2016 Air Quality Annual Status Report (ASR)

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

Date (November, 2017)

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Report Reference number	BCC/ASR/2017
Date	06/11/2017

Executive Summary: Air Quality in Our Area

Air Quality in Birmingham

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas[1,2].

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

The main air quality issue in Birmingham is elevated levels of nitrogen dioxide (NO_2), particularly within the City Centre area as a result of road traffic emissions. Consequently a city wide air Quality Management Area (AQMA) was declared in 2005. Details can be found on the following webpage https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=18.

In December 2015 DEFRA published its Air Quality plans to demonstrate how the UK will achieve compliance with the EU limit values for NO2 (https://uk-air.defra.gov.uk/library/no2ten/). The document highlighted areas of non-compliance within Birmingham, principally 2 stretches of the A38 in the City Centre. As a result Birmingham was required to implement a Clean Air Zone. A feasibility study is underway to determine the type and extent of the zone and any additional measures that may be required to achieve the required reduction in NO2 concentrations.

Work undertaken by Birmingham City Council has highlighted other areas where air pollution is above the legal limit, particularly in the vicinity of Moor Street Queensway; although at present there is considered to be no relevant exposure at this location.

Birmingham City Centre is undergoing significant regeneration with several major projects either underway or planned for the near future including at Paradise Circus, Curzon Street (HS2), and Smithfield. As a result the city centre area is in near constant state of flux and as a result it is considered that the best way to address air

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

quality issues is through the adoption of an area based strategy, and through working in collaboration with partner organisations such as DEFRA, the West Midlands Combined Authority, the Integrated Transport Authority, the West Midlands Low Emissions Towns & Cities Partnership, Highways England, and CENTRO.

Actions to Improve Air Quality

A number of actions have been implemented under Birmingham City Council's Air Quality Action Plan with the aim of improving air quality, such as increasing the number of park and ride schemes, the provision of charging infrastructure to encourage the take up of electric vehicles, and, in partnership with CENTRO, improvements to the bus fleet under the Statutory Bus Quality Partnership (SBQP).

Several other projects have been undertaken with the aid of funding through DEFRA's Air Quality Grant Scheme;

- 2012-2013 Air Quality Grant - £150,000 to support implementation of ongoing work items commissioned through the West Midlands regional Low Emissions Towns and Cities Programme (LETCP). The automatic number plate recognition camera survey has been completed and reported upon. The information collected has been used to inform the Clean Air zone feasibility study.
- 2014-2015 Air Quality Grant - £32,443 for the Birmingham Region Updated Monitoring (BRUM) project. The new emissions database has been completed and uploaded into the air quality modelling software. However this project has now largely been superseded by the Clean Air zone feasibility study.

Other achievements include;

The setting up of an Air Quality Members Steering Group comprising the Chair of the Public Protection Committee and the Cabinet members for Transportation, Health and Wellbeing, and Clean Streets, Recycling and Environment.

An Air Quality Program Delivery Group has also been established, chaired by the Director of Public Health, and comprising senior officers from departments involved in the delivery of programs to improve air quality.

The Environmental Health service have recently commenced a review of the 2011 Air Quality Action Plan with a view to completing this revision in the following year.

Conclusions and Priorities

The City continues to have air quality breaches against the annual mean objective for NO_2 with known exceedence areas being within the city centre. The primary source of air quality issues within Birmingham is road transport. However, in order to ensure that there is no risk of transferring exceedence areas during the implementation of compliance strategies the Council retains a city-wide air quality management area.

Birmingham, as a major UK city, is undergoing continual redevelopment of the urban landscape and resulting changes to the supporting transport network. This leads to challenges in balancing sustainable development of a 21st century city with providing for the health and well-being of citizens, business and visitors.

The primary focus to reduce air pollution, promote health and drive compliance in the coming year will be through development of the Clean Air Zone (CAZ) as directed by Government. It is anticipated that this study will provide the most up-to-date information on air quality within Birmingham, the strategy by which compliance can be delivered and the means for implementing that strategy.

The CAZ is part of a suite of measures being progressed by the City Council and to underpin these interventions air quality has been prioritised across all services and championed by relevant politicians (Cabinet Members and Committee Chairs). This updated and prioritised governance will be supported by underpinning policies, including a review of the Air Quality Action Plan.

Local Engagement and How to get Involved

Details of local consultation undertaken and how to help improve air quality can be viewed on the council's website here;

https://www.birmingham.gov.uk/info/20076/pollution.

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1 Local Air Quality Management

This report provides an overview of air quality in Birmingham during 2016. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

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

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by Birmingham City Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=18.

Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides for a map of air quality monitoring locations in relation to the AQMA(s).

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)		Action Plan (inc. date of publication)
						At Declaration	Now	
Birmingham AQMA	05/05/2005	NO2 Annual Mean	Birmingham	Whole borough	NO	46 µg/m3	63 µg/m3	Air Quality Action Plan 2011

☐ **<Local Authority> confirm the information on UK-Air regarding their AQMA(s) is up to date (confirm by selecting in box)**

N.B. The information on UK-Air is incorrect. The AQMA for pm10 has been revoked.

2.2 Progress and Impact of Measures to address Air Quality in Birmingham

Defra's appraisal of last year's ASR stated that the conclusions reached were acceptable for all sources and pollutants, although it was recommended that in future reports if all monitoring locations can be identified on a map that highlights air pollution hotspots and includes the AQMA boundary. Guidance was also provided regarding the drafting of the revised Air Quality Action Plan.

Birmingham City Council has taken forward a number of direct measures during the current reporting year of 2016 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

Birmingham City Council's priorities for the coming year (2016) are:

- We will review and refresh our Air Quality Action Plan (AQAP), updating existing actions and building in new actions which are relevant to current challenges faced by the Council and better reflective of initiatives both proposed and underway which seek to address those challenges.
- We will progress all necessary actions pursuant to delivering the introduction of a Clean Air Zone as mandated by Defra. For 2016 this involves commencement of a scoping study to ascertain the baseline position, followed by consideration of relevant interventions which can deliver compliance with the limit values as soon as possible and by 2020 at the latest.
- We will establish an Air Quality Steering Group comprising key senior officers who report to relevant elected members. All air quality matters which specifically relate to delivering legislative compliance and driving forward public health gains will be raised and directed by this group.
- We will develop our existing working arrangements between Environmental Health and the Director of Public Health to ensure that we maximise benefits in delivering air quality improvements arising from key pollutants, namely nitrogen dioxide and fine particles.

- We will continue our representation on the project board of the Low Emissions Towns and Cities Programme (LETCP)[4], and will contribute to on-going, developing and proposed work streams in partnership with other members to seek air quality gains at a regional level.

[4] The LETCP comprises air quality specialists from the West Midlands Local Authorities, namely Birmingham City Council, Coventry City Council, Dudley Metropolitan Borough Council, Sandwell Metropolitan Borough Council, Solihull Metropolitan Borough Council, Walsall Council and Wolverhampton City Council.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Action 2010/1	FS into a Low Emission Zone within the City Centre	Promoting Low Emission Transport	Low Emission Zone (LEZ)	BCC – TS	2011 - 2013	2013-2015	Completion of the FS	No target	FS Complete	COMPLETE	Superseded by CAZ
Action 2010/2	Detailed study on introducing Biomass in Birmingham Schools	Policy Guidance and Development Control	Other policy	BCC – EH	NK	NK	Completion of the study	No target	Study complete	COMPLETE	Led to introduction of a Biomass Emissions Policy by Council
Action 2010/3	Extend the Red Route network and assess effectiveness	Traffic Management	Other	BCC – TS	NK	NK	Improved journey times and less congestion in specific areas	No target	Red routes have been implemented on 6 major routes into and out of the city centre (Stratford Rd, Tyburn Rd, Walsall Rd. A4540 ring road, A38, A45)	COMPLETE	Implementation and enforcement of the red route in the worst polluted area has shown a reduction in measured NO2 to below the objective in 2013.
Action 2010/4	Build New Roads and modify existing to promote effective traffic management	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	BCC – TS	NK	NK	Improved journey times and less congestion in specific areas	No target	The Selly Oak New Road phase 1a is complete. Phase 1b is funded through Local Growth Fund.	2018	Monitoring has shown that in the most congested part of the street the new road has reduced NO2 concentrations from above 50 to 38ug/m3. Completion of the scheme will reduce this further.
Action 2010/5	Policy on Air Quality & Planning	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	BCC - EH	2005-2007 / 2011-2012	2012 - 2014	Strategic, consistent and transparent approach to assessing planning applications on AQ grounds	No target	Extremely difficult to develop (commenced 2005-2007). Revisited within the LETCP. Best Practice Guide (BPG) issued by LETCP in 2014. Development of BDP and DM DPD both of which will have AQ links.	2018	BPG embedding within the Council. Integration with emerging Development Management Development Plan Document (DPD)
Action 2010/6	Control of Industry	Environmental Permits	Other measure through permit systems and economic instruments	BCC – EH	n/a	1995 to current	Annual Defra return	No target	All processes inspected annually in accord with direction from Defra	Ongoing - annual	Processes regulated to ensure emissions remain within specified limits
Action 2010/7	Control of Bonfires and other Unauthorised Fires			BCC – EH	n/a	Historic to current	Response to complaints about bonfires	No target	Complaints responded as and when generated	Ongoing	None
Action 2010/8	To increase the number and use of park & ride schemes in accord with the CENTRO Environment Strategy 2009-2014	Alternatives to private vehicle use	Rail based Park & Ride	BCC – TS	2008-2011	2018	Increase in park and ride usage	No target	New site proposed at Longbridge. Feasibility study on decking of car parks e.g. Four Oaks. Proposals related to Bus rapid Transit Routes.	2017	Longbridge site now operational. CENTRO has now published new Environment Strategy 2014-2019

