



Ribble Valley Borough Council

2020 Air Quality Annual Status Report (ASR)

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

October 2021

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Executive Summary: Air Quality in Our Area

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 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 exceedances are considered likely, the local authority must then 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.

Air Quality in Ribble Valley Borough Council

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 Public Health England [now UK Health Security Agency] website has a health protection indicator that considers the fraction of mortality in each area attributable to particulate air pollution. The 2019 results revealed that the rate for England was 5.1%. The value for Ribble Valley was 3.58% and for Lancashire as a whole 3.96%.

The principal pollutants of concern within Ribble Valley are those associated mainly with traffic, these being Nitrogen Dioxide, and Particulate Matter. The Council only monitors Nitrogen Dioxide emissions via a network of diffusion tubes and currently has one declared [Air Quality Management Area](#) [AQMA] within the borough, located in Clitheroe.

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

Ribble Valley Borough Council

Trend data over the last five years indicates that levels are declining slightly with a marked decrease last year [coinciding with the Spring lockdown] and results since 2013 show only one exceedance of the national objective of 40µg/m³ either inside or outside the declared AQMA. See Chart 1 below.

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Control Site	●	●	●	●	●	●	●	●	●
Royal British Legion 1	●	●	●	●	●	●	●	●	●
Royal British Legion 2	●	●	●	●	●	●	●	●	●
Royal British Legion 3	●	●	●	●	●	●	●	●	
Greenacre Street	●	●	●	●	●	●	●	●	●
57 Whalley Road	●	●	●	●	●	●	●	●	●
AQMA Average	●	●	●	●	●	●	●	●	●
85 Whalley Road	●		●	●	●	●	●	●	●
John Wall Court	●	●	●	●	●	●	●	●	●
Feildens Arms				●	●	●	●	●	●

Chart 1 Annual NO₂ figures. RBL3 was relocated for 2020. Key: Red >40; Amber 35 – 40; Green <35 ug/m³

It is important that work continues to maintain and improve the air quality within the borough, given:

- the recently published evidence on the harmful effects of both Particulate Matter and Nitrogen Dioxide
- the Council's Ambition 3 *To help make people's lives safer and healthier* and Ambition 4 *To protect and enhance the existing environmental quality of our area* (Corporate Strategy 2019-2023)
- the Council's duties under the Local Air Quality Management regime
- the significant housing development within the area.

To that end the Ribble Valley Borough Council will continue to identify measures to improve and maintain the air quality within the borough, including ensuring developments do not adversely affect or significantly contribute to pollutant levels.

There have been no new major roads or industrial processes constructed within the last year that will have a significant impact on air quality within the borough.

Actions to Improve Air Quality

Key actions the Council will be looking at over the next year include:

- Continuing with the diffusion tube monitoring programme, including those within the AQMA,
- Continue to consider air quality for all relevant planning applications,
- Encourage greater use of public transport and alternative forms of travel, including the provision of electric vehicle recharging points through the planning

- system.
- We will continue to carry out the inspections and enforcement of permitted premises within the borough under the Environmental Permitting Regulations.
 - Continue to work with partners in Public Health Lancashire, and across the Lancashire District authorities in the development and publication of the Lancashire Air Quality Planning Guidance Document. [Covid delayed].

Conclusions and Priorities

The results from the 2020 monitoring programme and review of the government data have identified no areas of likely exceedances of the national objective values for any of the pollutants of concern inside or outside of the declared AQMA. The monitoring programme has identified an increase in nitrogen dioxide levels at all sites in the second half of the year after a dramatic drop in the first half. The AQMA levels when bias adjusted remain below the objective value of 40µg/m³.

As a priority over the coming months the Council will continue to work with partner organisations, in particular the County Public Health team and other local authorities in the development of a county wide guidance document for planning, to ensure all developments adequately address air quality impacts. The council will also continue its air quality monitoring programme, in addition to the other measures identified within this report.

Local Engagement and How to get Involved

If you would like to get involved in the work being undertaken to tackle air pollution within Ribble Valley; or you would like more information on how you can help reduce your personal emissions then please contact the Environmental Health Department at Ribble Valley Borough Council via e-mail at environmental.health@ribblevalley.gov.uk

Please see Appendix F for ideas about how personal choices can help to improve air quality.

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1 Local Air Quality Management

This report provides an overview of air quality in Ribble Valley Borough Council during 2020. 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 Ribble Valley Borough 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 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.

Ribble Valley Borough Council currently has one declared Air Quality Management Areas within the borough. The AQMA was declared in 2010 following exceedances of the annual mean objective value for Nitrogen Dioxide. The AQMA boundaries are shown in Appendix D.

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		
						At Declaration		Now		Name	Date of Publication	Link
Whalley Road, Clitheroe No.1	31/05/2010	NO ₂ annual mean	Clitheroe	An area encompassing a number of residential properties at the junction of Whalley road and Greenacre Street.	No	45	µg/m ³	38*	µg/m ³			

Ribble Valley Borough Council confirm the information on UK-Air regarding their AQMA(s) is up to date

*Dec 2020 at DT2, bias adjusted figure.

2.2 Progress and Impact of Measures to address Air Quality in Ribble Valley Borough Council

Defra's appraisal of last year's ASR concluded that the previous report was acceptable. The appraisal further identified that there had been a general improvement in air quality over the year however, improvements within the declared AQMA have been inconsistent and the authority should consider targeted traffic management measures. The appraisal also supported the joint working between the council and the Lancashire County Council.

Ribble Valley Borough Council has taken forward a number of direct measures during the current reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

Ribble Valley Borough Council does expect the following measures to be significantly progressed over the course of the next reporting year, to help maintain and improve air quality within its area:

- To ensure all new developments have some form of electric vehicle recharging capability.
- Ensure all new developments have adequate cycle storage, especially commercial/industrial developments.
- Encourage the use of alternative means of travel to the internal combustion engine car through the provision of travel plans for new developments and the promotion of car sharing schemes, public transport and cycling.
- Progress the implementation of electric vehicle recharge points on Council owned car parks.

The principal challenges and barriers to implementation that Ribble Valley Borough Council anticipates facing are lack of resources both within the Borough Council and partner organisations.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance and the general trend of monitoring shows an improvement in air quality, Ribble Valley Borough Council anticipates that further evidence is required to enable the revocation of Whalley Road, Clitheroe, AQMA No. 1.

