



**Westmorland  
& Furness  
Council**

# 2024 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995  
Local Air Quality Management, as amended by the  
Environment Act 2021

Date: September 2024

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## **Executive Summary: Air Quality in Our Area**

During 2023, South Lakeland District Council, Barrow Borough Council, Eden District Council and Cumbria County Council went through a process of Local Government Reorganisation, which resulted in the three legacy district and part of the County Council becoming Westmorland and Furness Council. The vesting day for Westmorland and Furness Council was the 1 April 2023. Following advice from DEFRA, the three legacy districts are submitting separate Air Quality Annual Status Reports for 2023, as the first quarter of the year (January to March) covers a period before vesting day. In future years, a single Annual Status Report and Air Quality Strategy will be submitted on behalf of the whole of Westmorland and Furness.

In 2023, twenty two sites across South Lakeland were monitored for Nitrogen Dioxide (NO<sub>2</sub>) and all twenty two sites are now below the national air quality annual mean objective of 40µg/m<sup>3</sup> for NO<sub>2</sub>, including those sites within the Kendal Air Quality Management Area (AQMA). The Council's voluntary annual mean target of 30µg/m<sup>3</sup> is also being met at twenty one of the twenty two sites.

Work towards progressing the requirements of the Council's Air Quality Action Plan (AQAP) has been delayed this year owing to the Local Government Reorganisation. Additionally, it has been agreed with DEFRA that the update of the AQAP can be deferred until 2025, when a decision will be made on the revocation of the AQMA, which will depend on the 2024 NO<sub>2</sub> figures. If the figures continue the downward trend and show compliance for a third consecutive year (at ten per cent below the annual mean objective), DEFRA will require Westmorland and Furness Council to apply for a revocation. We will use this opportunity to produce a combined local Air Quality Strategy for the whole district.

## **Air Quality in South Lakeland**

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality. In the

UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year<sup>1</sup>.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, people living in less affluent areas are most exposed to dangerous levels of air pollution<sup>2</sup>.

Table ES 1 provides a brief explanation of the key pollutants relevant to Local Air Quality Management and the kind of activities they might arise from.

**Table ES 1 - Description of Key Pollutants**

Pollutant	Description
Nitrogen Dioxide (NO <sub>2</sub> )	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO <sub>2</sub> )	Sulphur dioxide (SO <sub>2</sub> ) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM <sub>10</sub> and PM <sub>2.5</sub> )	<p>Particulate matter is everything in the air that is not a gas.</p> <p>Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes.</p> <p>PM<sub>10</sub> refers to particles under 10 micrometres. Fine particulate matter or PM<sub>2.5</sub> are particles under 2.5 micrometres.</p>

It is for this reason South Lakeland District Council are charged with the review and assessment of air quality at a local level.

We have monitored NO<sub>2</sub> levels around the district since 1995. Previous assessments have shown that this is the only pollutant of concern in the district and that the principal source is road traffic.

An Air Quality Management Area (AQMA) was declared in 2001 when levels were found to be above the Government’s national annual mean NO<sub>2</sub> objective at Lowther Street,

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<sup>1</sup> UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

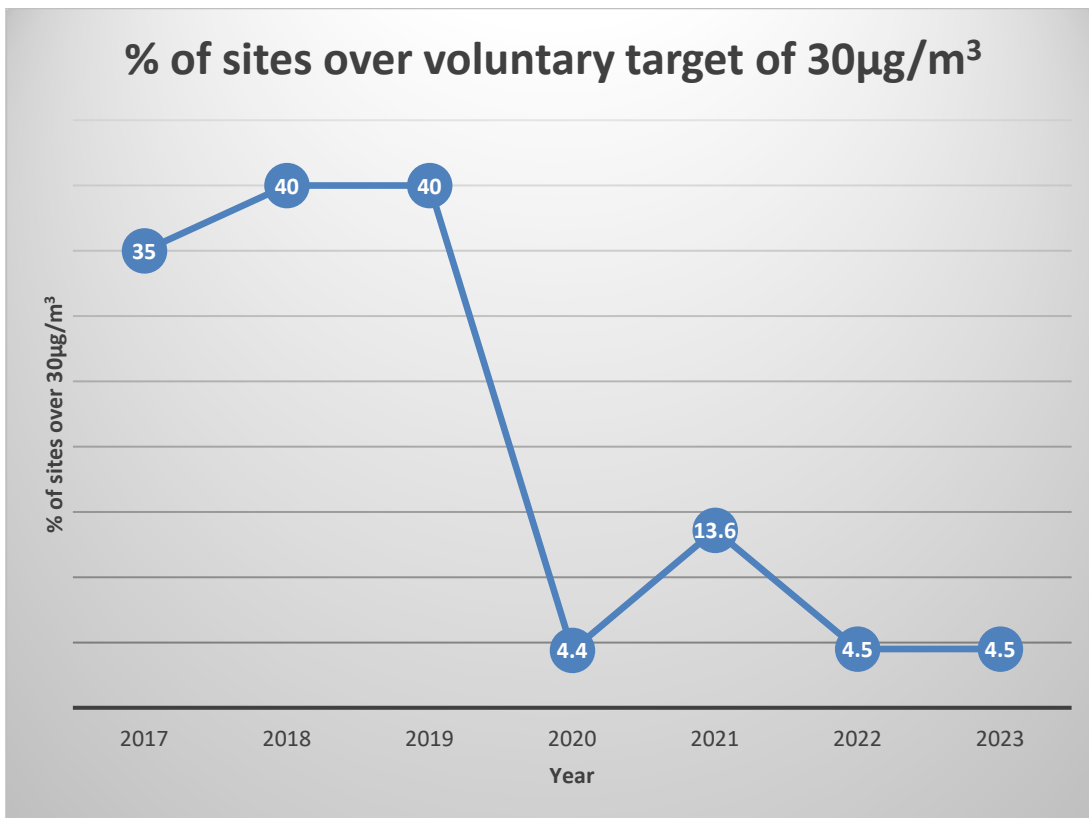
<sup>2</sup> Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

Kendal. This was then extended in 2010 to cover other roads in the town centre, as shown on DEFRA's UK Air website. All other areas of the district meet the annual mean objective and all areas, including Lowther Street and the AQMA meet the short-term 1-hour mean objective.

After the initial AQMA declaration we then drew up an AQAP. This was done in partnership with stakeholders who can influence air quality (Cumbria County Council, South Lakeland District Council Planners and Kendal Town Council) through the Kendal Traffic Pollution Working Group, to ensure that measures were in place to bring levels of NO<sub>2</sub> down to below the national objective. Progress on our action plan has been reported annually, with full reviews of the action plan undertaken on a regular basis, the last full review being in 2016.

Work on air quality in previous years in South Lakeland has involved extensive monitoring and working to reduce areas which are above the annual mean/exceedance level for NO<sub>2</sub>. Since the declaration of the AQMA and the implementation of our action plan, levels of NO<sub>2</sub> have shown a downward trend. Of the twenty two sites we monitor, no locations remain above the national mean objective of 40µg/m<sup>3</sup>. This is the fourth consecutive year that this has been the case and also the second year at ten per cent below the objective.

The Council have previously committed to adopting a voluntary annual mean objective of 30µg/m<sup>3</sup>, to ensure an ongoing reduction in NO<sub>2</sub>, even when the national objective has been met. Significant and pleasing progress has been made on achieving this target and in 2023 this voluntary target was being met at twenty one of the twenty two sites.



## Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where action is needed to protect people and the environment from the effects of air pollution.

The Environmental Improvement Plan<sup>3</sup> sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter (PM<sub>2.5</sub>), a pollutant of particular concern to human health. The Air Quality Strategy<sup>4</sup> provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero<sup>5</sup> details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of

<sup>3</sup> Defra. Environmental Improvement Plan 2023, January 2023

<sup>4</sup> Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

<sup>5</sup> DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

personal travel and the majority of Air Quality Management Areas are designated due to elevated concentrations heavily influenced by transport emissions.

In June 2023, then new Westmorland and Furness Council began to develop a new policy for the introduction of 20mph limits for communities within the area. The Council's Highways and Transport Strategic Board agreed that the policy was to be developed and the Cabinet agreed a one-off additional funding of £300,000 for the scheme. The aim of the scheme was to promote safer roads, reduce congestion, reduce vehicle pollution and noise and enhance the environment for walking and cycling. In December 2023, the Council launched a new streamlined route which makes it easier and quicker for communities to submit requests for the speed limits. This resulted in a total of 49 requests for 79 schemes across the area. Further progress has been made in 2024 (Westmorland and Furness Council, 2024).

In September 2023, Westmorland and Furness Council applied for funding for a Local Air Quality Grant scheme from DEFRA.

This included the 'Lot 1' application which was "for projects that will improve local air quality - especially in areas that are projected to remain in exceedance of local air quality objectives, such as for nitrogen dioxide. DEFRA will prioritise local authorities:

- where an exceedance has been identified
- that have one or more Air Quality Management Areas (AQMAs)"

(UK Government, 2023)

The Council also applied for the 'Lot 2' funding, for projects that would improve public awareness in local communities about the risks of air pollution, and projects for measures that deal with particulate matter.

For Lot 1, the Council chose to focus on taxis in our area, aiming to increase the number of ULEV vehicles by delivering training to taxi drivers on the desirability of electric vehicles and educating on the potential cost savings. The application also included providing financial grants for drivers to use towards purchasing an electric vehicle.

For Lot 2, the proposed plan was to improve public understanding of air quality and improve the Council's monitoring of key pollutants. This would have been done by using air quality sensors for measuring outdoor concentrations of particulates with the data being available to the public, as well as air quality monitors to assess the impact of solid fuel burning on appliances inside homes. With this funding, the Council planned to develop an

air quality strategy for the area and try to drive behavioural change from members of the public.

