



## **2020 Air Quality Annual Status Report (ASR)**

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

June 2020

## Richmondshire District Council

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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<sup>1,2</sup>.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion<sup>3</sup>.

## 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 2019 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.

Locations of AQMAs in other parts of the country can be found at

<https://uk-air.defra.gov.uk/aqma/list> .

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<sup>1</sup> Environmental equity, air quality, socioeconomic status and respiratory health, 2010

<sup>2</sup> Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

<sup>3</sup> Defra. Abatement cost guidance for valuing changes in air quality, May 2013

Previous air quality reports submitted by RDC can be found at

<https://www.richmondshire.gov.uk/environmental-health/pollution/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 2019. 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.<sup>4</sup>

## Conclusions and Priorities

This report provides the results of the monitoring of nitrogen dioxide (NO<sub>2</sub>) concentrations over the past 5 years. These NO<sub>2</sub> annual mean concentrations are compared to the air quality objective of 40µg/m<sup>3</sup>. In Richmondshire the air-quality objective was not exceeded in 2019. 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<sup>5</sup> 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 within the National Park. The YDNP Local Plan<sup>6</sup> is published on the YDNP website.

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<sup>4</sup> Defra Local Air Quality Management Policy Guidance (PG16), April 2016

<sup>5</sup> Richmondshire District Council, Richmondshire Local Plan 2012-2028 Core Strategy, adopted 2014

<sup>6</sup> Yorkshire Dales National Park, Local Plan 2015-2030, adopted 2016

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 Traffic Engineering monitor traffic signals and make technological improvements with the aim of reducing congestion, improving traffic flows and thus allowing the efficient use of the highway. NYCC also have many other roles such as those that relate to promoting active travel (like cycling and walking). NYCC have drafted an Air Quality Strategy which has undergone consultation (ended in April 2020) and is expected to be approved in 2020.

A summary of all the measures taken by the various authorities to improve air quality are included in Table 2.1 of the report.

## **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

<b>Executive Summary: Air Quality in Our Area .....</b>	<b>1</b>
Air Quality in Richmondshire .....	1
Actions to Improve Air Quality .....	2
Conclusions and Priorities .....	2
Local Engagement and How to get Involved .....	3
<b>1 Local Air Quality Management .....</b>	<b>6</b>
<b>2 Actions to Improve Air Quality .....</b>	<b>7</b>
2.1 Air Quality Management Areas .....	7
2.2 Progress and Impact of Measures to address Air Quality in Richmondshire .....	8
2.3 PM <sub>2.5</sub> – Local Authority Approach to Reducing Emissions and/or Concentrations .....	13
<b>3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance .....</b>	<b>14</b>
3.1 Summary of Monitoring Undertaken .....	14
3.1.1 Automatic Monitoring Sites .....	14
3.1.2 Non-Automatic Monitoring Sites .....	14
3.2 Individual Pollutants .....	14
3.2.1 Nitrogen Dioxide (NO <sub>2</sub> ) .....	14
<b>Appendix A: Monitoring Results .....</b>	<b>16</b>
<b>Appendix B: Full Monthly Diffusion Tube Results for 2019 .....</b>	<b>20</b>
<b>Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC .....</b>	<b>22</b>
<b>Appendix D: Maps of Monitoring Locations .....</b>	<b>24</b>
<b>Appendix E: Summary of Air Quality Objectives in England .....</b>	<b>26</b>
<b>Glossary of Terms .....</b>	<b>27</b>
<b>References .....</b>	<b>29</b>

## List of Tables

Table 2.1 – Progress on Measures to Improve Air Quality .....	9
Table A.1 - Details of Non-Automatic Monitoring Sites .....	16
Table A.2 – Annual Mean NO <sub>2</sub> Monitoring results .....	17
Table B.1 - NO <sub>2</sub> Monthly Diffusion Tube Results- 2019 .....	20
Table C.1 - National Diffusion Tube Bias Adjustment Factor Spreadsheet Version 03/20 .....	23
Table E.1 – Air Quality Objectives in England .....	26

**List of Figures**

Figure A.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations.....19

Figure D.1 - Location of Diffusion Tubes in Richmond..... 24

Figure D.2 - Location of Diffusion Tubes on the A66 Road..... 25

# 1 Local Air Quality Management

This report provides an overview of air quality in Richmondshire during 2019. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy<sup>7</sup> and Technical<sup>8</sup> 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 and others 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.

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<sup>7</sup> Defra Local Air Quality Management Policy Guidance (PG16), April 2016

<sup>8</sup> 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 provided information specified in the Guidance and that *'On the basis of the evidence provided by the local authority the conclusions reached are acceptable for all sources and pollutants.'* The appraisal included comments designed to help with future reports as follows:

1. Trends are clearly presented and discussed and a robust comparison with air quality objectives is provided.
2. The diffusion tube mapping is comprehensive and clearly demonstrates the monitoring network.
3. The report included links to Public Health Outcomes Frameworks.
4. Comments from the previous appraisal are provided and responded to.
5. Overall air quality in the District is good and the Council should continue to monitor and maintain this.