Table 2.2 – Progress on Measures to Improve Air Quality

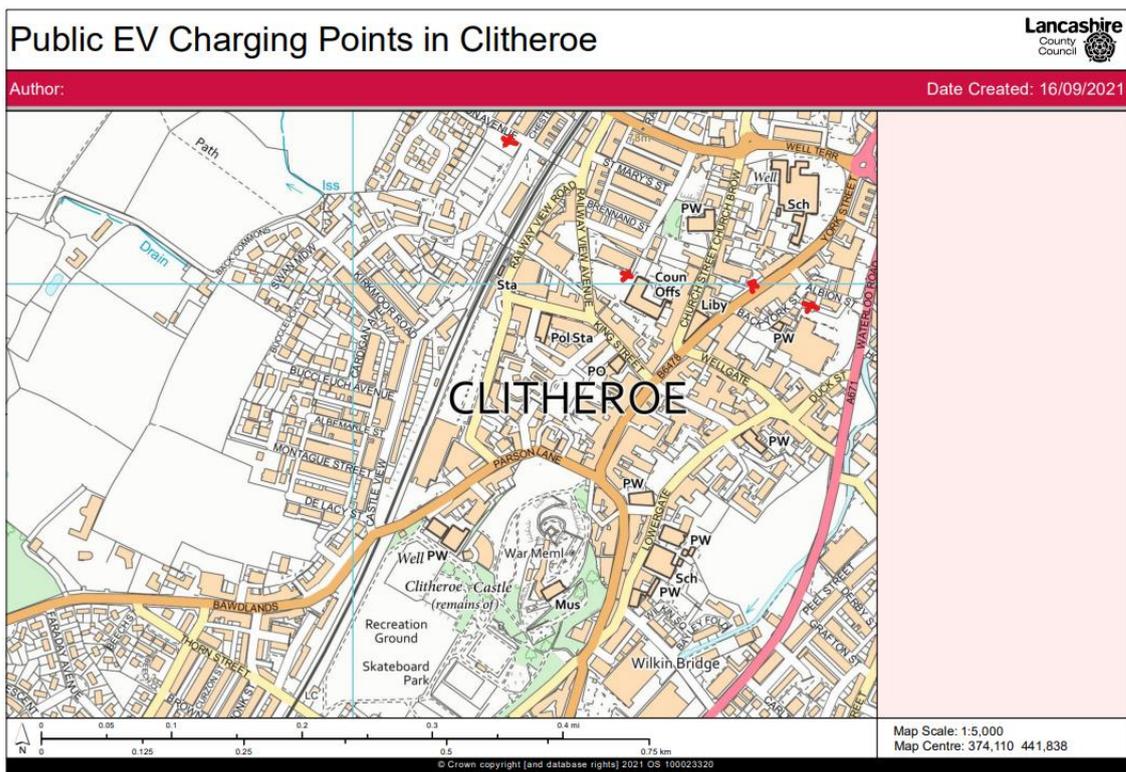
Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Require EVR points on all appropriate planning applications	Promoting Travel Alternatives	Other	LA, Funding: Developers		Mar-16	All appropriate planning applications include EVR point condition	Reduce vehicle emissions	On-going	On-going	
2	Raise awareness with Members, and public	Public Information	Via the Internet	Lead: LA Environmental Health		Mar-17	Website up to date with relevant information	0.2 µg/m ³	Implementation on-going	On-going	Funding
3	Require cycle storage on all appropriate planning applications	Promoting Travel Alternatives	Other	LA ; Funded by developers		Mar-16	All appropriate planning applications include cycle storage condition	Reduced vehicle emissions	Implementation on-going	On-going	
4	Develop Lancashire wide Planning Guidance on Air Quality and Implement.	Policy Guidance and Development Control	Regional Groups Coordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	Policy Guidance and Development Control	Mar-16	Ongoing	Implementation and use of guidance document	Reduce emissions promote alternative forms of travel	Draft policy complete, trying to embed policy with planners and to include in revised Core Strategy document	Ongoing	Local Planning Department, government policy on Planning

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.

Ribble Valley Borough Council is taking the following measures to address PM_{2.5}:

- The inclusion of PM_{2.5} assessment within Air Quality Assessments carried out through the planning process.
- Encouraging the use of alternative travel options e.g. cycling, walking, and use of public transport.
- Provision of Electric Vehicle Recharging points on appropriate new developments.
- The provision of EVR points on Council car parks: 10 bays capable of 11kW at the Chester Avenue long-stay car park and 4 bays capable of 22kW at the Railway View Avenue short-stay car park. These are in addition to the charging points provided by Lancashire CC in York Street and the points for customer use in the Tesco car park.



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- Raise awareness of the harmful effects of PM_{2.5} using the Public Health Indicators which demonstrate that Ribble Valley suffers from an adult mortality attributed to particulate matter of 3.58%.

2.4 Lancashire County Council Actions on PM_{2.5}

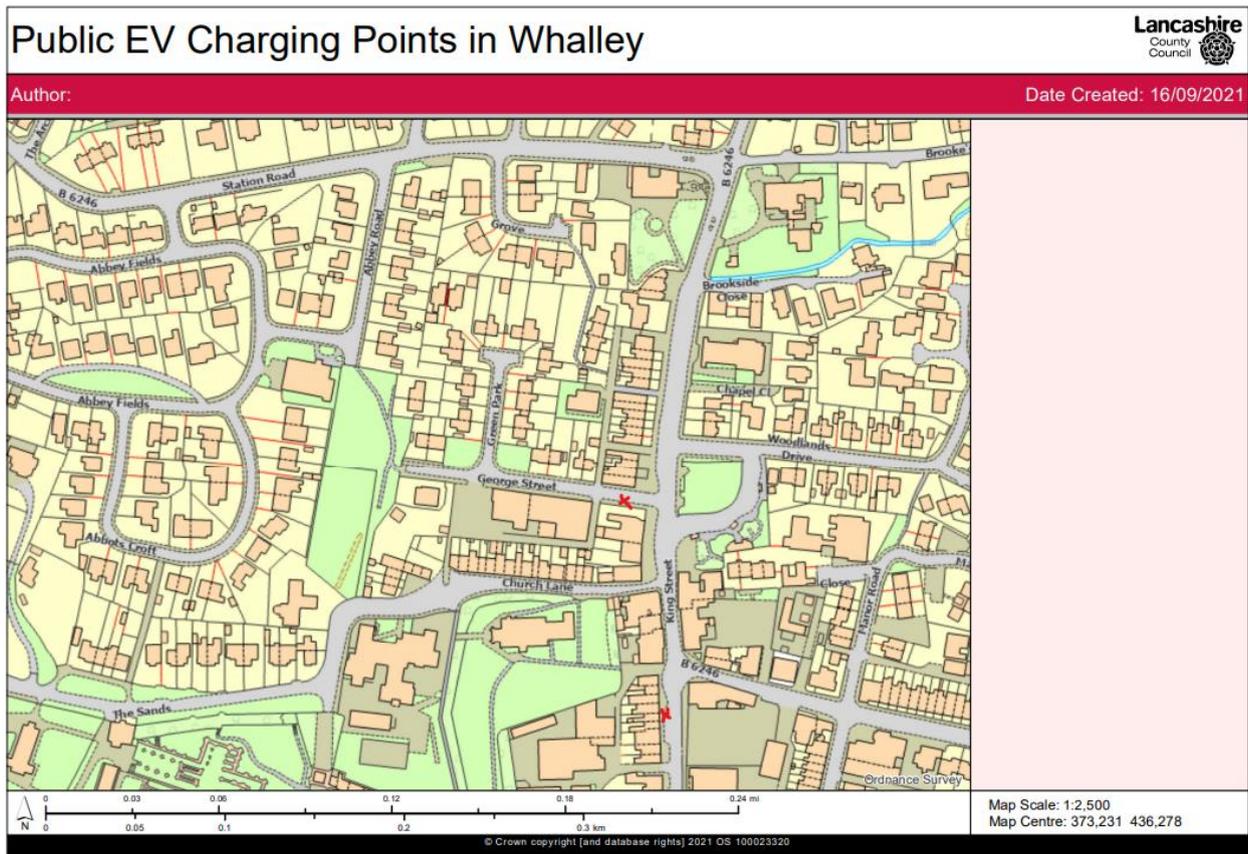
Lancashire County Council has an important role to play in taking action to reduce the health impacts of air pollution. Responsible for transport planning, network management, highway maintenance, public health and procuring local vehicle fleets, there are a number of ways LCC can support local and county wide efforts to improve air quality. In summary, the following activities are underway or in development:

