LANCASTER CITY COUNCIL

*Promoting City, Coast & Countryside*

# 2022 Air Quality Annual Status Report (ASR)

## In fulfilment of Part IV of the Environment Act 1995

## Local Air Quality Management

Date: September 2022

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|---|---|
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| **Report Reference Number** | PC/ASR2022 |
| **Date** | September 2022 |

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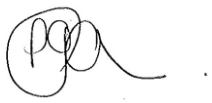
| **Signature** |  |
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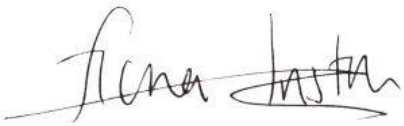
| **Signature** |  |

# Executive Summary: Air Quality in Our Area

## Air Quality in the Lancaster 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 28,000 to 36,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

In 2021 nitrogen dioxide pollution levels rose from that experienced during the pandemic in 2020, but overall, still indicated a return to a slow declining trend. Air quality monitoring in 2021 indicated that exceedances of the annual mean objective for nitrogen dioxide remained only within the Lancaster Air Quality Management Area. 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.

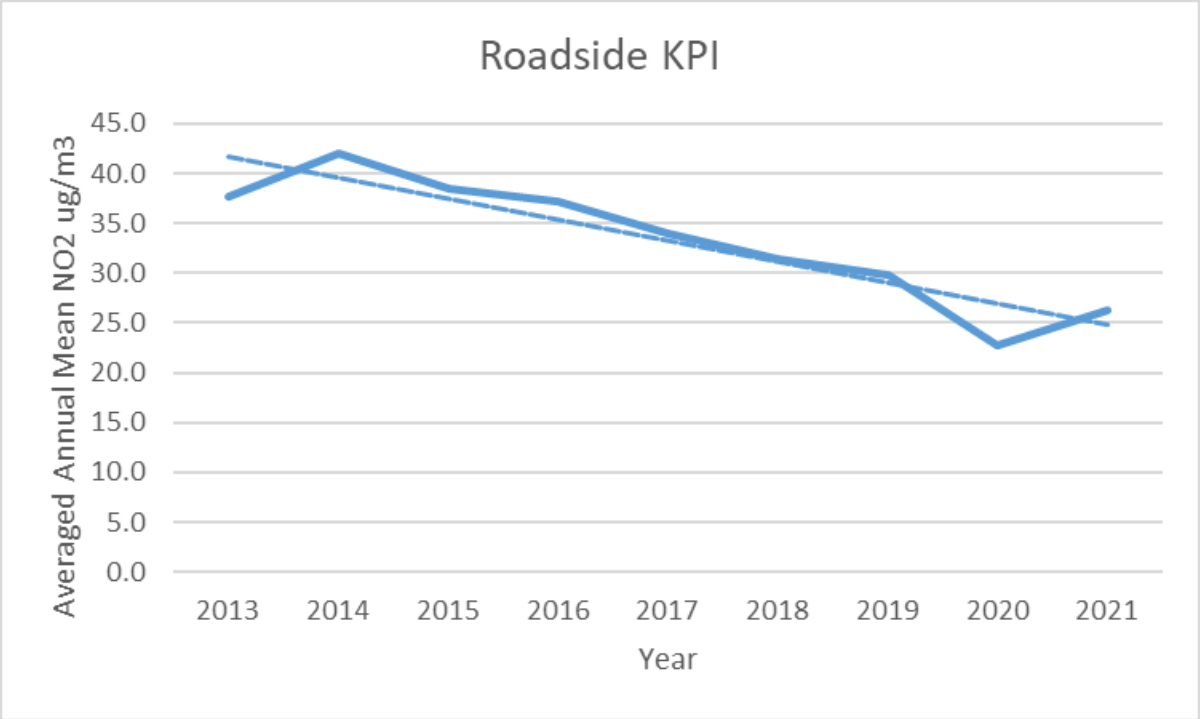
The Council reports two key air quality indicators annually (shown below) which are based on local air quality monitoring within the district. These both show pollution levels in 2021 were higher than 2020 (during the pandemic) but were generally lower than 2019 and following general declining trend levels evident prior to the pandemic.