A great deal of time and resource was put into the application and the Council was successful in their bid for the Lot 2 grant. Despite this, the Air Quality Minister decided not to progress the scheme due to his “overarching duty to manage public monies”. As a result the money received by the Council had to be returned to DEFRA.

## Conclusions and Priorities

This report shows that all locations within the district comply with the 1-hour NO<sub>2</sub> objective and the national annual mean objective.

Levels at Burgundy’s, which is the site which has previously showed the highest results, have fallen since the declaration of the AQMA and with the progression of the air quality action plan we anticipate that this trend will continue.

Only one site remains above the voluntary target of 30mg/m<sup>3</sup>, which is very encouraging.

The main priority for the year ahead is to continue to form relationships with relevant stakeholders both within and out with Westmorland and Furness Council. This process has begun and has proven successful with the joint application for the air quality grant.

The Council will continue to respond to local queries regarding air quality and monitoring locations will be reviewed in order to accurately reflect the concerns of residents and stakeholders. We strive for continuous improvement in air quality and maintain a local annual average mean objective for NO<sub>2</sub> of 30mg/m<sup>3</sup>.

Responding to Planning applications is another important mechanism used by the Council to prevent future activities having an impact on local air quality and to assess areas of housing that have the potential to be affected by adverse air quality.



## Local Engagement and How to get Involved

Any consultations on air quality will be published on the council's website at [westmorlandandfurness.gov.uk/your-environment/pollution/air-quality/](https://westmorlandandfurness.gov.uk/your-environment/pollution/air-quality/) and public engagement is actively advertised and encouraged.

There are lots of simple things we can all do to improve air quality, including:

- Walk or cycle short journeys instead of using the car
- Use public transport
- Car share to work, school or activities
- Switch off your engine when stationary
- Choose a low emission vehicle such as an electric or hybrid. The network of charging points is continually growing across the district and across the country and these vehicles are becoming more popular and affordable
- Form a 'walking bus' for the journey to and from school

## Local Responsibilities and Commitment

This report was prepared by the Public Protection Team at Westmorland and Furness Council with the support of the following officers and departments at Westmorland and Furness Council and Kendal Town Council:

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This ASR has been approved by: Councillor Neil Hughes, Portfolio Holder, Westmorland and Furness Council

This ASR has been signed off by the Director of Public Health, Katrina Stephens, Westmorland and Furness Council

**If you have any comments on this report please send them to the Public Protection team at:**

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## Table of Contents

<b>Executive Summary: Air Quality in Our Area</b> .....	<b>i</b>
Air Quality in South Lakeland .....	i
Actions to Improve Air Quality .....	iv
Conclusions and Priorities .....	vi
Local Engagement and How to get Involved .....	vii
Local Responsibilities and Commitment .....	vii
<b>1 Local Air Quality Management</b> .....	<b>1</b>
<b>2 Actions to Improve Air Quality</b> .....	<b>2</b>
<b>2.1 Air Quality Management Areas</b> .....	<b>2</b>
<b>2.2 Progress and Impact of Measures to address Air Quality in South Lakeland District Council</b> .....	<b>4</b>
<b>2.3 PM<sub>2.5</sub> – Local Authority Approach to Reducing Emissions and/or Concentrations</b> .....	<b>16</b>
<b>3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance</b> .....	<b>17</b>
<b>3.1 Summary of Monitoring Undertaken</b> .....	<b>17</b>
3.1.1 Automatic Monitoring Sites .....	17
3.1.2 Non-Automatic Monitoring Sites .....	17
<b>3.2 Individual Pollutants</b> .....	<b>17</b>
3.2.1 Nitrogen Dioxide (NO <sub>2</sub> ) .....	18
<b>Appendix A: Monitoring Results</b> .....	<b>19</b>
<b>Appendix B: Full Monthly Diffusion Tube Results for 2023</b> .....	<b>28</b>
<b>Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC</b> .....	<b>30</b>
New or Changed Sources Identified Within South Lakeland District Council During 2023 .....	30
Additional Air Quality Works Undertaken by South Lakeland District Council During 2023 .....	30
QA/QC of Diffusion Tube Monitoring .....	30
Diffusion Tube Annualisation .....	31
Diffusion Tube Bias Adjustment Factors .....	31
NO <sub>2</sub> Fall-off with Distance from the Road .....	33
<b>Appendix D: Map(s) of Monitoring Locations and AQMAs</b> .....	<b>34</b>
<b>Appendix E: Summary of Air Quality Objectives in England</b> .....	<b>40</b>
<b>Glossary of Terms</b> .....	<b>41</b>
<b>References</b> .....	<b>42</b>

## Figures

Figure A.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations.....25

## Tables

Table 2.1 – Declared Air Quality Management Areas.....3

Table 2.2 – Progress on Measures to Improve Air Quality.....7

Table A.2 – Details of Non-Automatic Monitoring Sites .....19

Table A.3 – Annual Mean NO<sub>2</sub> Monitoring Results: Non-Automatic Monitoring (µg/m<sup>3</sup>) ....22

Table B.1 – NO<sub>2</sub> 2023 Diffusion Tube Results (µg/m<sup>3</sup>) .....28

Table C.2 – Bias Adjustment Factor .....33

Table E.1 – Air Quality Objectives in England .....40

# 1 Local Air Quality Management

This report provides an overview of air quality in South Lakeland during 2023. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), 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 order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by South Lakeland District 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 18 months. The AQAP should specify how air quality targets will be achieved and maintained, and provide dates by which measures will be carried out.

A summary of AQMAs declared by South Lakeland District Council can be found in Table 2.1. The table presents a description of the one AQMA that is currently designated within Westmorland and Furness Council. [Westmorland and Furness Council: SLDC Maps \(southlakeland.gov.uk\)](#) provides maps of the AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation is as follows:

- NO<sub>2</sub> annual mean

**Table 2.1 – Declared Air Quality Management Areas**

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Kendal AQMA	Declared 05.5.2001, amended 23.11.10	NO2 Annual Mean	An area encompassing properties bordering Lowther Street in Kendal, later extended to also cover properties bordering Kirkland.	NO	82.1	34.3	4	South Lakeland Action Plan Nov-16	<a href="https://southlakeland.gov.uk">SLDC Air Quality Action Plan 2016 (southlakeland.gov.uk)</a>

SLDC confirm the information on UK-Air regarding their AQMA(s) is up to date.

SLDC confirm that all current AQAPs have been submitted to Defra.

## 2.2 Progress and Impact of Measures to address Air Quality in South Lakeland District Council

DEFRA's appraisal of last year's ASR concluded:

*'The SLDC has one air quality management area (AQMA), located within the Kendal AQMA. There is one automatic monitoring unit and 17 non-automatic monitoring stations within the AQMA, all measuring NO<sub>2</sub> concentrations below the objective values. The highest NO<sub>2</sub> concentration within the AQMA is 35.4 µ/m<sup>3</sup>. The SLDC has been compliant for 3 years. If compliant in 2024, the SLDC should consider revocation of the Kendal AQMA.*

*The SLDC is making a clear effort in improving air quality within their jurisdiction. They have a robust list of air quality action plan (AQAP) methods which outline how they plan on improving air quality, and detailed implementation notes. In total, the SLDC have 16 AQAP measures, where 14 have been implemented and 2 completed measures. In next year's ASR it would be great to see more complete measures.*

*QA/QC of the monitoring data is good for both automatic and non-automatic air quality monitoring, justification for annualisation, bias adjustment and NO<sub>2</sub> fall off with distance from the roadside has been made, however, there are some inconsistencies between which guidance notes used between the automatic and non-automatic monitoring sites. TG16 guidance was used for QA/QC of the automatic monitoring station, A1, whereas TG22 has been used for the non-automatic stations. For consistency in the analysis of the data, please refer to TG22 for both monitoring methods.*

*SOCOTEC has been used for analysis of the diffusion tubes, however, it is not clear within the report which laboratory has been used. For future reports, please ensure that you confirm the laboratory location. All annualisation, bias adjustment factors and NO<sub>2</sub> drop off with distance from the roadside have all been justified and used when necessary.*

*The locations of the automatic and non-automatic monitoring sites have been included in Appendix D. All maps used are clear and show the precise locations of each of the monitoring locations, including the location of the Kendal AQMA.*

*Location of diffusion tube and monitoring has been mapped and placed in Appendix D. All maps used are clear and shows the placement of all diffusion tube locations along with automatic monitoring station, A1.*

*The revocation of an AQMA should be considered following three consecutive years of compliance with the relevant objective as evidenced through monitoring. Where there have been no*



*exceedances for the past five years, local authorities must proceed with plans to revoke the AQMA. The LAQM Technical Guidance 2022 is clear in this respect:*

*"There should not be any declared AQMAs for which compliance with the relevant objective has been achieved for a consecutive five-year period." (Point 3.57, page 50).*

*Please be aware that unless a likely exceedance has been identified in the area, Defra will not appraise AQAPs for AQMAs that have been in compliance for five years. Local Authorities will instead be advised to revoke the AQMA.*

*AQMAs should identify areas where air quality objectives are not being met or are likely to be at risk of not meeting them. Keeping AQMAs in place longer than required risks diluting their meaning and impacting public trust in LAQM.*

*Local authorities that do not have an AQMA should continue to monitor for exceedances and should still have a local air quality strategy in place to ensure air quality remains a high-profile issue, thereby enabling a quick response should there be any deterioration in condition. See LAQM Statutory Policy Guidance 2022 for more information.*

*Local Air Quality Strategies will not have a set format and authorities will be able to draw on content within their ASRs and local transport plans to produce them. As long as the strategy addresses air quality assessments and policy responsibilities under the LAQM regime, it can be combined with the authority's other relevant plans and strategies if it is logical to do so.*

*Defra will monitor whether Local Authorities have or are developing a local Air Quality Strategy through the ASR appraisal process.*

South Lakeland District Council has taken forward a number of direct measures during the current reporting year of 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 15 measures are included within Table 2.2, with the type of measure and the progress South Lakeland District Council have made during the reporting year of 2023 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

SLDC worked to implement these measures in partnership with the following stakeholders during 2023:

- Kendal Town Council
- Cumbria County Council

As discussed, if the figures continue on the downward trend it is anticipated that the AQMA can be revoked in 2025 and the action plan will be replaced with an Air Quality Strategy for the whole of Westmorland and Furness.