1. Encourage the use of sustainable forms of travel

- Lancashire's cycling and walking strategy – [Actively Moving Forward](#) – sets out an ambitious plan for increasing the number of people walking and cycling in the county by 2028. Through improving and increasing access to cycling and walking infrastructure, alongside training and promotional activities, it aims to significantly increase the amount of cycling and walking people do across the county.
- As part of Lancashire's cycling and walking strategy, work has now commenced on developing Local Cycling and Walking Infrastructure Plans (LCWIPs) for the five Lancashire Highway and Transport Masterplan areas. The Plans will include a network plan for cycling and walking infrastructure and a prioritised list of schemes for delivery over short, medium- and long-term timeframes. These plans will be used to support future infrastructure decisions and access new funding schemes as they become available.
- [Connecting East Lancashire](#) is a 'smarter travel choices' campaign designed to encourage healthier and greener ways of travelling in East Lancashire. A dedicated team of Business Travel Planners work with individuals and organisations across east Lancashire to support a shift towards more sustainable and active forms of travel.
- The Safe and Healthy Travel team work with schools, workplaces and the community to encourage safe and sustainable modes of travel. Initiatives for schools are promoted through the [Safer Travel Moodle](#) and include: a series of cycling and walking safety training programmes; guidance and resources for teachers to encourage safe and active travel; and support for creating travel plans.

2. Support the transition to low emission vehicles

- The County Council is working with BP Chargemaster to deliver 150 electric vehicle charge points across the County. The charging network will be accessible to drivers from all over the country and will support local and national efforts to increase the number of drivers purchasing electric vehicles. Presently, there are on-street chargers provided in George St and King Street, Whalley and York Street, Clitheroe.



- The County Council is supporting six district councils with a low emission taxi infrastructure scheme. Funded by the Office for Low Emission Vehicles, the scheme will provide taxi drivers with access to 24 new rapid electric vehicle charge points across the six districts. This, alongside a series of promotional activities and suggested regulatory changes, is designed to produce a transition towards more low emission taxi vehicles across Lancashire.

3. Create cleaner, healthier road networks

- Work to develop the next Local Transport Plan (LTP4) for Lancashire, Blackpool and Blackburn with Darwen is now underway. The Public Health team has submitted an evidence base to the process highlighting transport related health

challenges affecting the population of Lancashire and making recommendations about how local transport planning policy can make a contribution to addressing these. Air quality is one of the key themes of the evidence base and will be an identified priority in LTP4. Stakeholder engagement and consultation will be carried out during 2021. Approaches to improving air quality could include:

- Redesigning road networks to reduce congestion and separate vehicle emissions from places where people live, work and congregate;
- Increasing access to cycling and walking infrastructure, and cleaner public transport;
- Facilitating the move towards the use of low emission vehicles through upgrading public transport and public sector vehicle fleets and introducing new electric vehicle charge points;
- Targeting areas with high levels of air pollution, including considering the introduction of Clean Air Zones.

The Local [Highways and Transport Masterplans](#) will be refreshed to align with the priorities of LTP4, which will provide an opportunity to identify longer-term network solutions that address issues in AQMAs and have a positive impact on air quality generally.

- The County Council's vehicle fleet will be fitted with a driver behaviour tracking system to monitor and influence driver behaviour. The aim of the tracking system is to improve driver performance, reducing fuel costs, road accidents and vehicle emissions.

4. Embed air quality into policy

- The County Council works with district planners to ensure air quality is a key consideration of Local Plans, alongside wider public health issues. Providing support to districts to develop policies that seek to ensure that new development does not contribute to increasing levels of air pollutants and that requirements for appropriate mitigation are in place.
- The County Council, as part of its highways input into planning applications, actively encourages measures that aim to promote sustainable forms of travel. Working under the direction of the National Planning Policy Framework, the Council seeks measures that facilitate cycling and walking, increase the use of public transport and provide access to electric vehicle charge points. The Council also seeks funding from developers, through section 106 contributions, to support existing bus services or to provide new bus services suitable to serve development sites once their built.
- The County Council is working with Lancaster and Birmingham Universities to develop evidence-based guidance for the use of green infrastructure as an approach to mitigating the health impacts of road transport emissions. The guidance will enable spatial planners, public services and the public to introduce the most effective infrastructure at the most appropriate sites. In time, there may be opportunities for further projects around this work.

5. Raise awareness and increase engagement

- The Lancashire Insight website provides information on the sources and health impacts of air pollution. Webpages include a [Summary of Emissions Data](#), [Monitoring of Air Quality and Health Impacts](#) and an [Air Quality and Health Dashboard](#).
- The County Council is in the process of developing a clean air programme for schools. The scheme will include: guidance and support for schools on developing a clean air strategy; lesson plans, activities and resources for teachers; provision of LCC's cycling and walking programmes; and resources to deliver a clean air event, campaign and poster competition.
- The County Council's Lead Member for Health and Adult Services has established a network for elected members from across Lancashire and Cumbria to come together to gain an understanding of the issues and the key messages to champion and advocate in their communities.

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

3.1 Changes to the Local Authority Area

A review of the area has been undertaken to assess any changes that have occurred over the last 12 months and the potential for these to impact either negatively or positively on air quality.

Significant residential development has been granted planning permission in some areas of the borough. Air quality reports have been prepared for most of these developments with most indicating a negligible impact. Monitoring of the borough using diffusion tubes is currently being undertaken by the Council and the results are detailed below.