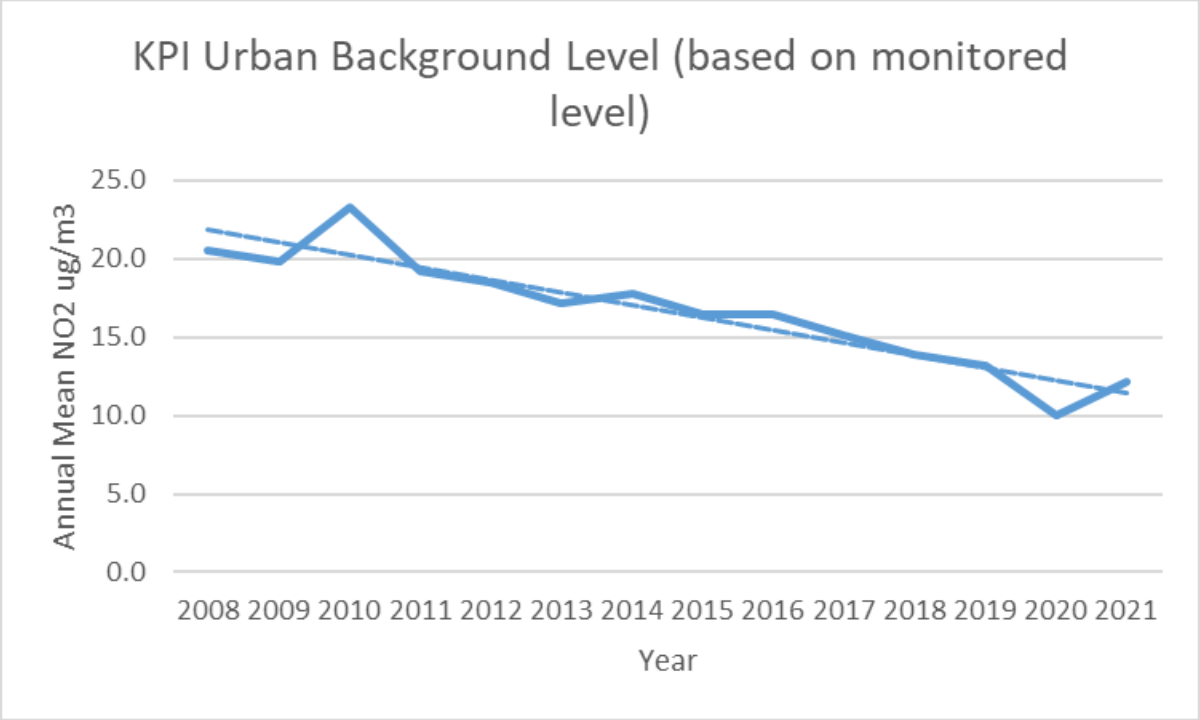
[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

[3] Defra. Air quality appraisal: damage cost guidance, July 2021

[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




Although traffic levels have crept back to near pre-pandemic levels, it is hoped that patterns of behaviour adopted during recent times will have a more long lasting legacy leading to air quality improvement e.g. working from home, using TEAMS platforms for meetings etc.. The current cost of living crisis will also have an impact on our behaviour, which is anticipated to have a reducing impact on emissions during 2022/23.

In 2021 monitored roadside annual mean nitrogen dioxide levels at Dalton Square were indicated to be around 48 ug/$m^3$ . In China Street indicative levels were monitored to be around 42ug/$m^3$. Overall levels showed a reduction on levels monitored in 2019 (pre-pandemic). The objective level is 40ug/$m^3$.

Levels of particulate pollution ($PM_{10}$) measured at Cable Street Lancaster, also indicated compliance with the objective standard, but showed similar levels to the previous years rather than a reduction. $PM_{2.5}$ monitoring, now also monitored from the Cable Street station, is reported for the first time this year. Annual mean levels monitored at this location were 8ug/$m^3$ which is significantly below the current national standard and also anticipated to be below the new national standard due to be announced in October 2022.

The Council is preparing a new Air Quality Action Plan for Lancaster alongside work to prepare a Movement Strategy for Lancaster city centre and new development and road plans for south Lancaster. In July 2022 the Council engaged a consultant (Bureau Veritas) to assist with the production of the plan which should go out for consultation in 2023. The plan will carry forward measures detailed in this and previous ASR reports but also importantly include significant planned highway and transport changes around Lancaster city centre and south Lancaster. Progress on these transport plan at the county council

have been delayed at the time of writing this report and therefore as a consequence production of an action plan has also been delayed. Plans for the city centre (the Lancaster AQMA) provide the major element of the new action plan, and therefore it is our view that consultation on an action plan proposal requires their inclusion. We are hopeful plans will be available later this year to allow consultation to take place in 2023.

## Actions to Improve Air Quality

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

The 2019 Clean Air Strategy[5] sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero[6] sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Due to remaining exceedances of the annual mean nitrogen dioxide objective in the Lancaster AQMA and elevated pollutant concentrations in other locations, the city council continues to pursue the production of a new air quality action plan. The plans are very reliant on movement strategy proposal for the city centre and development plans for south Lancaster and therefore the council has been working closely with the county council on developing and considering new highway and transport proposals. This work has been delayed consequently further delaying progress on a new Air Quality Action Plan. Delivery in the remainder of 2022 will hopefully provide a new plan being available for consultation in 2023.

