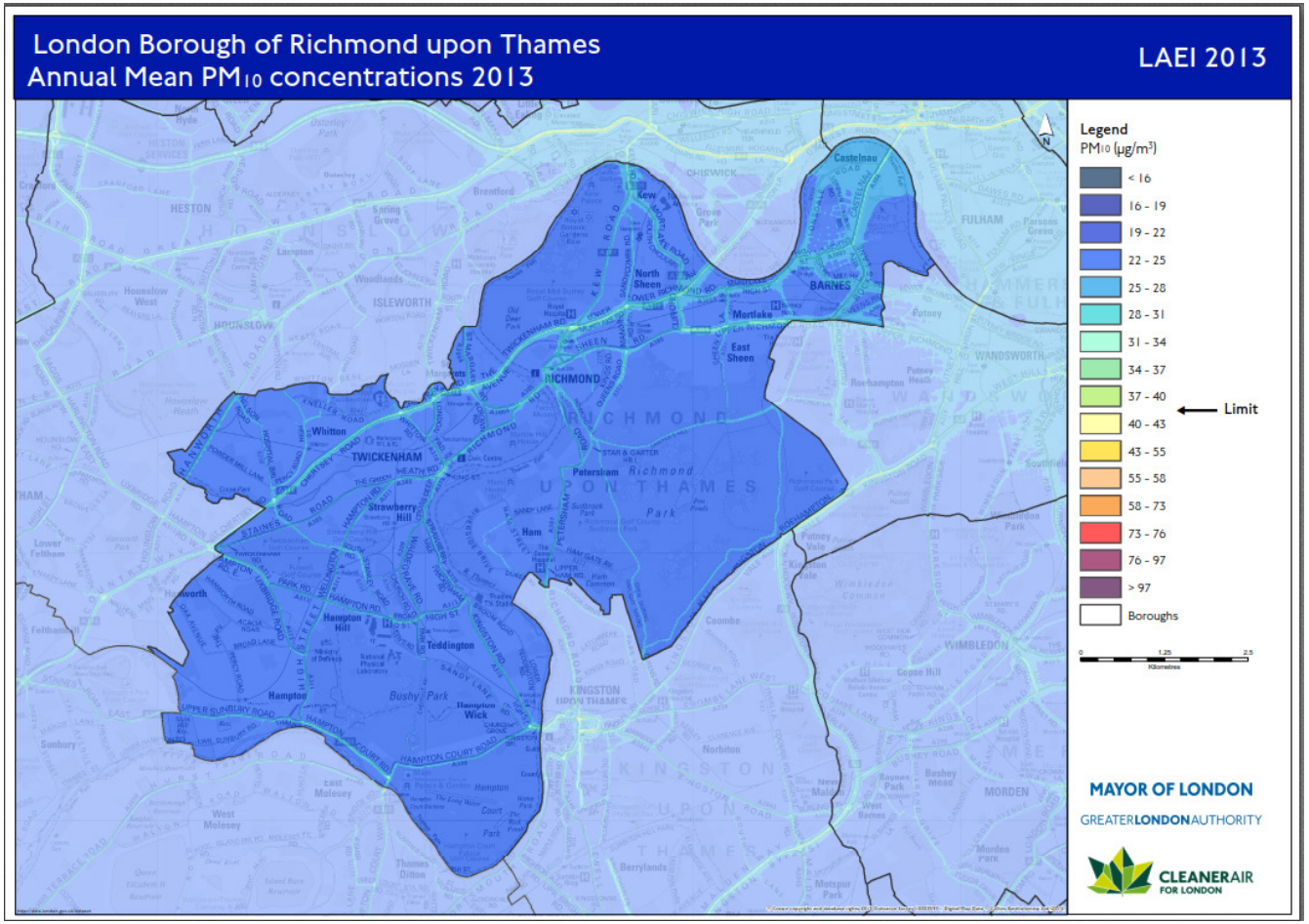


Figure 2: Modelled map of annual mean PM10 (from the LAEI 2013)

PM2.5 concentrations are not currently monitored in Richmond but the dispersion model identifies elevated concentrations along the main transit routes and in the town centres within the borough, as would be expected. There is no regulatory standard applicable to English local authorities in respect of PM2.5, however, the EU Ambient Air Quality Directive (2008/50/EC) does set out air quality standards including an exposure reduction obligation, a target value and a limit value (25µg/m3 by 2020). The GLA has introduced a 'PM2.5 borough role' for air quality teams to consider how existing and new priority actions can help reduce PM2.5 levels in their area, and to work collaboratively to align any new measures with the objectives of the borough Public Health team.

