LANCASTER
CITY COUNCIL
Promoting City, Coast & Countryside

Lancaster City Council

2023 Air Quality Annual Status Report (ASR)

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

Date: September 2023

Information	Lancaster City Council Details
Local Authority Officer	Paul Cartmell
Department	Environment and Places
Address	Public Health and Protection Section, Morecambe Town Hall, Marine Road East, Morecambe, LA4 4AF
Telephone	01524 582728
E-mail	pcartmell@lancaster.gov.uk environmentalhealth@lancaster.gov.uk
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Executive Summary: Air Quality in Our Area

Air Quality in Lancaster City Council District

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas[1,2].

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

In 2022 nitrogen dioxide pollution levels in the Lancaster district generally indicated continued improvement. Air quality monitoring in 2022 indicated that exceedances of the annual mean objective for nitrogen dioxide remained only within the Lancaster City Centre Air Quality Management Area (AQMA). Details of Lancaster's Air Quality Management Areas (AQMAs) and monitoring information can be found at Lancaster Air Quality. A full national list of AQMAs can be found at National AQMA list.

The Council reports two key air quality indicators to councillors annually (shown below) which are based on local air quality monitoring within the district. One shows the average of 42 roadside diffusion tube monitoring sites (near to main roads in the district) and the other the result of an urban background site (located away from main roads in a residential area). These both show pollution levels in 2022 were generally lower than 2021 and follow the general declining trend evident prior to the 2020 pandemic year.

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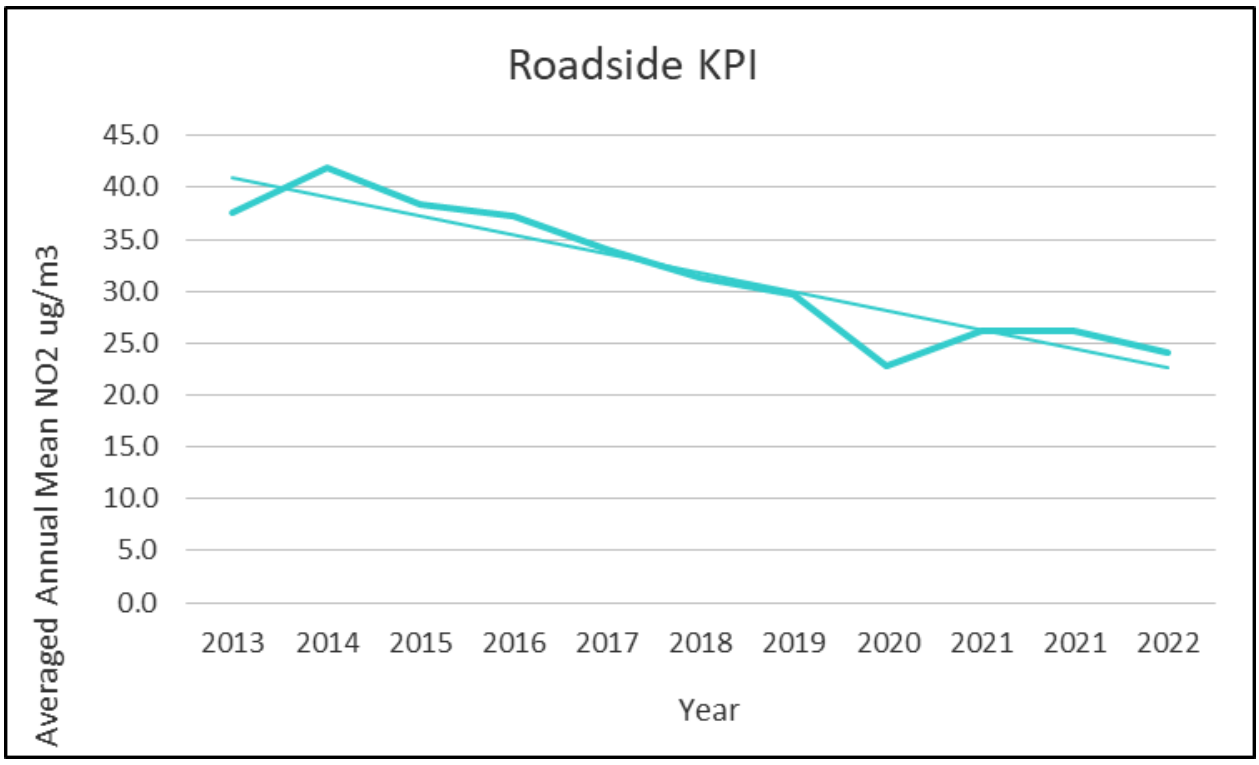
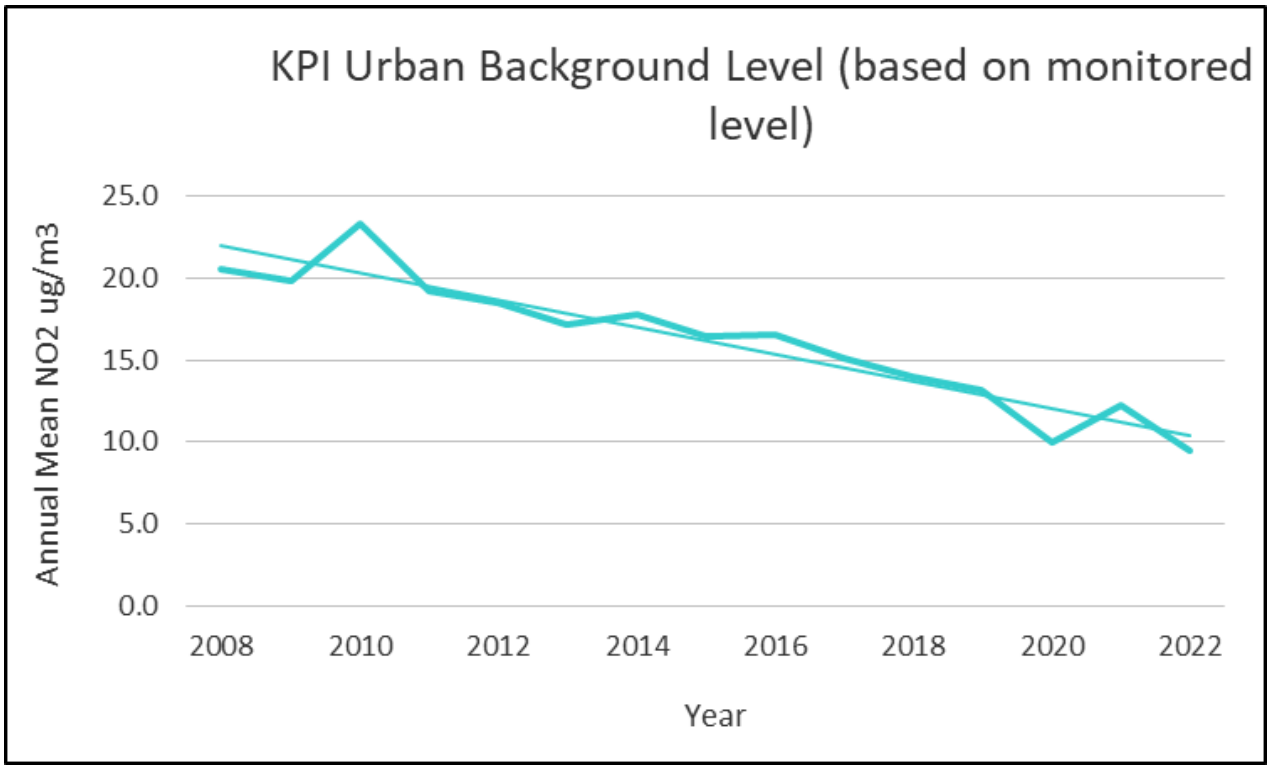
[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

[3] Defra. Air quality appraisal: damage cost guidance, January 2023

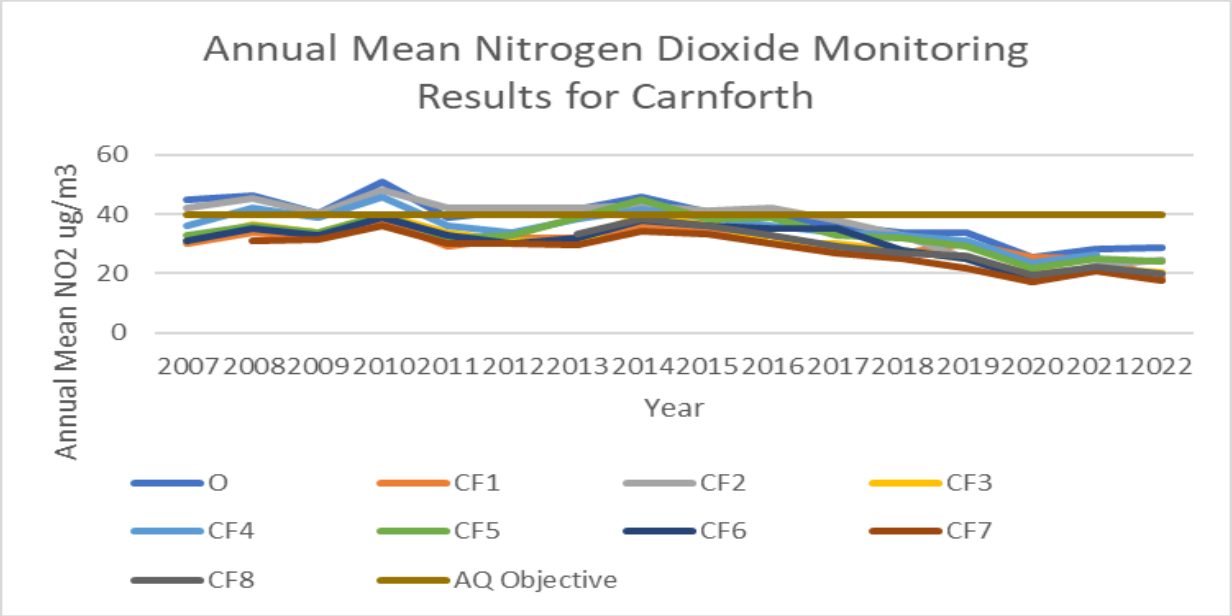
[4] Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

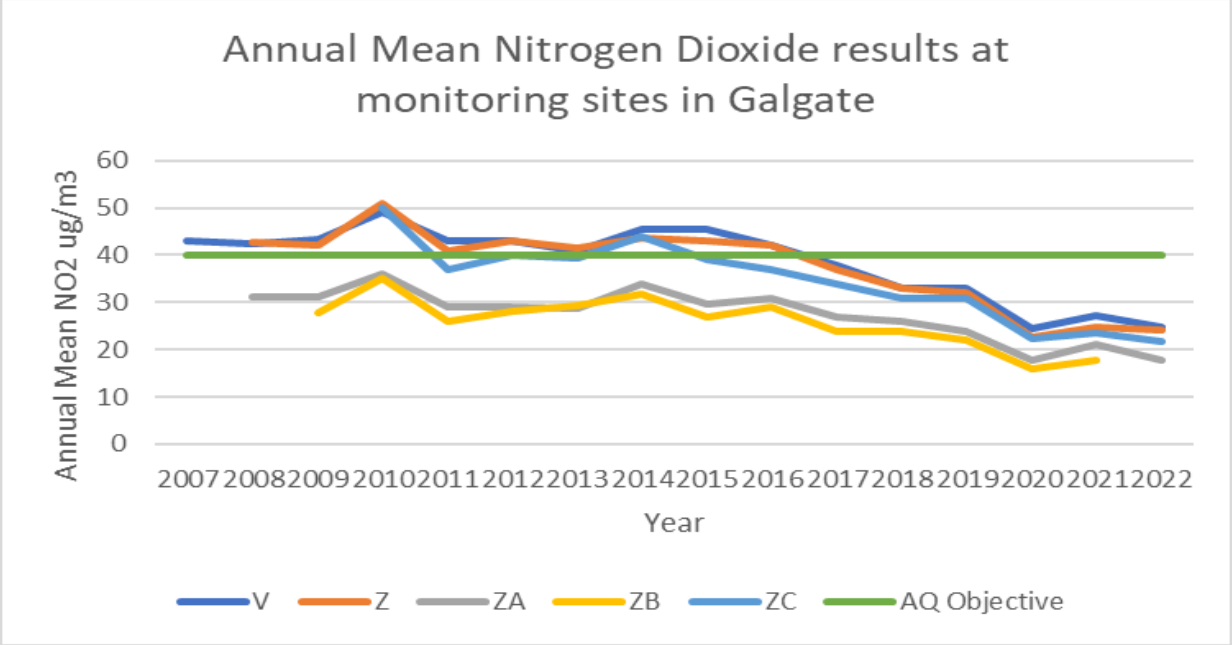




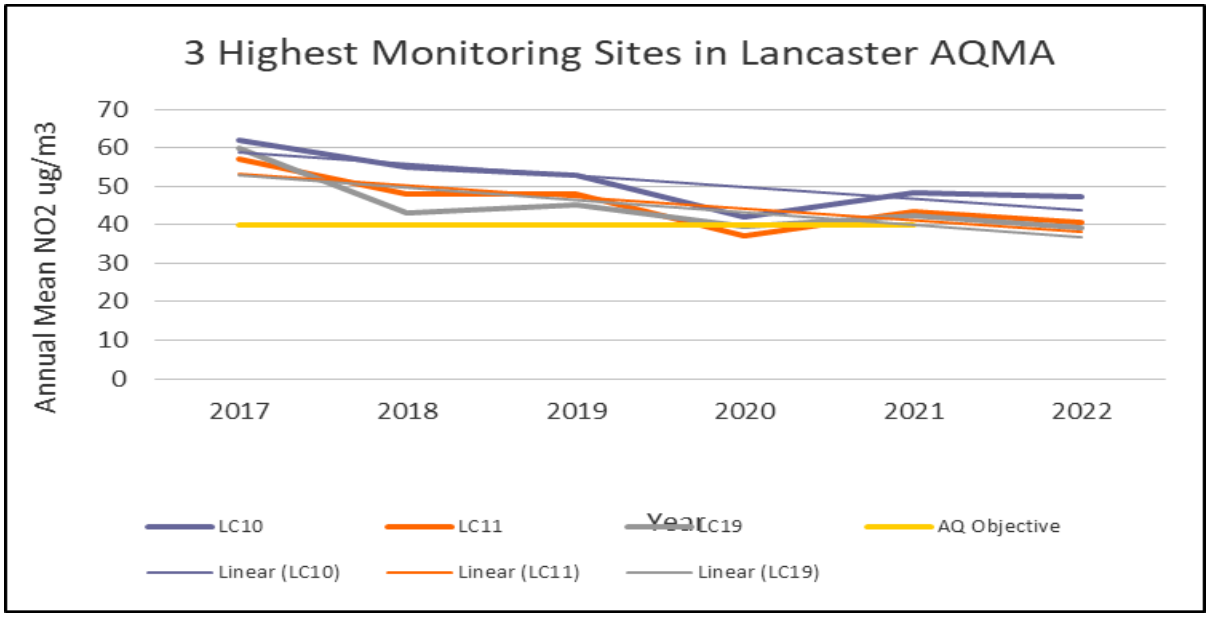
The current cost of living crisis is anticipated to have had an impact on our behaviour, which is likely (but not certain) to have had a polluting emission reducing impact during 2022 which is expected to continue into 2023.

Lancaster City Council is looking to revoke the two Air Quality Management Areas (AQMAs) in Galgate and Carnforth as monitoring has indicated compliance with the annual mean objective standard for nitrogen dioxide since 2017. Briefing and consultation on this proposal has commenced, with revocation (subject to consideration of consultation responses and due process being completed) likely early in 2024. The two graphs below show monitored data within the two AQMAs indicating compliance with the objective standard 2017 onwards (for 6 years or 5 years excluding the pandemic year).





Air quality monitoring within the Lancaster City Centre AQMA, despite also showing a declining pollution trend (see chart below), is however still indicating exceedance of the annual mean objective standard for nitrogen dioxide at two monitoring sites at Thurnham Street and Dalton Square, Lancaster.



Lancashire County Council, as the transport authority for the district, have been working with Lancaster City Council to explore potential changes to Lancaster City Centre's gyratory network. These changes would provide betterment for public transport, cycling and walking.

As part of an initial phase of work, a Lancaster City Centre Movement and Public Realm Strategy (Route Options Report, September 2020) was published and was subject to public consultation. The consultation revealed broad support for the reallocation of road space for public transport, predominantly centred along the eastern (Dalton Square) corridor of the city centre. Three options were due to proceed to further detailed design. Work was paused due to the need for decisions to be made by all parties regarding wider plans for growth south of the City Centre and associated funding arrangement (discussed below) given the interrelationship between the two plans.

At the same time a wider programme of highway and transport improvement across Lancaster was being progressed. This work would enable the delivery of significant housing growth, particularly in South Lancaster, including at a new settlement called Bailrigg Garden Village. This programme was called the South Lancaster Growth Catalyst. It would be part-funded by the (national) Housing Infrastructure Fund. However,

due to increasing costs driven by unprecedented inflation, combined with other factors that increased the pressure on the public purse, a decision was made to suspend further work. Re-evaluation of the plans for both South Lancaster and the City Centre will be taking place.

The delivery of a new Air Quality Action Plan (AQAP) for the Lancaster City Centre AQMA has been inextricably linked to these transport programmes. Understandably, the difficulties experienced in recent years regarding costs have affected the timely delivery of an AQAP (previously advised for delivery in mid-2023). The situation continues to present a challenge to both councils.

The decision to suspend work on the South Lancaster Growth Catalyst will allow a wider consideration of other matters that will have an impact upon the highway network, including:

- The delivery of a new Royal Lancaster Infirmary in the city (precise site location yet to be confirmed);
- Proposals for the redevelopment of the existing Royal Lancaster Infirmary site, which occupies a prominent position within the city centre, can be appraised; and,
- In a post-Housing Infrastructure Fund era, confirmation of the timeframe and the delivery of complementary traffic measures referred to in the Bay Gateway Development Consent Order.

Lancaster City Council and Lancashire County Council are aware of the need to deliver a new plan before the end of March 2024 in the light of the new policy Defra policy and legislative arrangements introduced in 2021 and 2022 (The Environment Act 2021 and Defra LAQM Policy Guidance August 2022 respectively).

The two Councils have started to discuss alternative proposals for the gyratory system, and whilst these discussions are in the early stages both Councils (and National Highways) are committed to improving the safety and efficiency of Lancaster's transport network.

The key (but not sole) identified components of any future proposals for the Lancaster City Centre AQMA are likely to focus upon: -

- The delivery of electric buses in Lancaster (the ability to deliver this will rely on a successful ZEBRA round 2 grant bid. See Zebra 2 zero emission bus funding for further information.)

- Delivery of a new parking strategy developed in partnership by Lancaster City and Lancashire County Councils.
- Technological Solution(s) to improve and enhance traffic management around the city centre through the use of intelligent systems e.g. traffic light signalling system upgrades
- Physical measures comprising a revised Movement and Public Realm Strategy (or similar) of which air quality improvement would be a primary objective.

Existing measures currently being delivered to improve air quality and to respond to the declared climate emergency will of course continue (see updates provided in table 2.2 below).

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[5] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term $PM_{2.5}$ targets. The National Air Quality Strategy, published in 2023, provides more information on local authorities' responsibilities to work towards these new targets and reduce $PM_{2.5}$ in their areas. The Road to Zero[6] details the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

The core actions Lancaster City Council is progressing in 2023/24 to improve local air quality are as follows:-

- Delivery of a new air quality action plan to address the remaining air quality objective exceedances (annual mean nitrogen dioxide) in the Lancaster City centre AQMA before the end of March 2024.

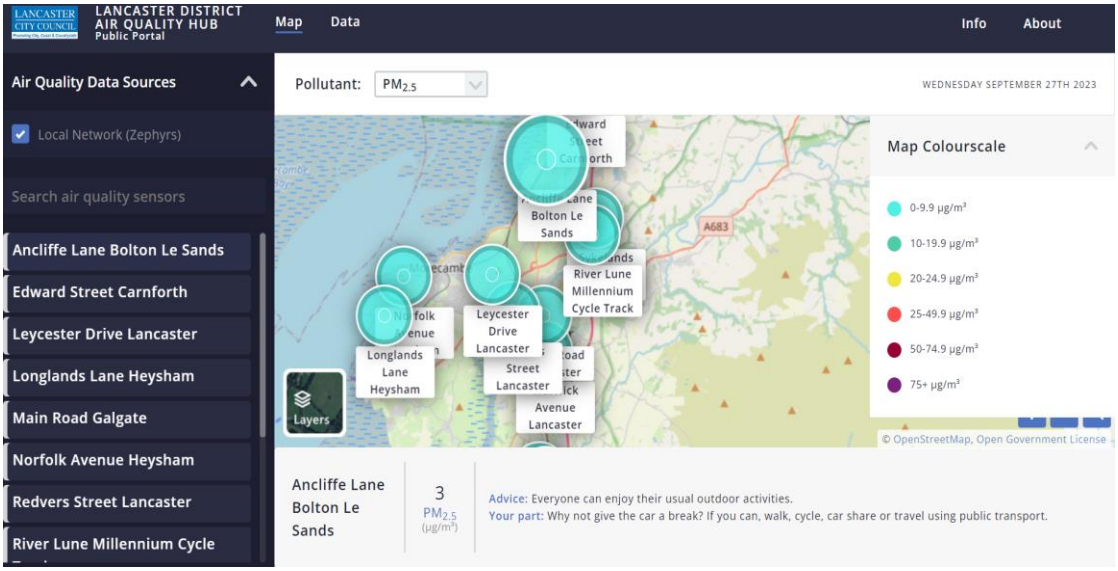
[5] Defra. Environmental Improvement Plan 2023, January 2023

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

- The Delivery of a Defra Air Quality Grant funded project to provide information to the main urban areas in the Lancaster district through real time monitoring and modelling, messaging and surveys. The project is intended to present information to inform the public about choices resulting in air quality impacts and so influence behaviour.

To left - Photograph showing an example of the 12 air quality monitors installed/attached to lampposts across the district as part of the Defra Air Quality Grant funded project to provide better air quality information to residents within the Lancaster district.

Below - A screen snapshot of public information web site soon to be released.



- Continue to work with schools building on the pilot project run with 6 schools last year. An event is planned for Clean Air Day 2024 working with the city council's climate change team, to bring participating schools together so that learnings can be shared and expanded on going forward.