Despite delays on plan production, work on individual actions has still progressed in 2021/ 22. Key areas where progress has been made are as follows:-

- The local development plan has been reviewed to consider climate change matters, resulting in a raft of changes being proposed to respond to the declared

[5] Defra. Clean Air Strategy, 2019

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

climate emergency. Generally, plans that reduce climate impacting emissions also reduce air quality pollutants and therefore this step is considered a very important change. If adopted, new policies and guidance will direct and influence emission reducing requirements for new development in future years. Examination of the plan is due in October 2022 with plan adoption anticipated in early 2023.

- A bid for Defra Air Quality Grant funding was made in 2021 seeking funding to undertake a project to monitor air pollution arising from solid fuel burning within the district. This is being undertaken so that the council and the public generally (through a public web site) can see and better understand the impact of this growing air pollution source. This bid was successful and a grant award of £198,794 was made by Defra in 2022. An order is being placed with a supplier with the intention to have equipment installed and operational for this winter.
- With links to the Defra grant funded project, a further project has commenced providing a practical lesson package of materials to schools together with a number of low-cost air pollution monitors for pupils to use as part of the learning exercise. This scheme is initially being run as a pilot study with six schools, however the intention is to roll out the programme to all schools wishing to participate. When data from the Defra grant funding solid fuel burning monitoring project becomes available this will be brought into the educational package.


Photos showing the package of materials and low-cost air quality monitors provided to schools

- The Council is pressing forward with a number of direct actions to respond to the declared climate emergency which have the linked benefit of reducing polluting emissions in the district. Notable actions include the transition of the Salt Ayre Leisure Centre to operate using sustainable power sources, replacing diesel and

petrol vehicles in the Council's fleet with electric vehicles (including two electric refuse vehicles), energy efficiency measures in Council owned buildings and proposals underway to provide solar power infrastructure.

- Electric vehicle rapid charge points, ultimately intended for taxi use but currently available for general public use have been installed and are operational in three car parks in Lancaster, Heysham and Morecambe.
- A new taxi licencing policy was adopted in January 2022 requiring that from 2025 all newly licensed taxis to be Euro 6 compliant and from 2030 that all newly licensed vehicles to be electric vehicles.
- To hopefully assist in the transition to electric taxis and following a taxi trade survey in August 2022(see Appendix F) to obtain their views on the subject, a Defra Air Quality grant application bid has been made to run an electric taxi 'try before you buy' scheme followed by the possibly for taxi drivers to lease and electric vehicles in the longer term. A decision on this bid is due in February/ March 2023.
- Lancaster City Council has also partnered another Defra Air Quality Grant bid with Hertfordshire County Council, Global Action Plan and a number of other local authorities to deliver a 'Clean Air Night' campaign to raise awareness of the air pollution impacts of using solid fuels to heat out homes. Again, a decision on this bid is due in February/ March 2023.


Photo shows one of the two new electric refuse vehicles – the first to be used in Lancashire

## 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. No exceedances of air quality objective standards were monitored outside the Lancaster AQMA.
- From local monitoring data for nitrogen dioxide a general downward trend in levels continues to be observed across the district. Despite this, exceedances still remain in Lancaster and therefore action is still needed to reduce pollution levels in this location as soon as possible. This therefore remains a priority, and the production of plans to address this are still being developed and considered.
- As part of the work to produce a new air quality action plan and through work undertaken at the county council to consider city centre and south Lancaster highway and transport proposals, we are currently in the progress of modelling air quality within the three AQMAs within the district. This modelling will inform whether the two AQMAs (Carnforth and Galgate) can now be revoked. Monitoring data has indicated compliance objective standards in these locations over the past few years and a general declining pollution trend.

- Significant future housing development proposals are included in the local plan, particularly affecting south Lancaster. Plans (including the construction of a new road through Housing Infrastructure Fund government grants) are being progressed, assessed and considered. This includes assessment of arising air quality impacts. Despite the plan to introduce new road infrastructure, the focus and direction of development policies and plans are to seek a more sustainable transport approach for new development.
- As indicated above a new air quality action plan is under production based on work undertaken over the past few years and currently being progressed. The Council has commissioned consultants Bureau Veritas in July 2022 to assist in the delivery of this plan. As part of the work, modelling of air quality in the Carnforth AQMA is currently underway. The production of a new AQAP remains a top priority to pull together current and planned future actions to deliver better air quality within the 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 recent introduction of a new particulate monitor at the Cable Street station, the due deployment of a number of low-cost monitors across the district and various planned projects to raise awareness and so influence pollution generating behaviour e.g. the schools pilot project and the 'Clean Air Night' proposal. Monitoring and addressing particulate pollution concerns is therefore a increasing priority for Lancaster City Council.