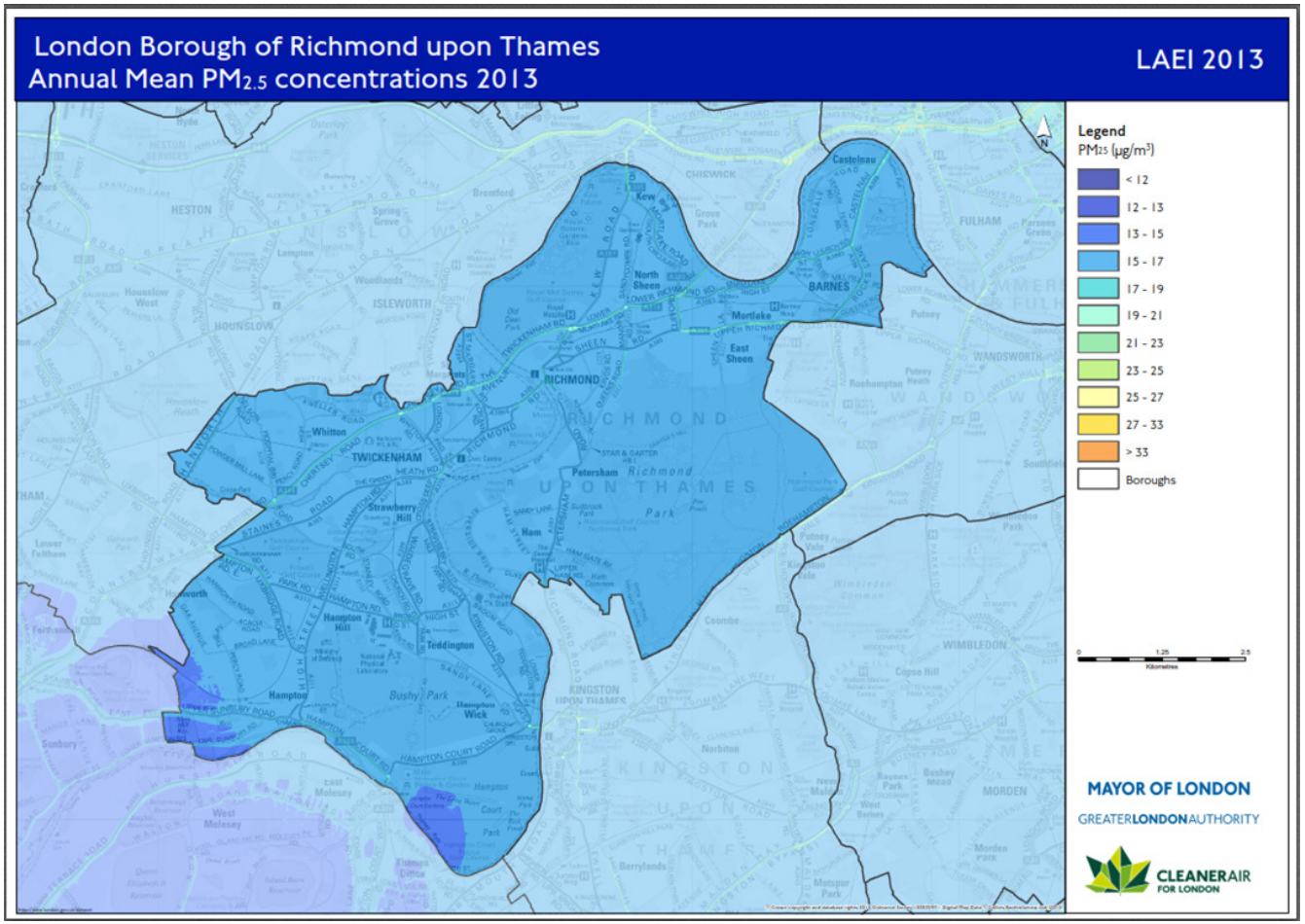


Figure 3: Modelled map of annual mean PM2.5 (from the LAEI 2013)

Public Health Outcomes Framework

The current Public Health Outcomes Framework (PHOF), produced by Public Health England, provides an indication of differences in life expectancy and healthy life expectancy between communities. The fraction of mortality attributable to particulate air pollution (Indicator 3.01) for Richmond upon Thames is as follows:

Region/community	Particulate air pollution (Indicator 3.01) (Feb 2017)
London Borough of Richmond upon Thames	5.1
London Region	5.6
England	4.7

Source: Public Health Outcomes Framework – Public Health England (website accessed May 2017)

The PHOF data indicates that the fraction of mortality attributable to particulate air pollution is slightly below the average value for the London region but is higher than the average for England.

Estimate of Population Exceeding UK Annual Mean Objective for NO2

Data from the London Atmospheric Emissions Inventory also provides an estimate of proportion of the total population of Richmond that are subject to NO2 concentrations in excess of the annual mean UK AQ objective of 40µg/m3. Based on modelled data for 2013 this was slightly in excess of 13%. The table below provides a comparison of this statistic against other boroughs in the South London Sub-Region and indicates that Richmond has the second highest population exposed to NO2 in excess of the objective.