In light of these comments the ASR 2020 report will include similar information to that in the ASR 2019 report. Richmondshire District Council's priorities for the coming year are to continue monitoring in the same locations as those monitored during 2019.

Richmondshire District Council has a Local Plan Core Strategy<sup>9</sup> and Yorkshire Dales National Park Authority has a Local Plan<sup>10</sup>. 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 (NYCC), as local highway authority, has objectives which relate to transport as detailed in their Local Transport Plan four (LTP4)<sup>11</sup>. NYCC have drafted an Air Quality Strategy which has undergone consultation (which ended in April 2020) and this is likely to be adopted in 2020.

Progress on measures made to improve air quality by these authorities are summarised in Table 2.1 over the next four pages.

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<sup>9</sup> Richmondshire District Council, Richmondshire Local Plan 2012-2028 Core Strategy

<sup>10</sup> Yorkshire Dales National Park, Local Plan 2015-2030

<sup>11</sup> 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	Date Measure Introduced	Organisations involved	Funding Source	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	2012-2028	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	As per organisations involved	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.	Ongoing	The strategy seeks to align development and provision of services to minimise the need for travel.
2	Local Transport Plan 4 (LTP4) 2016-2045	Policy Guidance and Development Control	Other policy	2016	NYCC	NYCC capitol allocation on transport & bids through the Local Enterprise Partnership (LEP)	N/A	N/A	Air Quality Strategy (see below) expected to be approved Q2 20/21  Active Travel Strategy to re-start preparation in 2020 following release of new Government guidance on cycle infrastructure design and further details of Government funding for walking and cycling infrastructure	Ongoing	Two of the objectives: • 'Environment and Climate Change' - managing the adverse impact of transport on the environment • 'Healthier Travel' - promoting healthier travel opportunities
3	Air Quality Strategy - Protecting North Yorkshire's Air Quality 2020-2045 (DRAFT)	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2020	NYCC	NYCC & look to external funding	N/A	N/A	Draft - consultation closed 30 April 2020 Expected to be approved Q2 20/21.  NYCC already has a £100k p.a. countywide allocation to identify and deliver measures to improve traffic related air quality  NYCC recently led on unsuccessful European Regional Development Fund (ERDF) bid for funding to deliver EV charging points across North Yorkshire.	2020 (est)	Key objectives: • Raise the profile of improving air quality in the context of North Yorkshire • Work in partnership with borough and district councils and other organisations to protect and, where appropriate, improve air quality • Ensure that improving or maintaining good air quality is a key consideration when planning and delivering County Council services • Support the use of Ultra Low Emission Vehicles (ULEVs) in North Yorkshire

4	Local Plan Review 2018-2035 Policy on EV charging point provision in new developments	Policy Guidance and Development Control	Other policy	2018-2035 once adopted	RDC / Development Industry	RDC / Development Industry	N/A	N/A	Policy drafted & to be included in Preferred Options Consultation Summer 2020	Adoption Autumn 2021	Subject to economic viability and approval at examination and adoption by Members
5	Management and optimisation of traffic signals - whole district	Traffic Management	UTC, Congestion management, traffic reduction	Ongoing	NYCC	NYCC	N/A	N/A	Traffic Engineering monitor the condition / operation of traffic signals through a programme of inspection, fault reporting and network management. Technological improvements installed when available to improve efficiency of the junction, reliability and reduce power consumption	N/A	Aim to reduce congestion, improve traffic flows and efficient use of the highway.
6	Management and optimisation of traffic signals Leyburn	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	Funding from 2020/21	NYCC & Department for Transport (DfT)	Government's Safer Roads Fund	N/A	N/A	Pedestrian crossing Improvements. Works continuing on the delivery of a package of measures in Leyburn	Over a 3 year period	Aim to reduce congestion & improve perceived and actual road safety risk.
7	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	Funding available 2018/19 and 2020/21	NYCC & Department for Transport (DfT)	DfT's Safer Roads Fund	N/A	N/A	Traffic signal improvements to reduce delay and improve safety of all users. Project at tender with delivery planned for 2020.	2020	Aim to improve traffic flow and road safety
8	Road safety and travel awareness	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	Ongoing	NYCC, 95-Alive	NYCC / DfT grant	N/A	N/A	On-going as part of LTP4	Ongoing	Social media posts. Engagement with schools, businesses and communities. Promotion of active/sustainable travel.

