2019 Air Quality Annual Status Report (ASR)

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

June 2019

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Executive Summary: Air Quality in Our Area

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].

Air Quality in Richmondshire

Richmondshire District Council (RDC) is principally a rural district. Very few areas within the district are of concern in relation to air quality. Nitrogen dioxide levels are the principal focus of monitoring in RDC. Concentrations of nitrogen dioxide tend to reflect local road traffic conditions, layout of the roads and the surrounding buildings. An area of narrow congested streets, road junctions and properties close to the kerb in Richmond (around the main approaches to the town centre from the northeast), has been identified as an area of concern in relation to air quality. The results of monitoring in 2018 for this area, together with all of the other sites in Richmondshire, indicate that the concentrations of nitrogen dioxide measured lie below the objective set by legislation (see Appendix E). There is a slight overall downward trend displayed by data gathered at the various monitored locations over the last five years.

There are currently no Air Quality Management Areas (AQMAs) in the district. If an AQMA were to be declared in the future then RDC and North Yorkshire County Council (NYCC) would work together to develop an Air Quality Action Plan which would include measures to address air pollution.

[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

Locations of AQMAs in other parts of the country can be found at https://uk-air.defra.gov.uk/aqma/list .

Previous air quality reports submitted by RDC can be found at www.richmondshire.gov.uk (search for 'Air Quality').

Actions to Improve Air Quality

The air quality in Richmondshire is generally good. Monitoring will continue at the same sites as monitored in 2018. If the results of monitoring indicate an upward trend with exceedance(s) of the air-quality objective then Richmondshire District Council will take the steps required by the Local Air Quality Management (LAQM) Policy Guidance.[4]

Conclusions and Priorities

This report provides the results of the monitoring of nitrogen dioxide (NO_2) concentrations over the past 5 years. These NO_2 annual mean concentrations are compared to the air quality objective of 40µg/m^3. In Richmondshire the air-quality objective was not exceeded in 2018. Data over this 5-year period displays a slight overall downward trend.

In Richmondshire the priorities with regard to air quality are therefore to focus on continued monitoring of nitrogen dioxide.

North Yorkshire is a two-tier authority, with North Yorkshire County Council (NYCC) being responsible for highways for example. Richmondshire District Council set the strategy for new development in the eastern area of Richmondshire (outside the Yorkshire Dales National Park). The Richmondshire Local Plan[5] is published on the RDC website and is under review in order to accommodate additional military growth anticipated in Catterick Garrison and civilian growth across the Plan Area. This review will include a transport assessment with consideration of potential air quality issues. Yorkshire Dales National Park Authority (YDNP) set the strategy for new development in the western area of Richmondshire. The YDNP Local Plan[6] is published on the YDNP website.

[4] Defra Local Air Quality Management Policy Guidance (PG16), April 2016
[5] Richmondshire District Council, Richmondshire Local Plan 2012-2028 Core Strategy, adopted 2014
[6] Yorkshire Dales National Park, Local Plan 2015-2030

The Local Planning Authorities covering Richmondshire (RDC and YDNP) and NYCC (as the Local Highway Authority) will continue to consider planning applications and seek to ensure they do not cause undue traffic congestion on the highway network.

NYCC undertake the ongoing management of traffic signals by monitoring the condition and operation of traffic signals through a programme of inspection and day-to-day fault reporting and network management with the aim of reducing congestion.

Local Engagement and How to get Involved

Richmondshire District Council currently has no schemes to help improve air quality however North Yorkshire County Council works with schools to improve road safety, promote cycling and travel alternatives and travel awareness and offer cycle training to primary school pupils. Members of the public can help by reducing the number of car-driver trips, car sharing, increasing use of public transport and increasing active travel (cycling and walking).

Table of Contents

List of Tables

List of Figures

1 Local Air Quality Management

This report provides an overview of air quality in Richmondshire during 2018. 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[7] and Technical[8] 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. As a two-tier authority Richmondshire District Council and North Yorkshire County Council would work together to develop an AQAP (which would include measures to address air pollution).

This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Richmondshire District Council to improve air quality and any progress that has been made (as appropriate).

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

[7] Defra Local Air Quality Management Policy Guidance (PG16), April 2016
[8] Defra Local Air Quality Management Technical Guidance (PG16), February 2018

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.

Richmondshire District Council currently does not have any AQMAs.

For reference, maps of Richmondshire District Council's monitoring locations are available in Appendix D.

