Lancaster City Council

2025 Annual Status Report

July 2025

Document Control Sheet

Identification	
Client	Lancaster City Council
Document Title	Lancaster City Council – 2025 Annual Status Report
Bureau Veritas Ref No.	AIR26437175

Contact Details		
Company Name	Bureau Veritas UK Limited	Lancaster City Council
Contact Name	Hannah Pearson	Rachel Stainton
Position	Senior Consultant	Environmental Protection Manager
Address	2nd Floor Atlantic House, Atlas Business Park, Manchester, M22 5PR	Morecambe Town Hall, Marine Road East, Morecambe, LA4 5AF
Email	hannah.pearson@bureauveritas.com	rstainton@lancaster.gov.uk

Version Control			
Version	**Date**	**Author**	**Status**
V1.0	26/06/2025	L Stevens	Draft
V1.1	17/07/2025	L Stevens	Revised Draft
V1.2	23/07/2025	L Stevens	Final
V1.3	11/09/2025	L Stevens	Updated Final

	Name	Job Title	Signature
Prepared By	L Stevens	Junior Consultant	L. Stevens
Approved By	H.Pearson	Senior Consultant	H.Pearson

LANCASTER CITY COUNCIL

Promoting City, Coast & Countryside

2025 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: July 2025

Information	Lancaster City Council Details
Local Authority Officer	Rachel Stainton
Department	Environmental Protection Manager
Address	Morecambe Town Hall, Marine Road East, Morecambe, LA4 5AF
Telephone	01524 582935
E-mail	rstainton@lancaster.gov.uk
Report Reference Number	AIR26437175
Date	July 2025

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of Lancaster City Council with the support and agreement of the following officers and departments:

- Rachel Stainton
- Cllr Paul Hart (Environment)
- Cllr Sam Riches, (Climate Change)
- Will Griffith, Chief Officer, Environment and Place
- Mark Cassidy, Chief Officer, Planning and Climate Change
- Members of Lancaster City Council's Energy and Sustainability Team

This ASR has not been signed off by a Director of Public Health though the document will be shared with the Public Health Team at Lancashire County Council and the Growth, Environment, Transport and Health Directorate at County Council for review, feedback, and future contributions.

If you have any comments on this ASR please send them to:

Rachel Stainton, Environmental Protection Manager

Environment and Place

Lancaster City Council

Morecambe Town Hall

Marine Road East

Morecambe

LA4 5AF

rstainton@lancaster.gov.uk

Executive Summary: Air Quality in Our Area

Air Quality in Lancaster City Council

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.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Low-income communities are also disproportionately impacted by poor air quality, exacerbating health and social inequalities.

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_2)	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO_2)	Sulphur dioxide (SO_2) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Particulate matter is everything in the air that is not a gas. 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. PM_{10} refers to particles under 10 micrometres. Fine particulate matter or $PM_{2.5}$ are particles under 2.5 micrometres.

In Lancaster City Council, one Air Quality Management Area (AQMA), City of Lancaster, is declared for both 1-hour and annual mean NO_2 concentrations. Therefore. the main pollutant of concern within the Council is NO_2 which largely originates from vehicle emissions. Lancaster City Council is not required to monitor SO_2 as there are no relevant sources of concern within the district.

During 2024, NO_2 concentrations in Lancaster were generally consistent with the previous year's monitoring results. Passive monitoring was undertaken at 30 diffusion tube locations in 2024 with an average annual mean concentration of 24.0 µg/m^3 across the network. Two sites located within the City of Lancaster AQMA recorded concentrations within 10% or above annual average NO_2 objective, Site LC10 (40.3 µg/m^3) and LC11 (36.6 µg/m^3) (after fall off with distance correction). At the automatic monitoring site, Cable Street, an annual mean NO_2 concentration of 26.0 µg/m^3 was recorded which is the lowest reported over the past five years.

Annual mean concentrations of PM_{10} and $PM_{2.5}$ recorded at the Cable Street automatic monitoring site have fallen considerably below the relevant annual average objective and/or target for the past five years.

Actions to Improve Air Quality

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

The Environmental Improvement Plan[1] 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 ($PM_{2.5}$), the pollutant of most harmful to human health. The Air Quality Strategy[2] 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[3] 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 personal travel, and the majority of AQMAs are designated due to elevated concentrations heavily influenced by transport emissions.

[1] Defra. Environmental Improvement Plan 2023, January 2023

[2] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

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

Lancaster City Council has produced a new Air Quality Action Plan (AQAP) for the City of Lancaster AQMA which was finalised in December 2024 and is published on the Council website. The AQAP discusses a number of key priorities including reducing transport emissions and improve vehicle efficiency through encouraging and facilitating the use of low emission vehicles, expanding sustainable transport services, and incentives for taxis to use electric vehicles.

The council have numerous other policies and strategies in place to support improvements in the local air quality.

In January 2025, Lancaster City Council adopted a revised Local Plan for the period 2020 to 2031[4] which sets out the strategic policies and land allocations The section focusing on 'Transport, Accessibility and Connectivity' is most relevant to air quality with policies about 'Lancaster Park and Ride', 'Developing the Cycling and Walking Network' and 'Public Transport Corridors'. The Local Plan sets out the council's commitment to improving and expanding the cycle and pedestrian routes and ensuring adequate infrastructure is in place such as cycle parking. Encouraging active travel has multiple benefits for health and wellbeing through encouraging outdoor activity whilst having the co-benefit of reducing pollutant concentrations from vehicular traffic.

The Council's Defra Air Quality Grant (2021) funded project is ongoing with the aim to improve public awareness of air pollution and improve public health by reducing the local population's exposure to air pollution from all sources. The project facilitates a publicly available portal, EarthSense, which displays up-to-date real-time local air quality information from a network of Zephyr sensors. The annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$ from the 11 monitors can be found in Table F.1 in Appendix F. The key focuses of the project are to ensure public accessibility to the data, engage with schools, and provide an informative campaign to improve knowledge and awareness. The project initially planned to also include indoor air quality monitoring however due to issues with staff retention and retirement, the project will no longer deliver this aspect as anticipated.

The Defra Air Quality Grant (2022) funding which had previously been planned to be used for an Electric Taxi Project, has been redistributed to fund a rapid charging infrastructure project. This project incentivises taxis drivers to switch to an electric vehicle through a reduced charging tariff to encourage higher adoption of low emission vehicles within the

[4] Local Plan 2020-2031. Lancaster City Council 1.Part One_DPD_SPLA_Adopted FINAL.pdf. January 2025

district. Further to this, the plans for increasing electric charging are discussed within the revised Local Plan with sections enforcing electric charging infrastructure within new developments.

In March 2024, a Draft Parking Strategy and Action Plan[5] was approved for consultation which aims to ensure Lancaster City Centre has a well-managed supply of public parking facilities alongside maintaining the Council's overarching commitment to climate action. Within this strategy, there is an aim to provide car parks that are fit for the future by ensuring provisions for electric vehicles and alternative transport modes. In June 2025, the Lancaster City Centre Parking Strategy 2025-2028 was approved by the Cabinet.

Lancaster City Council continue to support the Global Action Clean Air Day and Clean Air Night as a funding founder as it aligns strongly with the Council's own campaign to improve public awareness and knowledge around air pollution.

Conclusions and Priorities

During 2024, there were two exceedances of the annual average NO_2 objective at the passive monitoring sites LC10 (40.3 µg/m^3) and LC11 (36.6 µg/m^3) after fall off with distance correction. Both of these sites are located within the only remaining AQMA within the district, the City of Lancaster AQMA.

In 2024, a new AQAP was developed for this AQMA which was finalised and published in December 2024. The AQAP highlights a number of key priorities with a focus on the transition to low emission vehicles and increasing sustainable travel through ensuring cycle path links, electric vehicle charging points and adequate bus stops.

The automatic monitoring station at Cable Street, recorded annual mean concentrations of NO_2, PM_{10} and $PM_{2.5}$ which fall significantly below the respective objectives and targets.

How to get Involved

The public can get involved in raising a greater awareness and understanding of local air quality through accessing the EarthSense public portal. This allows the public to become more familiar with air pollutant concentrations in their area. Alongside this, further

[5] Draft Parking Strategy and Action Plan Draft parking strategy approved for consultation - Lancaster City Council

information about the Council's monitoring infrastructure, the types of pollutants, health impacts, and previous ASRs/ AQAPs can be found on the Council's Air Quality page.

Table of Contents

Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality in Lancaster City Council during 2024. 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 Lancaster City 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 Lancaster City Council can be found in Table 2.1. The table presents a description of the AQMA that is currently designated within Lancaster City Council. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation are as follows:

- NO_2 annual mean;
- NO_2 1 hour 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
City of Lancaster AQMA	2004	NO_2 Annual Mean NO_2 1 Hour Mean	Covers gyratory system in Lancaster city centre	No	75 µg/m^3 Declared due to likely exceedance based on annual value over 60 µg/m^3	40.3 µg/m^3 0	NO_2 Annual Mean: 0 years NO_2 1 Hour Mean: 10 years (Last exceedance was December 2014)	December 2024	Air quality reports - Lancaster City Council

☒ **Lancaster City Council confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **Lancaster City Council confirm that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in Lancaster City Council

Defra's appraisal of last year's ASR concluded

1. It is positive for the air quality in the council that two AQMAs have been revoked, and that no exceedances – except from the one within 10% of 40 µg/m^3 at LC9. This has been acknowledged.
2. The Council has updated the AQAP for their remaining AQMA. It is encouraging that the Council is active in ensuring the AQAP is updated when necessary. Lancaster City Council has produced a new Air Quality Action Plan (AQAP) for the City of Lancaster AQMA which was finalised in December 2024
3. As the AQMA declared for hourly NO_2 exceedances of the Air Quality Objective has been compliant for 6 years now, the Council could consider amending the AQMA. As such that it is only declared for annual exceedances in concentrations.
   This has been acknowledged. Lancaster City Council commit to amending the AQMA well in advance of next year's ASR submission.
4. The Council has tubes co-located with automatic monitors, but a local bias factor has not yet been calculated. The Council is encouraged to calculate a factor in the next ASR.
   A local bias adjustment factor has been calculated within Appendix C. However, due to poor data capture, the national bias adjustment factor has been used.
5. An extensive discussion has been provided regarding $PM_{2.5}$ measures, including details of the County-wide fraction of mortality attributable to particulate matter and the comparison with the national statistic. It has also been highlighted that currently $PM_{2.5}$ concentrations are below the newly adopted target of 10 µg/m^3. It is encouraging that the Council are focused on maintaining good air quality in terms of $PM_{2.5}$ measures and should ensure that this is included within their new AQAP.
   This has been acknowledged.

The above comments have been addressed in this year's ASR.

Lancaster City Council has taken forward a number of direct measures during the current reporting year of 2024 in pursuit of improving local air quality. Details of all measures

completed, in progress or planned are set out in Table 2.2. There are 60 measures included within Table 2.2, with the type of measure and the progress Lancaster City Council have made during the reporting year of 2024 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in the Lancaster Air Quality Action Plan (published December 2024).

Key completed measures are:

- Air Quality Action Plan submitted and accepted – December 2024: Air quality reports - Lancaster City Council.
- Adoption of the new Lancaster City Centre Parking Strategy 2025-2028 which was approved by the Cabinet in June 2025.

Lancaster City Council expects the following measures to be completed over the course of the next reporting year:

- Continue to deliver the Defra Air Quality Grant (2021) funded public educational campaign project which utilises the use a public portal with real-time air quality data for the Lancaster District
- Adoption of the new Local Plan following the Climate Emergency Review

Lancaster City Council's top three priorities for the coming year are:

- Undertake further improvements to electric vehicle charging infrastructure through the redistribution of the Defra Air Quality Grant 2022 funding. Lancaster City Council aim to scale up accessible charging infrastructure within off-street council run car parks and in particular, target locations where home charging is not feasible or more difficult to implement. Additionally, the funding will be used to incentivise taxi drivers to transition to electric vehicles through a reduced tariff. Further information regarding the future of EV charging within the district is available within the recently adopted Lancaster City Centre Parking Strategy 2025-2028.
- Support and encourage modal shift to sustainable travel. The Local Cycling and Walking Infrastructure Plan for Lancaster has been published and was adopted in April 2024 (Local Cycling and Walking Infrastructure Plans (LCWIPs)) and a Sustainable Travel Supplementary Planning Document is in development. The Canal Quarter Masterplan features a commitment to safe pedestrian and cycle friendly streets (Canal Quarter masterplan unveiled - Lancaster City Council).

Lancaster City Council adopted a revised Local Plan for 2020-2031 with sections focusing on electric charging infrastructure. These strategies aim to facilitate a shift from private vehicle use to active travel which will reduce vehicle emissions and in turn have a positive impact on pollutant concentrations

- Reduce emissions related to bus congestion through the traffic management system 'Traffic Light Technology Intelligent Bus Priority'. This measure aims to reduce bus related emissions by reducing congestion and improving traffic flow, predominantly within the AQMA.

Lancaster City Council worked to implement these measures in partnership with the following stakeholders during 2024:

- Lancashire County Council (the local transport and public health authority);
- EarthSense Systems Limited - to deliver publicly accessible air quality monitoring and modelling facilities)
- ESU1 Limited – to service and maintain the Council's automatic monitoring stations
- Air Quality Data Management – manage, monitor and ratify data from the Council's automatic air quality stations
- Bureau Veritas UK – consultant appointed to help in the delivery of the Air Quality Action Plan for the Lancaster City Centre AQMA
- Gradko International Limited – to supply and analyse nitrogen dioxide diffusion tubes
- Global Action Plan – continue to promote both Clean Air Day and Clean Air Night as a founding member. Lancaster City Council also committed to local campaigns on social media to reduce air quality impacts from human behaviours – for example burning, best practice for domestic burning associated with heating homes and encouraging greener forms of travel.

The principal challenges and barriers to implementation that Lancaster City Council anticipates facing are:

- Local government structure - challenges and difficulties co-ordinating and planning localised priorities within a two-tier authority structure with differing financial/corporate priorities and political influences. However, with proposals to local government reorganisation, in the longer term this could improve working

collaboratively and ensure that barriers and challenges are managed more effectively at local level.