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

- There has been a delay in producing plans for Lancaster City centre (the Lancaster AQMA) and therefore this will impact on the final speed of delivery of planned measures. The Council has and will make the case for air quality improvement and will work with Lancashire County Council to come up with deliverable proposals, hopefully to allow consultation on these proposals in 2023.
- The cost of living crisis affecting us all will no doubt impact in an number of possible ways 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 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. Overcoming these problems if and when they arise will present new challenges going forward.

## Local Engagement and How to get Involved

Our web site has been updated this 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 2023 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 spring/summer 2023. 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,
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 Health, Lancaster City Council

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

Eleanor Huddleston, Planning Assistant (Policy) - Lancaster City Council Development Control

Richard Camp, Planning officer (cycling), 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 - Communities and Environment Directorate

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

Andrew Ashcroft - Lancashire County Council Public Health

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 approved by:

Fiona Inston – Head of Public Protection

Richard Walsh - Public Health and Protection Manager

This ASR has not been signed off by a Director of Public Health but a copy of the report has been sent to them to receive any comments on the submission.

If you, the reader, have any comments on this ASR please send them to Paul Cartmell at:

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environmentalhealth@lancaster.gov.uk

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## Figures



## Tables

# 1 Local Air Quality Management

This report provides an overview of air quality in the Lancaster City Council district during 2021/22. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by 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.

# 2 Actions to Improve Air Quality

## 2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by Lancaster City Council can be found in Table 2.1. The table presents a description of the three AQMAs that are currently designated within the Lancaster 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 is as follows:

- $NO_2$ annual mean
- $NO_2$ hourly mean

We are currently assessing whether or not we should revoke two of the three AQMAs (Galgate and Carnforth). Dependant on the outcome of the assessment (involving air quality modelling work), we anticipate that we may revoke the Galgate and Carnforth AQMAs in 2023.

## 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 National Highways? | Level of Exceedance: Declaration | Level of Exceedance: Current Year | 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/$m^3$ | 48ug/$m^3$ | 2007 (new Plan due 2023) | Available at:- Lancaster 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) | 48ug/$m^3$ (annual mean value) | 2007 (new plan due 2023) | Available at:- Lancaster Air Quality |
| Carnforth AQMA | 2007 | $NO_2$ Annual Mean | Covers main cross road area in Carnforth | NO | 42ug/$m^3$ | 28ug/$m^3$ | 2007 (new plan due 2023) | Available at:- Lancaster Air Quality |
| Galgate AQMA | 2009 | $NO_2$ Annual Mean | Covers main cross road area in Galgate | NO | 43ug/$m^3$ | 27ug/$m^3$ | 2007 (new plan due 2023) | Available at:- Lancaster 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. A new AQAP is now due in 2023.**

## 2.2 Progress and Impact of Measures to address Air Quality in the Lancaster District

Defra's appraisal of last year's ASR concluded that the report was well structured, detailed, and provides the information specified in the Guidance. It recommended consideration of the position in two of the AQMAs (Galgate and Carnforth) with a view to possibly revoke the designation. This is being investigated as part of the production of a new AQAP with air modelling taking place through the county council for Galgate and Lancaster and consultants Bureau Veritas commissioned by Lancaster City Council to undertake modelling for Carnforth. The report also commented on formatting discrepancies with table 2.2 of the report. This formatting issue remains in this report but as previously advised the format and content of the table will be completely revised linked to the production of the new AQAP which unfortunately has now been delayed to 2023.

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. A total of 53 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 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

Key completed measures are:

- Delivery of rapid electric vehicles chargers (destined ultimately for taxi use) at three Council car parks
- Receiving a Defra AQ grant award to deliver a project to investigate the air quality impact of solid fuel use.
- Delivery of more electric vehicles in the council fleet (including two electric bin wagons)
- Delivery of a new taxi licensing policy to require newly licensed vehicles to meet the Euro 6 standard at 2025 and to be electric vehicles at 2030.
- A partial review of the local plan to consider policies and guidance to address climate (and consequently air quality) matters. The reviewed plans are due for examination in October.

- Submission of 2 Defra air quality grant bids. One for an electric vehicle 'try before you buy' scheme for taxis and the other a partnership bid with Hertfordshire County Council and Global Action Plan to deliver a 'Clean Air Night' campaign to raise awareness of the air pollution impacts of burning solid fuels.
- Responses collected and submitted to Defra consultations on air quality policy and new $PM_{2.5}$ standard through the regional working group.

