London Borough of Merton
Air Quality Annual Status Report for 2016
Date of publication: April 2017

This report provides a detailed overview of air quality in London Borough of Merton during 2016. It has been produced to meet the requirements of the London Local Air Quality Management statutory process[1].

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[1] LLAQM Policy and Technical Guidance 2016 (LLAQM.TG(16)). https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/working-boroughs

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Abbreviations

AQAP	Air Quality Action Plan
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
PM_{10}	Particulate matter less than 10 micron in diameter
$PM_{2.5}$	Particulate matter less than 2.5 micron in diameter
TEB	Transport Emissions Benchmark
TfL	Transport for London

Table A. Summary of National Air Quality Standards and Objectives

Pollutant	Objective (UK)	Averaging Period	Date[1]
Nitrogen dioxide - NO_2	200 μg m^{-3} not to be exceeded more than 18 times a year	1-hour mean	31 Dec 2005
	40 μg m^{-3}	Annual mean	31 Dec 2005
Particles - PM_{10}	50 μg m^{-3} not to be exceeded more than 35 times a year	24-hour mean	31 Dec 2004
	40 μg m^{-3}	Annual mean	31 Dec 2004
Particles - $PM_{2.5}$	25 μg m^{-3}	Annual mean	2020
	Target of 15% reduction in concentration at urban background locations	3 year mean	Between 2010 and 2020
Sulphur Dioxide (SO_2)	266 μg m^{-3} not to be exceeded more than 35 times a year	15 minute mean	31 Dec 2005
	350 μg m^{-3} not to be exceeded more than 24 times a year	1 hour mean	31 Dec 2004
	125 μg m^{-3} mot to be exceeded more than 3 times a year	24 hour mean	31 Dec 2004

Note: [1]by which to be achieved by and maintained thereafter

1. Air Quality Monitoring

In 2016 Merton operated one automatic monitoring site. The ME2 site is a roadside site on Merton Road in South Wimbledon monitoring PM_{10}; the site started operating in June 2011. The monitoring station is sited 0.6m from kerb of the nearest road and 3m from nearest point of relevant exposure.

The continuous site (ME1) measuring NO_2 at a roadside site located at the Civic Centre in Morden suffered from a series of continuous faults during 2016 and no data is available for this period. The station has also been moved as the existing site is subject to redevelopment work. The station will continue to operate a chemiluminescent NO_2 analyser and was relocated to a new position close to the original site in January 2017. Results for the new location will be presented in the next Annual Status Report.

All data from the automatic monitoring analysers undergoes quality assurance and quality control (QA/QC) procedures to ensure that the data is of a high quality. The standards of QA/QC at the London Air Quality Network (LAQN) sites are similar to those of the government's national Automatic Urban and Rural Network (AURN) sites. All data have traceability to national standards and operational procedures defined for the London Air Quality Network (LAQN). For QA/QC purposes all continuous analysers are manually checked and calibrated every two weeks, serviced every six months and audited by an independent auditor (National Physical Laboratory) every six months. Subsequent data ratification is undertaken by King's College London.

Merton Council also undertakes non-automatic monitoring of nitrogen dioxide using diffusion tubes which are located at 20 sites across the borough. Diffusion tubes offer a relatively inexpensive means of gauging NO_2 concentrations at a number of locations across the borough. The results provide monthly NO_2 averages and can be used to compare measured concentrations with the annual mean NO_2 objective. The accuracy of diffusion tube data is improved by comparing results with automatic monitoring data and a bias adjustment factor applied based on calculation of a national factor.

Following a comprehensive review of the monitoring provision in Merton, the diffusion tube network has been expanded to 52 sites. A number of the existing sites have also been changed to improve quality of monitoring data across the borough. Full site descriptions and the 2017 monitoring data for the revised network will be provided in the 2018 Annual Status Report.

Table B. Details of Automatic Monitoring Sites for 2016

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Monitoring technique
ME2	Merton Road, South Wimbledon	525808	170122	Roadside	Y	3m	0.6m	1.6m	PM_{10}	BAM

Table C. Details of Non-Automatic Monitoring Sites for 2016

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance of tube to kerbside (m)	Distance of receptor to kerbside (m)	Inlet height (approx.) (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
BA	Burlington Road New Malden	522501	168235	roadside	Y	3	2.6	N/A	NO_2	N
EA	246 Merton Rd, Sth Wimbledon A219	525798	170081	roadside	Y	0.5	1.9	N/A	NO_2	N
FA	154 Grand Drive Raynes Park	523207	169195	kerbside	Y	0.9	3.6	N/A	NO_2	N
JC	17 Grand Drive Raynes Park	523315	168048	kerbside	Y	0.4	8.4	N/A	NO_2	N
GA	Garth Drive Morden	524113	166129	kerbside	Y	0.5	4.1	N/A	NO_2	N

HA	High St Colliers Wood	526955	170707	kerbside	Y	0.7	2.6	N/A	NO_2	N
LA	Alley Charminster Ave Morden	525449	169152	background	Y	15	9	N/A	NO_2	N
MA	Lavender Ave Morden	527621	169646	kerbside	Y	0.4	5.8	N/A	NO_2	N
RA	Pepys Road Morden	523357	169534	kerbside	Y	0.6	10.1	N/A	NO_2	N
WA	Woodside Wimbledon	524608	170873	kerbside	Y	0.5	6.7	N/A	NO_2	N
AC	The Ridgeway Wimbledon	524111	170883	kerbside	Y	0.4	1.5	N/A	NO_2	N
BC	Haydons Road South Wimbledon	526155	170168	roadside	Y	2.4	2.4	N/A	NO_2	N
CC	107 London Rd Tooting	527932	169502	kerbside	Y	0.6	2.4	N/A	NO_2	N
DC	35 London Rd Tooting	527913	170518	roadside	Y	1.5	1.9	N/A	NO_2	N
FC	Church Rd Mitcham	527158	168646	kerbside	Y	0.6	3	N/A	NO_2	N
HC	80 Crown Lane Morden	525401	168502	kerbside	Y	0.6	5	N/A	NO_2	N
IC	HSBC, London Rd Morden	525778	169824	kerbside	Y	0.6	2.6	N/A	NO_2	N
EC	BHF, 265 London Rd, Mitcham	527743	168874	kerbside	Y	0.6	4.2	N/A	NO_2	N
AA	Oxfam, London Rd, Morden	525817	168643	kerbside	Y	0.6	4.9	N/A	NO_2	N
GC	Western Rd Colliers Wood	526840	169694	roadside	Y	2	2.3	N/A	NO_2	N

1.2 Comparison of Monitoring Results with AQOs

The results presented are after adjustments for "annualisation" and for distance to a location of relevant public exposure, the calculations for which are described in Appendix A.