- Public perception - uncertainty around electric vehicle use for members of the public and businesses alike, may hinder transition to cleaner forms of transport. Also, roll out of EV charging schemes, takes time, and impacts on public confidence of whether there is the infrastructure to support cleaner transport, including whether associated costs are prohibitive.
- Existing road infrastructure - limitations around what can be done around Lancaster City Centre gyratory traffic system. Funding for traffic light technology to decrease congestion and improve traffic flows has been rejected.
- Changing behaviours - encouraging residents and businesses to change travel habits and how we monitor and report any changes in behaviour locally. Lancaster City Council anticipates that the measures stated above and in Table 2.2 will assist in achieving compliance in City of Lancaster AQMA.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Measure Introduced/ 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	Improvements to Electric Vehicle Charging Infrastructure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2025	2028 & onwards	Lancaster City Council	Defra Air Quality Grant 2022	YES	Funded		Implementation	Encouraging a shift towards ownership of low emission vehicles to facilitate reductions in NO_2 concentrations associated with older, polluting vehicles.	Increased EV charging infrastructure to meet future demand. Develop a joint City & County Electric Vehicle charging strategy by 2028.	The Defra Air Quality Grant (2022) funding has been redistributed to fund a rapid charging infrastructure project in the Lancaster District. EV charging is discussed further within the recently adopted Lancaster City Centre Parking Strategy 2025-2028.	Ensuring accessible charging infrastructure by scaling up EV charging within off-street council-run car parks and targeting locations where home charging is not feasible/difficult.
2	Local Cycling and Walking Infrastructure Plan (LCWIP)	Transport Planning and Infrastructure	Cycle network	2021	2032	Lancashire County Council, Lancaster City Council	Department for Transport	NO	Funded	£1 million - £10 million	Implementation	Facilitating a modal shift away from private vehicles to increased rates of walking, cycling and wheeling will have positive impacts on air pollutants associated with vehicles.	Increased cycling, walking and wheeling rates across Lancaster and wider county.	Following extensive consultation, the Lancaster LCWIP was adopted in 2024. https://www.lancashire.gov.uk/media/951846/lancaster.pdf. This sets out the long term strategy of potential infrastructure to improve and support active and sustainable travel. Air quality - Lancashire County Council	Next steps - prioritise all schemes in readiness for future funding opportunities, such as the anticipated Local Transport Fund (LTF), and any future tranches of Active Travel Funding (ATF). Interactive LCWIP map: https://lancashire.citizenspace.com/lcwip-engagement-stage-2/
3	Traffic Light Technology - Intelligent Bus Priority	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2024	2025	Lancashire County Council	Bus Services Improvement Plan	NO	Funded	£500k - £1 million	Planning	Smoothing of bus journeys, reducing congestion, improving traffic flow, and therefore reducing bus related emissions mainly in the Lancaster AQMA.	All traffic signal installations on Lancaster gyratory upgraded with UTC SCOOT.	High level desktop costing exercise and feasibility, BSIP Sponsors committed to scheme. Design work 2024 and implementation 2025.	Proposed expansion of this project using Intelligent Traffic Management Fund. Funding from County Council no longer available – looking for alternative funding.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced/ 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
4	Lancaster Transport Masterplan (a)	Traffic Management	UTC, Congestion management, traffic reduction	2016	2031	Lancashire County Council, Lancaster City Council		NO			Planning	General air quality improvements from reduced traffic and congestion across district, including Lancaster AQMA	M6/Heysham link Road, Lancaster Caton Road Park and Ride, Renumbering A6, Strategic Multiuser cycle network, Lancaster Reach express Public Transport service, reconfiguration of J33 of M6, Lancaster South Park and Ride, Lancaster Movement Strategy (incorporating Lancaster Centre network review and restraint measures). ULEV Strategy, Morecambe Movement Strategy, Morecambe to Lancaster Rail services, Heysham supporting development, Carnforth Town Centre Improvements, Carnforth Railway Station, Rural connections	Plans arising from the Masterplan have been developed over 2019 to 2022/23 but currently halted. (https://www.lancaster.gov.uk/planning/planning-policy/local-plan-review). The Local Plan Review is complete, and the County Council are now due to revisit/review.	

Measure No.	Measure Title	Category	Classification	Year Measure Introduced/ 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
5	Electric low emission buses	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport			Lancashire County Council, Lancaster City Council, Stagecoach, Department for Transport		NO	Not Funded	£1 million - £10 million	Planning	Reduction of NOx across district and Lancaster AQMA in particular through low emission buses. Estimated 1-2 ug/m3 reduction in NO2.	Deployment of 31 electric buses in Lancaster by Stagecoach.	Alternative funding sought as ZEBRA bid unsuccessful.	Funding required
6	Speed limits in residential areas	Traffic Management	Reduction of speed limits, 20mph zones	2012		Lancashire County Council	Lancashire County Council	NO	Funded	£1 million - £10 million	Completed	Improved air quality in residential areas.	Most residential areas designated 20 mph zones	Most residential zones in Lancaster District now covered	
7	Transport Masterplan for Lancaster (b)	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	2031	Lancashire County Council, Lancaster City Council		NO			Planning	See above - Lancaster Transport Masterplan (a)	See above - Lancaster Transport Masterplan (a)	See above - Lancaster Transport Masterplan (a)	

Measure No.	Measure Title	Category	Classification	Year Measure Introduced/ 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
8	Lancaster Parking Strategy	Traffic Management	Emission based parking or permit charges	2015	2025	Lancaster City Council	N/A	NO			Planning	City of Lancaster AQMA air quality improvements through a reduction of circulating traffic and congestion within the city centre through accessing carparks.	Optimal use of space for car parks, reducing circulation through the city centre, with links to sustainable transport strategy, provision for EVs, and accommodates alternative transport modes.	The parking strategy has now been approved by the Cabinet: Lancaster City Centre Car Parking Strategy 2025 /2028 28	
9	AQ Station Traffic Management Link	Traffic Management	Other	2015	2025	Lancaster City Council, Lancashire County Council		NO			Planning	Assist with traffic management measures in Lancaster AQMA, improving congestion.	AQ station linked with traffic management.	Works to AQ station completed to facilitate link but management system awaited from County Council.	Potential links with Intelligent Traffic Management Fund project.
10	M6 / Heysham Link Road (The Bay Gateway)	Traffic Management	Other	2013	2016	Lancashire County Council	Department for Transport	NO	Funded	> £10 million	Completed	Traffic reduction in range of 3-9% within the Lancaster AQMA.	Traffic reduction and reduced NO_2 concentrations within the the AQMA.	Monitoring in 2019 indicates a general reduction on levels reported for 2018.	A Developmental Consent Order for the Bay Gateway has an implementation date of 31st October 2026.
11	Travel Plans for New Development	Promoting Travel Alternatives	Workplace Travel Planning			Lancashire County Council		NO			Implementation	General air quality improvements from reduced traffic and congestion across district.	New developments have sustainable transport plans.	Ongoing	Lancashire County Council Sustainability Team was disassembled in 2015 due to County Council budget cuts. Transport planning function in relation to new development transferred to County Council Highways Team.
12	School Travel Plans	Promoting Travel Alternatives	School Travel Plans		2015	Lancashire County Council		NO			Implementation	General air quality improvements from reduced traffic and congestion across district.	Lancaster district schools with travel plans	Sixty-six schools have travel plans	Most schools utilised grant funding to provide cycle storage facilities.
13	Promoting Home Working	Promoting Travel Alternatives	Encourage / Facilitate home-working	2020		Lancashire County Council, Lancaster City Council		NO			Implementation	A reductio in traffic related pollution due to a decreased number of trips for work.	Less trips for work.	The City and County Councils have flexible working policies which give employees the opportunity to work from home where appropriate.	The COVID-19 pandemic resulted in an increased number of employees working from home.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced/ 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
14	Lancashire Cycle September and other events	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure								Implementation	Reduced traffic emissions through encouraging use of alternative transport (cycling) to reduce dependence on cars.	Increased cycling rates across Lancaster.	Love to Ride's Cycle September is an annual event that encourages cycling and both the City Council and County Council take part in. Further info on cycling in Lancashire: https://www.lancashire.gov.uk/cycling/	Lancaster hosts the Bay Health Festival of which 'A Celebration of Cycling' is a theme: https://www.thebayhealthfestivals.org.uk/event-details/bay-health-festivals-cycling-extravaganza
15	Cycling Demonstration Town	Promoting Travel Alternatives	Promotion of cycling			Lancashire County Council		NO			Implementation	Reduced traffic emissions through encouraging use of alternative transport (cycling) to reduce dependence on cars.	Increased cycling rates across Lancaster.	Four contraflow cycle lanes, three toucan crossings, seven on-road cycle lanes, cycle links to canal tow path, cycling assess to pedestrian areas, twelve crossing upgrades, new path links, 1176 cycle parking spaces, signage, workplace engagement, events (25,000 contacts), cycle training, school engagement	
16	Lancaster Rail Station Park and Ride	Promoting Travel Alternatives	Promote use of rail and inland waterways					NO			Implementation	Reduced traffic emissions through encouraging use of alternative transport (rail) to reduce dependence on cars.	More rail journeys opted for over car journeys.	165 spaces at Lancaster Rail Station (operated by Avanti West Coast)	
17	Carnforth Rail Station Park and Ride	Promoting Travel Alternatives	Promote use of rail and inland waterways					NO			Implementation	Reduced traffic emissions through encouraging use of alternative transport (rail) to reduce dependence on cars.		Sixty-four fee charged spaces	
18	Bare Lane Rail Station Park and Ride	Promoting Travel Alternatives	Promote use of rail and inland waterways					NO			Implementation	Reduced traffic emissions through encouraging use of alternative transport (rail) to reduce dependence on cars.		Twelve free spaces	
19	Morecambe Rail Station Park and Ride	Promoting Travel Alternatives	Promote use of rail and inland waterways					NO			Implementation	Reduced traffic emissions through encouraging use of alternative transport (rail) to reduce dependence on cars.		One hundred fee payable spaces but fee refunded with rail ticket	
20	Silverdale Rail Station Park and Ride	Promoting Travel Alternatives	Promote use of rail and inland waterways					NO			Implementation	Reduced traffic emissions through encouraging use of alternative transport (rail) to reduce dependence on cars.		Three free spaces	

Measure No.	Measure Title	Category	Classification	Year Measure Introduced/ 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
21	Wennington Rail Station Park and Ride	Promoting Travel Alternatives	Promote use of rail and inland waterways					NO			Implementation	Reduced traffic emissions through encouraging use of alternative transport (rail) to reduce dependence on cars.		Seven free spaces	
22	Information via County Council website	Promoting Travel Alternatives	Other			Lancashire County Council		NO	Not Funded	< £10k	Implementation	Reduced traffic emissions through promoting travel alternatives.		County Council website updated regularly with public transport information	https://www.lancashire.gov.uk/roads-parking-and-travel/public-transport/
23	Information via Lancaster City Council website	Public Information	Via the Internet			Lancaster City Council	N/A	NO	Not Funded	< £10k	Implementation	Behaviour change relating to travel and domestic burning, and so an overall reduction in transport and burning emissions.		A new web page to Council website was introduced in 2022 providing information about air quality pollutants and advice about what individuals can do to assist with local air quality matters and reduce their own exposure	https://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality/ AND https://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality/about-air-pollution
24	Burning of Waste Fact Sheet	Public Information	Via leaflets	2014		Lancaster City Council	N/A	NO	Not Funded	< £10k	Implementation	The leaflet aims to educate around the harms, hazards, and legalities of burning waste with the aim of discouraging waste burning, and therefore a reduction in particulate matter emissions.		The fact sheet is provided to residents and businesses that are alleged to have burn burning waste to educate and inform and prevent further waste burning. It is also publicly available online.	Fact sheet available at: https://www.lancaster.gov.uk/environmental-health/environmental-protection/smoke-control
25	Direct Communication / Education and School Projects	Public Information	Via other mechanisms	2022		Lancashire County Council, Lancaster City Council	Defra and LA	YES	Partially Funded	< £10k	Implementation			Original programme planned through County Council Safe and Healthy Schools but County Council aspect currently undelivered. Following Defra grant funding (AQ grant 2021), Lancaster City Council has produced a school project of which seven local schools have participated (see below).	
26	Cycle Hire	Transport Planning and Infrastructure	Public cycle hire scheme			Lancashire County Council	N/A	NO	Not Funded	< £10k	Implementation			Visit Lancashire website with information relating to bicycle hire.	Available at: https://www.visitlancashire.com/things-to-do/cycling-lancashire/cycle-hire
27	M6 / Heysham Link Road (The Bay Gateway) Conditional Complimentary Measures	Transport Planning and Infrastructure	Other	2016	2026	Lancashire County Council						See above - M6 Link / Bay Gateway		Development Consent Order requires delivery of complimentary measures by 2026 but current uncertainty over what will be delivered by this date.	For more info see: https://www.lancashire.gov.uk/council/strategies-policies-plans/roads-parking-and-travel/highways-and-transport-masterplans/lancaster-district-highways-and-transport-masterplan/

Measure No.	Measure Title	Category	Classification	Year Measure Introduced/ 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
28	Caton Road Park and Ride	Alternatives to private vehicle use	Bus based Park & Ride	2014	2016	Lancashire County Council	Department for Transport and NHS	NO	Funded	> £10 million	Implementation	Reduction in the number of car trips in and around the city centre and therefore a reduction in traffic related emissions (NO2) within the AQMA.	Park and ride usage	Park and ride usage has increased year on year and averaged at 238 passengers per day in 2023. Discounts available for University Hospital of Morecambe Bay NHS Foundation Trust staff. NHS funding contribution for additional bus frequency.	The park and ride has 650 free spaces and 18 electric vehicle charging points. More information at: https://www.lancashire.gov.uk/roads-parking-and-travel/public-transport/park-and-ride/lancaster-park-and-ride/
29	Co-Wheels Car Club - Car Share Scheme	Alternatives to private vehicle use	Car Clubs			Lancaster City Council									
30	Shared Wheels	Alternatives to private vehicle use	Car & lift sharing schemes			Lancashire County Council							Members registered	Currently 2951 members registered across Lancashire, down from 3892 previous year. 210 members registered from Lancashire County Council staff.	
31	Lancaster Community Car Club	Alternatives to private vehicle use	Car Clubs	2012		Lancaster Community Car Club - Community Interest Company								Currently has 30 individual members and 7 cars.	This Community Interest Group is part of Lancaster Cohousing
32	Sustainable Transport Fund Grants	Alternatives to private vehicle use	Other	2014	2015	Lancashire County Council	Local Sustainable Transport Fund	NO	Funded		Completed		Businesses engaged and grants provided	Thirteen further schemes during 2014/15. Over 100 businesses engaged and 50 grants provided over the period of the scheme	Main transport route between Lancaster and Preston targeted including Lancaster centre. Grants awarded for cycle storage, changing facilities and for pool bikes.
33	Local Transport Plan 3 (LTP3)	Policy Guidance and Development Control	Other policy	2019	2021	Lancashire County Council	N/A	NO	Not Funded		Completed		Production of Local Transport Plan	Current version (LTP3) sets out transport priorities until 2021	
34	Local Transport Plan 4 (LTP4)	Policy Guidance and Development Control	Other policy	2023	2025	Lancashire County Council and Atkins	N/A	NO	Not Funded		Planning		Production of Local Transport Plan	County Council have started work to update LTP and commissioned Atkins to start work on LTP4 which will establish priorities for next decade.	Expected provisional area-wide LTP by March 2025
35	Local Air Quality Planning Guidance	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2015	2025	Lancaster City Council	N/A	NO	Not Funded	< £10k	Planning	Planning policy to limit the contribution of new developments to air pollution and therefore impacts on a range of pollutants including oxides of nitrogen and particulate matter	Production of a Planning Advisory Note for Air Quality and Supplementary Planning Document	Planning advisory notes for air quality and walking and cycling complete. Supplementary planning documents relating to sustainable travel, and electric vehicle infrastructure are being drafted.	For info: https://keepconnected.lancaster.gov.uk/st-spd AND https://keepconnected.lancaster.gov.uk/evci-spd

Measure No.	Measure Title	Category	Classification	Year Measure Introduced/ 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
36	Lancashire Public Health Team Air Quality Coordination	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2015		Lancashire County Council					Planning			Initial meeting in 2015. Air quality briefing note produced in 2017. Public Health work was dominated by Covid in 2020. Public Health team looking to coordinate roles of stakeholders at County Council to improve air quality.	
37	Lancaster Air Quality Strategy	Policy Guidance and Development Control	Other policy	2013	2015	Lancaster City Council	N/A	NO	Not Funded	< £10k	Completed	General air quality strategy so all key air pollutants	Production of a local Air Quality Strategy	The Lancaster Air Quality Strategy 'Clearing the Air' was published in 2013. A new Air Quality Action Plan has been drafted for City of Lancaster AQMA and will be published in 2024.	Available at: https://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality/air-quality-reviews-and-assessments
38	Local Plan Review - Planning Policy Lancaster City Council	Policy Guidance and Development Control	Other policy	2017	2024	Lancaster City Council								The Local Plan is currently under review and has recently been open to participation and engagement. Further consultation is being prepared.	More information: https://www.lancaster.gov.uk/planning/planning-policy/local-plan-review
39	Guidance on electric vehicle charging point requirements for new development	Policy Guidance and Development Control	Other policy	2015	2024	Lancaster City Council						Reduction in traffic related emission through encouraging the transition to electric vehicles.		Guidance reviewed in 2021/22 as part of Local Plan Review. Due for adoption in 2024. DM29 Policy adopted.	Barriers: electricity grid capacity issues. More information: https://www.lancaster.gov.uk/planning/planning-policy/planning-policy-consultations
40	M6 / Heysham Link Road - Traffic Regulation Order	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	2016	2016	Lancashire County Council								Order placed 2016	HGV traffic to use J34 Link Road (Bay Gateway). The link road must not be fully opened to vehicular traffic until the undertaker has completed statutory consultation upon a proposal to make traffic regulation order prohibiting HGVs from roads forming part of the A6 in central Lancaster and along the A589 Morecambe Road, east of the link road, except for access.
41	Clean Bus Technology Fund Grant Phase 1	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	2015	2025	Lancashire County Council, Stagecoach, and Lancaster City Council as partner	Clean Bus Technology Fund	NO	Funded	£100k - £500k	Planning	Estimated 4% reduction in NOx levels in Lancaster AQMA	NOx emissions from buses reduced by over 90%	£288,150 grant to upgrade eight buses with technology to reduce emissions. Spend amendment agreed in 2019 and potential further amendment in 2024.	

