



2021 Air Quality Annual Status Report (ASR)

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

Date: August 2021

*MARTIN
ENVIRONMENTAL
SOLUTION*



Information	Chorley Council Details
Local Authority Officer	Laura Taylor
Department	Environmental Health
Address	Civic Offices Union Street Chorley Lancashire PR7 1AL
Telephone	01257 515151
E-mail	laura-jean.taylor@chorley.gov.uk
Report Reference Number	ASR21
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Prepared By	N. Martin CEnvHMCIEH, MIAQM Martin Environmental Solutions
Qualifications	BSc (Hons) Env. Health, EMAQ certificate in LAQM
Signature	
Checked By	Laura Taylor, Environmental Health Manager
Signature	
Endorsed By	Gary Hall Chief Executive, Chorley Council
Signature	
Endorsed By	Dr Sakthi Karunanithi, Director of Public Health
Signature	

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 Chorley Council

Air pollution is associated with several 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, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas^{1,2}.

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴. For the borough of Chorley, the current mortality attributed to anthropogenic (made man) particulate air pollution is 4.2%⁵.

¹ Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

² Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

³ Defra. Air quality appraisal: damage cost guidance, July 2020

⁴ Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

⁵ Public Health England, Public Health Profiles, Air Pollution: fine particulate matter 2019

https://fingertips.phe.org.uk/search/air%20pollution#page/0/gid/1/pat/102/par/E10000017/ati/101/iid/30101/age/230/sex/4/cid/4/tbm/1/page-options/car-do-0_ovw-do-0

The principal pollutants of concern within Chorley 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 no declared Air Quality Management Areas within the borough. **Trend data over the last five years indicates that levels have generally reduced, the results from 2020 show no areas of exceedance or near exceedance of the national objectives within the borough.**

However, given the continual evidence identifying the harmful effects of both Particulate Matter and Nitrogen Dioxide, along with the Council's commitment to work with partners on the public health agenda, the Council's duties under the Local Air Quality Management regime, combined with the significant development within the area, it is important that work continues to maintain and improve the air quality within the borough.

To that end, the Chorley 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. This will be helped by the adoption of an Air Quality Strategy and Air Quality Planning Guidance document.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy⁶ sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero⁷ sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Chorley Council has over the previous 12 months reviewed the nitrogen Dioxide monitoring locations. This has resulted in some previous monitoring locations being dropped from the monitoring programme due to successively low results and six new sites being added to the programme.

The Council has also written, a new Clean Air Strategy. The strategy was later adopted in 2021 (the next reporting year).

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

- Publish the new Clean Air Strategy,
- Continuing with the diffusion tube monitoring programme,
- Purchase continuous air quality monitoring stations
- Continue to consider air quality for all relevant planning applications,
- Continue to liaise with colleagues across the Council land with South Ribble and Preston City councils to develop the revised Central Lancashire Local Plan.
- The adoption of an Air Quality Planning Guidance note, setting out how and when air quality issues need to be considered as part of the planning process.

⁶ Defra. Clean Air Strategy, 2019

⁷ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

- 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.
- Through the emerging Climate Emergency work continue to embed air quality actions and improvements through the Council's operations.
- Continue to work with partners in Public Health Lancashire, and across the Lancashire District authorities in the development and publication of a Lancashire Air Quality Planning Guidance Document.

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. The monitoring programme has identified that the nitrogen dioxide levels are low across the borough at sensitive receptor locations.

All monitoring locations have shown a reduction in Nitrogen Dioxide concentrations on previous years.

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 on the implementation of the county wide guidance document for planning. The document is required to ensure all developments adequately address air quality impacts.

In addition, the Council will complete, consult, and adopt an Air Quality Strategy and 'Action Plan' to drive forward air quality improvements throughout the borough. A further review of monitoring locations will also be undertaken across the borough.

Local Engagement and How to get Involved

If you would like to get involved in the work being undertaken to tackle air pollution within the Chorley area; or you would like more information on how you can help reduce your personal emissions, then please contact the Environmental Health Department at Chorley

Council on 01257 515151 or via e-mail at contact@chorley.gov.uk. Further information will be made available on the Council's website.

Air Quality is an issue that everyone can take responsibility for and make small changes to achieve improvements. There is a wealth of information on the internet on how you can contribute to improving air quality.

Lancashire has a large number of established and well-maintained cycle routes that can be used for commuting as well as leisure purposes. More information can be found on: <http://www.visitlancashire.com/cycling-lancashire>

There is also a wealth of information on public transport: <http://www.lancashire.gov.uk/roads-parking-and-travel/public-transport.aspx>

And alternative ways to travel:

<http://www.lancashire.gov.uk/roads-parking-and-travel/alternative-ways-to-travel.aspx>

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1 Local Air Quality Management

This report provides an overview of air quality in Chorley 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 Chorley Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

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 should prepare an Air Quality Action Plan (AQAP) within 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

Chorley Council currently does not have any declared AQMAs.

For reference, a map of Chorley Council's monitoring locations is available in Appendix D.