There have been no major road improvements or new roads or significant changes in traffic flow over the last year, with no significant changes to the railway network throughout the borough. There are no bus depots or significant ports within the borough. The airport at BAE systems Samlesbury can no longer be used due to significant construction.

No new industrial sources, including biomass plants have been identified which are likely to make a significant contribution to pollutant emissions.

3.2 Summary of Monitoring Undertaken

3.2.1 Automatic Monitoring Sites

Ribble Valley Borough Council does not undertake any automatic (continuous) monitoring.

3.2.2 Non-Automatic Monitoring Sites

Ribble Valley Borough Council undertook non- automatic (passive) monitoring of NO₂ at 8 sites during 2020. Table A.1 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.

3.3 Individual Pollutants

The air quality monitoring tubes are calibrated by DEFRA against results from continuous monitors to derive a bias adjustment factor. This figure is applied to the raw data from the NO_x tubes. Further details on adjustments are provided in Appendix C.

3.3.1 Nitrogen Dioxide (NO₂)

Table A.2 and Figure A.1 in Appendix A compare the adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

For diffusion tubes, the full 2020 dataset of monthly values is provided in Appendix B, Table B.1.

3.3.2 Particulate Matter

Ribble Valley Borough Council does not monitor PM₁₀ or PM_{2.5} levels. However, a check of the Defra background maps indicates no likely exceedances of the objective levels for either of these two pollutants.

3.3.3 Sulphur Dioxide (SO₂)

Ribble Valley Borough Council does not monitor SO₂ levels. A review of the national dataset shows that the nearest monitoring stations, located some distance away, do not show any exceedance of the SO₂ objective level.

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?	Inlet Height (m)
DT1	Bolland Prospect	Urban Background	374803	441511	NO ₂	NO	0	10.5	NO	2
DT2	Royal British Legion 1	Roadside	374234	441291	NO ₂	YES	0	1.8	NO	2
DT3	Royal British Legion 2	Roadside	374234	441291	NO ₂	YES	0	1.8	NO	2
DT4	Greenacre St	Roadside	374222	441315	NO ₂	YES	0	1.5	NO	2
DT5	57 Whalley Road	Roadside	374213	441240	NO ₂	YES	0	1	NO	2
DT6	85 Whalley Road	Roadside	374175	441153	NO ₂	NO	0	1.6	NO	2
DT7	John Wall Court	Roadside	373911	441497	NO ₂	NO	10	1.8	NO	2
DT8	Feildens Arms	Roadside	364027	431179	NO ₂	NO	13.6	1	NO	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 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2015	2016	2017	2018	2019
DT1	Urban Background	Diffusion Tube	100	75	11.88	12.61	10.57	11.89	9.95
DT2	Roadside	Diffusion Tube	100	100	33.30	39.23	34.61	38.60	33.69
DT3	Roadside	Diffusion Tube	100	100	36.24	41.38	37.25	38.28	34.51
DT4	Roadside	Diffusion Tube	100	100	24.60	28.14	25.16	27.18	23.87
DT5	Roadside	Diffusion Tube	100	100	33.17	35.85	33.80	33.32	32.80
DT6	Roadside	Diffusion Tube	100	100	26.57	31.43	25.31	28.63	26.56
DT7	Roadside	Diffusion Tube	92	75	15.99	15.99	15.99	15.99	15.99
DT8	Roadside	Diffusion Tube	100	100	17.93	20.12	18.43	18.86	16.60

Diffusion tube data has been bias corrected

Annualisation has been conducted where data capture is <75%

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

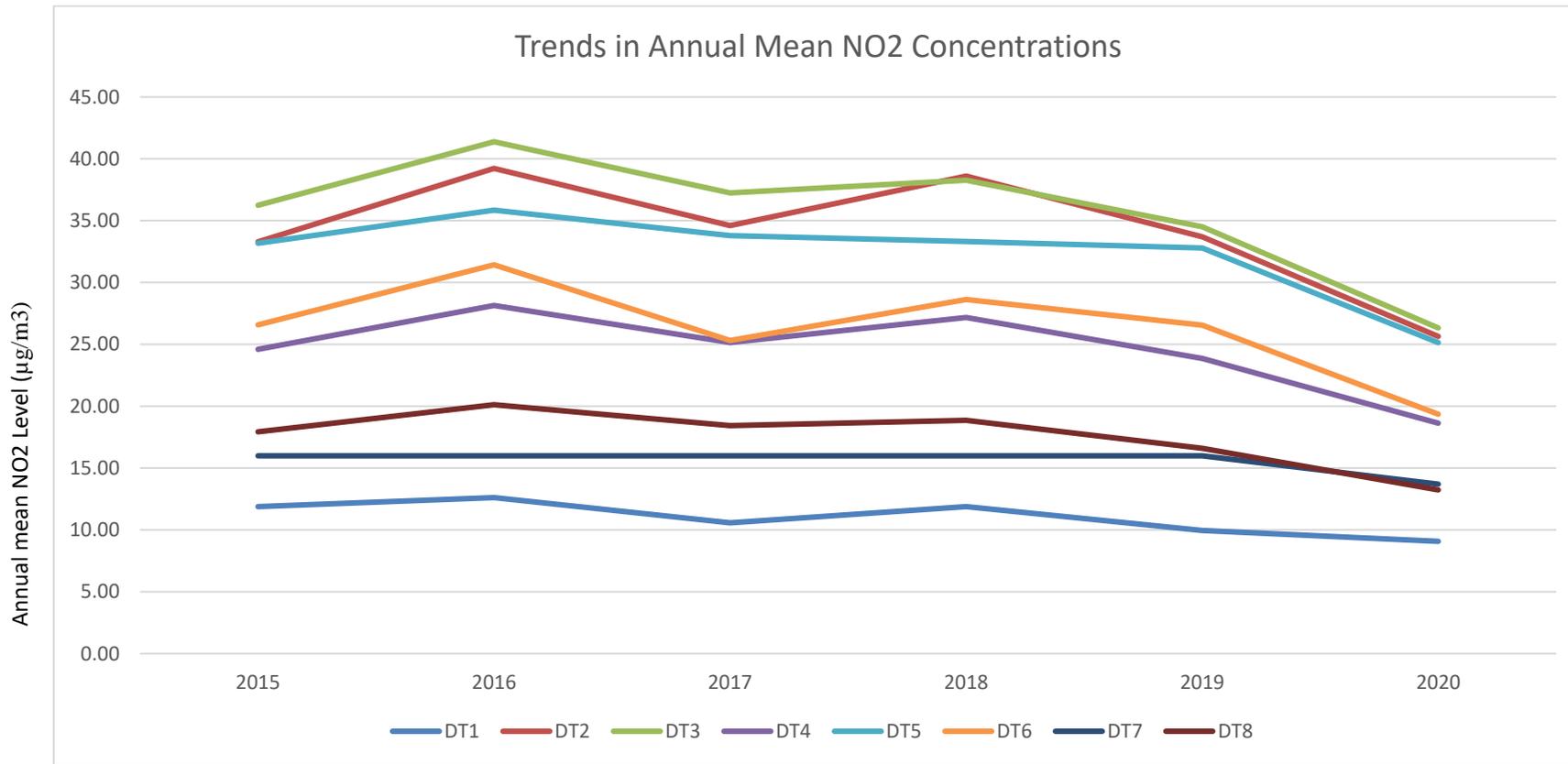
NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