- Participating in the ‘Clean Air Night’ campaign being run this winter by Global Action Plan (funded by Hertfordshire County Council), seeking to provide better public information relating to the consequences of choosing to burn solid fuels.
- To deliver the Defra Air Quality Grant funded project to provide taxi drivers a ‘try before you buy’ trial of electric vehicles for taxi use. The council is currently in the process of procuring 10 purely electric vehicles for this purpose using funding allocated by Defra through the air quality grant scheme. The project is due for practical delivery in 2024.
- The adoption of a reviewed Lancaster District Local Plan, which would be likely to include stronger policy measures to reduce emissions from new development in response to the declared climate emergency. (The City Council’s Cabinet resolved to approve the cessation of work on the Lancaster South Area Action Plan, and commencement of a full district wide Local Plan Review, at its September 2023 meeting).
- The adoption of new smoke control area enforcement policy to implement new powers to issue fixed penalty notices and use of nuisance legislation (as introduced by the Environment act 2021).
- The replacement of council fleet vehicles (cars, vans refuse vehicles) with electric zero exhaust emission vehicles wherever possible. The city council currently has 52 electric vehicles in its fleet representing 29% of the total fleet.

Conclusions and Priorities

The main conclusions of this report and arising priorities are as follows:

- Exceedances of the annual mean air quality objective for nitrogen dioxide persist inside the Lancaster AQMA and therefore addressing this issue remains a priority despite the halt to plans linked to the relinquished Housing Infrastructure Grant/new link road. The delivery of a new air quality action plan before March 2024 is the main priority for the city council and its key partner the county council (the local transport authority). No exceedances of air quality objective standards were monitored outside the Lancaster City Centre AQMA.
- Levels monitored in the Carnforth and Galgate AQMAs have now indicated annual mean nitrogen dioxide levels below the objective standard from 2017 onwards and also show a general decreasing trend. Briefing and consultation has therefore begun looking to revoke these AQMAs within the next few months. Air quality action plans are not therefore being developed for these two AQMAs but the localities would be included in any future air quality strategy for the Lancaster City Council district.
- Being mindful of the priorities set out in Defra's current national Clean Air Strategy, Lancaster is taking steps to monitor and respond to issues around particulate pollution ($PM_{2.5}$). This includes the deployment of 12 low-cost monitors across the district (a Defra Air Quality Grant funded project) and various planned projects to raise awareness and so influence pollution generating behaviour e.g. the schools pilot project and participation in the Global Action Plan 'Clean Air Night' campaign funded by Hertfordshire County Council. Monitoring and addressing particulate pollution is therefore an increasing priority for Lancaster City Council. Progress and findings from these projects will be reported in the next 2024 Annual Status Report.
- The Council obtained Defra Air Quality Grant funding to deliver an electric taxi 'try before you buy' scheme and subsequent electric taxi leasing. Procurement of appropriate electric taxi vehicles is underway and the scheme is due for practical delivery in 2024.
- The Council is actively pursuing a raft of measures to reduce or eliminate the councils carbon dioxide emissions. Many of these actions also deliver associated polluting emission reduction benefits. Further information is available at Lancaster Climate Emergency and also in table 2.2 below.

The key challenges that are perceived to improving local air quality currently are:

- The halt to the production of air quality improvement plans linked to the Housing Infrastructure Fund based proposals has been a significant delivery interruption. Strategies and plans had been in development for a number of years with the aim of not only improving local air quality in the Lancaster City Centre AQMA, but a general aim to improve the whole environment and experience for people visiting Lancaster town centre based principally on transport focused interventions. The Housing Infrastructure Fund announcement in June 2023, and the subsequent suspension of work in the South Lancaster Growth Catalyst has impacted upon the delivery of a new air quality action plan to meet Defra deadlines. Both Councils are continuing to collaborate with new, deliverable transport proposals, which are anticipated to emerge in 2024.
- Inflation and the associated cost of living crisis affecting most of us will no doubt impact on the delivery of air quality improvement actions. For example we anticipate that due to the increased cost of gas and electricity there will be a growth in the use of solid fuels. The increased cost of electricity will also impact on the transition to use of electric vehicles. Obtaining funding to deliver new infrastructure may also be more difficult and the funding amount now needed will be greater. Overcoming these problems when they are encountered will present challenges going forward.
- One primary and probably the most significant new proposed air quality action plan measure for the Lancaster City Centre AQMA is to deliver electric buses in the city centre. The delivery of this action is very much linked to a successful Zebra round 2 electric bus grant bid (see Zebra Grant details). Without such a bid and a successful outcome, the delivery of electric buses within Lancaster will be very difficult to achieve in the near future. In summary, the failure to deliver a positive Zebra round 2 outcome is anticipated to significantly compromise the effectiveness of the new AQAP.
- Another key action for the plan will be the production of a new parking strategy and associate parking plan. The process to deliver this plan will require a close working partnership between the city and county councils and appropriate resourcing to deliver the new strategy and arising plan.

Local Engagement and How to get Involved

Our web site was updated last year to include a new page advising about pollutants and what people can do to help with local air quality. This is available at: About air pollution

We are planning to consult on a draft AQAP in 2024 and will automatically consult persons who responded to the past measures consultation. Should you wish to be included on this list/ notified directly of the consultation or want to contact us regarding any other air quality concern please contact us as follows:

Tell us what you think!

We will be consulting again on our selected measures proposed to form a new air quality action plan, most likely now in January 2024. If you would like to be consulted on the plans, please provide your contact details (name, organisation (if any) and email address to:

environmentalhealth@lancaster.gov.uk

(If you specifically wish to be a consultee on the new Air Quality Action Plan please present the email subject as 'Request to be a Consultee on the new Air Quality Action Plan for Lancaster District')

or send by post to:-

FAO Paul Cartmell,
Senior Environmental Health Officer,
Public Health and Protection Section
Lancaster City Council,
Morecambe Town Hall,
Marine Road,
Morecambe
LA4 5AF

Local Responsibilities and Commitment

This ASR was prepared by the Public Health and Protection Section of Lancaster City Council with the input of the following officers and departments:

Paul Cartmell, Senior Environmental Health Officers (Pollution Control), Environmental Protection Team, Lancaster City Council

Mark Cassidy, Chief Officer - Planning and Climate Change, Lancaster City Council

Paul Hatch, Principal Planning Policy Officer, Lancaster City Council Development Control

Melissa Parnell - Environmental Protection Technical Officer, Environmental Health, Lancaster City Council

Robert Boschi and Elliot Grimshaw - Climate Change projects manager officer and projects lead – Planning and Climate Change, Lancaster City Council

Lee McKenzie – Transport Manager, Environment and Place, Lancaster City Council

Jenifer Curtis, Licensing Manager, Environment and Place, Lancaster City Council

Andrew Varley – Public Transport Manager (Buses), Lancashire County Council

Richard Askew – Principal Transport Planner, Infrastructure, Lancashire County Council

Rebekah Nicholls - Senior Transport Planner, Infrastructure Planning, Lancashire County Council

Marcus Hudson, Acting Head of Transport and Planning, Lancashire County Council

Michelle Holroyd, Team Leader – Transport Policy, Environment and Planning Service, Lancashire County Council

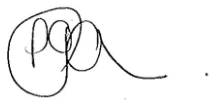
Andrew Ashcroft - Lancashire County Council Public Health

Debbie King, Acting head of Planning and Environment (Environment and Climate), Lancashire County Council,

Jonathan Collins - Lancashire County Council, Transport Planner, Cycling and Walking

(above directly and/or via Lancaster Planning and Transport Working Group)

This ASR has been prepared and approved by:

Prepared by	Paul Cartmell – Senior Environmental Health Officer, Lancaster City Council
Qualifications	BSc(Hons) Env. Sciences, MSc Env. Protection
Signature	
Checked by	Richard Walsh - Public Health and Protection Manager
Signature	
Endorsed by	Will Griffith – Chief Officer Environment and Place
Signature	

This ASR has not been signed off by the Director of Public Health but county public health input to the document has been provided and used in the report and the final document will be shared with the public health team at the county council.

If you have any comments on this ASR please send them to: environmentalhealth@lancaster.gov.uk or post to:

FAO Paul Cartmell,
Senior Environmental Health Officer,
Public Health and Protection Section
Lancaster City Council,
Morecambe Town Hall,
Marine Road,
Morecambe
LA4 5AF

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Tables

1 Local Air Quality Management

This report provides an overview of air quality in Lancaster City Council district during 2022. 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 in Appendix E below.

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 3 AQMAs that are currently designated within the Lancaster City Council district. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO_2 annual mean;
- NO_2 1 hour mean

It should be noted that the Council is proposing to revoke two of its three AQMAs (the Carnforth and Galgate AQMAs) and are currently briefing and consulting on this proposal.

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	Covers gyratory system in Lancaster city centre	NO	75ug/m^3	47ug/m^3	0 (from diffusion tube monitoring data only)	2007 (new plan due March 2024)	Available at:- http://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality
City of Lancaster AQMA	2017 (new order replaced 2004 order above and covered both annual and 1 hr Objectives for NO2. The area covered by the AQMA was unchanged.	NO_2 1 Hour Mean	Covers gyratory system in Lancaster city centre	NO	75ug/m^3 (annual mean value)	47ug/m^3 (annual mean value)	5 (from diffusion tube monitoring data only)	2007 (new plan due March 2024)	Available at:- http://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality

Carnforth AQMA	2007	NO_2 Annual Mean	Covers main cross road area in Carnforth	NO	42ug/m^3	29ug/m^3	6 (from diffusion tube monitoring data only)	2007 (AQMA revocation proposed 2023//24)	Available at:- http://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality
Galgate AQMA	2009	NO_2 Annual Mean	Covers main cross road area in Galgate	NO	43ug/m^3	25ug/m^3	6 (from diffusion tube monitoring data only)	2007 (AQMA revocation proposed 2023//24)	Available at:- http://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality

☒ **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 however a new AQAP is needed for the Lancaster AQMA.**

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

Defra's appraisal of last year's ASR concluded that the report was well structured, detailed, and provided the information specified in the Guidance.

Lancaster City Council has taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 52 measures are included within Table 2.2, with the type of measure and the progress Lancaster City Council have made during the reporting year of 2022/23 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 using the web links where they are provided.

Key completed measures are:

- Following an application in 2022, Lancaster City Council was awarded £454,576 in 2023 through the Defra Air Quality Grant scheme to deliver an electric taxi 'try before you buy' scheme and subsequent electric taxi leasing. The project us underway with practical delivery planned for mid-2024.
- After making a successful application and receiving a Defra Air Quality Grant award of £198,794 in 2022, Lancaster City Council has been working with delivery partner Earthsense Systems Limited to put monitoring, modelling, information and communication systems in place to allow the public launch of the project in autumn 2023. The project aims to better inform the public about air quality impacts and consequences of air polluting choices and so influence behaviour.
- The 4 electric vehicle rapid chargers installed with the benefit of Department of Transport funding (specifically OZEV) are all now operational from three council car parks.
- A local Lancaster City Council policy has been adopted to allow the utilisation of new smoke enforcement powers introduced by the Environment Act 2021 (adopted 18 Sept 2023).
- Responses were submitted to Defra national consultations. The online responses submitted to the national air quality strategy consultation in April 2023 is contained in Appendix F to this report.

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

- Delivery of a new Air Quality Action Plan for the Lancaster City Centre AQMA.
- Revocation of the Carnforth and Galgate AQMA designations due to ongoing compliance with air quality standards for nitrogen dioxide (air quality improvement linked principally to improvements in vehicle emissions) in these two locations.
- Commencement of Defra Air Quality Grant project to operate an electric taxi ‘try before you buy’ scheme. Between 5-10% of vehicle trips in the Lancaster City Centre AQMA are made by taxis and therefore reducing emissions from this source is a key aim to help air quality meet objective standards in this locality.
- Delivery of Defra Air Quality Grant project to provide better air quality information to the public to influence polluting choices/behaviour. Choices we make inside and outside our homes impact on the pollution we are exposed to. For example, the choice on how we travel or how we heat our homes are both important factors influencing the level of pollution present locally in the air we breathe and also impact on climate change related emissions.
- For the local transport authority (the county council) to submit a Zebra round 2 grant application to seek funding for electric buses in Lancaster. When last assessed, diesel buses were calculated to account for around 30% of nitrogen oxide emissions in the Lancaster City Centre AQMA and therefore removing or reducing this source through the use of electric buses is a key action if it can be delivered.
- Continued delivery of measures to remove or reduce emissions from the Lancaster City Council estate and promote and assist wider emission reductions e.g. through local plan policies.
- A major review of the councils air quality monitoring network of nitrogen dioxide diffusion tubes (in the light of decreasing levels of this particular pollutant).

Lancaster City Council’s main priority for the coming year is to provide a new Air Quality Action Plan for the Lancaster AQMA as this is the only area of the district where exceedances of air quality objective standards remain.

Lancaster City Council worked to implement the above measures in partnership with the following stakeholders during 2022:

- Lancashire County Council (the local transport and public health authority)

- Other local authorities (relating to Defra air quality related consultation responses, the formation of local policy and in partnership to manage the ongoing delivery of the national Air Quality Hub.
- Earthsense Systems Limited (to deliver public accessible monitoring and modelling facilities to better inform air quality impacts)
- ESU1 Limited – to service and maintain the council's automatic monitoring stations.
- Air Quality Data Management – to manage, monitor and ratify data from the council's automatic aur quality stations.
- Bureau Veritas UK - Consultant appointed to help in the delivery of a new Air Quality Action Plan for the Lancaster City Centre AQMA.
- Gradko International Limited – to supply and analyse nitrogen dioxide diffusion tubes used to monitor over 40 locations across the district.
- Global Action Plan – to assist in the delivery and development of a ;Clean Air Night' campaign focused on emissions linked to the use of solid fuels.
- Other Lancashire local authorities, and air quality officers in York City Council, Bradford City Council, Manchester City Council and Hertfordshire County Council.

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

- The halt to the production of air quality improvement plans linked to the Housing Infrastructure Fund based proposals has been a significant delivery interruption. Strategies and plans had been in development for a number of years with the aim of not only improving local air quality in the Lancaster City Centre AQMA, but a general aim to improve the whole environment and experience for people visiting Lancaster town centre based principally on transport focused interventions. The Housing Infrastructure Fund announcement in June 2023, and the subsequent suspension of work in the South Lancaster Growth Catalyst has impacted upon the delivery of a new air quality action plan to meet Defra deadlines. Both Councils are continuing to collaborate with new, deliverable transport proposals, which are anticipated to emerge in 2024.
- Inflation and the associated cost of living crisis affecting most of us will no doubt impact on the delivery of air quality improvement actions. For example, we anticipate that due to the increased cost of gas and electricity there will be a growth in the use of solid fuels. The increased cost of electricity will also impact on the

transition to use of electric vehicles. Obtaining funding to deliver new infrastructure may also be more difficult and the funding amount now needed will be greater. Overcoming these problems when they are encountered will present challenges going forward.

- One primary and probably the most significant new proposed air quality action plan measure for the Lancaster City Centre AQMA is to deliver electric buses in the city centre. The delivery of this action is very much linked to a successful Zebra round 2 electric bus grant bid (see Zebra Grant details). Without such a bid and a successful outcome, the delivery of electric buses within Lancaster will be very difficult to achieve in the near future and therefore failure to deliver a positive Zebra round 2 outcome will significantly compromise the effectiveness of the new AQAP.
- Another key action for the plan will be the production of a new parking strategy and associate parking plan. The process to deliver this plan will require a close working partnership between the city and county councils and appropriate resourcing to deliver the new strategy and arising plan.

Progress on the following measures has been slower than expected due to:

- Deliver if a new AQAP for the Lancaster City Centre AQMA was due to be delivered by summer 2023. This has not happened due to the impacts caused by the suspension of work to other programmes described earlier in this report. Both Councils continue to collaborate to identify alternative proposals, and this work is anticipated to continue into early 2024.
- Delivery of the electric taxi project has been a little slower than planned as initially no bids were received from suppliers in response to the tender offered. This was primarily due to the fact that we were seeking a number of disabled access purely electric vehicles, which we now understand that there is not a commercially produced and available vehicle of this type (which is also suitable for the use as a taxi). We have therefore regrettably resorted to seeking to procure only standard electric taxi vehicles. We would suggest this finding requires the attention of national government to intervene to resolve this current position.

Whilst the measures stated above and in Table 2.2 below will help to contribute towards compliance, Lancaster City Council anticipates that further additional measures not yet prescribed i.e. a new Air Quality Action Plan for the Lancaster AQMA, will be required in subsequent years to achieve compliance and enable ultimately the revocation of the Lancaster City Centre AQMA.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Lancaster Transport Masterplan	Traffic Management	UTC, Congestion management, traffic reduction	Lancashire County Council	2015/16	2016 to 2025	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.	Plan aims to deliver air quality improvements to lead to general air quality improvement and revocation of three AQMA	Plans arising from the Masterplan have been developed over 2019 to 2022/23. However, at time of writing development of plans have been halted. A decision is awaited between the city and county councils to determine new plan progression as detailed in report sections above. It is anticipated that a new AQAP will be in place by March 2024.	2025	The production of a new air quality action plan for the district is linked and scheduled within Transport Masterplan delivery. Plan available at:- Highways and transport masterplans - Lancashire County Council Delivery of a new air quality action plan to cover the Lancaster district has been delayed due to a halt in works associated with the new link road and city centre movement strategy. The delivery element of the plan is under review at the time of writing of this report due to these new circumstances
2	Speed limits in residential areas	Traffic Management	Reduction of speed limits, 20mph zones	Lancashire County Council	-	2012-2014	-	-	Most residential areas designated 20mph zones	2014	Covers most residential areas in the Lancaster district
3	Transport Masterplan for Lancaster	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, inc Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	Lancashire County Council	Transport Masterplan for Lancaster	2015/16	2016 to 2025	Plan aims to deliver air quality improvements to lead to general air quality improvement and revocation of the three AQMAs	See item 1 above	Plan adopted October 2016	Delivery of a new air quality action plan to cover the Lancaster district (including the Lancaster city centre AQMA) is now scheduled for delivery in 2023 Highways and transport masterplans - Lancashire County Council

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4	Lancaster Parking Strategy	Traffic Management	Emission based parking or permit charges	Lancaster City Council	2015-24	-	-	-	A base line parking strategy report has been produced by consultants Systra. Outlining parking strategy options. This strategy report has been accepted but a specific strategy and plan remains needed and has been identified as a key element of the new proposed AQAP for the Lancaster AQMA	2022	Information on parking is available at: Lancaster Parking
5	AQ Station traffic management link	Traffic Management	Other	Lancaster City Council and Lancashire County Council	2012/13	2013	-	Assist with traffic management measures in Lancaster AQMA	Works to AQ Stations completed to facilitate link (City Council). Link to management system awaited (County Council). Still outstanding in 2022.	2024	*LCC's traffic* systems database was planned to be upgraded to receive real time information from Lancaster CC air quality monitoring stations to aid traffic management and reduce emissions. Unfortunately, procurement has been delayed. Lancashire County Council are still intending to pursue the procurement of a UTMC common database in 2021. No update is available for this report.
6	M6/Heysham Link Road(the Bay Gateway)	Traffic Management	Other	Lancashire County Council	Pre 2014	2014-16	-	A maximum 10ug/m^3 annual mean NO_2 reduction in Carnforth AQMA. Traffic reduction in range of 3-9% within the Lancaster AQMA and potential of up to 5ug/m^3 (annual mean NO_2) in Galgate AQMA	2019 monitoring results indicated a general small reduction on levels reported for 2018. Levels monitored within the Carnforth and Galgate AQMAs indicate compliance with objective standards.	Road opened October 2016 More information available at: Baygate way	AQ monitoring to assess changes has continued in 2023. Revocation of the Carnforth (and Galgate) AQMAs is now proposed and the subject of briefing and consultation.

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7	Travel Plans for new development	Promoting Travel Alternatives	Workplace Travel Planning	Lancashire County Council	-	ongoing	-	-	ongoing	-	Lancaster 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
7a	School Travel Plans	Promoting Travel Alternatives	School Travel Plans	Lancashire County Council	-	2003-2011	-	-	66 Schools with travel plans	-	Most Schools utilized grant funding to provide cycle storage facilities
8	Promoting home working	Promoting Travel Alternatives	Encourage / Facilitate home-working	Lancaster City Council and Lancashire County Council	-	ongoing	-	-	ongoing	-	The Covid crisis resulted in a large proportion of council staff working from home and being equipped (lap top computers) to do so. Such working continues in 2023.
9	Lancashire Cycle September and other events	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	Lancashire County Council	-	Yearly	-	-	The Cycle September Challenge ran in 2022 Other Cycling event and information is available from the cycling Lancashire web link..	-	Events usually consist of try a bike sessions and fun activities such as mini bikes, penny farthing, provision of maps and other info and options to sign up for a personal journey plan. For more information see: :Love to ride Cycling Lancashire
10	Cycling Demonstration Town	Promoting Travel Alternatives	Promotion of cycling	Lancashire County Council	-	2008-11	-	-	Completed	-	4 contra flow cycle lanes, 3 Toucan crossings, 7 on road cycle lanes, cycle links to canal tow path, cycling access to pedestrian areas, 12 crossing upgrades, new path links, 1176 cycle parking spaces, signage, workplace engagement, events (25.000 contacts),cycle training, schools engagement
11	Lancaster Rail Station Park and Ride	Promoting Travel Alternatives	Promote use of rail and inland waterways	-	-	-	-	-	ongoing	-	60 Fee payable spaces

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12	Carnforth Rail Station Park and Ride	Promoting Travel Alternatives	Promote use of rail and inland waterways	-	-	-	-	-	ongoing	-	64 Fee charged spaces
13	Bare Lane Rail Station Park and ride	Promoting Travel Alternatives	Promote use of rail and inland waterways	-	-	-	-	-	ongoing	-	12 free spaces
14	Morecambe Rail Station Park and ride	Promoting Travel Alternatives	Promote use of rail and inland waterways	-	-	-	-	-	ongoing	-	100 fee payable spaces but refundable with rail ticket purchase
15	Silverdale Rail Station Park and ride	Promoting Travel Alternatives	Promote use of rail and inland waterways	-	-	-	-	-	ongoing	-	3 free parking spaces
16	Wennington Rail Station Park and ride	Promoting Travel Alternatives	Promote use of rail and inland waterways	-	-	-	-	-	ongoing	-	7 free parking spaces
17	Information via web site	Promoting Travel Alternatives	Other	Lancashire County Council	-	-	-	-	ongoing	-	Traveline Northwest Alternative ways to travel Parking roads and public transport
18	Air Quality information	Public Information	via the Internet	Lancaster City Council	-	-	-	-	A new page to the web site was introduced in 2022 providing information about air quality pollutants and advice on what you can do to assist with local air quality matters (see 'About Air Pollution' link .	-	Air Quality Lancaster UK air quality About Air Pollution
19	Burning of waste Fact sheet	Public Information	via leaflets	Lancaster City Council and	-	2014	-	-	ongoing	-	Available at: Smoke Control

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20	Direct Communication/Education	Public Information	Other	Lancaster City Council and Lancashire County Council	2019/20	-	-	-	Programme for schools being coordinated and planned through County Council Safe and Healthy Travel Schools programme Web site Update 2022 Schools lesson programme (see item 46a) Earthsense partnered Defra AQ grant funded public information/communication programme due to commence (public release) autumn 2023	-	County Council element remains undelivered. Piloted School programme run as part of Defra grant assisted project no completed by City Council (see item 46a) Additional air quality information page added to web site in 2022 (see About air pollution)
21	Cycle Hire	Transport Planning and Infrastructure	Public cycle hire scheme	Lancaster City Council	-	-	-	-	ongoing	-	More information available at: Cycle Hire
22	M6/Heysham link road (Bay Gateway) conditional complimentary measures	Transport Planning and Infrastructure	Other	Lancashire County Council	Before summer 2016	2016-2024	-	-	Plan adopted October 2016. Development Consent Order requires delivery of complementary measures by October 2026. Current uncertainty over what will be delivered by the completion date. The county council is reviewing the position at the time this report was written	2026/27	Plan of measures to be submitted to prevent relief offered by new road being eroded. Plan to be submitted before link road is fully opened (Schedule 2, 10 requirements). See Transport Masterplan at Highways and transport masterplans - Lancashire County Council for more information.