**Table 2.2 – Progress on Measures to Improve Air Quality**

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	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	Town Centre Strategy	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2019	2024	SLDC; Cumbria County Council	SLDC internal funding	NO	Not Funded	£500k - £1 million	Implementation	Unknown	Strategy in place; measures implemented	Masterplan now referred to as Kendal Town Centre Strategy published 2019	Flexible framework for future development and investment in Kendal including car parking, the road, walking and cycling networks and the public realm. Funding required to take strategy forward, delivery mechanism established, money to be made available for projects and further feasibility studies to deliver strategy.
3	Reducing bus emissions and increasing usage	Promoting Low Emission Plant	Public Procurement of stationary combustion sources	2016	2026	SLDC, bus companies	SLDC internal funding	NO	Not Funded	£100k - £500k	Implementation	Unknown	Number of buses using Kendal town centre and Lowther Street of Euro Std. 6	In July 2016 - 12 new Euro 6 double-deckers introduced on the 555 Lancaster to Keswick route, which includes Lowther Street. In July 2017, 7 new Euro 6 Volvo B5 TL double deck (open top) vehicles added on the on 599 service. Operators have idling policies in place. Anti-idling campaign ran Spring 2017 targeting buses and taxis in Kendal. Stagecoach are planning introduction of nine new Low Floor double deck buses in	Bids for funding to return buses to Stricklandgate in Kendal; improve the waiting environment in Kendal bus station; and traffic changes to reduced mileage in Ambleside in Bus Service Improvement Plan 2022 were not successful.

																		Kendal in 2023, which will have significantly lower emissions.	
4	Implementation of Kendal Transport Measures	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2016	2020	CCC	Cumbria County Council Local Growth Fund	NO	Not Funded	£500k - £1 million	Completed	Unknown	Number of schemes completed	13 schemes out of 16 completed to date. Includes pedestrian improvements such as crossings and footpaths, cycleways, road widening and junction improvements. The remaining 3 will not be undertaken due to other restrictions. Traffic calming through speed humps no longer align with CCC policy. The final scheme A5284 Sandylands/ Appleby Road is not deliverable.	As identified in 'Kendal Transport Improvement Study'. 3 schemes removed as undeliverable.				

5	Car Parking Review (including park and walk and park and cycle)	Traffic Management	Other	2016	2021	SLDC	SLDC internal funding	NO	Not Funded	Implementation	Unknown	Town Centre AADT's; car park usage figures	Car park on County Hall – that may now serve to reduce car journeys of visitors who access Kendal down Windermere Road or Burneside Road as they may be diverted to find parking at the North end of Kendal before accessing the Town centre. Lowther Street AADT: March 2016 = 10,759; March 2017 = 11,066; March 2018 = 11,013; March 2019 = 11,371 Car park tickets sold in Kendal: 1 Jan – 31 Aug 2015 = 577,665; 1 Jan – 31 Aug 2016 = 534,629; 1 Jan - 31 Aug 2017 = 539,588; 1 Jan - 31 Aug 2018 = 564,740 1 Jan - 31 Aug 2019 = 553,889 1 Jan - 31 Aug 2020 = 607586 1 Jan - 31 Aug 22 = 281650 1 Jan – 31 Aug 22 = 275300	Plan to use Kendal Leisure Centre as park and walk / cycle shelved due to lack of funding as deemed "before it's time". Proving difficult as a Council to balance economy (bringing shoppers in by providing town centre parking) against the air quality benefits of keeping cars out of town. Prioritisation is a political issue. *NB reporting of figures revised in 2018 - multi-storey usage had been omitted
6	Kendal Strategic Infrastructure Study/ Kendal Highways and Transport improvements Study	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2016	2019	CCC, SLDC	CCC, SLDC, KTC	NO	Not Funded	Completed	Unknown	Strategic Study completed and measures delivered	This study considers longer term infrastructure requirements of Kendal, taking into account recent flooding events, air quality and proposed future development (including one way system, north / south travel and 'Northern	Delays due to linked projects but this study is the first step and significant additional work and funding will be required prior to any delivery.

														Development Route').	
7	Public electric charging points	Promoting Low Emission Transport		2015	2023	SLDC	SLDC OLEV funding	NO	Not Funded	£100k - £500k	Implementation	Unknowin	Number and useage of EV charging points	<p>Currently there are 54 public EV chargers in Kendal. The council installed 24 22kW chargers into its car parks in South Lakeland including South Lakeland House, Library Road Kendal, Redbank Road Grasmere and Buxton Place Ulverston. These charge points went live in Autumn 2022 and have been operating at around 25% capacity, with usage rising. They support a 2-3 hour charge time for vehicles and are the first step in providing EV infrastructure to residents.</p>	<p>The council has received £4.5 Million in LEVI funding from government, to further scale up an EV charging network across the whole of the district. This will include significant investment in on-street charging. The council is producing an Electric Vehicle infrastructure strategy and considering options to ensure equality of accessibility to charge points for residents. The EV infrastructure strategy will be influenced by the councils air quality management plans.</p>
8	Reduced price parking/parking permits for cleaner vehicles	Traffic Management	Emission based parking or permit charges	2016	2025	SLDC	SLDC	NO	Not Funded		Implementation		No. of reduced price parking permits issued	<p>Permits issued:                  2015 = 25                  2016 = 33                  2017 = 50                  2018 = 70                  2019 = 54                  2020 = 44                  2022 = 42                  2023 = no figures due to system change</p>	<p>Discount on price of annual parking pass for Band A vehicles. Discount increased to £100 April 2017.</p>

9	Enforcement of parking/loading restrictions	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	2016	2025	Cumbria County Council	Cumbria County Council	NO	Not Funded		Implementation		Number of PCN's served	2010 = 15 2011 = 273 2012 = 254 2013 = 61 2014 = 127 2015 = 121 2016 = 138 2017 = 582 2018 = 403 2019 = 134 2020 = 170 2021=793 2022 = 1542 2023 = 954	Staffing issues within the parking services team hindered performance, these are now resolved hence the increase in PCN's served.
10	Encouraging walking	Transport Planning and Infrastructure	Other	2016	2025	SLDC/KTC/CCC	KTC/SLDC	NO	Not Funded		Implementation	Unknown	Number of cars using Park and Walk sites	KTC continue to distribute a Walking Trails leaflet for Kendal - will encourage walking into town from residential areas. Improvements made. SLDC liaising with CCC Public Health team to target travel to school. Kendal Bid project for Kendal Leisure Centre to become a Park and Walk / Cycle, including improved links to town centre, did not receive funding. No Park & Walk yet in operation, so no usage figures available.	Further measures to enhance the walkability of the town to be worked up through the Kendal Town Centre Strategy.

11	Encouraging cycling, enhanced cycle routes and cycle parking in Kendal	Transport Planning and Infrastructure	Cycle network	2015	2020	CCC/KTC/SLDC	Cumbria County Council, Local Growth Fund, Defra AQ grant, Health and well being funding	NO	Not Funded	Implementation	Unknown	Length of cycleway. Number of cycle stands installed	<p>850m of cycleway installed in Phase 1 of Burton Rd Cycleway and 1.41km now completed in Phase 2. Shap Road section to follow.</p> <p>Lancaster Canal Partnership implementing the Kendal to Lancaster canal cycleway to encourage cycling from Natland to Kendal. Work now started on completing missing sections of 'Kendal X', linking 4 corners of Kendal. Also potential for cycle routes to be combined in flood defence works which received planning approval early 2019. Cycle parking now installed in most SLDC car parks. 46 Defra-funded cycle stands installed in Kendal, with net increase of 25 stands, alongside 20 bike boxes installed by Kendal BID. Bike Hub installed in Westmorland Shopping Centre, Kendal - secure bike parking, changing rooms, lockers and maintenance stand. To be publicised following Purdah. Electric</p>	<p>Cycle routes funded by Local Growth Fund. Funding was reprofiled to 2018/19 which has delayed implementation of the schemes. Cycle parking funded by Defra AQ Grant. Cycling Hub in Westmorland Shopping Centre delayed pending investigation of other options. Further measures to encourage cycling to be worked up through the Kendal Town Centre Master Plan. No cycle count since 2017 or 2018 due to CCC funding cuts.</p>
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12	Reducing Taxi Emissions	Promoting Low Emission Transport		2015	2023	SLDC	SLDC	NO	Not Funded		Implementation	Unknown	Policy in place. % of licensed taxis of Euro Standard 6	Taxi Licensing Policy review delayed until 2023. Anti-idling campaign ran Spring 2017 targeting buses and taxis in Kendal. Another campaign ran on Clean Air Day, with Officers from South Lakeland and Cumbria County Council and the Police handing out leaflets to drivers found idling. Internal reorganisation has led to the employment of locality officers who will be authorised to serve Fixed Penalty Notices and carry out education/enforcement role.	Awaiting the inclusion in the Council constitution to allow for the service of FPN's
13	Councils climate change action plan	Promoting Travel Alternatives		2016	2025	SLDC	SLDC internal funding/historic AQ grant	YES	Partially Funded		Implementation	Unknown	Number of active travel projects completed.	Some small projects completed-staff cycle morning at the Leisure Centre, grant funding through Climate Change fund for E-bikes, officer support on E-Cargo bike scheme and the Council's greening campaign has led to creation of community actions groups (SENS, Sustainable Duddon) that have been exploring e-bikes projects.	Lack of resources funding and expertise (active travel officer).