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Action 2010/9	All vehicles procured by Birmingham City Council will by 2015 be either electrically powered or run on liquified petroleum gas.	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	BCC - S	2011	2012-2014	Replacement of council fleet vehicles through procurement strategy	No target	Green Fleet Review completed. Identified all vehicles, mileage, fuel costs, etc.	N/A	Need to update action
Action 2010/10	Introduction of low carbon/electric Vehicles	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	BCC – S	2011	2012-2016	Infrastructure to encourage the use of electric and gas powered vehicles	No target	Green Fleet Review completed. Identified infrastructure requirements, gaps and barriers.	N/A	Need to update action
Action 2010/11	Improvement of the Public Service Fleet - Birmingham City Council will support the programme for replacement buses as outlined by CENTRO's Environmental Strategy 2009 – 2014.	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	BCC - TS	2011	2012-2022	Replacement of the bus fleet with low emitting vehicles	No target	SBQP introduced and now under review	2015-2016	CENTRO has now published new Environment Strategy 2014-2019.
Action 2010/12	Birmingham City Council will seek to reduce the overall age of the taxi fleet and Encourage the use of less polluting vehicles.	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	BCC - L	2011-2015	2016-2020	Replacement of taxi fleet with vehicles with low emissions	No target	New taxi emissions policy has been subject to consultation. Awaiting finalization via alignment to clean air zone.	2017/2018	With the replacement of the fleet the emissions from the 6800 vehicles in the fleet will improve. Many of the vehicles operate extensively within the City Centre.

Lead Authority: EH = Environmental Health; TS = Transportation Strategy; S = Sustainability; L = Licensing

2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Birmingham City Council is taking the following measures to address $PM_{2.5}$:

- The primary emission source for $PM_{2.5}$ within Birmingham is from the exhausts of road vehicles. Accordingly action taken to reduce vehicle usage and incentivise the uptake of cleaner vehicle technology will deliver reductions in $PM_{2.5}$. The actions will be set out in the revised AQAP (see section 2.2).
- The newly established Air Quality Steering Group will include the Director of Public Health to ensure that duties arising from the Public Health Outcomes Framework, including those relevant to $PM_{2.5}$ are captured at the highest level and built into future key policies.
- A working group comprising Environmental Health, Public Health and Transportation Policy has been established to produce information at a local level around pollution and health with a view to informing politicians about the health issues within their areas where they arise from traffic pollution. This work will seek to consider the impacts arising from key pollutants, namely NO_2 and $PM_{2.5}$.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

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

Birmingham City Council undertook automatic (continuous) monitoring at 7 sites during 2016. Table A.1 in Appendix A shows the details of the sites. N.B. the Birmingham Tyburn Roadside site closed during 2016 and a new roadside site was established on the Ring Road (A4540). National monitoring results are available at https://uk-air.defra.gov.uk/data/.

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

3.1.2 Non-Automatic Monitoring Sites

Birmingham City Council undertook non- automatic (passive) monitoring of NO_2 at 53 sites during 2016. Table A.2 in Appendix A shows the details of the sites. There has been a significant change to the passive monitoring network, with monitoring ceasing at a number of sites in the outlying areas of the city where no exceedences have been monitored in recent years and an increase in the number of sites located in the City Centre. Diffusion tube sites have also been established at a number of sites around the ring road (A4540). However insufficient data has been collected from these sites in 2016 to calculate a meaningful annual mean. It is anticipated that the findings from these locations will be reported in future Annual Status Reports.

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

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, “annualisation” and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

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

For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Appendix B.

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

The annual mean for NO2 was exceeded at the autocmatic monitoring sites at Tyburn Roadside, Moor Street Queensway, and A4540 Roadside. There were no exceedances of the hourly mean air quality objective at any of the automatic monitoring sites.

Overall the results from the automatic monitoring sites show a downward trend over the past 5 years, although the sites at Tyburn Roadside, Moor Street Queensway, Stratford Road, and Acocks Green have shown increased concentrations in 2016 compared with the previous year.

The annual mean was also exceeded at many of the non-automatic (diffusion tube) monitoring sites including within the city centre (particularly at Corporation Street, Moor Street Queensway, Broad Street, Great Charles Street, Suffolk Street Queensway, and adjacent to the Children’s Hospital), and at Tyburn Road, Stratford Road, and Kings Heath High Street.

NO2 annual mean concentration exceeeded 60µg/m3 at the following locations BHM21 (Lawley Middleway), BHM46 (Masshouse Lane), BHM52 (Carrs Lane), and BHM55 (Moor Street). However the hourly mean air quality objective was not exceeded at nearby comparable automatic monitoting sites at A4540 Roadside and Moor Street Queensway.

Many of the non-automatic (diffusion tube) monitoring sites have shown increased concentrations in 2016 compared with the previous year.

3.2.2 Particulate Matter (PM_{10})

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

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

There have been no monitored exceedances of the annual mean air quality objectives for PM_{10} during the monitoring period. The daily mean air quality objective of 50µg/m^3 was exceeded at the Tyburn and Tyburn Roadside sites on 1 and 6 occasions respectively. The number of exceedences were significantly less then the 35 permitted.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.7 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past 5 years.

Monitoring for $PM_{2.5}$ was undertaken at 4 locations, Acocks Green, Tyburn, Tyburn Roadside and A4540 Roadside, with respective annual means of 12µg/m^3, 11µg/m^3, 12µg/m^3 and 17µg/m^3 being recorded. The concentrations are generally comparable to previous years where monitoring results are available.

3.2.4 Sulphur Dioxide (SO_2)

Table A.8 in Appendix A compares the ratified continuous monitored SO_2 concentrations for year 2016 with the air quality objectives for SO_2.

There have been no eceedances of the air qulaity objectives for SO_2 within the monitoring period.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
	Birmingham Tyburn Roadside	Roadside	411577	290491	NO2; PM10; PM2.5; O3	YES	Chemiluminescent; FDMS	10	6	2
	Birmingham Tyburn	Urban Background	411592	290440	NO2; PM10; PM2.5; O3	YES	Chemiluminescent; FDMS	27	65	2
	New Hall	Urban Background	414574	296724	NO2	YES	Chemiluminescent	41	20	2
	Stratford Road	Roadside	408820	284591	NO2	YES	Chemiluminescent	5	5	2
	Bristol Road	Roadside	404545	283020	NO2	YES	Chemiluminescent	27	9	2
	Moor Street Queensway	Roadside	407435	286891	NO2	YES	Chemiluminescent	65	6	2
	Birmingham A4540 Roadside	Roadside	408506	286470	NO2; PM10; PM2.5; O3	YES	Chemiluminescent; FDMS	14	7	2

Notes:

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

(2) N/A if not applicable.

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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
BHM1	Fox Green Crescent	Urban Background	411211	282756	NO_2	YES	0	10	NO	2
BHM2	Langleys Road	Urban Background	404082	282128	NO_2	YES	0	9	NO	2
BHM3	28 High Street	Roadside	407386	282131	NO_2	YES	5	2	NO	2
BHM4	75 High Street	Roadside	407401	282032	NO_2	YES	13	1	NO	2
BHM5	448 Stratford Road	Roadside	409108	284158	NO_2	YES	0	4	NO	2
BHM6	487 Stratford Road	Roadside	409144	284053	NO_2	YES	0	4	NO	2
BHM7	Broad Street - Brasshouse	Urban Centre	406113	286633	NO_2	YES	61	7	NO	2
BHM8	Broad Street - O'Neils	Roadside	406036	286489	NO_2	YES	24	1	NO	2
BHM9	Shelley Drive	Urban Centre	408618	291351	NO_2	YES	0	26	NO	2
BHM10	Stratford Road AQ station	Roadside	408818	284591	NO_2	YES	21	3	YES	2
BHM11	Stratford Road AQ station	Roadside	408818	284591	NO_2	YES	21	3	YES	2
BHM12	Stratford Road AQ station	Roadside	408818	284591	NO_2	YES	21	3	YES	2
BHM13	Tyburn Road AQ station	Urban Background	411592	290438	NO_2	YES	47	62	YES	2