(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 NO₂ Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2020

Site ID	NO ₂ Mean Concentrations (µg/m ³)												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.83) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
DT1	14.6	14.0	11.1	6.0	6.0	6.6	5.8	7.4	10.5	12.0	18.0	19.3	10.9	9.1	9.1
DT2	33.5	31.9	27.4	17.6	21.9	34.3	17.9	35.3	33.5	33.4	38.1	46.0	30.9	25.6	25.6
DT3	32.0	36.6	26.9	18.5	24.8	29.2	21.1	32.4	33.5	36.1	44.4	45.1	31.7	26.3	26.3
DT4	28.3	27.0	21.5	12.8	15.4	21.9	14.9	23.8	23.3	29.1	33.0	18.3	22.4	18.6	18.6
DT5	36.4	32.4	28.2	16.0	20.8	28.5	20.5	29.8	31.2	34.5	42.8	42.4	30.3	25.1	25.1
DT6	31.2	29.8	26.3	15.3	13.8	22.8	15.7	24.1	0.0	28.8	33.0	39.0	23.3	19.4	19.4
DT7	20.7	19.3	14.0	10.0	11.4	13.3	12.8	13.0	17.1	17.8	24.2	24.5	16.5	13.7	13.7
DT8	22.3	21.7	16.1	9.4	9.9	12.0	12.6	13.1	13.8	18.1	21.8	20.6	15.9	13.2	13.2

- 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 NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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.

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

The diffusion tubes used by Ribble Valley Borough Council were supplied by Gradko Environmental Ltd, using a 50% TEA / Acetone solution. The [DEFRA Air Quality website](https://www.gov.uk/guidance/defra-air-quality-website) gives a bias adjustment figure of 0.83 for the 2020 data set.

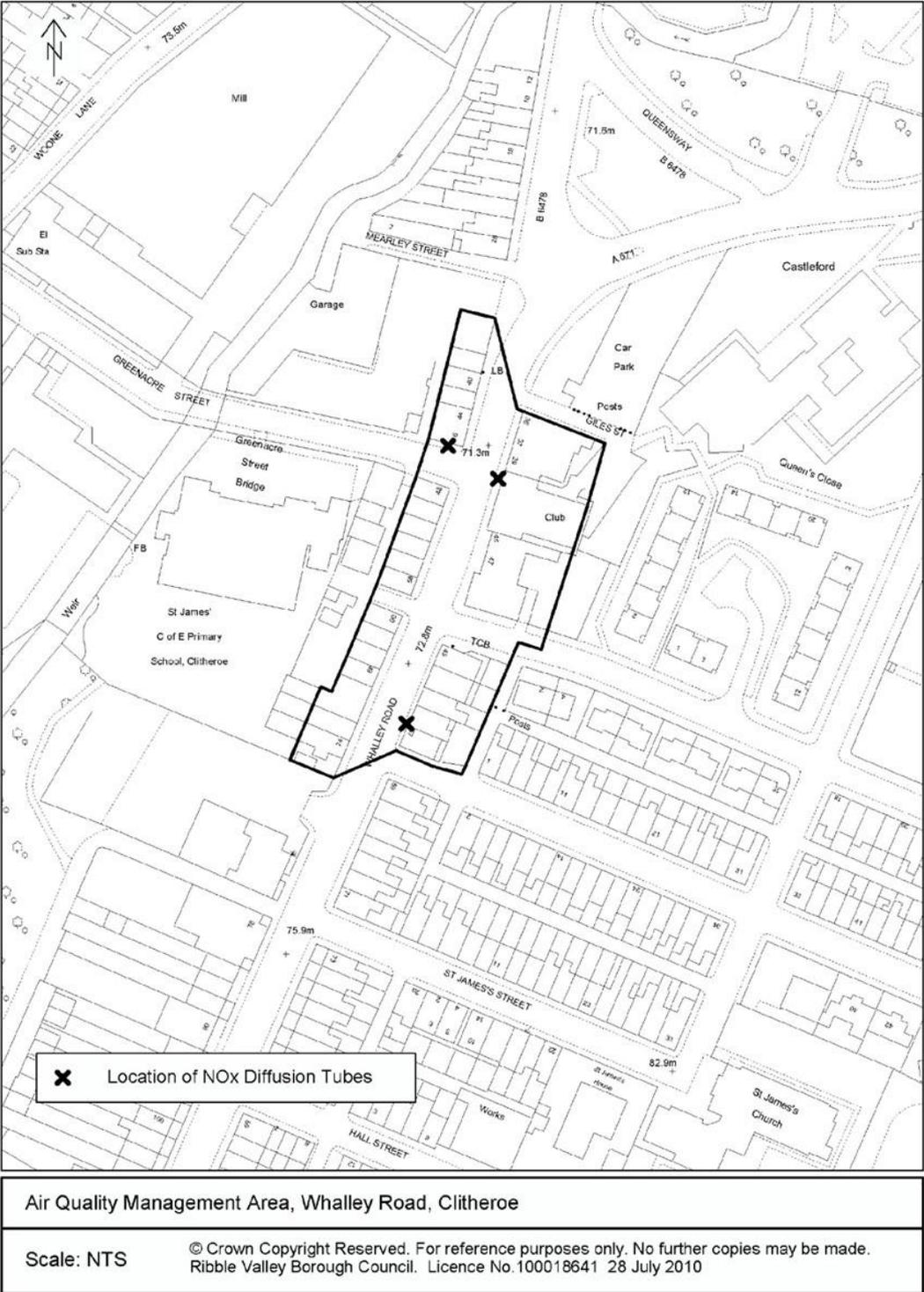
National Diffusion Tube Bias Adjustment Factor Spreadsheet				Spreadsheet Version Number: 06/21						
Follow the steps below in the correct order to show the results of relevant co-location studies				This spreadsheet will be updated at the end of Sept 2021 LAQM Helpdesk Website						
Data only apply 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.				Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.						
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 Version Number: 06/21						
Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a 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 shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data.	If you have your own co-location study then see footnote 5. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMhelpdesk@bureauveritas.com or 0800 0327953							
Analysed By	Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in Acetone	2020	UC	Falkirk Council	10	33	26	24.3%	G	0.80
Gradko	50% TEA in Acetone	2020	UB	Falkirk Council	11	16	12	33.8%	G	0.75
Gradko	50% TEA in acetone	2020	UB	Middlesbrough Council	9	17	12	45.6%	G	0.69
Gradko	50% TEA in acetone	2020	R	Royal Borough of Windsor and Maidenhead	12	23	25	17.3%	G	0.85
Gradko	50% TEA in acetone	2020	R	Royal Borough of Windsor and Maidenhead	12	24	22	11.7%	G	0.90
Gradko	50% TEA in acetone	2020	SU	Redcar & Cleveland Borough Council	11	16	13	23.4%	P	0.81
Gradko	50% TEA in acetone	2020	R	Newham	10	23	24	18.2%	G	0.85
Gradko	50% TEA in acetone	2020	R	Sandwell MBC	12	34	27	26.3%	G	0.79
Gradko	50% TEA in acetone	2020	B	Sandwell MBC	9	14	11	23.0%	S	0.81
Gradko	50% TEA in acetone	2020	R	Sandwell MBC	11	25	23	9.4%	S	0.91
Gradko	50% TEA in acetone	2020	UB	Sandwell Metropolitan Borough Council	11	21	19	9.4%	G	0.91
Gradko	50% TEA in acetone	2020	KS	Marylebone Road Intercomparison	12	57	43	33.0%	G	0.75
Gradko	50% TEA in acetone	2020	R	London Borough of Richmond upon Thames	12	22	20	9.4%	G	0.91
Gradko	50% TEA in acetone	2020	B	London Borough of Richmond upon Thames	9	19	16	20.3%	G	0.83
Gradko	50% TEA in acetone	2020	UB	Reading Borough Council	12	14	15	-7.7%	G	1.08
Gradko	50% TEA in acetone	2020	R	Reading Borough Council	12	30	25	20.2%	G	0.83
Gradko	50% TEA in acetone	2020	UB	Norwich City Council	10	12	10	14.4%	G	0.87
Gradko	50% TEA in acetone	2020	SU	Reigate and Banstead BC (RG1)	10	19	14	33.3%	G	0.75
Gradko	50% Tea in Acetone	2020	KS	Slough Borough Council	12	34	27	23.5%	G	0.81
Gradko	50% TEA in Acetone	2020	SU	Slough Borough Council	11	21	17	29.2%	G	0.77
Gradko	50% TEA in Acetone	2020	KS	Slough Borough Council	12	29	25	17.3%	G	0.85
Gradko	50% TEA in acetone	2020		Overall Factor¹ (21 studies)					Use	0.83