14	Planning policy prioritise air quality (Local Plan Policy)	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2015	2032	SLDC	SLDC	NO	Not Funded		Implementation	Unknown	CIL liabilities, CIL receipts, CIL spending decisions. Adoption of new policies	Local Plan under review, Issues and Options Consultation 2022. Existing policies being reviewed include those relating to pollution and transport.	
15	20mph zones in Kendal	Traffic Management	Reduction of speed limits, 20mph zones	2017	2024	Kendal Town Council Internal Funding	KTC/SLDC	NO	Not Funded		Completed	Unknown	Number of 20mph zones	Zone boundary agreed with CCC.	£300,000 funding secured to implement zones across WAF. Streamlined process for application of 20mph zones from residents
16	Enhanced green infrastructure	Other	Other	2016	2025	SLDC/KTC internal funding/ locally important projects grant	SLDC/ KTC	NO	Not Funded		Completed	Unknown	Number of projects completed	Several schemes now completed by Kendal Town Council	

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy<sup>6</sup>, local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter (PM<sub>2.5</sub>). There is clear evidence that PM<sub>2.5</sub> (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

As discussed previously in this report, in 2023 the Council spent a great deal of time producing a grant application for a 'Local Air Quality Grant scheme from DEFRA'.

The Lot 2 application, for projects that would improve public awareness in local communities about the risks of air pollution, and projects for measures that deal with particulate matter and the proposed plan was to improve public understanding of air quality and improve the Council's monitoring of key pollutants. This would have been done by using air quality sensors for measuring outdoor concentrations of particulates with the data being available to the public, as well as air quality monitors to assess the impact of solid fuel burning on appliances inside homes. From this, the Council planned to develop an air quality strategy for the area and try to drive behavioural change from members of the public.

A great deal of time and resource was put into the application and the Council was successful in their bid for the Lot 2 grant. Despite this, the Air Quality Minister decided not to progress the scheme due to his "overarching duty to manage public monies" and as a result the money received by the Council had to be returned to DEFRA.

Obviously, this set us back in monitoring particulates but this will be re-visited when the new Westmorland and Furness Council develops their Air Quality Strategy.

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<sup>6</sup> Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

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

This section sets out the monitoring undertaken within 2023 by South Lakeland District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2019 and 2023 to allow monitoring trends to be identified and discussed.

### 3.1 Summary of Monitoring Undertaken

#### 3.1.1 Automatic Monitoring Sites

South Lakeland did not undertake automatic (continuous) monitoring at any sites during 2023. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. We do not have any local circumstances in South Lakeland that mean we would need to report on these pollutants. National monitoring results are available at <https://uk-air.defra.gov.uk/>

#### 3.1.2 Non-Automatic Monitoring Sites

SLDC undertook non- automatic (i.e. passive) monitoring of NO<sub>2</sub> at twenty two sites during 2023. Table A.1 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.

### 3.2 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.

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

Figures A.2 and A.3 in Appendix A compare the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past five years with the air quality objective of 40µg/m<sup>3</sup>. 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. For diffusion tubes, the full 2023 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Monitoring has shown that in 2023, after bias adjustment and distance correction (for those sites which are not representative of public exposure) there were no sites in the District that were above the annual mean objective of 40µg/m<sup>3</sup>.

There were 0 sites within 10% of the objective.

The Council has adopted a voluntary target of 30µg/m<sup>3</sup>, to ensure an ongoing reduction in NO<sub>2</sub>, even when the national objective has been met. This was being met at twenty one of the twenty two sites in 2023, which is very encouraging. The only remaining site above the voluntary target is the site known as Burgundy's, on Lowther Street which is in the AQMA and has historically shown the highest results.

## 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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
N4	St Thomas' School, Kendal	Urban Background	351100	493720	NO2	No	6.4	2.9	No	2.6
N9	1 Lowther St, Kendal	Kerbside	351490	492610	NO2	No	0.0	0.9	No	2.9
N11, N13, N14	24 Lowther St, Kendal	Kerbside	351605	492640	NO2	Yes	0.0	0.8	No	2.5
N17	Kirkland, Kendal	Roadside	351570	492410	NO2	Yes	0.5	4.1	No	3.0
N18	Cooks Corner, Bowness	Roadside	340340	497010	NO2	No	0.0	1.9	No	2.6
N19	Beezon Road, Kendal	Kerbside	351897	493022	NO2	Yes	3.2	0.5	No	2.5
N20	29 Wildman Street, Kendal	Roadside	351970	493070	NO2	Yes	0.5	1.5	No	2.6
N21	Blackhall Rd, Kendal	Roadside	351680	492840	NO2	Yes	0.0	2.3	No	2.5
N23	99 Highgate, Kendal	Kerbside	351484	492434	NO2	Yes	1.8	0.8	No	2.4

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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
N24	147 Highgate, Kendal	Roadside	351499	492314	NO2	Yes	0.0	2.7	No	3.1
N25	Burgundy's Kendal	Kerbside	351557	492624	NO2	Yes	0.0	0.9	No	2.6
N26	31 Lowther St, Kendal	Kerbside	351619	492637	NO2	Yes	0.0	0.8	No	2.6
N27	Kent Street, Kendal	Roadside	351674	492695	NO2	Yes	5.1	2.6	No	2.4
N31	42 Stramongate, Kendal	Roadside	351712	492832	NO2	Yes	0.6	2.8	No	2.4
N33	Sandes Ave, Kendal	Roadside	351597	493052	NO2	Yes	0.7	2.7	No	2.4
N36	11 Longpool, Kendal	Kerbside	352016	493142	NO2	Yes	3.3	0.6	No	2.5
N37	9 Wildman St, Kendal	Roadside	351934	493043	NO2	Yes	0.0	1.5	No	2.5
N38	Windermere Rd, Kendal	Roadside	351499	493022	NO2	Yes	12.0	1.5	No	2.5
N41	County Road, Ulverston	Roadside	328698	478158	NO2	No	5.8	2.2	No	2.5
N43	Casson St, Ulverston	Urban Background	329049	478471	NO2	No	0.3	1.1	No	2.6
N46	46 Canal Street, Ulverston	Kerbside	329316	478554	NO2	No	0.0	1.3	No	2.5
SLAKE/20A/NWB 3S1	22 Canal Street, Ulverston	Kerbside	329356	478604	NO2	No	0.0	1.3	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 NO<sub>2</sub> Monitoring Results: Non-Automatic Monitoring (µg/m<sup>3</sup>)**

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
N4	351100	493720	Urban Background	100	100.0	11.0	5.6	7.1	6.7	5.8
N9	351490	492610	Kerbside	100	100.0	29.6	22.1	28.0	26.5	25.2
N11, N13, N14	351605	492640	Kerbside	100	100.0	28.8	22.5	24.6	22.5	20.6
N17	351570	492410	Roadside	100	100.0	25.0	18.5	21.1	21.3	19.2
N18	340340	497010	Roadside	100	100.0	25.8	15.9	20.5	19.3	18.4
N19	351897	493022	Kerbside	100	100.0	35.6	20.9	28.1	26.8	25.5
N20	351970	493070	Roadside	100	100.0	32.7	26.1	31.9	29.7	28.6
N21	351680	492840	Roadside	100	100.0	32.3	25.1	28.6	28.6	23.4
N23	351484	492434	Kerbside	100	100.0	34.0	24.6	26.8	25.8	24.2
N24	351499	492314	Roadside	100	100.0	24.8	19.7	20.8	20.3	19.1
N25	351557	492624	Kerbside	100	100.0	<b>40.2</b>	30.5	39.4	35.4	34.3
N26	351619	492637	Kerbside	100	100.0	33.9	23.3	29.6	28.2	26.7

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
N27	351674	492695	Roadside	100	100.0	29.9	20.4	26.1	24.0	21.2
N31	351712	492832	Roadside	100	100.0	29.3	22.1	27.4	25.5	23.5
N33	351597	493052	Roadside	100	100.0	27.4	19.8	25.9	23.6	21.9
N36	352016	493142	Kerbside	100	100.0	25.7	20.0	23.8	22.2	21.6
N37	351934	493043	Roadside	100	100.0	33.3	29.5	31.9	29.1	30.0
N38	351499	493022	Roadside	100	100.0	29.3	21.2	26.8	25.0	24.6
N41	328698	478158	Roadside	100	100.0	29.0	20.0	24.5	24.9	22.0
N43	329049	478471	Urban Background	100	100.0	11.7	7.8	8.9	9.2	7.8
N46	329316	478554	Kerbside	100	100.0	33.3	22.7	29.1	27.9	26.4
SLAKE/20A/NWB3S1	329356	478604	Kerbside	100	100.0	-	20.5	20.6	21.2	19.7

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

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

Where exceedances of the NO<sub>2</sub> annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2023.

**Notes:**

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

Exceedances of the  $\text{NO}_2$  annual mean objective of  $40\mu\text{g}/\text{m}^3$  are shown in **bold**.