Borough	% Population in borough > 40µg/m3 (LAEI 2013)
Wandsworth	20.12
Richmond upon Thames	13.06
Kingston	7.48
Bromley	5.80
Croydon	3.83
Sutton	3.77
Merton	0.55

Nitrogen Dioxide (NO2) concentrations remain in excess of the UK Air Quality Objectives at a significant number of locations across the borough. Monitoring during 2016 indicated that the annual mean NO2 objective of 40µg/m3 was exceeded at 48 of the 64 sites where monitoring was carried out with the highest concentrations measured at sites in Richmond, Twickenham, Barnes, Chalkers Corner, Hampton, East Sheen, Hampton Hill, Kew, Teddington, Whitton, Hampton Wick and St. Margaret's. Additionally, at five of these monitoring sites measured NO2 concentrations were in excess of 60µg/m3, which is considered indicative of an exceedance of the 1-hour UK AQ objective. These sites were George Street, Hill Street, The Quadrant and Red Lion Street in Richmond; and York Street in Twickenham. Exceedance of this short term objective indicates that there is a risk to individuals spending as little as an hour in the area of exceedance and is therefore significant not just for people living in that area but also for those working or visiting the area.

Monitoring trends for the period 2010 to 2016 indicate very little change in NO2 levels across the borough over the past 7 years. Given the consistently high concentrations measured and the extent of the borough failing to meet the UK AQ objectives it is clear that more robust action on a national, regional and local scale is needed to protect the health of those living within the borough.

Calculation of Required Reduction in Emissions

Local authorities are recommended to identify the reduction in pollutant emissions required to attain the objectives within their AQMAs to determine the scale of effort likely to be required. The London Local Air Quality Management Technical Guidance document (LLAQM.TG16) recommends that this is expressed as the required percentage reduction of local emissions in terms of NOx due to local road traffic. This is because the primary emission is of NOx and there is a non-linear relationship between NOx concentrations and NO2 concentrations. The calculation was carried out according to Box 4.5 of LLAQM.TG16 and was based on the monitoring site recording the highest measures NO2 concentration (George Street, Richmond at 96µg/m3 in 2016)) as this represented the worst case location. The calculation is summarised in the table below.

Site	**Measured NO2**	**Dist corr.**	**Total Nox**	**Background concs**		**Road Nox-current**
				NO2	NOx	
Richmond Circus	96	80.8	164.39	25.6	39.8	124.59
Road NOx to give 40ug/m3			33.03			
Road NOx reduction	91.56					
% Reduction	**73%**					

APPENDIX C: AQMAS AND FOCUS AREAS

In Richmond an Air Quality Management Area (AQMA) has been declared for the whole borough.

The AQMA has been declared for the following pollutant/s:

- Nitrogen Dioxide - we are failing to meet the EU annual average limit for this pollutant at some of our monitoring stations and modelling indicates it is being breached at a number of other locations. We may also be breaching the UK 1-hour AQ Objective based on measured concentration for NO2 being in excess of 60µg/m3 at some locations within the borough.
- Particulate Matter (PM10) – whilst monitoring data from the automatic monitoring stations at Castelnau Library (Roadside site), and Wetlands Centre (Background site) in Barnes indicate we are complying with the UK Objectives and EU Limits, the wider modelling data indicates that we are likely to be breaching the 24-hour and annual mean PM10 Objectives at a number of locations across the borough. We are also exceeding World Health Organisation air quality guideline for this pollutant, and we have a formal responsibility to work towards reductions of PM2.5.

An air quality Focus Area is a location that has been identified as having high levels of pollution and human exposure. There are four focus areas in the borough. These are on the main transport links along Hammersmith Bridge Road at Castelnau; the road between Richmond Circus and Richmond Bridge up to Sheen Road; Chalkers Corner, King Street, Twickenham.

Figure 4: London Borough of Richmond upon Thames GLA Focus Areas (2013)

Focus Area Ref.	Location
Focus Area 159	Hammersmith Bridge Road at Castelnau
Focus Area 160	Richmond Circus to Richmond Bridge and Sheen Road A305
Focus Area 161	Richmond – Chalker's Corner/ Clifford Avenue/A205/Upper Richmond Road/Millstone Green.
Focus Area 162	Twickenham – King Street