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23	Caton Road Park and Ride	Alternatives to private vehicle use	Bus based Park & Ride	Lancashire County Council	-	2014-16	-	-	Site Operational	2016	A daytime bus service is normally operational every 30 mins 6 days a week. In 2021 the site was operational from April (used as covid test station in 2020) Passenger numbers have increased month by month since opening. In June 2023 passenger number were 5347 with average daily passenger numbers at 232.. Ticket detail is available at : Park and Ride See item '32' below.
24	Shared Wheels Car Sharing	Alternatives to private vehicle use	Car & lift sharing schemes	Lancashire County Council	-	-	Members registered	-	3892 members registered in Lancashire area (Sept 2023).This was slightly down on members reported in Sept 2022.	-	See: Liftshare for further information
25	Lancaster Community Car Club	Alternatives to private vehicle use	Car Clubs	Lancaster Community Car Club –Community Interest Company	-	2010	-	-	-	-	-
26	Sustainable Transport Fund Grants	Alternatives to private vehicle use	Other	Lancashire County Council	-	-	-	-	13 further schemes in Lancaster during 2014/15. Over 100 businesses engaged and 50 grants provided over the period of the scheme.	2015	Main transport rout between Lancaster and Preston targeted including Lancaster centre. Grants awarded for cycle storage, changing facilities and for pool bikes. Scheme ended April 2015
27	Local Transport Plan	Policy Guidance and Development Control	Other policy	Lancashire County Council	2019/24 (LTP4)	2011-21(LTP3)	-	-	Development of new plan is currently in progress but has again been delayed. The new plan (LTP4) is now due 2024. The plan will link to the transport masterplan for the district.	2024	Current plan available at: Local Transport Plan

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28	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	Lancaster City Council	2015/16(PAN) 2019/20 (SPD)	2017 onwards (PAN) 2024 onwards (SPD)	-	-	Guidance produced. - Launch Event took place in October 2016 Guidance adopted as a planning advisory note(PAN) September 2017 and revised in 2020. Adoption as supplementary planning document (SPD) will be reconsidered in 2024 in light of the adopted local plan and air quality position (covered by the new AQAP). .	2017(PAN adoption) and 2024(SPD adoption)	Delay to adoption is linked to the delay in delivery of the AQAP linked to halt to city centre movement strategy planning works. However the delivery of climate change policies and guidance may influence the decision on the need for an air quality SPD. This will be considered as part of the delivery of a new AQAP before March 2024 The reviewed (to address the declared climate emergency) the local plan has still yet to be finalised and adopted at the time this report was written (now due 2024)
29	Lancashire Public Health Team AQ Coordination	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	Lancashire County Council	2015/16	2016	-	-	Initial meeting Dec 2015.AQ briefing note produced April 2017 Public Health work has been dominated by Covid in 2020.	-	Public Heath team at the County council are looking to coordinate roles of stakeholders at County Council to improve air quality (see overview above) See AQ and County Council public health $PM_{2.5}$ actions under section 2.3 below)
30	Lancaster Air Quality Strategy	Policy Guidance and Development Control	Other policy	Lancaster City Council	2013	2015-24	-	-	Approach detailed in Strategy to be adopted in Transport Masterplan for Lancaster	2025	Available at: Lancaster Air Quality Strategy

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31	Planning Policy - Lancaster City Council	Policy Guidance and Development Control	Other policy	Lancaster City Council	-	2014	-	-	New policy introduced for consultation in 2017 (DM28). Plan now adopted (2020). Local Plan	2024	To ensure new exposure to poor AQ is prevented and to minimise emissions from new development Available at: Local Plan Policy reviewed to support new air quality planning guidance (item 28 above). Majority of planning policies are being reviewed in 2021 to address locally declared climate emergency position see Local Plan Review This review still remains to be finalised and adopted at the time this report was written
32	Guidance on electric vehicle charging point requirements for new development	Policy Guidance and Development Control	Other policy	Lancaster City Council	2015	2016	-	-	Guidance reviewed in 2021/22 as part of review of local plan to respond to declared climate emergency. Due for adoption in now in 2024	2024	Draft guidance available at: Planning Guidance
33	Planning Policy – Carnforth former TDG site	Policy Guidance and Development Control	Other policy	Lancaster City Council	-	2012	-	-	Site is currently being returned to commercial use. Attempts by the owner to redevelop the site in line with the policy did not prove successful. The policy is therefore no longer active at the site.	2018	Planning Policy to direct use of former TDG Haulage site in Carnforth to reduce impact of site on Carnforth AQMA See 2014 Progress report for more information :Available at: Air Quality Reports Policy did not achieve objective.

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34	M6/Heysham Link Road – Traffic Regulation Order	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	Lancashire County Council	-	2016	-	See item 6 above	Order place 2016	2016	HGV traffic to use J34 Link Road Baygateway The link road must not be fully opened to vehicular traffic until the undertaker has completed statutory consultation upon a proposal to make a 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
35	Clean bus technology fund grant Phase 1	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	Lancashire County Council and Stagecoach (with Lancaster City Council as partner)	2015	2016/17	NOx emissions from buses reduced by over 90%	4% reduction in NOx levels in Lancaster AQMA (revised due to recalculation using Defra Emission Factor Toolkit V8/2017	£288,150 grant to tackle (re-engine 8 buses grant spend amendment agreed in 2019 potential further amendment in 2023/24).	Now due 2024/25.	More information available at: Clean Bus Technology Fund No progress in 2022/23. None delivery flagged with county council..
35a	Clean bus technology fund grant bid Phase 2	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	Lancaster City Council and Stagecoach	2017	-	NOx emissions from buses reduced by over 90%	Treatment of 57 buses resulting in a Reduction of 11.7% of NOx emissions in the Lancaster AQMA	Grant application was not successful (2017)	-	Response to application indicated that bid was not successful as Defra air quality modelling indicated Lancaster was not exceeding air quality objectives.
36	Modernisation of local bus fleet (Carnforth)	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	Lancaster City Council	2010/17	-	-	-	Bid made in 2017 however was unsuccessful (see item 35a above)	-	Enquiries are ongoing to see if new development generated funding could possibly be used to fund retrofit programme.
37	ULEV Cities/Fleet OLEV Grant applications	Vehicle Fleet Efficiency	Other	Lancashire County Council with Lancaster City Council	2015	-	-	-	Grant bids not successful	-	-

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38	Lancaster City Council Climate Emergency	Promoting Low Emission Plant	Public Procurement of stationary combustion sources	Lancaster City Council	-	ongoing	The council estate to be net zero by 2030	-	The Climate Emergency declaration and associated steps to make Councils activities carbon neutral by 2030. Progress in 2022/23 includes -Plan to provide 4MWp solar array -£2.6m PSDS bid to decarbonise Williamson Park, City Lab and The Storey. - since Nov 2021Salt Ayre Lesure Centre heated and powered using air source heat pumps and solar array - A local heat network viability study and progress on producing a local area energy plan. -	2030	Further information at: Carbon Reduction Commitment Climate Emergency
39	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	Lancashire County Council Highways	2015/16	2017/18	-	-	Grant monies awarded for 150 points across Lancashire	Jan 2020	Project delivered. See : County Council delivered chargepoints Appendix G shows a map of currently public chargepoints in the Lancaster district

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39a	Provision of electric charging points in public car parks for electric vehicles	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Lancaster City Council	2018	2019/23	Zap Map		Charging points provided in following car parks: 1. Library Street Morecambe 2. Dallas Road Boys and Girls Club Lancaster 3. Auction Mart Lancaster 4. Westview Morecambe 5. Upper St Leonardsgate Lancaster 6. Charter House Lancaster 7. Dallas Road Lancaster 8. Salt Ayre Leisure Centre Morecambe 9 Festival .Market Morecambe 10. Williamson Park Lancaster	-	A strategy is required locally to direct future implementation. A regional strategy has been produced (county council)
39b	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	Lancashire County Council	2023/24	2024-26			The county council is one of 16 councils in England to secure funding from the Local Electric Vehicle Infrastructure (LEVI) extended pilot scheme to expand this trial to more residents and to trial lamp post integrated chargepoints 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 £10.1m from the LEVI capital fund for the provision of local, low power, public on-street charging infrastructure. This is subject to the submission of a delivery plan in early 2024 that is accepted by the Department for Transport.

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40	Green barriers	Other	Other	Lancaster City Council	2017/18	2018/19	-	-	LCC working with Lancaster University on deployment of green barriers in poor AQ locations and also to inform more general planting schemes (AQ beneficial plant species)	2019/20	Research project instigated at Cable Street Lancaster in June 2018. Report from University/Lancashire Public Health still awaited (2023).
41	Promoting the use of electric vehicles as taxis	Promoting Low Emission Transport	Taxi emission incentives	Lancaster City Council	2017/18 and 2023/24	2018/22 and 2024-2026	Number of electric taxi vehicles in local taxi fleet	-	Ongoing through work associated with OLEV grant for charging infrastructure and Defra AQ Grant (see 42 and 48 below) and through local 'Climate Emergency' initiatives And through changes to taxi licensing policies in January 2022(requiring all taxis EV's by 2030 and transitional policies)	2026	A further survey consultation took place in August 2022 to ask the trade its opinion on a potential 'try before you buy' scheme and subsequent leasing scheme. On the back of the response to this consultation the Council submitted a Defra AQ grant bid to run such a scheme. The bid was successful with a grant award of £454,576 to deliver the scheme commencing practically in 2024 The Council is looking to ensure barriers that prevent the uptake of electric taxis are addressed.
42	Grant Bid for electric taxi vehicle charging infrastructure from OLEV scheme	Promoting Low Emission Transport	Taxi emission incentives	Lancaster City Council or Lancashire County Council	2016/18	2019/21	Installation of charging points	-	4 rapid chargers for use by taxis (initially open to all vehicles) are now delivered and operational	2022	Chargers are now in place and operational at Heysham, Billy Hill, Morecambe and Spring Garden Street Lancaster car parks.. 5 other Lancashire authorities have also installed chargers through the Lancaster co-ordinated bid delivering 24 rapid chargers across the region..

Measure No.	Measure	Category	Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
43	Promoting the use of electric vehicles in Council fleet	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Lancaster City Council	2017/18	2018/21	Installation of charging points and purchase of electric vehicles	-	Currently 8 electric pool car vehicles are available for use, 42 electric vans and 2 electric bin wagons. This represents 29% of the fleet. Charging infrastructure is now available at White Lund Depot, Lancaster Town Hall and Morecambe Town Hall aswell as council car parks detailed above (39a and 42)	2030	The Council is planning to replace fleet vehicles with electric vehicle alternatives where possible. For new electric bin wagons see Electric Bin Wagon
44	Plan for electric buses in Lancaster	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Lancaster City Council	2021/22	2022 onwards	Installation of charging points and delivery of electric vehicles	-	Plans are being developed to provide charging to accommodate 35 electric buses which operate between Morecambe and Lancaster University. It is hoped that developed plans can be implemented dependant on the availability of suitable grant funding	2024	Bus Service The County Council has indicated they will support Stagecoach (the main local bus service provider) in a future Zebra grant funding bid. At the time of writing this report a further Zebra grant funding round has opened with expressions of interest to be made by the 20 October 2023 by the local transport authority (the county council). A bid is anticipated (an expression of interest has already been submitted), which if successful, would form a main plank of the new AQAP for the Lancaster City Centre AQMA.
45	Non road mobile machinery emissions during construction	Promoting Low Emission Plant	Shift to installations using low emission fuels for stationary and mobile sources	Lancaster City Council	2021/22	2023 onwards	Developments affected by requirement	-	Potential adoption of scheme to require use of low emission NRMM through adoption of specific AQAP requirement	2024	Subject to national scheme being available for national participation (not available at the time this report was written)

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46	Defra AQ Grant Bid to support behaviour change measures	Public Information	Other Mechanisms	Lancaster City Council	2021	2022-2027		-	Grant bid due Oct 8 2021 to considered monitoring information project to trigger behaviour change to reduce local particulate pollution and working with schools. Grant bid was successful £198,794 was awarded in 2022.	2027	Contract was awarded in 2022 to Earthsense Systems Limited as a delivery partner to the project. Monitoring and public web site communication package now in place with full public launch due Sept/Oct 2023. .
46a	Schools AQ pilot programme (as part of item 46)	Public Information	Other Mechanisms	La aancaster City Council	2021	2022 onwards			Pilot involving 6 schools commenced September 2022 and was completed at end of summer term 2023. A linked event, also involving climate change matters, is planned for Clean Air Day 2024		It is anticipated the programme will expand to more schools and carry forward as part of the school's education programme in subsequent years. The project is linked to information that will be available shortly from item 46.
47	Defra AQ Grant Bid to support behaviour change measures	Public Information	Other Mechanisms	Lancaster City Council	2022	2023 onwards			Partnership bid (Sept 2022) with Hertfordshire County Council (lead authority) and Global Action Plan to take forward 'Clean Air Night' proposal aimed at raising public awareness of the impacts of burning solid fuels	2023	The Grant bid was not successful, but Hertfordshire County Council have funded the campaign for 2023/24 A revised grant bid (by Hertfordshire County Council) will also be submitted in 2023 looking for funding to carry the campaign forward a further 2 years.
48	Defra AQ Grant Bid to support transition of taxis to electric vehicles	Promoting Low Emission Transport	Taxi emission incentives	Lancaster City Council	2022/23	2023-26	Electric vehicles Licensed in local taxi fleet		The grant application bid was successful with a grant award of £454,576.	2026	Procurement of electric bids is underway with a number of bids received. Practical delivery of the electric taxi 'try before you buy' type scheme is due in 2024 following the delivery of the electric vehicles (delivery time is anticipated to be in the order of 6 months but is dependent on vehicle type(s) selected.

Measure No.	Measure	Category	Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
49	Local Cycling and Walking Infrastructure plans (LCWIP)	Promoting Travel Alternatives	Promotion of cycling	Lancashire County Council	2018/23	2023 onwards	No of Trips		See LCWIP Progress	2023-2032	A restart of this work is just commencing with a 4 month programme to deliver a new LCWiP network plan by the end of early 2024 with prioritisation to follow A second LCWIP engagement survey went live on 12 Sept 2023 to provide additional input into the design of the final network plan.
50	DfT Zebra Round 2 Grant bid to provide electric buses	Promoting Low Emission Transport	Company Vehicle Procurement -Prioritising uptake of low emission vehicles	Lancashire County Council	2023	2024 onwads	Number of electric buses	When last calculated (2017) buses were assessed to contribute around 30% of nitrogen oxide emissions in the Lancaster City Centre AQMA.	An expression of interest has been submitted (required before 20 October 2023) with a full application needing to be submitted before the 15 December 2023	2024-26	Should a successful bid be forthcoming the delivery of electric buses in Lancaster City Centre would form the main plank of a new AQAP for the Lancaster City Centre AQMA
51	Clean Air Night Campaign	Promoting Low Emission Plant	Other measure for low emission fuels for stationary and mobile sources	Hertfordshire County Council	2023	2023/24			The first Clean Air Night campaign is due to happen in January 2024		Lancaster City Council are to participate and support this campaign for this year (2023/24) and for two subsequent years if Defra AQ grant bid by Hertfordshire County Council is successful.

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52	Information to farmers	Public Information	Via other mechanisms	Lancaster City Council	2021/23	2021/23			In 2021 a letter was sent to all farms within the Lancaster City Council 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 to farms in 2023 providing similar advice and details of organisation who offer assistance and national grant schemes available to help framers reduce emissions.	2023	A measure to help reduce ammonia emission which lead to particulate formation in the atmosphere and address local odour impacts.

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Measures being adopted by Lancaster City Council

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

Lancaster City Council monitors $PM_{2.5}$ pollution at one automatic station (Cable Street Lancaster) which is a roadside location in close proximity to the city centre bus station. The site has measured an annual mean level of 8ug/m^3 for the last two years. Given the position of the station we think this is indicative that the district generally will likely be in compliance with the newly adopted national 10ug/m^3 target standard. As part of a Defra AQ grant funded project the Council has installed 12 lower cost air quality sensors (Zephyr monitors) at lamp post locations across the main residential areas of the district, covering Heysham, Morecambe, Lancaster, Halton and Galgate. The sensors monitor $PM_{2.5}$ alongside other pollutants. The indicative annual mean level results from these monitors will be reported in next year's ASR report together with other project findings and outcomes.

As previously reported Lancaster City Council is working to address $PM_{2.5}$ through existing and proposed actions to reduce emissions. Many of the measures used to reduce emissions impact on nitrogen dioxide emissions also impact on particulate pollution (PM_{10} and $PM_{2.5}$). For example measures that replace vehicle trips with cycling or walking will reduce all these pollutants and traffic alleviation provided by the Bay Gateway road will reduce pollutant emissions for both nitrogen dioxide and particulates in key areas. $PM_{2.5}$ reduction measures are therefore similar to measures contained in the existing action plans and include:-

- Cycling and walking measures
- Measures to raise awareness of the impact of burning solid fuels
- Initiatives around the use of electric vehicles
- Providing information to farms on how to reduce agricultural emissions

- Requirements for new developments (policy and guidance driven)
- Providing information on the impact of solid fuel use and proposing a project to influence behaviour to reduce particulate emissions from these sources

The Council made an air quality grant bid to Defra in October 2021 to fund a project aimed at reducing particulate emissions arising from the use of solid fuel appliances and bonfires, linked to a general emission reducing/air quality impact educational scheme delivered to local schools. Emissions from domestic solid fuel installations were estimated to contribute around 27% of $PM_{2.5}$ emissions nationally (see 2019 national Clean Air Strategy[4]). This bid was successful, and a Defra grant award was made in 2022. Monitoring has been installed and real time modelling facility developed to deliver a full public launch of the project in autumn 2023.

Lancashire County Council's Public Health Summary on measures being taken at Lancashire County Council to reduce emissions/concentrations

In Lancashire the strongest evidence we have on the population health impacts of air pollution comes from Public Health England's Public Health Outcomes Framework. This Framework estimates the 'fraction of annual all cause adult mortality attributable to particulate air pollution (measured as fine particulate matter, PM2.5*)' each year. It shows that, while the overall mortality rate from particulate air pollution in Lancashire-12 (4.8%) is lower than the England average (5.5%), air pollution remains a significant public health issue for the county (2021).

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

1. Encouraging the use of sustainable forms of travel

Lancashire's cycling and walking strategy, Actively Moving Forward, sets out an ambitious plan for increasing the number of people walking and cycling in the county by 2028. By improving and increasing access to cycling and walking infrastructure, alongside training and promotional activities, it aims to significantly increase the amount of cycling and walking people do across the county. Information on the County Council's ongoing activities in this area can be found on the Active Travel in Lancashire website.

As part of Lancashire's cycling and walking strategy, work has now commenced on developing Local Cycling and Walking Infrastructure Plans (LCWIPs) for Lancashire. LCWIP's have been defined for seven areas across Lancashire. These are:

- Lancaster
- Central Lancashire
- West Lancashire
- Fylde Coast
- Ribble Valley
- Burnley and Pendle
- Rossendale and Hyndburn

As part of the LCWIP process extensive public and stakeholder engagement is underway. Following on from this, it is planned for all LCWIP's to be completed early 2024 with a prioritisation exercise for each plan to follow. The Plans will include a network plan for cycling and walking infrastructure and a prioritised list of schemes for delivery over short, medium and long term timeframes which will subsequently be determined. These plans will be used to support future infrastructure decisions and to access new funding schemes as they become available.

The Road Safety Team work with schools, workplaces and the community to encourage safe and sustainable modes of travel. Initiatives for schools are promoted though the Safer Travel Moodle and include: a series of cycling and walking safety training programmes; guidance and resources for teachers to encourage safe and active travel; and support for creating travel plans.

Bus services across Lancashire operate in a deregulated market, meaning the County Council doesn't control the bus network, franchise routes or control fares. In the next three years, the county council will continue to work more closely with bus operators, alongside local communities, to create a network that people want and will use. The council has published a ten-year Enhanced Partnership Plan and Scheme alongside its Bus Service Improvement Plan which together will deliver measures to restore confidence and grow patronage numbers.