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

Defra's appraisal of last year's ASR concluded that the submitted ASR was acceptable and levels of pollutants (Nitrogen Dioxide, Particulate Matter and Sulphur Dioxide) were expected to be below the national objective limit values. In addition, the appraisal identified the following points;

- 1. The Council continue to provide an in-depth discussion on the NO₂ trends seen within their borough. Furthermore, they Council have assessed the increases in NO₂ seen and have related this to changes in traffic patterns. This is an example of good practice and shows that they Council actively trying to understand and determine the factors influencing air quality within their borough.*
- 2. The Council are commended on their decision to relocate diffusion tubes from areas of low/static concentrations to those where concentrations appear to be increasing. The Council are encouraged to continue reviewing their monitoring locations and adjust monitoring locations where they deem appropriate.*
- 3. Overall, the report is detailed, concise, satisfies the criteria of relevant standards and continues to be an example of good practice. The Council should continue their good work and submit an Annual Status Report in 2021.*

Chorley Council has taken forward a number of direct measures during the current reporting year of 2020 in pursuit of improving local air quality. However, the Covid-19 pandemic has restricted planned actions, particularly around the engagement of the public. Staff were also heavily involved in the Councils response to the pandemic. Details of all measures completed, in progress or planned are set out in Table 2.1 – Progress on Measures to Improve Air Quality

Chorley Council's priorities for the coming year are:

- To continue the enhanced monitoring programme.
- Enhance the monitoring capability of the Council for both nitrogen dioxide and particulate matter
- To adopt a new Clean Air Strategy
- To require Air Quality Assessments to be undertaken on all relevant planning applications.
- To complete and implement the 'Lancashire wide Air Quality Guidance Document, if required independently of the full Lancashire working group.
- Require mitigation measures were appropriate on planning applications, including electric vehicle charging points to all suitable developments.

The principal challenges and barriers to implementation that Chorley Council anticipates facing are lack of resources both internally and from partner organisations.

Progress on the measures detailed below has been slower than expected due to the covid-19 pandemic and continual general lack of staffing resources within both Chorley Council and the Lancashire District and County Councils. The pandemic and lack of resources within Chorley Council and across Lancashire have further limited the introduction of the County Wide guidance document for developers.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Air Quality Planning Policy	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2020	2022	Lancashire LA's	Existing Budgets	NO	Not Funded	< £10k	Implementation	Reduced Emissions	Implementation	Implementation on-going	limited buy in from DC. Potential to use Central Lancashire local plan to create SPG
2	Introduction of Air Quality Strategy	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2020	2021	Chorley Council	Existing Budgets	NO	Not Funded	< £10k	Implementation	Reduced missions	Adoption of air quality strategy	Implementation on-going	Main focus of Air Quality Strategy will be to promote and support behavioural change and sustainable development
3	Minimum Euro 5 vehicles as licensed taxis	Promoting Low Emission Transport	Taxi Licensing conditions	2016	2021	Chorley Council	Existing Budgets	NO	Not Funded	< £10k	Implementation	Reduced vehicle emissions	100% of newly licensed vehicles Euro 5 or above	Implementation on-going	resistance from taxi trade to upgrade to low emission vehicles
4	Electrification of the Rail Network	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2016	2022	Network Rail	Network Rail	NO	Funded	£1 million - £10 million	Implementation	Reduced diesel Emissions	100% electrification of line	Network rail are moving forward with the electrification of the line, with large sections already completed	no additional incentive to use rail network
5	Make Air Quality and Climate Change key factors in Central Lancashire Planning Policy	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2020	2021	Preston City Council, South Ribble Borough Council and Chorley Council	Existing Budgets	NO	Partially Funded	£50k - £100k	Planning	Reduced Emissions	Inclusion within the Central Lancs Plan	Little progress has been made on this item over 2020. Partially due to the Covid pandemic and officers concentrating of other areas of the plan	Developers' reluctance to implement planning policy guidance.

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.

Chorley Council is taking the following measures to address PM_{2.5}:

- Encouraging the use of alternative travel options e.g., cycling, walking, and use of public transport.
- Working on the implementation a robust Air Quality Planning Policy.
- Raise awareness of the harmful effects of PM_{2.5} using the Public Health Indicator's which demonstrate that Chorley suffers from an adult mortality attributed to particulate matter of 4.2% (2019).

2.4 Lancashire County Council Actions on PM_{2.5}

In Lancashire, the strongest evidence we have on the population health impacts of air pollution comes from Public Health England's Public Health Outcomes Framework. This Framework estimates 'the fraction of adult mortality attributable to particulate air pollution (PM_{2.5})' each year. It shows that, while the overall mortality rate from particulate air pollution in Lancashire-12 (4.0%) is lower than the England average (5.1%), air pollution remains a significant public health issue for the county.

Working with district councils, Lancashire County Council (LCC) 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. Encouraging 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. By 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. Information on the County Council's ongoing activities in this area can be found on the Active Travel in Lancashire website.
- 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 to access new funding schemes as they become available.
- The Road Safety 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. Supporting 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.
- 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. Creating 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. The local Highways and Transport Masterplans will be refreshed to align with the priorities of LTP4. This 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 Lancaster City Centre Movement Strategy is looking at how vehicular, public transport and pedestrian walking movements can be improved across the city. A key facet of the study is to examine what improvements can be implemented to prioritise public transport, reduce severance, improve air quality, and effectively make the city centre a more welcoming environment for people. The intention is for a similar approach to be adopted as part of future Highways and Transport Masterplans.

4. Embedding 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. It supports district councils in developing policies that seek to ensure new developments do 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 County Council seeks measures that facilitate cycling and walking, increase the use of public transport, and provide access to electric vehicle charge points. The County 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.

5. Raising awareness and increasing engagement

- The Lancashire Insight website provides information on the sources and health impacts of air pollution across the county. Webpages include a [Summary of Emissions Data](#), [Monitoring of Air Quality and Health Impacts](#) and an [Air Quality and Health Dashboard](#).

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

This section sets out the monitoring undertaken within 2020 by Chorley Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2016 and 2020 to allow monitoring trends to be identified and discussed.

3.1 Review of 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.

As with most areas there are pockets of significant residential development that has been granted planning permission. Air quality reports have been prepared for majority of these developments with most indicating a negligible impact. Most of the sites that have been granted permission have begun (and in some cases completed) construction work during 2020.