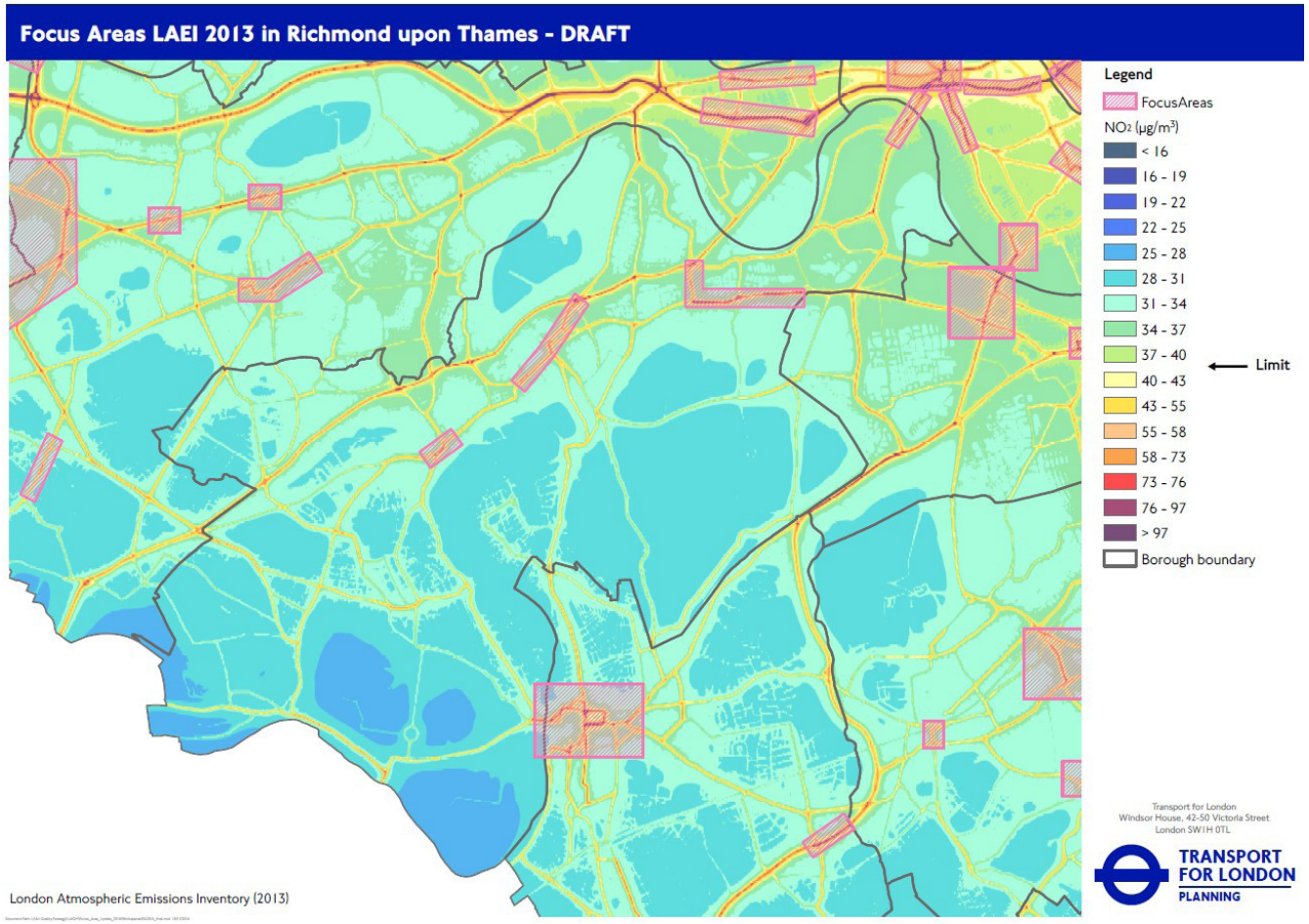


Figure 5: Map of London Borough of Richmond upon Thames - Air Quality Focus Areas (GLA 2013)

APPENDIX D: SOURCES OF POLLUTION IN LONDON BOROUGH OF RICHMOND UPON THAMES

Pollution in the London Borough of Richmond upon Thames comes from a variety of sources. This includes pollution from sources outside of the borough, and , in the case of particulate matter, a significant proportion comes from outside London and beyond the UK.

In order to evaluate the impact of the pollution sources within the borough, the charts reproduced in Figure 6 below provide source apportionment data for each of the borough's four Air Quality Focus Areas. The data originates from TfL's London Atmospheric Emissions Inventory (LAEI) and is based on modelled data for the year 2020. The charts provide a comparison of the percentage contribution to NOx concentrations across each AQFA, as an average concentration value, and compare it with the percentage NOx concentration within 20 metres of the major roads within each AQFA. As would be expected this highlights the impact of road transport at receptor locations close to the roadside.

For each AQFA the charts also provide a breakdown of NOx emissions from each vehicle type within the road transport fraction. This information is helpful for highlighting the variation in traffic emissions between the different AQFAs and for targeting measures which will have the most benefit in terms of reducing emissions from the various transport sources. Based on the average percentage contribution of