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
BHM14	Tyburn Road AQ station	Urban Background	411592	290438	NO_2	YES	47	62	YES	2
BHM15	Tyburn Road AQ station	Urban Background	411592	290438	NO_2	YES	47	62	YES	2
BHM16	Childrens Hospital	Roadside	407321	287531	NO_2	YES	0	6	NO	2
BHM17	Tyburn (39)	Roadside	410010	289995	NO_2	YES	7	1	NO	2
BHM18	Tyburn (40)	Roadside	410072	289999	NO_2	YES	7	1	NO	2
BHM20	641 Bristol Road	Roadside	404739	279701	NO_2	YES	23	5	NO	2
BHM21	Lawley Middleway	Roadside	408197	287394	NO_2	YES	1	3	NO	2
BHM22	Sheepcote Street	Roadside	405794	286649	NO_2	YES	3	3	NO	2
BHM24	Great Charles Street (1)	Roadside	406743	286541	NO_2	YES	26	4	NO	2
BHM26	Nelson JI	Roadside	408586	286455	NO_2	YES	17	3	NO	2
BHM27	Waterlinks	Roadside	407833	288046	NO_2	YES	2	1	NO	2
BHM28	Great Charles Street (2)	Roadside	406762	287329	NO_2	YES	94	1	NO	2
BHM29	Sufflok Street Queensway	Roadside	406584	286723	NO_2	YES	33	1	NO	2
BHM31	Holiday Street	Roadside	407967	287151	NO_2	YES	75	1	NO	2
BHM33	Severn Street	Roadside	406701	286512	NO_2	YES	46	7	NO	2

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
BHM34	Superdrug	Urban Centre	407114	286906	NO_2	YES	0	2	NO	2
BHM35	Café Nero	Urban Centre	407177	286996	NO_2	YES	0	2	NO	2
BHM36	Corporation Street Sq Peg	Roadside	407205	287065	NO_2	YES	20	2	NO	2
BHM38	Old Square - LP	Roadside	405383	285315	NO_2	YES	7	9	NO	2
BHM39	Corporation Street	Roadside	407259	287110	NO_2	YES	7	4	NO	2
BHM40	Priory Queensway (1)	Roadside	407407	287092	NO_2	YES	46	1	NO	2
BHM41	Priory Queensway (2)	Roadside	407399	287078	NO_2	YES	44	1	NO	2
BHM42	MSQ - Masshouse	Roadside	407548	287107	NO_2	YES	34	3	NO	2
BHM43	Masshouse Lane - Masshouse	Roadside	407611	287110	NO_2	YES	14	3	NO	2
BHM44	Masshouse Lane - LP	Roadside	407628	287121	NO_2	YES	24	3	NO	2
BHM45	Hotel La Tour - LP	Roadside	407582	287020	NO_2	YES	30	2	NO	2
BHM46	Masshouse Lane Masshouse 2	Roadside	407547	287047	NO_2	YES	2	2	NO	2
BHM48	Millenium Post MSQ	Roadside	407488	287023	NO_2	YES	96	2	NO	2

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
BHM49	Fazeley Street	Roadside	407455	286989	NO_2	YES	110	3	NO	2
BHM50	MSQ - No entry post	Roadside	407433	286922	NO_2	YES	63	2	NO	2
BHM52	Carrs Lane	Urban Centre	406921	285937	NO_2	YES	63	2	NO	2
BHM53	MSQ - no loading	Roadside	407355	286769	NO_2	YES	136	2	NO	2
BHM54	Pavillions	Urban Centre	407320	286756	NO_2	YES	140	8	NO	4
BHM55	Moor Street corner of	Roadside	407348	286722	NO_2	YES	139	3	NO	2
BHM56	New Meeting Street	Urban Centre	407377	286896	NO_2	YES	12	23	NO	2
BHM60	Lower Bull Street	Roadside	407687	283370	NO_2	YES	4	2	NO	2
BHM61	St Phillips Church yard	Urban Centre	406919	287037	NO_2	YES	91	19	NO	2
BHM62	Snow Hill	Urban Centre	407033	287196	NO_2	YES	70	15	NO	2
BHM63	Chapel Lane	Roadside	407509	287226	NO_2	YES	67	22	NO	2
BHM64	Stephenson Street	Urban Centre	406973	286751	NO_2	YES	70	2	NO	2
BHM65	Digbeth	Roadside	407446	286478	NO_2	YES	67	2	NO	2

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2012	2013	2014	2015	2016
Birmingham Tyburn Roadside	Roadside	Automatic		68	**46**	**42**	**43**	**42**	**43**
Birmingham Tyburn	Urban Background	Automatic		99	32	29	31	30	29
New Hall	Urban Background	Automatic		84	19	17	17	16	16
Stratford Road	Roadside	Automatic			35	31	36	33	37
Bristol Road	Roadside	Automatic		83	30	34	34	29	25
Moor Street Queensway	Roadside	Automatic		94	N/A	**44**	**43**	**45**	**50**
Acocks Green	Urban Background	Automatic		99	32	29	N/A	18	21
Birmingham A4540 Roadside	Roadside	Automatic		31	N/A	N/A	N/A	N/A	**43**
BHM1	Urban Background	Diffusion Tube		67	22	19	17	17	15
BHM2	Urban Background	Diffusion Tube		83	20	18	17	17	17
BHM3	Roadside	Diffusion Tube		92	**47**	**40**	**41**	38	39
BHM4	Roadside	Diffusion Tube		83	**47**	**47**	**43**	36	**41**
BHM5	Roadside	Diffusion Tube		83	**42**	39	**40**	36	**41**
BHM6	Roadside	Diffusion Tube		50	**45**	39	**40**	38	**56**

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2016 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2012	2013	2014	2015	2016
BHM7	Urban Centre	Diffusion Tube		83	**52**	**48**	**49**	**45**	**49**
BHM8	Roadside	Diffusion Tube		92	**52**	**47**	**49**	**41**	**48**
BHM9	Urban Centre	Diffusion Tube		92	**47**	37	**41**	**40**	**40**
BHM10	Roadside	Diffusion Tube		83	37	35	36	33	37
BHM11	Roadside	Diffusion Tube		83	36	35	36	34	36
BHM12	Roadside	Diffusion Tube		83	36	35	36	33	37
BHM13	Urban Background	Diffusion Tube		92	33	29	30	31	29
BHM14	Urban Background	Diffusion Tube		92	35	29	30	31	30
BHM15	Urban Background	Diffusion Tube		83	39	30	31	31	29
BHM16	Roadside	Diffusion Tube		75	**56**	**52**	**55**	**55**	**54**
BHM17	Roadside	Diffusion Tube		83	N/A	**41**	**42**	**43**	**48**
BHM18	Roadside	Diffusion Tube		92	N/A	**45**	**47**	**44**	**47**
BHM20	Roadside	Diffusion Tube		83	N/A	N/A	37	35	39
BHM21	Roadside	Diffusion Tube		83	N/A	N/A	N/A	N/A	**62**
BHM22	Roadside	Diffusion Tube		92	N/A	N/A	N/A	N/A	33
BHM24	Roadside	Diffusion		75	N/A	N/A	N/A	N/A	**49**

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2012	2013	2014	2015	2016
		Tube							
BHM26	Roadside	Diffusion Tube		92	N/A	N/A	N/A	N/A	25
BHM27	Roadside	Diffusion Tube		92	N/A	N/A	N/A	N/A	**48**
BHM28	Roadside	Diffusion Tube		83	N/A	N/A	N/A	N/A	60
BHM29	Roadside	Diffusion Tube		83	N/A	N/A	N/A	N/A	**55**
BHM31	Roadside	Diffusion Tube		75	N/A	N/A	N/A	N/A	**52**
BHM33	Roadside	Diffusion Tube		83	N/A	N/A	N/A	N/A	**52**
BHM34	Urban Centre	Diffusion Tube		92	**41**	33	31	30	32
BHM35	Urban Centre	Diffusion Tube		92	N/A	N/A	N/A	N/A	36
BHM36	Roadside	Diffusion Tube		83	**66**	**54**	**50**	**46**	**47**
BHM38	Roadside	Diffusion Tube		75	**50**	**43**	**47**	**42**	**54**
BHM39	Roadside	Diffusion Tube		75	N/A	N/A	N/A	N/A	**47**
BHM40	Roadside	Diffusion Tube		92	60	**49**	**50**	**49**	**55**
BHM41	Roadside	Diffusion Tube		92	**62**	**50**	**55**	**50**	**58**
BHM42	Roadside	Diffusion Tube		92	**56**	**41**	**45**	**42**	**46**
BHM43	Roadside	Diffusion Tube		92	**45**	**52**	**58**	**59**	**47**

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2016 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2012	2013	2014	2015	2016
BHM44	Roadside	Diffusion Tube		92	N/A	N/A	N/A	N/A	**48**
BHM45	Roadside	Diffusion Tube		92	N/A	N/A	N/A	N/A	**47**
BHM46	Roadside	Diffusion Tube		92	N/A	N/A	N/A	N/A	**67**
BHM48	Roadside	Diffusion Tube		83	N/A	N/A	N/A	N/A	**50**
BHM49	Roadside	Diffusion Tube		83	N/A	N/A	N/A	N/A	**47**
BHM50	Roadside	Diffusion Tube		92	N/A	N/A	N/A	N/A	60
BHM52	Urban Centre	Diffusion Tube		92	N/A	N/A	N/A	N/A	**62**
BHM53	Roadside	Diffusion Tube		92	N/A	N/A	N/A	N/A	**55**
BHM54	Urban Centre	Diffusion Tube		92	N/A	N/A	N/A	N/A	**59**
BHM55	Roadside	Diffusion Tube		83	**74**	**67**	**66**	**61**	**65**
BHM56	Urban Centre	Diffusion Tube		92	**48**	**41**	**43**	**41**	**48**
BHM60	Roadside	Diffusion Tube		83	N/A	N/A	N/A	N/A	**46**
BHM61	Urban Centre	Diffusion Tube		92	**43**	34	36	39	38
BHM62	Urban Centre	Diffusion Tube		92	**49**	38	39	**40**	**43**
BHM63	Roadside	Diffusion Tube		92	**42**	33	33	36	36
BHM64	Urban Centre	Diffusion		92	N/A	N/A	N/A	N/A	**51**