Table D. Annual Mean NO_2 Ratified and Bias-adjusted Monitoring Results ($\mu g\ m^{-3}$)

Site ID	Site Description	Site Type	Valid Data Capture for period of monitoring %	Valid Data Capture for 2016 %[a]	Annual Mean Concentration (μgm^{-3})				
					2012	2013	2014	2015	2016
ME1	Roadside	Automatic	100	0	**48 (48.1)**	**40.1**	38 (37.9)	34	closed
BA	Roadside	Diffusion tube	100	33	37.2	42	32.9	28	32[c]
GA	Kerbside	Diffusion tube	100	100	37.5	39.6	32.8	32	32[d]
HA	Kerbside	Diffusion tube	100	17	**50.7**	**52.2**	**49.8 (46.6)**	31	**49.9[c,d]**
LA	Background	Diffusion tube	100	92	24	26.1	26	17	24
MA	Kerbside	Diffusion tube	100	100	31.4	35.2	32.2	32	39
RA	Kerbside	Diffusion tube	100	83	32	35.9	32.8	26	36
WA	Kerbside	Diffusion tube	100	100	33.3	33.7	**40.5** (36.1)	25	37
AA	Kerbside	Diffusion tube	100	33	**45.1**	**48.2**	**51 (48.7)**	N/A	38[c,d]

EA	Roadside	Diffusion tube	100	92	**52.7**	**57.5**	**61.1 (50.5)**	**65**	**61[d]**
FA	Kerbside	Diffusion tube	100	100	34.7	37.7	**43.4** (36.5)	32	39.3[d]
AC	Kerbside	Diffusion tube	100	92	N/A	**47.6**	**41.6** (38)	N/A	**45[d]**
BC	Roadside	Diffusion tube	100	92	N/A	**48.3**	**43.6 (42.6)**	N/A	**54[d]**
CC	Kerbside	Diffusion tube	100	100	N/A	**72.6**	**67.2 (54.5)**	**64**	**62[d]**
DC	Roadside	Diffusion tube	100	50	N/A	**59.3**	**55.5 (50.2)**	**45**	**57[d]**
EC	Kerbside	Diffusion tube	100	83	N/A	**40.4**	38	37	39[d]
FC	Kerbside	Diffusion tube	100	92	N/A	**45.2**	36.2	37	**41[d]**
GC	Roadside	Diffusion tube	100	92	N/A	N/A	N/A	**53**	**64[d]**
HC	Kerbside	Diffusion tube	100	66	N/A	N/A	N/A	**46**	**48[d]**
IC	Kerbside	Diffusion tube	100	100	N/A	N/A	N/A	**40**	**45[c,d]**
JC	Kerbside	Diffusion tube	100	100	N/A	**42.1**	32.4	N/A	34[d]

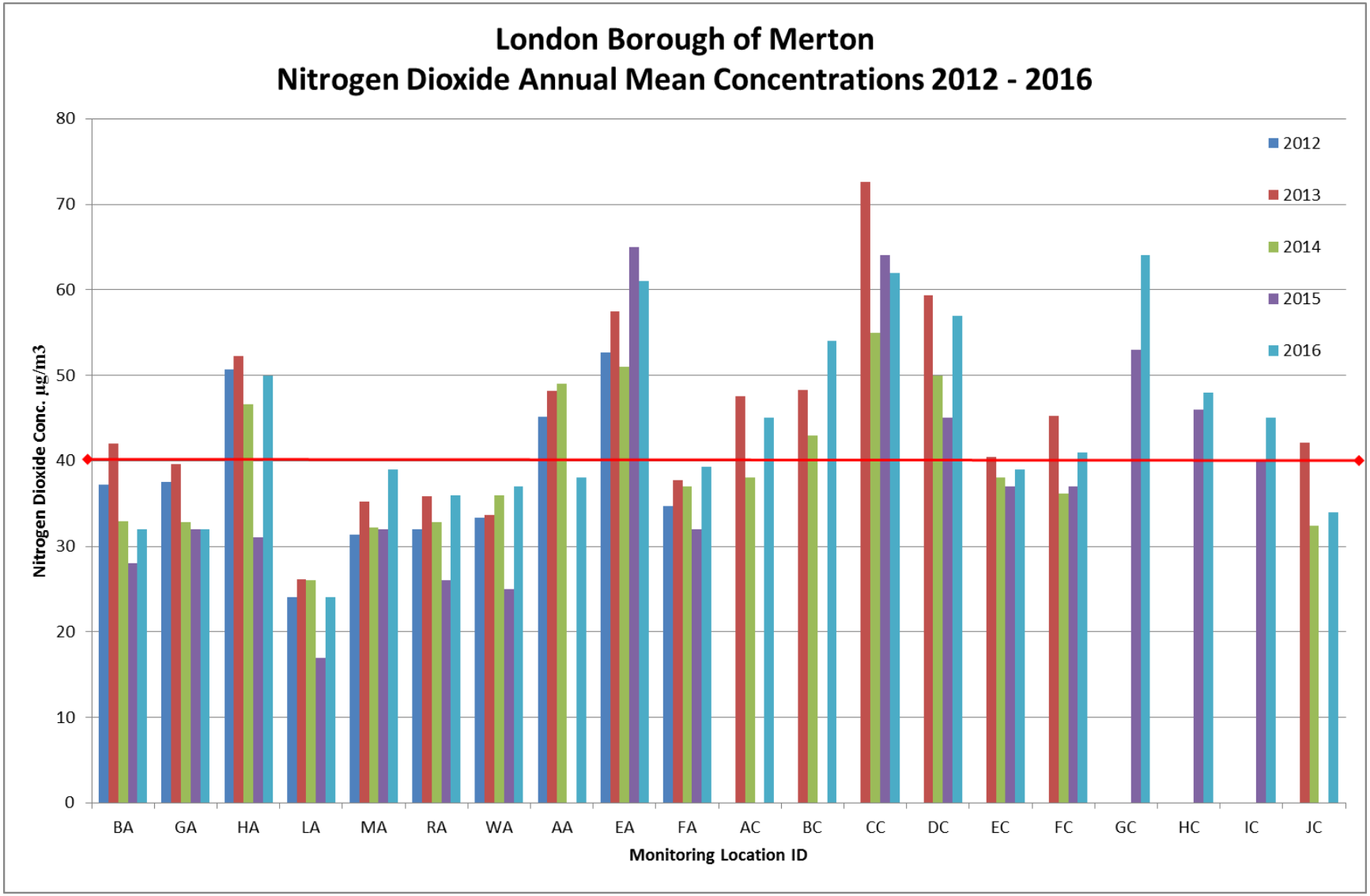
Notes:
Exceedance of the NO_2 annual mean AQO of 40µgm^{-3} are shown in **bold**.
Exceedance of the NO_2 annual mean AQO of 60µgm-3 are shown in **bold** and underlined
NO_2 annual means in excess of 60 µg m^{-3}, indicating a potential exceedance of the NO^2 hourly mean AQS objective are shown in bold and underlined.
[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year
[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)
[c] Means have been "annualised" in accordance with LLAQM Technical Guidance, where data capture less than 75%
[d] Mean concentrations have been adjusted for distance to point of relevant exposure using the LAQM NO_2 Fall-off with distance Calculator (Version 4.1)