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

Defra's appraisal of last year's ASR indicated that the report was well-structured and detailed and conclusions reached were acceptable for all sources and pollutants based on the evidence provided by the local Authority. The appraisal included commentary/provisos listed below:

1. *The District Council continues to undertake routine monitoring with diffusion tubes for nitrogen dioxide at 15 sites across the district, with results below objective levels. Two monitoring sites in Richmond, at Gallowgate and Frenchgate that have previously been within 10% of the objective level for annual mean nitrogen dioxide, are now below this range.*
2. *The report states that monitoring will continue at the same locations in 2018 and this is supported.*
3. *It appears the Local Authority have distance corrected all sites that are not located at the nearest receptor. The guidance was updated in April 2018 to state that this is not necessary for sites below 36ug/m^3. See LAQM TG16[9] paragraph 7.78 for further details.*
4. *The maps showing the locations of the monitoring locations are very clear and should be included in all future reports.*

Updates to these comments are included below:

1. The two sites referred to in the comments above (on Gallowgate and Frenchgate) as falling within 10% of the objective level for nitrogen dioxide in 2016, did not fall within 10% of the objective level for annual mean nitrogen dioxide in 2017 or 2018.
2. All of the 15 sites, which were being monitored in 2018, continue to be monitored in 2019.
3. Data for 2018 has not been distance corrected (in line with the updated LAQM TG16 as detailed above). Data for previous years (2014 - 2017) as presented in table A.1 has not been distance corrected.

[9] Defra Local Air Quality Management Technical Guidance (PG16), February 2018

4. Maps of locations are included in Appendix D.

Richmondshire District Council's priorities for the coming year are to continue monitoring in the same locations as those monitored during 2018.

Richmondshire District Council has a Local Plan Core Strategy[10] and Yorkshire Dales National Park Authority has a Local Plan[11]. Core Policy 3 of the RDC Strategy seeks to align development and provision of services to minimise the need for travel. North Yorkshire County Council, as local highway authority, has objectives which relate to transport as detailed in their Local Transport Plan four (LTP4)[12]. These are summarised in Table 2.11 over the next four pages.

[10] Richmondshire District Council, Richmondshire Local Plan 2012-2028 Core Strategy
[11] Yorkshire Dales National Park, Local Plan 2015-2030
[12] North Yorkshire County Council, Local Transport Plan four, 2016-2045

Table 2.1 – 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
1	Local Plan 2012-2028 Core Strategy including Core Policy CP3 Achieving Sustainable Development - RDC Local Planning Authority area	Policy Guidance and Development Control	Other policy	Richmondshire District Council (RDC) as Local Planning Authority (LPA) & Ministry of Defence (MoD) in consultation with North Yorkshire County Council (NYCC) as Local Highway / Education Authority	N/A	2012-2028	N/A	N/A	On-going & under review to include masterplan for Catterick Garrison to accommodate additional military and civilian growth. Will include transport and air quality assessment.	N/A	The strategy seeks to align development and provision of services to minimise the need for travel.
2	Local Transport Plan 4 (LTP4)	Policy Guidance and Development Control	Other policy	North Yorkshire County Council	N/A	2016-2045	N/A	N/A	NYCC preparing Active Travel strategies, ULEV and Air Quality (see separate entries below)	Ongoing	Two objectives of the plan are - 'Environment and Climate Change' - managing the adverse impact of transport on the environment, and 'Healthier Travel' - promoting healthier travel opportunities.
3	Management and optimisation of traffic signals - whole district	Traffic Management	UTC, Congestion management, traffic reduction	North Yorkshire County Council	Ongoing	Ongoing	N/A	N/A	Traffic Engineering monitor the condition / operation of traffic signals through a programme of inspection, fault reporting and network management.	N/A	Aim to reduce congestion
4	Management and optimisation of traffic signals Leyburn	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access	North Yorkshire County Council & Department for Transport (DfT)	Ongoing	Funding available 2020/21	N/A	N/A	Pedestrian crossing Improvements.	2020/21	Aim to reduce congestion & improve road safety

			management, Selective vehicle priority, bus priority, high vehicle occupancy lane								
5	Traffic signal Improvements Spennithorne Bridge	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	North Yorkshire County Council & Department for Transport (DfT)	Ongoing	Funding available 2018/19 and 2020/21	N/A	N/A	Traffic signal improvements.	2018/19 and 2020/21	Aim to improve traffic flow and road safety
6	Transport related air quality policy.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	North Yorkshire County Council	Ongoing	Ongoing	N/A	N/A	Being updated as part of LTP4	N/A	Aim to reduce air quality issues.
7	Report on ULEV charging points	Policy Guidance and Development Control	Low Emissions Strategy	North Yorkshire County Council	Report to members Oct 2018	Ongoing	N/A	N/A	Being developed as part of LTP4	Ongoing	Officers continue with review of policy and approach to the provision of facilities in light of popularity of ULEVs
8	Local Plan Review 2018-2035 Policy on EV charging point provision in new development	Policy Guidance and Development Control	Other policy	Richmondshire District Council / Development Industry	Ongoing	2018-2035 once adopted	N/A	N/A	Policy currently being drafted to be included in Preferred Options Consultation Sept 2019	Adoption Autumn 2021	Subject to economic viability and approval at examination and adoption by Members
9	Road safety and travel awareness	Promoting Travel Alternatives	School Travel Plans	North Yorkshire County Council	Ongoing	Ongoing	Number of pupils trained	N/A	On-going as part of LTP4	Ongoing	Cycle training to primary school pupils. Promotion of non-car journeys to/from school via Junior Road Safety Officers (JRSO) and curriculum resources.