Richmondshire District Council

9	Countywide Civil Parking Enforcement	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	Ongoing	NYCC	NYCC	N/A	N/A	On-going as part of LTP4. CPE now a fundamental part of delivering traffic and parking management improving safety and accessibility of the network for all users.	Ongoing	To address parking related traffic congestion / disruption
10	Road safety and travel awareness	Promoting Travel Alternatives	Promotion of cycling	Ongoing	NYCC (with partners as appropriate)	NYCC/DfT Grant	Number of pupils trained.	N/A	On-going as part of LTP4	N/A	Bikeability cycle training to primary school pupils. Engagement with clubs and event organisers. Safety information. Face-to-face engagement with cyclists.
11	Provision of walking and cycling routes	Transport Planning and Infrastructure	Cycle network	Ongoing	NYCC & Local Planning Authority (LPA)	NYCC / LEP  NYCC awaiting further details of recently announced (spring 2020) Government funding for provision of walking and cycling facilities	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 where appropriate.  Catterick Garrison Masterplan - existing bid to the LEP for funding to undertake a feasibility study to identify improvements / projects to enhance and expand the existing green infrastructure corridor network for walking / cycling as part of the additional development programme. NYCC producing Local Cycling and Walking Infrastructure Plans (LCWIP's) of the main towns in each district in North Yorkshire. Catterick Garrison to commence 21/22	N/A	Very limited resources.  Success of bid to LEP
12	Installation of EV charging points at YDNPA car parks - Hawes & Aysgarth	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2019	Yorkshire Dales National Park Authority (YDNPA)	YDNPA	N/A	N/A	Completed	2020	Completed

**Richmondshire District Council**

13	Installation of EV charging points at certain RDC car parks	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Ongoing	RDC	RDC capital project	N/A	N/A	Ongoing	U/K	Subject to budget approval
14	Information about air quality monitoring and reporting	Public Information	Via the Internet	Ongoing	RDC	RDC	N/A	N/A	N/A	N/A	Available on RDC website & news on RDC Facebook
15	Information about domestic solid fuel burning	Public Information	Via the Internet	2018	RDC / Defra	RDC	N/A	N/A	N/A	N/A	Available on RDC website & RDC Home Heating leaflet

## 2.3 PM<sub>2.5</sub> – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7)<sup>12</sup>, local authorities are expected to work towards reducing emissions and/or concentrations of PM<sub>2.5</sub> (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM<sub>2.5</sub> 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

<https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#> ).

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 2018. The value for this indicator for Richmondshire is 3.5%. The value for the same indicator for the whole of the Yorkshire and Humber region is 4.5%, with the value for England given as 5.2%.

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<sub>2.5</sub> 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.

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<sup>12</sup> 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.

Further information about monitoring networks and other resources about air pollution are available from Defra 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<sub>2</sub>) using diffusion tubes at 15 sites during 2019. **Error! Reference source not found.** 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) if appropriate, are included in Appendix C.

### 3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias<sup>13</sup>, “annualisation” (where the data capture falls below 75%), and distance correction<sup>14</sup>. Further details on adjustments are provided in Appendix C.

#### 3.2.1 Nitrogen Dioxide (NO<sub>2</sub>)

Table A.2 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>. Note that the concentration data presented in Table A.2 represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

<sup>13</sup> <https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html>

<sup>14</sup> Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)



## **Richmondshire District Council**

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

### **Monitoring Results Summary**

The air-quality objective of  $40\mu\text{g}/\text{m}^3$  was not exceeded at any of the sites in 2019.

In addition, as there were no annual mean values greater than  $60\mu\text{g}/\text{m}^3$ , this indicates that the 1-hour mean objective of  $200\mu\text{g}/\text{m}^3$ , not to be exceeded more than 18 times per year, is unlikely to be exceeded at these sites.

The air-quality objective of  $40\mu\text{g}/\text{m}^3$  was not exceeded at any of the sites in 2019.

### **Trend**

There is a slight overall downward trend displayed by data collected from the monitored locations over the five-year period 2015 to 2019.

The air-quality objective of  $40\mu\text{g}/\text{m}^3$  was not exceeded at any of the sites during this five-year period.