Table D shows the NO_2 diffusion tube monitoring results, with bias corrected values for each year from 2012 to 2016. (Note – see Table K for the uncorrected monthly data for 2016). The results in bold indicate an exceedance of the annual mean objective of 40µg/m^3 and the results underlined indicate NO_2 annual means in excess of 60µg/m3 indicating a potential exceedance of the NO_2 hourly mean AQS objective. All diffusion tube data has been bias corrected and "annualised" where data capture rates were below 75%. In addition all sites measuring annual mean concentrations in excess of the AQ objective (40µg/m^3) have also been corrected for distance between the monitoring site and the nearest relevant receptor using the LAQM NO_2 Fall-off with Distance Calculator. The correction calculations are presented in Appendix A3.

The overall trend for measured annual mean NO_2 in Merton indicates that concentrations have remained more or less static for the period 2012 to 2016. The 2016 data shows an increase in concentrations at 13 out of the total 20 sites when compared to 2015, although the trend graph would suggest that 2015 data was unusually low overall. This could be attributable to variables such as weather conditions during that year although it should also be noted that data capture rates for the majority of sites in 2015 was less than 75% and it was not possible to correct the data accurately.

For the 2016 data fifteen sites showing an exceedance of the annual mean objective were corrected for distance, with ten sites remaining in exceedance of the objective after adjustment. Of those ten sites, three measured concentrations in excess of 60µg/m^3 and may be exceeding the 24-hour NO_2 objective. The sites concerned are 246 High Street, Merton (EA), 107 London Road, Tooting (CC) and 211 Western Road, Colliers Wood (GC).

Figure 1: Nitrogen Dioxide Annual Mean Concentrations 2012 - 2016



Automatic Monitoring

The automatic NO_2 analyser, previously sited at the Civic Centre Morden (ME1), was relocated to a new site at the beginning of 2017. It has not been possible to report data for 2016 as the analyser was undergoing repair during the monitoring period due to equipment failure. NO_2 data for 2017 will be reported for the new site in the next Annual Status Report.

Table E. Annual Mean PM_{10} Automatic Monitoring Results ($\mu g\ m^{-3}$)

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2016 % [b]	Annual Mean Concentration (μgm^{-3})					
			2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]
ME2	100	71	26[a]	29	31	28	25	24[c]

Notes: Exceedance of the PM_{10} annual mean AQO of 40 μgm^{-3} are shown in **bold**.

[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year. ME2 site opened June 2011.

[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

Table E provides results for the automatic monitoring station at the Merton Road, South Wimbledon (ME2) site which houses a Beta Attenuation Monitor (BAM) particulate analyser. The automatic monitoring data for the automatic monitoring stations are subject to correction by Kings College as part of the London Air Quality Network. BAM particulate analysers are equivalent to the PM_{10} reference method and the applicable correction factor has been applied by Kings College for all data presented in this report. Data capture for the ME2 automatic PM_{10} analyser was less than 75% for 2016 and data has therefore been "annualised" in accordance with the Technical Guidance (see appendix for full calculations). The "annualised" mean concentration provides an estimated value of $24\mu g/m^3$ indicating that this site met the annual mean objective for 2016. Compared to previous years the annual mean concentration remained static when compared to the previous year but overall indicates a slight overall reduction in the annual mean concentration over the past 5 years.

Table F. PM_{10} Automatic Monitor Results: Comparison with 24-Hour Mean Objective

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2016 % [b]	Number of Daily Means > 50 µgm^{-3}					
			2011[c]	2012 [c]	2013[c]	2014 [c]	2015 [c]	2016 [c]
ME2	71	71	0	26	31	17 (44.4)	21	8 (36.6)

Notes: Exceedance of the PM_{10} short term AQO of 50 µg m^{-3} over the permitted 35 days per year or where the 90.4th percentile exceeds 50 µg m^{-3} are shown in **bold**.
Where the period of valid data is less than 90% of a full year, the 90.4th percentile is shown in brackets after the number of exceedances.
[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year
[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)
[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

Table F provides a comparison of the 2016 monitoring data with the 24-hour mean objective. The objective of no more than 35 days exceeding 50µg/m^{3}was achieved at the Merton Road (ME2) site in 2016. Given that the data capture rate for the year was less than 90% the 24-hour mean objective has been expressed as a 90.4th percentile value at 36.6µg/m^3. As this value is below 50µg/m^3 it confirms that if there had been 100% data capture the short term objective would not have been exceeded. The results indicate a reduction in number of days exceeding 50µg/m^{3}over the past 5 years with 2016 showing the lowest value for that period.