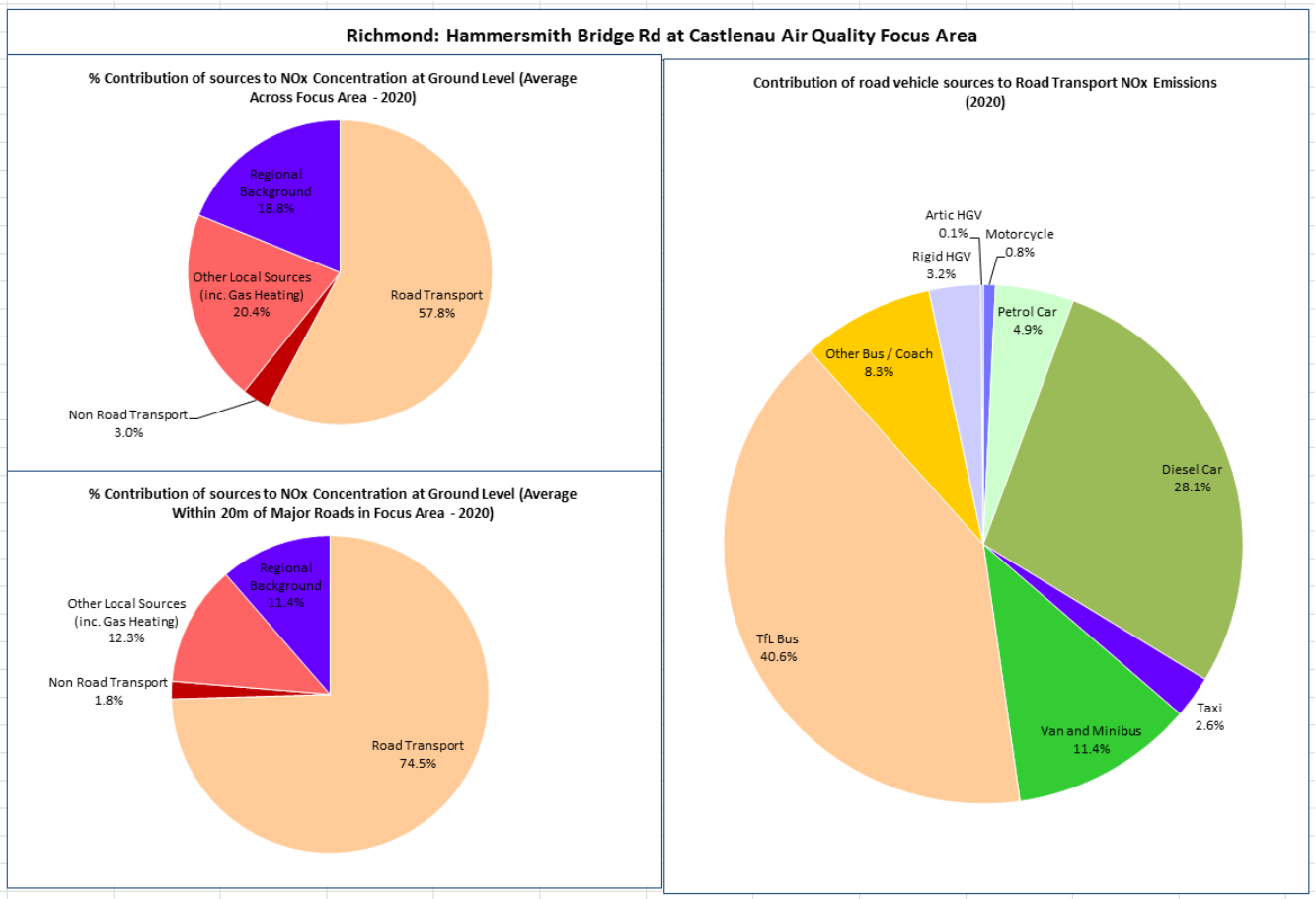
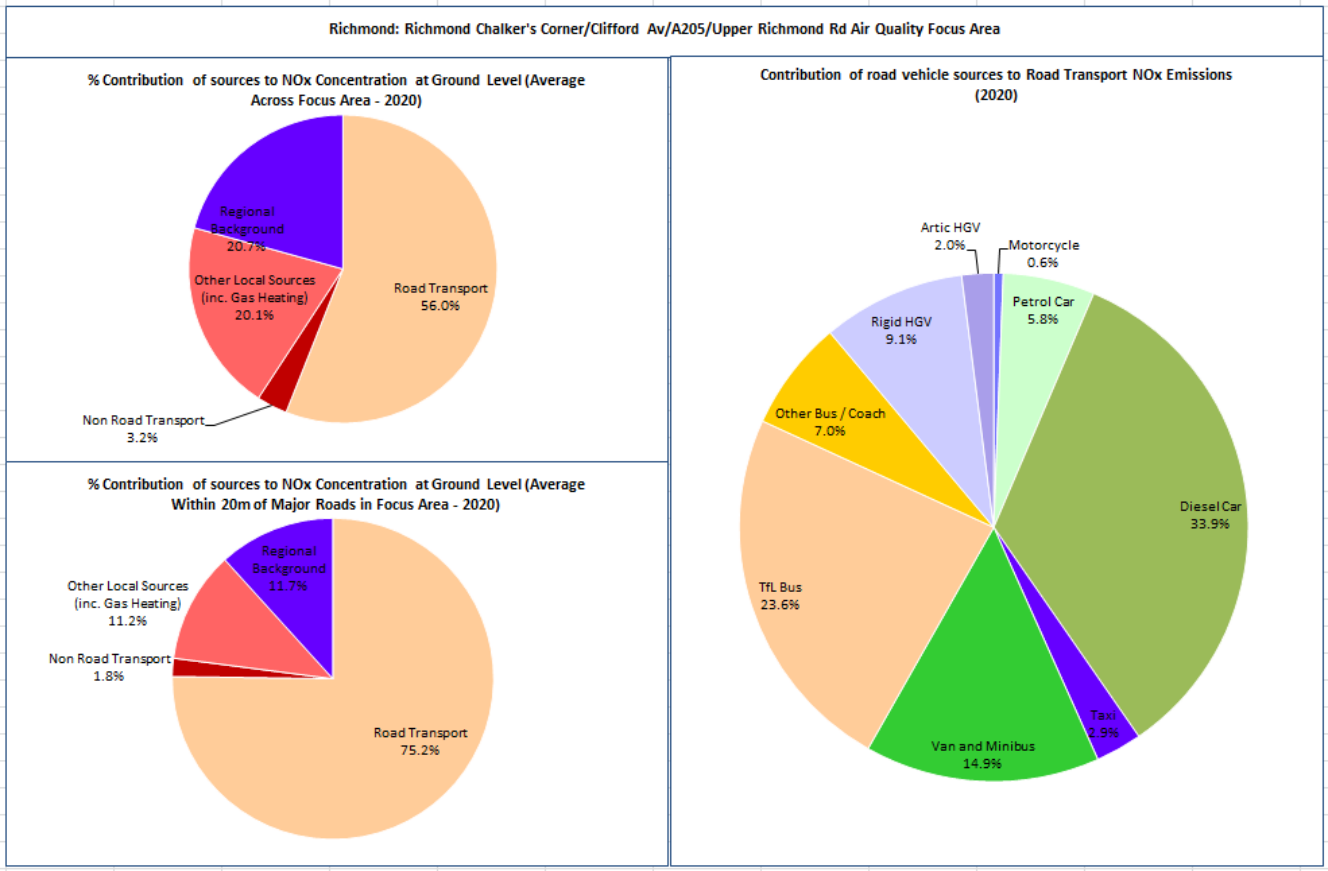