2. Supporting the transition to low emission vehicles

Lancashire County Council, working with BP Pulse, has installed 150 Electric Vehicle charge points either at the side of the adopted highway or in county council carparks. These

chargepoints are ultra chargers which will allow most vehicles to take a full charge in less than an hour and Fast Chargers that will take around three hours to charge the vehicles. The mix of these units depends on location, power supply and demand.

Since the installation of these points the focus has been on supporting residents who do not have off-street parking charge at home, with the County Council trailing an innovative footway cable tray which will provide a low cost and practical solution to support residents without off street parking charge at home. The cable-tray enables residents to safely pass an electric cable across the footway from their property to the carriageway enabling charging their vehicle from their domestic supply. Two products (one designed in-house and one adapted product) have been trialled at several residential properties in the county. The county council is one of 16 councils in England to secure funding from the Local Electric Vehicle Infrastructure (LEVI) extended pilot scheme to expand this trial to more residents and to trial lamp post integrated chargepoints 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 £10.1m from the LEVI capital fund for the provision of local, low power, public on-street charging infrastructure. This is subject to the submission of a delivery plan in early 2024 that is accepted by the Department for Transport. This will help us scale up the deployment of local chargepoints and solutions for residents without access to off-street parking beyond the pilot projects and deliver the vision and aims of the Lancashire and Blackburn with Darwen EV Infrastructure Strategy.

The county council's parking services fleet is now fully electric, with charging infrastructure installed at the offices and depots where the vehicles are based, and regularly visit. Fleet services are continuing to deliver their programme to upgrade to ultra low emission vehicles.

3. Creating cleaner, healthier road networks

Work to develop the next Local Transport Plan (LTP4) for Lancashire, Blackpool and Blackburn with Darwen is underway. The Public Health team has submitted an evidence base to inform the process, highlighting transport related health challenges affecting the population of Lancashire and making recommendations about how local transport planning policy can make a contribution to addressing these. The local Highways and Transport Masterplans will be refreshed to align with the priorities of LTP4. This will provide an opportunity to identify longer-term network solutions that address issues in AQMAs and have a positive impact on air quality generally.

4. Embedding air quality into policy

The County Council works with district planners to ensure air quality is a key consideration of Local Plans, alongside wider public health issues. It supports district councils in developing policies that seek to ensure new developments do not contribute to increasing levels of air pollutants and that requirements for appropriate mitigation are in place.

The County Council, as part of its highways input into planning applications, actively encourages measures that aim to promote sustainable forms of travel. Working under the direction of the National Planning Policy Framework, the County Council seeks measures that facilitate cycling and walking, increase the use of public transport and provide access to electric vehicle charge points. The County Council also seeks funding from developers, through section 106 contributions, to support existing bus services or to provide new bus services suitable to serve development sites once their built.

5. Raising awareness and increasing engagement

The Lancashire Insight website provides information on the sources and health impacts of air pollution across the county. Webpages include a Summary of Emissions Data and Monitoring of Air Quality and Health Impacts.

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

This section sets out the monitoring undertaken within 2022 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 2018 and 2022 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 2 sites during 2022. Table A.1 in Appendix A shows the details of the automatic monitoring sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. There are no such identified problems in the Lancaster area. The Lancaster Air Quality page presents automatic monitoring results for Lancaster City Council with automatic monitoring results 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 48 sites during 2022. Table A.2 in Appendix A presents the details of the non-automatic sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on any adjustments applied are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 and Table A.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 40µg/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).

For diffusion tubes, the full 2022 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.

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 200µg/m^3, not to be exceeded more than 18 times per year.

The monitored results indicate that exceedances of the annual mean objective for nitrogen dioxide only remain within the Lancaster City Centre AQMA. For the first year, levels in the China Street section of the Lancaster City Centre AQMA indicated levels just below the annual mean objective standard (LC19 - 39ug/m^3). The two monitoring sites showing levels above the objective standard (LC10 Dalton Square and LC11 Thurnham Street) showed levels of 47ug/m^3 and 41ug/m^3 respectively. These two monitoring sites also show a declining pollution trend but are currently still showing levels above the objective standard. In general, a declining nitrogen dioxide pollution trend can be observed from monitoring sites both inside and outside the districts AQMAs. Levels specifically within the Carnforth and Galgate AQMAs also reflected this trend, but with levels in this location also indicating compliance with objective standards from 2017 onwards. On this basis the council is currently briefing and consulting on a proposal to revoke these two AQMAs within the forthcoming months.

No locations inside of outside designated AQMA areas indicated any exceedance of the hourly mean objective standard for nitrogen dioxide.

One diffusion tube monitoring site (LC 18 Brock Street Lancaster was discontinued in early 2022 and so was not reported in this report. The Dalton Square automatic monitoring station also suffered an equipment (the analyser) fault in December 2022. It was decided to discontinue this monitoring site given the monitoring position was indicating levels significant below the objective standards for nitrogen dioxide (the station only monitored this pollutant), was showing a declining trend and the data obtained did not now in itself add significantly to the data collected at an AQMA and district level. The Cable Street automatic station which monitors nitrogen dioxide and particulate levels remains operational in 2023.

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 40µg/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 50µg/m^3, not to be exceeded more than 35 times per year.

Monitored levels of PM_{10} particulate pollution showed a deceasing trend in annual mean levels and compliance with the objective standard.

24 hour mean PM_{10} levels, although compliant with objective standards indicated a possible increasing trend. This however could be attributable to local circumstances e.g. road works, and may not therefore potentially represent an increasing pattern. Attention to any continuing observed trend will be reported in future ASR reports.

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.

$PM_{2.5}$ levels during 2022 were only monitored at one location (the Cable Street automatic monitoring station) and monitoring for $PM_{2.5}$ has only been in place in this location for 2

years. Annual mean levels monitored over each of the two years has indicated the same $PM_{2.5}$ concentration level of 8ug/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?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
AN1	Cable Street	Roadside	347684	461963	NO2	YES	APNA-370 NOx analyser	Y(0.4m)	4	2
APM1	Cable Street	Roadside	347684	461963	PM10 and PM2.5	YES	FIDAS	Y(0.4m)	4	2
AN2	Dalton Square	Roadside	347852	461611	NO2	YES	APNA-370 NOx analyser	Y – 0m (Dalton Square is a sitting area)	3.5	2

Notes:

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

(2) N/A if not applicable

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

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	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	Height (m)
LC1	Great John Street, Lancaster	Roadside	347852	461682	NO_2	Yes City of Lancaster AQMA	2.5	2.5	No	3.5
LC4	Brunton Road, Lancaster	Urban Background	347904	460508	NO_2	No	0.2	1.5	No	3.5
LC5	Owen Road, Lancaster (Resid)	Roadside	347846	462448	NO_2	Yes City of Lancaster AQMA	0.2	2.5	No	3
LC8	Rosemary Lane, Lancaster (Resid)	Roadside	347796	461853	NO_2	Yes City of Lancaster AQMA	0.2	1.7	No	3.5
LC9	Brock Street 1, Lancaster (Resid)	Roadside	347808	461564	NO_2	Yes City of Lancaster AQMA	0.2	2.7	No	3

LC10	Dalton Square, Lancaster Resid)	Roadside	347834	461596	NO_2	Yes City of Lancaster AQMA	0.2	3.3	No	3
LC11	Thurnham Street, Lancaster (Resid)	Roadside	347821	461404	NO_2	Yes City of Lancaster AQMA	0.2	3.1	No	3
LC13	King Street 1, Lancaster AQMA(Resid)	Roadside	347580	461593	NO_2	Yes City of Lancaster AQMA	0.2	2.4	No	3
LC14	King Street 2 Lancaster (Resid)	Roadside	347685	461389	NO_2	Yes City of Lancaster AQMA	0.2	2.2	No	3
A	High School, Morecambe Road, Lancaster	Kerbside	347582	462451	NO_2	Yes City of Lancaster AQMA	N/A	0.3	No	3
B1,B2, B3	Dalton Square, Lancaster(Co-Located)	Roadside	347852	461611	NO_2	Yes City of Lancaster AQMA	N/A	3.3	Yes	2

C1,D1,E1	Cable Street, Lancaster(Co-Located) (Resid)	Roadside	347685	461963	NO_2	Yes City of Lancaster AQMA	0.4	3.7	Yes	2
H	South Road 1, Lancaster (Resid)	Roadside	347859	461126	NO_2	No	0.2	9	No	3
I	Parliament Street, Lancaster (Resid)	Roadside	347909	462015	NO_2	Yes City of Lancaster AQMA	0.2	3.5	No	3
J	North Road, Lancaster (Resid)	Roadside	347852	461909	NO_2	Yes City of Lancaster AQMA	0.2	1.9	No	3
K	Stonewell, Lancaster (Resid)	Roadside	347850	461791	NO_2	Yes City of Lancaster AQMA	0.2	4.4	No	3
L	King Street, Lancaster (Resid)	Roadside	347613	461523	NO_2	Yes City of Lancaster AQMA	0.2	1.5	No	2.5

CFO	Market Street, Carnforth (Resid)	Roadside	349909	470624	NO_2	Yes Carnforth AQMA	0.2	1.4	No	3
Q	King Street 3, Lancaster (Resid)	Roadside	347664	461449	NO_2	Yes City of Lancaster AQMA	0.2	2	No	3
V	Main Road, Galgate (Resid)	Roadside	348359	455352	NO_2	Yes Galgate AQMA	0.2	1.6	No	3
Z	Main Road, Galgate (Resid)	Roadside	348345	455272	NO_2	Yes Galgate AQMA	0.2	2.3	No	2.5
ZA	Salford Road, Galgate AQMA (Resid)	Roadside	348351	455381	NO_2	Yes Galgate AQMA	0.2	1	No	3.5
ZC	Main Road, Galgate (Resid)	Roadside	348375	455393	NO_2	Yes Galgate AQMA	0.4	2.3	No	3
CF1	Lancaster Road, Carnforth (Resid)	Roadside	349870	470524	NO_2	Yes Carnforth AQMA	0.2	5.9	No	2
CF2	Lancaster Road/Market Street,	Roadside	349934	470605	NO_2	Yes	0.2	2.3	No	3.5

	Carnforth AQMA (Resid)					Carnforth AQMA				
CF3	Market Street, Carnforth AQMA(Resid)	Roadside	349853	470615	NO_2	Yes Carnforth AQMA	0.2	2	No	3.5
CF5	Scotland Road 1, Carnforth AQMA(Resid)	Roadside	349962	470618	NO_2	Yes Carnforth AQMA	0.2	1.8	No	3
CF6	Scotland Road 1, Carnforth AQMA(Resid)	Roadside	349962	470618	NO_2	Yes Carnforth AQMA	0.2	1.8	No	3
CF7	Fernbank, Carnforth (Resid)	Roadside	349613	470223	NO_2	No	0.2	5.9	No	2.5
T1	Lancaster Road Torrisholme (Resid)	Roadside	345631	463694	NO_2	No	0.2	2.4	No	3.5
LC15	Caton Road Lancaster (Resid)	Roadside	348199	462361	NO_2	Yes City of Lancaster AQMA	0.2	4.7	No	5
LC19	China Street 1 Lancaster Bombay Balti Lamp Post)	Roadside	347502	461841	NO_2	Yes City of Lancaster AQMA	0.4	1.5	No	3

LC20	China Street 2 Lancaster (Public House Lamppost)	Roadside	347515	461835	NO_2	Yes City of Lancaster AQMA	0.4	1.5	No	3
LC22	South Road 2, Lancaster (No. 69 Resid)	Roadside	347928	461025	NO_2	No	0.2	7.2	No	3
LC23	Greaves Road 1 Lancaster (1 Alma Road - Resid)	Roadside	347948	460893	NO_2	No	0.2	5	No	3
LC24	Greaves Road 2 Lancaster (No.138 Resid)	Roadside	347974	460514	NO_2	No	0.2	2.8	No	3
LC25	Scotforth Road1, Scotforth (No.65 Resid.)	Roadside	348084	459844	NO_2	No	0.2	5.2	No	3
LC26	Scotforth Road 2, Scotforth (No.100 Resid.)	Roadside	347990	459418	NO_2	No	0.2	5.5	No	3
LC27	Scotforth Road 3, Scotforth (No.110 Resid.)	Roadside	347989	459396	NO_2	No	0.2	6.5	No	3
BLS1	Main Road, Bolton Le	Roadside	348594	468500	NO_2	No	0.2	4	No	3

	Sands (11A Resid)									
H1	Heysham Road, Heysham (109 (Resid - downspout)	Roadside	341964	463273	NO_2	No	0.2	2.5	No	2.5
CF8	Lancaster Road (Resid) (No.101/103 downspout)	Roadside	349568	470044	NO_2	No	0.2	2.4	No	3
LC28	Newton Terrace, Caton Road Lancaster (No 7)	Roadside	348517	463243	NO_2	No	0.2	6	No	2.5
LC31	3 St Leonards Gate Lancaster (Resid)	Roadside	348114	462071	NO_2	No	0.4	3	No	3
LC32	The Pub China Street Lancaster (Resid)	Roadside	347511	461744	NO_2	Yes City of Lancaster AQMA	0.2	2	No	3.5
LC33	Avis Caton Road, Lancaster	Roadside	348045	462120	NO_2	Yes City of Lancaster AQMA	3.5	2.7	No	3

MC4	Shrimp Roandabout Morecambe	Kerbside	345240	463663	NO_2	No	20	1	No	3
LC34	Derwent Road Lancaster (Resid.)	Roadside	348623	461870	NO_2	No	0	5	No	2.2

Notes:

(1) 0.2m is used as the position of the monitoring diffusion tube located on the façade of a residential property and is considered indicative of exposure (e.g. a monitoring site 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 2022 (%) (2)	2018	2019	2020	2021	2022
AN1 - Cable St	347684	461963	Roadside	-	99.9	39.6	34	28	32	27
AN2 - Dalton Sq	347852	461610	Roadside	-	96.5	32	34	21	26	23

☒ **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**

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 2018-2022: Non-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 2022 (%) [2]	2018	2019	2020	2021	2022
LC1	347852	461682	Roadside	-	100.0	**43**	**43**	34	38	36
LC4	347904	460508	Urban Background	-	100.0	14	13	10	12	10
LC5	347846	462448	Roadside	-	91.7	30	29	23	29	24
LC8	347796	461853	Roadside	-	100.0	25	29	20	24	22
LC9	347808	461564	Roadside	-	100.0	32	30	22	24	23
LC10	347834	461596	Roadside	-	100.0	**55**	**53**	**42**	**48**	**47**
LC11	347821	461404	Roadside	-	100.0	**48**	**48**	37	**43**	**41**
LC13	347580	461593	Roadside	-	91.7	34	32	26	27	27
LC14	347685	461389	Roadside	-	83.3	28	27	25	29	25
A	347582	462451	Kerbside	-	83.3	26	23	19	22	19
B1,B2, B3	347852	461611	Roadside	-	100.0	28	27	21	23	23
C1,D1,E1	347685	461963	Roadside	-	100.0	36	36	27	32	28
H	347859	461126	Roadside	-	100.0	27	26	21	25	23
I	347909	462015	Roadside	-	100.0	33	32	23	27	25
J	347852	461909	Roadside	-	100.0	**40**	**40**	28	35	33
K	347850	461791	Roadside	-	100.0	35	34	27	31	29
L	347613	461523	Roadside	-	91.7	37	34	22	29	27
CFO	349909	470624	Roadside	-	100.0	34	34	26	28	29
Q	347664	461449	Roadside	-	91.7	28	26	21	23	24
V	348359	455352	Roadside	-	91.7	33	33	24	27	25
Z	348345	455272	Roadside	-	100.0	33	32	22	25	24
ZA	348351	455381	Roadside	-	100.0	26	24	18	21	18
ZC	348375	455393	Roadside	-	91.7	31	31	22	24	22

CF1	349870	470524	Roadside	-	91.7	27	30	25	25	19
CF2	349934	470605	Roadside	-	100.0	33	25	17	22	25
CF3	349853	470615	Roadside	-	100.0	28	25	20	22	21
CF5	349962	470618	Roadside	-	91.7	32	29	22	25	24
CF6	350000	470667	Roadside		83.0	28	25	-	-	19
CF7	349613	470223	Roadside	-	100.0	25	22	17	21	18
T1	345631	463694	Roadside	-	100.0	28	24	21	21	20
LC15	348199	462361	Roadside		83.3	27	27	-	-	22
LC19	347502	461841	Roadside	-	100.0	**43**	**45**	**40**	**42**	39
LC20	347515	461835	Roadside	-	91.7	39	38	29	33	31
LC22	347928	461025	Roadside	-	100.0	25	22	17	21	19
LC23	347948	460893	Roadside	-	91.7	27	26	20	23	19
LC24	347974	460514	Roadside	-	100.0	25	24	18	20	18
LC25	348084	459844	Roadside	-	100.0	21	19	14	16	15
LC26	347990	459418	Roadside	-	100.0	29	27	20	23	21
LC27	347989	459396	Roadside	-	100.0	26	25	18	21	18
BLS1	348594	468500	Roadside	-	100.0	26	24	18	20	17
H1	341964	463273	Roadside	-	100.0	22	20	15	17	15
CF8	349568	470044	Roadside	-	100.0	27	26	20	22	20
LC28	348517	463243	Roadside	-	100.0	23	26	19	23	20
LC31	348114	462071	Roadside	-	83.3	33	31	22	27	22
LC32	347511	461744	Roadside		83.3	**44**	37	-	-	29
LC33	348045	462120	Roadside	-	83.3	35	34	23	26	25
MC4	345240	463663	Kerbside	-	100.0		26	22	25	21
LC34	348623	461870	Roadside	-	75.0			10	11	9

☒ **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 using national factor 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%).

For the vast majority sites, levels monitored in 2022 showed a decrease in monitored annual mean nitrogen dioxide concentrations from the previous year. For sites showing a slight increase this change was not considered significant and in all of these particular cases levels were all well below the annual mean objective standard.

Figures A.1 – Trends in Annual Mean NO_2 Concentrations

Chart showing decreasing trend at the two automatic monitoring station sites (Cable St and Dalton Sq)

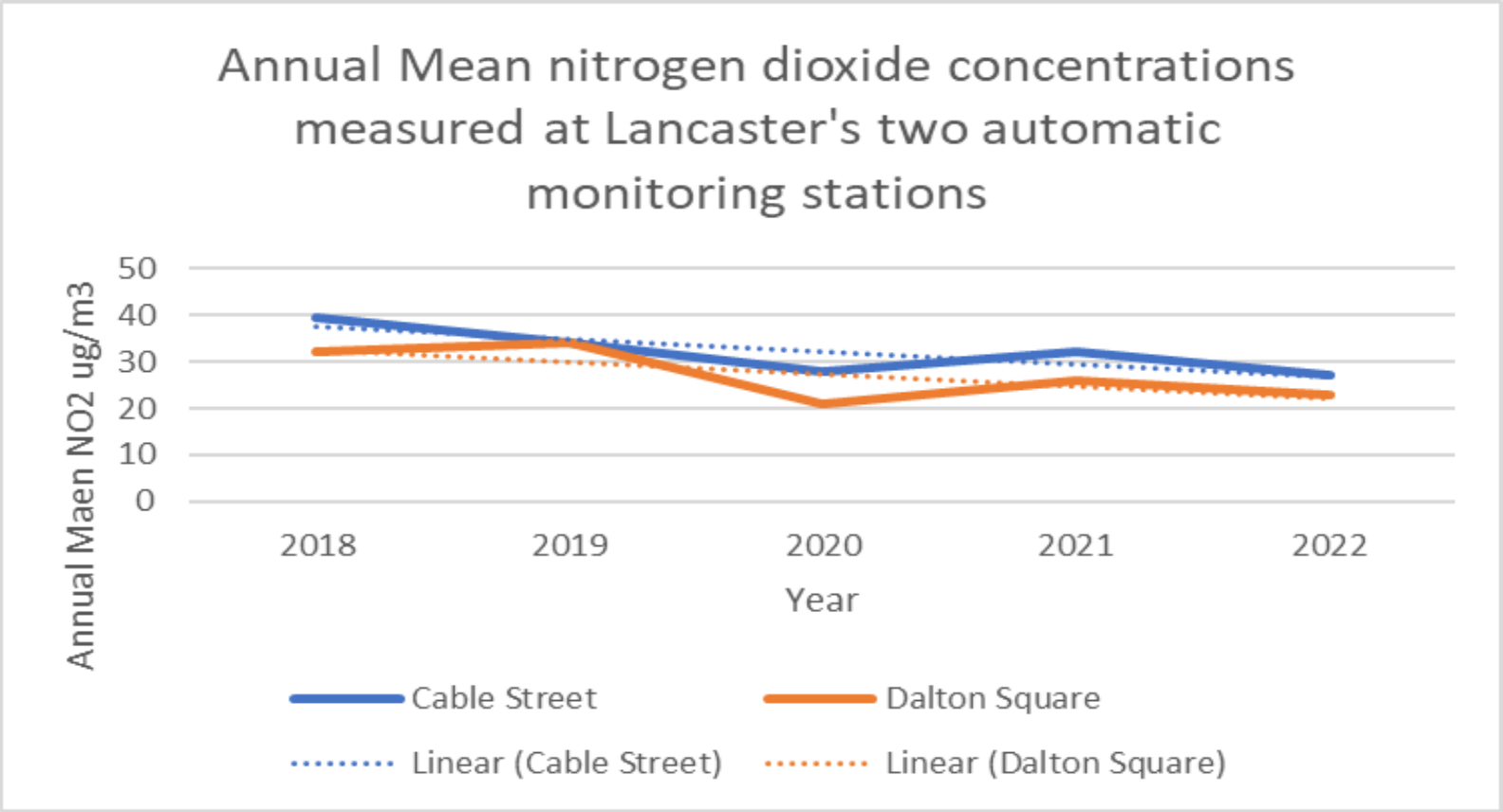


Chart showing the decreasing trend in concentrations at the three highest diffusion tube monitoring sites in Lancaster (although two of the three sites are still indicating exceedance of the objective annual mean standard for nitrogen dioxide)