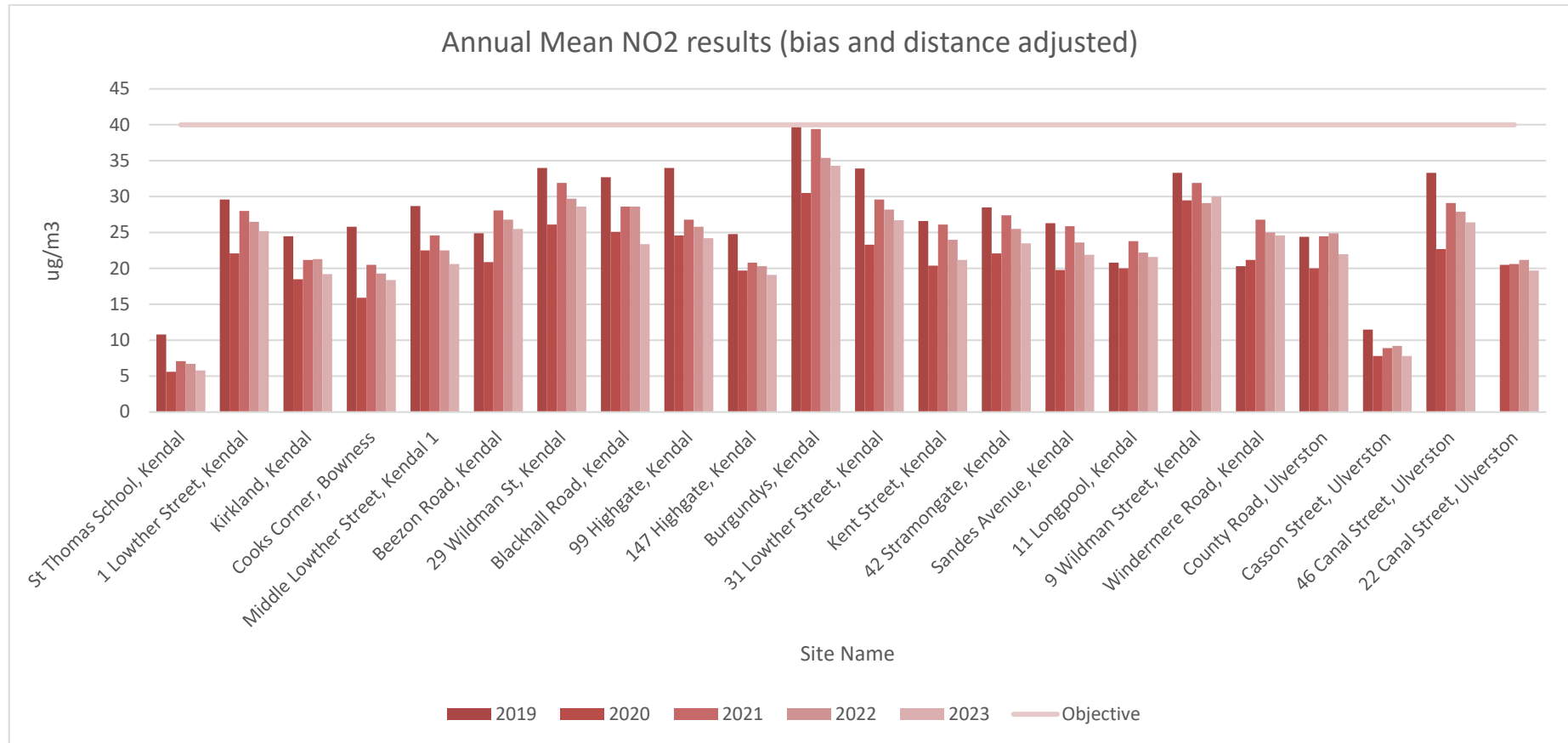
All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

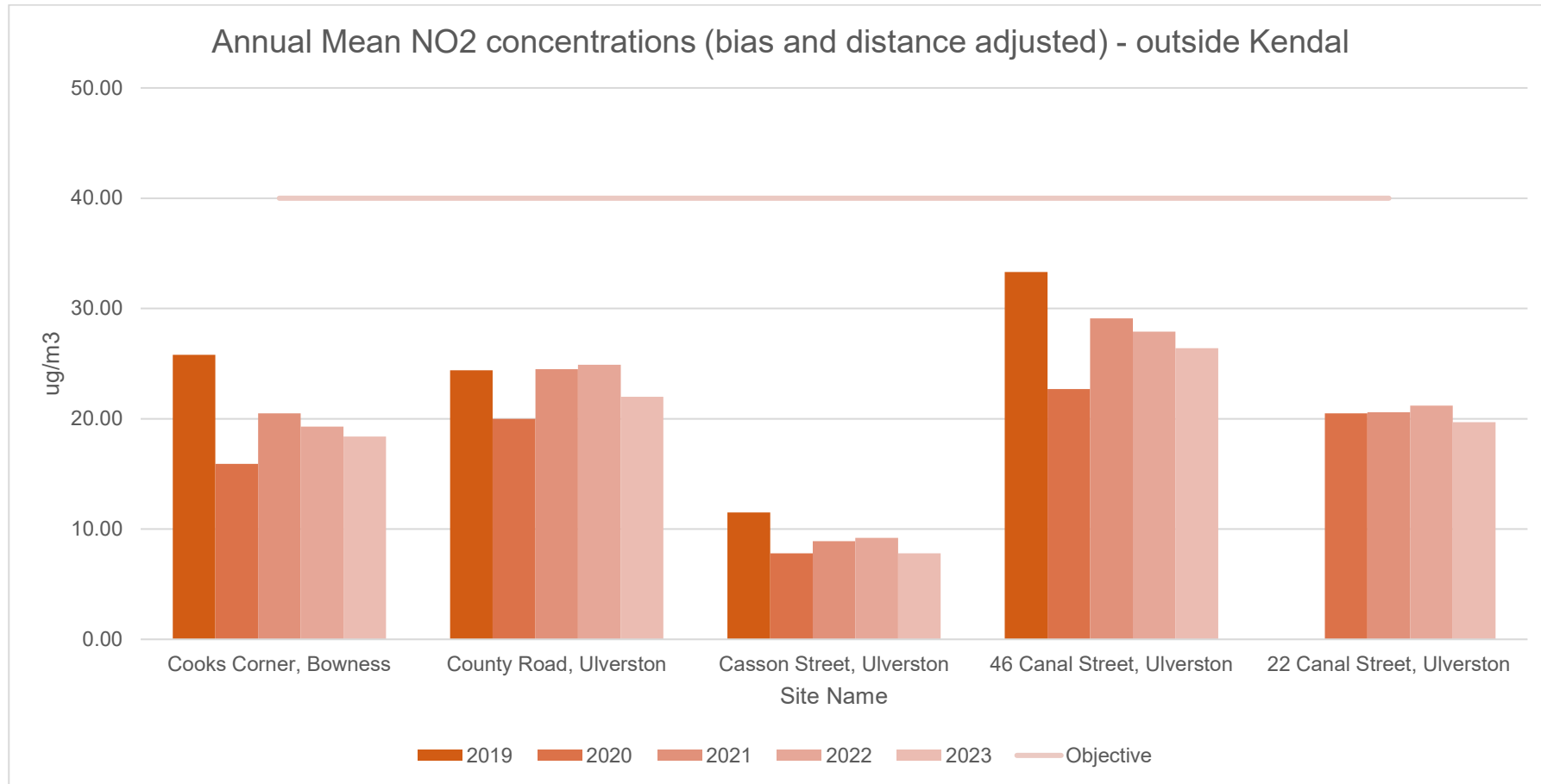
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(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%).