# Appendix A: Monitoring Results

Table A.1 - Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m)	Tube collocated with a Continuous Analyser?	Height (m)
R2	Queens Road	Roadside	417180	501125	NO <sub>2</sub>	No	8	2	No	3
R3	Darlington Road	Roadside	418066	501490	NO <sub>2</sub>	No	22	1	No	3
R4	White Rose Crescent	Urban Background	418504	501455	NO <sub>2</sub>	No	11	2	No	3
R6	Gatherley Moor Farm	Roadside	419207	506509	NO <sub>2</sub>	No	0	8	No	2
R7	Scotch Corner Hotel	Roadside <sup>(2)</sup>	421366	505261	NO <sub>2</sub>	No	0	22	No	3
R8	15 Queens Road	Roadside	417179	501127	NO <sub>2</sub>	No	7	2.5	No	3
R10	Oglethorpe	Roadside	417381	501281	NO <sub>2</sub>	No	1.7	1.7	No	3
R11	7 Gallowgate	Roadside	417377	501317	NO <sub>2</sub>	No	0	3.3	No	3
R12	1 Anchorage Hill	Roadside	417542	501275	NO <sub>2</sub>	No	3.5	1.8	No	3
R13	3 Maison Dieu	Roadside	417536	501258	NO <sub>2</sub>	No	0	1.4	No	3
R15	2 Maison Dieu	Roadside	417500	501263	NO <sub>2</sub>	No	0	1.7	No	3
R16	74 Frenchgate	Roadside	417451	501269	NO <sub>2</sub>	No	0	1.5	No	3
R17	95 Frenchgate	Roadside	417370	501262	NO <sub>2</sub>	No	2	1.5	No	3
R18	26 Darlington Road	Roadside	417661	501297	NO <sub>2</sub>	No	3.5	1.7	No	3
R19	43 Frenchgate	Roadside	417312	501037	NO <sub>2</sub>	No	0	2	No	3

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

(2) This 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<sub>2</sub> Monitoring Results**

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2019 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3) (4)</sup>				
							2015	2016	2017	2018	2019
R2	417180	501125	Roadside	Diffusion Tube	100	100	26.1	28.6	25.5	23.4	22.5
R3	418066	501490	Roadside	Diffusion Tube	100	100	17.9	18.3	16.7	18.6	14.8
R4	418504	501455	Urban Background	Diffusion Tube	100	100	7.8	8.8	7.6	7.5	7.4
R6	419207	506509	Roadside	Diffusion Tube	100	100	23.8	22.9	21.3	20.4	20.6
R7	421366	505261	Roadside <sup>(5)</sup>	Diffusion Tube	100	100	18.1	18.1	15.7	15.6	14.4
R8	417179	501127	Roadside	Diffusion Tube	100	100	32.7	31.6	29.9	28.6	27.7
R10	417381	501281	Roadside	Diffusion Tube	100	100	35.7	36.3	34.7	33.2	28.6
R11	417377	501317	Roadside	Diffusion Tube	100	100	37.1	36.7	35.4	33.6	32.7
R12	417542	501275	Roadside	Diffusion Tube	100	100	26.9	26.4	23.5	21.9	21.0
R13	417536	501258	Roadside	Diffusion Tube	92	92	25.9	27.4	24.4	22.8	19.3
R15	417500	501263	Roadside	Diffusion Tube	100	100	28.6	27.6	25.1	23.5	21.9
R16	417451	501269	Roadside	Diffusion Tube	100	100	38.9	37.8	35.2	31.5	30.3
R17	417370	501262	Roadside	Diffusion Tube	100	100	28.1	29.9	25.7	25.6	23.4
R18	417661	501297	Roadside	Diffusion Tube	100	100	28.8	29.2	24.3	20.4	21.8

## Richmondshire District Council

R19	417312	501037	Roadside	Diffusion Tube	100	100	25.9	29.3	27.9	22.3	21.1
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☒ Diffusion tube data has been bias corrected