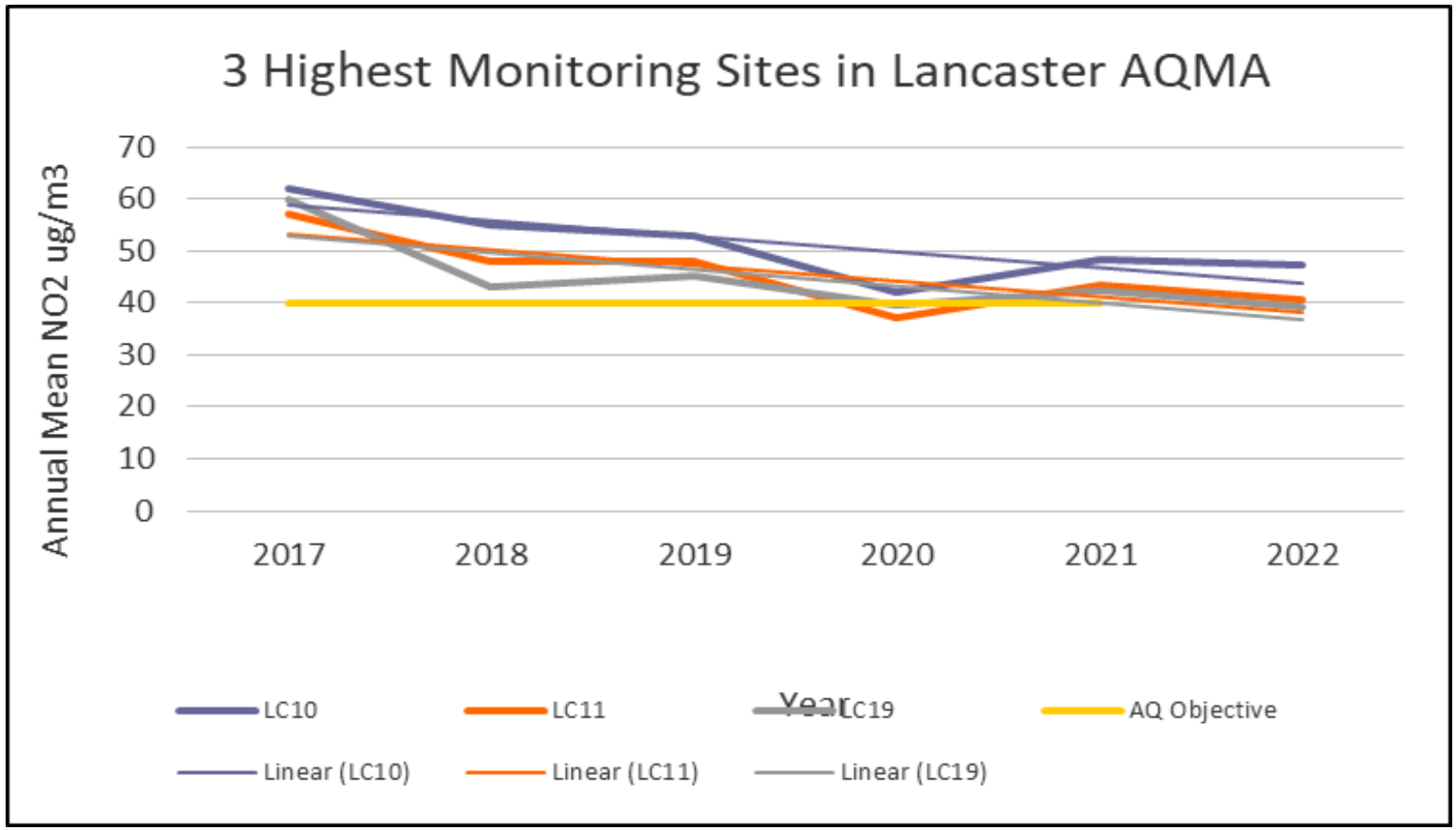


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
AN1 - Cable St	347684	461963	Roadside	-	99.9	0(98)	0	0	0	0
AN2 - Dalton Sq	347852	461610	Roadside	-	96.5	0	0	0	0	0

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%).

There have been no monitored exceedances of the 1-hour objective air quality standard for nitrogen dioxide at either of the two automatic monitoring sites for the past 5 years.

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 2022 (%) (2)	2018	2019	2020	2021	2022
APM1 - Cable Street	347684	461963	Roadside	-	94.4	**22**	**17**	**17**	**17**	**15**

☒ **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%).

Trend analysis indicates a decreasing trend in annual mean PM_{10} levels.

Figure A.2 – Trends in Annual Mean PM_{10} Concentrations

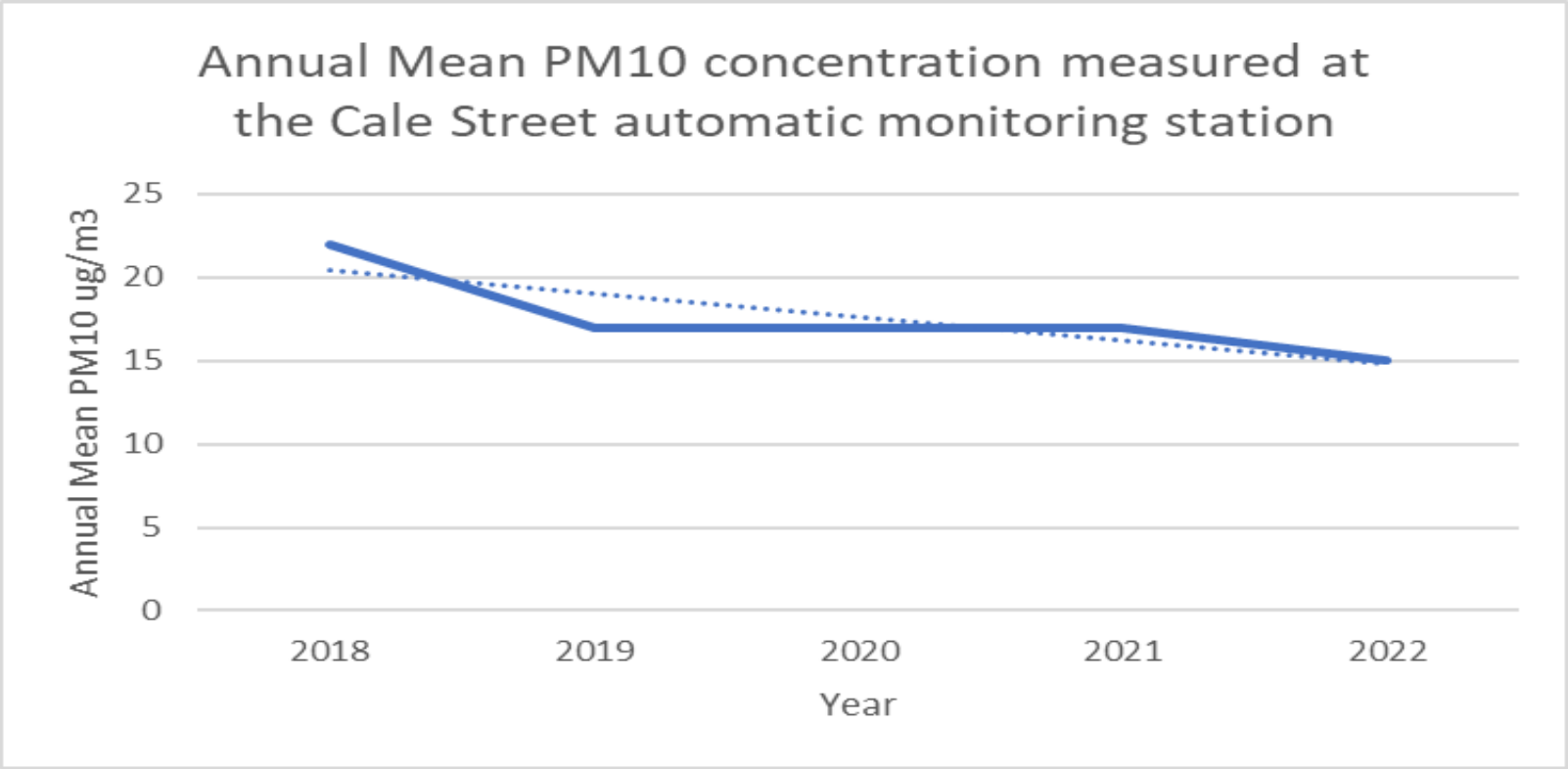


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
APM1 - Cable Street	347684	461963	Roadside		94.4	1	1	**0(27)**	2	4

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%).

Unlike annual mean PM_{10} levels, trend analysis indicates a slight increasing incidence of events (24hr periods) where the concentration is greater than 50ug/m^3. At this stage there is no clear indication why this may be the case and given the still low incidence of events has not prompted detailed investigation at this stage. If the trend continues over future years a more detailed investigation into why this may be happening will be undertaken.

Figure A.3 – Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m^3

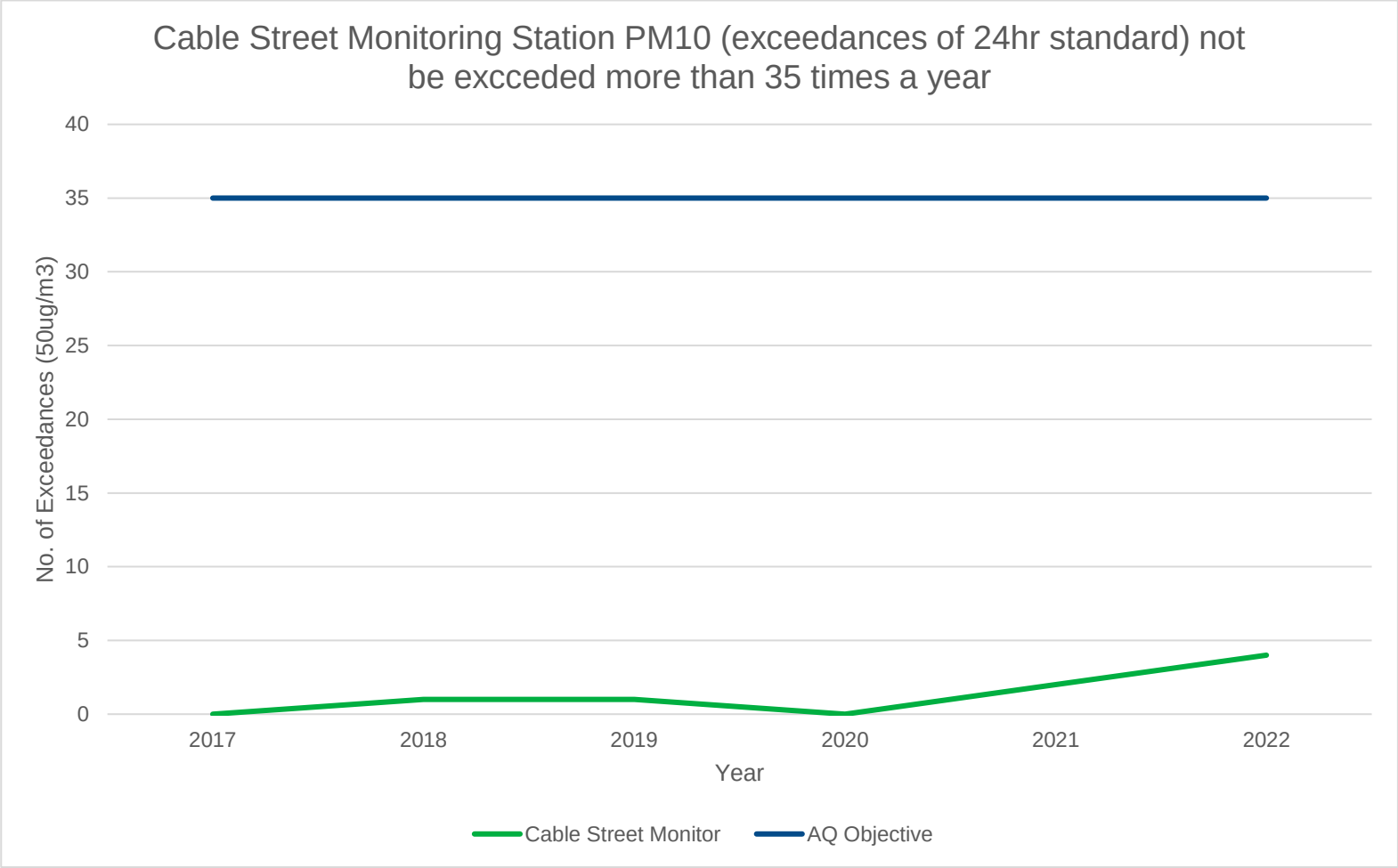


Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
APM1 - Cable Street	347684	461963	Roadside		94.4	-	-	-	8	8

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

Notes:

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

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%).

Monitoring over the past two years has shown an annual mean level of $8ug/m^3$.

Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO_2 2022 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 (0.83)	Annual Mean: Distance Corrected to Nearest Exposure
LC1	347852	461682	47.9	49.7	39.7	57.1	42.0	32.5	36.3	38.4	39.8	42.6	40.5	50.1	43.0	35.7	
LC4	347904	460508	16.8	17.4	9.6	17.7	11.1	6.7	6.8	7.8	9.3	12.1	10.4	16.8	11.9	9.9	
LC5	347846	462448	30.3		24.9	38.6	26.7	23.5	21.9	25.6	31.8	35.9	26.2	31.9	28.9	23.9	
LC8	347796	461853	28.4	31.1	23.0	35.9	25.9	20.3	20.4	21.1	24.7	31.9	27.3	31.6	26.8	22.2	
LC9	347808	461564	34.5	34.2	25.9	34.8	24.7	20.8	23.2	23.4	23.1	28.1	28.0	32.7	27.8	23.1	
LC10	347834	461596	53.2	69.2	58.0	59.0	53.4	53.0	54.9	55.3	54.6	55.8	55.9	57.3	56.6	**47.0**	
LC11	347821	461404	50.7	57.2	48.9	52.2	44.8	47.0	51.7	49.7	48.4	51.0	45.9	43.3	49.2	**40.9**	
LC13	347580	461593	36.4	40.5	21.8	37.8	29.2		29.6	32.1	32.4	29.2	32.9	38.8	32.8	27.2	
LC14	347685	461389	31.6	39.3		36.9		20.4	23.9	26.1	25.2	31.2	29.2	35.3	29.9	24.8	
A	347582	462451			22.3	27.4	20.5	18.9	19.9	19.9	22.7	24.7	21.9	25.4	22.4	18.6	
B1,B2, B3	347852	461611	34.7	36.0	29.4	32.9	22.8	21.6	22.8	24.1	22.1	22.7	27.6	30.1	27.2	22.6	
C1,D1,E1	347685	461963	36.8	42.3	30.4	40.5	33.8	28.2	28.3	29.1	37.7	40.1	29.2	31.5	34.0	28.2	
H	347859	461126	35.7	22.8	19.3	39.0	41.2	20.9	19.7	20.7	28.2	34.0	22.3	27.1	27.6	22.9	
I	347909	462015	36.4	36.9	25.9	42.6	26.7	21.7	24.3	25.6	28.5	34.9	28.2	36.0	30.6	25.4	
J	347852	461909	42.3	48.2	35.6	48.2	35.1	31.0	31.6	35.4	39.1	42.9	37.6	44.6	39.3	32.6	
K	347850	461791	31.3	28.8	33.2	50.2	36.4	29.8	28.9	30.2	33.2	40.2	36.2	38.7	34.8	28.9	
L	347613	461523		37.5	33.9	35.2	30.8	29.3	32.6	30.4	32.0	33.7	31.0	36.2	33.0	27.4	
CFO	349909	470624	58.1	39.9	29.8	39.7	30.1	27.9	25.9	32.7	32.1	35.5	30.8	33.9	34.7	28.8	

Q	347664	461449	31.5	34.0		58.8	24.7	18.4	18.6	20.1	22.6	32.4	25.3	28.9	28.7	23.8	
V	348359	455352	31.3	41.1	29.0		27.3	24.7	29.8	29.9	31.5	29.8	27.2	26.8	29.9	24.8	
Z	348345	455272	30.8	39.9	27.9	31.1	26.1	23.5	26.2	28.0	27.5	30.3	26.7	30.0	29.0	24.1	
ZA	348351	455381	25.7	26.8	19.9	25.9	21.0	16.5	15.3	17.2	19.2	23.9	19.8	24.9	21.3	17.7	
ZC	348375	455393	31.2	31.6	23.7	32.1	25.1	18.2	18.3	21.2	24.3	31.6		32.3	26.3	21.8	
CF1	349870	470524	24.4	30.1	20.0	24.7	19.7	27.1	18.6		19.6	23.3	19.7	21.3	22.6	18.7	
CF2	349934	470605	33.6	40.8	34.6	31.9	25.3	17.9	27.2	29.9	29.6	29.0	27.6	28.8	29.7	24.6	
CF3	349853	470615	28.6	30.8	19.1	32.9	22.6	19.5	18.8	22.8	21.7	26.4	25.3	28.9	24.8	20.6	
CF5	349962	470618	32.6	35.4	26.6	38.8	30.7	22.5	21.0		26.8	31.0	23.5	28.3	28.8	23.9	
CF7	349613	470223			23.2	32.4	23.0	19.0	16.9	18.3	22.3	25.9	21.5	26.3	22.9	19.0	
T1	345631	463694	23.7	28.9	22.4	23.8	20.0	18.3	18.0	19.3	19.6	21.7	18.0	20.6	21.2	17.6	
LC15	348199	462361			27.0	33.7	24.6	22.3	23.0	24.5	26.1	25.9	28.9	28.5	26.4	21.9	
LC19	347502	461841	51.1	62.6	48.5	49.9	40.1	37.8	50.3	48.4	45.2	48.3	41.3	46.4	47.5	39.4	
LC20	347515	461835	41.4	43.3	34.2	43.8	30.4		30.4	34.9	34.0	40.1	35.9	41.3	37.3	30.9	
LC22	347928	461025	26.5	30.1	17.8	36.2	32.2	14.8	16.1	17.5	17.1	23.0	20.9	22.3	22.9	19.0	
LC23	347948	460893	28.6	30.8	28.4		11.6	17.6	21.0	23.1	21.2	24.5	24.5	27.0	23.5	19.5	
LC24	347974	460514	21.9	32.0	21.7	27.9	17.9	15.1	21.9	17.0	18.1	20.7	21.2	22.8	21.5	17.8	
LC25	348084	459844	22.7	37.6	17.4	19.7	15.9	12.6	11.0	12.6	14.0	17.9	16.8	20.8	18.2	15.1	
LC26	347990	459418	29.8	35.5	28.7	27.3	20.5	19.8	22.4	21.7	23.4	25.3	20.6	27.1	25.2	20.9	
LC27	347989	459396	27.2	31.6	23.0	23.3	18.9	14.0	15.4	16.9	18.7	24.1	19.8	26.0	21.6	17.9	
BLS1	348594	468500	23.5	26.7	19.7	25.8	19.2	17.8	15.9	18.3	18.4	21.0	19.2	24.1	20.8	17.3	
H1	341964	463273	24.3	24.1	17.1	25.0	18.0	12.3	9.6	14.5	15.2	18.3	18.0	21.7	18.2	15.1	
CF8	349568	470044	29.8	30.1	23.4	30.7	22.8	18.5	15.7	19.2	20.5	26.4	22.8	29.2	24.1	20.0	

LC28	348517	463243	26.4	31.5	23.3	30.9	23.5	18.6	19.3	21.6	24.0	28.6	22.2	26.0	24.7	20.5	
LC31	348114	462071		36.5		28.1	16.1	22.0	25.0	27.2	38.6	23.7	25.0	26.2	26.8	22.3	
LC32	347511	461744			28.9	50.1	39.7	20.6	30.7	33.5	24.6	45.7	39.9	37.1	35.1	29.1	
LC33	348045	462120	32.5	37.6		35.1	25.6	33.7	22.4	25.1	26.3	27.3		32.7	29.8	24.8	
MC4	345240	463663	28.6	30.4	25.2	34.8	29.0	20.4	19.0	24.0	8.5	27.5	22.8	28.3	24.9	20.7	
LC34	348623	461870			12.7	15.8	9.6	7.1	7.5	8.9		10.5	11.9	15.5	11.1	9.2	

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

☒ **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 2022 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.

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

New or Changed Sources Identified Within Lancaster City Council During 2022

Lancaster City Council has not identified any notable new significant sources impacting on local air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by Lancaster City Council During 2022

Lancaster City Council has not completed any additional works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

Diffusion Tubes are provided and analysed by Gradko International Ltd. (20% TEA in water method). Lab certification and proficiency testing information from Gradko in relation to nitrogen dioxide diffusion tube services are provided below.

Monitoring has been completed in adherence with the 2022 Diffusion Tube Monitoring Calendar.

Gradko Accreditation Certificate and Schedule (for provision and analysis of NO_2 diffusion tubes used in Lancaster) and Proficiency Scheme results for 2022

United Kingdom Accreditation Service

ACCREDITATION CERTIFICATE

UKAS
UNITED KINGDOM ACCREDITATION SERVICE

TESTING LABORATORY
No. 2187

Gradko International Ltd

is accredited in accordance with the recognised International Standard ISO/IEC 17025:2005 - General Requirements for the competence of testing and calibration laboratories.

This accreditation demonstrates technical competence for a defined scope as detailed in and at the locations specified in the schedule to this certificate, and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated January 2009).

The schedule to this certificate is an essential accreditation document and from time to time may be revised and reissued by the United Kingdom Accreditation Service. The most recent issue of the schedule of accreditation, which bears the same accreditation number as this certificate, is available from the UKAS website www.ukas.com.

This accreditation is subject to continuing conformity with United Kingdom Accreditation Service requirements. The absence of a schedule on the UKAS website indicates that the accreditation is no longer in force.

Accreditation Manager, United Kingdom Accreditation Service

Initial Accreditation date
31 January 2001

This certificate issued on
04 November 2014

UKAS is appointed as the sole national accreditation body for the UK by The Accreditation Regulations 2009 (SI No 3155/2009) and operates under a Memorandum of Understanding (MoU) with the Department for Business, Innovation and Skills (BIS).