Measure No.	Measure Title	Category	Classification	Year Measure Introduced/ 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
42	Clean Bus Technology Fund Grant Phase 2	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	2017		Lancaster City Council and Stagecoach	Clean Bus Technology Fund	NO	Not Funded		Aborted	Estimated 12% reduction of NOx emissions in Lancaster AQMA	NOx emissions from buses reduced by over 90%	Grant application not successful (2017) as Defra air quality modelling indicated Lancaster was not exceeding air quality objectives (it was in fact exceeding according to measured data)	
43	Lancaster City Council Climate Emergency	Promoting Low Emission Plant	Public Procurement of stationary combustion sources	2019	2030	Lancaster City Council		NO			Implementation	Mainly CO2 reduction through climate action but direct benefits to air quality due to pollutants associated with combustion.	The Council estate to be net zero by 2030	The Climate Emergency declaration in 2019 was followed by steps to a net zero Council by 2023. Lancaster scored top of the Climate Emergency UK leaderboard. Buildings and heating - £1 million to improve energy efficiency of Council buildings, Salt Ayre Leisure Centre Decarbonisation Project, improvements to the Council housing stock, biodiversity, plus much more.	More information: https://www.lancaster.gov.uk/sites/climate-emergency/new-and-updates
44	County Council Provision of roadside electric charging points for electric vehicles	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2015	2020	Lancashire County Council, Highways					Completed	Reduction in traffic related emission through encouraging the transition to electric vehicles.	Charge points installed roadside (County Council are highways authority)	Grant monies awarded for 150 points across Lancashire. The Lancashire and Blackburn with Darwen Electric Vehicle Infrastructure Strategy was approved 2023.	More information: https://www.lancashire.gov.uk/roads-parking-and-travel/electric-vehicle-charge-points/ AND https://www.lancashire.gov.uk/media/945415/the-lancashire-and-blackburn-with-darwen-electric-vehicle-infrastructure-strategy.pdf
45	City Council Provision of electric charging points in car parks	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2018	2023	Lancaster City Council					Completed	Reduction in traffic related emission through encouraging the transition to electric vehicles.	Charge points installed in district car parks.	Charge points have been provided in 10 carparks across the district. Locations here: https://www.zap-map.com/live/	A strategy is required locally to direct future implementation. A draft EV infrastructure SPD is in production. A regional strategy has been produced by the County Council: https://www.lancashire.gov.uk/roads-parking-and-travel/electric-vehicle-charge-points

Measure No.	Measure Title	Category	Classification	Year Measure Introduced/ 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
46	Provision of roadside electric charging points for electric vehicles 2	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2023	2026	Lancashire County Council	Local Electric Vehicle Infrastructure (LEVI)	NO	Funded	> £10 million	Planning	Reduction in traffic related emission through encouraging the transition to electric vehicles.		The County Council is one of 16 councils to secure funding from the LEVI extended pilot scheme. The trial aims to expand to more residents and trial lamp post integrated charge points in residential areas, helping those that do not have access to off-street parking.	In addition to the LEVI extended pilot, the County Council has been allocated indicative funding of £10.1 million from the LEVI capital fund for provision of local, low power, public on-street charging, subject to the submission of a delivery plan in early 2024 that is accepted by the DfT.
47	Roadside Green Barriers Research Project	Other	Other	2017	2020	Lancaster City Council, Lancaster University, Lancashire County Council		NO			Completed	Green barriers to prevent exposure to roadside pollution.		LCC worked with Lancaster University on deployment of green barriers in poor AQ locations and also to inform general planting schemes for AQ (AQ beneficial species).	Awaiting report.
48	Promoting use of electric vehicles as taxis	Promoting Low Emission Transport	Taxi emission incentives	2017	2026	Lancaster City Council	Defra	YES	Funded	£500k - £1 million	Planning	Reduction of NOx across district and Lancaster AQMA in particular through transition to EVs.	Number of electric taxis in local taxi fleet	Survey in 2022 into trade opinions on 'try before you buy' and subsequent leasing scheme. On the back of the response, the Council submitted a Defra AQ grant bid and was awarded £454,576. The Defra funded electric taxi project is on-hold until September 2024 due to resource issues across the City Council.	Resource issues with the Council and current taxi driver for electric vehicles are potential barriers
49	Grant bid for electric vehicle charging infrastructure from OLEV scheme	Promoting Low Emission Transport	Taxi emission incentives	2016	2022	Lancaster City Council and Lancashire County Council	OLEV	NO	Funded		Completed	Reduction of NOx across district and Lancaster AQMA in particular through transition to EVs.	Rapid chargers installed and operational.	Four rapid chargers for use by taxis are now delivered and operational at Heysham, Billy Hill, Morecambe and Spring Garden St Lancaster. Five other Lancashire authorities have also installed chargers through the Lancaster co-ordinated bid delivering 24 rapid chargers across the region.	Rapid charger fees have increased significantly over past year which may impact use.
50	Electrification of the City Council Fleet	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2017	2030	Lancaster City Council	Lancaster City Council	NO	Funded	£1 million - £10 million	Implementation	Reduction of NOx across district and Lancaster AQMA in particular through transition to EVs.	Percentage of fleet electric	Fifty-seven vehicles (31% fleet) currently EVs, plus an electric bin wagon: https://www.lancaster.gov.uk/news/2022/apr/lancashire-s-first-electric-bin-wagon-takes-to-the-road	Increasing capital and electricity prices

Measure No.	Measure Title	Category	Classification	Year Measure Introduced/ 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
51	Electric low emission buses	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport			Lancashire County Council, Lancaster City Council, Stagecoach, Department for Transport	DfT ZEBRA 2	NO	Not Funded	£1 million - £10 million	Planning	Reduction of NOx across district and Lancaster AQMA in particular through low emission buses. Estimated 1-2 ug/m3 reduction in NO_2.	Deployment of 31 electric buses in Lancaster by Stagecoach.	Alternative funding sought as ZEBRA bid unsuccessful.	Funding required
52	Non-road mobile machinery emissions during construction	Promoting Low Emission Plant	Shift to installations using low emission fuels for stationary and mobile sources	2021		Lancaster City Council	N/A	NO			Planning	Reduction in range of air pollutants associated with combustion machinery, primarily involved with development.	Developments affected by this requirement	Potential for adoption of scheme to require use of low emission NRMM but not yet explored further.	National scheme not currently available.
53	Defra Air Quality Grant bid to support behaviour change measures	Public Information	Via other mechanisms	2021	2027	Lancaster City Council, EarthSense	Defra	YES	Funded	£100k - £500k	Implementation	Focus on a reduction in particulate matter from domestic burning through behaviour change, particularly in burning 'hotspots'.	Reduction in measured PM over winter months in burning 'hotspots'. Engagement with the public portal from local residents.	Twelve Zephyr sensors installed early 2023. Public perceptions survey carried out end of 2023. Public portal due to be released July 2024.	Staff resourcing issues, SuperSkips industrial fire required use of sensors, pre-election rules preventing release of public portal.
54	School Air Quality Project	Public Information	Via other mechanisms	2021		Lancaster City Council	Defra and Lancaster City Council	YES	Partially Funded	< £10k	Implementation	Education of children around all key aspects of air pollution and measures individuals and communities can take to limit emissions and exposure	Number of schools that engage with the project	The 'Air That We Breathe' project was developed in conjunction with local schools and mapped onto the KS2 Geography curriculum and 'Morecambe Bay Curriculum'. A kit box has been produced container key knowledge for teachers, activity plans, and air quality measuring equipment. So far, seven schools have taken part - an initial 6 schools for the pilot and a further one school as part of British Science week 2024	Staff resourcing issues limiting the ability to advertise the project and put resource into delivery.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced/ 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
55	Clean Air Night partnership	Public Information	Via other mechanisms	2022		Global Action Plan, Lancaster City Council, Hertfordshire County Council, and other local authorities	Global Action Plan, Lancaster City Council, Hertfordshire County Council, and other local authorities	NO	Partially Funded	£10k - 50k	Implementation	Focus on a reduction in particulate matter from domestic burning through education, improved awareness, and behaviour change.		Partnership bid (Sep 2022) with Hertfordshire County Council and Global Action Plan to take forward 'Clean Air Night' - proposal aimed at raising public awareness of impacts of domestic burning. The grant bid was unsuccessful but Hertfordshire have funded the campaign, with Lancaster and other LAs contributing as 'funding founders'. Lancaster City Council presented at the first 'Clean Air Night Summit' in Jan 2024, with the communications team sharing educational messages to encourage better burning practices.	
56	Information to farmers	Public Information	Via other mechanisms	2021	2023	Lancaster City Council					Completed	Reduced ammonia emissions (which lead to particulate matter formation in the atmosphere).		In 2021 a letter was sent to all farms within the district advising on best practice to minimise air quality impacts and odour associated with manure/slurry spreading and use of fertilisers. A further letter was sent in 2023 providing similar advice and details of organisations who offer assistance and national grant schemes available to help farmers reduce emissions.	
57	New schools associated with new housing development	Policy Guidance and Development Control	Other policy							£1 million - £10 million	Planning	School provision will reduce the need for additional trips for school travel.	Schools provided with major developments	The Local Plan contains the requirement for a series of new schools to meet future demand generated by new housing growth. Schools would be delivered in part through new development but also through funding via the Education Authority.	As yet, done of the strategic sites identified have sufficiently advanced to see the delivery of new school provision.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced/ 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
58	Lune Valley Cycle Path (Greenway) Improvements and Extension	Transport Planning and Infrastructure	Cycle network	2023		Sustrans, Lancashire County Council, Lancaster City Council	Department for Transport	NO	Partially Funded		Planning	Reduced traffic emissions through promoting active travel.	Greenway extended.	Upgrades to existing section of Greenway between Caton and Bull Beck Picnic Site. Family Fun Day hosted Feb 2024 to showcase improvements at Bull Beck. Exploring feasibility and funding options to extend the Lune Valley Greenway to Hornby, Wray, Wennington, and Kirkby Lonsdale.	More information and updates: https://storymaps.arcgis.com/stories/b17198f215ac4fbb9efc15d8a61a5429
59	Bus Service Improvement Plan	Transport Planning and Infrastructure	Bus route improvements	2021		Lancashire County Council	Department for Transport	NO	Funded	> £10 million	Implementation	Reduced traffic emissions by promoting bus travel over private car use.		Reduced fare offers, enhanced bus services, bus priority schemes.	More info: https://www.lancashire.gov.uk/council/strategies-policies-plans/roads-parking-and-travel/bus-service-improvement-plan/
60	Sandylands Project - Safer, greener, and healthier streets scheme	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2021		Lancashire County Council	Active Travel Fund	NO	Funded		Planning	General reduction in traffic related emissions due to measures aimed at reducing volume and speed of traffic and rat running. Improved crossings, enhanced street environment, and cycle parking.		Autumn 2022 - traffic surveys. Early 2024 - public engagement with residents and production of co-discovery report. June 2024 - co-design workshop for local people and engagement survey currently open. Summer 2024 - scheme implementation.	More information: https://www.lancashire.gov.uk/roads-parking-and-travel/active-travel/sandylands/
61	MSc Research Project with Lancaster University Environment Centre – Using Zephyr data	Other	Other	2023	2024	Lancaster City Council, Lancaster University, EarthSense	N/A	NO			Completed		Research project exploring spatial-temporal patterns in air quality across Lancaster	Dissertation completed and received from Lancaster University. Report shows NO_2 trends are traffic related whilst $PM_{2.5}$ trends are most likely associated with domestic burning.	

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy[2], local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter ($PM_{2.5}$)). There is clear evidence that $PM_{2.5}$ (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

The Public Health Outcomes Framework data tool[6] compiled by Public Health England quantifies the mortality burden of $PM_{2.5}$ within England on a country and local authority scale. The fraction of mortality attributable to $PM_{2.5}$ in Lancaster (4.3%) is lower than that seen across the region (4.9%) however and the England average (5.2%). As is the case for NO_2 emissions, traffic emissions are also the primary source of anthropogenic particulates (both PM_{10} and $PM_{2.5}$) emissions within Lancaster. As such, the implementation of the transport measures associated to the Air Quality Action Plan should help reduce the concentration of $PM_{2.5}$.

Lancaster City Council is taking the following measures to address $PM_{2.5}$:

Automatic monitoring of $PM_{2.5}$ is carried out at one location within the local authority at Cable Street. This is a roadside site located nearby to the city centre bus station. In 2024, an annual mean concentration of 7.1 µg/m^3 was recorded, with similar concentrations reported for 2022 and 2023, 8 µg/m^3 and 7 µg/m^3 respectively. Therefore, this site is complying with the Environmental Targets Regulations[7] of 10 µg/m^3.

Additionally, monitoring was undertaken at 11 Zephyr monitors located in suburban areas and alongside quiet roads. The annual mean results are presented in Appendix F, Figure F.1. Across the network, all sites recorded annual mean concentrations below the 10 µg/m^3 target. The Zephyr sensors project has been funded by the Defra Air Quality Grant which aims to increase public awareness of air pollution and the local air quality impacts of solid fuel burning. The data recorded at the 11 Zephyr sites is publicly available on the EarthSense website.

[6] Public Health Outcomes Framework | Fingertips | Department of Health and Social Care

[7] The Environmental Targets (Fine Particulate Matter) (England) Regulations 2022

Lancashire County Council

Lancashire County Council work closely with the member district councils to act on reducing the health impacts of air pollution, Within the County Council's 'Environment and Climate Strategy 2023-2025', improving air quality is a key objective[8].

Through the County Council's responsibilities in transport planning, network management, highway maintenance, public health and procuring local vehicle fleets. One of the strategies in place which has a positive impact on air pollution is the Lancashire cycling and walking strategy, Actively Moving Forwards. This encourages the use of sustainable forms of travel through an ambitious plan to increase the number of people walking and cycling in the county by 2028. This initiative aims to increase the uptake of active travel through improvements to infrastructure and opportunities to take part in training and activities such as Bikeability and Local Cycling Groups. Further information about the ongoing activities can be found on the Active Travel In Lancashire website.

In conjunction with Lancashire's cycling and walking strategy, there are seven supplementary documents for Local Cycling and Walking Infrastructure Plans (LCWIPs).

The County Council also have a Bus Service Improvement Plan in place which hopes to encourage increased usage through improving reliability, frequency and affordability.

Lancashire County Council provide further education material on the sources and health impacts of air pollution on their pages, Summary of Emissions Data and Monitoring of Air Quality and Health Impacts.

Smoke Control

Lancaster City Council have declared eight smoke control areas which cover the majority of the Lancaster. Information regarding the location of the control areas, the exempt appliances, and the fining process is available on the here on the Council website.

[8] Environment and climate strategy 2023-2025 - Lancashire County Council

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

This section sets out the monitoring undertaken within 2024 by Lancaster City Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2020 and 2024 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Lancaster City Council undertook automatic (continuous) monitoring at one site during 2024. Table A.1 in Appendix A shows the details of the automatic monitoring site. The UK Air Quality page presents automatic monitoring results for Lancaster Cable Street with automatic monitoring information also available through the UK-Air website .