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. 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 upon air quality.

There are no new or significantly changed bus depots or significant ports within the borough. The borough still has no airports

Monitoring of the area using diffusion tubes is currently being undertaken by the Council and the results are detailed below.

No new industrial sources, including significant 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

Chorley Council does not undertake any automatic monitoring.

3.2.2 Non-Automatic Monitoring Sites

Chorley Council undertook non- automatic (i.e. passive) monitoring of NO₂ at 20 sites during 2020. Table in Appendix A presents the details of the non-automatic 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 results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.3.1 Nitrogen Dioxide (NO₂)

Error! Reference source not found. in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. Note that the concentration data presented 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).

For diffusion tubes, the full 2020 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.

There are no exceedances of the air quality objectives, either by the annual mean concentrations of 40µg/m³ or any tube result exceeding 60µg/m³, which indicates that an exceedance of the 1-hour mean objective is likely.

The trend data for the diffusion tube survey shows all locations are displaying a downward trend of Nitrogen Dioxide at the roadside. This is in part due to changes in vehicle technology, although traffic trend data is also showing a slight downward trend for most locations, but in the main due to the impact of the Covid 19 pandemic which has seen significant reduction in traffic flows over the last year.

3.3.2 Particulate Matter (PM₁₀ & PM_{2.5})

Chorley Council does not currently 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)

Chorley Council does not monitor SO₂ levels, a check of the Defra background maps indicates that there are no likely exceedances of the objective levels for this pollutant.

Appendix A: Monitoring Results

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
CH05	Market Street, Adlington	Kerbside	360095	413094	NO2	No	4.0	0.5	No	2.5
CH06	Moor Road, Chorley	Kerbside	357436	416130	NO2	NO	8.5	0.5	No	2.5
CH08	Balshaw Lane	Roadside	355891	418467	NO2	No	11.0	2.0	No	2.5
CH09	A49 Wigan Road South Balshaw Lane	Roadside	355550	418243	NO2	No	8.0	3.0	No	2.5
CH11	A49 Wigan Road South Euxton Lane	Kerbside	355454	419317	NO2	No	1.5	0.5	No	2.5
CH14	A49 Wigan Road	Roadside	355663	422349	NO2	No	10.0	2.0	No	2.5
CH14a	A49 Wigan Road / Lancaster La	Roadside	355674	422568	NO2	No	22.0	1.5	No	2.5
CH17	A6 Whittle (Swansey Lane)	Kerbside	357952	422176	NO2	No	6.0	0.5	No	2.5
CH17a	A6, Whittle (Opp St John's Church)	Roadside	357885	421524	NO2	No	7.0	1.5	No	2.5
CH19	A6 at Chorley Hospital	Roadside	358335	419226	NO2	No	10.0	4.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
CH20	A6 South Chorley Hospital The Spinney	Roadside	358325	418920	NO2	No	13.0	2.0	No	2.5
CH23	Market St, Chorley (LP172)	Roadside	358357	417297	NO2	No	1.5	2.5	No	2.5
CH24	Euxton Lane Opposite Hospital	Roadside	358023	419145	NO2	No	1.0	1.5	No	2.5
CH25	Bolton Street Opposite Asda	Roadside	358518	417105	NO2	No	2.0	1.8	No	2.5
CH29	M6 Subway Moss Lane Clayton	Kerbside	355423	422673	NO2	No	28.5	1.0	No	2.5
CH30	Buckshaw Avenue to Ordnance way	Kerbside	356815	420271	NO2	No	11.8	2.0	No	2.5
CH31	A6 Preston Road Clayton	Roadside	357879	423303	NO2	No	1.2	2.9	No	2.5
CH32	Ashdown Drive	Roadside	358313	422937	NO2	No	5.5	0.9	No	2.5
CH33	A6 Preston Road Whittle	Kerbside	358110	420361	NO2	No	2.4	1.4	No	2.5
CH34	Fallow Close	Kerbside	358568	420246	NO2	No	3.3	0.5	No	2.5

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: Non-Automatic Monitoring (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CH05	360095	413094	Kerbside	84.6	84.6	35.4	33.8	34.1	32.2	23.4
CH06	357436	416130	Kerbside	84.6	84.6	30.8	28.0	28.0	27.1	22.0
CH08	355891	418467	Roadside	75.0	75.0	33.4	29.3	29.3	29.0	21.6
CH09	355550	418243	Roadside	84.6	84.6	32.7	30.0	28.5	28.3	20.4
CH11	355454	419317	Kerbside	84.6	84.6	31.7	28.2	26.6	24.2	19.5
CH14	355663	422349	Roadside	84.6	84.6	43.2	42.3	38.9	37.1	29.5
CH14a	355674	422568	Roadside	84.6	84.6	31.3	29.8	27.0	26.3	20.7
CH17	357952	422176	Kerbside	76.9	76.9	33.0	31.6	29.0	29.6	21.7
CH17a	357885	421524	Roadside	75.0	75.0	32.0	28.3	28.0	27.0	20.3
CH19	358335	419226	Roadside	75.0	75.0	35.1	34.1	31.1	30.4	20.0
CH20	358325	418920	Roadside	84.6	84.6	35.5	32.2	31.7	30.2	22.7
CH23	358357	417297	Roadside	84.6	84.6	35.0	31.3	30.9	32.8	23.3
CH24	358023	419145	Roadside	84.6	84.6	37.7	33.5	34.9	31.4	23.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CH25	358518	417105	Roadside	84.6	84.6	29.2	25.8	25.7	26.2	19.4
CH29	355423	422673	Kerbside	76.9	76.9					19.0
CH30	356815	420271	Kerbside	76.9	76.9					24.3
CH31	357879	423303	Roadside	76.9	76.9					16.9
CH32	358313	422937	Roadside	76.9	76.9					17.2
CH33	358110	420361	Kerbside	76.9	76.9					19.6
CH34	358568	420246	Kerbside	76.9	76.9					18.6

CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM LAQM DATA PROCESSING TOOL (IF UTILISED)

- Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).
- Diffusion tube data has been bias adjusted (confirm by selecting in box).
- 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 correction (confirm by selecting in box).