2. Action to Improve Air Quality

Table G. Commitment to Cleaner Air Borough Criteria

Theme	Criteria		Achieved (Y/N)	Evidence
1. Political leadership	***1.a***	Pledged to become a Cleaner Air for London Borough (at cabinet level) by taking significant action to improve local air quality and signing up to specific delivery targets.	*Y*	Cabinet Members signed up to LB of Merton achieving CAB status in 2013 and have signed a commitment to supporting the objectives of the updated AQAP.
	1.b	Provided an up-to-date Air Quality Action Plan (AQAP), fully incorporated into LIP funding and core strategies.	*Y*	The previous AQAP has been reviewed and updated to cover the period 2017- 2022. The updated AQAP is currently in draft format subject to further evaluation by the AQ steering group and public consultation. The updated AQAP measures will be incorporated into the LIP process and public health agenda via Health and Wellbeing Strategy which includes air quality as a key theme.
2. Taking action	**2.a**	Taken decisive action to address air pollution, especially where human exposure and vulnerability (e.g. schools, older people, hospitals etc) is highest.	*Y*	- 86 events held in 2015/16 including CleanerAir4Schools – joint project between Croydon, Merton, Richmond and Wandsworth including 'walk once a week campaign', School Travel Plan champions training events held in three schools in each borough(Mayor's AQ Fund project 2015 - 2017) - Assessed AQ impacts of introducing emissions based parking levy for residential parking permits in 2016. Levy applied to diesel vehicles to incentivise uptake of low emission alternatives. Cabinet approved scheme for implementation in 2017. - Provision of electric vehicle charging infrastructure including 21 new charge points installed in 9 locations across the borough during 2016. - Provision of 90 on-street cycle parking facilities via Local Implementation Plan.

	2.b	Developed plans for business engagement (including optimising deliveries and supply chain), retrofitting public buildings using the RE:FIT framework, integrating no engine idling awareness raising into the work of civil enforcement officers, (etc etc).	Y	- Diesel parking levy extended to business parking permits. - Participated in project coordinated by LB Richmond-upon –Thames to evaluate AQ/congestion improvements through introduction of delivery timing restrictions. Outcomes from trial to be incorporated as part of business engagement project via updated AQAP.
	2.c	Integrated transport and air quality, such as: improving traffic flows on borough roads to reduce stop/start conditions, improving the public realm for walking and cycling, and introducing traffic reduction measures.	Y	- Implemented on- carriageway cycling improvements along 2 km of Croydon Road to provide shared facility. (via LB of Merton LIP) - Undertook further public consultations on Cycle Quietway between Clapham Common & Wimbledon forming the Merton section of the Wandle trail. (TfL Quietways project) - Undertook 72 junction reviews and 1 waiting & loading review in 2016 to improve traffic flow (via LB of Merton LIP).
	2.d	Made additional resources available to improve local air quality, including by pooling its collective resources (s106 funding, LIPs, parking revenue, etc).	Y	The council makes use of a range of funding sources to help deliver its transport schemes, many of which deliver AQ benefits. Sources include TfL LIP funding, other TfL funding schemes (e.g. Borough Cycling Programme, Incubator funding), S.106 funding, Council uplift funding, Council revenue funding, parking related income and Mayor's AQ funding.
3. Leading by example	**3.a**	Invested sufficient resources to complement and drive action from others.	Y	LB Merton share resources with LB Richmond-upon-Thames. AQ budget for Merton is £40k which covers cost of AQ officer time, equipment and maintenance of monitoring stations.
	3.b	Maintained an appropriate monitoring network so that air quality impacts within the borough can be properly understood	Y	The Merton monitoring network was reviewed and rationalised in 2016 with a number of sites relocated to provide better assessment of air quality impacts. The network has also been expanded to 52 sites to provide a more comprehensive assessment of air quality across the borough. Additional resources have been allocated to improve monitoring procedures and achieve better data capture rates from all sites.

				- Monitoring network will be kept under review to ensure that impact of AQAP measures can be evaluated.
	3.c	Reduced emissions from council operations, including from buildings, vehicles and all activities.	Y	Total CO_2 equivalent emissions in Merton for 2015-16 were 15,512 tonnes, compared to 18,455 tonnes in 2014-15. This represents a 15% reduction in CO_2 emissions from the 4 key sectors monitored; buildings- corporate, street lighting , buildings – schools and renewables reduction (tonnes CO_{2e}). CO_2 monitoring calculations at Merton are based on financial rather than calendar year.
	3.d	Adopted a procurement code which reduces emissions from its own and its suppliers activities, including from buildings and vehicles operated by and on their behalf (e.g. rubbish trucks).	Y	New contracts issued during 2016 have outsourced waste collection and Parks contracts under existing procurement criteria. Updated AQAP includes measure to review procurement policies in respect of vehicle emissions.
4. Using the planning system	**4.a**	Fully implemented the Mayor's policies relating to air quality neutral, combined heat and power and biomass.	Y	- All approved planning applications must meet the Mayor's requirements relating to AQ neutral and CHPs.
	4.b	Collected s106 from new developments to ensure air quality neutral development, ***where possible***.	Y	- Commissioned development of Merton AQ Supplementary Planning Guidance in 2016. SPG to require AQ mitigation and community sustainable transport measures to be delivered through planning condition and s.106 planning agreements. SPG further ensures that emissions from new developments are minimised and effective mitigation is integrated at scheme design stage. No s106 monies have been collected to date but this would be enabled in future based on adoption of current SPG and incorporation of AQ into Local Plan.
	4.c	Provided additional enforcement of construction and demolition guidance, with regular checks on medium and high risk building sites.	Y	The Pollution Team carried out 350 Pollution compliance visits (30% of these visits were to medium and high risk sites. Visits include noise/ dust enforcement etc. Merton conducted 21 NRMM compliance visits (with 15 sites compliant and 6 working towards compliance). In 2016 LB Merton commissioned NRMM

				emissions study in partnership with 12 other boroughs. Project to identify all compliant machinery & develop checklist for contractors. To be implemented via updated AQAP in 2017.
5. Integrating air quality into the public health system	**5**	Included air quality in the borough's Health and Wellbeing Strategy and/or the Joint Strategic Needs Assessment.	*Y*	LB of Merton Health and Wellbeing Strategy 2015 – 2018 identifies poor AQ as a significant contributory factor in respiratory diseases within the borough. Target set to increase LBM managed tree canopy cover by 3% by 2018 to reduce pollution. (Outcome 5.3) - Merton Joint Strategic Needs Assessment (2015 Summary document) indicates that 6.4% of mortality in LB Merton was attributable to air pollution. (2013 PHOF 3.01 data). Local recommendations embedded in Merton JSNA include: expanding access to green spaces, improve active travel across social gradient, and integrate planning/transport/housing/environmental and health systems to coordinate improvements in health outcomes. - Merton Health & Wellbeing Strategy and JSNA can be accessed via: http://www.merton.gov.uk/health-social-care/publichealth.htm
6. Informing the public	**6.a**	Raised awareness about air quality locally.	Y	- airTEXT promoted via Love Clean Air website (south London cluster group). - Love Clean Air website also provides general AQ information and advice for public. Local page enables boroughs to update AQ reports, promote events and publicise public consultations. - Updated AQAP measure to optimise website potential by providing regular updates on local AQ initiatives; promote availability of AirText notification service; invite contact from local residents to identify local AQ issues/opportunities; circulate consultations and publicise events.