Figure 6: NOx emissions by source and vehicle type for the London Borough of Richmond upon Thames Air Quality Focus Areas. (Modelled data for 2020)

sources to NOx concentrations across the four AQFAs; transport contributes an average of 55% (range 50.0% to 57.8%), other local sources including gas heating an average of 21.2% (range 20.1% to 23.5%), non-road transport an average of 3.4% (range 3.0% to 3.9%), with regional background sources contributing an average of 20.2% (range 18.8% to 21.8%).

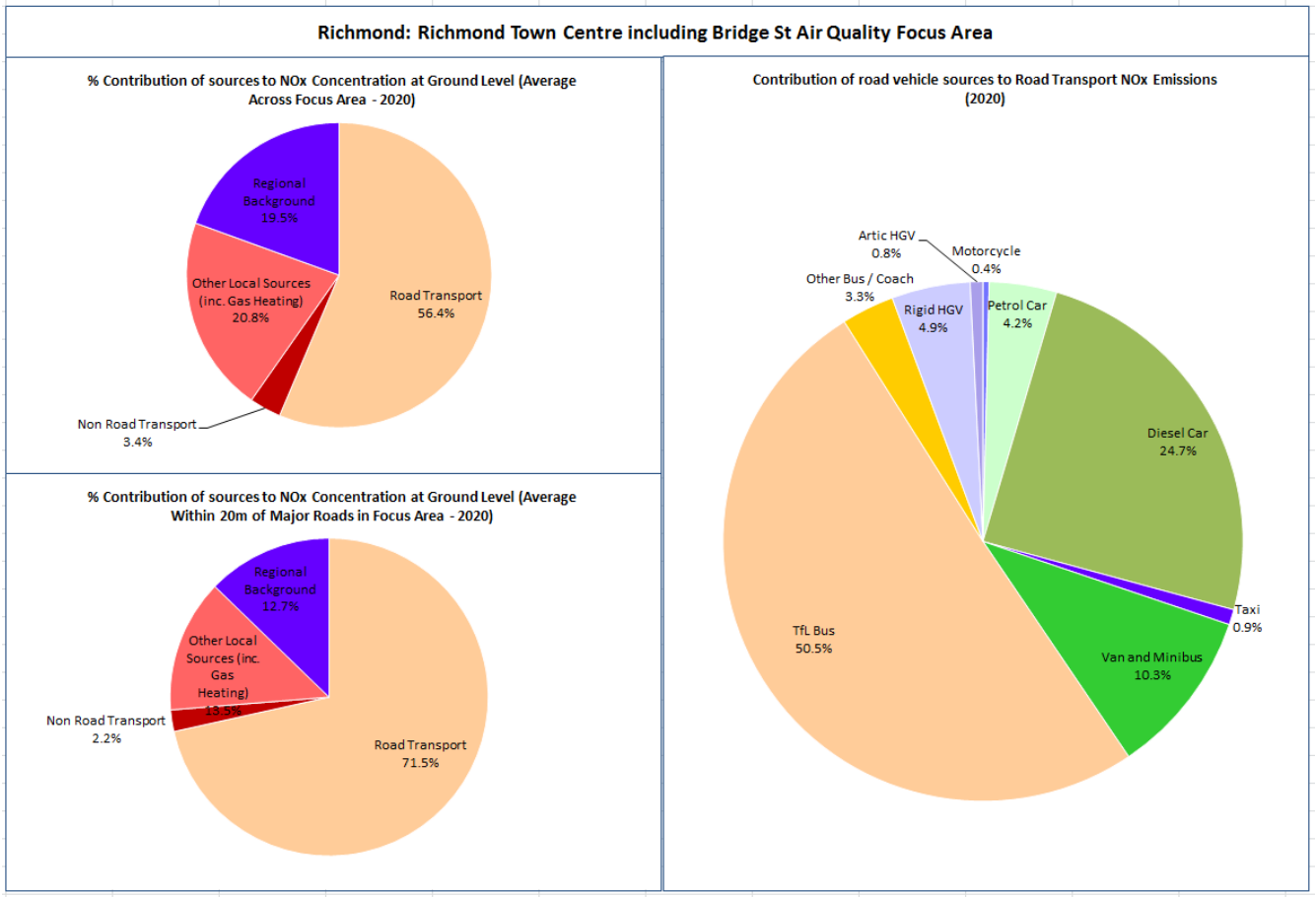
In respect of the transport sources in particular, the LAEI source apportionment emissions data for each AQFA indicates that diesel vehicles contribute approximately 90% of the total road transport NOx emissions (based on 2020 modelled data). This is the combined NOx emission contribution from diesel vehicles across all vehicle types. Comparison of the modelled emissions data between each AQFA indicates some interesting variations in the relative contribution of NOx from diesel cars and TfL buses which are the two largest individual road transport emission sources.