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Lancaster City Council undertook non-automatic (i.e. passive) monitoring of NO_2 at 30 sites during 2024 including one triplicate site (C1,D1,E1). Table A.2 in Appendix A presents the details of the non-automatic sites. The number of diffusion tubes in the network has reduced since 2023 due to continued missing diffusion tubes or compliance with concentrations significantly below the relevant objective for the past five years. Monitoring at site LC23 was discontinued in 2024 due to the site being located on the facia of a building which has been renovated and changed ownership. Sites LC8, B1, B2, B3, Q, ZA, CF1, CF3, CF6, CF7, LC22, LC24 LC25, LC27, CF8 and LC28 were discontinued for 2024 and are no longer monitoring sites. As discussed in last year's ASR, the justification for ceasing monitoring at these sites stems from the low measured nitrogen dioxide concentrations at these sites, combined with the fact that there are other monitoring sites

within the area. Triplicate site ‘B1, B2, B3’ was co-located at the Dalton Square automatic monitoring station which is no longer active.

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_2)

Table A.3 and Table 4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40 µg/m^3. 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).

Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200 µg/m^3, not to be exceeded more than 18 times per year.

In 2024, the annual mean NO_2 concentration recorded at Lancaster Cable Street (Urban Traffic) automatic monitoring site was 26.0 µg/m^3, therefore significantly below the objective of 40 µg/m^3 and recording the lowest annual mean concentration over the past five years. Additionally, there were no exceedances of the NO_2 1-hour mean objective as has been the case for the past ten years with the last singular concentration over 200 µg/m^3 occurring in December 2014.

For diffusion tubes, the full 2024 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.

During 2024, the average NO_2 annual mean concentration across the entire diffusion tube network was 24.0 µg/m^3, with the lowest concentration of 10.0 µg/m^3 recorded at LC4 (Brunton Road) and the maximum being 40.3 µg/m^3 at LC10 (Dalton Square) after fall off with distance correction. This continues the trend at this location of recording the highest mean concentration for the past five years. This highlights a slight increase relative to the annual mean concentration recorded in 2023 (39 µg/m^3). In 2024, two sites recorded annual mean NO_2 concentrations above or within 10% of the objective of 40 µg/m^3; Site LC10 (40.3 µg/m^3) and LC11 (36.6 µg/m^3), after fall off with distance correction. The concentration at Site LC11 (Thurnham Street) has increased considerably in comparison to 2023 (27 µg/m^3) however is a reduction relative to the long-term trend of 2020-2024. Both sites, LC10 and LC11, are located within the City of Lancaster AQMA.

The concentrations recorded at each site for 2023 and 2024 are presented and compared in Table 3.1. Across the network, 22 sites recorded an increased in annual mean NO_2 concentration between 2023 and 2024 and the remaining eight sites experiencing a reduction in concentration.

Table 3.1 – Changes in Nitrogen Dioxide Levels at Non-Automatic Monitoring Sites Between 2023 – 2024.

Diffusion Tube ID	2023 NO_2 Monitoring Result (µg/m^3)	2024 NO_2 Monitoring Result (µg/m^3)	Increase / Decrease between 2023-2024	Difference (µg/m^3)
LC1	31	31.4	Increase	0.4
LC4	9	10.0	Increase	1.0
LC5	23	23.1	Increase	0.1
LC9	20	20.5	Increase	0.5
LC10	39	40.8	Increase	1.8
LC11	27	37.1	Increase	10.1
LC13	25	24.4	Decrease	-0.6
LC14	21	19.8	Decrease	-1.2
A	19	17.5	Decrease	-1.5
C1, D1, E1	27	27.2	Increase	0.2
H	21	20.8	Decrease	-0.2
I	24	24.4	Increase	0.4
J	29	29.9	Increase	0.9
K	27	26.6	Decrease	-0.4
L	25	25.8	Increase	0.8

Diffusion Tube ID	2023 NO_2 Monitoring Result ($\mu g/m^3$)	2024 NO_2 Monitoring Result ($\mu g/m^3$)	Increase / Decrease between 2023-2024	Difference ($\mu g/m^3$)
cfO	25	27.0	Increase	2.0
V	20	22.6	Increase	2.6
Z	21	22.1	Increase	1.1
ZC	21	20.6	Decrease	-0.4
CF2	23	24.0	Increase	1.0
CF5	21	21.6	Increase	0.6
T1	18	18.3	Increase	0.3
LC19	33	35.5	Increase	2.5
LC20	27	27.6	Increase	0.6
LC26	18	17.2	Decrease	-0.8
BLS1	16	16.0	Increase	0.0
H1	15	15.1	Increase	0.1
LC31	20	20.8	Increase	0.8
LC32	30	29.6	Decrease	-0.4
MC4	21	21.6	Increase	0.6

3.2.2 Particulate Matter (PM_{10})

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of 40$\mu g/m^3$.

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of 50$\mu g/m^3$, not to be exceeded more than 35 times per year.

In 2024, the annual mean PM_{10} concentration recorded at Lancaster Cable Street was 13.4 $\mu g/m^3$ which follows the trend of continued reductions seen for the past five years. This is a decrease of 1 $\mu g/m^3$ in comparison to the 2023 annual average. Similarly to 2023, there were no exceedances of the 24 hour mean objective in 2024.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.8 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years.

The 2024 annual mean concentration recorded at Cable Street automatic monitoring station was 7.1 $\mu g/m^3$ which is shown to be consistent with the 2023 annual mean of 7 $\mu g/m^3$.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Which AQMA? (1)	Monitoring Technique	Distance to Relevant Exposure (m) (2)	Distance to kerb of nearest road (m) (1)	Inlet Height (m)
A1	Cable Street	Roadside	347684	461963	NO_2, PM_{10}, $PM_{2.5}$	Yes	City of Lancaster	APNA-370 NO_x analyser, FIDAS	0.4	4.0	2.0

Notes:

(1) N/A if not applicable

(2) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

Table A.2 – 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)
L/C1	Great John Street	Roadside	347852	461682	NO_2	City of Lancaster	2.5	2.5	No	3.5
L/C4	Brunton Road	Urban Background	347904	460508	NO_2	No	0.2	1.5	No	3.5
L/C5	Owen Road	Roadside	347846	462448	NO_2	City of Lancaster	0.2	2.5	No	3.0
L/C9	Brock Street 1	Roadside	347808	461564	NO_2	City of Lancaster	0.2	2.7	No	3.0
L/C10	Dalton Square	Roadside	347834	461596	NO_2	City of Lancaster	0.2	3.3	No	3.0
L/C11	Thurnham Street	Roadside	347821	461404	NO_2	City of Lancaster	0.2	3.1	No	3.0
L/C13	King Street 1	Roadside	347580	461593	NO_2	City of Lancaster	0.2	2.4	No	3.0
L/C14	King Street 2	Roadside	347685	461389	NO_2	City of Lancaster	0.2	2.2	No	3.0
A	High School, Morecambe Road	Kerbside	347582	462451	NO_2	City of Lancaster	N/A	0.3	No	3.0
C1, D1, E1	Cable Street, Lancaster (Co-located)	Roadside	347685	461963	NO_2	City of Lancaster	2.0	3.7	Yes	2.0
H	South Road 1	Roadside	347859	461126	NO_2	No	0.2	9.0	No	3.0

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)
I	Parliament Street	Roadside	347909	462015	NO_2	City of Lancaster	0.2	3.5	No	3.0
J	North Road	Roadside	347852	461909	NO_2	City of Lancaster	0.2	1.9	No	3.0
K	Stonewell	Roadside	347850	461791	NO_2	City of Lancaster	0.2	4.4	No	3.0
L	King Street	Roadside	347613	461523	NO_2	City of Lancaster	0.2	1.5	No	2.5
CFO	Market Street	Roadside	349909	470624	NO_2	No	0.2	1.4	No	3.0
V	Main Road	Roadside	348359	455352	NO_2	No	0.2	1.6	No	3.0
Z	Main Road	Roadside	348345	455272	NO_2	No	0.2	2.3	No	2.5
ZC	Main Road	Roadside	348375	455393	NO_2	No	0.4	2.3	No	3.0
CF2	Lancaster Road/Market Street	Roadside	349934	470605	NO_2	No	0.2	2.3	No	3.5
CF5	Scotland Road	Roadside	349962	470618	NO_2	No	0.2	1.8	No	3.0
T1	Lancaster Road, Torrisholme	Roadside	345631	463694	NO_2	No	0.2	2.4	No	3.5

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)
LC19	China Street 1	Roadside	347502	461841	NO_2	City of Lancaster	0.4	1.5	No	3.0
LC20	China Street 2	Roadside	347515	461835	NO_2	City of Lancaster	0.2	1.5	No	3.0
LC26	Scotforth Road 2,	Roadside	347990	459418	NO_2	No	0.2	5.5	No	3.0
BLS1	Main Road, Bolton Le Sands	Roadside	348594	468500	NO_2	No	0.2	4.0	No	3.0
H1	Heysham Road, Heysham	Roadside	341964	463273	NO_2	No	0.2	2.5	No	2.5
LC31	3 St Leonards Gate	Roadside	348114	462071	NO_2	No	0.4	3.0	No	3.0
LC32	The Pub, China Street	Roadside	347511	461744	NO_2	City of Lancaster	0.2	2.0	No	3.5
MC4	Shrimp Roundabout Morecambe	Kerbside	345240	463663	NO_2	No	20	1.0	No	3.0

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.3 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
A1	347684	461963	Roadside	69.4	69.4	28	32	27	26.6	26.0

☒ **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_2 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 2024.**

Notes:

The annual mean concentrations are presented as µg/m^3.

Exceedances of the NO_2 annual mean objective of 40µg/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%).

Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

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 2024 (%) [2]	2020	2021	2022	2023	2024
LC1	347852	461682	Roadside	83.9	83.9	34	38	36	31	31.4
LC4	347904	460508	Urban Background	86.1	86.1	10	12	10	9	10.0
LC5	347846	462448	Roadside	93.6	93.6	23	29	24	23	23.1
LC9	347808	461564	Roadside	93.6	93.6	22	24	23	20	20.5
LC10	347834	461596	Roadside	93.6	93.6	**42**	**48**	**47**	39	**40.8**
LC11	347821	461404	Roadside	84.5	84.5	37	43	41	37	37.1
LC13	347580	461593	Roadside	85.5	85.5	26	27	27	25	24.4
LC14	347685	461389	Roadside	85.5	85.5	25	29	25	21	19.8
A	347582	462451	Kerbside	93.6	93.6	19	22	19	19	17.5
C1, D1, E1	347685	461963	Roadside	93.6	93.6	27	32	28	27	27.2
H	347859	461126	Roadside	83.9	83.9	21	25	23	21	20.8
I	347909	462015	Roadside	93.6	93.6	23	27	25	24	24.4
J	347852	461909	Roadside	93.6	93.6	28	35	33	29	29.9
K	347850	461791	Roadside	93.6	93.6	27	31	29	27	26.6
L	347613	461523	Roadside	93.6	93.6	22	29	27	25	25.8
CFO	349909	470624	Roadside	93.6	93.6	26	28	29	25	27.0
V	348359	455352	Roadside	93.6	93.6	24	27	25	22	22.6

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 2024 (%) [2]	2020	2021	2022	2023	2024
Z	348345	455272	Roadside	84.5	84.5	23	25	24	21	22.1
ZC	348375	455393	Roadside	83.9	83.9	22	24	22	21	20.6
CF2	349934	470605	Roadside	93.6	93.6	17	22	25	23	24.0
CF5	349962	470618	Roadside	93.6	93.6	22	25	24	21	21.6
T1	345631	463694	Roadside	93.6	93.6	21	21	20	18	18.3
LC19	347502	461841	Roadside	93.6	93.6	**40**	**42**	39	33	35.5
LC20	347515	461835	Roadside	93.6	93.6	29	33	31	27	27.6
LC26	347990	459418	Roadside	83.9	83.9	20	23	21	18	17.2
BLS1	348594	468500	Roadside	83.9	83.9	18	20	17	16	16.0
H1	341964	463273	Roadside	93.6	93.6	15	17	15	15	15.1
LC31	348114	462071	Roadside	84.5	84.5	22	27	22	20	20.8
LC32	347511	461744	Roadside	93.6	93.6	N/A	N/A	N/A	30	29.6
MC4	345240	463663	Kerbside	83.9	83.9	22	25	21	21	21.6

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

☒ **Diffusion tube data has been bias adjusted.**

☒ **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.**

Notes:

The annual mean concentrations are presented as µg/m^3.

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

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

Means for diffusion tubes have been corrected for bias. 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_2 Concentrations – City of Lancaster AQMA

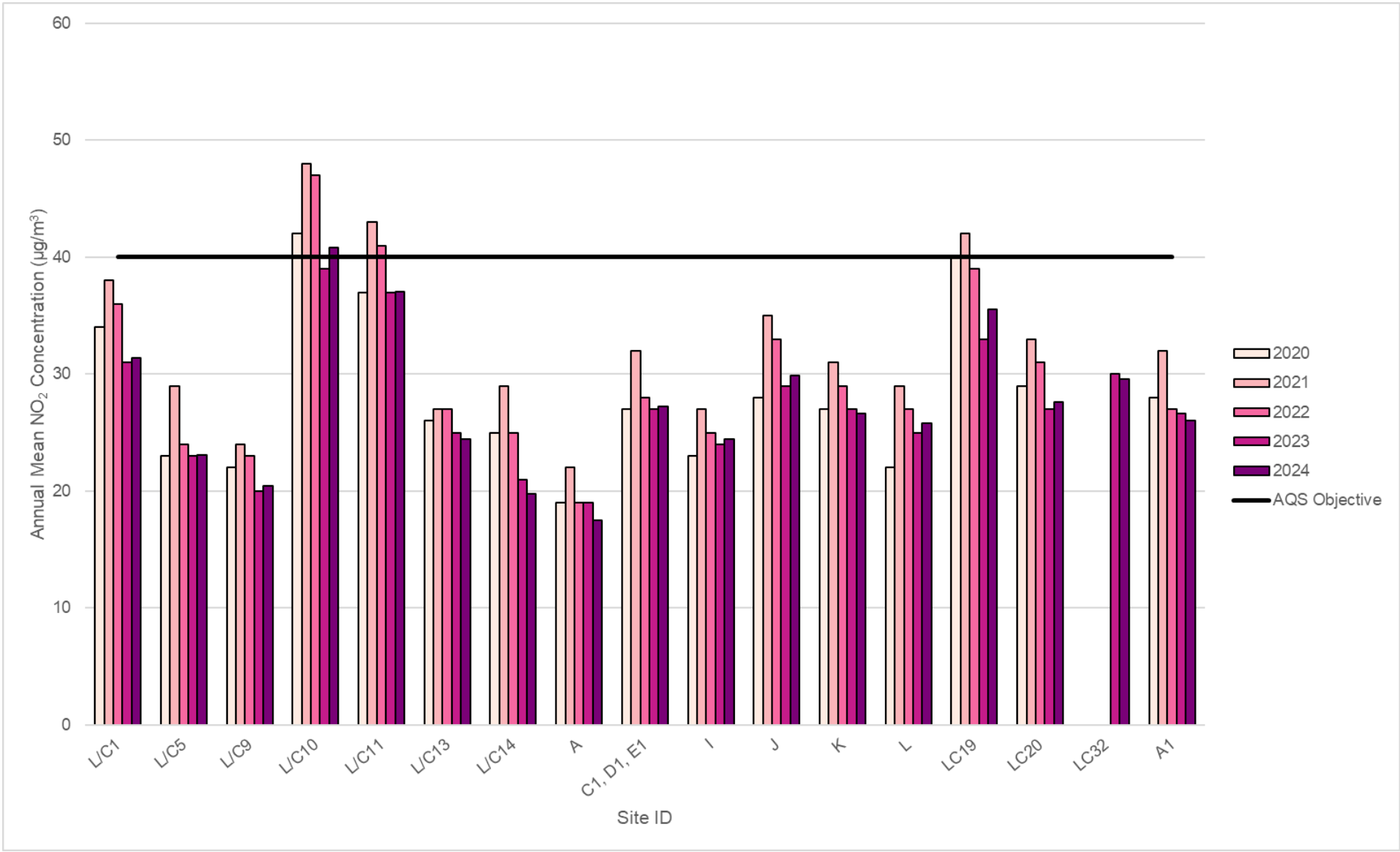


Figure A.2 – Trends in Annual Mean NO_2 Concentrations –Outside AQMA (Morecambe and Torrisholme)