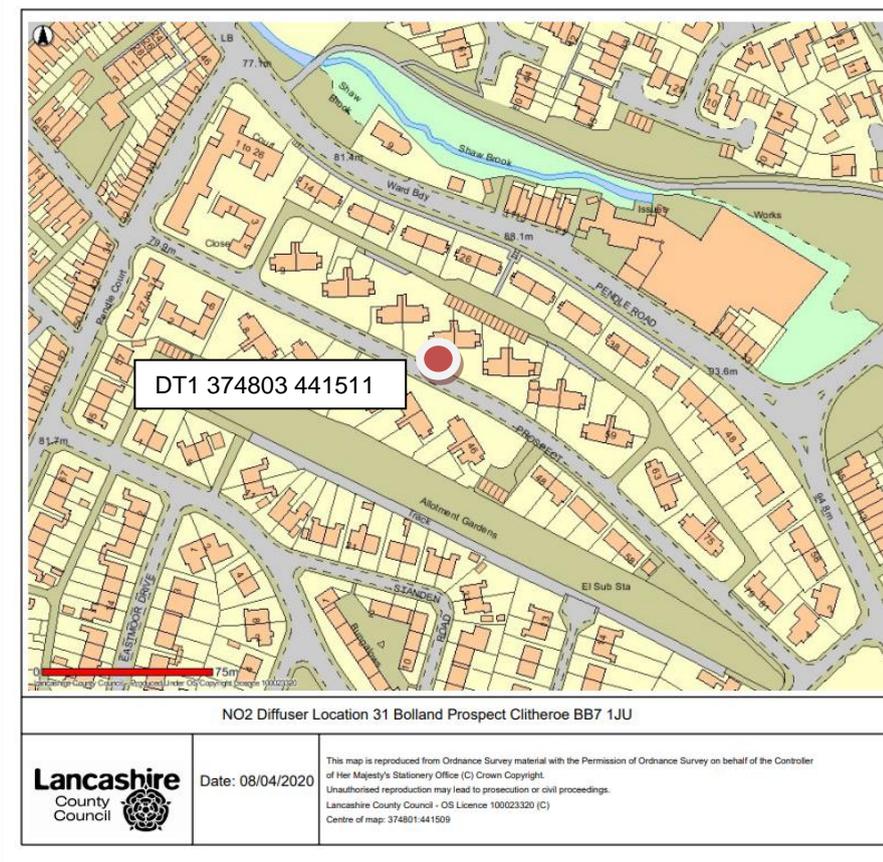
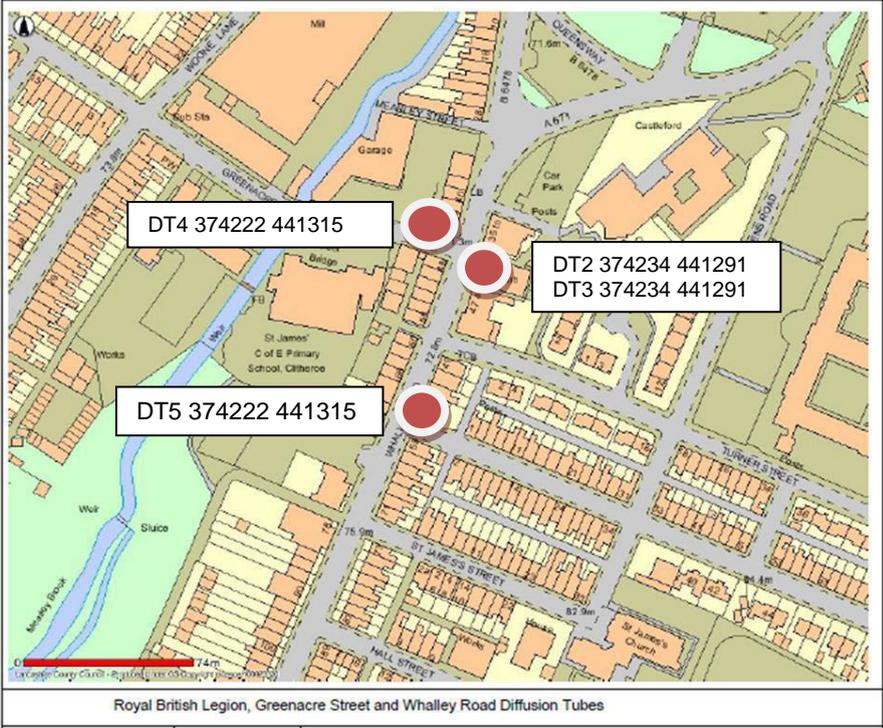
No co-location study has been undertaken