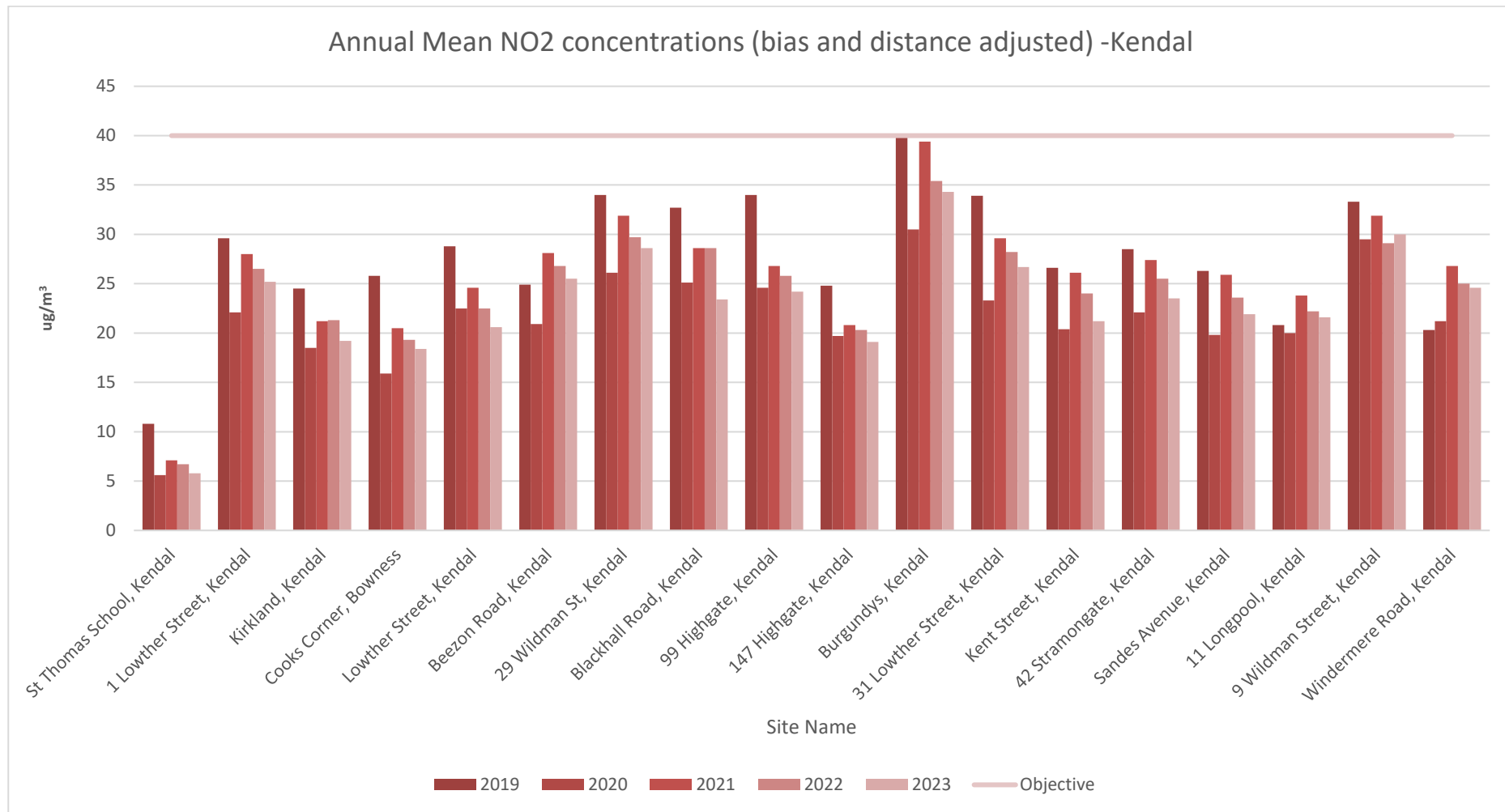
**Figure A.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations**



**Figure A.2 – Trends in Annual Mean NO<sub>2</sub> Concentrations outside Kendal (bias and distance adjusted)**



**Figure A.3 – Trends in Annual Mean NO<sub>2</sub> Concentrations - Kendal (bias and distance adjusted)**



## Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO<sub>2</sub> 2023 Diffusion Tube Results (µg/m<sup>3</sup>)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
N4	351100	493720	12.9	10.4	8.6	5.8	6.9	5.4	4.0	4.3	7.9	7.5	9.7	8.7	7.7	5.8	-	
N9	351490	492610	56.4	34.6	37.2	29.9	31.4	28.6	23.7	23.7	35.5	31.9	38.8	32.0	33.6	25.2	-	
N11	351605	492640	37.9	33.5	30.7	29.0	25.1	24.7	0.6	22.7	29.3	26.1	28.7	26.8	-	-	-	Triplicate Site with N11, N13 and N14 - Annual data provided for N14 only
N13	351605	492640	35.5	32.2	38.6	36.6	28.4	24.4	20.3	19.4	27.4	28.9	38.5	25.9	-	-	-	Triplicate Site with N11, N13 and N14 - Annual data provided for N14 only
N14	351605	492640	32.8	29.9	29.6	22.1	28.4	22.0	19.1	21.0	27.4	28.0	33.0	24.1	27.5	20.6	-	Triplicate Site with N11, N13 and N14 - Annual data provided for N14 only
N17	351570	492410	37.4	28.6	28.8	25.5	21.0	18.4	20.4	18.9	27.7	23.4	29.8	27.1	25.6	19.2	-	
N18	340340	497010	26.6	33.0	26.4	24.1	23.5	18.0	24.7	21.6	26.0	22.2	28.8	19.0	24.5	18.4	-	
N19	351897	493022	53.9	38.9	37.4	34.2	29.5	25.8	23.0	24.8	33.4	31.7	37.1	37.8	34.0	25.5	-	
N20	351970	493070	46.3	41.7	43.2	36.6	33.6	31.2	31.4	29.5	38.2	36.5	47.4	41.6	38.1	28.6	-	
N21	351680	492840	41.9	37.5	29.9	26.0	29.6	24.8	29.3	26.3	36.5	27.5	40.9	23.7	31.2	23.4	-	
N23	351484	492434	55.1	33.2	37.1	27.2	28.2	25.1	21.4	21.5	33.4	33.8	38.5	32.7	32.3	24.2	-	
N24	351499	492314	37.1	27.7	30.0	23.2	24.5	23.4	16.7	16.3	22.1	25.9	33.7	25.0	25.5	19.1	-	
N25	351557	492624	47.0	48.0	47.7	48.9	44.3	41.0	31.0	33.9	42.2	39.2	86.9	38.9	45.8	34.3	-	
N26	351619	492637	41.3	41.7	39.4	45.8	29.1	27.5	25.9	27.3	36.7	35.4	44.5	32.3	35.6	26.7	-	
N27	351674	492695	37.3	35.0	31.7	29.6	27.8	22.7	20.6	12.8	31.6	24.9	34.8	29.8	28.2	21.2	-	
N31	351712	492832	40.8	34.0	34.4	34.5	28.0	27.8	18.7	24.8	30.8	31.7	42.3	27.5	31.3	23.5	-	
N33	351597	493052	33.5	34.8	32.3	32.1	29.6	29.2	18.3	23.8	23.4	31.1	33.7	29.3	29.3	21.9	-	



DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
N36	352016	493142	34.9	30.1	35.1	31.5	29.3	31.8	18.5	21.8	29.0	24.6	33.1	25.8	28.8	21.6	-	
N37	351934	493043	43.3	43.9	49.0	40.8	39.9	40.3	31.1	32.6	40.7	38.4	46.9	32.9	40.0	30.0	-	
N38	351499	493022	39.3	38.3	39.3	35.4	33.4	28.9	21.0	23.6	30.8	33.1	42.8	27.8	32.8	24.6	-	
N41	328698	478158	43.7	37.0	29.8	20.2	26.3	23.7	21.5	21.9	33.8	27.6	39.7	27.0	29.4	22.0	-	
N43	329049	478471	15.9	13.4	11.6	6.9	7.8	8.3	7.2	6.8	11.1	10.2	14.2	11.7	10.4	7.8	-	
N46	329316	478554	43.3	43.7	38.2	23.1	31.4	30.2	33.3	28.3	36.7	33.6	49.0	31.9	35.2	26.4	-	
SLAK E/20A/NWB3 S1	329356	478604	31.1	33.0	29.1	25.2	24.3	22.0	23.0	23.2	26.9	25.8	26.5	24.5	26.2	19.7	-	

- All erroneous data has been removed from the NO<sub>2</sub> diffusion tube dataset presented in Table B.1.
- Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.
- National bias adjustment factor used.
- Where applicable, data has been distance corrected for relevant exposure in the final column.
- SLDC confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

**Notes:**

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

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

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 South Lakeland District Council During 2023**

South Lakeland District Council has not identified any new sources relating to air quality within the reporting year of 2023.

### **Additional Air Quality Works Undertaken by South Lakeland District Council During 2023**

South Lakeland District Council has not completed any additional works within the reporting year of 2023.

### **QA/QC of Diffusion Tube Monitoring**

South Lakeland District Council's diffusion tubes are supplied and analysed by Environmental Scientifics Group (ESG) using 20% triethylamine (TEA) in water by UKAS accredited SOCOTEC.

The samples have been analysed in accordance with SOCOTEC's standard operating procedure ANU/SOP/1015. This method meets the guidelines set out in DEFRA's 'Diffusion Tubes for Ambient NO<sub>2</sub> Monitoring: Practical Guidance.'

The tubes were prepared by spiking water:triethanolamine (80:20) onto the grids prior to the tubes being assembled. The tubes were desorbed with distilled water and the extract analysed using a segmented flow autoanalyser with ultraviolet detection. All samples were received in good condition, unless otherwise stated in the comments field of results table. Please note:

(i) As set out in the practical guidance, the results were initially calculated assuming an ambient temperature of 11°C, the reported values **have** been adjusted to 20°C to allow for direct comparison with EU limits.

In the AIR NO<sub>2</sub> PT proficiency testing scheme, 100% of results submitted in 2019 and 2020 by SOCOTEC (formerly ESG), who supply and analyse the Council's diffusion tubes, were subsequently determined to be satisfactory. Their test method for NO<sub>2</sub> tubes meets the guidelines in Defra's guidance for diffusion tube monitoring and they are UKAS accredited.

Diffusion tubes are installed and changed each month by the Council according to the Council's document "Procedure for Air Quality Monitoring" and in accordance with Defra's documents "Diffusion Tubes for Ambient Monitoring: Practical Guidance" and TG(16).

Spurious or unusual diffusion tube results are removed from the data set.

### **Diffusion Tube Annualisation**

All diffusion tube monitoring locations within South Lakeland District Council recorded data capture of 75% therefore it was not required to annualise any monitoring data.

### **Diffusion Tube Bias Adjustment Factors**

The diffusion tube data presented within the 2023 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.TG22 provides

guidance with regard to 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<sub>x</sub>/NO<sub>2</sub> continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

The National Diffusion Tube Bias Adjustment Factor Spreadsheet version 03/24 has been used (see the table below) and subsequently SLDC have applied a national bias adjustment factor of 0.75 to the 2023 monitoring data. A summary of bias adjustment factors used by SLDC over the past five years is presented in

Table C.1.