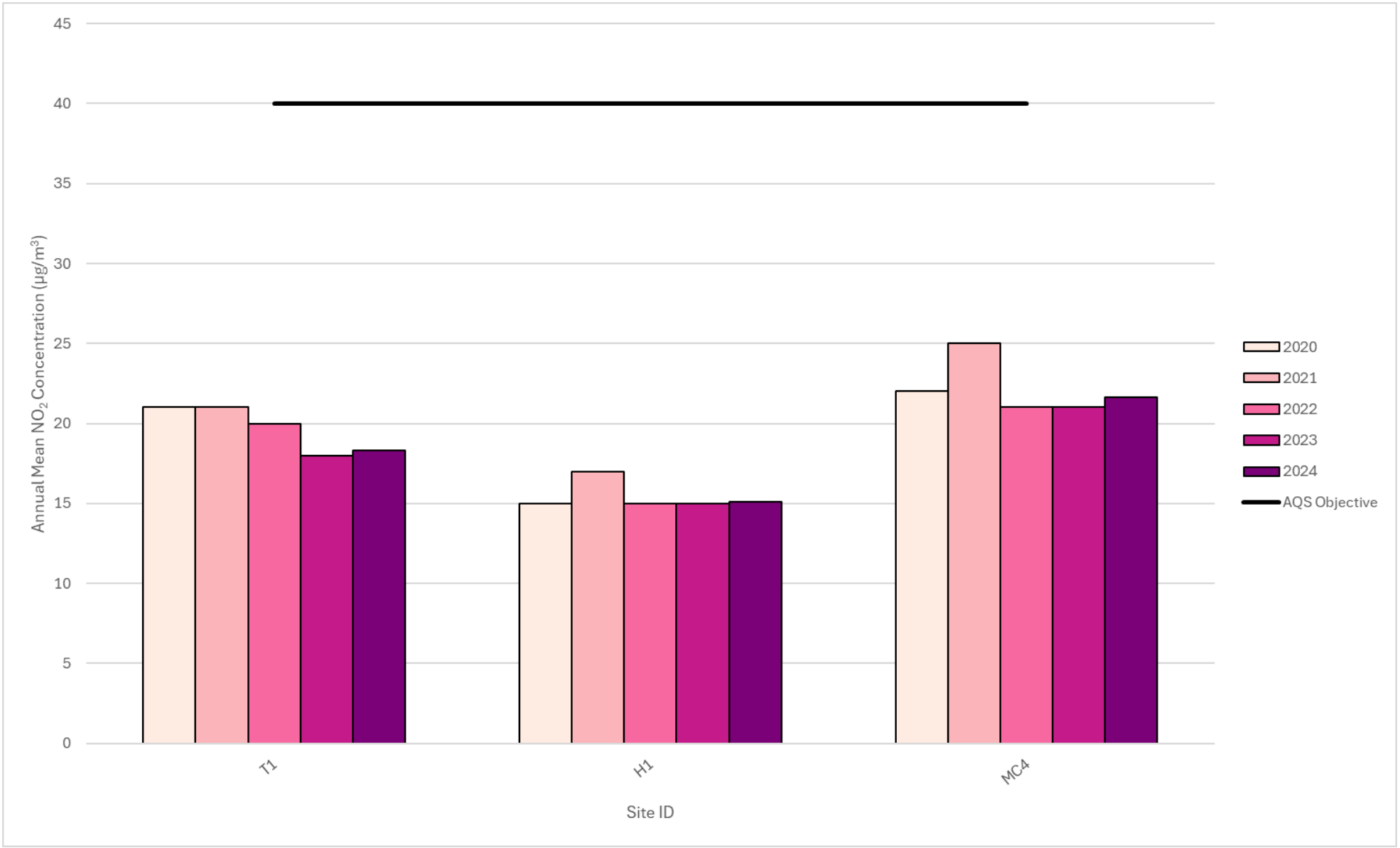


Figure A.3 – Trends in Annual Mean NO_2 Concentrations – Outside of AQMA (Carnforth and Bolton Le Sands)

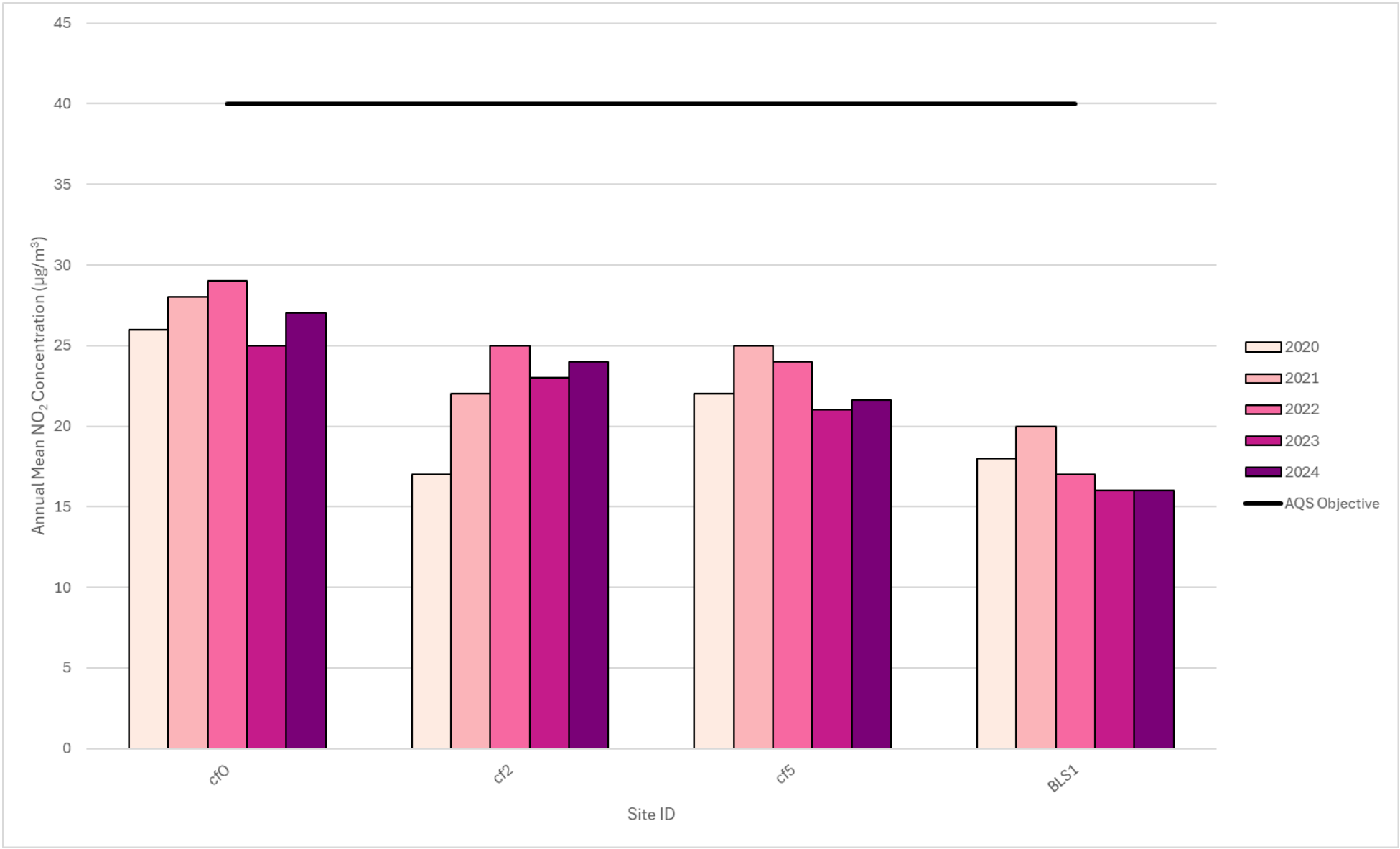


Figure A.4 – Trends in Annual Mean NO_2 Concentrations – Outside of AQMA (Galgate)

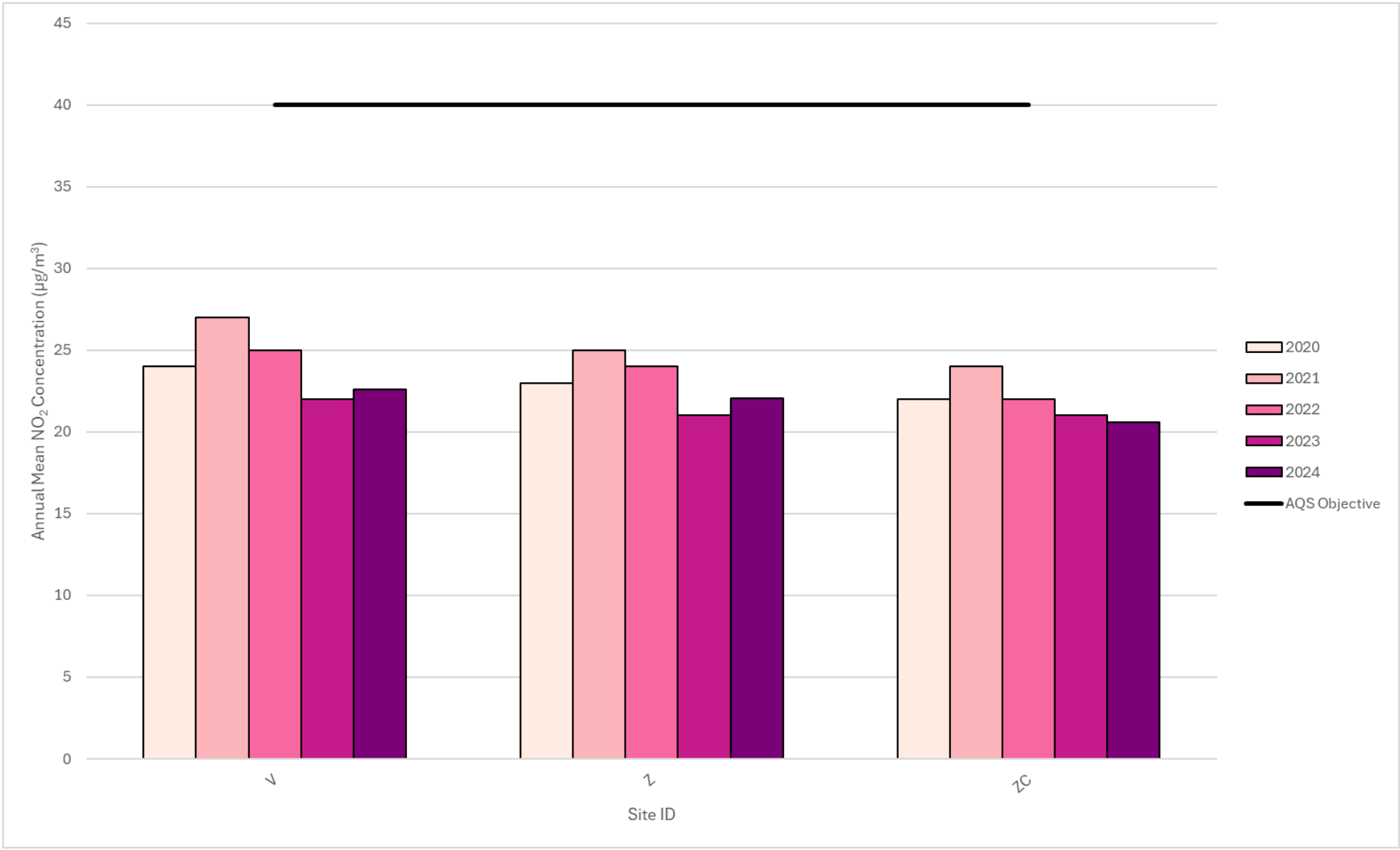


Figure A.5 – Trends in Annual Mean NO_2 Concentrations –Outside AQMA (Lancaster)

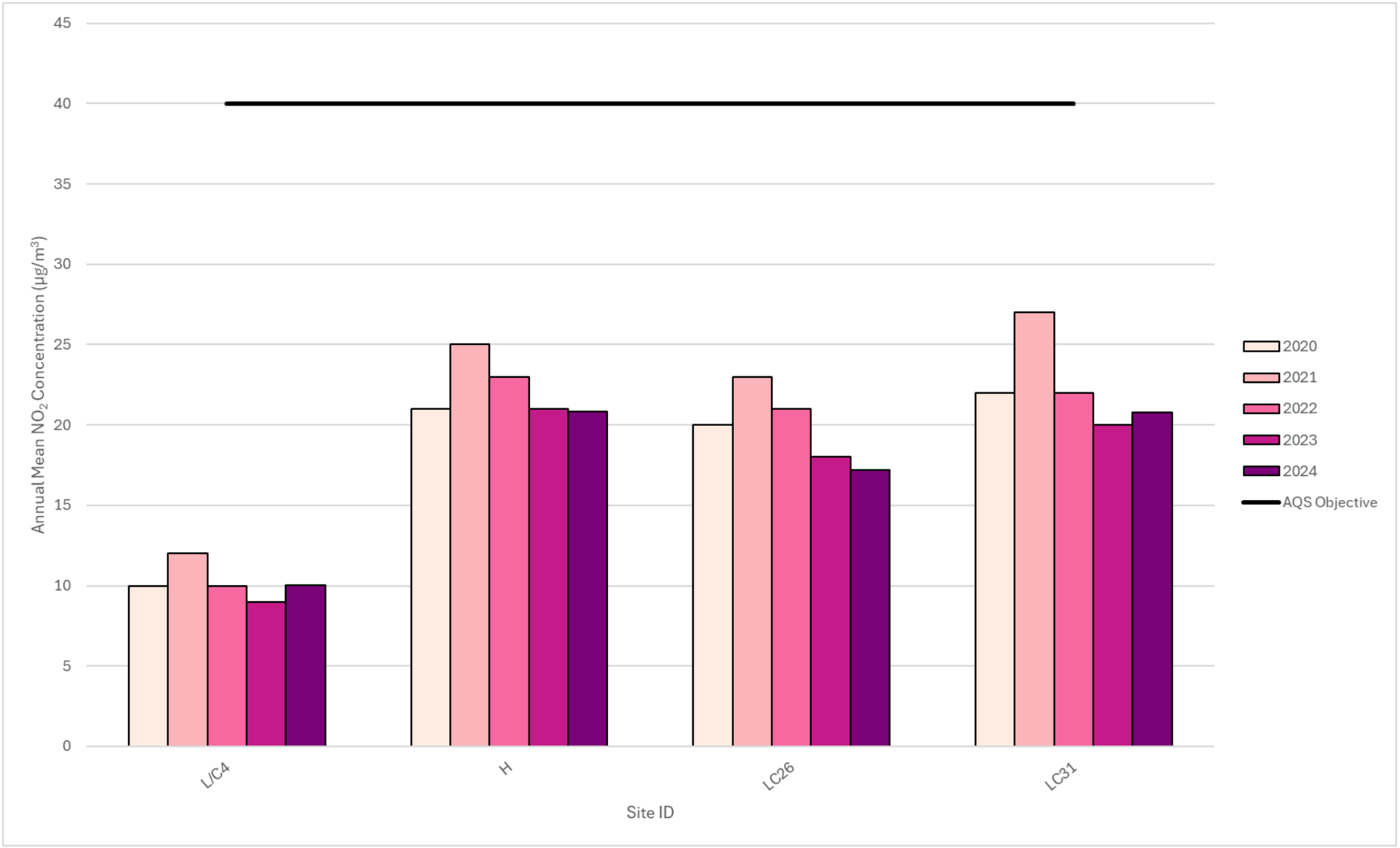


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
A1	347684	461963	Roadside	69.4	69.4	0	0	0	0	0 (83)

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m^3 have been recorded.

Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(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%).

Table A.6 – Annual Mean PM_{10} Monitoring Results ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
A1	347684	461963	Roadside	60.4	60.4	17	17	15	14.4	13.4

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

Notes:

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

Exceedances of the PM_{10} annual mean objective of $40\mu g/m^3$ 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.