Notes:

The annual mean concentrations are presented as $\mu\text{g}/\text{m}^3$.

Exceedances of the NO₂ annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO₂ annual means exceeding $60\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

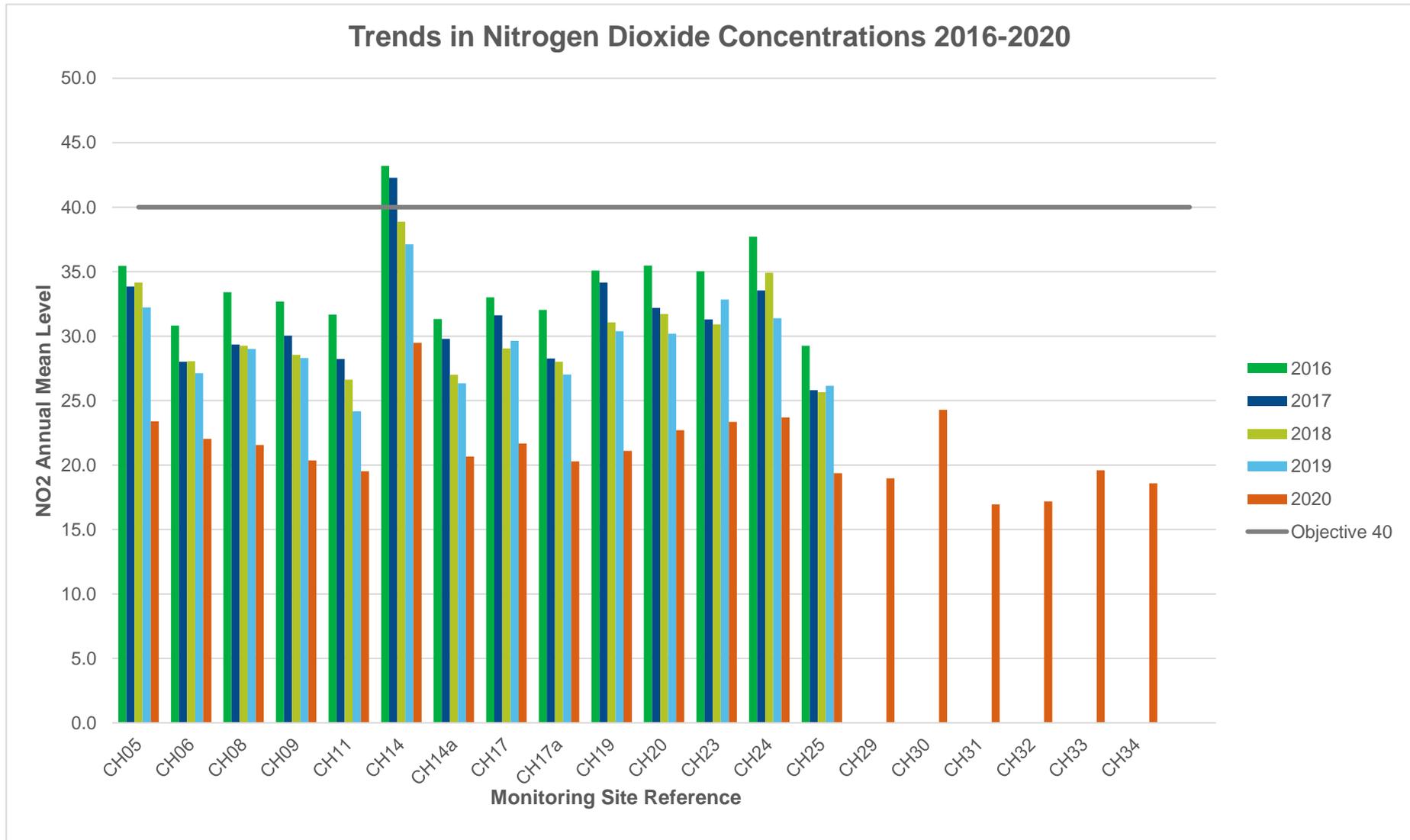
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

(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%).