2.1 Air Quality Action Plan Progress

Table H provides a brief summary of Merton's progress against the Air Quality Action Plan, showing progress made this year. The current Action Plan has been in place since 2003 and as such the measures within it are generally completed, no longer relevant or ongoing. Measures which are still active have been updated in Table H together with some new actions which have been initiated through the Local Implementation Plan and Mayors AQ Fund.

An updated draft AQAP has been produced and is currently subject to review by the AQ Steering Group before public consultation. The AQAP will cover the period from 2017 – 2022 and will reflect changes in air quality policy and identify specific measures to tackle pollution in the AQ Focus Areas and local 'hot-spots' within the borough. It will include measures to incentivise the uptake of low emission transport; encourage modal shift to active travel options and address the council's new $PM_{2.5}$ role. Adopted measures will include Key Performance Indicators wherever possible.

The updated AQAP, once finalised and approved, will be supported by the departmental Heads of Service for Environmental Health, Transport, and Planning; the Director of Public Health and Cabinet members.

Table H. Delivery of Air Quality Action Plan Measures

Measure	Action	Progress	Further information
Action 3	Identify appropriate sites for introduction of alternative fuelling infrastructure	Provision of electric vehicle charging infrastructure including 21 new charge points installed in 9 locations across the borough during 2016.(LIP2)	
Action 8	Progress the City Car Clubs scheme	Two successful car clubs within borough currently operated by Zipcar and City Car Club	
Action 10	Introduction of Controlled Parking Zones to reduce congestion	4 new zones and 73 waiting and loading reviews undertaken in 2015/16 (LIP2)	
Action 13	The council will produce updated supplementary planning guidance on air	Draft Supplementary Planning Guidance for Air Quality produced in late 2016 currently	

	quality.	undergoing review/consultation prior to adoption into Local Plan.	
Action 15	The council will produce a walking strategy for the borough	Signed up to Walkit.com walking strategy	
Action 16	The council will continue to promote and implement the Walking Bus and Safe Routes to School Scheme.	Implemented Safer Routes to School/Walking Bus scheme via School Travel Plans. (Mayor's AQ Fund project 2015 – 2017)	Participated in CleanerAir4Schools – joint project between Croydon, Merton, Richmond and Wandsworth including 'walk once a week campaign', School Travel Plan champions training events held in three schools in each borough.
Action 18	Development of cycle facilities	Provision of 90 on-street cycle parking facilities via Local Implementation Plan (LIP2 2016)	
Action 22	The council will provide guidance and support to businesses on developing Green Transport Plans	AQ project at Willow Lane Industrial Estate, Mitcham. Funded through Mayors AQ Fund (2013 -16).	Project increased green infrastructure through planting schemes; enhanced road/gully cleansing to reduce re-suspension of dust; delivered sustainable travel training & support and raised awareness of AQ to approximately 150 local businesses.
Action 32	Continue to monitor NO_2 using passive diffusion tubes.	Monitoring network reviewed in 2016. Automatic PM_{10} site maintained; automatic NO_2 site relocated. Diffusion tube network revised and expanded from 20 to 52 sites.	
2016	Encourage update of low emission vehicles	In 2016 Merton conducted Assessment of AQ benefits of introducing an emissions based parking levy for residential and business parking permits. Levy was approved at the beginning of 2017 for implementation and assessment for a period of 2 years.	

3. Planning Update and Other New Sources of Emissions

Table I. Planning requirements met by planning applications in *London Borough of Merton* in 2016

Condition	Number
Number of planning applications reviewed for air quality impacts	*494*
Number of planning applications required to monitor for construction dust	30
Number of CHPs/Biomass boilers refused on air quality grounds	0
Number of CHPs/Biomass boilers subject to GLA emissions limits and/or other restrictions to reduce emissions	5
Number of AQ Neutral building and/or transport assessments undertaken	3
Number of AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	0
Number of planning applications with S106 agreements including other requirements to improve air quality	0
Number of planning applications with CIL payments that include a contribution to improve air quality	0
NRMM: Central Activity Zone and Canary Wharf Number of conditions related to NRMM included. Number of developments registered and compliant. Please include confirmation that you have checked that the development has been registered at www.nrmm.london and that all NRMM used on-site is compliant with Stage IIIB of the Directive and/or exemptions to the policy.	*Not applicable*
NRMM: Greater London (excluding Central Activity Zone and Canary Wharf) Number of conditions related to NRMM included. Number of developments registered and compliant. Please include confirmation that you have checked that the development has been registered at www.nrmm.london and that all NRMM used on-site is compliant with Stage IIIA of the Directive and/or exemptions to the policy.	During 2016 NRMM conditions were applied at 4 sites. LB Merton undertook 21 NRMM site visits: 15 sites were found to be compliant, 6 sites were working towards compliance.

The current process used to identify relevant planning applications in Merton is based primarily on officers' discretion and experience of impact, considering:

- Size of the site
- Location

- Construction impact
- Local knowledge

In 2016 Merton and Richmond-upon-Thames jointly commissioned preparation of a draft Supplementary Planning Guidance (SPG) to address common air quality issues affecting both boroughs and assist in providing a consistent approach to new development. The SPG will set out the criteria for identifying planning application which require an air quality assessment; define the information to be submitted and assessed and guide developers on appropriate on-site mitigation and/or S.106 Agreements. The draft SPG is currently subject to internal review and will be incorporated into the borough's Local Plan in due course.

3.1 New or significantly changed industrial or other sources

No new or significantly changed sources have been identified in LB Merton in 2016.

Appendix A Details of Monitoring Site QA/QC

A.1 Automatic Monitoring Sites

All data undergoes quality assurance and quality control (QA/QC) procedures to ensure that the data obtained are of a high quality.

The continuous analyser is manually checked at frequent intervals by the local authority Air Quality Officer when filters are changed and the inlet head cleaned to remove any build-up of dirt. Flow audits and calibrations are carried out six monthly as part of the service contract.