(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.6 – Trends in Annual Mean PM_{10} Concentrations

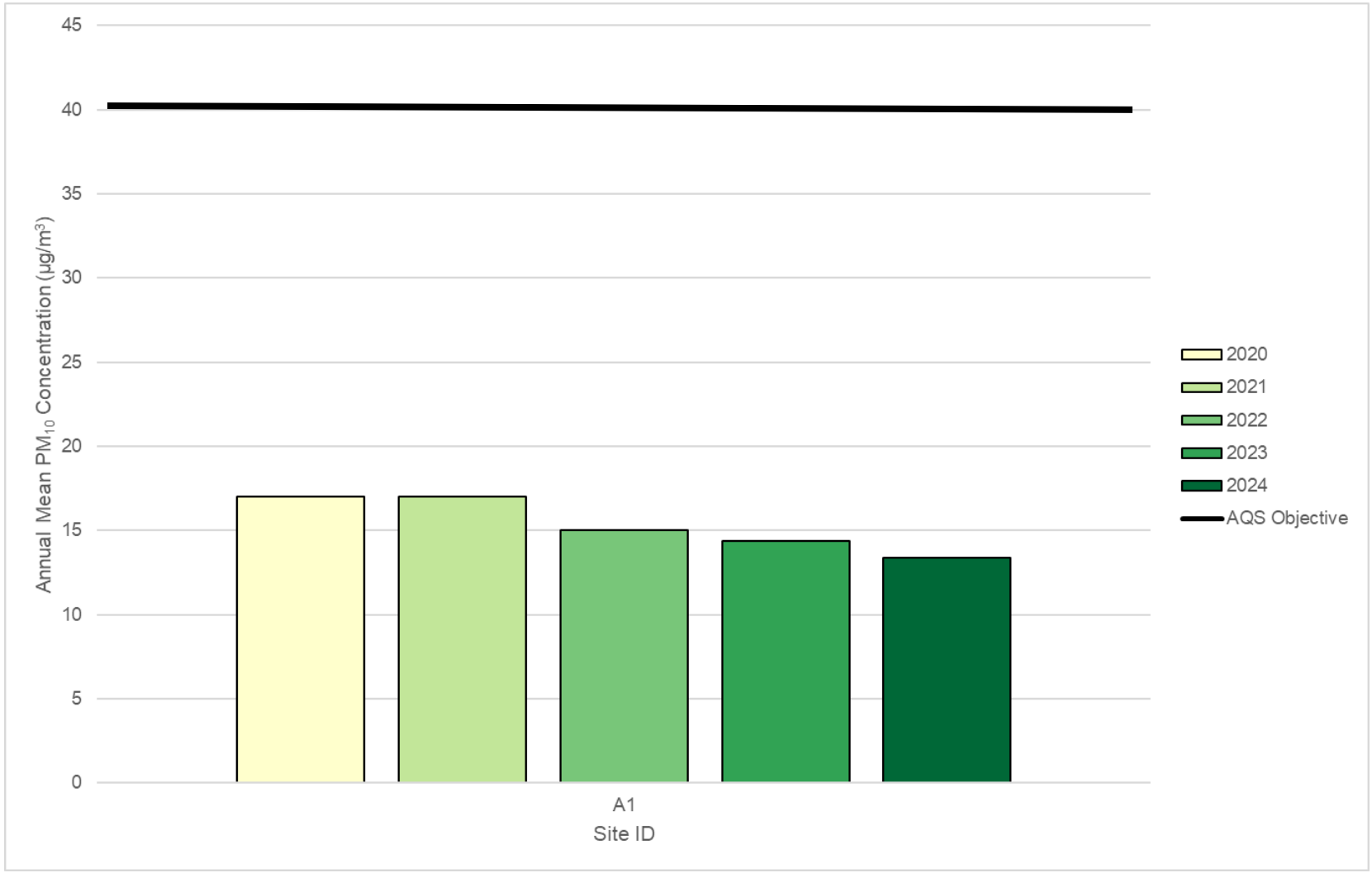


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
A1	347684	461963	Roadside	60.4	60.4	0	2	4	0	0 (24)

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m^3 have been recorded.

Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

(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.7 – Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m³

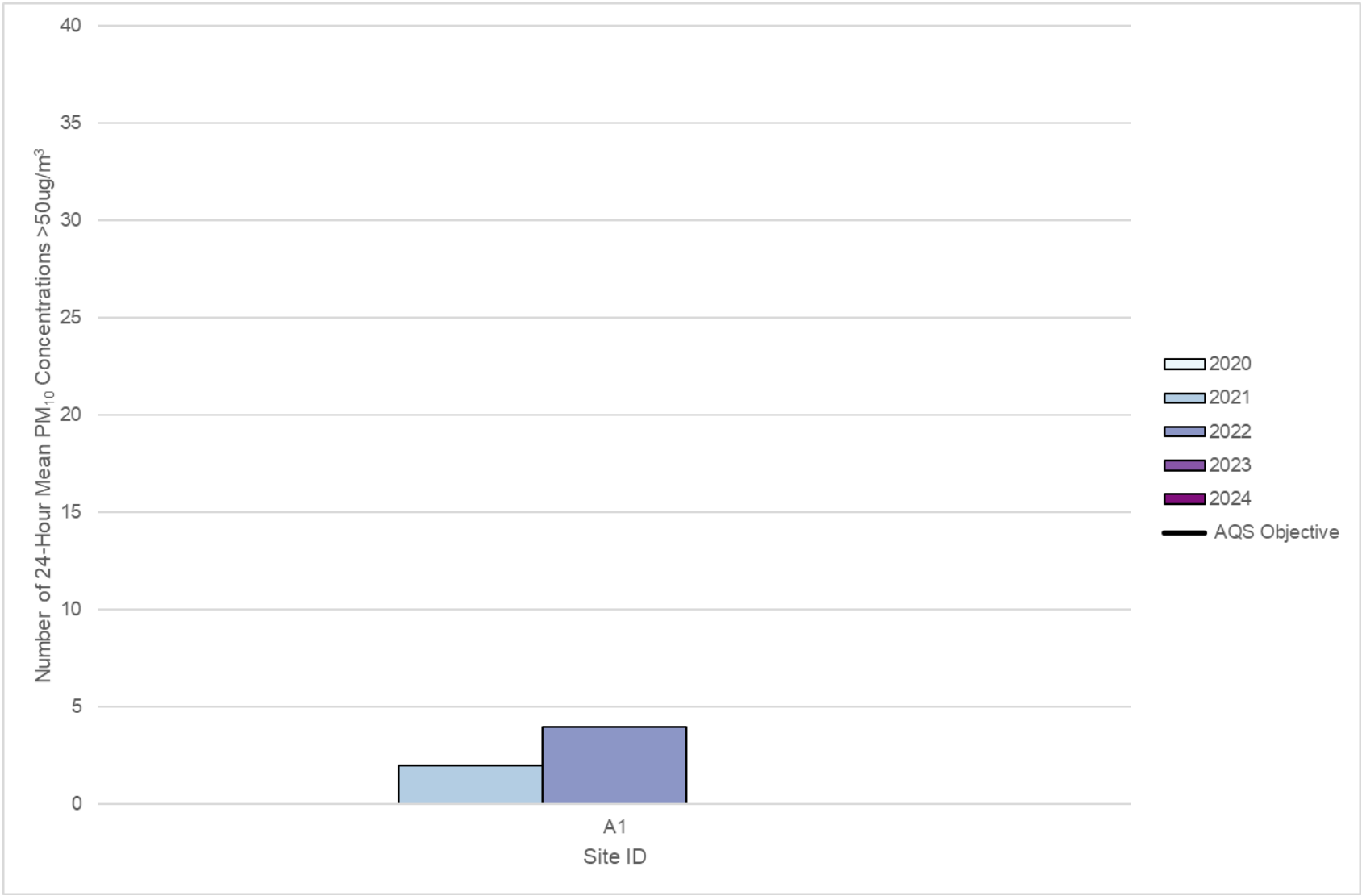


Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
A1	347684	461963	Roadside	60.4	60.4	N/A	8	8	7	7.1

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

Notes:

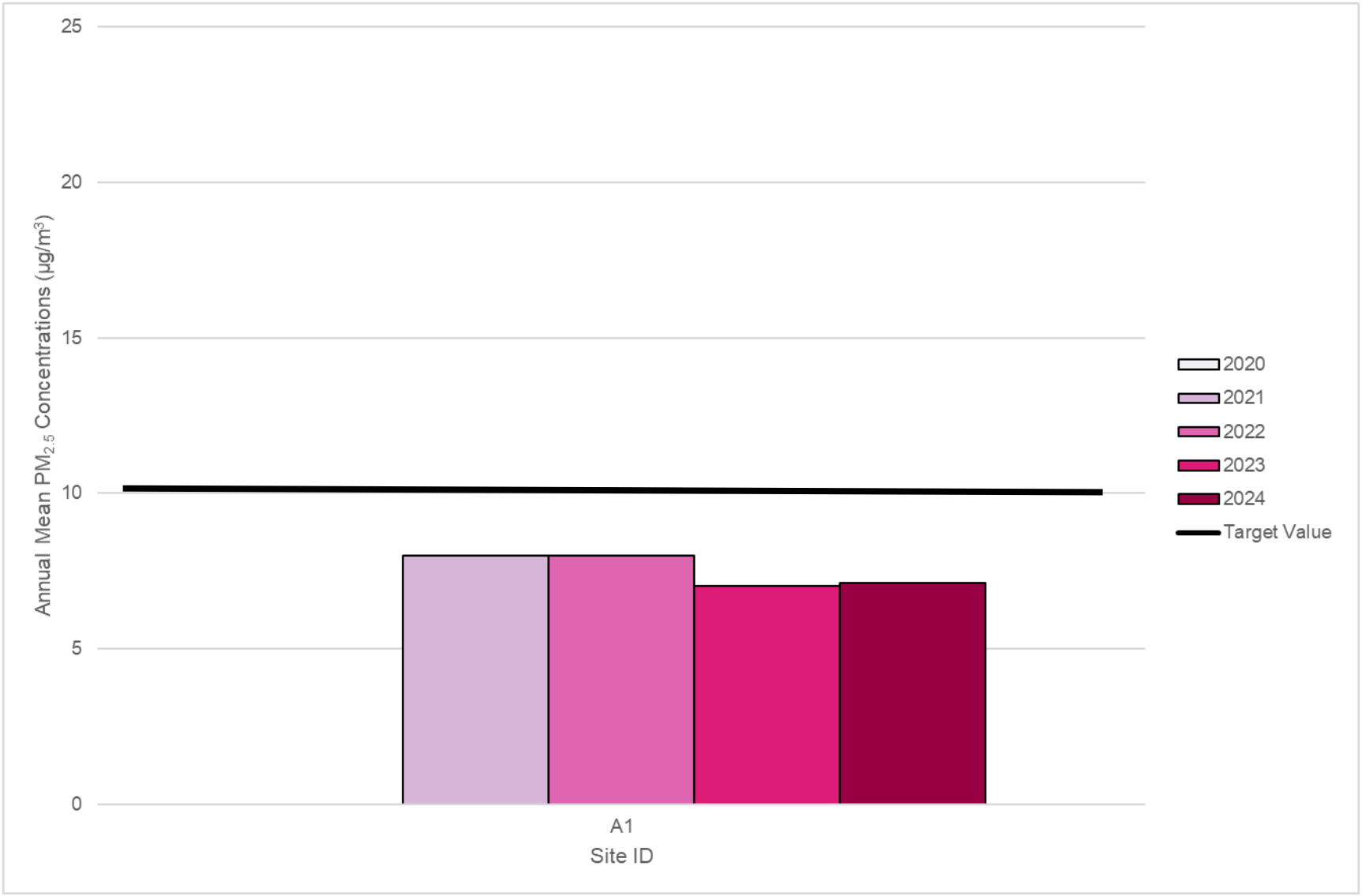
The annual mean concentrations are presented as µg/m^3.

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.

(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.8 – Trends in Annual Mean $PM_{2.5}$ Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO_2 2024 Diffusion Tube Results (µg/m^3)

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 (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
L/C1	347852	461682	39.8	41.0	42.1	-	-	34.0	29.8	28.7	39.6	41.3	41.0	36.7	37.4	31.4	-	Missing tube reported for May.
L/C4	347904	460508	17.9	13.2	9.5	-	8.3	6.3	7.9	6.6	-	18.2	17.2	14.3	11.9	10.0	-	September result removed due to monitoring a concentration below 1 µg/m^3.
L/C5	347846	462448	35.1	26.7	24.7	-	28.5	22.5	23.7	19.0	33.0	28.0	32.7	28.6	27.5	23.1	-	
L/C9	347808	461564	31.3	29.6	23.3	-	22.9	20.5	19.3	14.5	22.9	26.3	31.4	26.1	24.4	20.5	-	
L/C10	347834	461596	53.9	47.4	43.8	-	47.5	56.2	47.2	38.6	49.3	45.6	51.2	53.8	48.6	**40.8**	**40.3**	
L/C11	347821	461404	44.1	-	37.0	-	44.1	50.7	46.0	36.5	49.1	41.7	41.0	51.2	44.1	37.1	36.6	February result deemed as erroneous due to being significant lower.
L/C13	347580	461593	-	23.9	30.9	-	29.3	31.2	26.6	26.3	25.8	32.5	34.0	30.2	29.1	24.4	-	Missing tube reported for January.
L/C14	347685	461389	-	27.6	24.8	-	22.1	23.2	21.4	21.2	22.7	27.5	32.6	12.2	23.5	19.8	-	Missing tube reported for January.
A	347582	462451	27.6	22.5	14.0	-	20.4	21.7	20.9	17.2	23.1	22.0	16.2	23.5	20.8	17.5	-	
C1	347685	461963	37.9	31.4	29.6	-	32.9	33.3	32.4	23.8	43.2	29.5	36.5	35.6	-	-	-	Triplicate Site with C1, D1 and E1 - Annual data provided for E1 only
D1	347685	461963	35.2	31.6	28.2	-	33.4	32.9	28.2	22.2	39.1	29.2	34.8	32.4	-	-	-	Triplicate Site with C1, D1 and E1 - Annual data provided for E1 only
E1	347685	461963	37.0	32.6	29.7	-	35.3	32.6	28.2	21.1	38.6	29.9	35.5	34.5	32.4	27.2	-	Triplicate Site with C1, D1 and E1 - Annual data provided for E1 only
H	347859	461126	30.0	27.2	22.9	-	-	20.9	20.9	16.8	29.5	26.8	28.6	24.3	24.8	20.8	-	Missing tube reported for May.
I	347909	462015	36.1	31.8	27.7	-	26.8	22.3	25.6	18.7	30.7	30.7	39.3	30.2	29.1	24.4	-	
J	347852	461909	38.6	37.6	33.3	-	34.3	31.4	32.8	26.3	38.1	36.8	45.0	37.2	35.6	29.9	-	
K	347850	461791	37.1	35.7	32.0	-	31.5	26.4	24.6	23.5	36.0	33.7	34.5	34.1	31.7	26.6	-	
L	347613	461523	37.2	33.7	30.1	-	29.4	32.4	25.6	22.4	30.4	28.9	38.0	29.7	30.7	25.8	-	
CFO	349909	470624	36.2	29.7	30.3	-	31.9	31.0	32.3	23.7	34.8	32.1	37.9	34.2	32.2	27.0	-	
V	348359	455352	33.6	28.6	21.4	-	26.0	29.8	26.0	22.6	23.3	25.0	30.5	28.8	26.9	22.6	-	
Z	348345	455272	30.0	29.0	20.7	-	24.4	28.4	25.3	20.5	28.9	25.2	30.2	-	26.3	22.1	-	December result removed due to monitoring a concentration below 1 µg/m^3.
ZC	348375	455393	29.4	27.4	25.5	-	22.5	17.6	17.6	-	25.0	26.4	31.2	22.6	24.5	20.6	-	August result removed due to monitoring a concentration below 1 µg/m^3.
CF2	349934	470605	30.6	29.0	26.5	-	26.3	28.6	28.8	26.9	27.2	27.9	32.6	30.0	28.6	24.0	-	

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 (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
CF5	349962	470618	28.7	29.0	25.4	-	25.0	21.4	21.3	18.6	27.9	29.1	33.9	22.9	25.7	21.6	_	
T1	345631	463694	25.5	27.5	22.6	-	19.6	19.5	19.9	17.3	17.2	17.3	28.3	25.1	21.8	18.3	_	
LC19	347502	461841	43.7	44.8	39.4	-	41.0	48.5	43.2	36.4	36.7	43.1	47.6	41.0	42.3	35.5	_	
LC20	347515	461835	38.8	38.0	33.8	-	30.3	29.5	26.6	24.2	33.2	33.8	39.5	34.2	32.9	27.6	_	
LC26	347990	459418	27.4	22.1	14.0	-	15.7	15.1	15.3	-	19.3	22.7	29.8	23.3	20.5	17.2	_	August result deemed as erroneous due to being significant lower.
BLS1	348594	468500	24.2	20.9	19.4	-	-	15.7	16.3	16.4	16.0	20.3	23.3	18.1	19.1	16.0	_	Missing tube reported for May.
H1	341964	463273	23.7	22.8	19.9	-	14.5	9.9	12.0	10.5	17.8	20.5	25.5	20.4	17.9	15.1	_	
LC31	348114	462071	30.3	28.6	20.1	-	21.4	27.7	22.3	23.3	21.3	19.8	32.9	-	24.8	20.8	_	December result removed due to monitoring a concentration below 1 µg/m^3.
LC32	347511	461744	39.9	38.4	34.8	-	34.9	33.5	31.0	25.7	39.5	36.6	38.9	34.1	35.2	29.6	_	
MC4	345240	463663	31.3	29.9	24.2	-	-	20.2	23.4	16.2	28.4	23.7	31.7	28.8	25.8	21.6	_	Missing tube reported for May.