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2012	2013	2014	2015	2016
		Tube							
BHM65	Roadside	Diffusion Tube		75	N/A	N/A	N/A	N/A	**56**

☒ **Diffusion tube data has been bias corrected (confirm by selecting in box)**

☒ **Annualisation has been conducted where data capture is <75% (confirm by selecting in box)**

☒ **If applicable, all data has been distance corrected for relevant exposure (confirm by selecting in box)**

Notes:

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

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

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

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

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

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

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2016 (%) [2]	NO_2 1-Hour Means > 200µg/m^3 [3]				
					2012	2013	2014	2015	2016
Birmingham Tyburn Roadside	Roadside	Automatic		68	0	0	0	0	0
Birmingham Tyburn	Urban Background	Automatic		99	0	0	0	0	0
New Hall	Urban Background	Automatic		84	0	0	0	0	0
Stratford Road	Roadside	Automatic			0	0	0	0	0
Bristol Road	Roadside	Automatic		83	0	0	0	0	0
Moor Street Queensway	Roadside	Automatic		94	0	0	0	0	0
Acocks Green	Urban Background	Automatic		99	0	0	0	0	0
Birmingham A4540 Roadside	Roadside	Automatic		31	0	0	0	0	0

Notes:

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

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

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

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

Table A.5 – Annual Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	PM_{10} Annual Mean Concentration (µg/m^3) (3)				
				2012	2013	2014	2015	2016
Birmingham Tyburn Roadside	Roadside		52	22	19	20	17	16
Birmingham Tyburn	Urban Background		79	19	18	19	19	14
Birmingham A4540 Roadside	Roadside		27	N/A	N/A	N/A	N/A	14

☒ **Annualisation has been conducted where data capture is <75%** **(confirm by selecting in box)**

Notes:

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

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

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

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

Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
				2012	2013	2014	2015	2016
Birmingham Tyburn Roadside	Roadside		52	13	9	8	6	6
Birmingham Tyburn	Urban Background		79	9	7	6	3	1
Birmingham A4540 Roadside	Roadside		27	N/A	N/A	N/A	N/A	0

Notes:

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

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

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

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

Table A.7 – $PM_{2.5}$ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	$PM_{2.5}$ Annual Mean Concentration (µg/m^3) (3)				
				2012	2013	2014	2015	2016
Birmingham Tyburn Roadside	Roadside		65	13	14	16	12	12
Birmingham Tyburn	Urban Background		96	14	14	13	13	11
Birmingham A4540 Roadside	Roadside		15	N/A	N/A	N/A	N/A	17
Acocks Green	Urban Background		98	11	13	12	12	10

☒ **Annualisation has been conducted where data capture is <75% (confirm by selecting in box)**

Notes:

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

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

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

Table A.8 – SO_2 Monitoring Results

Site ID	Site Type	Valid Data Capture for monitoring Period (%) [1]	Valid Data Capture 2016 (%) [2]	Number of Exceedances 2016 (percentile in bracket) [3]		
				15-minute Objective (266 µg/m^3)	1-hour Objective (350 µg/m^3)	24-hour Objective (125 µg/m^3)
Birmingham Tyburn	Urban Background		96	0	0	0

Notes:

Exceedances of the SO_2 objectives are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year)

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

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

(3) If the period of valid data is less than 85%, the relevant percentiles are provided in brackets.

Appendix B: Full Monthly Diffusion Tube Results for 2016

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2016

Site ID	NO_2 Mean Concentrations ($\mu g/m^3$)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (factor) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
BHM1	23.3	22.0	-	-	-	15.0	12.0	14.0	20.0	24.0	-	25.0	19.3	15.4	15.4
BHM2	17.8	24.0	25.0	20.0	-	15.0	-	14.0	19.0	29.0	25.0	26.0	21.4	17.1	17.1
BHM3	56.63	49	56	43	-	41	45	41	50	54	43	45	47.5	38.9	38.9
BHM4	51.42	m	54	45	-	41	36	42	49	53	80	49	50.0	**40.9**	**40.9**
BHM5	40.85	50	47	51	-	-	35	48	53	68	57	50	50.0	**40.9**	**40.9**
BHM6	-	-	-	-	-	-	64	66	66	72	80	62	68.3	**55.9**	**55.9**
BHM7	52.41	66	56	55	-	-	49	49	54	58	108	56	60.4	**49.4**	N/A
BHM8	51.25	58	65	57	-	46	45	51	74	62	84	58	59.2	**48.4**	N/A
BHM9	59.3	54	45	45	-	37	46	44	51	38	66	58	49.3	**40.3**	**40.3**
BHM10	39.18	51	46	46	-	32	-	39	42	55	61	45	45.6	37.3	N/A
BHM11	37.02	48	44	38	-	33	-	37	47	54	57	49	44.4	36.3	N/A
BHM12	45.27	42	50	42	-	34	-	36	48	53	60	46	45.7	37.3	N/A
BHM13	38.84	43	40	33	-	25	28	26	35	35	51	43	36.2	28.9	N/A
BHM14	44.5	44	38	32	-	24	27	27	37	36	55	45	37.2	29.7	N/A
BHM15	35.21	-	36	34	-	25	25	28	38	36	54	51	36.0	28.7	N/A

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (factor) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
BHM16	73.78	-	-	61	-	53	60	61	73	68	87	53	65.5	**53.5**	**53.5**
BHM17	66.79	67	58	60	-	42	50	50	53	61	80	-	58.8	**48.1**	**42.9**
BHM18	65.07	67	56	56	-	31	53	46	56	57	77	61	57.0	**46.6**	**41.1**
BHM20	44.29	48	49	40	-	39	-	36	46	55	63	54	47.4	38.8	38.8
BHM21	66.44	-	74	79	-	53	72	81	79	93	110	54	76.1	**62.3**	**56.6**
BHM22	39.02	40	45	43	-	30	26	37	40	50	61	42	41.2	32.9	32.1
BHM24	60.59	63	-	-	-	43	48	53	56	74	90	48	59.5	**48.6**	N/A
BHM26	33.68	27	31	27	-	19	17	23	28	37	49	38	29.9	24.5	N/A
BHM27	55.9	67	66	59	-	39	45	49	57	68	90	47	58.4	**47.8**	**44.1**
BHM28	82.69	70	72	77	-	60	61	-	74	74	101	57	72.9	**59.6**	N/A
BHM29	-	65	73	77	-	58	53	67	66	78	95	45	67.7	**55.4**	N/A
BHM31	-	60	52	57	-	48	-	69	61	86	87	58	64.1	**52.4**	N/A
BHM33	67.78	63	70	70	-	-	58	45	67	72	74	49	63.6	**52.0**	N/A
BHM34	43.64	42	47	22	-	28	28	35	36	48	65	47	40.2	32.1	32.1
BHM35	38.64	50	54	30	-	32	34	42	42	53	74	48	45.0	36.0	36.0
BHM36	59.4	64	65	46	-	44	49	-	50	64	76	57	57.5	**47.0**	**40.9**
BHM38	84.57	80	83	42	-	54	58	67	70	-	-	58	66.2	**54.1**	N/A
BHM39	59.27	60	72	36	-	44	-	56	-	52	81	58	57.6	**47.1**	**42.7**
BHM40	83.08	71	87	45	-	47	49	65	60	68	88	71	66.8	**54.6**	N/A
BHM41	81.16	80	90	35	-	55	62	70	67	71	94	70	70.5	**57.7**	N/A

Site ID	NO_2 Mean Concentrations ($\mu g/m^3$)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (factor) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
BHM42	64.54	64	70	32	-	39	45	50	52	61	79	58	55.9	**45.7**	N/A
BHM43	68.3	68	60	34	-	41	43	48	53	68	84	67	57.7	**47.2**	**43.1**
BHM44	68.09	73	61	33	-	39	40	49	58	68	83	72	58.6	**47.9**	N/A
BHM45	70.18	65	69	31	-	41	45	53	55	64	80	64	58.0	**47.4**	N/A
BHM46	150.94	76	99	56	-	57	63	69	76	82	100	71	81.9	**66.9**	**62.9**
BHM48	73.23	65	69	34	-	44	47	60	60	75	85	-	61.2	**50.1**	N/A
BHM49	78.13	70	67	35	-	39	45	56	52	57	77	-	57.7	**47.1**	N/A
BHM50	94.69	83	100	45	-	56	57	68	68	76	85	72	73.1	**59.8**	N/A
BHM52	94.69	86	82	38	-	61	67	77	73	73	98	88	76.2	**62.3**	N/A
BHM53	78.66	76	84	42	-	55	58	72	65	76	87	50	67.7	**55.3**	N/A
BHM55	99.35	90	95	43	-	61	74	85	74	67	104	-	79.3	**64.9**	N/A
BHM56	67.58	66	74	36	-	40	40	52	52	65	83	63	58.1	**47.5**	**46.1**
BHM60	-	63	64	39	-	42	50	62	54	59	71	55	55.9	**45.7**	**41.4**
BHM61	54.17	53	57	33	-	34	33	40	39	53	67	53	46.9	38.4	N/A
BHM62	51.73	54	67	39	-	37	38	48	48	65	72	58	52.5	**42.9**	N/A
BHM63	54.34	44	49	28	-	28	33	36	42	48	61	57	43.7	35.7	N/A
BHM64	64.08	70	71	39	-	49	60	63	60	62	86	66	62.8	**51.3**	N/A
BHM65	61.69	69	93	51	-	-	53	66	64	-	91	71	68.9	**56.3**	**46.5**

☒ **Local bias adjustment factor used (confirm by selecting in box)**

☐ **National bias adjustment factor used (confirm by selecting in box)**

☒ **Annualisation has been conducted where data capture is <75% (confirm by selecting in box)**

Notes:

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

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

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

(2) Distance corrected to nearest relevant public exposure.