The highest NOx emissions from buses are within the Richmond Town Centre AQFA at 50.5% compared with the lowest contribution at Chalkers Corner/Clifford Avenue AQFA at 23.6%. For emissions from diesel cars the highest percentage contribution is within the Twickenham Town Centre AQFA at 37.2% and the lowest within the Richmond Town Centre AQFA at 24.7%. The data is based on the predicted number of each of the vehicle types within the AQFAs in 2020 as well as other assumptions such as predicted average vehicle speed and emission standards for the specific vehicle fleet at that point in time.



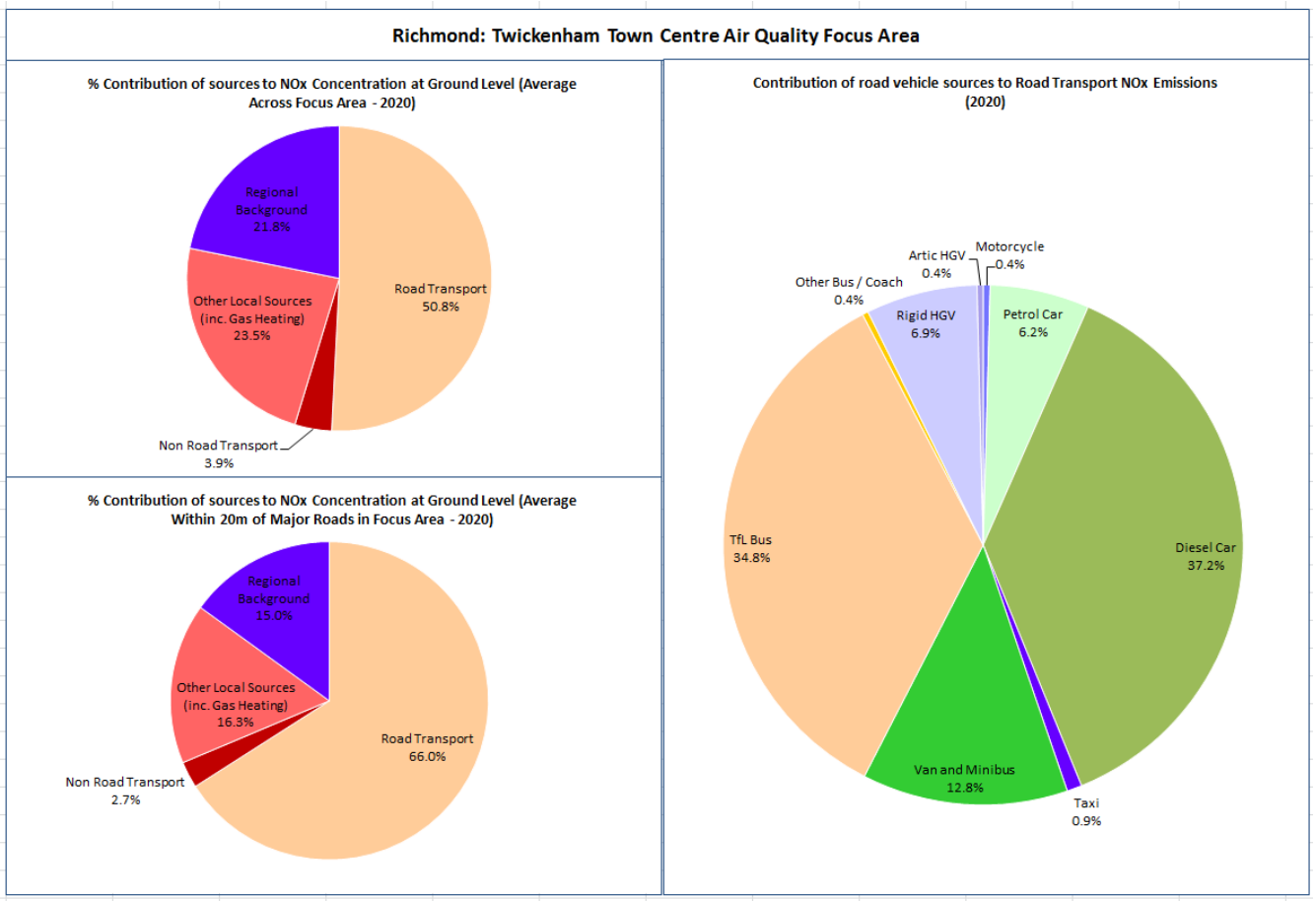
Numerically buses and other heavy duty vehicles represent a smaller proportion of the fleet but generate higher emissions per vehicle when compared to cars and other light duty vehicles. The council currently has limited direct control over the TfL bus and taxi fleets operating within the borough but it is clear that the AQAP measures need to address emissions from all vehicle types but particularly those which are diesel powered. This includes general measures which aim to reduce traffic volume and improve traffic flow but also more specific measures to increase the proportion of low emission vehicles in the general fleet such as increasing number of electric cars and vans; ensuring that the borough benefits from improved TfL emission standards for local bus and taxi fleets and reviewing freight and delivery practices to minimise emissions in areas with poorest AQ.