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

- The production of highway and transport proposals for the city centre and south Lancaster for public consultation
- Consulting on and delivering a new air quality action plan for the Lancaster district
- Reporting on practical delivery of the Defra AQ grant award to investigate the impact of solid fuel burning. The monitors and web site should be operational by the writing of the next report.
- Reporting the success or otherwise of the two Defra AQ grant bids made by Lancaster City Council (to run a electric taxi try before you buy scheme and participate in the delivery if a national Clean air Night campaign.
- Adoption of policies and guidance resulting from the climate change based partial review of the local plan
- Production of Local Cycling and Walking Infrastructure Plans by Lancashire County Council

Lancaster's priorities for the coming year (in no particular order) are:

- To deliver a new AQAP
- To deliver the project to investigate and raise awareness of the impact of solid fuel burning in district, including inside people's homes.
- Participate in the delivery of a local and regional electric vehicle charging strategy and local parking strategy.
- Take forward Defra air quality grant awards if allocated.
- To adopt local plan measure following inspector examination and review the need to adopt an air quality supplementary planning guidance document in the knowledge of measures brought forward by changes in policies and guidance introduced to address climate change matters.

- To continue to deliver actions to respond to the locally declared climate emergency (see Climate Emergency Actions for a list of actions.
- To maintain and develop the Air Quality Hub - a web site for air quality professional) as part of the Low Emission Partnership (see Air Quality Hub ).
- To seek delivery of produced Local Cycling and Walking Infrastructure Plans.

Lancaster City Council worked to implement these measures in partnership with the following stakeholders during 2021:

- Other local authorities in the region (to deliver charging infrastructure for taxis) and to respond to Defra consultations
- Lancashire County Council (the highways and public health authority) to develop highway and transport measures
- OZEV and Defra – Grant funding assistance to deliver actions.
- The Low Emission Partnership - to maintain and develop the Air Quality Hub (developed mainly for the use of local authority officers involved in addressing air quality improvements)
- Local bus service providers - regarding electrification/ lower emissions from bus fleet
- The electricity distribution network operator - regarding plans to transition to electric buses and for climate change drive actions.
- Electric Vehicle Charging Infrastructure Provider (EB Charging Limited) - regarding operation of taxi rapid chargers
- Co Wheels - operation of electric vehicle booking scheme in Lancaster
- The local taxi trade – regrading using electric vehicles as taxis
- The councils taxi licensing section - regarding licensing policy and electric taxi delivery
- Global Action Plan - regarding ‘Clean Air Night’ proposals
- Earthsense Systems Limited - regarding delivery of solid fuel/ air quality monitoring and information proposals.
- ESU1, Gradko and Air Quality Data Management – to deliver air quality monitoring data for the district
- Systra – consultant assisting with delivery of a new local parking strategy
- Local schools - to deliver piloted air quality educational package
- Lancaster City Council Climate projects team, development control team, and other supporting services within Lancaster City Council.

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

- There has been a delay in producing plans for Lancaster City centre (the Lancaster AQMA) and therefore this will impact on the final speed of delivery of planned measures to form a major part of the new Air Quality Action Plan for Lancaster. The Council has and will make the case for air quality improvement and for this to be delivered as soon as possible. The city council will work with Lancashire County Council to come up with deliverable proposals, hopefully to allow consultation on these proposals in 2023.
- The cost-of-living crisis affecting us all will no doubt impact in an number of possible ways 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 cost of electricity will also impact on the transition to use of electric vehicles. Obtaining funding to deliver new measures or infrastructure may potentially also be more difficult. Overcoming these problems if and when they are encountered will present new challenges going forward.

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

- The delivery of a new AQAP due to delays in production of substantial highway and transport plans for the city centre and south Lancaster

Lancaster City Council anticipates that the measures stated above and in Table 2.2 will, when delivered, achieve compliance in the Lancaster city centre AQMA and provide improvement to air quality in many other areas of the district. We anticipate that it is likely that we will revoke the Carnforth and Galgate AQMAs in 2023 but are undertaking air quality modelling to ensure that no objective exceedances still remain within these areas before making the final decision on revocation.