UKAS TESTING 2187 Accredited to ISO/IEC 17025:2005	**Schedule of Accreditation** issued by **United Kingdom Accreditation Service** 2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK **Gradko International Ltd** **(Trading as Gradko Environmental)** **Issue No:** 019 **Issue date:** 04 September 2015
Testing performed at main address only	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS Collected on diffusion (sorbent) tubes and monitors (cont'd)	Chemical Tests (cont'd)	
Flexible Scope encompassing Volatile Organic Compounds to in-house validation criteria	Volatile Organic Compounds including: Benzene 1,3-Butadiene 1,2-Dichloro(Z)ethene, Ethylbenzene Indane Naphthalene Styrene Tetrachloroethylene Toluene Trichloroethylene 1,2,3-Trimethylbenzene 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene p-Xylene o-Xylene **The laboratory holds a flexible scope of accreditation for these tests.** **Please contact the laboratory for details of the individual compounds they can analyse using this method.**	GLM 13 by Thermal Desorption GC-Mass Spectrometry
END		

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

UKAS TESTING 2187 Accredited to ISO/IEC 17025:2005	**Gradko International Ltd** **(Trading as Gradko Environmental)** **Issue No:** 019 **Issue date:** 04 September 2015
St Martins House **77 Wales Street** **Winchester** **Hampshire** **SO23 0RH**	**Contact: Mr A Poole** **Tel: +44 (0)1962 860331** **Fax: +44 (0)1962 841339** **E-Mail: diffusion@gradko.co.uk** **Website: www.gradko.co.uk**
Testing performed at the above address only	

DETAIL OF ACCREDITATION

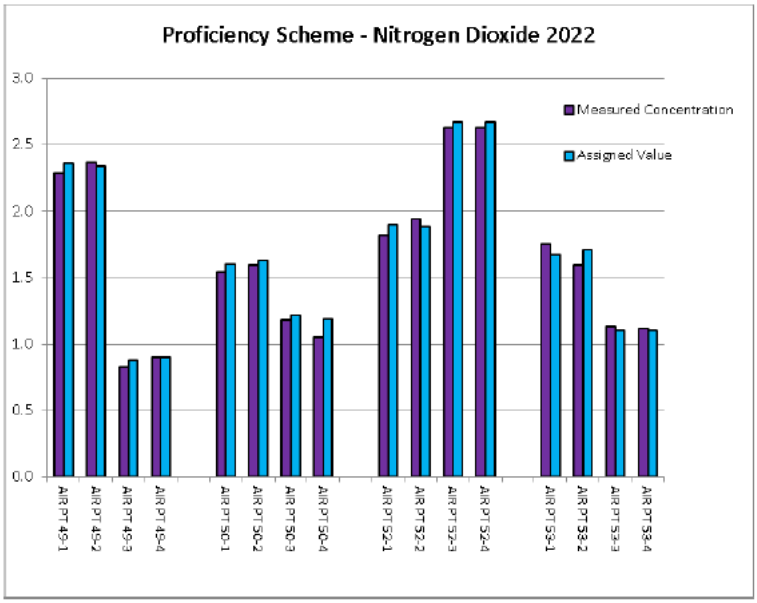
Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS Collected on diffusion (sorbent) tubes and monitors	Chemical Tests	Documented In-House Methods
	Ammonia	GLM 8 by Ion Chromatography
	Benzene Toluene Ethyl benzene Xylene	GLM 4 by Thermal Desorption/ FID Gas Chromatography
	Hydrogen chloride Nitrogen dioxide Sulphur dioxide Hydrogen fluoride	GLM 3 by Ion Chromatography
	Hydrogen sulphide	GLM 5 by Colorimetric determination (UV Spectrophotometry)
	Ozone	GLM 2 by Ion Chromatography
	Nitrogen Dioxide	GLM 7 by Colorimetric determination (UV Spectrophotometry)
	Nitrogen Dioxide (as Nitrite)	GLM 9 by continuous flow colorimetric analyser
	Sulphur dioxide	GLM 1 by Ion Chromatography
	Formaldehyde	GLM 18 by HPLC

(A division of Gradko International Ltd.)
St. Martins House, 77 Wales Street Winchester, Hampshire SO23 0RH
tel.: 01962 860331 fax: 01962 841339 email:diffusion@gradko.com

AIR PT Nitrogen Dioxide Proficiency Scheme Results 2022

Methods: GLM 7 – CARY 60 Spectrophotometer

AIR PT Proficiency Scheme - Nitrogen Dioxide 2022					
Date	Round	Assigned value	Procedure GLM 7		
			Measured concentration	z-Score	% Bias
Feb-22	AIR PT 49-1	2.36	2.29	-0.4	-3.0%
Feb-22	AIR PT 49-2	2.34	2.37	0.2	1.3%
Feb-22	AIR PT 49-3	0.88	0.83	-0.65	-5.7%
Feb-22	AIR PT 49-4	0.9	0.9	0.0	0.0%
May-22	AIR PT 50-1	1.6	1.54	-0.5	-3.8%
May-22	AIR PT 50-2	1.63	1.59	-0.29	-2.5%
May-22	AIR PT 50-3	1.22	1.18	-0.44	-3.3%
May-22	AIR PT 50-4	1.19	1.05	-1.48	-11.8%
Aug-22	AIR PT 52-1	1.90	1.82	-0.56	-4.2%
Aug-22	AIR PT 52-2	1.88	1.94	0.43	3.2%
Aug-22	AIR PT 52-3	2.67	2.63	-0.2	-1.5%
Aug-22	AIR PT 52-4	2.67	2.63	-0.2	-1.5%
Oct-22	AIR PT 53-1	1.67	1.75	0.64	4.8%
Oct-22	AIR PT 53-2	1.71	1.59	-0.94	-7.0%
Oct-22	AIR PT 53-3	1.1	1.13	0.36	2.7%
Oct-22	AIR PT 53-4	1.1	1.12	0.24	1.8%



Diffusion Tube Annualisation

All diffusion tube monitoring locations within Lancaster City Council district 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 2023 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_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.

Lancaster City Council have applied a national bias adjustment factor of 0.83 to the 2022 monitoring data. The national factor incorporated local submitted co-location data from two monitoring sites (Dalton Sq. and Cable Street, Lancaster). A summary of bias adjustment factors used by Lancaster City Council over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	V03/23	0.83*
2021	National	V06/22	0.84
2020	National	V06/21	0.81
2019	National	V09/20	0.91
2018	National	V09/19	0.92

***** The V06/23 spreadsheet provided a very slightly lower factor (0.82). Use of this factor would serve to lower very slightly levels for diffusion tube monitoring shown in this report but would have no impact on whether sites show exceedance of the annual mean objective standard for nitrogen dioxide or not and so re-calculation using this slightly lower factor was not considered necessary/required. The national factor spreadsheet from which the correction factor used in this report was calculated/obtained is shown below.

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/23

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 spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2023

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: Select the Laboratory that Analyses Your Tubes from the Drop-Down List. If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List. If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List. If a year is not shown, we have no data [2]

Step 4: 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 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	Year [5]	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 [6]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2022	R	Blackburn With Darwen Bc	12	26	19	35.0%	G	**0.74**
Gradko	20% TEA in water	2022	R	Gedling Borough Council	12	31	26	19.3%	G	**0.83**
Gradko	20% TEA in water	2022	R	Ards And North Down Borough Council	12	33	22	49.4%	G	**0.67**
Gradko	20% TEA in water	2022	R	Bath & North East Somerset	12	30	25	19.0%	G	**0.84**
Gradko	20% TEA in water	2022	R	Birmingham City Council	11	32	24	36.8%	G	**0.73**
Gradko	20% TEA in water	2022	UB	East Devon District Council	12	8	7	23.6%	G	**0.81**
Gradko	20% TEA in water	2022	R	Gateshead Council	11	23	20	14.2%	G	**0.88**
Gradko	20% TEA in water	2022	R	Gateshead Council	12	23	21	12.7%	G	**0.89**
Gradko	20% TEA in water	2022	R	Gateshead Council	12	25	23	10.1%	G	**0.91**
Gradko	20% TEA in water	2022	R	Gateshead Council	11	30	23	29.0%	G	**0.77**
Gradko	20% TEA in water	2022	R	Gateshead Council	9	31	36	-14.0%	G	**1.16**
Gradko	20% TEA in Water	2022	R	Lisburn & Castlereagh City Council	12	24	19	23.7%	G	**0.81**
Gradko	20% TEA in Water	2022	R	Monmouthshire County Council	12	35	28	23.8%	G	**0.81**
Gradko	20% TEA in water	2022	KS	Marylebone Road Intercomparison	12	52	42	22.8%	G	**0.81**
Gradko	20% TEA in Water	2022	UB	Plymouth City Council	12	18	18	3.2%	G	**0.97**
Gradko	20% TEA in water	2022	UC	Belfast City Council	12	26	20	30.7%	G	**0.76**
Gradko	20% TEA in water	2022	R	Belfast City Council	12	47	36	28.1%	G	**0.78**
Gradko	20% TEA in water	2022	R	Belfast City Council	12	25	22	14.0%	G	**0.88**
Gradko	20% TEA in water	2022	R	Belfast City Council	12	36	28	29.0%	G	**0.78**
Gradko	20% TEA in water	2022	R	Brighton & Hove City Council	10	37	23	62.8%	G	**0.61**
Gradko	20% TEA in water	2022	UB	Hertsmere Borough Council	12	16	15	7.1%	G	**0.93**
Gradko	20% TEA in water	2022	R	Southampton City Council	12	36	28	30.6%	G	**0.77**
Gradko	20% TEA in water	2022	UC	Southampton City Council	12	28	24	15.4%	G	**0.87**
Gradko	20% TEA in water	2022	R	Southampton City Council	12	34	31	8.4%	G	**0.92**
Gradko	20% TEA in water	2022	R	Worcestershire	11	13	12	4.2%	G	**0.96**
Gradko	20% TEA in water	2022	R	Lancaster City Council	13	34	27	25.8%	G	**0.79**
Gradko	20% TEA in water	2022	R	Lancaster City Council	12	28	24	15.2%	G	**0.87**
Gradko	20% TEA in water	2022		**Overall Factor [3] (27 studies)**				Use		**0.83**

[1] For Casella Stanger/Bureau Veritas (NOT Bureau Veritas Labs) use Gradko 50% TEA in Acetone.
For Casella Seal/GMSS/Casella CRE/Bureau Veritas Labs/Eurofins! use Environmental Scientific Groups.
From 2011 for Environmental Scientific Groups use ESG Glasgow.
From 2011 for Harwell Scientific Services use ESG Didcot.
For 2017 for SOCOTEC use ESG Didcot, as name changed mid year.
For 2018 SOCOTEC entered as Didcot and Glasgow. Glasgow analysis lab moved to Didcot mid 2018.
For Staffordshire CC SS/Staffordshire County Analyst use Staffordshire Scientific Services.
For Bodycote Health Sciences and Clyde Analytical Laboratories use Exova.
For Rotherham MBC use South Yorkshire Labs.
For Dundee CC use Tayside SS.
For Leicester Scientific Services use Staffordshire Scientific Services.
For South Yorkshire Air Quality Samplers use South Yorkshire Labs. As of January 2010 sampler body changed. As of April 2010 sampler cap changed.

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 can been estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website.

No sites showing levels above 36ug/m^3 (the threshold above which distance correction should be applied where appropriate) required distance correction as they were considered representative of exposure. No diffusion tube NO_2 monitoring locations within Lancaster City Council district required distance correction during 2022.

QA/QC of Automatic Monitoring

For 2022 the Council had two operational automatic air quality monitoring stations, one located at Cable Street, Lancaster, the other at Dalton Square, Lancaster. For 2023 the

Dalton Sq. automatic station was closed and therefore will not be reported on the next ASR report.

The Cable Street station monitors both nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$). The Dalton Square site monitored nitrogen dioxide only. The two stations commenced monitoring in 2011 and both remained operational in 2022.

Equipment at the two sites is (2 No. Horiba APNA 370 NO_2 analysers and 1No. particulate monitor). The particulate monitor is a FIDAS instrument monitoring both PM_{10} and $PM_{2.5}$. They are maintained and serviced by ESU1, servicing being undertaken twice a year. Routine calibration is undertaken by Lancaster City Council on a monthly basis. The sites are not independently audited, however, data monitoring, validation and ratification for the two sites is undertaken by Air Quality Data Management.

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

Automatic station data provided in this report has been ratified by Air Quality Data Management.

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

The type of PM_{10}/$PM_{2.5}$ monitor (a FIDAS instrument) utilised within Lancaster City Council does not required the application of a correction factor.

Automatic Monitoring Annualisation

All automatic monitoring locations within Lancaster City Council district recorded data capture of greater than 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.

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 can been estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website.

No sites showing levels above 36ug/m^3 (the threshold above which distance correction should be applied where appropriate) required distance correction as they were considered representative of exposure.

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

Figure D.1 – Maps of AQMAs, Automatic and Non-Automatic Monitoring Site

A map showing monitoring locations of Lancaster's two automatic monitoring stations and monitoring data can be found at:

UKAir

A map showing the position of nitrogen dioxide diffusion tube monitoring locations and monitoring data can be found at:

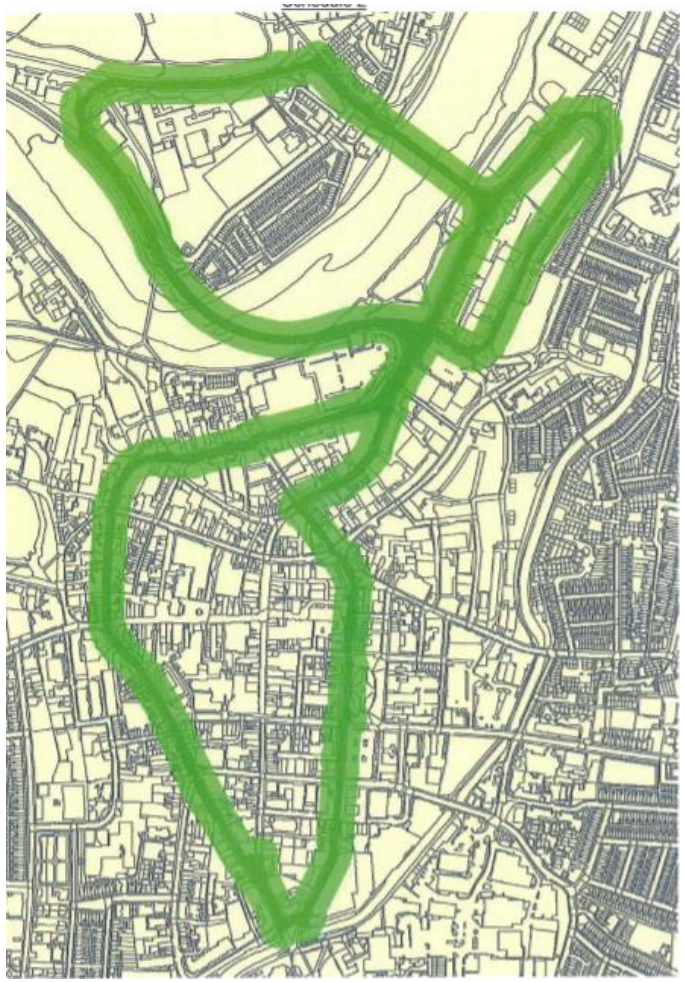
Diffusion Tube Map

Maps/order details for air quality management areas can be found at:

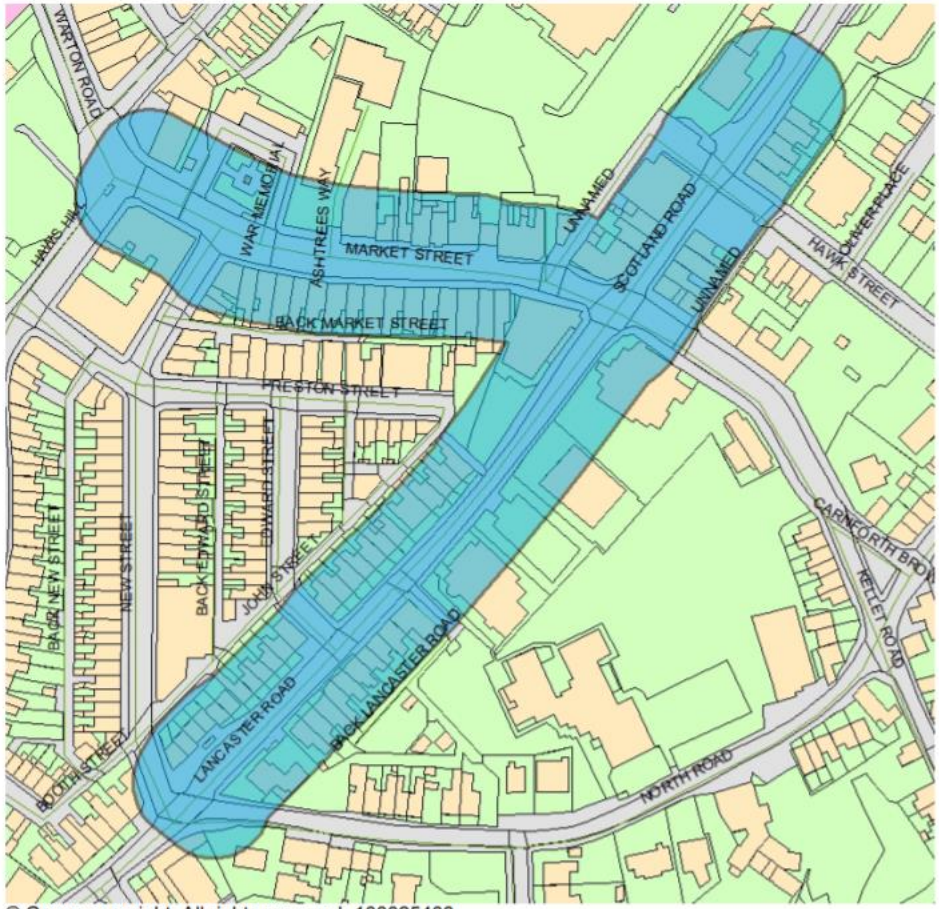
Lancaster AQMA
Carnforth AQMA
Galgate AQMA

Maps showing monitoring locations and AQMAs are also shown below.