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

☒ Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance adjustment

### Notes:

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

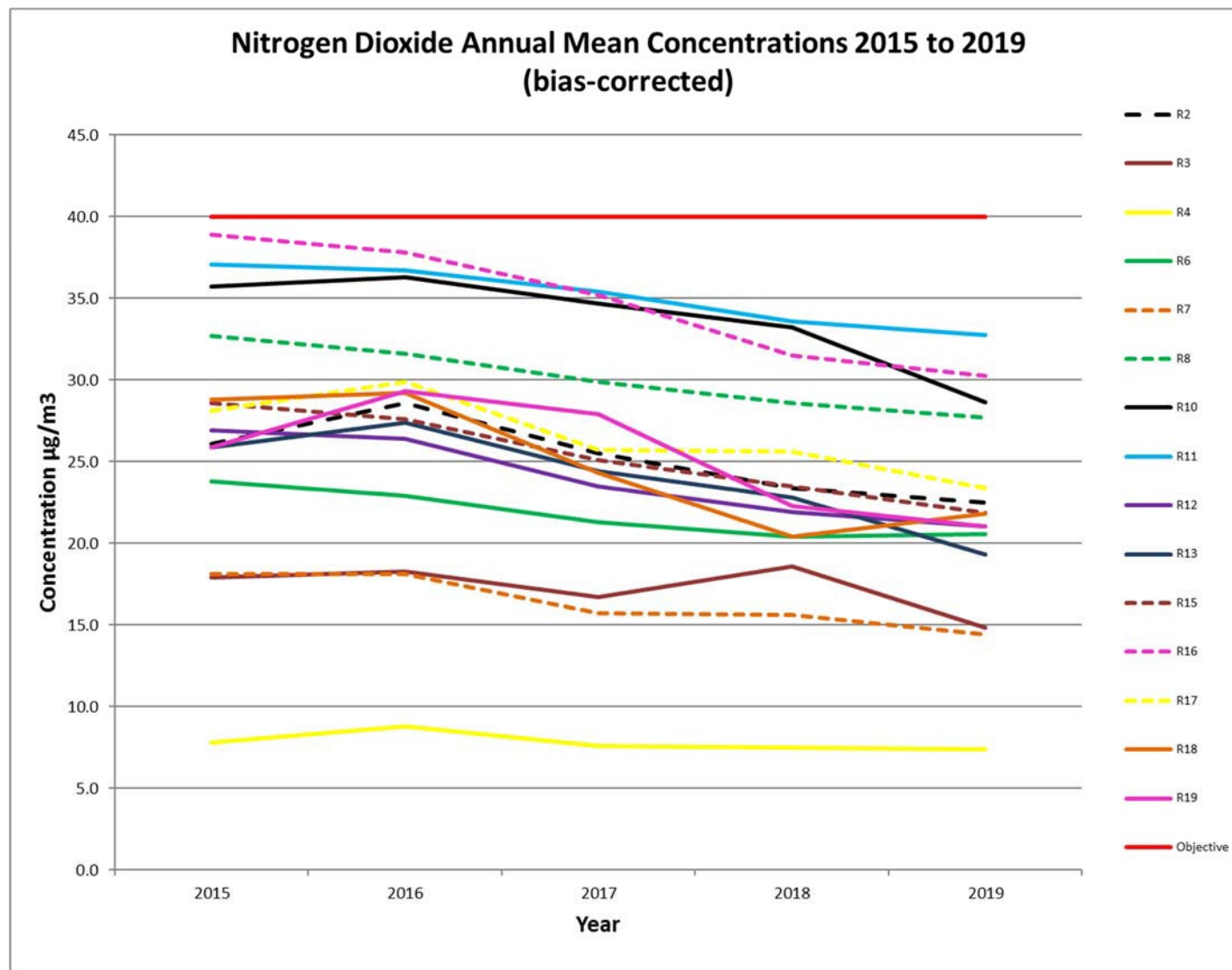
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

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

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

(4) Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(5) 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



**Figure A.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations**

# Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO<sub>2</sub> Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
															Raw Data	Bias Adjusted (0.75) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
R2	417180	501125	33.3	31.9	23.0	34.6	25.3	25.6	26.8	24.6	30.6	33.7	39.1	31.2	30.0	22.5	-
R3	418066	501490	20.2	25.3	17.0	21.4	16.8	14.8	15.6	14.2	19.2	23.6	26.7	22.3	19.8	14.8	-
R4	418504	501455	14.7	14.9	8.2	9.8	5.2	4.9	5.9	5.8	8.1	10.8	16.8	13.4	9.9	7.4	-
R6	419207	506509	30.1	27.7	22.6	34.8	21	21.9	23	21.7	28.6	30.4	40.1	26.9	27.4	20.6	-
R7	421366	505261	19.4	22.1	15.2	25.9	16.8	15.1	16.9	13.9	18.1	20.7	28.3	18.3	19.2	14.4	-
R8	417179	501127	43	42.4	40.4	37.4	30.3	31.3	31.5	32.5	34.8	37.5	42.4	39.5	36.9	27.7	-
R10	417381	501281	44.6	40.2	44.3	40.2	33.3	34.3	33.5	19.7	37.7	38.5	52.4	39.5	38.2	28.6	-
R11	417377	501317	51	44.8	42.4	39.7	34.9	38.3	44.7	40	43.4	44.6	54.1	46	43.7	32.7	-
R12	417542	501275	30.7	34.2	27.5	27	22.3	22.7	23	21.9	27.4	30	36.8	33	28.0	21.0	-
R13	417536	501258	32.3	31.9	22.9	27.9	22.1	22.4	20.5	18.9	23.2	-	34.3	27.2	25.8	19.3	-
R15	417500	501263	28	35.5	26.4	31.3	24.4	23	23.4	22.6	27.2	34.1	41.5	32.6	29.2	21.9	-
R16	417451	501269	41.4	38.9	33.8	50.2	33.5	34.5	36.4	34.7	40.6	44.8	51.8	43.5	40.3	30.3	-
R17	417370	501262	34.5	36.4	26.5	38.5	31.2	27	30.4	26.1	28.6	33.8	33.7	27.5	31.2	23.4	-
R18	417661	501297	32.4	38.1	27.5	32	24.4	23.1	23.9	23.9	29.4	31.6	32.8	30	29.1	21.8	-
R19	417312	501037	35	34.8	29.6	25.9	21.8	23.1	22.5	22.7	26.8	30.2	33.4	31.2	28.1	21.1	-