PM_{10} Monitoring Adjustment

The TG09 guidance highlights that BAM instruments (as used at the Merton ME2 site) were shown to be equivalent to the PM_{10} reference method, provided that the results are corrected for slope. The monitoring results have been corrected by a factor of 1.2. Thus the results for the Merton ME2 site are reference equivalent.

Results from 2011 to 2016 (inclusive) are reported. It should be noted that data capture for 2011 was only 16% as the site was commissioned in June of that year. Data capture for 2014 was 77% and for 2016, 71%. For these years the data has been annualised to provide an annual mean value and the 90.4^{th} percentile of the one hour mean has been included for comparison against the 24-hour mean objective. The "annualisation" calculation for the Merton Road ME2 site for 2016 is provided in Appendix A3 below.

A.2 Diffusion Tube Quality Assurance / Quality Control

Directive 2008/50/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe (EC, 2008) sets data quality objectives for NO_2 along with other pollutants. Under the Directive, annual mean NO_2 concentration data derived from diffusion tube measurements must demonstrate an accuracy of ±25 % to enable comparison with the NO_2 air quality objectives of the Directive. In order to ensure that NO_2 concentrations reported are of a high quality, strict performance criteria need to be met through the execution of QA and QC procedures.

A number of factors have been identified as influencing the performance of NO_2 diffusion tubes including the laboratory preparing and analysing the tubes, and the tube preparation method (AEA, 2008). QA and QC procedures are therefore an integral feature of any monitoring programme, ensuring that uncertainties in the data are minimised and allowing the best estimate of true concentrations to be determined.

Merton's NO_2 diffusion tubes are analysed by Gradko using 50% TEA in acetone method of preparation. Gradko take an active role in developing rigorous QA and QC procedures in order to maintain the highest degree of confidence in their laboratory measurements. Gradko were involved in the production of the Harmonisation Practical Guidance for NO_2 diffusion tubes (AEA, 2008) and have been following the procedures set out in the guidance since January 2009. Since April 2014

Gradko has taken part in a new scheme AIR PT, which combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme.

This section contains details of Gradko International Ltd.'s Results of laboratory precision

- Performance in AIR NO_2 PT Scheme (April 2015 – February 2017)

- Summary of Precision Scores for 2014 - 2016

- UKAS schedule of accreditation (January 2017)

Summary of Laboratory Performance in AIR NO_2 Proficiency Testing Scheme (April 2014 – February 2016

Gradko participate in the AIR PT NO_2 diffusion tube scheme which uses artificially spiked diffusion tubes to test each participating laboratory's analytical performance on a quarterly basis. The scheme is designed to help laboratories meet the European Standard. Gradko demonstrated "good" laboratory performance for every period except one in 2016 for 50% TEA in Acetone.

Reports are prepared by LGC for BV/NPL on behalf of Defra and the Devolved Administrations. Background AIR is an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). AIR PT is a new scheme, started in April 2014, which combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme.

Table 1: Laboratory summary performance for AIR NO_2 PT rounds AR007, 9, 10, 12, 13, 15, 16 and 18

The following table lists those UK laboratories undertaking LAQM activities that have participated in recent AIR NO_2 PT rounds and the percentage (%) of results submitted which were subsequently determined to be **satisfactory** based upon a z-score of $\leq \pm 2$ as defined above.

AIR PT Round	AIR PT AR007	AIR PT AR009	AIR PT AR010	AIR PT AR012	AIR PT AR013	AIR PT AR015	AIR PT AR016	AIR PT AR018
Round conducted in the period	April – May 2015	July – August 2015	October – November 2015	January – February 2016	April – May 2016	July – August 2016	September – October 2016	January – February 2017
Aberdeen Scientific Services	100 %	75 %	100 %	100 %	100 %	100 %	100 %	100 %
Cardiff Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Edinburgh Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Environmental Services Group, Didcot [1]	100 %	100 %	100 %	100 %	75 %	75 %	100 %	100 %
Exova (formerly Clyde Analytical)	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Glasgow Scientific Services	100 %	100 %	100 %	75 %	100 %	0 %	100 %	100 %
Gradko International [1]	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Kent Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Kirklees MBC	100 %	100 %	100 %	100 %	100 %	100 %	NR [2]	NR [2]
Lambeth Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	75 %	100 %
Milton Keynes Council	100 %	100 %	100 %	50 %	100 %	100 %	75 %	100 %
Northampton Borough Council	100 %	100 %	100 %	50 %	100 %	NR [2]	75 %	0 %
Somerset Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
South Yorkshire Air Quality Samplers	100 %	100 %	75 %	100 %	100 %	75 %	100 %	100 %
Staffordshire County Council	100 %	75 %	75 %	75 %	75 %	100 %	NR [2]	100 %
Tayside Scientific Services (formerly Dundee CC)	NR [2]	NR [2]	NR [2]	100 %	NR [2]	100 %	NR [2]	100 %
West Yorkshire Analytical Services	75 %	75 %	75 %	75 %	100 %	NR [2]	50 %	100 %

[1] Participant subscribed to two sets of test samples (2 x 4 test samples) in each AIR PT round.
[2] NR No results reported
[3] Kent Scientific Services, Cardiff Scientific Services and Exova (formerly Clyde Analytical) no longer carry out NO_2 diffusion tube monitoring and therefore did not submit results.

2014 - 2016 Summary of Precision Results for Nitrogen Dioxide Diffusion Tube Collocation Studies for Gradko Laboratory 50% TEA in Acetone

Gradko, 50% TEA in Acetone	
2014	G
2014	G
2014	G
2014	G
2014	G
2014	G
2014	G
2014	G
2014	G
2014	P
2015	G
2015	G
2015	G
2015	G
2015	G
2015	G
2015	G
2015	G
2015	G
2015	G
2015	G
2015	G
2015	G
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2016	G
2016	G
2016	G
2016	G
2016	G
2016	G
2016	G
2016	G
2016	G
2016	G
2016	G
2016	G
2016	G
2016	G
2016	P

2014 Results of study carried out in 2014

2015 Results of study carried out in 2015

2016 Results of study carried out in 2016

Numerical results for this data are contained in the National Bias Adjustment Spreadsheet version 03/17.

P Poor Precision

G Good Precision

Gradko is accredited by UKAS for the analysis of NO_2 diffusion tubes. It undertakes the analysis of the exposed diffusion tubes by ultra violet spectrophotometry.