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

It is considered that there have been no significant changes to sources of pollution. The AQMA relates to exceedences of the air quality objective for nitrogen dioxide for which the main source is considered to be road traffic. Birmingham has a city wide AQMA for nitrogen dioxide. It is considered that any change to the extent of the AQMA is not required at this time.

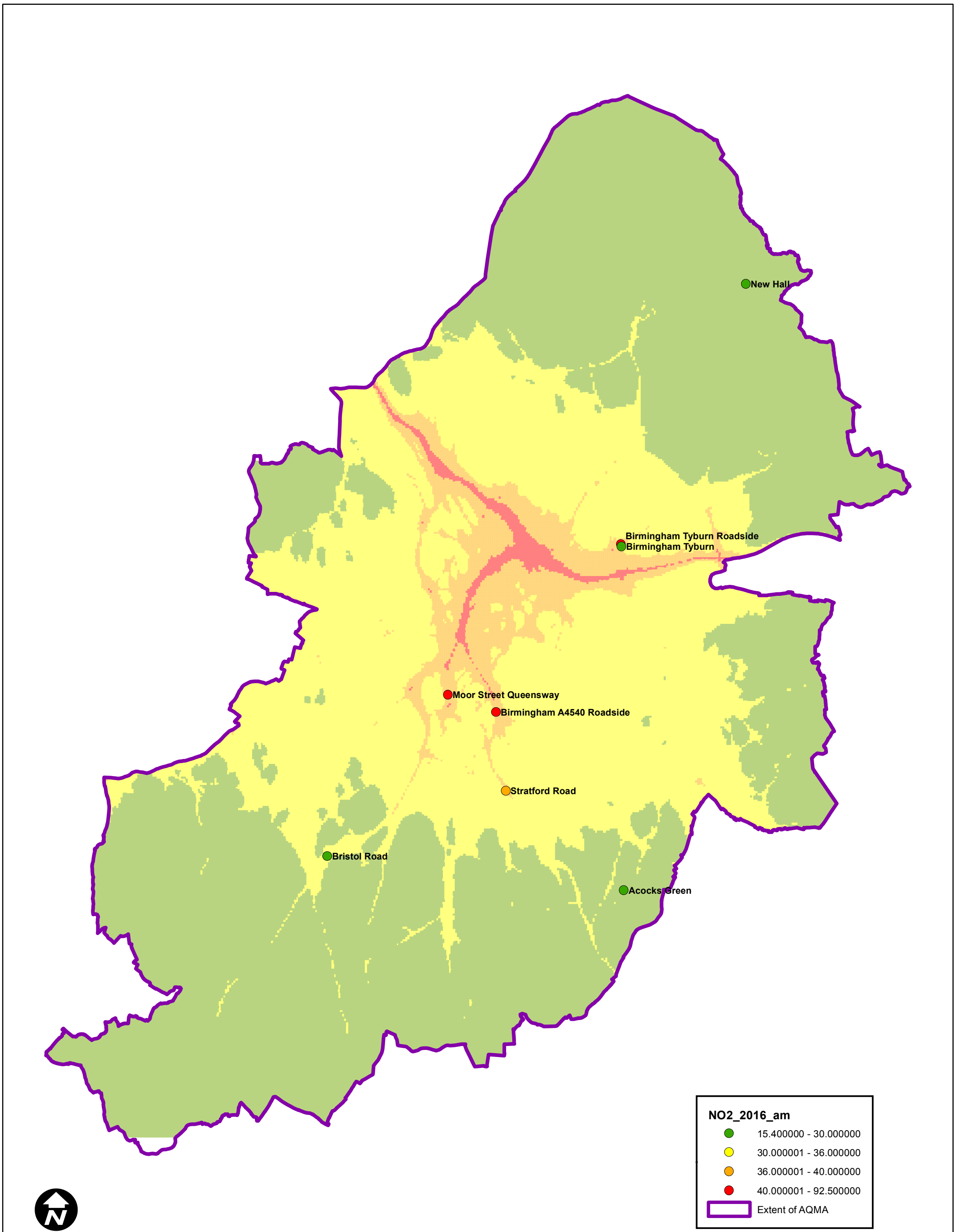
No new dispersion models have been produced. As part of the CAZ Feasibility Study data is being gathered to allow a new model to be produced. It is anticipated that details of any new models will be presented in future annual Status Reports.

Local bias adjustment factors have been applied to diffusion tube results as the council uses many of its chemiluminescence analyser sites for colocation comparisons, at all site types. 2 bias adjustment factors have been used to correct results from diffusion tube monitoring. One for tubes classed as roadside sites, and one for tubes classed urban background sites. Roadside diffusion tube sites diffusion tube sites are bias adjusted against the automatic monitoring station at Stratford Road, and urban background sites against the Birmingham Tyburn automatic monitoring station.

Where appropriate a distance correction has been applied to diffusion tube results using the fall of with distance calculator (Version 4.1). Where this process has been applied the outputs are presented in Appendix F.

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

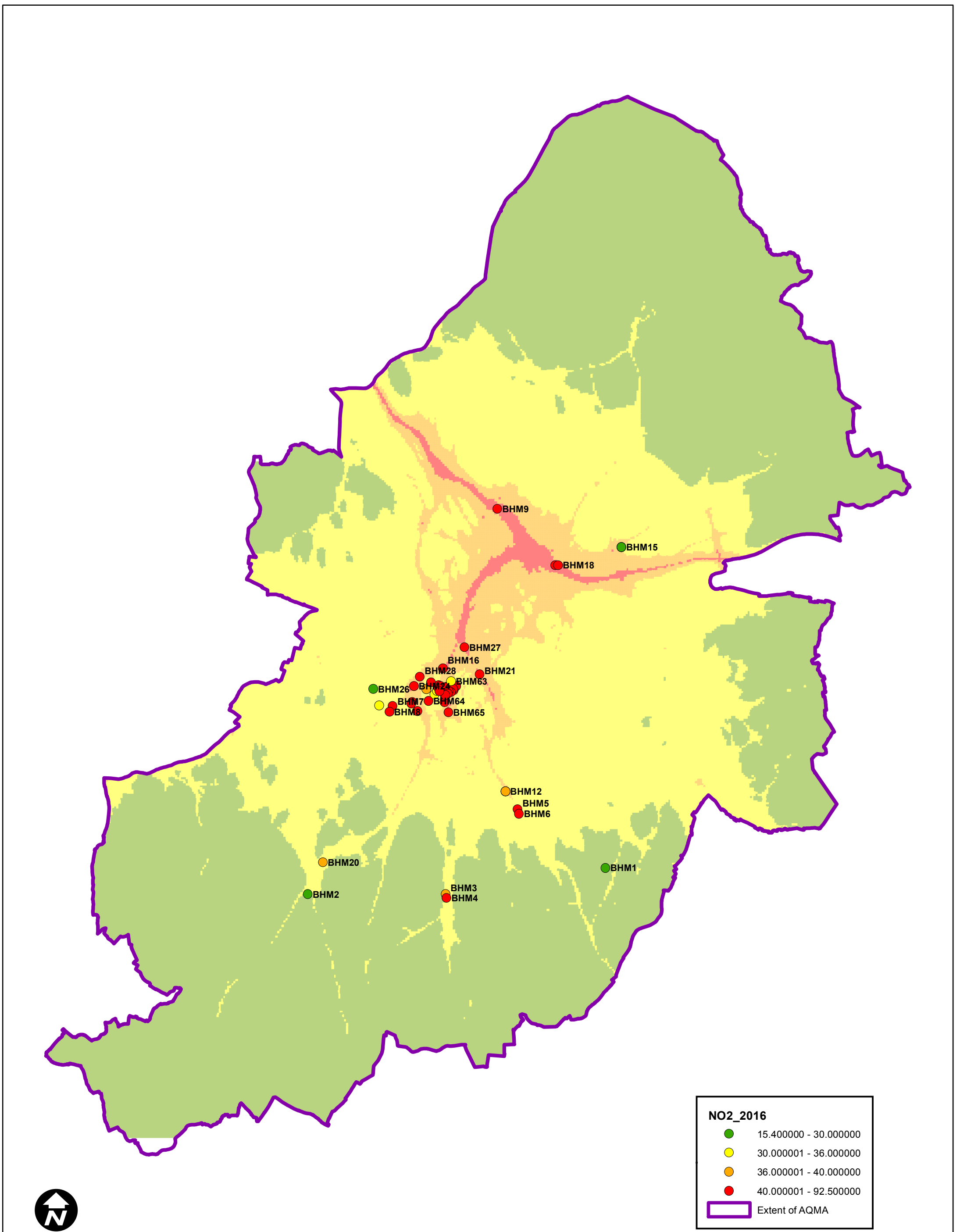
Location of Air Quality Monitoring Stations