National Diffusion Tube Bias Adjustment Factor Spreadsheet						Spreadsheet Version Number: 03/24				
Follow the steps below <b>in the correct order</b> to show the results of <b>relevant</b> co-location studies						This spreadsheet will be updated at the end of June 2024				
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.						<a href="#">LAQM Helpdesk Website</a>				
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.						Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.				
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 <sup>2</sup> 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 <sup>2</sup>	If you have your own co-location study then see footnote <sup>1</sup> . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953						
Analysed By <sup>1</sup>	Method	Year <sup>2</sup>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> )	Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> )	Bias (B)	Tube Precision <sup>3</sup>	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	20% TEA in water	2023	KS	New Forest District Council	10	32	21	50.1%	G	0.67
SOCOTEC Didcot	20% TEA in water	2023	KS	Marlyebone Road intercomparison	11	52	38	37.1%	G	0.73
SOCOTEC Didcot	20% TEA in water	2023	R	South Oxfordshire District Council	12	22	16	33.9%	G	0.75
SOCOTEC Didcot	20% TEA in water	2023	R	South Oxfordshire District Council	10	33	29	15.8%	G	0.86
SOCOTEC Didcot	20% TEA in water	2023		<b>Overall Factor<sup>2</sup> (4 studies)</b>				<b>Use</b>		<b>0.75</b>

**Table C.1 – Bias Adjustment Factor**

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.75
2022	National	03/23	0.76
2021	National	09/22	0.77
2020	National	09/21	0.74
2019	National	09/20	0.76

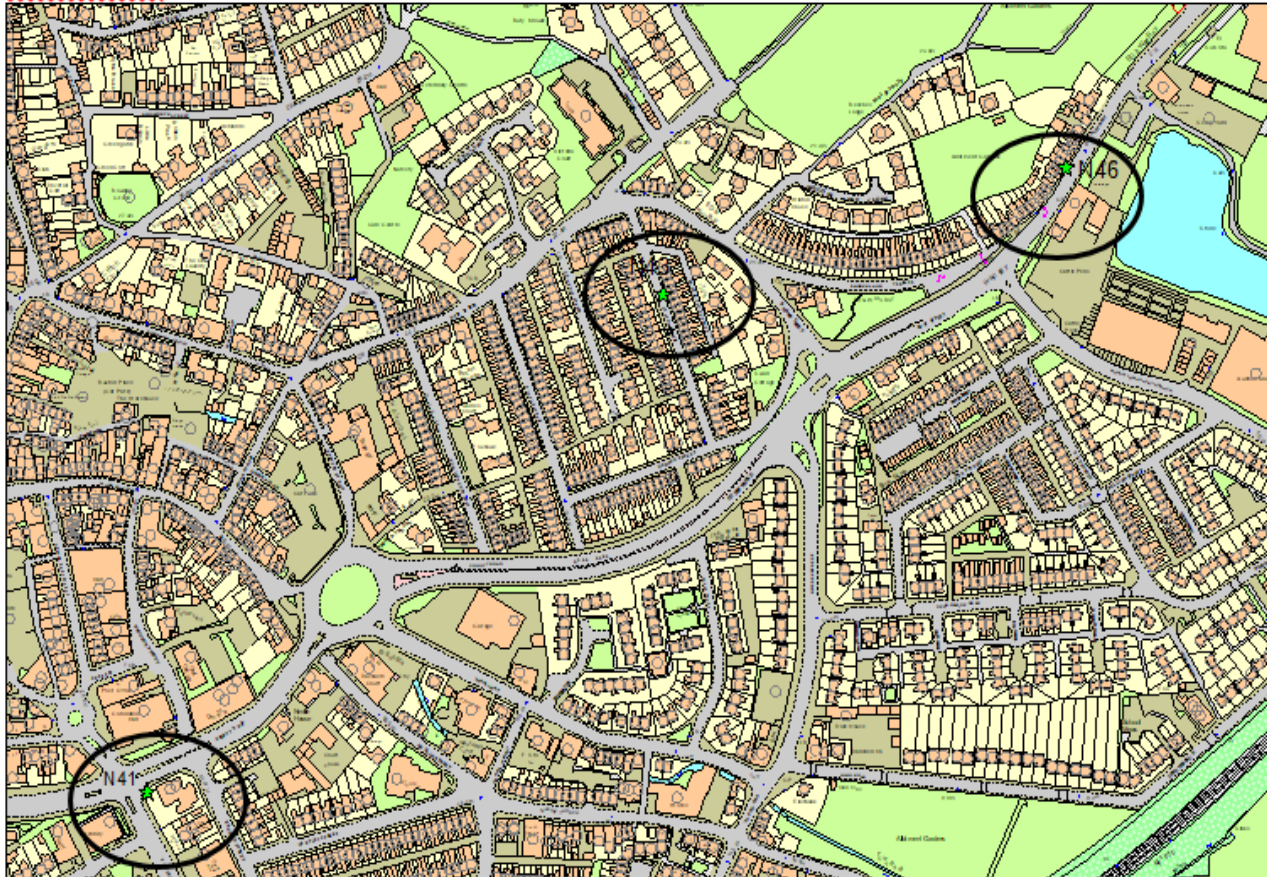
**NO<sub>2</sub> Fall-off with Distance from the Road**

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO<sub>2</sub> concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO<sub>2</sub> fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO<sub>2</sub> concentrations corrected for distance are presented in Table B.1. No diffusion tube NO<sub>2</sub> monitoring locations within SLDC required distance correction during 2023.

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

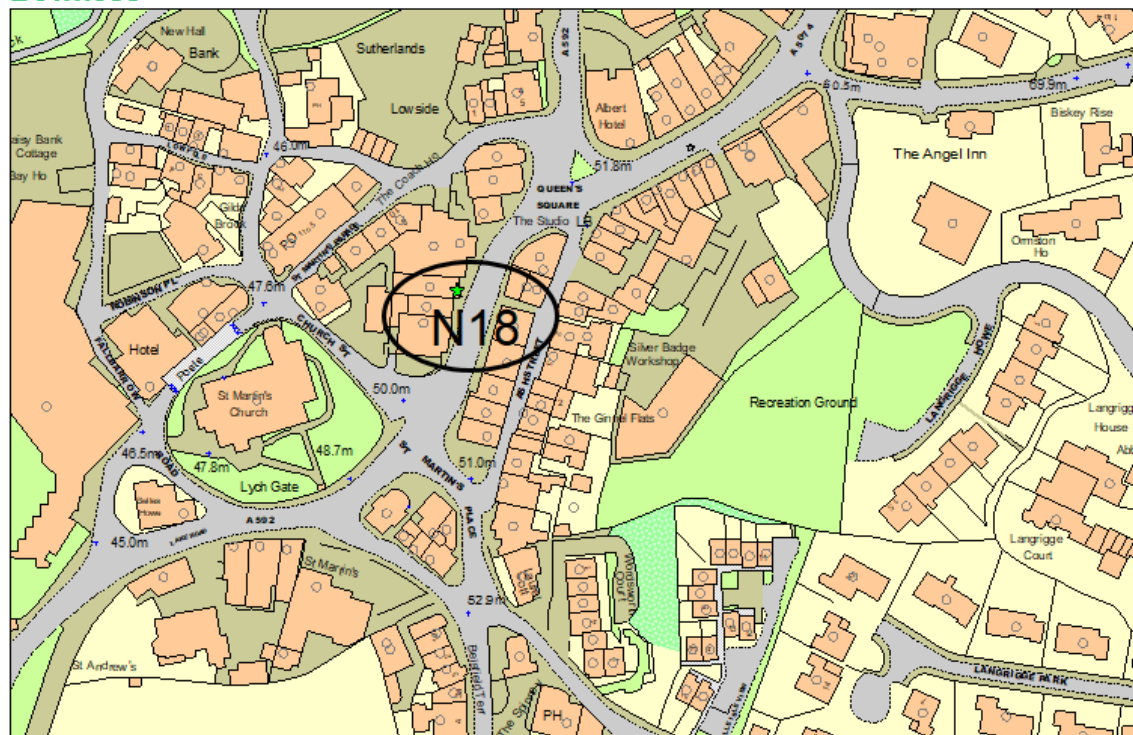
### Figure D1 – Ulverston Monitoring locations