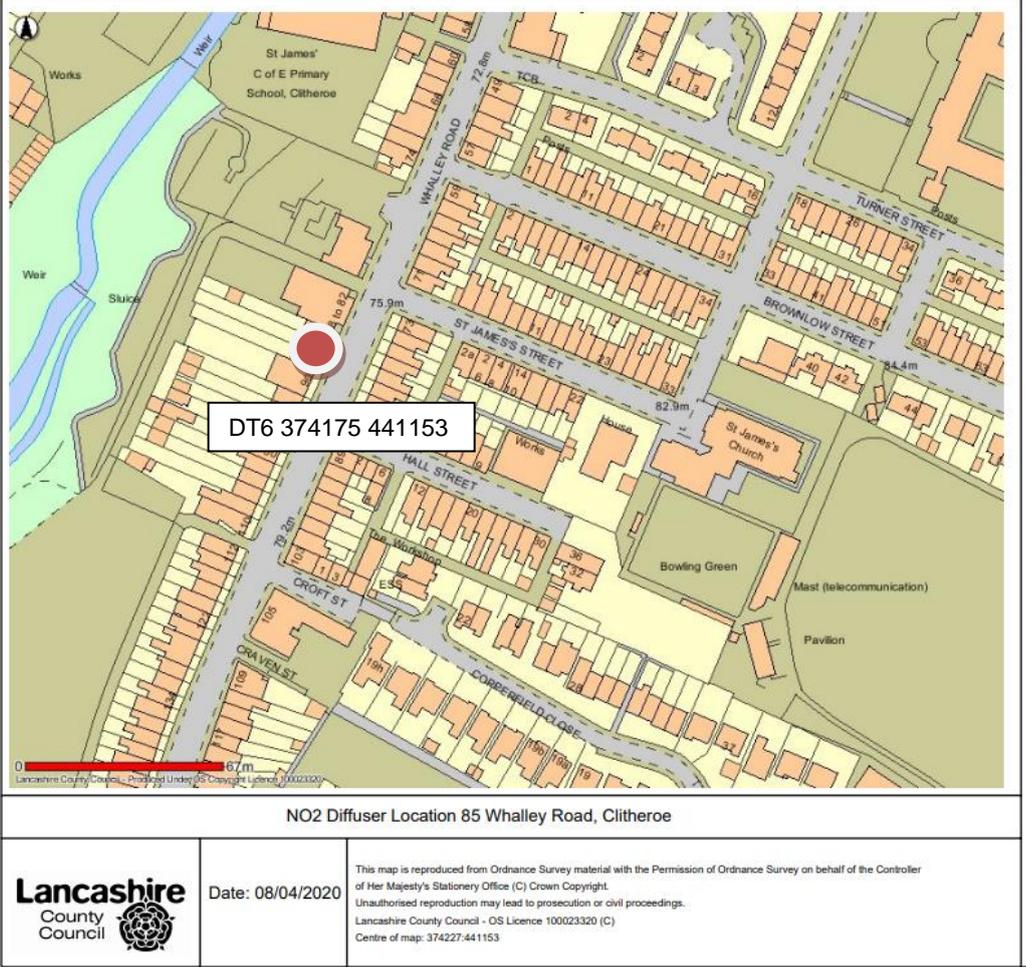
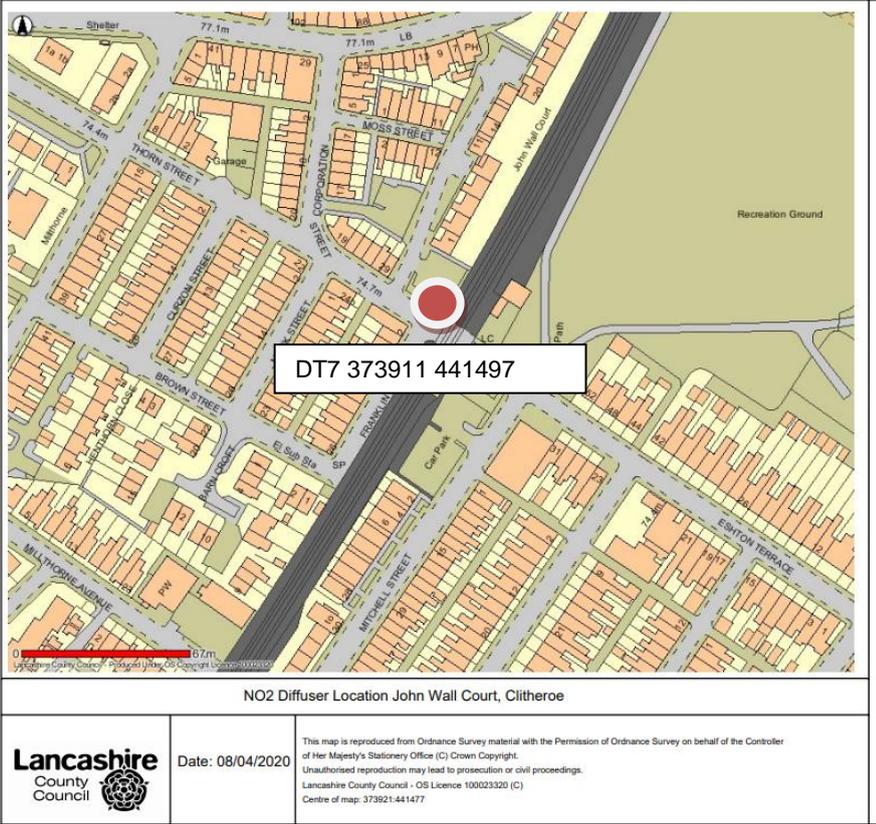
by Ribble Valley Borough Council, and so the national bias adjustment figured derived from the table above has been used to adjust all results obtained by Ribble Valley Borough Council. The results of the Workplace Analysis Scheme for Proficiency (WASP) and a field intercomparison exercise precision survey indicated a good overall level of precision with collocated studies for the Gradko diffusion tubes.

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

AQMA Boundary – Whalley Road, Clitheroe No. 1





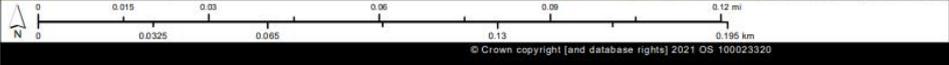


NO2 Diffusion Tube DT8 Feilden Arms



Author:

Date Created: 15/09/2021



Map Scale: 1:1,250
Map Centre: 363,944 431,199

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Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ⁷	
	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

⁷ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Appendix F: How to make a difference personally.