10	Countywide Civil Parking Enforcement	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	North Yorkshire County Council	Ongoing	Ongoing	N/A	N/A	On-going as part of LTP4	N/A	To address parking related traffic congestion / disruption
11	Promotion of cycling	Promoting Travel Alternatives	Promotion of Cycling	North Yorkshire County Council (with partners as appropriate)	Ongoing	Ongoing	N/A	N/A	On-going as part of LTP4	N/A	Social media posts. Safety information packs. Engagement with clubs and event organisers. Face-to-face engagement with cyclists. Stands at major events. Road-side information posters. Bikeability programme.
12	Provision of cycle routes	Transport Planning and Infrastructure	Cycle network	North Yorkshire County Council & Local Planning Authority (LPA)	Ongoing	Ongoing	N/A	N/A	NYCC work with the LPA to ensure that any improvement(s) whether cycle or general Non-Motorised Users (NMU) are accommodated. Some locations dictate that no improvements are required / feasible with the smaller developments.	N/A	Very limited resources
13	Installation of EV charging points at YDNP car parks: (Hawes and Aysgarth)	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Yorkshire Dales National Park Authority	Ongoing	2019	N/A	N/A	N/A	?	Subject to satisfactory resolution of issues around procurement, installation & ongoing management & administration.
14	Installation of EV charging points at certain RDC car parks	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV	Richmondshire District Council	Report to directors 2018	N/A	N/A	N/A	N/A	N/A	Subject to satisfactory management approval and adoption by Members (as appropriate).

			recharging, Gas fuel recharging								
15	Information about air quality monitoring and reporting	Public Information	Via the Internet	Richmondshire District Council	N/A	N/A	N/A	N/A	N/A	N/A	Available on RDC website
16	Information about domestic solid fuel burning	Public Information	Via the Internet	Richmondshire District Council / Defra	N/A	N/A	N/A	N/A	N/A	N/A	Available on RDC website

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7)[13], 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.

No specific targets have been issued and no monitoring is currently undertaken by Richmondshire District Council. There are no smoke control areas in Richmondshire.

Public Health England (PHE) produce figures, as part of the Public Health Outcomes Framework (PHOF), in relation to certain health indicators (found at http://www.phoutcomes.info/public-health-outcomes-framework#gid/1000049). The indicator of relevance (within the context of this Annual Status Report report) is 'Fraction of mortality attributable to particulate air pollution'. The values currently available from PHE for this indicator are for 2017. The value for this indicator for Richmondshire is 3.4%. The value for the same indicator for the whole of the Yorkshire and Humber region is 4.2%, with the value for England given as 5.1%.

It is expected that Local authorities review any existing measures already being implemented and assess whether they are already taking positive action to reduce $PM_{2.5}$ emissions. The development of any such measures would form part of an Action Plan to tackle a problem with any Air Quality Management Area (AQMA). As RDC does not have an AQMA no change has been necessary.

[13] Defra Local Air Quality Management Policy Guidance (PG16), April 2016

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

Richmondshire District Council does not undertake automatic (continuous) monitoring.

National monitoring results are available at https://uk-air.defra.gov.uk/ .

3.1.2 Non-Automatic Monitoring Sites

Richmondshire District Council undertook non-automatic (passive) monitoring of nitrogen dioxide (NO_2) at 15 sites during 2018. Table A.21 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. “annualisation” and/or distance correction), are 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.2 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 2018 dataset of monthly mean values is provided in Appendix B.

Monitoring Results Summary

The air-quality objective of 40µg/m^3 was not exceeded at any of the sites in 2018. As there were no annual mean values greater than 60µg/m^3, this indicates that the 1-hour mean objective of 200µg/m^3, not to be exceeded more than 18 times per year is unlikely to be exceeded at these sites.

Trend

There is a slight overall downward trend displayed by data collected from the monitored locations over the five-year period 2014 to 2018.