Figure A.1 – Trends in Annual Mean NO₂ Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO₂ 2020 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
CH05	360095	413094	40.4	33.3			19.8	21.4	21.5	24.5	24.6	29.0	35.4	38.9	28.9	23.4	18.5	
CH06	357436	416130	34.9	27.8			18.1	22.0	19.8	23.5	24.9	27.3	35.8	37.8	27.2	22.0	16.1	
CH08	355891	418467	36.8	27.6			17.3	20.7	16.6		24.8	25.9	31.7	38.0	26.6	21.6	16.8	
CH09	355550	418243	34.6	28.1			15.2	21.1	16.3	22.7	26.0	25.7	28.5	33.0	25.1	20.4	17.1	
CH11	355454	419317	35.2	28.3			14.2	16.3	15.2	18.1	20.5	24.2	32.5	36.4	24.1	19.5	17.4	
CH14	355663	422349	44.8	39.7			24.3	33.2	32.2	32.5	33.2	39.6	42.7	41.7	36.4	29.5	24.1	
CH14 _a	355674	422568	37.0	28.0			13.4	17.0	19.6	19.5	23.5	26.1	33.5	37.6	25.5	20.7	18.2	
CH17	357952	422176	34.6				18.7	21.9	17.5	23.7	24.4	27.2	36.4	36.4	26.8	21.7	16.9	
CH17 _a	357885	421524	33.2	25.7			16.9	23.2	17.7	20.4	21.9		31.0	35.3	25.0	20.3	16.7	
CH19	358335	419226	33.9	26.7				22.1	19.8	25.8	25.3	29.9		37.2	26.0	21.1	18.6	
CH20	358325	418920	43.4	30.8			17.8	21.9	21.0	20.5	26.7	29.2	32.7	36.4	28.0	22.7	18.5	
CH23	358357	417297	38.0	28.9			18.1	23.5	17.9	25.5	25.1	28.7	39.6	42.7	28.8	23.3	22.2	
CH24	358023	419145	40.7	28.0			20.0	24.2	23.3	29.0	26.9	26.8	36.4	37.0	29.2	23.7	22.8	
CH25	358518	417105	31.0	24.8			8.9	17.3	14.9	22.0	22.6	25.3	34.6	37.5	23.9	19.4	18.4	
CH29	355423	422673		32.9			16.7	16.3	20.9	16.6	22.1	24.2	30.7	30.2	23.4	19.0	17.3	
CH30	356815	420271		35.8			20.2	23.3	25.4	25.9	27.8	31.2	38.5	41.5	30.0	24.3	17.9	
CH31	357879	423303		24.9			14.1	16.7	15.7	16.4	19.2	20.3	29.9	30.9	20.9	16.9	16.5	
CH32	358313	422937		19.3			14.6	20.5	12.8	23.6	22.0	22.1	24.6	31.3	21.2	17.2	16.0	
CH33	358110	420361		27.0			15.3	17.0	17.5	20.3	21.9	25.4	38.2	35.0	24.2	19.6	18.4	
CH34	358568	420246		23.0			16.0	18.9	13.6	22.6	21.2	24.9	32.2	34.2	23.0	18.6	17.0	

- All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1
- Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16
- National bias adjustment factor used
- Where applicable, data has been distance corrected for relevant exposure in the final column
- Chorley Borough Council confirm that all 2020 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System

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**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Chorley Council During 2020

Chorley Council has not identified any new sources relating to air quality within the reporting year of 2020.

Additional Air Quality Works Undertaken by Chorley Council During 2020

Chorley Council has not completed any additional works within the reporting year of 2020.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes used by Chorley Council were supplied by Gradko Environmental Ltd, using a 20% TEA / Water solution. The Air Quality Review and Assessment website gives a bias adjustment figure of 0.81 for the 2020 data set.

No co-location study has been undertaken by Chorley Council, and so the national bias adjustment figure derived from the table below has been used to adjust all results obtained by Chorley Council.

The results of the AIR NO₂ Proficiency Testing Scheme and a field inter-comparison exercise, precision survey indicated a good overall level of precision with collocated studies for the Gradko diffusion tubes.

The diffusion tube monitoring program has been completed generally in line with the 2020 Diffusion Tube Monitoring Calendar, during a couple of months the diffusion tubes were changed slightly later than the planned day for example during the summer months. These

dates have been noted and the correct exposure times recorded. All tubes were exposure for the minimum of 4 weeks with no tubes exposed for longer than 4.5 weeks, except for the March 2020 tubes which were left out for a period of 3 months due to the Covid 19 Pandemic.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Chorley Council recorded data capture of <75% at all but one site, CH19, with a 69% capture rate, therefore it was not required to annualise any monitoring data except site CH19.

The AURN sites at Preston, Blackburn and Wigan have been used to provide an annualization correction factor of 0.9410 which has been applied to site CH19.

Table C.1 – Annualisation Adjustment Factor



Annualisation Summary - Information Only

Diffusion Tube ID	Annualisation Factor Preston	Annualisation Factor Blackburn	Annualisation Factor Wigan	Annualisation Factor Site 4 Name	Average Annualisation Factor	Raw Data Time Weighted Annual Mean ($\mu\text{g}/\text{m}^3$)	Annualised Data Time Weighted Annual Mean ($\mu\text{g}/\text{m}^3$)
CH19	0.9295	0.9396	0.9538		0.9410	27.7	26.0

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance regarding the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Chorley Council have applied a national bias adjustment factor of 0.81 to the 2020 monitoring data. A summary of bias adjustment factors used by Chorley Council over the past five years is presented in Table C..

Table C.2 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	06/21	0.81
2019	National	03/20	0.93
2018	National	03/19	0.93
2017	National	03/18	0.89
2016	National	03/17	0.94