## 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 | Pans have been developed over 2019 to date. However at time of writing development of plans have been delayed. A decision is awaited between the city and county councils to determine plan progression. It is hoped this will take place in 2022 allowing developed proposals to be incorporated in the new AQAP for consultation in 2023. . | 2025 | The production of a new air quality action plan for the district is linked and scheduled within Transport Masterplan delivery.<br><br>Plan available at:- Highways and transport masterplans - Lancashire County Council<br>Delivery of a new air quality action plan to cover the Lancaster district has been delayed due to delays in development of transport plans for the city centre. Delivery has therefore been delayed and is anticipated for delivery in 2022/2023. |
| 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 three AQMA | 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<br><br>Highways and transport masterplans - Lancashire County Council |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | Lancaster Parking Strategy | Traffic Management | Emission based parking or permit charges | Lancaster City Council | 2015-22 | - | - | - | A base line parking strategy report has been produced by consultants Systra. Following consideration of this report a new strategy is anticipated to be adopted towards the end of 2022 | 2022 | Information on parking is available at:<br><br>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. | 2022 | *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.<br><br>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 indicated compliance with objective standards. | Road opened October 2016<br><br>More information available at:<br><br>Baygate way | AQ monitoring to assess changes will continue in 2022/23.<br><br>Assessment of air quality changes in the Carnforth AQMA is ongoing which may result in the revocation of the Carnforth AQMA designation. |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 2022. |
| 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.<br>For more information see:<br>:Love to ride<br>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 |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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<br><br>Alternative ways to travel<br><br>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<br><br>UK air quality<br><br>About Air Pollution |
| 19 | Burning of waste Fact sheet | Public Information | via leaflets | Lancaster City Council and | - | 2014 | - | - | ongoing | - | Available at: Smoke Control |
| 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<br><br>Web site Update 2022<br><br>Schools lesson programme (see item 46a) | - | County Council element not delivered due to impact of COVID pandemic. School programme currently being piloted as part of Defra grant assisted project by City Council (see item 46a)<br>Additional air quality information page added to web site in 2022 (see About air pollution ) |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | Cycle Hire | Transport Planning and Infrastructure | Public cycle hire scheme | Lancaster City Council | - | - | - | - | ongoing | - | More information available at:<br><br>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. Consultation on movement strategy for Lancaster centre (key element of plan) now due 2022/23<br><br>Please note estimated completion date has been put forward | 2027 | Plan of measures to be submitted to prevent relief offered by new road being eroded.<br><br>Plan to be submitted before link road is fully opened (Schedule 2, 10 requirements).<br><br>See Transport Masterplan at Highways and transport masterplans - Lancashire County Council<br><br>for more information. |
| 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 July 2022 passenger number were 5208 with average daily passenger numbers at 217 .. 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 | - | 4329 members registered in Lancashire area (Sept 2022).This was slightly up on members reported in Oct 2021 | - | 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 | - | - | - | - | - |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 2019/23 (LTP4) | 2011-21(LTP3) | - | - | Development of new plan is currently in progress but has been delayed. The new plan (LTP4) is now due 2023. The plan will link to the transport masterplan for the district. | 2023 | Current plan available at:<br><br>Local Transport Plan |
| 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) 2021 onwards (SPD) | - | - | Guidance produced. - Launch Event took place in October 2016 Guidance adopted as a planning advisory note September 2017. Adoption as supplementary planning document (SPD) anticipated summer 2023.following adoption of AQAP. A draft plan has been written.in readiness. . | 2017(PAN adoption) and 2022(SPD adoption) | Delay to adoption is linked to the delay in delivery of the city centre movement strategy and linked AQAP. 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 tye delivery of a new AQAP<br><br>A EV charging SPD and sustainable travel SPD is due to be adopted following further consultation in spring 2023. See |
| 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). In April 2017 an AQ Briefing note was produced with a list of priority actions. See AQ and County Council public health section above (p15) for more detail on action in 20/21 |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 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 | 2022 | To ensure new exposure to poor AQ is prevented and to minimise emissions from new development<br><br>Available at: Local Plan<br><br>Policy reviewed to support new air quality planning guidance (item 28 above).<br>Majority of planning policies are being reviewed in 2021 to address locally declared climate emergency position see Local Plan Review |
| 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 2022/3 | 2022 | Draft guidance available at:<br><br>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<br><br>See 2014 Progress report for more information :Available at:<br><br>Air Quality Reports<br><br>Policy did not achieve objective. |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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) | 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 2022/23). | Now due 2022/23. | More information available at: Clean Bus Technology Fund No progress in 2020/21. Flagged with county council. Delivery impact by pandemic. County Council propose delivery linked to wider transport plans for city centre and south Lancaster |
| 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 | - | - |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 previous 'carbon reduction commitment' has been surpassed by Climate Emergency declaration and associated steps to make Council s activities carbon neutral by 2030 | 2030- | Further information at:<br><br>Carbon Reduction Commitment<br><br>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<br><br>Highways | 2015/16 | 2017/18 | - | - | Grant monies awarded for 150 points across Lancashire | Jan 2020 | Project delivered. See : County Council delivered chargepoints<br><br>Appendix G shows a map of currently public chargepoints in the Lancaster district |
| 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:<br>1. Library Street Morecambe<br>2. Dallas Road Boys and Girls Club Lancaster<br>3. Auction Mart Lancaster<br>4. Westview Morecambe<br>5. Upper St Leonardsgate Lancaster<br>6. Charter House Lancaster<br>7. Dallas Road Lancaster<br>8. Salt Ayre Leisure Centre Morecambe<br>9 Festival .Market Morecambe<br>10. Williamson Park Lancaster | - | A strategy is being developed both locally and regionally for further charging facilities |