Birmingham City Council

0 1,200 2,400 4,800 7,200 9,600
Meters

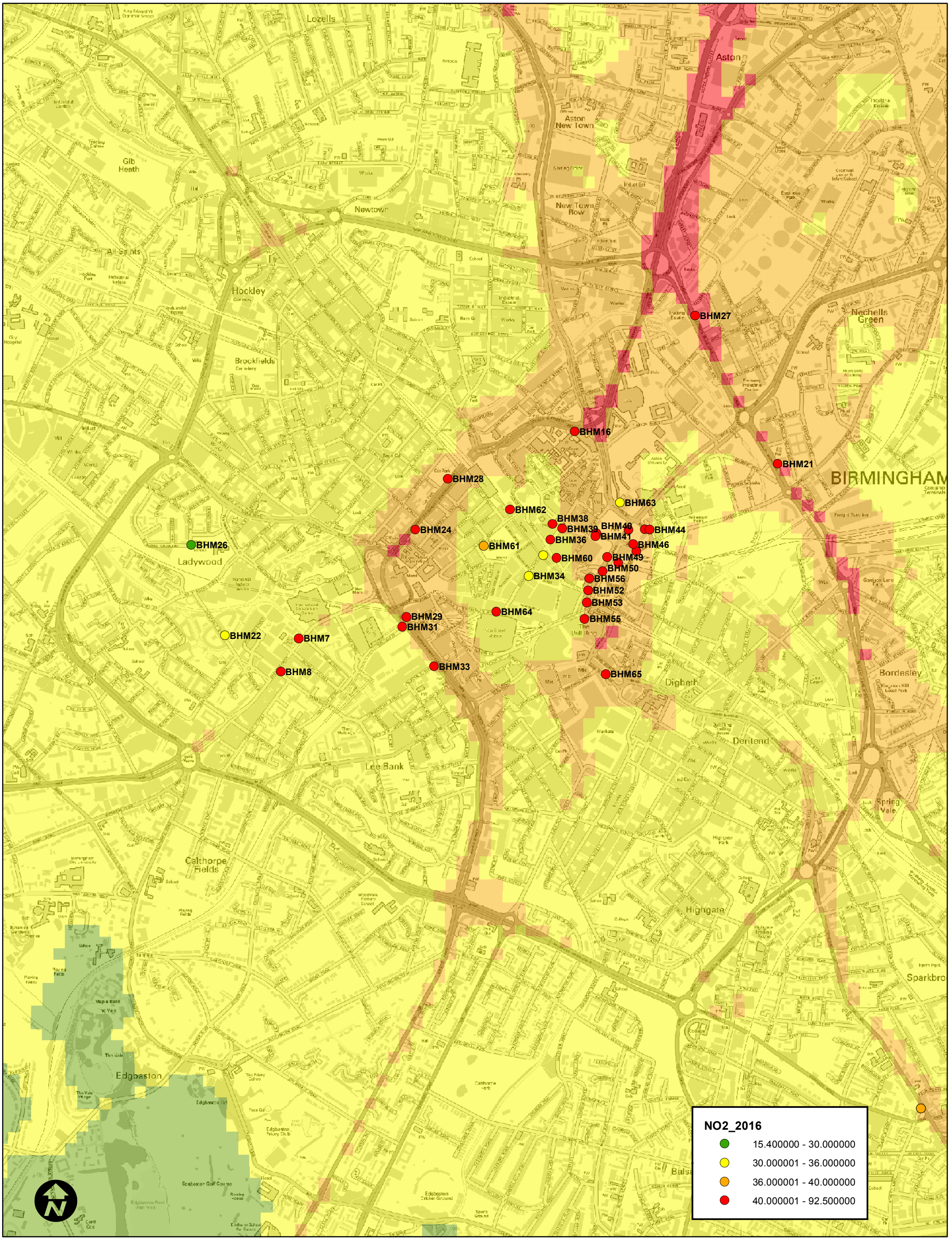
Location of Diffusion Tube Monitoring Sites



Birmingham City Council

0 1,200 2,400 4,800 7,200 9,600
Meters

Location of City Centre Diffusion Tube Monitoring Sites



Birmingham City Council

0 220 440 880 1,320 1,760

Meters

Appendix E: Summary of Air Quality Objectives in England

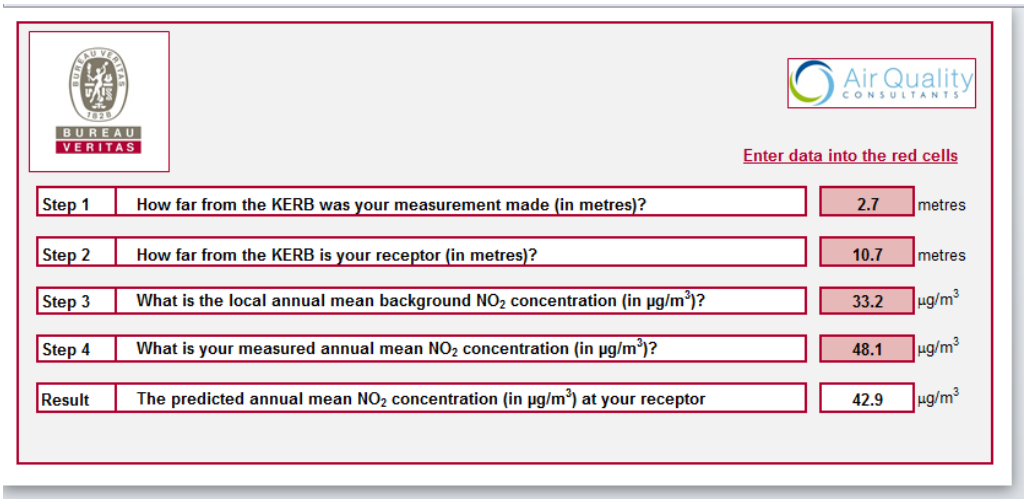
Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[5]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

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

Appendix F: Fall Off with Distance Calculations

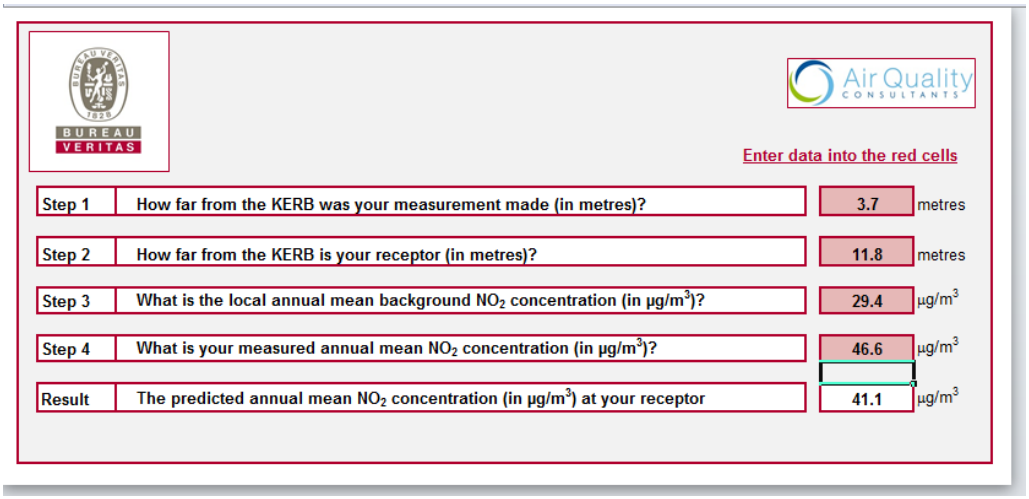
BHM17



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	2.7	metres
Step 2	How far from the KERB is your receptor (in metres)?	10.7	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	33.2	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	48.1	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	42.9	µg/m^3