Appendix A: Monitoring Results

Table A.1 – 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)
R2	Queens Road	Roadside	417180	501125	NO2	NO	8	2	NO	3
R3	Darlington Road	Roadside	418066	501490	NO2	NO	22	1	NO	3
R4	White Rose Crescent	Urban Background	418504	501455	NO2	NO	11	2	NO	3
R6	Gatherley Moor Farm	Roadside	419207	506509	NO2	NO	0	8	NO	2
R7	Scotch Corner Hotel	Roadside(3)	421366	505261	NO2	NO	0	22	NO	3
R8	15 Queens Road	Roadside	417179	501127	NO2	NO	7	2.5	NO	3
R10	Oglethorpe	Roadside	417381	501281	NO2	NO	1.7	1.7	NO	3
R11	7 Gallowgate	Roadside	417377	501317	NO2	NO	0	3.3	NO	3
R12	1 Anchorage Hill	Roadside	417542	501275	NO2	NO	3.5	1.8	NO	3
R13	3 Maison Dieu	Roadside	417536	501258	NO2	NO	0	1.4	NO	3
R15	2 Maison Dieu	Roadside	417500	501263	NO2	NO	0	1.7	NO	3
R16	74 Frenchgate	Roadside	417451	501269	NO2	NO	0	1.5	NO	3

R17	95 Frenchgate	Roadside	417370	501262	NO2	NO	2	1.5	NO	3
R18	26 Darlington Road	Roadside	417661	501297	NO2	NO	3.5	1.7	NO	3
R19	43 Frenchgate	Roadside	417312	501037	NO2	NO	0	2	NO	3

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.

(3) This site is more than 15 metres from the kerb so doesn't meet the site type description of 'Roadside' as per Table 7.7 of the LAQM.TG16

Table A.2 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2018 (%) [2]	NO_2 Annual Mean Concentration (µg/m^3) [3]				
					2014	2015	2016	2017	2018
R2	Roadside	Diffusion Tube	100	100	30.1	26.1	28.6	25.5	23.4
R3	Roadside	Diffusion Tube	100	100	19.3	17.9	18.3	16.7	18.6
R4	Urban Background	Diffusion Tube	92	92	9.4	7.8	8.8	7.6	7.5
R6	Roadside	Diffusion Tube	100	100	26.5	23.8	22.9	21.3	20.4
R7	Roadside	Diffusion Tube	100	100	20.3	18.1	18.1	15.7	15.6
R8	Roadside	Diffusion Tube	100	100	33.4	32.7	31.6	29.9	28.6
R10	Roadside	Diffusion Tube	100	100	37.2	35.7	36.3	34.7	33.2
R11	Roadside	Diffusion Tube	100	100	38	37.1	36.7	35.4	33.6
R12	Roadside	Diffusion Tube	100	100	27.1	26.9	26.4	23.5	21.9
R13	Roadside	Diffusion Tube	92	92	28.2	25.9	27.4	24.4	22.8
R15	Roadside	Diffusion Tube	100	100	28.7	28.6	27.6	25.1	23.5
R16	Roadside	Diffusion Tube	92	92	**40.2**	38.9	37.8	35.2	31.5
R17	Roadside	Diffusion Tube	100	100	32.7	28.1	29.9	25.7	25.6
R18	Roadside	Diffusion Tube	100	100	27.4	28.8	29.2	24.3	20.4
R19	Roadside	Diffusion Tube	100	100	-	25.9	29.3	27.9	22.3

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

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

Notes:

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

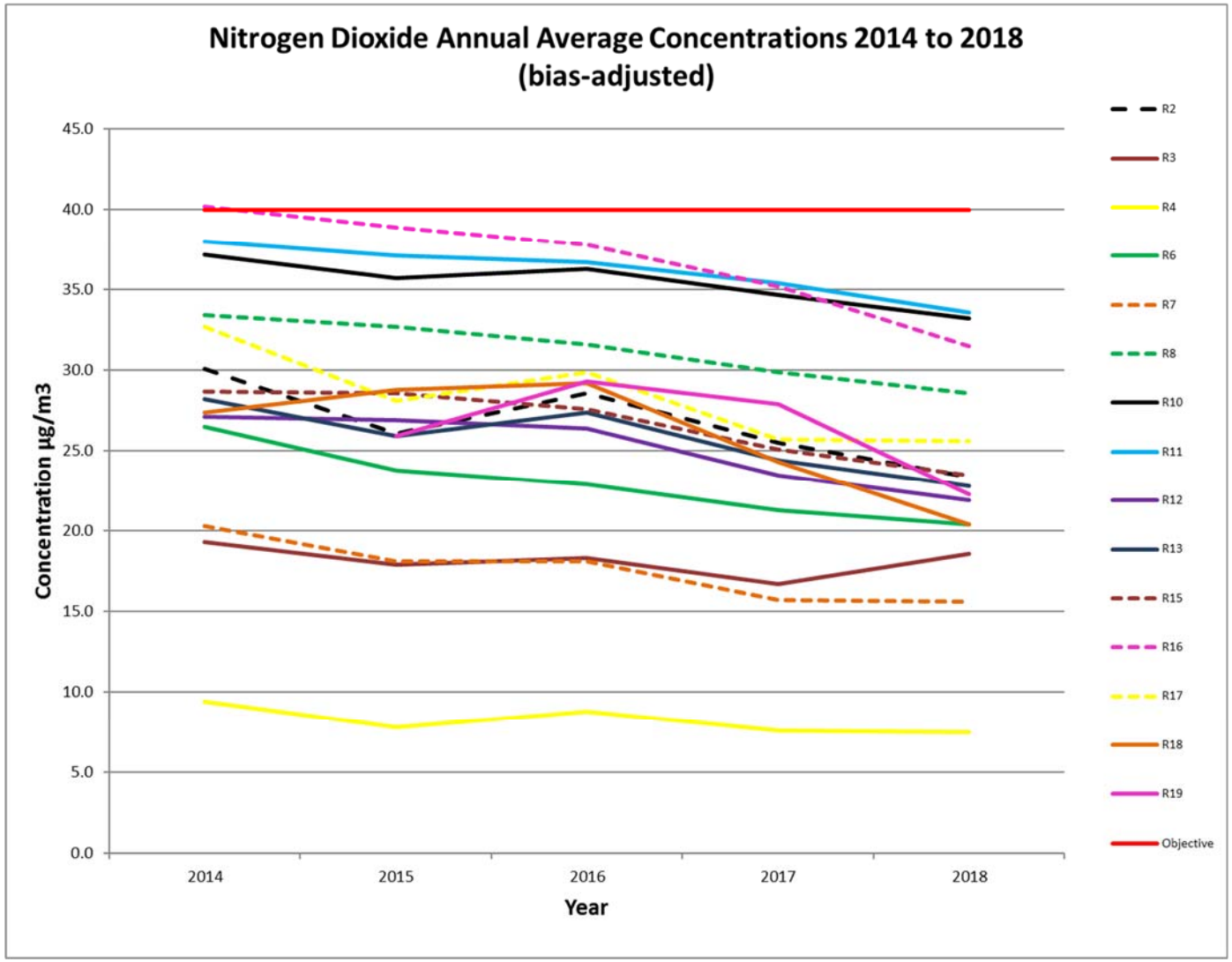
NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

(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.

Figure A.1 – Trends in Annual Mean NO_2 Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2018

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 (0.76) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
R2	34.7	31.6	33.8	32.4	31.8	26.5	27.3	25.0	27.3	27.8	36.8	34.6	30.8	23.4	-
R3	25.1	26.0	22.3	33.6	29.8	28.6	28.1	13.2	18.2	18.4	26.4	23.8	24.5	18.6	-
R4	-	12.8	11.2	9.2	7.2	6.3	5.7	6.5	7.1	9.1	18.4	15.5	9.9	7.5	-
R6	28.1	33.9	30.1	28.3	29	27.6	23.5	19.2	20.1	23.4	27.2	31.1	26.8	20.4	-
R7	20.9	24.8	23.1	23.9	20.9	23.2	16.9	13.5	14.7	15.5	25.9	22.5	20.5	15.6	-
R8	42.5	43.6	43.1	37.2	35.3	31.3	34.3	30	35.8	37.3	43.3	37.1	37.6	28.6	-
R10	48.4	51.8	47.6	47.7	43.9	37.3	38.8	36.1	40.8	41.8	40.8	48.9	43.7	33.2	-
R11	48.9	44.9	47.6	42	45.5	45.1	45.5	40.2	42.7	42.4	38.8	47.5	44.3	33.6	-
R12	36.2	28.8	30.4	28.6	27.4	22.4	25.7	22.2	24.8	27.2	39.3	33.1	28.8	21.9	-
R13	30.9	39.4	36.8	28.5	29.5	25.3	28.2	-	19.7	25.1	36	30.6	30.0	22.8	-
R15	32.6	38.4	35.4	30.5	27	21.9	26.2	22.8	24.4	30.4	40.5	40.4	30.9	23.5	-
R16	48.4	-	40.8	40.6	42.6	36.2	41.5	33.3	35.8	37.9	48.4	50.2	41.4	31.5	-
R17	32.1	38.3	40.6	32.8	34.1	33.1	34	26.8	27.9	26.4	41.4	37.2	33.7	25.6	-
R18	27.9	32.7	38	19.1	18.1	18.9	16.9	23.1	28	28.8	35.2	35.1	26.8	20.4	-
R19	35.2	35.5	37.8	25.8	24	22.8	25.8	21.3	27.1	29.2	33.3	35	29.4	22.3	-

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

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

☐ **Where applicable, data has been distance corrected for relevant exposure**

Notes:

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

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

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

(2) Distance corrected to nearest relevant public exposure.