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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. |
| 41 | Promoting the use of electric vehicles as taxis | Promoting Low Emission Transport | Taxi emission incentives | Lancaster City Council | 2017/18 | 2018/22 | Number of electric taxi vehicles in local taxi fleet | - | Ongoing through work associated with OLEV grant for charging infrastructure (see 42 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 transition policies) | 2022 | 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 has submitted a Defra AQ grant bid to run such a scheme. (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, 18 electric vans and 2 electric bin wagons. 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) | - | The Council is planning to replace fleet vehicles with electric vehicle alternatives where possible.<br>A further 26 electric vans have been ordered to replace diesel vehicles in 2023.<br><br>For new electric bin wagons see<br><br>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 (next round of Zebra funding) | 2024 | Bus Service Improvement Plan funding has been obtained by the county council but the allocation excludes spending funding on electric buses or supporting charging infrastructure. The County Council has indicated they will support Stagecoach (the main local bus service provider) in a future Zebra grant funding bid assuming a future round is forthcoming. |
| 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 | 2023 | Subject to national scheme being available for national participation (Defra Consultation in August 2021 on proposal for national roll out). |
| 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 successful £198,794 awarded. | 2027 | Specification for monitoring and public web site communication package drafted and tendered.<br><br>Contract award due Oct/Nov 2022. |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 46a | Schools AQ pilot programme (as part of item 46) | Public Information | Other Mechanisms | Lancaster City Council | 2021 | 2022 onwards | | | Pilot involving 6 schools commenced September 2022 | | 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 | Delivery of project subject to Defra AQ grant funding awardl. |
| 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 | | Grant application bid submitted Sept 2022 | 2026 | Delivery of project subject to Defra AQ grant funding award. |
| 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 | |

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

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
- Traffic alleviation through new link road
- Measures contained in the transport Masterplan for Lancaster.
- Travel Planning
- Car Share/Car Clubs
- Requirements for new developments (policy and guidance driven)
- Promoting use of Ultra Low Emission Vehicles
- Green barriers
- 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 38% 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 to deliver the project that is planned to commence this winter.

$PM_{2.5}$ measurements are available for the first time in Lancaster for 2021. The measured annual mean level at the Cable Street, Lancaster monitoring station was 8ug/$m^3$.

**Lancashire County Council's Public Health Summary for Air Quality Annual Status Reports, 2022**

In Lancashire the strongest evidence we have on the population health impacts of air pollution comes from Public Health England's Public Health Outcomes Framework. This Framework estimates 'the fraction of adult mortality attributable to particulate air pollution ($PM_{2.5}$)' each year. It shows that, while the overall mortality rate from particulate air pollution in Lancashire-12 (4.6%) is lower than the England average (5.6%), air pollution remains a significant public health issue for the county.

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

**1. Encouraging the use of sustainable forms of travel**

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

As part of Lancashire's cycling and walking strategy, work has now commenced on developing Local Cycling and Walking Infrastructure Plans (LCWIPs) for 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 by early 2023. The Plans will include a network plan for cycling and walking infrastructure and a prioritised list of schemes for delivery over short, medium and long term timeframes. These plans will be used to support future infrastructure decisions and to access new funding schemes as they become available.

The Road Safety Team work with schools, workplaces and the community to encourage safe and sustainable modes of travel. Initiatives for schools are promoted 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.

**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.

LCC is currently focussing on supporting residents who do not have off-street parking charge at home, this is a real issue in Lancashire, with up to 65% of households estimated to have no off-street parking. The Council is currently trialling 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 will enable 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 (1 designed in-house and 1 adapted product) are currently being trialled in several residential properties in the county.

Almost £3m has been invested in new electric vehicles and charging points for county council services. Following trials, the first service to go electric will be the county council's parking enforcement team, with 12 new electric vehicles. Work will get underway to install charging infrastructure at the offices and depots where the vehicles are based, and where they regularly visit. Trials have also been undertaken on small and medium battery electric plant, for example hedge trimmers, mowers and mini-diggers that will inform a move to battery electric plant from conventional petrol and diesel plant.

### 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. Air quality is one of the key themes of the evidence base and will be an identified priority in LTP4. The local Highways and Transport Masterplans will be refreshed to align with the priorities of LTP4. This will provide an opportunity to identify longer-term network solutions that address issues in AQMAs and have a positive impact on air quality generally.

The Lancaster City Centre Movement Strategy which looked at how vehicular, public transport and pedestrian walking movements could be improved across the city, recently received approval and is now moving towards implementation. A key facet of the study was to examine what improvements could be implemented to prioritise public transport, reduce severance, improve air quality, and effectively make the city centre a more welcoming environment for people. The intention is for a similar approach to be adopted as part of future Highways and Transport Masterplans.

### 4. Embedding air quality into policy

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

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

## 5. Raising awareness and increasing engagement

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

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

This section sets out the monitoring undertaken within 2021 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 2017 and 2021 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 2021. Table A.1 in Appendix A shows the details of the automatic monitoring sites. The automatic monitoring data page presents automatic monitoring results for Lancaster City Council, with automatic monitoring results also available through the UK-Air website (see UKAir ).