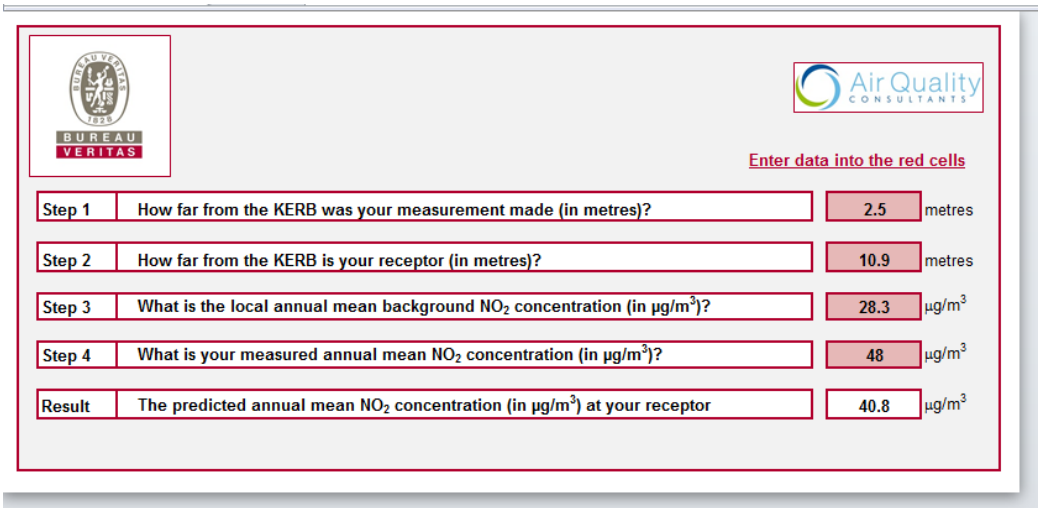
BHM18



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	3.7	metres
Step 2	How far from the KERB is your receptor (in metres)?	11.8	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	29.4	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	46.6	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	41.1	µg/m^3

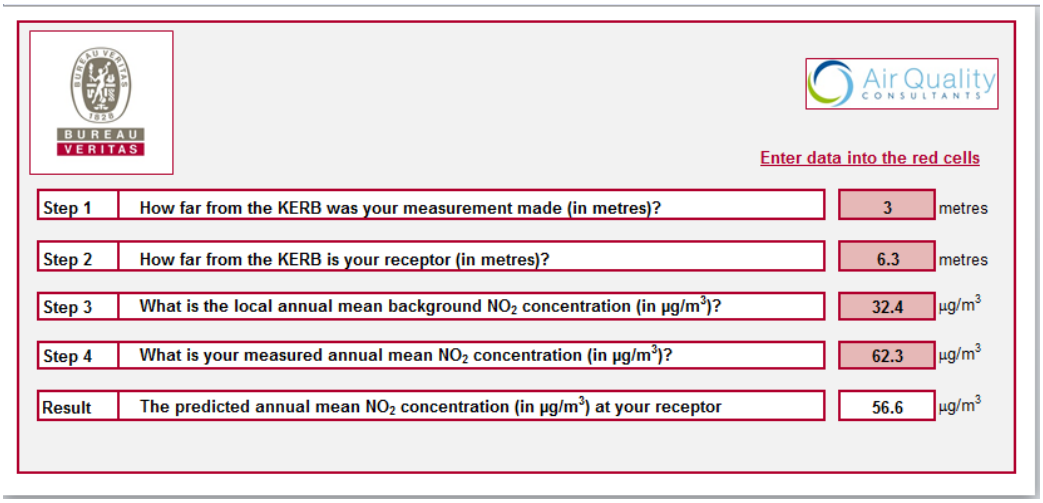
BHM19



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	2.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	10.9	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	28.3	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	48	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	40.8	µg/m^3

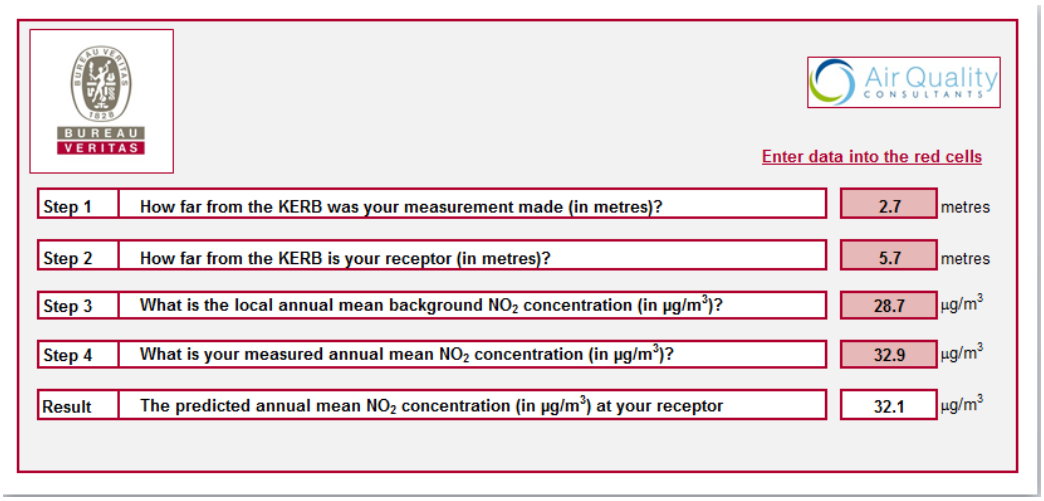
BHM 21



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	3	metres
Step 2	How far from the KERB is your receptor (in metres)?	6.3	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	32.4	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	62.3	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	56.6	µg/m^3

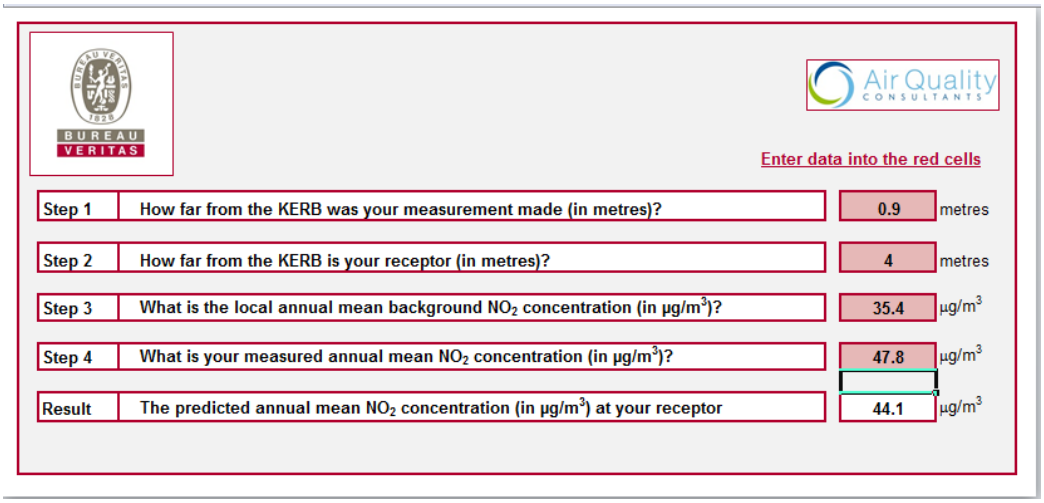
BHM22



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	2.7	metres
Step 2	How far from the KERB is your receptor (in metres)?	5.7	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	28.7	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	32.9	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	32.1	µg/m^3

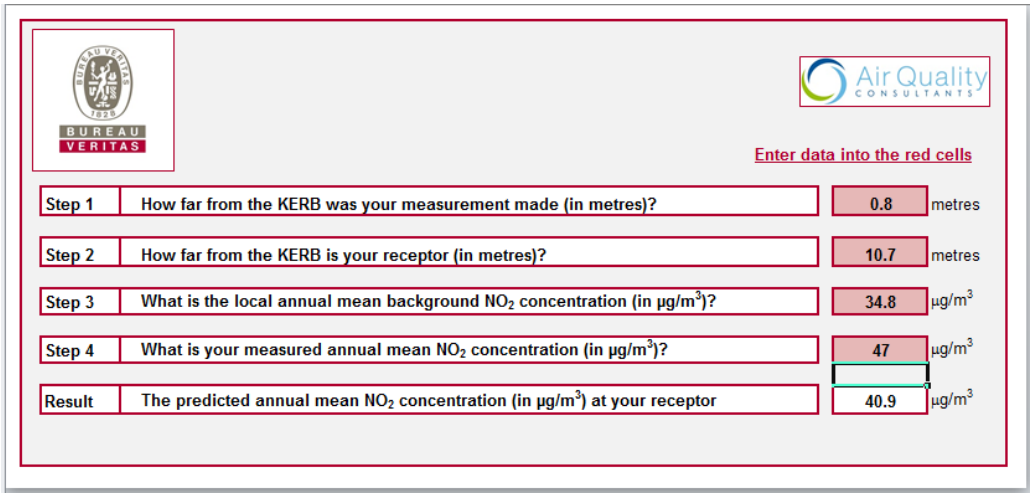
BHM27



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	0.9	metres
Step 2	How far from the KERB is your receptor (in metres)?	4	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	35.4	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	47.8	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	44.1	µg/m^3