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1.**

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

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☒ **Lancaster City Council confirm that all 2024 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

For all sites, the diffusion tubes for the April exposure period were not received by the lab.

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

New or Changed Sources Identified Within Lancaster City Council During 2024

Lancaster City Council has not identified any significant sources impacting the local air quality during 2024.

Additional Air Quality Works Undertaken by Lancaster City Council During 2024

Lancaster City Council has not completed any additional works within the reporting year of 2024, other than those already outlined above.

QA/QC of Diffusion Tube Monitoring

During 2024, the diffusion tubes were supplied and analysed by Gradko International Ltd, using the 20% TEA in water preparation method. Gradko International are a UKAS accredited laboratory who participate in the AIR-PT scheme for NO_2 diffusion tube analysis and Annual Field Intercomparison Exercise. These provide strict criteria that participating laboratories must meet, ensuring that the reported NO_2 concentrations are of a high calibre. From the most recent set of AIR-PT results (AR065, July – August 2024, and AR066, September – October 2024), Gradko scored 100% – the percentage score reflects the results deemed satisfactory based upon the z-score of ± 2.

During 2024, all diffusion tubes were exposed and changed in adherence (±2 days) with the 2024 Defra Diffusion Tube Monitoring Calendar.

For all sites, the diffusion tubes for the April exposure period were not received by the lab.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Lancaster City Council recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2025 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_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.

One co-location study was carried out by Lancaster City Council with the triplicate site (C1, D1, E1) and the automatic monitoring station at Cable Street. A local bias adjustment factor was produced however due to a poor overall continuous monitor data capture; the national bias adjustment factor has been used. The local bias adjustment factor calculation results are presented in Table C.3.

Lancaster City Council have applied a national bias adjustment factor of 0.84 to the 2024 monitoring data. A summary of bias adjustment factors used by Lancaster City Council over the past five years is presented in Table C.1.

Figure C.1 – Bias Adjustment Factor Spreadsheet (06/25)

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 06/25

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

This spreadsheet will be updated at the end of September 2025

LAQM Helpdesk Website

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

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

Step 1:	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[3] 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[2]	If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To update your selection, choose (All) from the pop-up list)	Year[2] (To update your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2024	UV	Belfast City Council	10	24	20	19.9%	G	**0.83**
Gradko	20% TEA in water	2024	R	Belfast City Council	12	43	34	28.8%	G	**0.78**
Gradko	20% TEA in water	2024	R	Belfast City Council	12	24	21	13.9%	G	**0.88**
Gradko	20% TEA in water	2024	R	Belfast City Council	12	34	27	25.5%	G	**0.80**
Gradko	20% TEA in water	2024	R	Blackburn With Darwen Bc	12	22	17	32.9%	G	**0.75**
Gradko	20% TEA in water	2024	R	Bath & North East Somerset	12	25	20	22.6%	G	**0.82**
Gradko	20% TEA in water	2024	R	Cambridge City Council	12	19	15	28.5%	G	**0.78**
Gradko	20% TEA in water	2024	UB	Plymouth City Council	12	16	14	13.8%	G	**0.88**
Gradko	20% TEA in water	2024	R	Plymouth City Council	12	31	23	33.4%	S	**0.75**
Gradko	20% TEA in water	2024	R	Monmouthshire County Council	12	29	24	19.4%	G	**0.84**
Gradko	20% TEA in water	2024	KS	Marylebone Road Intercomparison	11	41	36	16.1%	G	**0.86**
Gradko	20% TEA in water	2024	R	Lisburn & Castlereagh City Council	12	24	19	27.8%	G	**0.78**
Gradko	20% TEA in water	2024	R	Ards And North Down Borough Council	11	28	20	44.5%	G	**0.69**
Gradko	20% TEA in water	2024	R	Eastleigh Borough Council	12	29	24	20.3%	G	**0.83**
Gradko	20% TEA in water	2024	UB	Eastleigh Borough Council	12	19	17	12.4%	G	**0.89**
Gradko	20% TEA in water	2024	R	Eastleigh Borough Council	12	19	17	12.0%	G	**0.89**
Gradko	20% TEA in water	2024	R	Gateshead Council	12	20	18	13.9%	G	**0.88**
Gradko	20% TEA in water	2024	R	Gateshead Council	11	20	17	19.7%	G	**0.84**
Gradko	20% TEA in water	2024	R	Gateshead Council	12	24	20	21.7%	G	**0.82**
Gradko	20% TEA in water	2024	R	Gateshead Council	12	27	23	19.0%	G	**0.84**
Gradko	20% TEA in water	2024	R	Gateshead Council	12	28	30	-6.0%	G	**1.06**
Gradko	20% TEA in water	2024	R	Brighton & Hove City Council	11	34	27	26.3%	G	**0.79**
Gradko	20% TEA in water	2024	R	Liverpool City Council	12	34	25	35.7%	G	**0.74**
Gradko	20% TEA in water	2024	KS	Liverpool City Council	10	52	47	10.2%	G	**0.91**
Gradko	20% TEA in water	2024	R	Nottingham City Council	10	29	26	12.2%	G	**0.89**
Gradko	20% TEA in water	2024	R	Wychavon District Council	10	29	26	14.7%	G	**0.87**
Gradko	20% TEA in water	2024	R	Worcestershire	12	12	12	-3.4%	G	**1.04**
Gradko	20% TEA in water	2024	R	Cheshire West And Chester	12	33	27	21.7%	G	**0.82**
Gradko	20% TEA in water	2024	R	Cheshire West And Chester	11	30	27	12.9%	G	**0.89**
Gradko	20% TEA in water	2024	R	The Highland Council	12	19	18	6.9%	G	**0.94**
Gradko	20% TEA in water	2024	R	The Highland Council	11	15	11	35.3%	G	**0.74**
Gradko	20% TEA in water	2024		**Overall Factor[3] (31 studies)**				**Use**		**0.84**

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	National	06/25	0.84
2023	National	03/24	0.78
2022	National	03/23	0.83
2021	National	06/22	0.84
2020	National	06/21	0.81

Table C.2 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input
Periods used to calculate bias	7
Bias Factor A	0.78 (0.74 - 0.84)
Bias Factor B	28% (20% - 36%)

	Local Bias Adjustment Input
Diffusion Tube Mean (µg/m^3)	32.6
Mean CV (Precision)	3.8%
Automatic Mean (µg/m^3)	25.6
Data Capture (for periods used to calculate bias)	94%
Adjusted Tube Mean (µg/m^3)	25 (24 - 27)

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

Two diffusion tube sites had annual mean concentrations greater than 36 µg/m^3 and therefore require fall off with distance correction. The calculations are shown within Table C.4.

Table C.3 – Non-Automatic NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
LC10	3.3	3.5	40.8	9.9	**40.3**	*Predicted concentration at Receptor above AQS objective.*
LC11	3.1	3.3	37.1	6.7	36.6	*Predicted concentration at Receptor within 10% the AQS objective.*

QA/QC of Automatic Monitoring

For 2023 the Council had one operational automatic air quality monitoring station located at Cable Street Lancaster, which commenced monitoring in 2011. The station monitors nitrogen dioxide via a Horiba APNA 370 NO_2 analyser and particulate matter (PM_{10} and $PM_{2.5}$) via a FIDAS instrument. The monitors are maintained and serviced by ESU1 with servicing undertaken twice per year. Routine calibration is undertaken by Lancaster City Council on a monthly basis. The site is not independently audited but data monitoring, validation, and ratification is undertaken by Air Quality Data Management.

Live and historic data is available at: http://www.ukairquality.net/

Automatic monitoring data provided in this report has been ratified by Air Quality Data Management (AQDM).

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

Correction of the $PM_{2.5}$ Fidas monitoring data was conducted in accordance to methodology stipulated in paragraph 7.174 in LAQM.TG22, namely a division by 1.06 of the monitored concentrations.

Automatic Monitoring Annualisation

The Cable Street automatic monitoring site had a data capture of less than 75% therefore requiring annualisation. The urban background sites ‘Blackpool Marton’ and ‘Preston’ were used and the annualisation calculations are presented in Table C.5.

Table C.4 – Automatic NO_2 Annualisation Summary (concentrations presented in $\mu g/m^3$)

Background Site	Annual Data Capture (%)	Annual Mean (A_m)	A1	
			Period Mean (P_m)	Ratio (A_m / P_m)
Blackpool Marton	93.6	8.1	8.1	1.006
Preston	98.6	15.6	15.8	0.983
Average (R_a)			0.994	
Raw Data Annual Mean (M)			26.2	
Annualised Annual Mean (M x R_a)			26.0	

Table C.5 – Automatic PM_{10} Annualisation Summary (concentrations presented in $\mu g/m^3$)

Background Site	Annual Data Capture (%)	Annual Mean (A_m)	A1	
			Period Mean (P_m)	Ratio (A_m / P_m)
Blackpool Marton	99.9	12.7	12.7	0.997
Preston	99.9	11.3	11.0	1.031
Average (R_a)			**1.014**	
Raw Data Annual Mean (M)			**13.2**	
Annualised Annual Mean (M x R_a)			**13.4**	

Table C.6 – Automatic $PM_{2.5}$ Annualisation Summary (concentrations presented in $\mu g/m^3$)

Background Site	Annual Data Capture (%)	Annual Mean (A_m)	A1	
			Period Mean (P_m)	Ratio (A_m / P_m)
Blackpool Marton	99.9	7.5	7.5	1.006
Preston	99.9	6.9	6.6	1.035
Average (R_a)			**1.021**	
Raw Data Annual Mean (M)			**7.0**	
Annualised Annual Mean (M x R_a)			**7.1**	

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, automatic annual mean NO_2 concentrations corrected for distance are presented in Table A.3.

No automatic NO_2 monitoring locations within Lancaster City Council required distance correction during 2024.

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

Figure D.1 – Map of Non-Automatic Monitoring Site (City of Lancaster AQMA)

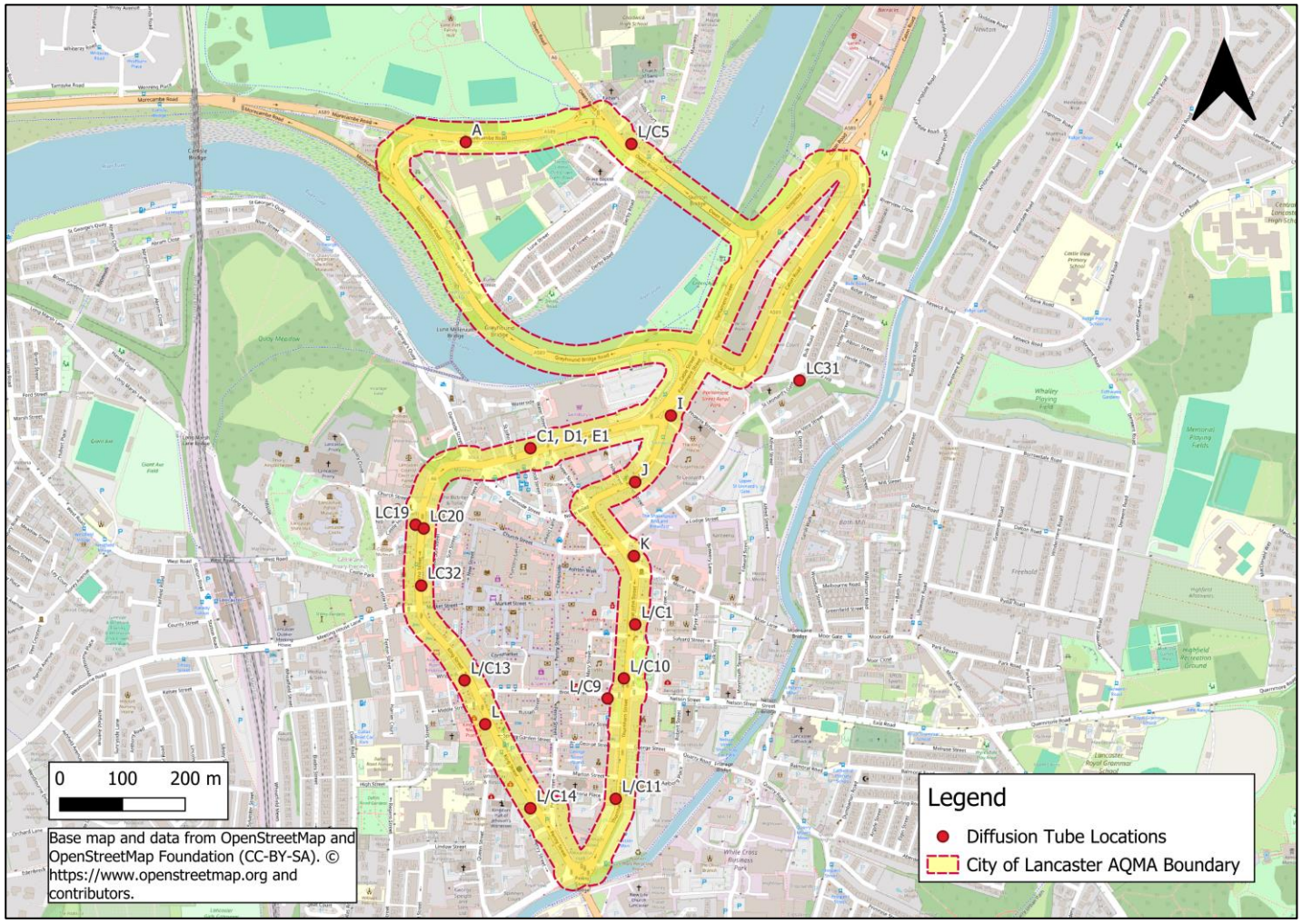


Figure D.2 – Map of Non-Automatic Monitoring Site (Lancaster – Outside of AQMA)