National Diffusion Tube Bias Adjustment Factor Spreadsheet							Spreadsheet Version Number: 06/21			
<p>Follow the steps below in the correct order to show the results of relevant co-location studies</p> <p>Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods</p> <p>Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet</p> <p>This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.</p>							<p>This spreadsheet will be updated at the end of Sept 2021</p> <p>LAQM Helpdesk Website</p>			
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:	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	<p>Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution.</p> <p>Where there is more than one study, use the overall factor² shown in blue at the foot of the final column.</p>							
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 ²	<p>If you have your own co-location study then see footnote⁴. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953</p>							
Analysed By ¹	Method ² <small>To undo your selection, choose (All) from the pop-up list</small>	Year ² <small>To undo your selection, choose (All)</small>	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 ³	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2020	R	Fareham Borough Council	10	22	17	26.5%	G	0.79
Gradko	20% TEA in water	2020	R	SOUTHAMPTON CITY COUNCIL	11	32	31	4.9%	G	0.95
Gradko	20% TEA in water	2020	KS	Marylebone Road Intercomparison	12	57	43	33.3%	G	0.75
Gradko	20% TEA in water	2020	R	Bath & North East Somerset	11	32	29	13.0%	G	0.89
Gradko	20% TEA in water	2020	R	Gateshead Council	12	22	17	28.1%	G	0.78
Gradko	20% TEA in water	2020	R	Gateshead Council	12	23	21	11.6%	G	0.90
Gradko	20% TEA in water	2020	R	Gateshead Council	10	26	25	6.5%	G	0.94
Gradko	20% TEA in water	2020	R	Gateshead Council	12	28	21	30.5%	G	0.77
Gradko	20% TEA in water	2020	R	Gateshead Council	12	31	32	-3.4%	G	1.03
Gradko	20% TEA in water	2020	R	Luton Borough Council	9	38	28	33.8%	G	0.75
Gradko	20% TEA in water	2020	R	Nottingham City Council	12	31	34	-8.5%	G	1.09
Gradko	20% TEA in water	2020	R	Dudley MBC	13	33	28	19.9%	G	0.83
Gradko	20% TEA in water	2020	UB	Dudley MBC	13	23	14	61.2%	G	0.62
Gradko	20% TEA in water	2020	R	Dudley MBC	13	44	34	30.6%	G	0.77
Gradko	20% TEA in water	2020	R	Ards and North Down Borough Council	10	27	20	34.0%	G	0.75
Gradko	20% TEA in water	2020	R	Belfast City Council	10	26	21	22.8%	G	0.81
Gradko	20% TEA in water	2020	R	Belfast City Council	10	41	36	12.6%	G	0.89
Gradko	20% TEA in water	2020	R	Belfast City Council	10	36	25	43.9%	G	0.69
Gradko	20% TEA in water	2020	R	Lancaster City Council	11	27	23	19.9%	G	0.83
Gradko	20% TEA in water	2020	R	Lancaster City Council	10	32	28	13.0%	G	0.89
Gradko	20% TEA in water	2020	R	Eastleigh Borough Council	9	23	20	13.6%	G	0.88
Gradko	20% TEA in water	2020	UB	Eastleigh Borough Council	9	22	19	17.9%	G	0.85
Gradko	20% TEA in water	2020	R	Lisburn & Castlereagh City Council	10	23	18	32.5%	G	0.75
Gradko	20% TEA in water	2020		Overall Factor² (27 studies)				Use		0.81

NO₂ Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure should be estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

The NO₂ fall-off with distance calculator version 4.2 has been utilised to calculate the predicted Nitrogen Dioxide concentration at the nearest receptor for each of the identified monitoring locations, where these locations are not already at a suitable receptor location. The results are shown in the table below. The results indicate no exceedances are predicted at any of the identified receptors

Table C.3 – NO₂ Fall-off with Distance from the Road Calculator Output

Site Name/ID	Distance (m)		NO ₂ Annual Mean Concentration (µg/m ³)			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
CH05	0.5	4.5	10.8	23.4	18.5	
CH06	0.5	9.0	10.4	22.0	16.1	
CH08	2.0	13.0	10.8	21.6	16.8	
CH09	3.0	11.0	10.8	20.4	17.1	
CH11	0.5	2.0	10.9	19.5	17.4	
CH14	2.0	12.0	16.6	29.5	24.1	
CH14a	1.5	23.5	16.6	20.7	18.2	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
CH17	0.5	6.5	11.2	21.7	16.9	
CH17a	1.5	8.5	10.8	20.3	16.7	
CH19	4.0	14.0	16.1	21.1	19.3	
CH20	2.0	15.0	13.7	22.7	18.5	
CH23	2.5	4.0	13.6	23.3	22.2	
CH24	1.5	2.5	16.1	23.7	22.8	
CH25	1.8	3.8	13.6	19.4	18.4	
CH29	1.0	29.5	16.6	19.0	17.3	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
CH30	2.0	13.8	10.4	24.3	17.9	
CH31	2.9	4.1	12.4	16.9	16.5	
CH32	0.9	6.4	14.1	17.2	16.0	
CH33	1.4	3.8	14.1	19.6	18.4	
CH34	0.5	3.8	14.1	18.6	17.0	

QA/QC of Automatic Monitoring

The AIR PT scheme uses laboratory spiked Palmes type diffusion tubes to test each participating laboratory's analytical performance on a quarterly basis and continues the format used in the preceding WASP PT scheme. The results are published and are detailed below.

For the Gradko International Laboratory have provided a 75% satisfactory response to tested samples up to October 2020 (the latest data available). However, it should be noted that due to the Covid-19 pandemic most of the test sampling over the year has not been undertaken.

The following table lists those UK laboratories undertaking LAQM activities that have participated in recent AIR NO₂ PT rounds and the percentage (%) of results submitted which were subsequently determined to be **satisfactory** based upon a z-score of $\leq \pm 2$ as defined above.