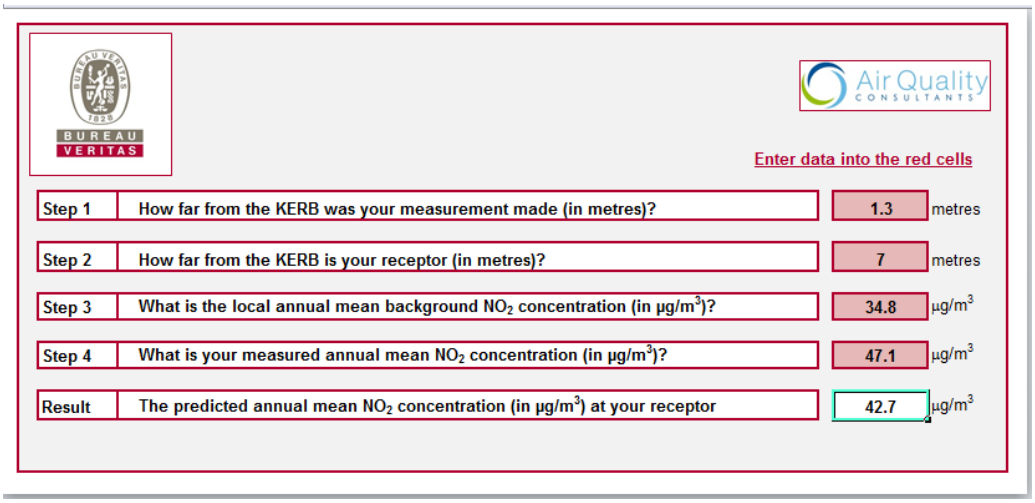
BHM36



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	0.8	metres
Step 2	How far from the KERB is your receptor (in metres)?	10.7	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	34.8	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	47	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	40.9	µg/m^3

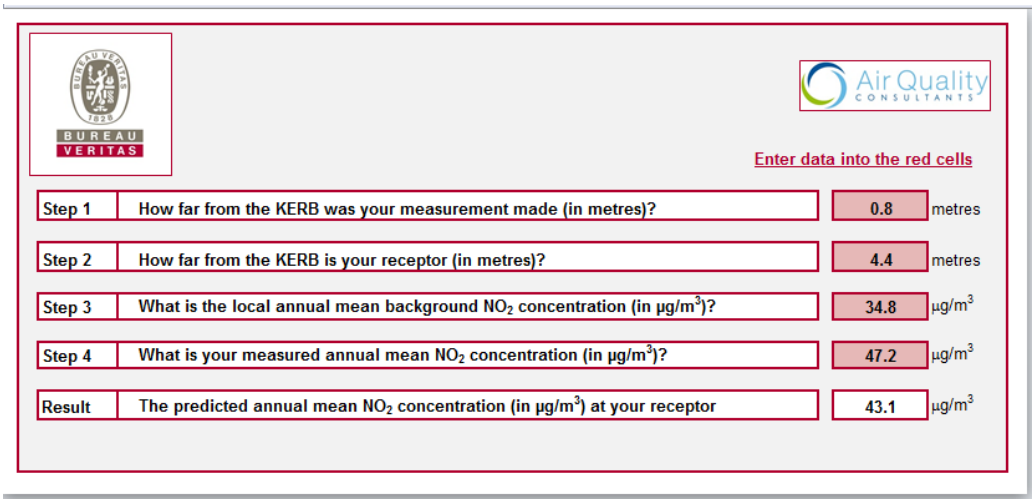
BHM39



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	1.3	metres
Step 2	How far from the KERB is your receptor (in metres)?	7	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	34.8	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	47.1	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	42.7	µg/m^3

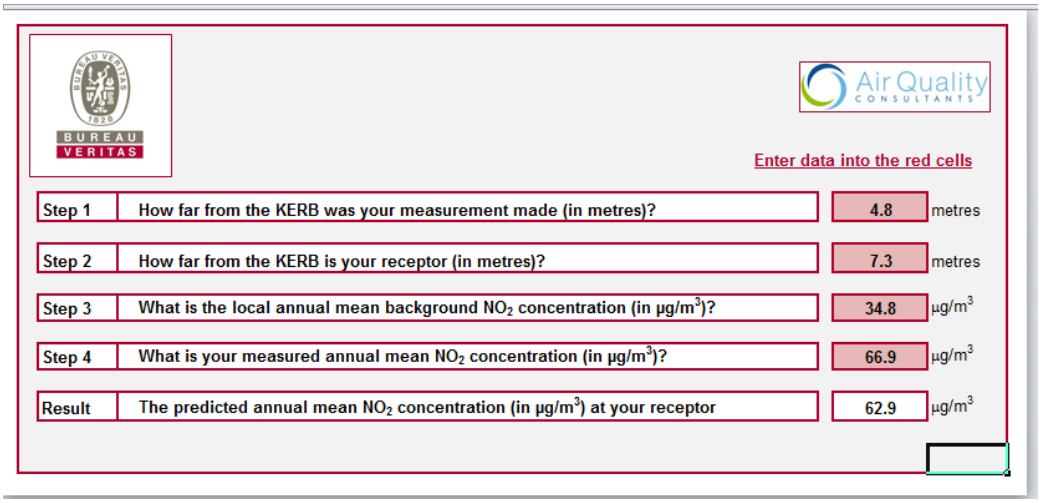
BHM43



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	0.8	metres
Step 2	How far from the KERB is your receptor (in metres)?	4.4	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	34.8	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	47.2	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	43.1	µg/m^3

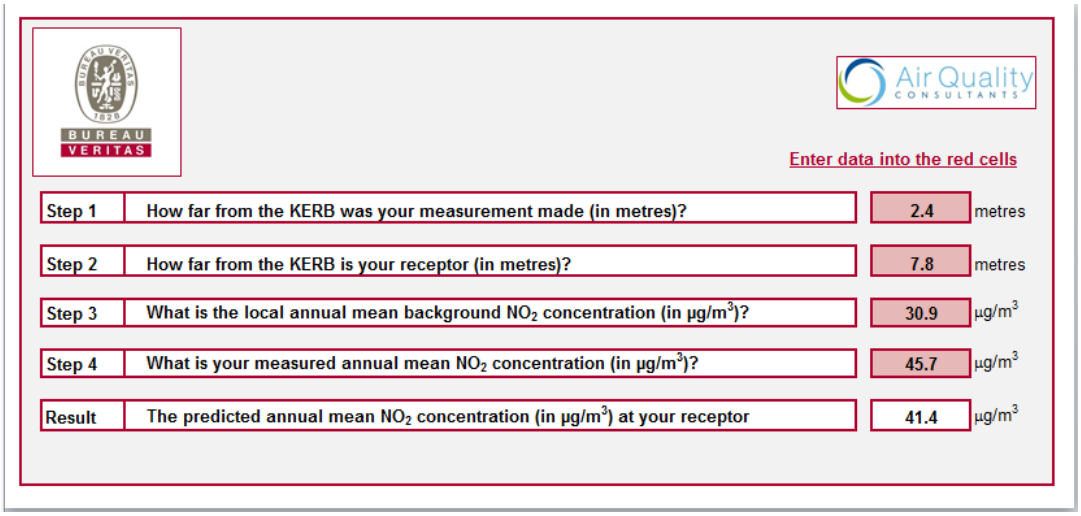
BHM46



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	4.8	metres
Step 2	How far from the KERB is your receptor (in metres)?	7.3	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	34.8	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	66.9	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	62.9	µg/m^3

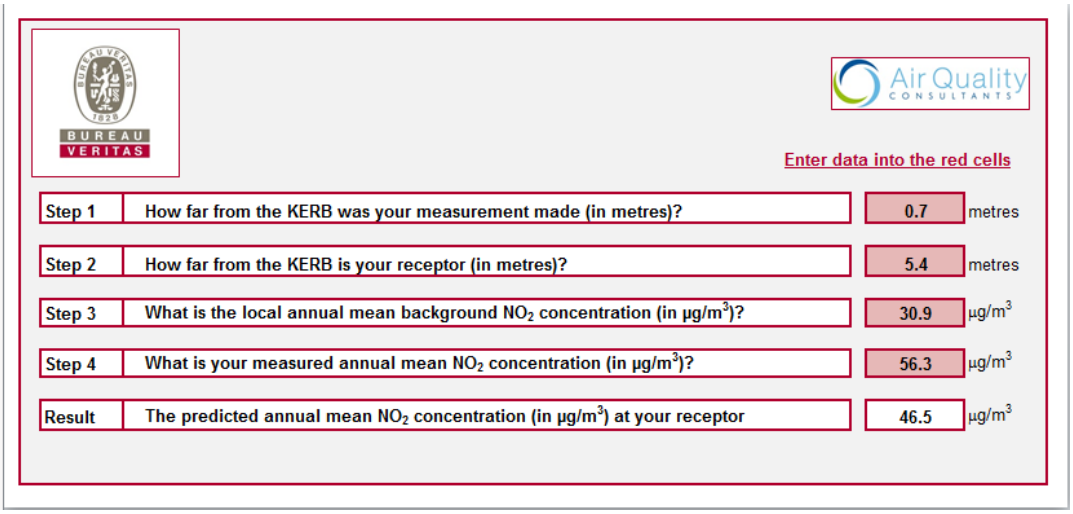
BHM60



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	2.4	metres
Step 2	How far from the KERB is your receptor (in metres)?	7.8	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	30.9	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	45.7	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	41.4	µg/m^3

BHM65



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	0.7	metres
Step 2	How far from the KERB is your receptor (in metres)?	5.4	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	30.9	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	56.3	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	46.5	µg/m^3

Glossary of Terms

Please add a description of any abbreviations included in the ASR – An example is provided below.

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide
CAZ	Clean Air Zone