## Richmondshire District Council

- ☐ Local bias adjustment factor used
- ☒ National bias adjustment factor used
- ☐ Annualisation has been conducted where data capture is <75%
- ☐ Where applicable, data has been distance corrected for relevant exposure in the final column

### Notes:

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 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

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 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 03/20**

National Diffusion Tube Bias Adjustment Factor Spreadsheet						Spreadsheet Version Number: 03/20				
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 2020 <a href="#">LAQM Helpdesk Website</a>				
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.				
<b>Step 1:</b>		<b>Step 2:</b>		<b>Step 3:</b>		<b>Step 4:</b>				
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Preparation Method from the Drop-Down List		Year from the Drop-Down List		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 shown in blue at the foot of the final column.				
If a laboratory is not chosen, we have no data for this laboratory.		If a preparation method is not chosen, we have no data for this method for this laboratory.		If a year is not chosen, we have no data.		If you have your own co-location study then see footnote <sup>15</sup> . If uncertain what to do then contact the Local Air Quality Management Helpdesk at <a href="mailto:LAQMHelpdesk@uk.bureauveritas.com">LAQMHelpdesk@uk.bureauveritas.com</a> or 0800 0327953				
Analysed By <sup>1</sup>	Method <sup>2</sup>	Year <sup>3</sup>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> )	Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> )	Bias (B)	Tube Precision <sup>4</sup>	Bias Adjustment Factor (A) (Cm/Dm)
Socotec Didcot	50% TEA in acetone	2019	UB	Kingston upon Hull City Council	12	30	23	32.2%	G	0.76
Socotec Didcot	50% TEA in acetone	2019	O	Kingston upon Hull City Council	11	32	26	19.1%	G	0.84
Socotec Didcot	50% TEA in acetone	2019	R	Vale of Glamorgan	11	40	24	68.0%	G	0.60
Socotec Didcot	50% TEA in acetone	2019	R	Watford Borough Council	12	35	30	16.8%	S	0.86
Socotec Didcot	50% TEA in acetone	2019	R	Dumfries & Galloway Council	13	35	31	11.9%	G	0.89
Socotec Didcot	50% TEA in acetone	2019	KS	Manglebone Road Intercomparison	12	92	65	40.5%	G	0.71
Socotec Didcot	50% TEA in acetone	2019	UB	City of York Council	12	22	16	35.6%	G	0.74
Socotec Didcot	50% TEA in acetone	2019	R	City of York Council	12	33	26	26.8%	G	0.79
Socotec Didcot	50% TEA in acetone	2019	R	City of York Council	9	32	23	37.2%	G	0.73
Socotec Didcot	50% TEA in acetone	2019	R	City of York Council	11	40	28	43.4%	G	0.70
Socotec Didcot	50% TEA in acetone	2019	R	Ipswich Borough council	11	34	26	34.1%	G	0.75
Socotec Didcot	50% TEA in acetone	2019	R	Swale BC	12	51	39	31.7%	G	0.76
Socotec Didcot	50% TEA in acetone	2019	R	Swale BC	12	33	27	23.9%	G	0.81
Socotec Didcot	50% TEA in acetone	2019	R	Swale BC	12	40	31	26.7%	G	0.79
Socotec Didcot	50% TEA in acetone	2019	R	Wrexham County Borough Council	10	20	16	22.2%	G	0.82
Socotec Didcot	50% TEA in acetone	2019	R	City of Wolverhampton Council	12	39	27	48.4%	G	0.67
Socotec Didcot	50% TEA in acetone	2019	R	North Herts DC	12	59	46	28.5%	G	0.78
Socotec Didcot	50% TEA in acetone	2019	R	Horsham District Council	12	30	24	24.5%	G	0.80
Socotec Didcot	50% TEA in acetone	2019	R	Horsham District Council	11	31	22	44.5%	G	0.69
Socotec Didcot	50% TEA in acetone	2019	R	Horsham District Council	11	32	24	34.4%	G	0.74
Socotec Didcot	50% TEA in acetone	2019	B	Medway Council	10	21	13	59.5%	P	0.63
Socotec Didcot	50% TEA in acetone	2019	R	Medway Council	12	33	24	35.1%	G	0.74
Socotec Didcot	50% TEA in acetone	2019	R	Waverley Borough Council	10	38	30	27.5%	G	0.78
Socotec Didcot	50% TEA in acetone	2019	R	Waverley Borough Council	12	35	24	44.7%	G	0.69
SOCOTEC Didcot	50% TEA in acetone	2019		<b>Overall Factor<sup>1</sup> (24 studies)</b>					<b>Use</b>	<b>0.75</b>