AIR PT Round	AIR PT AR030	AIR PT AR031	AIR PT AR033	AIR PT AR034	AIR PT AR036	AIR PT AR037	AIR PT AR039	AIR PT AR040	AIR PT AR042
Round conducted in the period	January – February 2019	April – May 2019	July – August 2019	September – November 2019	January – February 2020	May – June 2020	July – August 2020	September – October 2020	January – March 2021
Aberdeen Scientific Services	75 %	100 %	100 %	100 %	100 %	NR [3]	NR [3]	100 %	100 %
Edinburgh Scientific Services	100 %	NR [2]	100 %	25 %	50 %	NR [3]	NR [3]	100 %	25 %
SOCOTEC	87.5 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	NR [3]	NR [3]	100 % [1]	100 % [1]
Glasgow Scientific Services	100 %	100 %	100 %	50 %	100 %	NR [3]	NR [3]	100 %	50 %
Gradko International	75 %	100 %	100 %	100 %	75 %	NR [3]	NR [3]	75 %	25 %
Lambeth Scientific Services	50 %	100 %	50 %	100 %	100 %	NR [3]	NR [3]	100 %	100 %
Milton Keynes Council	100 %	100 %	50 %	100 %	100 %	NR [3]	NR [3]	25 %	0 %
Somerset Scientific Services	100 %	100 %	100 %	100 %	100 %	NR [3]	NR [3]	100 %	100 %
South Yorkshire Air Quality Samplers	100 %	100 %	100 %	75 %	100 %	NR [3]	NR [3]	100 %	100 %
Staffordshire County Council	100 %	75 %	75 %	75 %	100 %	NR [3]	NR [3]	50 %	100 %
Tayside Scientific Services (formerly Dundee CC)	100 %	NR [2]	100 %	NR [2]	100 %	NR [3]	NR [3]	100 %	NR [2]
West Yorkshire Analytical Services	100 %	100 %	100 %	50 %	100 %	NR [3]	NR [3]	NR [2]	NR [2]

[1] Participant subscribed to two sets of test results (2 x 4 test samples) in each AIR PT round.

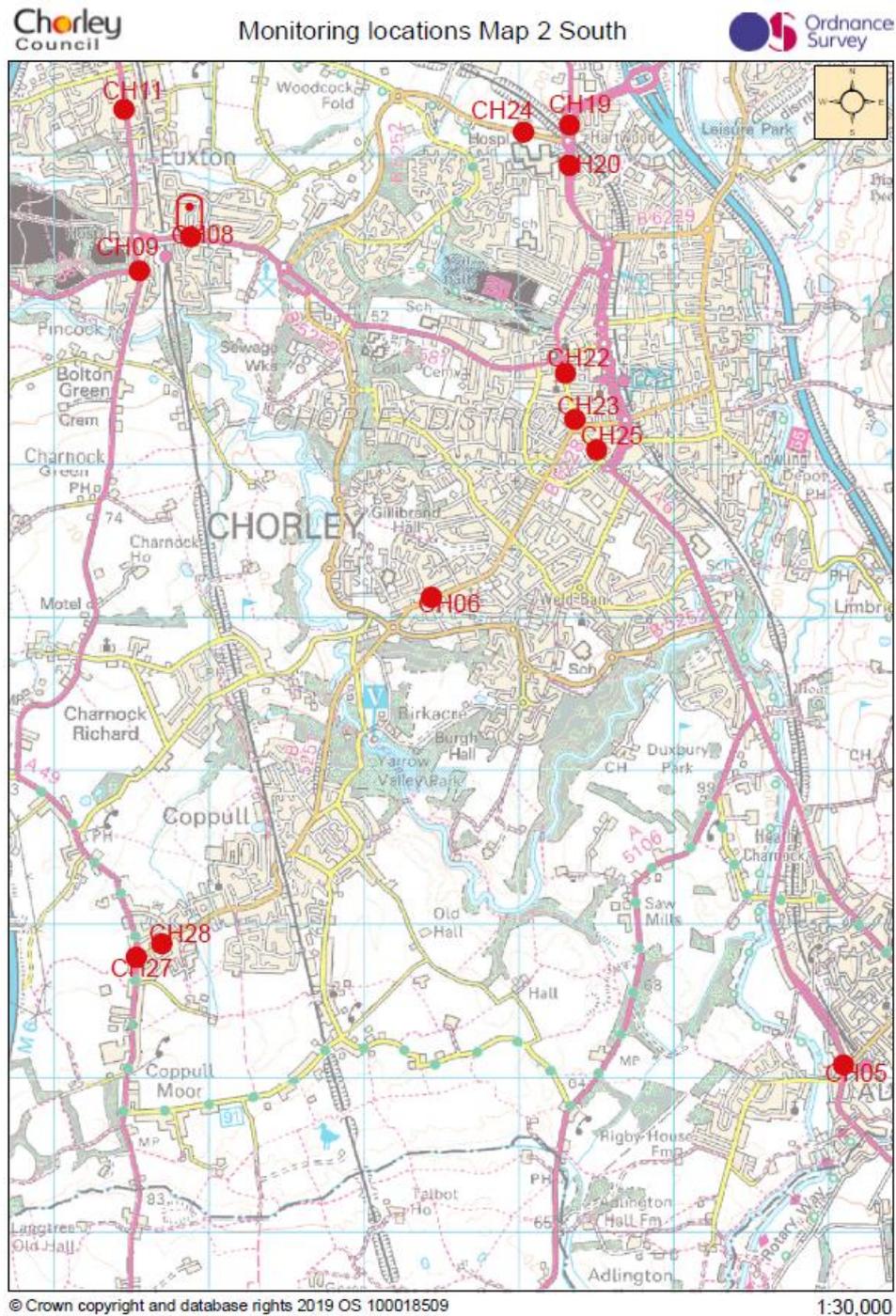
[2] NR, No results reported.