Air quality impacts are not generally the result of single source but are as a result of a number of combined impacts. Small contributions to air pollution are therefore more important than they may seem and need to be recognised if current air quality issues are to be resolved and to generally deliver better air quality. The principle 'look after the pennies and the pounds will look after themselves' comes to mind. Road traffic is an obvious example of an impact arising from numerous sources with control in the hands of each vehicle owner. The choice to use a wood burning/solid fuel stove to heat your home or to have a garden bonfire is another example. The choices individuals (you) make are therefore crucial to improve air quality. The following are therefore some suggested actions which if adopted would significantly contribute to improving air quality in the Ribble Valley area:-

- 1) *Internet technology available today allows communication and transactions to take place without the need for personal travel. Wherever possible the use of technology can remove or reduce polluting emissions and also save you valuable time and often money.*

- 2) *Where a journey is needed, choosing to walk or cycle means that you are not adding to pollution and has the added benefit of keeping you fit and healthy. Electric bikes (E bikes) provide a new possibility for many. Some good information and suggestions can be found at the following link:
<http://www.lancashire.gov.uk/roads-parking-and-travel/alternative-ways-to-travel.aspx>*

- 3) *Traffic queues are regularly noticeable around school pick up and drop off times. This results in increased air pollution around these times. Where possible avoid using a car to take your children to and from school. If feasible, please make safe and secure cycle or walking arrangements rather than use your car. If you do use your car, please do not leave your car engine idling while you are waiting as this further adds to the problem and can particularly impact on people who live in the vicinity of schools.*

- 4) *If you need a car, consider leasing or purchasing a lower emission vehicle such as an electric car. If an electric car does not currently meet your specific needs or is not a possibility, then if you can, choose a smaller, more fuel-efficient car: this usually will have significant emission benefits.*
- 5) *Please take the bus or train if this is an option.*

In addition to reducing the pollution you create, you can also do things to reduce your exposure to air pollution. These are a few suggestions:-

Get out of your car

Not only will you be reducing pollution if you don't drive, you will reduce how much pollution you breathe as often sitting in traffic surrounded by vehicles exhausts can be the worst place to be.

Choose where you walk

Air pollution along main roads with buildings close to the road can be particularly high. If possible avoid walking along main roads, choose side roads. If you can't avoid them walk as far away from the kerb as possible – pollution levels usually decrease quickly the further you get away from them. Watch out for your young children also: if they are in a pram, don't forget that they can be even closer to a vehicle's exhaust.

Choose where you exercise

Don't run or cycle along busy roads if you can avoid them. Choose locations where traffic is lower or ideally, where there is no traffic at all.

Get out of town

Not always an option, but if you can go out to places where the air is cleaner (the Ribble Valley is full of great locations). If possible, go there by public transport, or walk or cycle so you don't add to the problem.

Avoid times when pollution is worst

If you can, don't travel when traffic is busiest as this will usually be when the pollution is at its worst. This will not be a favourite for many, but walking in the rain reduces the pollution we breathe in.

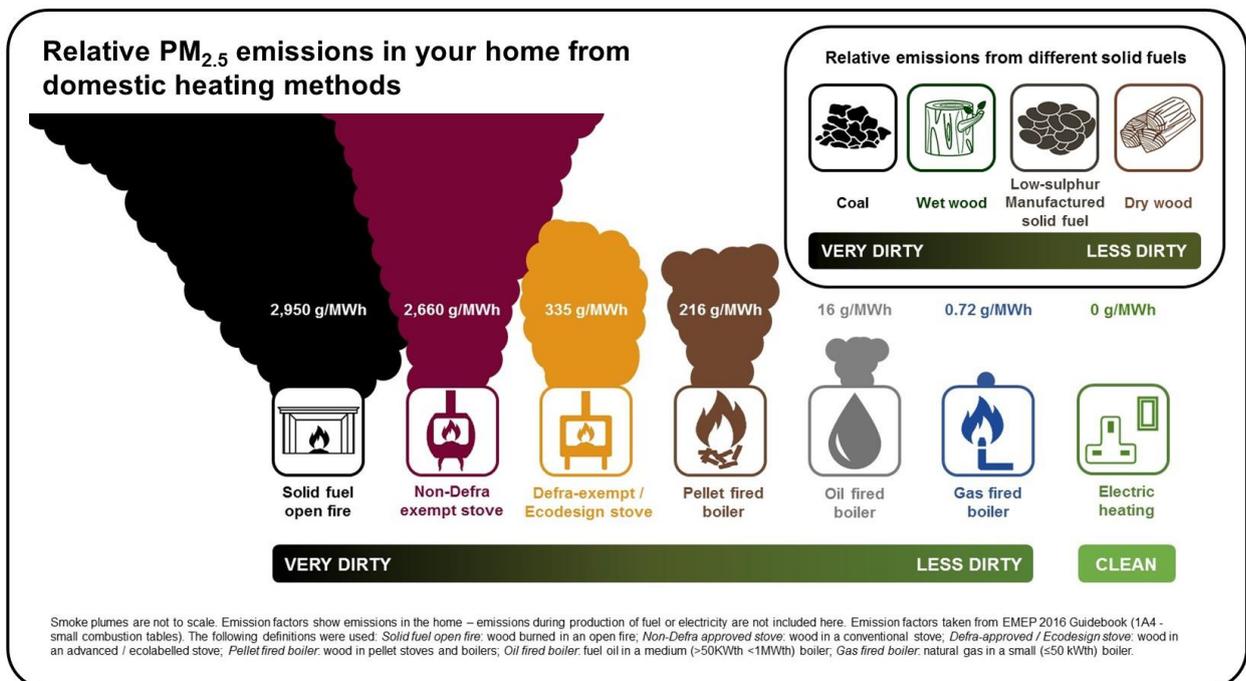
Air pollution indoors?

Air pollution inside can be an issue as we often produce dust from activities such as DIY, cleaning and also some pollution from cooking and heating our homes. Ventilate your home and minimise obviously dusty or smoky activities. Choose to heat your home using a ‘clean’ fuel. If you smoke, this the first thing to stop doing.

Wood burning stoves and garden bonfires

Pollution emissions from wood burning stoves are much higher than from gas or electric heating systems and the combined impact of a number of stoves in urban areas can lead to noticeably poorer air quality. Wood burning stoves and other solid fuel installations also significantly affect the air quality inside your home and therefore impacts on the health of you and your family. Garden bonfires can also similarly add to local pollution. It is therefore very helpful and beneficial to your health if these more polluting choices can be avoided.

Below is an indication of the relative emissions of small particulate matter [PM_{2.5}] from domestic heating methods:



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
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
...	...

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<http://mapzone.lancashire.gov.uk/>