## Annualisation

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

## Distance Correction

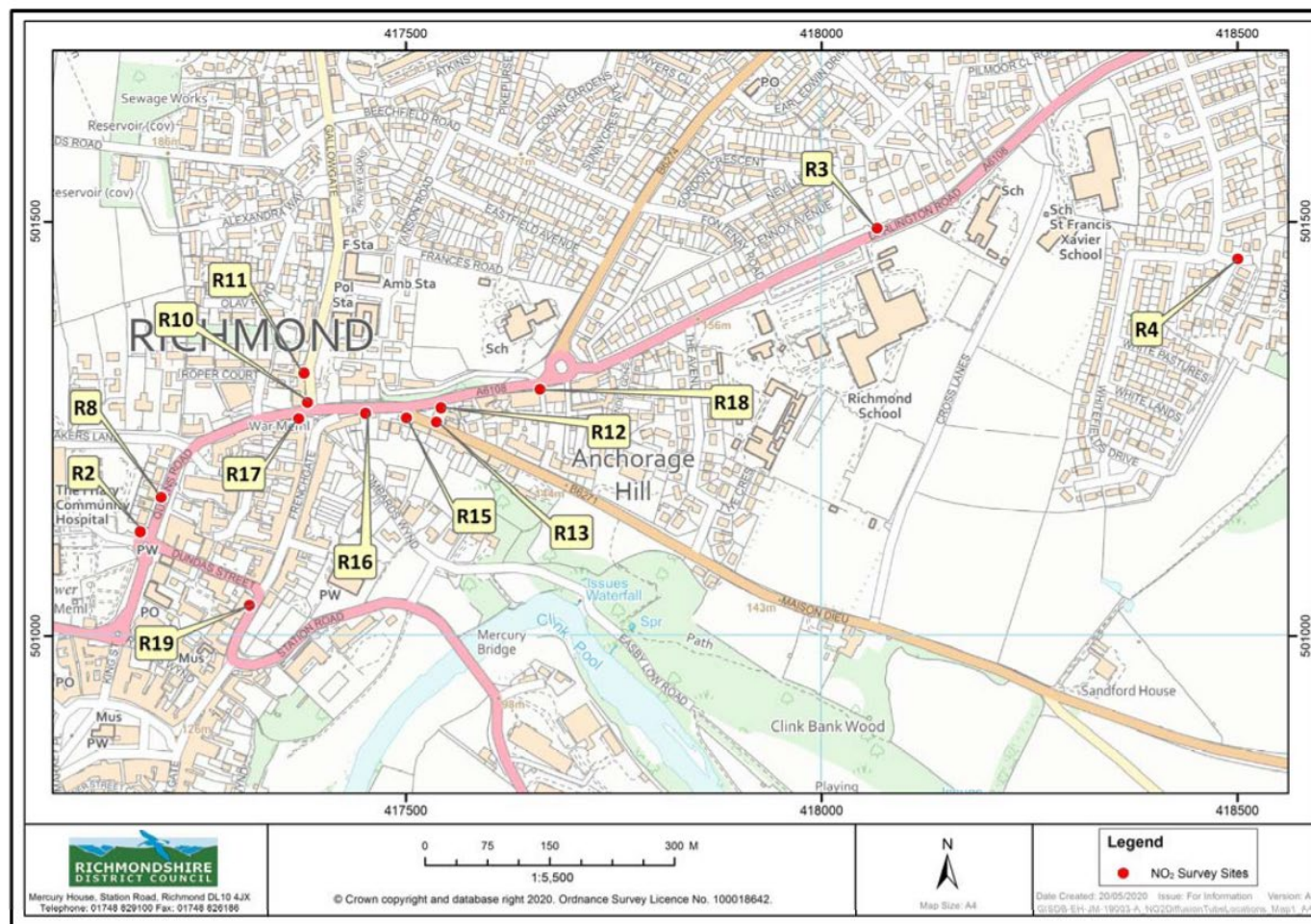
The LAQM TG16<sup>15</sup> guidance was updated in April 2018. Monitoring locations should be representative of exposure; where they are not, it is advised that for sites which record an annual mean concentration above the annual objective of 40ug/m<sup>3</sup>, the distance correction should be applied. Consideration can also be given to sites that are within 10% of this objective (i.e. above 36ug/m<sup>3</sup>).

In Richmondshire all of the sites which are not representative of exposure have results which fall below the 40ug/m<sup>3</sup> objective, and in addition, none of these sites have results above 36ug/m<sup>3</sup>; so distance correction adjustment was not necessary.