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

UKAS TESTING 2187 Accredited to ISO/IEC 17025:2005	**Gradko International Ltd** **(Trading as Gradko Environmental)** **Issue No:** 020 **Issue date:** 12 January 2017
	St Martins House **77 Wales Street** **Winchester** **Hampshire** **SO23 0RH** **Contact: Mr A Poole** **Tel: +44 (0)1962 860331** **Fax: +44 (0)1962 841339** **E-Mail: diffusion@gradko.co.uk** **Website: www.gradko.co.uk**
Testing performed at the above address only	

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS Collected on diffusion (sorbent) tubes and monitors	Chemical Tests	Documented In-House Methods
	Ammonia	GLM 8 by Ion Chromatography
	Benzene Toluene Ethyl benzene Xylene	GLM 4 by Thermal Desorption/ FID Gas Chromatography
	Hydrogen chloride Nitrogen dioxide Sulphur dioxide Hydrogen fluoride	GLM 3 by Ion Chromatography
	Hydrogen sulphide	GLM 5 by Colorimetric determination (UV Spectrophotometry)
	Ozone	GLM 2 by Ion Chromatography
	Nitrogen Dioxide	GLM 7 by Colorimetric determination (UV Spectrophotometry)
	Nitrogen Dioxide (as Nitrite)	GLM 9 by continuous flow colorimetric analyser
	Sulphur dioxide	GLM 1 by Ion Chromatography
	Formaldehyde	GLM 18 by HPLC

Factor from Local Co-location Studies

No co-location studies were undertaken by Merton in 2016.

Discussion of Choice of Factor to Use

Merton Borough does not undertake co-location studies, so the Gradko Laboratories 50% TEA national correction factor was used to bias adjust all NO_2 diffusion tubes. For 2016 the correction factor was 1.03.

A.3 Adjustments to the Ratified Monitoring Data

Short-term to Long-term Data Adjustment

For monitoring sites where data capture is less than 75% of a full calendar year (less than 9 months), the mean has been "annualised" using the methodology outlined in LLAQM.TG(16) before being compared to annual mean objectives.

Table J. Short-Term to Long-Term Monitoring Data Adjustment

PM_{10} Adjustment

Measured mean PM_{10} concentration for Merton Road ME2 site is 23µg/m^3 based on data capture rate of 71% covering the monitoring period 01/01/16 to 07/11/16. Where data capture falls below 75% is it necessary to "annualise" the data in accordance with the procedure detailed in LLAQM. Technical Guidance (TG16).

The long term sites chosen for the calculation are background sites selected on basis of distance to ME2, which provide good data capture rates and where data has been fully ratified. The short to long-term monitoring data adjustment calculation was carried out in accordance with Box 3.8 of the LLAQM Technical Guidance (TG16).

Site	Site Type	Annual Mean (µg/m^3)	Period Mean (µg/m^3)	Ratio
Wandsworth -Putney	Background	18	17	1.059
K & C – North Ken	Background	19	18	1.056
			Average	**1.0575**

Measured mean x R_a = 23 x 1.0575 =24.3µg/m^3

Annualised PM_{10} annual mean concentration for ME2 = 24.3µg/m^3

Annualisation of Diffusion Tube Monitoring Data

Four diffusion tube sites returned data capture rates below 75%. The 'raw' concentrations were annualised in accordance with Box 4.9 of the LLAQM Technical Guidance (TG16). No continuous background sites were identified that fulfilled the criteria of TG16 and therefore two non-automatic diffusion tube sites were used. One background site was within the Merton network and the other was the Wetlands site in Richmond. Both sites had data capture rates greater than 85% for 2016. As two background sites were used the ratio of the Annual mean/Period mean were averaged and applied to each of the four measured concentrations. The calculations are reproduced in the table below.

Start Date (dd/mm/yy)	End Date (dd/mm/yy)	tube average B1 wetlands	D1 IC	B1 when D1 is available	D2 BA	B1 when D2 is available	D3 AA	B1 when D3 is available	D4 HA	B1 when D4 is available
06/01/2016	01/02/2016	26.54			50.1	26.54				
01/02/2016	29/02/2106	26.15			43.3	26.15				
29/02/2106	31/03/2016	21.86			48.1	21.86				
31/03/2016	27/04/2016	19.18	36.4	19.18	49.3	19.18				
27/04/2016	24/05/2016	22.53	37.5	2.53	44.4	22.53				
24/05/2016	28/06/2016	19.68								
28/06/2016	27/07/2106	14.72			35.3	14.72				
27/07/2106	24/08/2016	16.37	34.3	16.37			30.7	16.37		
24/08/2016	28/09/2016	20.38	54.2	20.38			53.9	20.38		
28/09/2016	26/10/2016	25.71	58.8	25.71	52.2	25.71	68.6	25.71	73.5	25.71
26/10/2016	29/11/2016	30.25	57.4	30.25	52.3	30.25	56.6	30.25	72.3	30.25
29/11/2016	03/01/2017	34.40								
	Average	23.1	46.4	19.1	46.9	23.4	52.5	23.2	72.9	28.0
	Am/Pm (B1)			1.21		0.99		0.99		0.83

Start Date (dd/mm/yy)	End Date (dd/mm/yy)	tube average B2 Charminster (LA)	D1 IC	B2 when D1 is available	D2 BA	B2 when D2 is available	D3 AA	B2 when D3 is available	D4 HA	B2 when D4 is available
06/01/2016	01/02/2016	25.0			50.1	25.0				
01/02/2016	29/02/2106	22.5			43.3	22.5				
29/02/2106	31/03/2016	25.0			48.1	25.0				
31/03/2016	27/04/2016	13.3	36.4	13.3	49.3	13.3				
27/04/2016	24/05/2016	13.7	37.5	13.7	44.4	13.7				
24/05/2016	28/06/2016	25.3								
28/06/2016	27/07/2106	19.0			35.3	19.00				
27/07/2106	24/08/2016	19.2	34.3	19.2			30.7	19.2		
24/08/2016	28/09/2016	30.2	54.2	30.2			53.9	30.2		
28/09/2016	26/10/2016	33.7	58.8	33.7	52.2	33.7	68.6	33.7	73.5	33.7
26/10/2016	29/11/2016	33.1	57.4	33.1	52.3	33.1	56.6	33.1	72.3	33.1
29/11/2016	03/01/2017									
	Average	23.6	46.4	23.9	46.9	23.2	52.5	29.1	72.9	33.4
Ratio (Ra)	Am/Pm (B2)			0.99		1.02		0.81		0.71
	Site ref.			**IC**		**BA**		**AA**		**HA**
	Average (Ra) Correction factors			1.1		1		0.9		0.77
	Measured mean 2016			46		31		52		73
	Annualised mean ug/m3			**50.6**		**31**		**46.8**		**56.2**

Table K: Distance Adjustment

For a number of sites an exceedance was measured at a monitoring site which is not representative of public exposure, in these cases the concentration at the nearest receptor has been estimated using the LAQM NO_2 Fall-off with Distance Calculator (Version 4.1) in line with the procedure detailed in LLAQM.TG(16). Fifteen sites in 2016 measured exceedances of the annual mean NO_2 objective and were subject to distance adjustment. A summary of the calculations in included in Table K below.