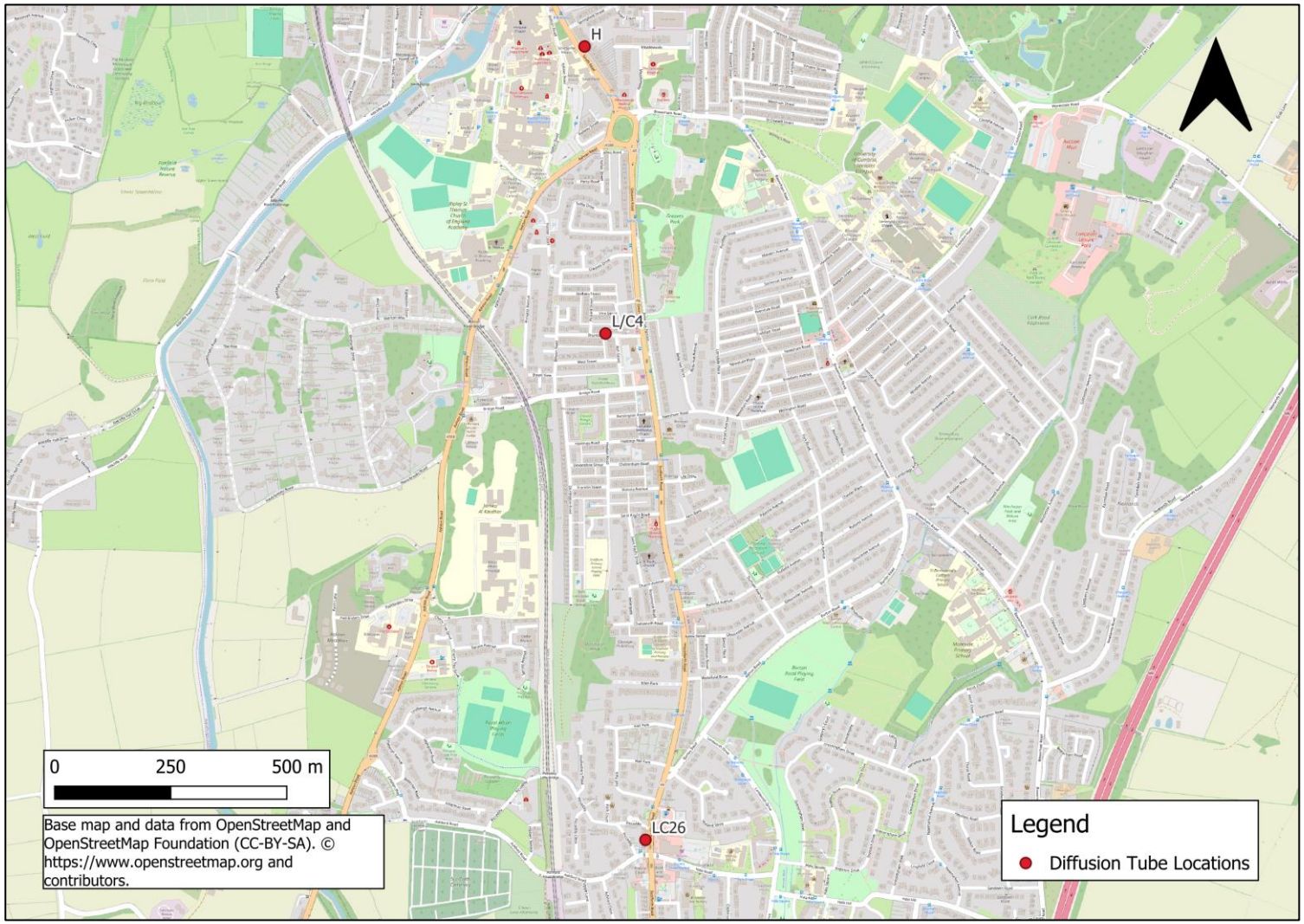


Figure D.3 – Map of Non-Automatic Monitoring Site (Galgate)

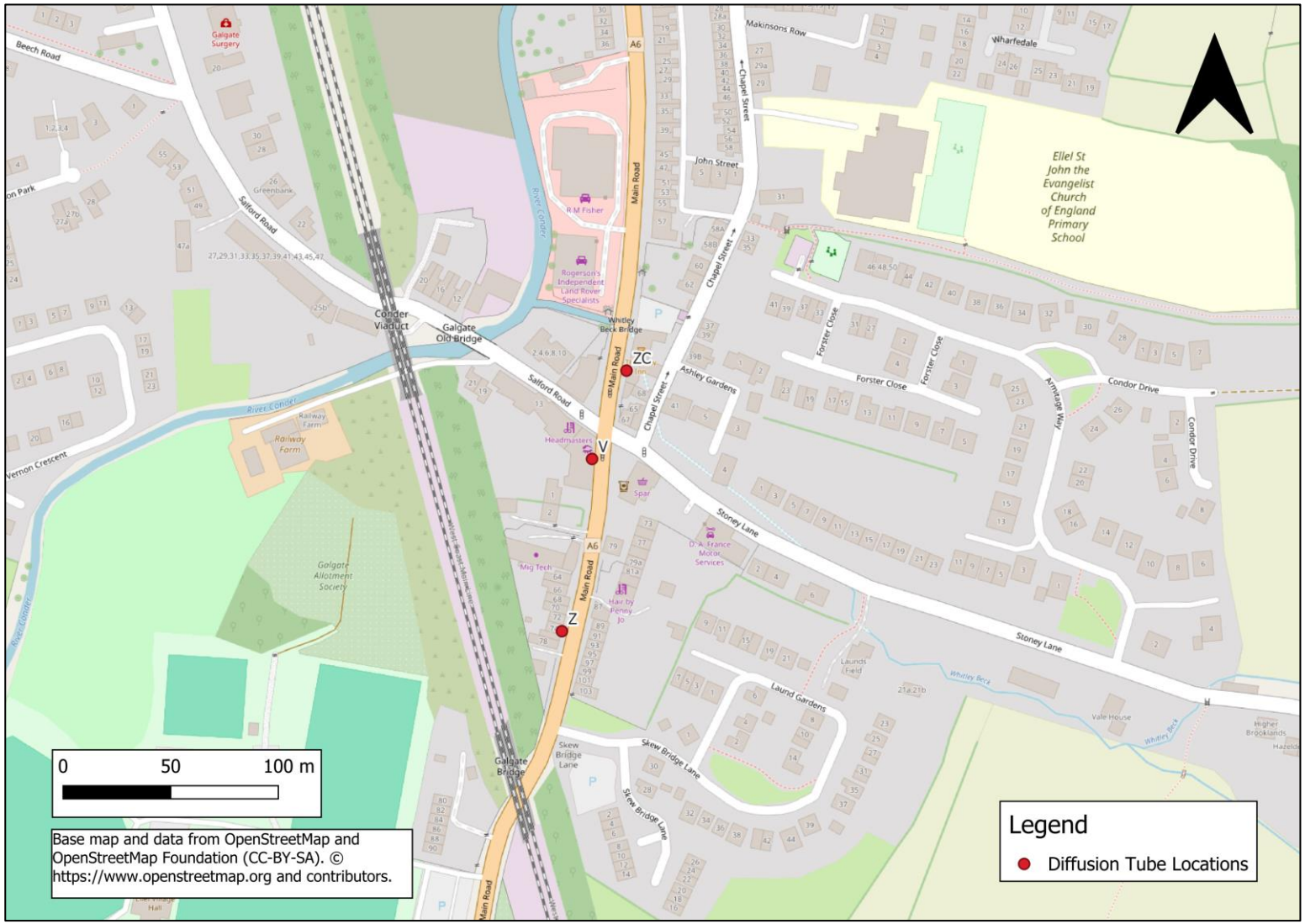


Figure D.4 – Map of Non-Automatic Monitoring Site (Morecambe & Torrisholme)

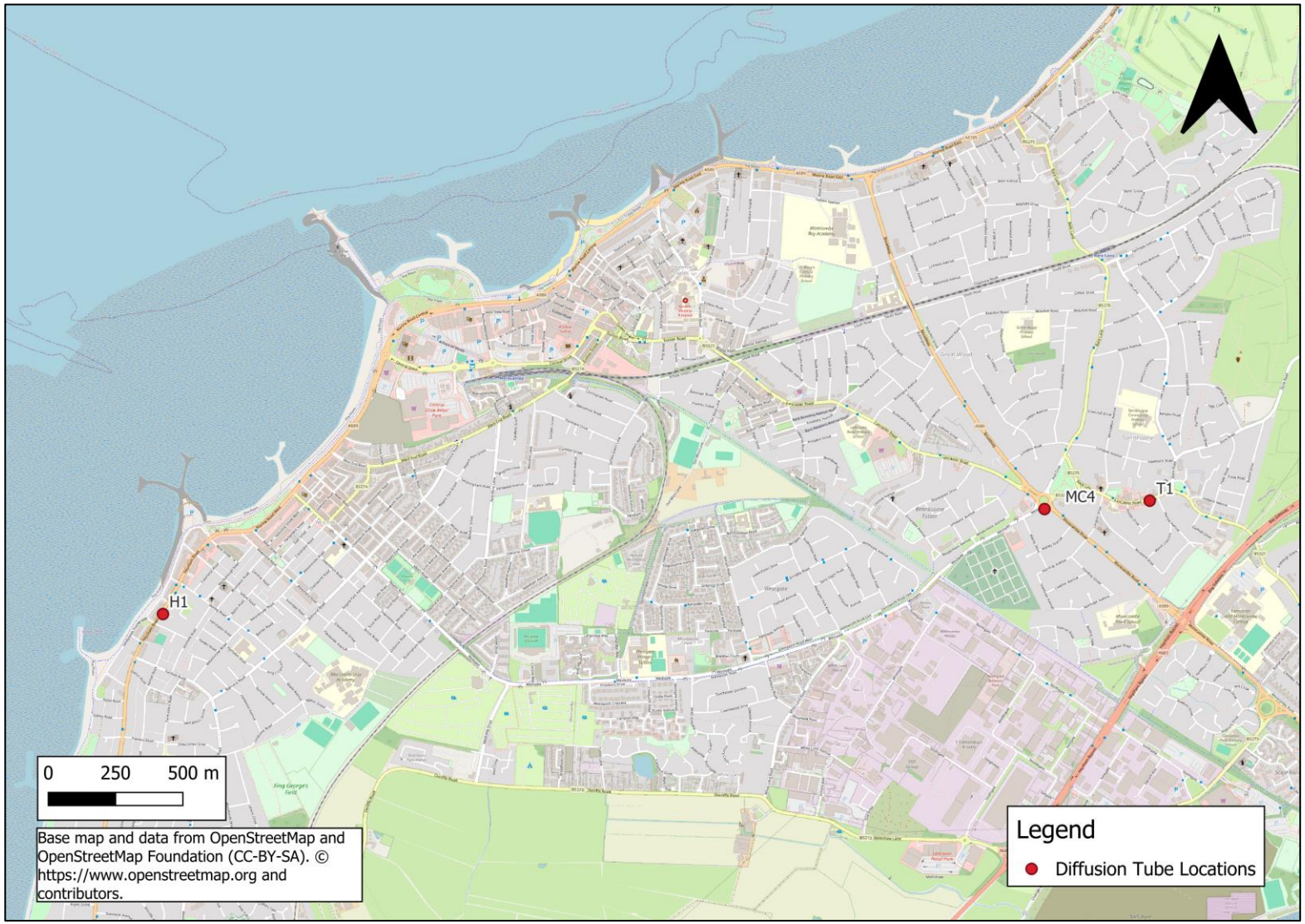
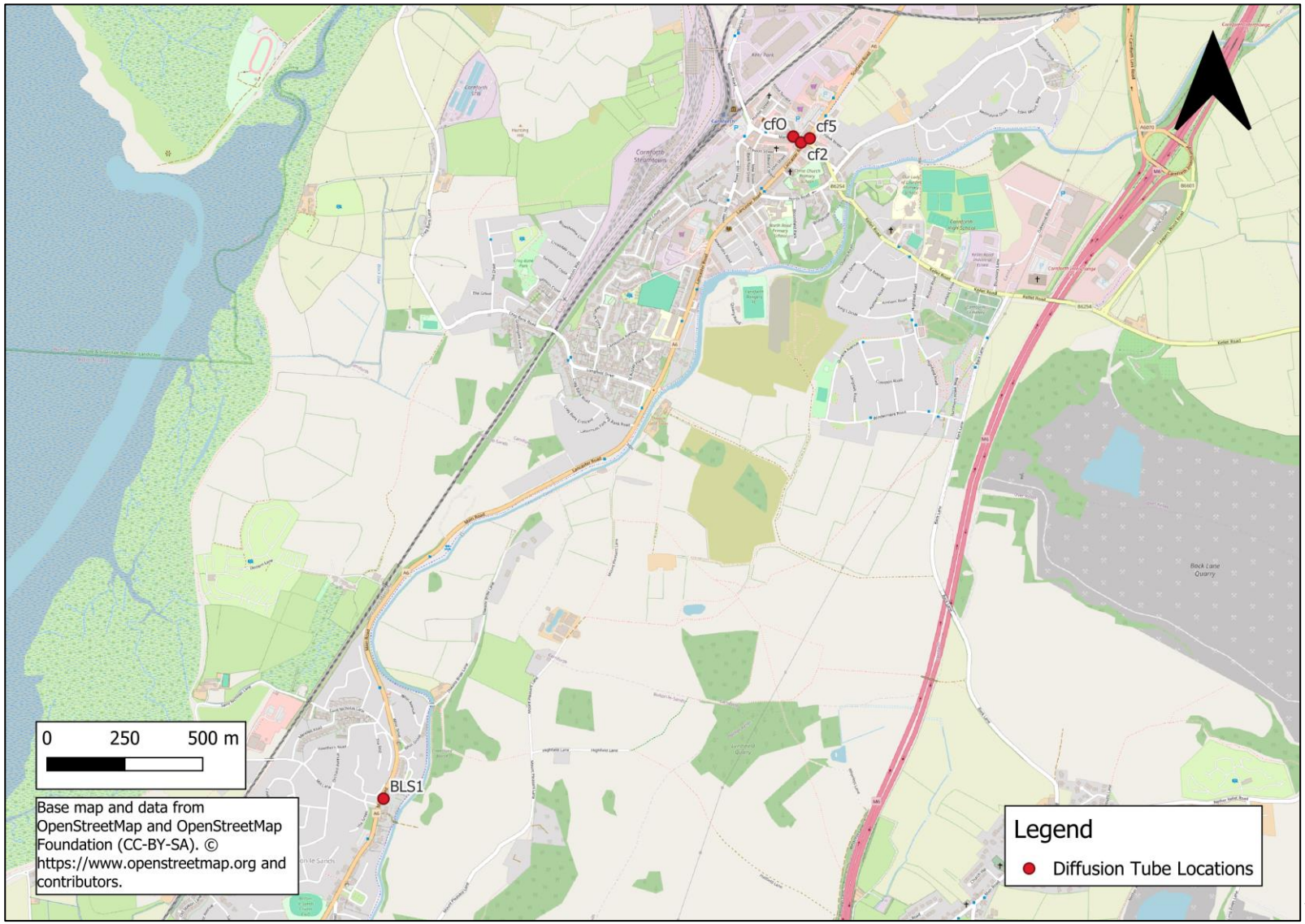


Figure D.5 – Map of Non-Automatic Monitoring Site (Carnforth & Bolton Le Sands)



)

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[9]

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

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

Appendix F: Zephyr Monitoring Data

Table F.2 – Annual Mean Zephyr Monitoring Results (µg/m^3)

Site Location	NO_2	PM_{10}	$PM_{2.5}$	Data Capture (%)
Lancaster Carnforth Edward St	8.9	9.8	6.5	100
Lancaster Fife St 1 (East)	4.7	11.6	6.7	33
Lancaster Fife St 2 (South)	7.0	10.0	5.8	100
Lancaster Halton Sykelands Ave	7.4	9.7	6.6	95
Lancaster Heysham Norfolk Ave	6.5	10.8	6.6	100
Lancaster Leycester Drive	8.3	11.3	7.1	100
Lancaster Redvers Street	7.1	9.5	6.3	100
Lancaster River Lune Millennium Cycle Track	5.1	8.4	5.2	100
Lancaster Rydal Road	8.6	10.0	6.3	100
Lancaster Scale Hall Scale Farm Rd	10.8	10.5	6.6	74
Lancaster Warwick Ave	6.0	9.9	6.2	100

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
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.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.
- Defra. Environmental Improvement Plan 2023, January 2023
- DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018
- Local Plan 2020-2031. Lancaster City Council 1.Part One_DPD_SPLA_Adopted FINAL.pdf. January 2025
- Draft Parking Strategy and Action Plan Draft parking strategy approved for consultation - Lancaster City Council
- Public Health Outcomes Framework | Fingertips | Department of Health and Social Care.
- The Environmental Targets (Fine Particulate Matter) (England) Regulations 2022
- Environment and climate strategy 2023-2025 - Lancashire County Council