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

Diffusion Tube Bias Adjustment Factor

Richmondshire has made use of the National bias adjustment factor. The factor used takes into account the following aspects:

(i) Supplier

The diffusion tubes used in Richmondshire are supplied and analysed by Socotec, Didcot, Oxfordshire.

(ii) Tube Type

The tubes used contain a mesh which is doped with 50% v/v triethanolamine (TEA) and acetone.

(iii) Results from other local authorities using the same supplier and tube type

There are systematic differences in the performance of different laboratories and preparation methods of diffusion tubes. A spreadsheet provided by the LAQM Helpdesk (viewed at http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html) shows those figures for different local authorities using the same supplier and tube type and where diffusion tubes are co-located with automatic (continuous) monitors.

A copy of the relevant section of the table used to obtain the bias adjustment figure for this report provided by the LAQM Helpdesk is shown in Table C.1 below.

Table C.1 – National Diffusion Tube Bias Adjustment Factor Spreadsheet Version 03/18

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/19

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2019
LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List. If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List. If a preparation method is not shown, we have no data for this method at this laboratory.[2]

Step 3: Select a Year from the Drop-Down List. If a year is not shown, we have no data[2]

Step 4: Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	50% TEA in acetone	2018	R	Cambridge City Council	12	42	30	40.2%	G	**0.71**
SOCOTEC Didcot	50% TEA in acetone	2018	R	Canterbury City Council	11	38	28	35.8%	G	**0.74**
SOCOTEC Didcot	50% TEA in acetone	2018	UB	Canterbury City Council	12	16	12	36.3%	G	**0.73**
SOCOTEC Didcot	50% TEA in acetone	2018	R	Hambleton District Council	12	21	18	20.8%	G	**0.83**
SOCOTEC Didcot	50% TEA in acetone	2018	R	Ipswich Borough Council	12	34	29	17.9%	G	**0.85**
SOCOTEC Didcot	50% TEA in acetone	2018	R	City of York Council	12	41	27	54.2%	G	**0.65**
SOCOTEC Didcot	50% TEA in acetone	2018	UB	City of York Council	11	22	15	52.0%	G	**0.66**
SOCOTEC Didcot	50% TEA in acetone	2018	R	City of York Council	12	34	26	30.8%	G	**0.76**
SOCOTEC Didcot	50% TEA in acetone	2018	R	City of York Council	11	30	23	32.9%	G	**0.75**
SOCOTEC Didcot	50% TEA in acetone	2018	R	Dumfries and Galloway Council	12	36	30	19.8%	G	**0.83**
SOCOTEC Didcot	50% TEA in acetone	2018	R	Knowsley MBC	12	47	38	26.5%	G	**0.79**
SOCOTEC Didcot	50% TEA in acetone	2018	R	Suffolk Coastal DC	11	44	33	32.4%	G	**0.76**
SOCOTEC Didcot	50% TEA in acetone	2018	R	Thanet District Council	10	26	21	25.4%	G	**0.80**
SOCOTEC Didcot	50% TEA in acetone	2018	R	Horsham District Council	11	33	23	42.2%	G	**0.70**
SOCOTEC Didcot	50% TEA in acetone	2018	R	Horsham District Council	12	33	29	17.2%	G	**0.85**
SOCOTEC Didcot	50% TEA in acetone	2018	R	Horsham District Council	12	30	26	16.1%	G	**0.86**
SOCOTEC Didcot	50% TEA in acetone	2018	UB	Slough Borough Council	10	38	31	25.6%	G	**0.80**
SOCOTEC Didcot	50% TEA in acetone	2018	SU	Slough Borough Council	11	32	22	46.7%	G	**0.68**
SOCOTEC Didcot	50% TEA in acetone	2018	R	Slough Borough Council	11	39	32	22.5%	G	**0.82**
SOCOTEC Didcot	50% TEA in acetone	2018	R	Vale of Glamorgan	12	39	25	57.8%	G	**0.63**
SOCOTEC Didcot	50% TEA in acetone	2018	KS	Marylebone Road Intercomparison	9	95	87	9.1%	G	**0.92**
SOCOTEC Didcot	50% TEA in acetone	2018		**Overall Factor[3] (21 studies)**				**Use**		**0.76**

Annualisation

Data capture for all monitoring sites in this report was greater than 75%, therefore annualisation of the data was not necessary.