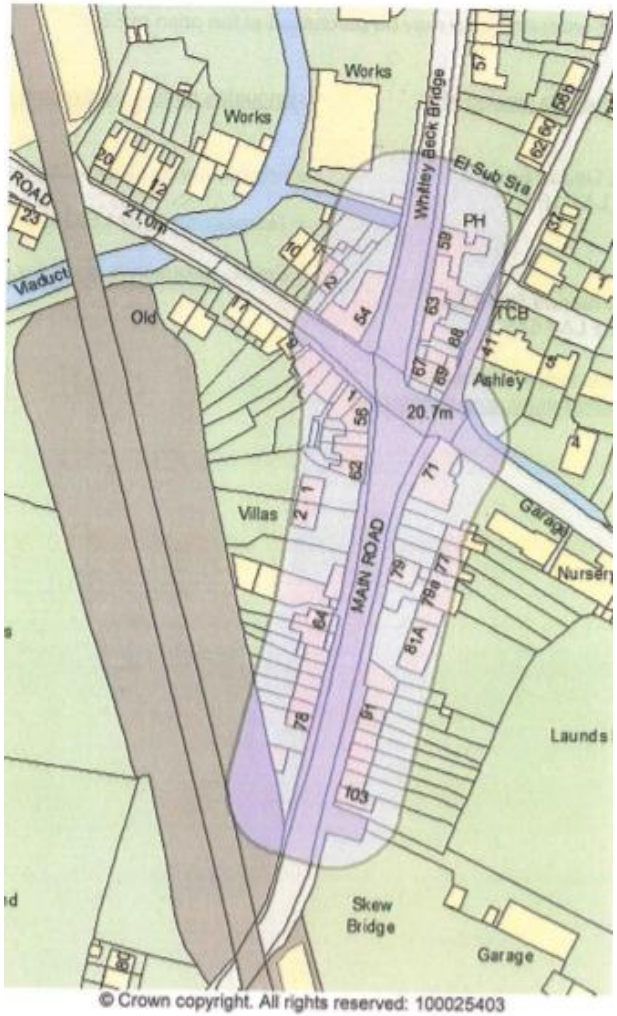
Lancaster AQMA



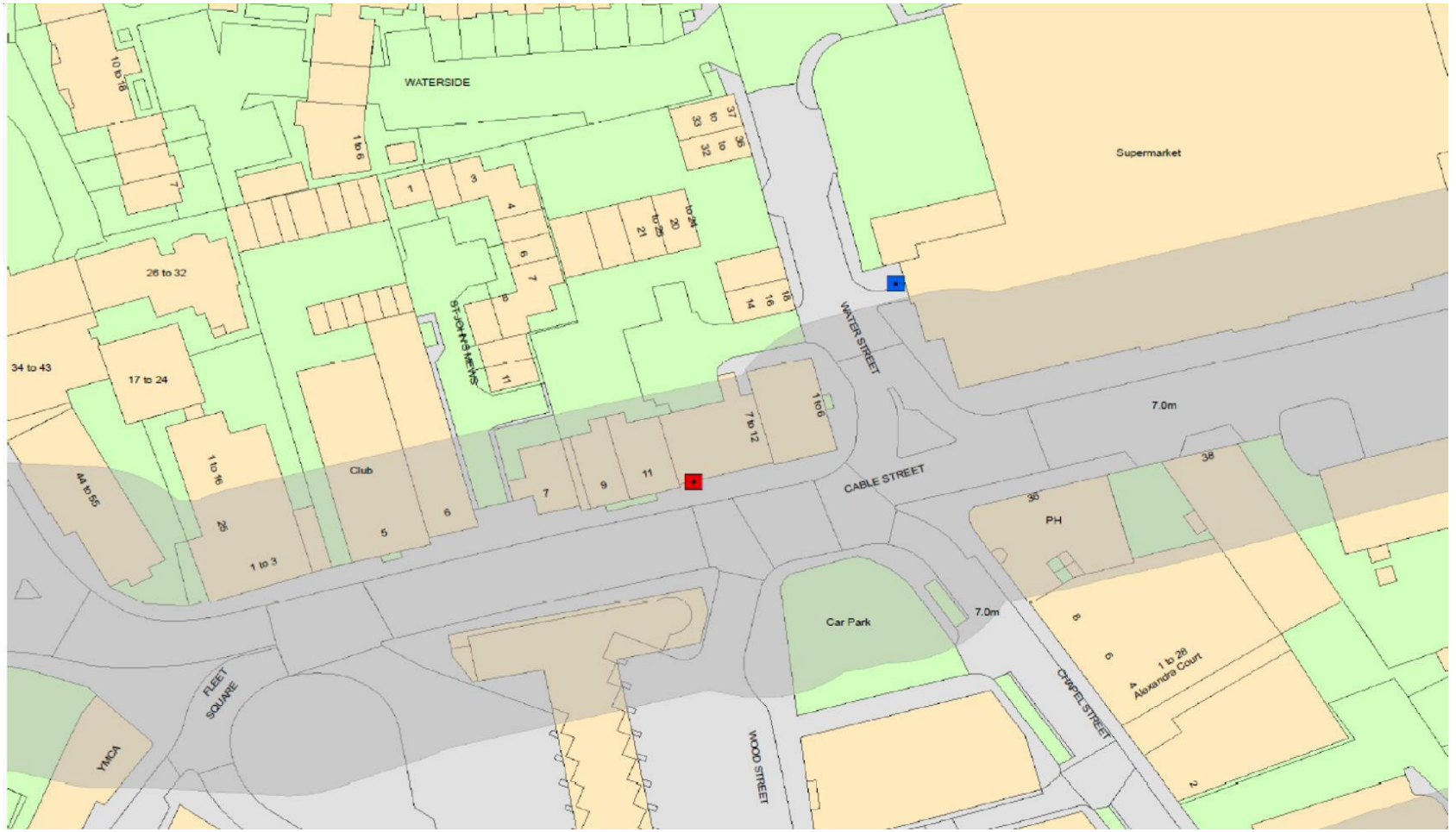
Carnforth AQMA



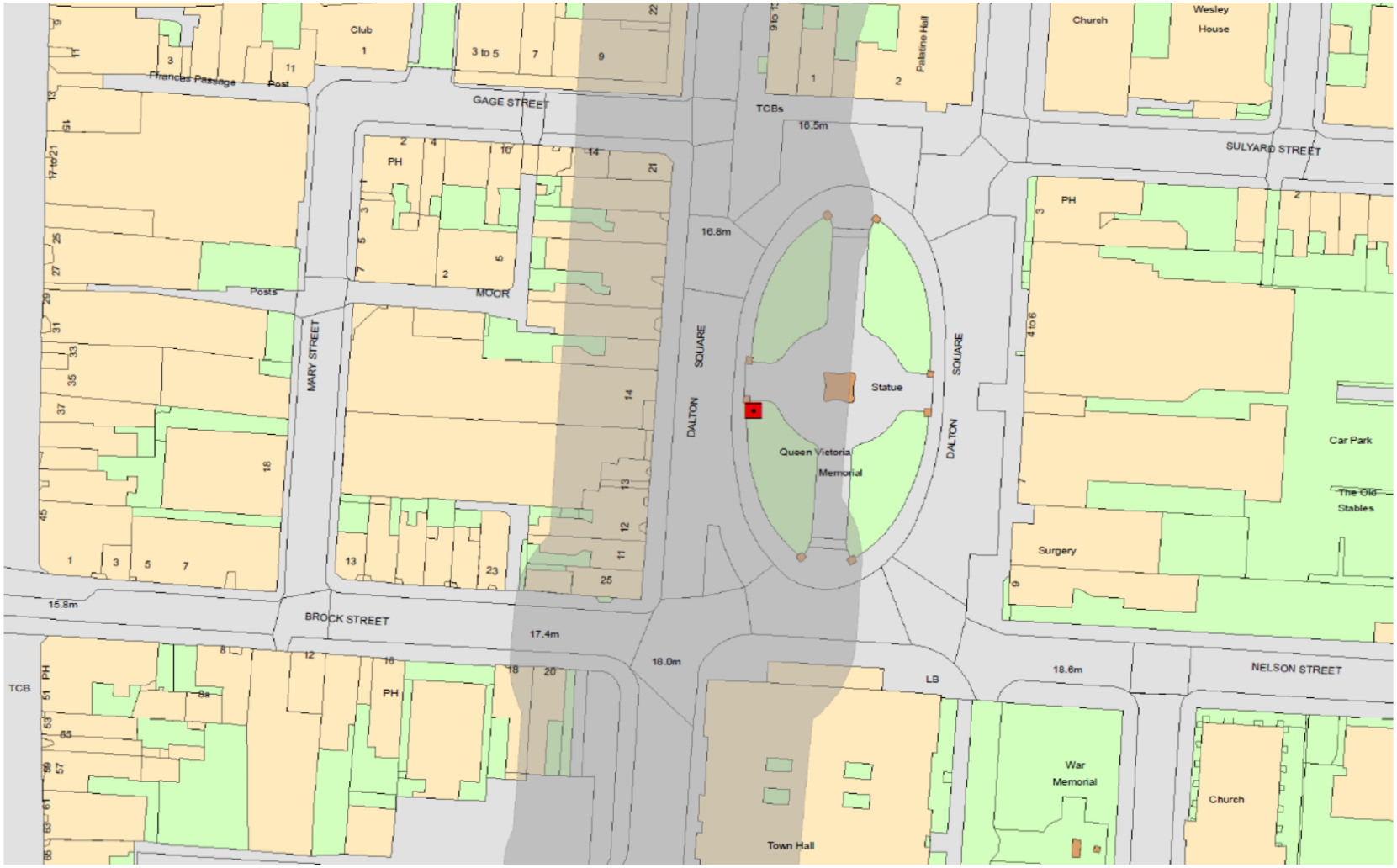
Galgate AQMA



Automatic Air Quality Monitoring Station (red square) at Cable Street Lancaster. Grey area is AQMA.

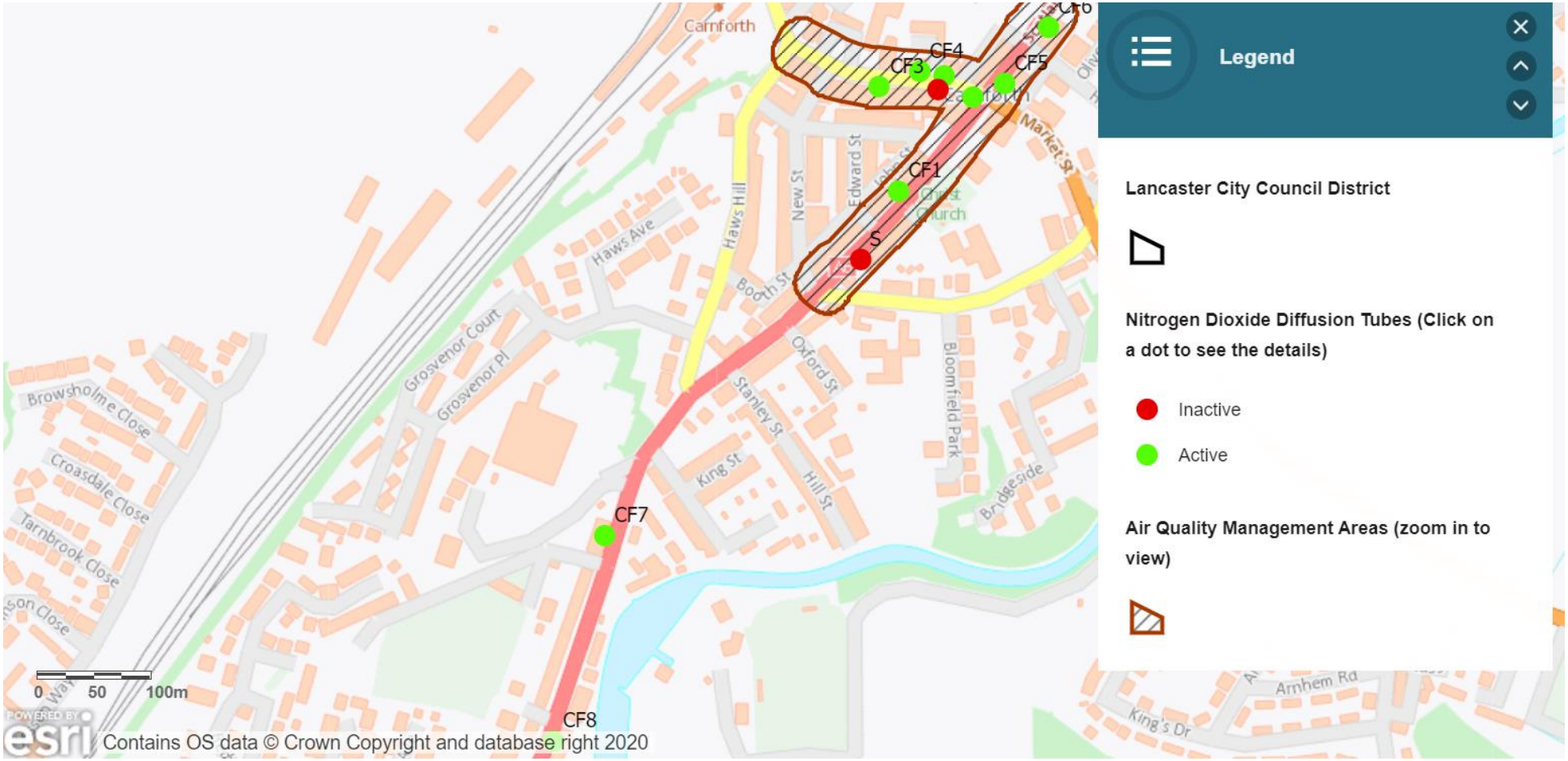


Automatic Air Quality Monitoring Station at Dalton Square Lancaster. Grey area is AQMA.



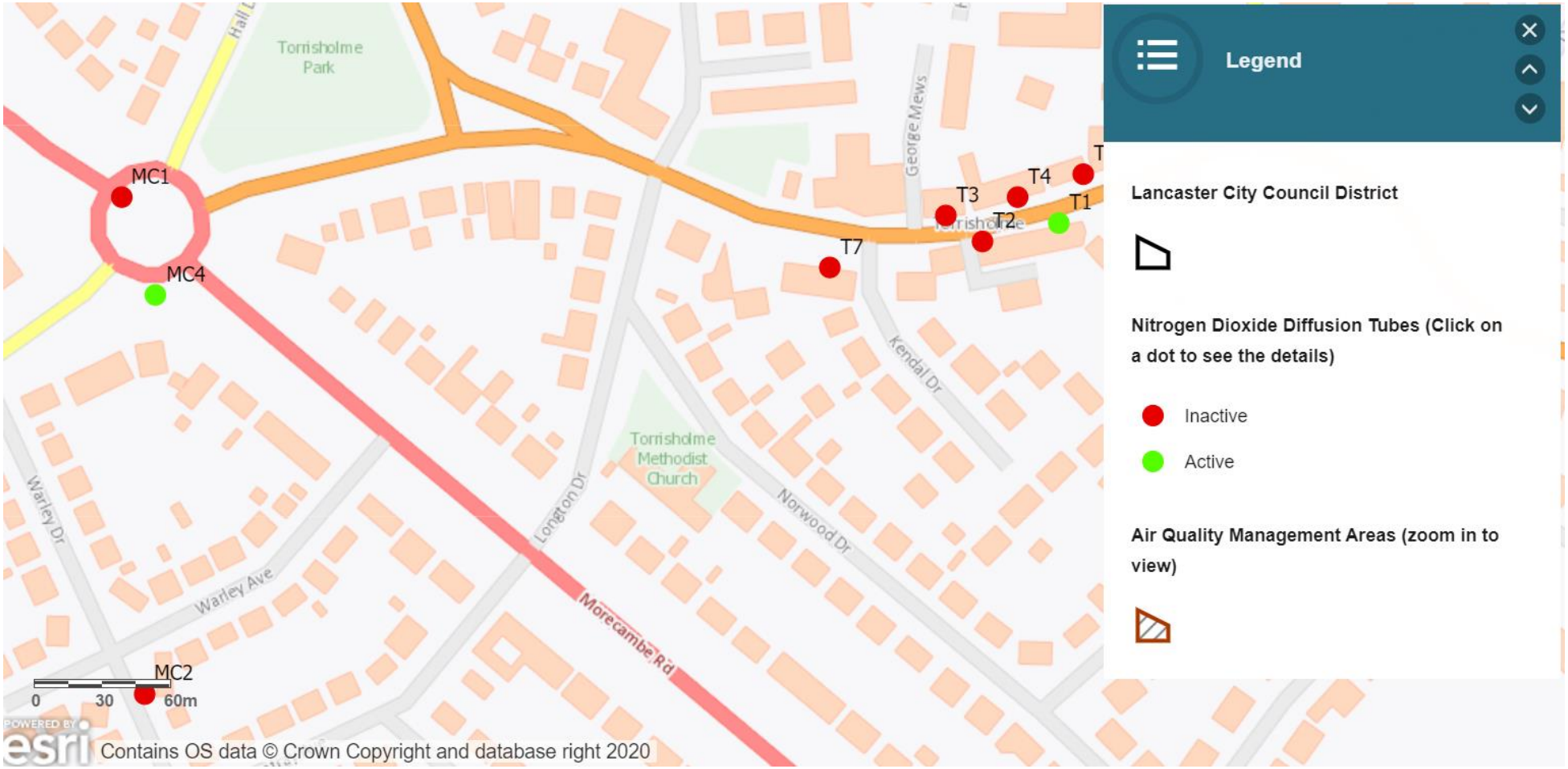
Diffusion Tube Monitoring Location Maps

Carnforth

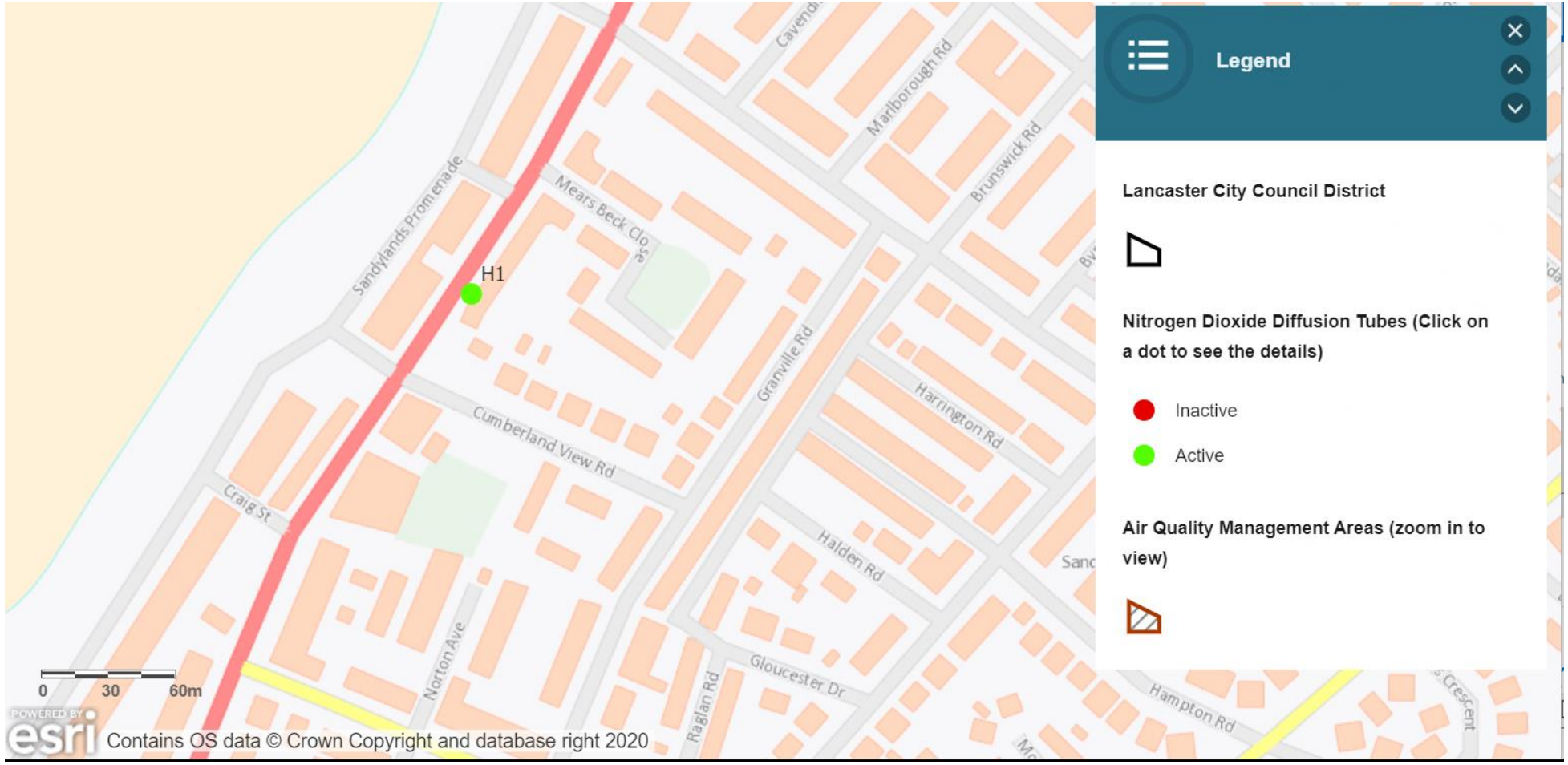


Bolton Le Sands

Morecambe


Legend
Lancaster City Council District
Nitrogen Dioxide Diffusion Tubes (Click on a dot to see the details)
Inactive
Active
Air Quality Management Areas (zoom in to view)
MC1
MC4
MC2
T1
T2
T3
T4
T7
Torrisholme Park
Torrisholme Methodist Church
George Mews
Kendal Dr
Longton Dr
Norwood Dr
Warley Dr
Warley Ave
Morecambe Rd
0
30
60m
Contains OS data © Crown Copyright and database right 2020