<sup>15</sup> Defra Local Air Quality Management Technical Guidance (PG16), February 2018

## Appendix D: Maps of Monitoring Locations

Figure D.1 Location of Diffusion Tubes in Richmond





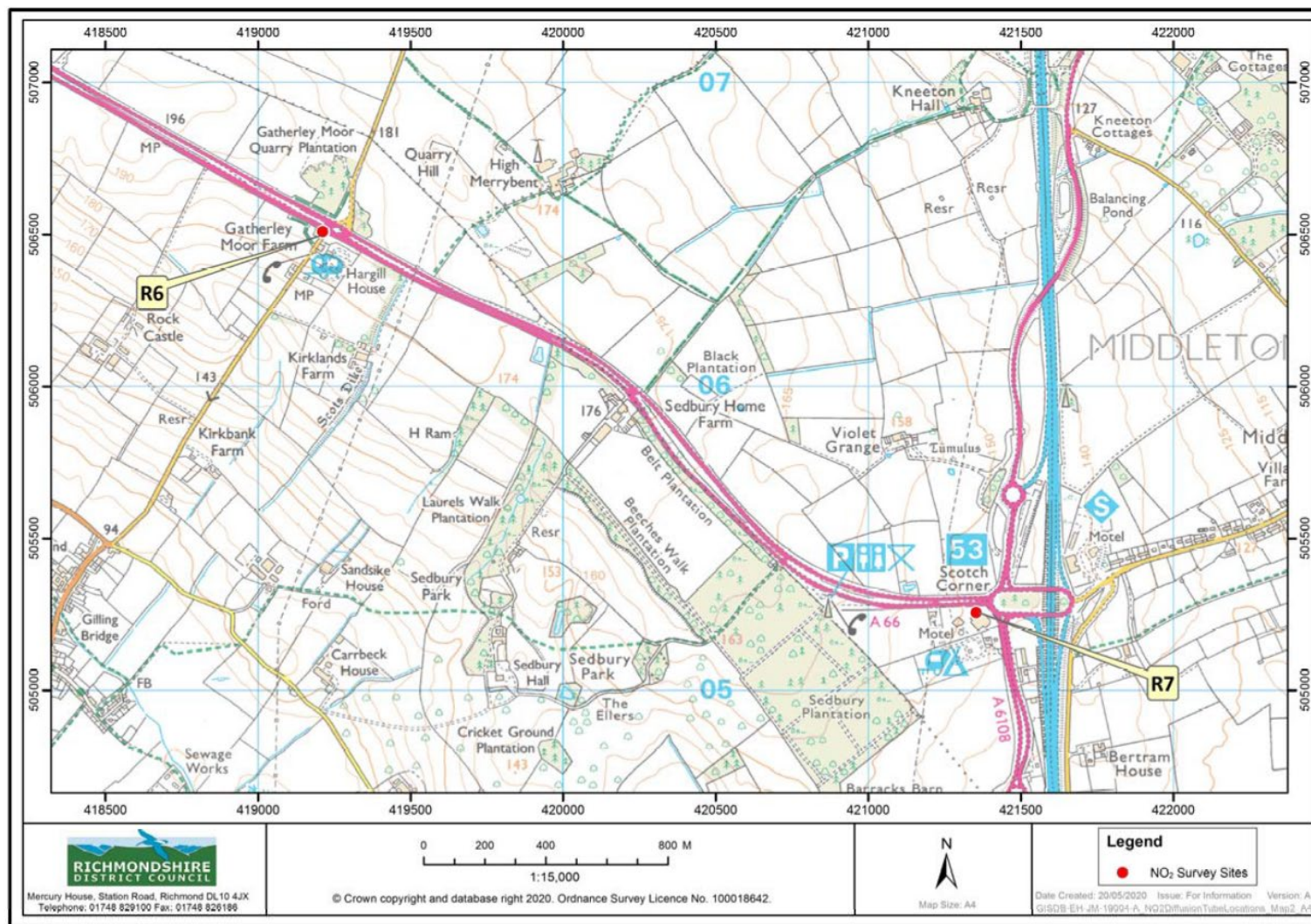


Figure D.2 Location of Diffusion Tubes on the A66 Road

# Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective <sup>16</sup>	
	Concentration	Measured as
Nitrogen Dioxide (NO <sub>2</sub> )	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m <sup>3</sup>	Annual mean
Particulate Matter (PM <sub>10</sub> )	50 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m <sup>3</sup>	Annual mean
Sulphur Dioxide (SO <sub>2</sub> )	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean

<sup>16</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

# 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
CPE	Civil Parking Enforcement
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
ERDF	European Regional Development Fund
EU	European Union
EV	Electric Vehicle
LAQM	Local Air Quality Management
LEP	Local Enterprise Partnership
LPA	Local Planning Authority
LTP4	Local Transport Plan 4
MoD	Ministry of Defence
NMU	Non-Motorised User E.g. Cycles, horses, pedestrians
NO <sub>2</sub>	Nitrogen Dioxide
NYCC	North Yorkshire County Council
PHE	Public Health England
PHOF	Public Health Outcomes Framework
PM10	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less

## Richmondshire District Council

PM2.5	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
ULEV	Ultra Low Emission Vehicle
UTC	Urban Traffic Control
YDNP	Yorkshire Dales National Park

## **References**

- 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