Distance Correction

The LAQM TG16[14] guidance was updated in April 2018. Monitoring locations should be representative of exposure. Where they are not it is advised that sites which record an annual mean concentration above the annual objective of 40ug/m^3 the distance correction should be applied. Consideration can also be given to sites that are within 10% of this objective (i.e. above 36ug/m^3).

As all of the sites which are not representative of exposure fall below the 40ug/m^3 (and 36ug/m^3) objective the distance correction adjustment was not necessary.

[14] Defra Local Air Quality Management Technical Guidance (PG16), February 2018

Appendix D: Maps of Monitoring Locations and AQMAs

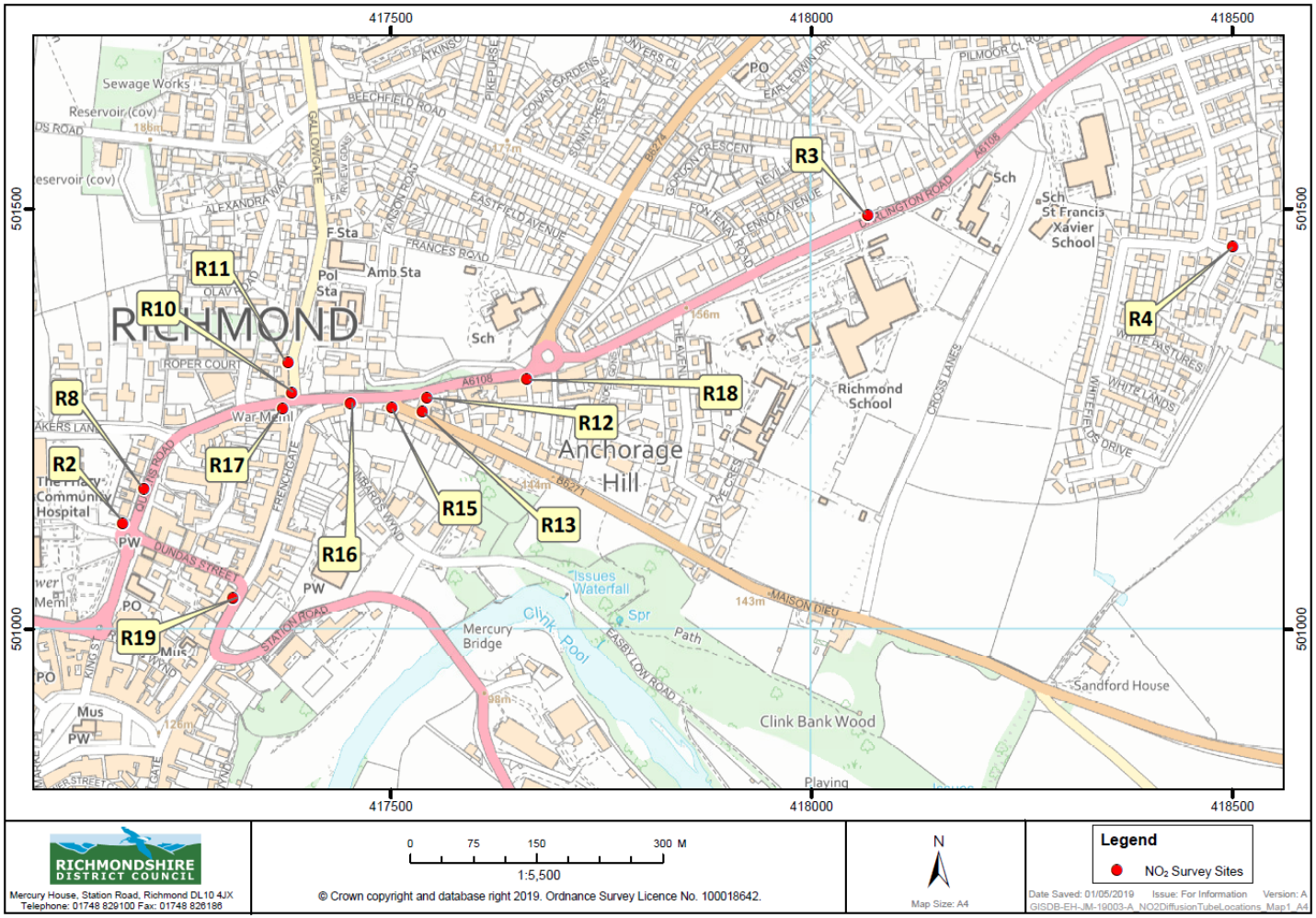


Figure D.1 Location of Diffusion Tubes in Richmond

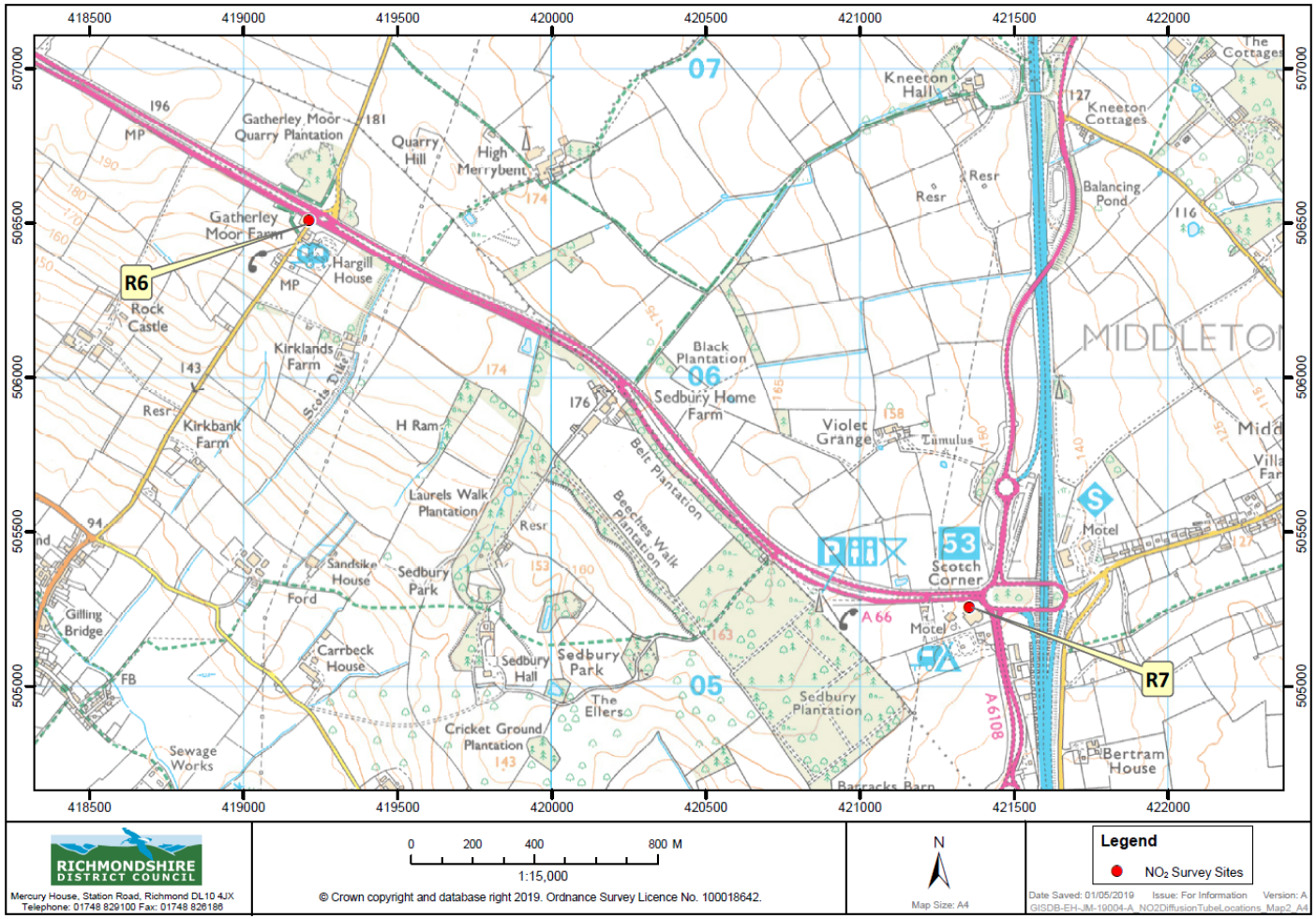


Figure D.2 Location of Diffusion Tubes on the A66 Road

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objectives[15]	
	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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
LAQM	Local Air Quality Management
NMU	Non-Motorised User E.g. Cycles, horses, pedestrians
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NYCC	North Yorkshire County Council
PHE	Public Health England
POHF	Public Health Outcomes Framework
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
RDC	Richmondshire District Council
TEA	Triethanolamine
YDNP	Yorkshire Dales National Park

References

- AEA Energy and Environment, Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users, February 2008
- Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
- Defra. Abatement cost guidance for valuing changes in air quality, May 2013
- Defra Local Air Quality Management Policy Guidance (PG16), April 2016
- Defra Local Air Quality Management Technical Guidance (TG16), February 2018
- Environmental equity, air quality, socioeconomic status and respiratory health, 2010
- North Yorkshire County Council, Local Transport Plan four (LTP4), 2016-2045
- Richmondshire District Council, Richmondshire Local Plan 2012-2028 Core Strategy, adopted 9 December 2014
- Yorkshire Dales National Park, Local Plan 2015-2030