**Ulverston**



**Figure D2 – Bowness Monitoring Location**

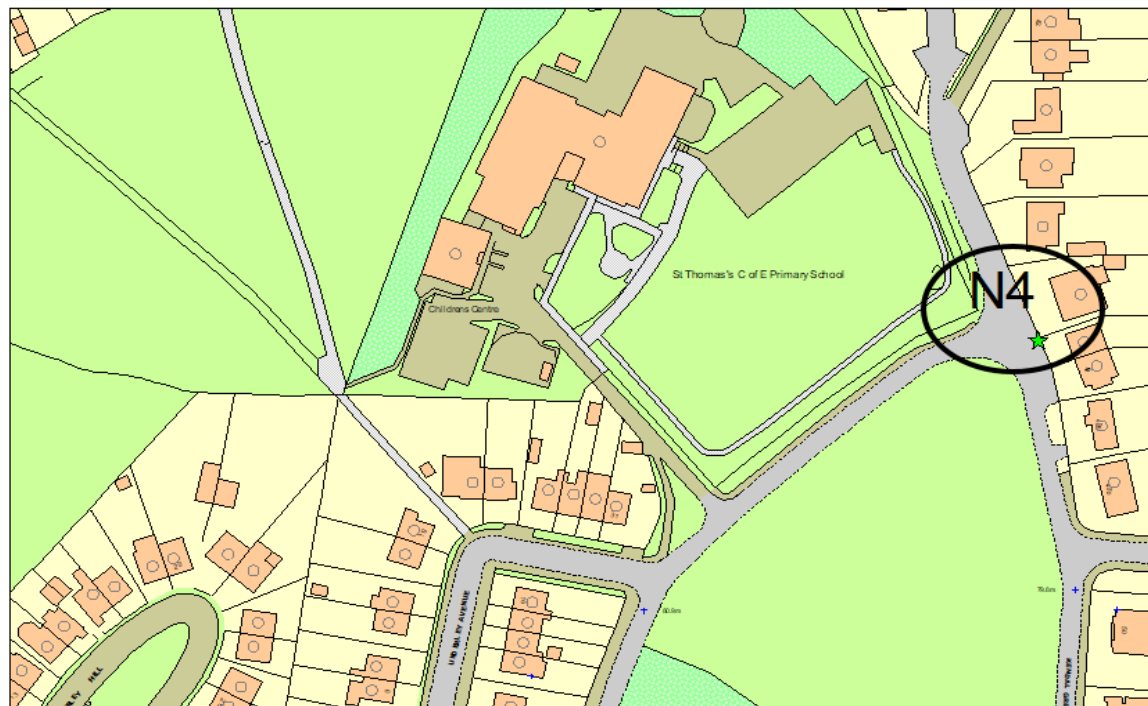
**Bowness**



**Figure D3 – Kendal Monitoring Location (outside AQMA)**



**Kendal 1**



**Figure D4a – Kendal Monitoring Locations (inside AQMA)**

## Kendal 2

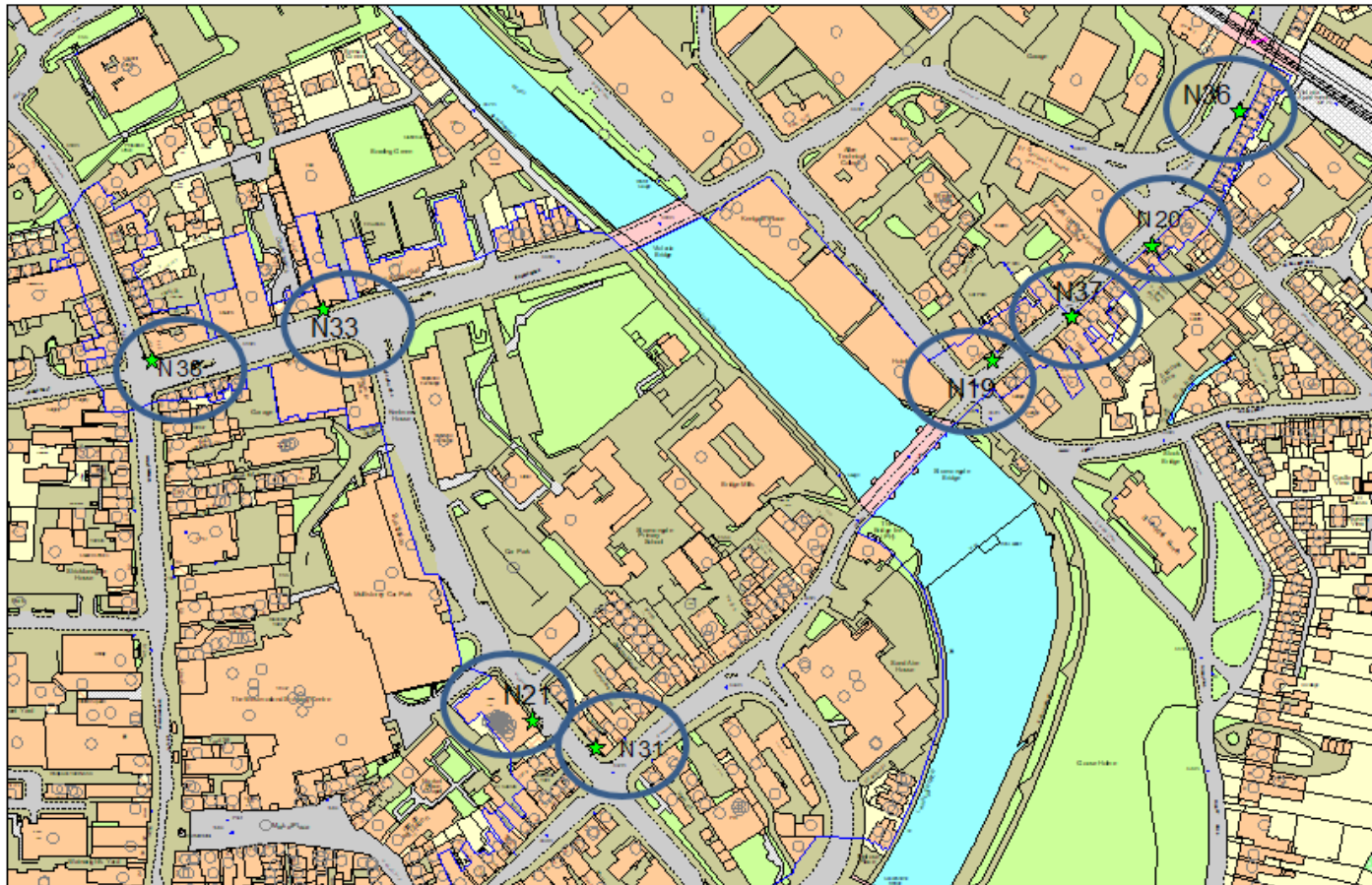
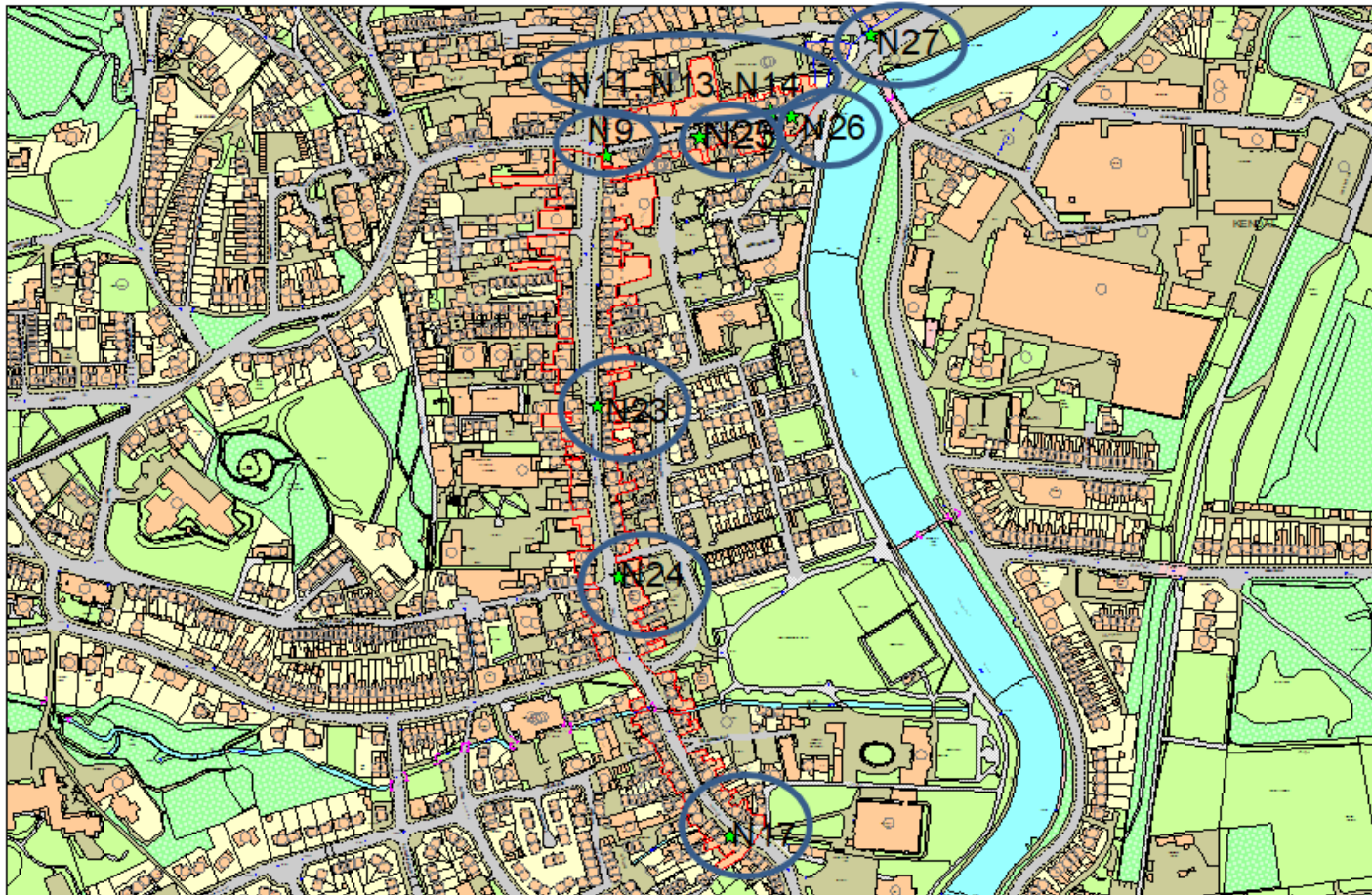


Figure D4b – Kendal Monitoring Locations (inside AQMA)

### Kendal 3



## Appendix E: Summary of Air Quality Objectives in England

**Table E.1 – Air Quality Objectives in England<sup>7</sup>**

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

<sup>7</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide

## References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. 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.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Chemical hazards and poisons report: Issue 28. June 2022. Published by UK Health Security Agency
- Air Quality Strategy – Framework for Local Authority Delivery. August 2023. Published by Defra.