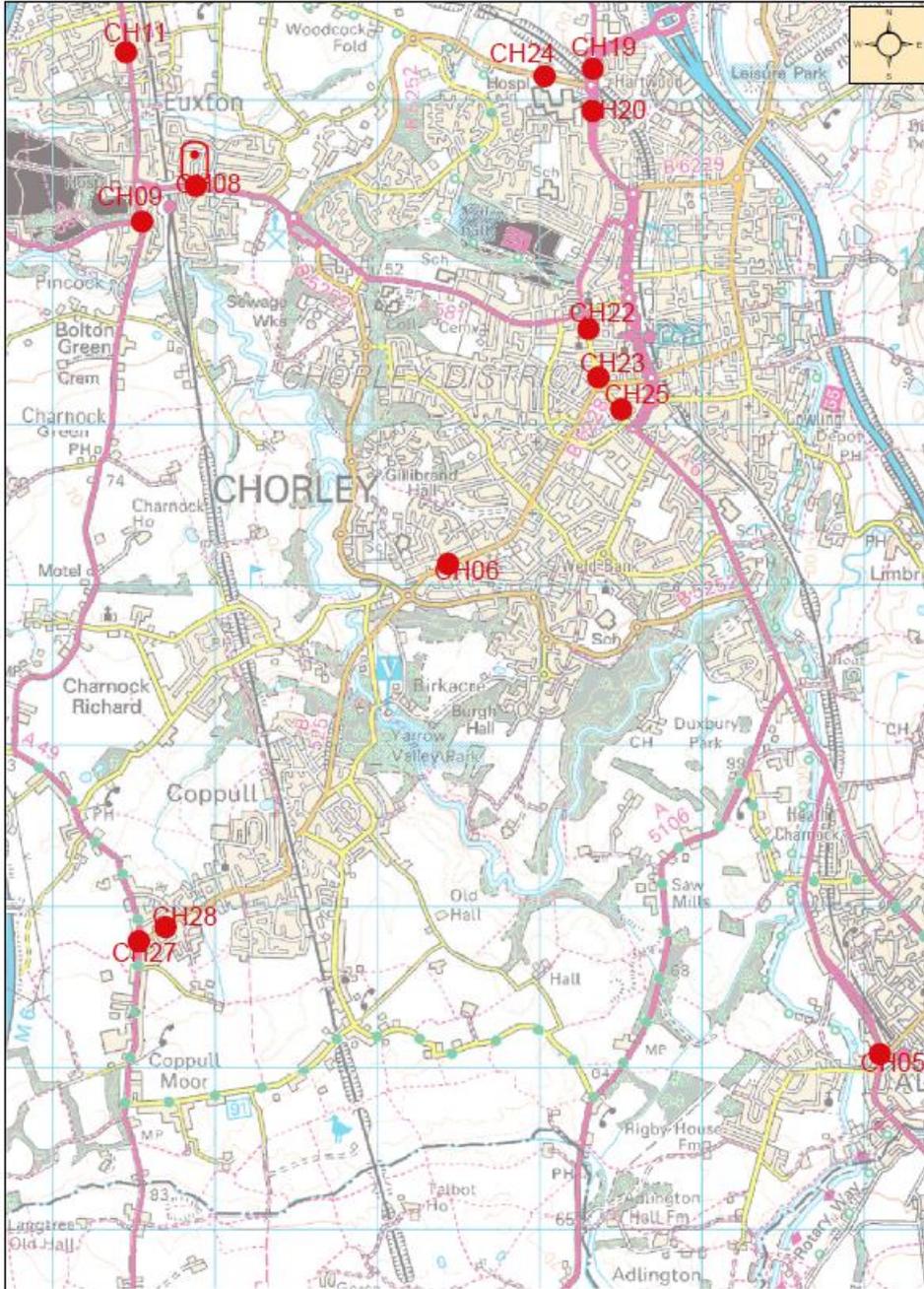
[3] Round was cancelled due to pandemic.

Cardiff Scientific Services, Exova (formerly Clyde Analytical), Kent Scientific Services, Kirklees MBC and Northampton Borough Council; these labs are not detailed as they no longer carry out NO₂ diffusion tube monitoring and therefore did not submit results for any of the AIR NO₂ PT rounds listed.

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

Figure D.1 – Map of Non-Automatic Monitoring Site





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Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁸

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

⁸ The units are in micrograms of pollutant per cubic metre of air (µg/m³).

Appendix F: Impact of COVID-19 upon LAQM

COVID-19 has had a significant impact on society. Inevitably, COVID-19 has also had an impact on the environment, with implications to air quality at local, regional, and national scales.

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO₂) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data⁹ suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)¹⁰ has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO₂ annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which represents an absolute

⁹ Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

¹⁰ Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

reduction of between 10 to 20 $\mu\text{g}/\text{m}^3$ if expressed relative to annual mean averages. During this period, changes in $\text{PM}_{2.5}$ concentrations were less marked than those of NO_2 . $\text{PM}_{2.5}$ concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that $\text{PM}_{2.5}$ concentrations during the initial lockdown period are of the order 2 to 5 $\mu\text{g}/\text{m}^3$ lower relative to those that would be expected under business-as-usual conditions.

As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

Impacts of COVID-19 on Air Quality within Chorley Borough

Following the March 2020 lock down traffic movements through the borough reduced significantly, although as restrictions were lifted in the late summer of 2020 visitor numbers, traffic along the motorways through the borough and general industrial and commercial activity have increased.

This reduction in traffic follow has result in significant reductions in Nitrogen Dioxide levels as can be seen by the monitoring results, despite levels already being low to begin with.

- Reductions of NO_2 concentrations of between 19 and 34% were experienced at roadside diffusion tube monitoring sites within the borough over the course of the year, with an average reduction of approx. 25%.

Opportunities Presented by COVID-19 upon LAQM within Chorley Borough

No LAQM related opportunities have arisen as a consequence of COVID-19 within Chorley.

Challenges and Constraints Imposed by COVID-19 upon LAQM within Chorley Council

During the Covid-19 pandemic work planned on to be undertaken on Air Quality was significantly hampered, due in part to the physical restrictions imposed on the Country and

in particular the northwest of England and due to the diversion of resources and staffing to responding to the pandemic.

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	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 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

References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Chorley Council 2020 Air Quality Annual Status Report; June 2020, Published by Chorley Council.