Other local sources of NOx emissions include commercial and domestic gas heating sources and non-road mobile machinery. The London Borough of Richmond upon Thames is limited in terms of reducing domestic gas NOx emissions from existing housing stock as the council no longer has any housing stock, however the AQ Supplementary Planning Guidance document and GLA AQ Neutral policy for London boroughs provide some controls on heating appliances for new and redeveloped properties and businesses.



For non-road mobile machinery (NRMM), the borough has jointly commissioned an NRMM emissions study to identify compliant machinery and develop a checklist for contractors which will be used to improve emissions from machinery and equipment operated on development sites.

Similarly, for particulate matter, the dominant source of emissions is transport and within that sector diesel powered vehicles collectively contribute more than 70% of PM10 emissions. Measures to address transport sources generally and those which reduce reliance on diesel fuels will have a positive impact on PM10 and PM2.5 emissions. One additional source of particulate matter is the re-suspension of dust from roads and commercial and development sites. For development sites re-suspension of particulate matter is controlled to some extent by use of the Sustainable Design and Construction and Control of Dust and Emissions Supplementary Planning Guidance and for highways sources, existing street cleansing regimes will have some benefit.



APPENDIX E: DEVELOPMENT AND IMPLEMENTATION OF THE LONDON BOROUGH OF RICHMOND UPON THAMES' AQAP

Consultation and Stakeholder Engagement

In updating the action plan we have worked with public groups, other local authorities, agencies, businesses and the local community to improve local air quality. Schedule 11 of the Environment Act 1995 requires local authorities to consult the bodies listed in Table 3.1. In addition, we have undertaken the following stakeholder engagement:

- web site
- Articles in local newspaper
- Direct engagement with partner groups

The response to our consultation stakeholder engagement is given in Appendix A. (To be completed)

Table A3: Consultation undertaken

Yes/No	Consultee
	the Secretary of State
	the Environment Agency
	Transport for London and the Mayor of London (who will provide a joint response)
	all neighbouring local authorities
	other public authorities as appropriate
	bodies representing local business interests and other organisations as appropriate

APPENDIX F: ABBREVIATIONS

AQAP	Air Quality Action Plan
AQFA	Air Quality Focus Area
AQMA	Air Quality Management Area
AQO	Air Quality Objective
BEB	Buildings Emission Benchmark
CAB	Cleaner Air Borough
CAZ	Central Activity Zone
EV	Electric Vehicle
GLA	Greater London Authority
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LLAQM	London Local Air Quality Management
NRMM	Non-Road Mobile Machinery
PM10	Particulate matter less than 10 micron in diameter
PM2.5	Particulate matter less than 2.5 micron in diameter
TEB	Transport Emissions Benchmark
TfL	Transport for London