The methodology consists of comparing the monitored annual mean NO_2 concentrations at a given point against known relationships between NO_2 concentrations and the distance from a road source. The monitored annual mean value used in the calculation is the 'raw' value which has not been bias adjusted and the background concentrations is derived from national maps downloaded from

http://uk-air.defra.gov.uk/data/laqm-background-home. Total annual mean concentrations are from 1km x 1km grid squares for year 2016 (based on 2013 background maps).

Site ID	Address	Valid data capture 2016 % [b]	Measured Annual mean Conc.	Background Concs.	Distance Corrected Conc.
GA	*Garth Road*	*100*	**40**	**19**	32.2
FA	*154 Grand Drive*	*100*	**46**	**24**	39.3
JC	*17 Grand Drive Raynes Park*	*100*	**50**	**21**	34
AC	*The Ridgeway*	*100*	**50**	**26**	**44.6**
EA	*246 Merton High Street*	*92*	**72**	**25**	**60.9**
DC	*35 London Road*	*100*	**59**	**24**	**57.2**
IC	*London Road HSBC*	*50*	**52[c]**	**24**	**44.5**
CC	*107 London Road*	*100*	**75**	**23**	**61.8**
EC	*265 London Road BHF*	*100*	**48**	**23**	39.1
FC	*80 Church Road*	*83*	**48**	**23**	**40.6**
GC	*211 Western Road*	*92*	**65**	**24**	**63.7**
BC	*11 Haydons Road*	*92*	**54**	**25**	**54**
HC	*80 Crown Lane*	*92*	**64**	**22**	**47.7**
AA	*Oxfam London Rd*	*33*	**48[c]**	**22**	38
HA	*Colliers Wood High Street*	*17*	**58[c]**	**25**	**49.9**

Appendix B Full Monthly Diffusion Tube Results for 2016

Table O. NO_2 Diffusion Tube Results

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2016 % [b]	Annual Mean NO_2													
			Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data [c]	Annual mean – bias adjusted [d]
Garth Road	100	100	41.6	31.5	35	26.5	27.3	46.3	37.1	43.1	41.9	48.5	42.1	43.2	39	**40**
154 Grand Drive	100	100	47.1	35.4	39.8	37.3	38.4	50.7	45.6	47.9	46.8	51.8	47.7	49.4	**45**	**46**
17 Grand Drive	100	100	45.6	48.8	50.7	30.7	31.6	59.6	54.3	39	53.5	54.8	57.3	53.3	**48**	**50**
32 Pepys Road	100	100	40.8	29.7	33	22.3	23	36.6	32.6	27.3	37.9	45.7	41.6	45.9	35	36
70 Woodside	100	83	35.2	31	34.4	36.7	38.7	39.2		24.6	36.2	44.8	41.7		36	37
The Ridgeway	100	100	41	42.7	44.9	49.8	47.4	66.1	31.9	33.3	56.9	60.8	54.4	57.4	**49**	**50**
246 Merton High Street	100	92	94.9	57.1	55.1	48.5	50	96.3	83.5	62.45	75.8	79.1	65.9		**70**	**72**
Charminster Ave	100	92	25	22.5	25	13.3	13.7	25.3	19	19.2	30.2	33.7	33.1		24	24
53 Lavender Ave	100	92	39.5	30.2	33.5	32.5	41.1	40.2	28.5	30.7	46.8	45.8	44.7		38	39
35 London Road	100	100	47.6	42.8	47.5	39.9	41.3	52.5	50.6	93.3	92.9	66.5	57.7	52.1	**57**	**59**
London Road HSBC	100	50				36.4	37.5			34.3	54.2	58.8	57.4		**46[c]**	**48**
107 London Road	100	100	89.8	63	66	56.3	58	84.3	83	67.9	70.5	86.6	71.8	74.2	**73**	**75**
265 London Road BHF	100	100	40.8	38.9	43.2	45.3	46	43	41	40.5	51.6	56.4	50.6	57	**46**	**48**
80 Church Road	100	83	37.2	35.7	40.5	-	-	55.8	49.8	40	50.7	54.6	52.1	51.3	**47**	**48**

211 Western Road	*100*	*92*	*93.3*	*59.2*	*65.2*	*44.3*	*45.6*	*55.9*	-	*63.6*	*69.2*	*63.8*	*68.8*	*67.1*	**63**	**65**
11 Haydons Road	*100*	*92*	*63.4*	*60.7*	-	*39.7*	*40.9*	*53.4*	*49.4*	*50.9*	*50.3*	*63.9*	*52.3*	*52.9*	**53**	**54**
80 Crown Lane	*100*	*92*	*79.4*	*72.9*	*51.6*	*55.6*	*48.9*	*57.5*	*51*	-	*65.3*	*68.9*	*65.3*	*69.4*	**62**	**64**
Burlington Road	*100*	*66*	*50.1*	*43.3*	*48.1*	*49.3*	*44.4*	-	*35.3*	-	-	*52.2*	*52.3*	-	**31**[c]	**32**
Oxfam London Rd	*33*	*33*	-	-	-	-	-	-	-	*30.7*	*53.9*	*68.6*	*56.6*	-	**52**[c]	**54**
Colliers Wood High Street	*33*	*17*	-	-	-	-	-	-	-	-	-	*73.5*	*72.3*	-	**73**[c]	**75**

Exceedance of the NO_2 annual mean AQO of 40 μgm^{-3} are shown in **bold**.

[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] valid data capture is less than 75%, Means to be "annualised" in accordance with LLAQM Technical Guidance.

[d] The bias adjustment factor used for all roadside/kerbside sites is 1.03 which is calculated using the National Gradko 50% TEA in acetone adjustment factor for 2016