Heysham


Legend
Lancaster City Council District
Nitrogen Dioxide Diffusion Tubes (Click on a dot to see the details)
Inactive
Active
Air Quality Management Areas (zoom in to view)
H1
Sandylands Promenade
Mears Beck Close
Marlborough Rd
Brunswick Rd
Granville Rd
Harrington Rd
Cumberland View Rd
Craig St
Halden Rd
Norton Ave
Gloucester Dr
Raglan Rd
Hampton Rd
0
30
60m
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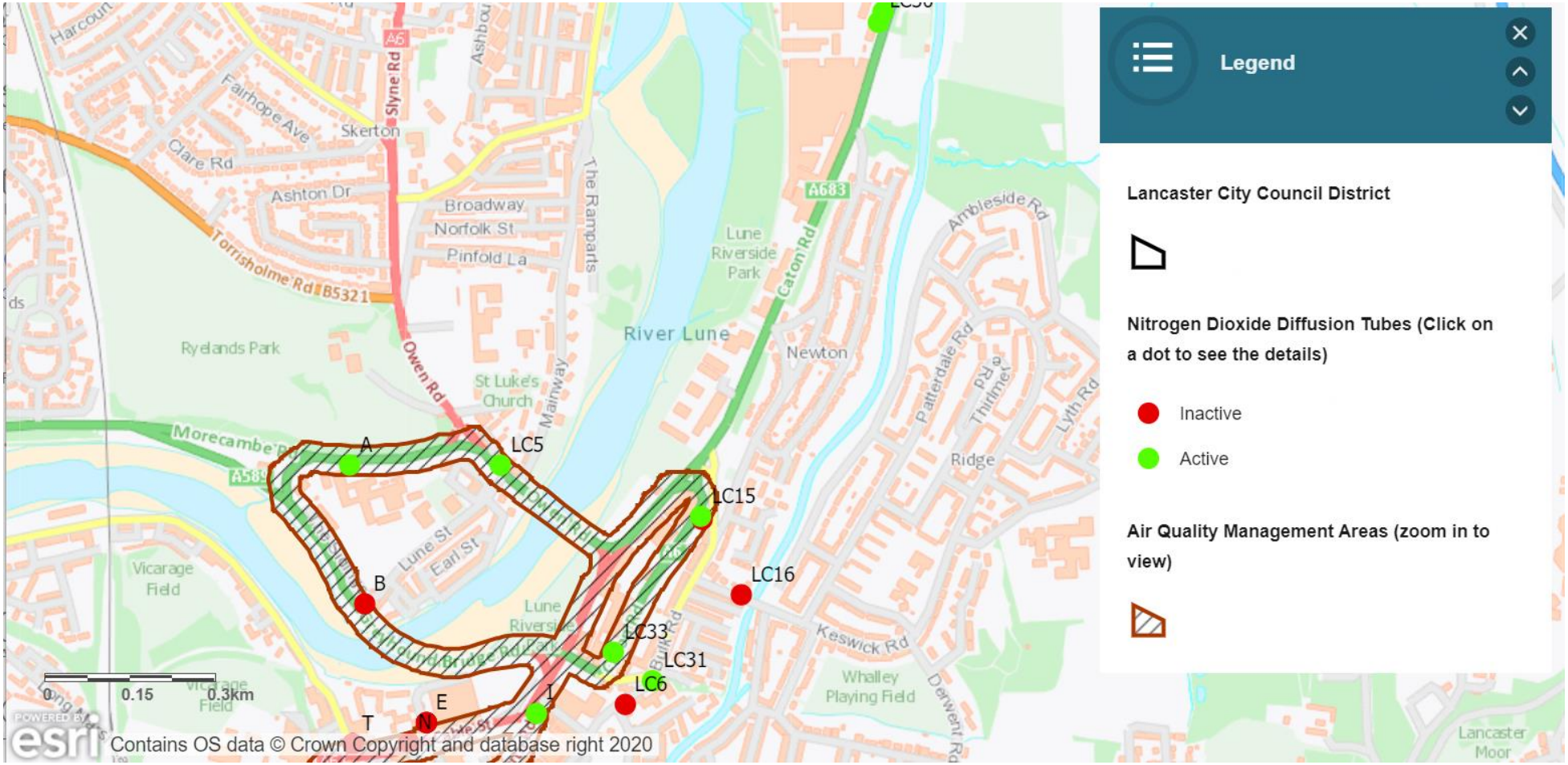
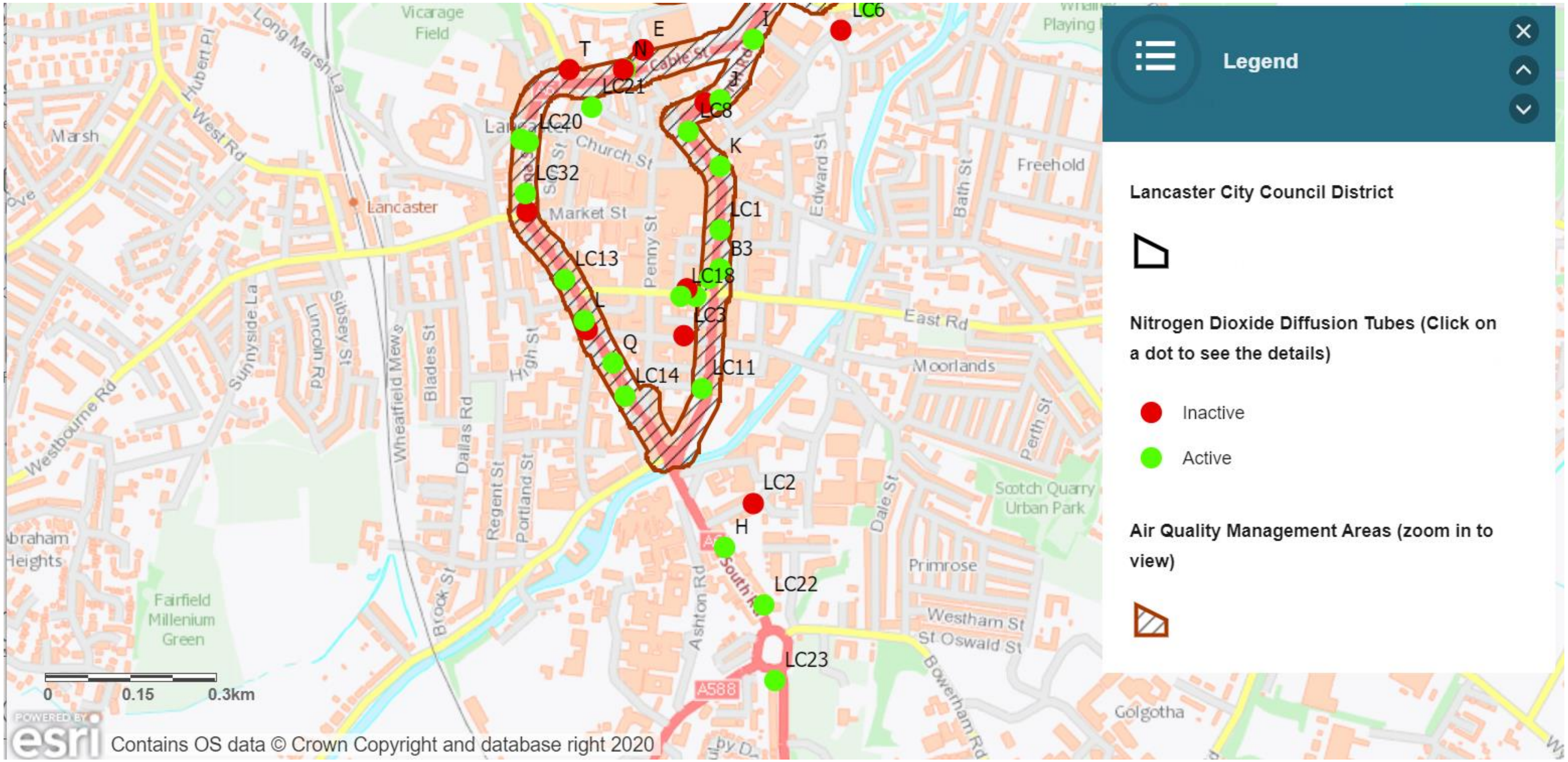
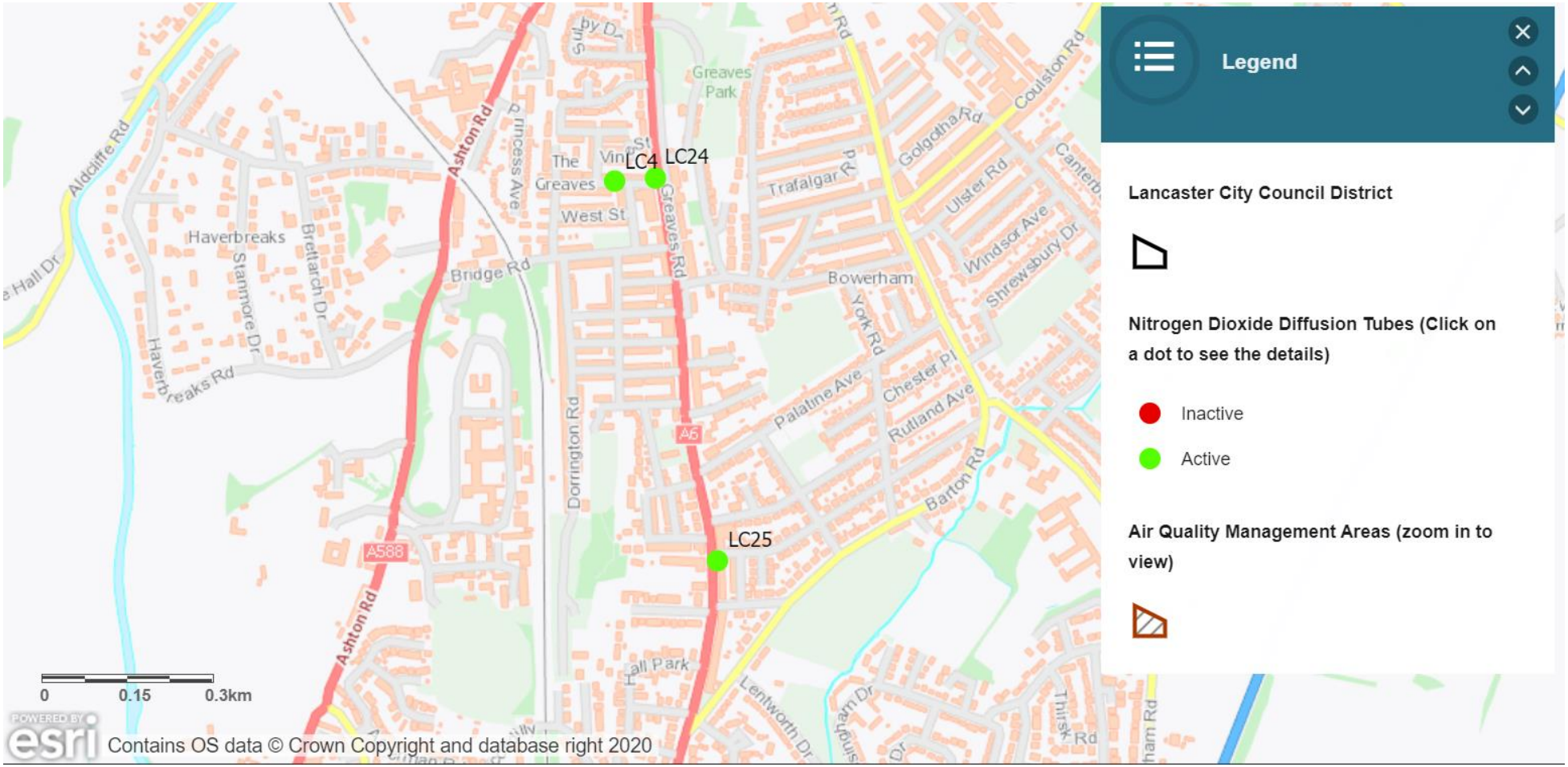
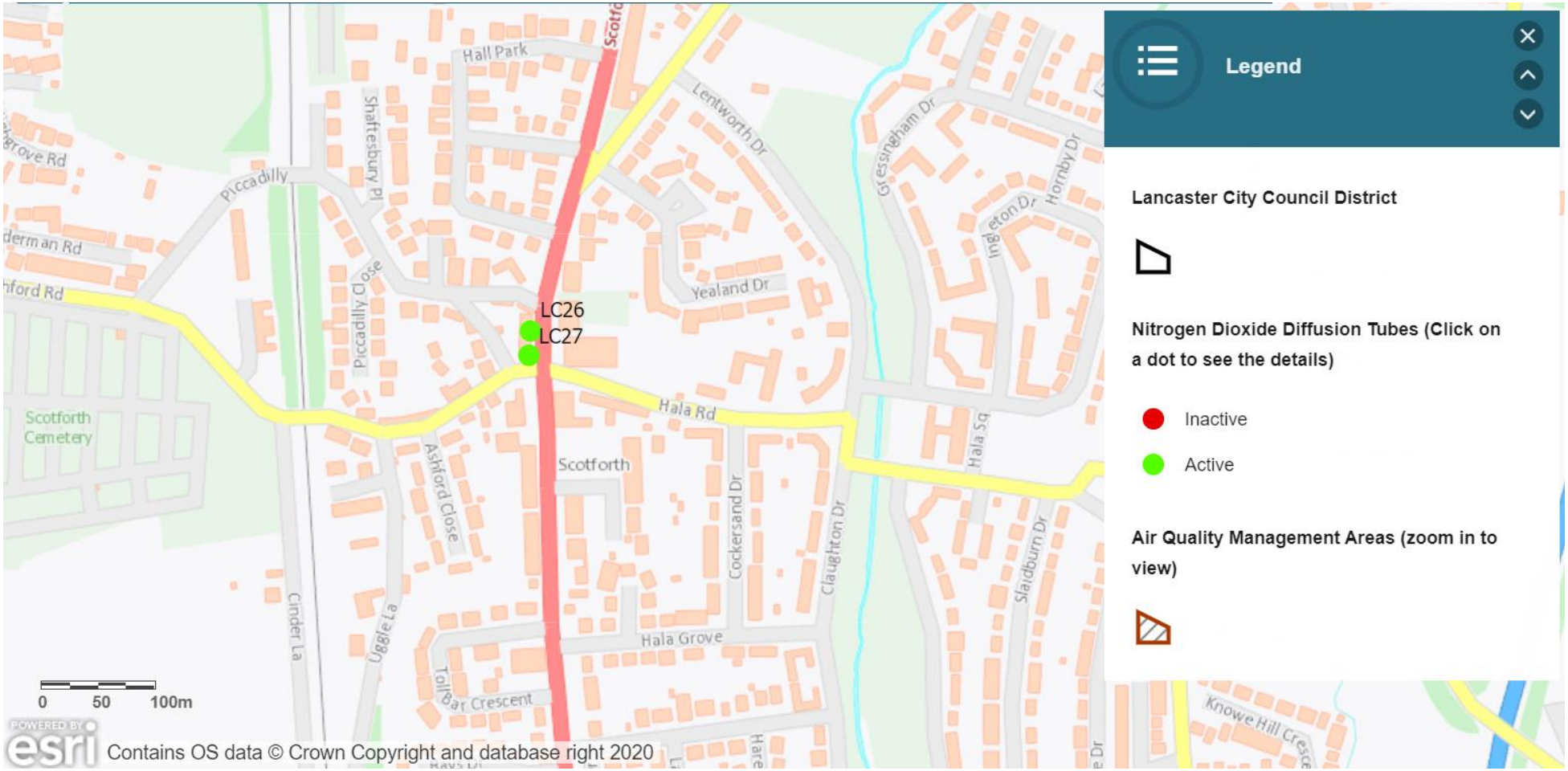
Lancaster


Lansil Way
LC29
LC28
LC30
Legend
Lancaster City Council District
Nitrogen Dioxide Diffusion Tubes (Click on a dot to see the details)
Inactive
Active
Air Quality Management Areas (zoom in to view)
0
30
60m
Contains OS data © Crown Copyright and database right 2020


Legend
Lancaster City Council District
Nitrogen Dioxide Diffusion Tubes (Click on a dot to see the details)
Inactive
Active
Air Quality Management Areas (zoom in to view)
A
LC5
LC15
B
LC16
LC33
LC31
LC6
E
T
N
I
River Lune
Lune Riverside Park
Ryelands Park
Vicarage Field
Whalley Playing Field
Lancaster Moor
Newton
Skerton
Broadway
Norfolk St
Pinfold La
Ashton Dr
Clare Rd
Fairhope Ave
Torrisholme Rd B5321
Owen Rd
Slyne Rd
The Ramparts
Mainway
St Luke's Church
Morecambe Rd
A683
Caton Rd
Ambleside Rd
Patterdale Rd
Thirlmere Rd
Lyth Rd
Ridge
Lune St
Earl St
Keswick Rd
Derwent Rd
0
0.15
0.3km
Contains OS data © Crown Copyright and database right 2020


Legend
Lancaster City Council District
Nitrogen Dioxide Diffusion Tubes (Click on a dot to see the details)
Inactive
Active
Air Quality Management Areas (zoom in to view)
LC6
E
T
N
LC21
I
J
LC8
LC20
K
LC32
LC1
B3
LC13
LC18
L
LC3
Q
LC14
LC11
LC2
H
LC22
LC23
Market St
Church St
East Rd
Moorlands
Freehold
Primrose
Golgotha
Scotch Quarry Urban Park
Fairfield Millenium Green
Vicarage Field
Marsh
Lancaster
0
0.15
0.3km
Contains OS data © Crown Copyright and database right 2020


Legend
Lancaster City Council District
Nitrogen Dioxide Diffusion Tubes (Click on a dot to see the details)
Inactive
Active
Air Quality Management Areas (zoom in to view)
LC4
LC24
LC25
Greaves Park
The Greaves
West St
Haverbreaks
Bridge Rd
Bowerham
Ashton Rd
A588
A6
0
0.15
0.3km
Contains OS data © Crown Copyright and database right 2020


Legend
Lancaster City Council District
Nitrogen Dioxide Diffusion Tubes (Click on a dot to see the details)
Inactive
Active
Air Quality Management Areas (zoom in to view)
LC26
LC27
Hall Park
Lentworth Dr
Piccadilly
Shaftesbury Pl
Piccadilly Close
Yealand Dr
Hala Rd
Scotforth Cemetery
Scotforth
Ashford Close
Cockersand Dr
Claughton Dr
Hala Sq
Slaidburn Dr
Cinder La
Uggle La
Hala Grove
Toll Bar Crescent
Knowe Hill
0 50 100m
Contains OS data © Crown Copyright and database right 2020

Galgate


Legend
Lancaster City Council District
Nitrogen Dioxide Diffusion Tubes (Click on a dot to see the details)
Inactive
Active
Air Quality Management Areas (zoom in to view)
ZB
ZC
ZA
W
V
Z
Y
John St
Main Rd
Chapel St
Salford Rd
Forster Close
Galgate
Armitage W
Laund Gardens
Skew B
0
30
60m
Contains OS data © Crown Copyright and database right 2020

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[7]

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

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

Appendix F – National Air Quality Strategy Consultation response (online response submitted on behalf of the Lancashire local authorities air quality group)

Chapter 4: Framework for action

5 To what extent do you agree or disagree with our commitment to better align air quality reporting zones with local government boundaries?

Somewhat agree

Any other information::
We would agree that the agglomerations previously used were not well understood but we are not sure what difference boundary changes will make practically make in delivering AQ actions, particularly for PM2.5 given its transboundary characteristic?

Chapter 5: Summary of powers available to local authorities

6 What more could local authorities do within the existing regulatory framework to reduce pollution from inappropriate domestic burning?

Please provide details.:

It is considered that the most recent changes (FPN.s in SCA's and changes around sale of solid fuels), although welcomed, will actually make very little difference in terms of actual PM2.5 emissions, particularly as more people are currently opting to use solid fuels. It is our opinion that to meet PM2.5 targets Defra/Gov will need to be far more ambitious and need to take appropriate steps to limit and reduce this major PM2.5 source. We would agree an outright ban on solid fuel is considered by us a disproportionate response, however, allowing it to grow without restrictions on use is also not a proportionate way to deal with issue either. The significance and growing significance of this source nationally surely means more is needed to be done at a national level in addition to that put forward in this draft strategy.
Government should look at measures to restrict growth in use of solid fuel appliances and disincentives use (this could be through measures such as regulation, approaches for new development, cost/tax disincentives around solid fuel etc..)
Within the existing regulatory framework LAs could potentially do more to proactively seek matters for enforcement, but this is considered unlikely to make very little difference to PM2.5 levels and would mean that ongoing, not insignificant, resource (staff/funding/policy) would be needed nationally. For this reason, it is queried whether proactive enforcement would add significantly to PM2.5 reduction and be a cost effective approach. Defra should perhaps consider the likely emission outcome impact of changes against the input and cost required to deliver that change in deciding how best to address this issue. Given that Defra has indicated a decrease of 1 ug/m3 could lead to a 0.8% increase in GDP there should be room to drive more significant national action on domestic burning and at the same time help with climate change.

7 How do you feel local authorities can most effectively reduce pollution from industrial sources they are responsible for?

Please provide details.:

Tighter regulation of emissions standard around processes regulated under Environmental Permits could be a way to reduce levels. However as permitting standards are reviewed and set around BAT it is uncertain how very significant reductions can be made.

As previously suggested (in other past consultations) the ability to issue FPN's around burning of waste material would be a helpful and pragmatic response to this issue (although needs to be without warning processes associated with the recently added powers to deal with smoke from chimneys in SCA's).

8 How do you feel local authorities can most effectively reduce pollution from transport and non-road mobile machinery (NRMM)?

Please provide details.:

Reduction in PM2.5 emissions through planning and NRMN betterment would be difficult to request due to the way planning works. A submission on this subject has already been made through a consultation arising from a LAQAG workshop. This can be provided again if requested. This subject is also given a more detailed response in our emailed submission response to this consultation.

9 How do you feel local authorities can most effectively reduce pollution from agriculture?

Please provide details.:

Currently the only tangible regulatory role local authorities have is really around nuisance, however nuisance action against farmers/farming practices we would guess (as this is the position regionally) is a very rare thing nationally. This is therefore not considered to be an effective route to reduce pollution levels through local action.
The only other role local authorities current have is advisory (passing on and recommending the adoption of government or other best practice guidance to local farmers). It is suggested that given current responsibilities regarding the control of spreading of manures etc.. (mainly to try and protect watercourses which we/you will be aware is not that effective and activity under resourced), that the role of the Environment Agency (EA) should be expanded. Better ringfenced resourcing the EA to police existing spreading and any other new regulation influencing farming practices would seem to be the best fit approach to gain reductions in agricultural emissions. Increased EA resourcing would also likely provide required additional benefit to protect the pollution of watercourses.

10 How do you feel local authorities can most effectively improve indoor air quality?

Please provide details.:

Local authorities can issue advice. We would flag (to Defra) that there is a conflict between heating and ventilation in most domestic situations.

Private sector housing enforcement already has a role with regulating housing standards in the private rented sector.

11 How do you feel local authorities can most effectively communicate air quality information?

Please provide details.:

The recently adopted national standard (for PM2.5) doesn't help with communication as it is an annual mean target. Such a standard does not feed into reducing short lived impacts (lasting hours or days) which are needed to deliver cumulatively reduced annual PM2.5 emission. We would suggest that the adoption of a short-term standard for PM2.5 is need e.g. adoption of 15ug/m3 24hr mean as per WHO guidance?

Short term standards or source specific levels are needed to influence or dictate on day-to-day actions. Otherwise, LA's can just advise (without saying whether day-to-day emissions breach anything or are too high currently other than perhaps give comparative emission responses e.g. solid fuel emissions are much higher than for gas or electric). Without these standards the anticipated response is considered likely to be generally uninterested and provide a low impact outcome for Defra.

Burning trees is not good for air quality nor for climate. Defra should communicate this, and not provide advice to say it is ok if wood is dry etc... Defra's messaging should better consider the combined environmental impact which seems worryingly absent from current/proposed thinking on burning of wood in this draft strategy. Providing correct and accurate national messaging is fundamentally important in assisting local authorities with their communications.

12 Do you feel that there are additional powers relating to air quality which should be available to local authorities?

Yes

If yes, please provide details.:

• FPN's around burning of wastes.
• To exclude the installation of new solid fuel appliances subject to set criteria (criteria to be determined).
• Grant funding/funding assistance to transition solid fuel users to renewable heating methods and provide insulation to homes (not to transition to slightly cleaner solid fuel appliances).
• Set design standards through planning e.g., not allowing solid fuel, requiring a high level of insulation, requiring the use of photovoltaics etc...

13 What further support could government provide to help with actions taken locally to tackle air quality?

Other (please specify below)

If you selected 'Other', please provide details.:

Money to deliver active travel infrastructure and disincentise traditional transport behaviours, money to deliver climate related actions (renewable heating, insulation etc.., money for electric buses and accompanying charging facilities, money to resource LA led protection and expansion of wildlife habitats. Funding and resourcing through public or private sector streams is fundamental to delivering actions. Talk and text is cheap but not really that effective as a government/local authority led change mechanism.

Chapter 6: PM2.5 Target Implementation

14 To what extent do you agree or disagree that a new approach needs to be employed to promote consideration of the PM2.5 targets in the planning system?

Somewhat agree

Please add any additional comments.:

To achieve national targets, it is assumed that such an intervention is needed as part of the picture to reducing PM2.5 levels. Also if set mandatory national design standards are adopted this will in theory subsequently simplify the extent to which local authority input is required (checking rather than formulating and agreeing what a development should do). We however wonder and would put forward, that perhaps an approach linked to the delivery of measures to respond to the current climate emergency is the best way of delivering air quality (and climate measures) measures through the planning system.

15 What do you think are the merits or drawbacks of a design-stage emission prevention approach as set out in this chapter?

Please provide details.:

These are needed if requiring PM2.5 reductions are to be sought through planning as measures through other planning condition/S106 agreement sought routes will be difficult to achieve given the implications of national adopted air quality standards and relatively minimal contributions of individual developments. We would strongly suggest design measures should be closely linked and driven alongside prescribed design measures needed to address climate emergency matters.

16 Are there any additional assessment approaches or points we should consider when developing proposals to integrate the PM2.5 targets in the planning system?

Yes

If yes, please provide details.:

Air quality measures may be best sought through the pursuit/requirement of climate change measures for new development. The pursuit of them as separate entities would not seem to make little sense, particularly not for Defra.

Consultee Feedback on the Online Survey

17 Overall, how satisfied are you with our online consultation tool? Please give us any comments you have on the tool, including suggestions on how we could improve it.

Very dissatisfied

Please give us any comments you have on the tool:

The consultation period way too short and questions not provided for comment on significant parts of the draft strategy in the online questionnaire. As a consequence, we have also submitted an emailed response with comments added to the draft strategy document. We trust both this questionnaire response and the emailed response will be properly considered before Defra finalises its strategy.

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 (Air Quality)
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
HIF	Housing Infrastructure Fund
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
OZEV	Office for Zero Emission Vehicles
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

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- **Internet links**
- Local Air Quality Management (LAQM) Support Website | DEFRA
- Environment Agency
- Lancaster Air Quality
- ***** Access to the Council's air quality reports is provided on the Council's website (link provided above).