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 50 sites during 2021. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

## 3.2 Individual Pollutants

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

### 3.2.1 Nitrogen Dioxide ($NO_2$)

Table A.3 and Table 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 2021 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 data shows an increase on pollution levels observed during 2020 ( the pandemic year) bit overall show a continuing declining trend following that shown in the years preceding 2020.  There was no monitored exceedance of the hourly $NO_2$ objective at either continuous automatic monitoring site or indicated by levels monitored at diffusion tube sites. All monitored exceedances of the annual mean objective for nitrogen dioxide were located within the existing Lancaster AQMA (monitored levels of 48ug/$m^3$ 43ug/$m^3$ and 42ug/$m^3$ at Dalton Square, Thurnham Street and China Street Lancaster respectively). There were no objective exceedances monitored outside this area and thefore a new AQMA designation is therefore not required or needing consideration. There were no exceedances monitored in the Galgate and Carnforth AQMAs for the fifth year running. Air quality modelling is being undertaken for these two AQMAs as part of steps involved in producing a new air quality action plan for Lancaster. The outcome of this, monitoring results for 2022, the trend indicated and the likley contribution from new developemen will

determine whether or not the AQMA designation are revoked in 2023.

It is anticipated that no changes to the monitoring network will be considered at the end of this year (2022) with the curent network being maintained in 2023. A review of monitoring requirements will take place when transport plans for the city centre and south Lancaster are selected and anticipated changes to vehicle movements are better understood.

### 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.

$PM_{10}$ monitoring in 2021 indicated compliance with annual mean and 24hr objectives for $PM_{10}$ but again did not show any decrease on the previous year.

Despite $PM_{10}$ objectives being anticipated to be met at all locations within the Lancaster district, particulate pollution is considered to be a none threshold pollutant (no safe level) and needs to be as low as possible to protect health and therefore pollutant level reduction is still an important priority for Lancaster City Council.

### 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 2021 (the first year $PM_{2.5}$ has been monitored in Lancaster).

The measured annual mean level (8ug/$m^3$) indicates compliance with the current national target level (25ug/$m^3$) . It should be noted that a new national standard for $PM_{2.5}$ is shortly due to be set and announced by government in October 2022.

# 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 | $NO_2$ | YES | APNA-370 NOx analyser | Y(0.4m) | 4 | 2 |
| APM1 | Cable Street | Roadside | 347684 | 461963 | $PM_{10}$ and $PM_{2.5}$ | YES | FIDAS | Y(0.4m) | 4 | 2 |
| AN2 | Dalton Square | Roadside | 347852 | 461611 | $NO_2$ | 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 (all none automatic sites in Lancaster monitor nitrogen dioxide)**

| Site ID | Site Name | New / Existing | Single / Duplicate / Triplicate | Site Type | X OS Grid Reference | Y OS Grid Reference | Height (m) | Distance to Kerb of Nearest Road (m) |
|---|---|---|---|---|---|---|---|---|
| LC1 | Great John Street, Lancaster AQMA | Existing | Single | Roadside | 347852 | 461682 | 3.5 | 2.5 |
| LC4 | Brunton Road, Lancaster | Existing | Single | Urban Background | 347904 | 460508 | 3.5 | 1.5 |
| LC5 | Owen Road, Lancaster AQMA(Resid) | Existing | Single | Roadside | 347846 | 462448 | 3 | 2.5 |
| LC8 | Rosemary Lane, Lancaster AQMA (Resid) | Existing | Single | Roadside | 347796 | 461853 | 3.5 | 1.7 |
| LC9 | Brock Street 1, Lancaster AQMA (Resid) | Existing | Single | Roadside | 347808 | 461564 | 3 | 2.7 |
| LC10 | Dalton Square, Lancaster AQMA(Resid) | Existing | Single | Roadside | 347834 | 461596 | 3 | 3.3 |
| LC11 | Thurnham Street, Lancaster AQMA(Resid) | Existing | Single | Roadside | 347821 | 461404 | 3 | 3.1 |
| LC13 | King Street 1, Lancaster AQMA(Resid) | Existing | Single | Roadside | 347580 | 461593 | 3 | 2.4 |
| LC14 | King Street 2 Lancaster AQMA (Resid) | Existing | Single | Roadside | 347685 | 461389 | 3 | 2.2 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| A | High School, Morecambe Road, Lancaster AQMA | Existing | Single | Kerbside | 347582 | 462451 | 3 | 0.3 |
| B1,B2, B3 | Dalton Square, Lancaster AQMA (Co-Located) | Existing | Triplicate Co-located | Roadside | 347852 | 461611 | 2 | 3.3 |
| C1,D1,E1 | Cable Street, Lancaster AQMA(Co-Located) | Existing | Triplicate Co-located | Roadside | 347685 | 461963 | 2 | 3.7 |
| H | South Road 1, Lancaster (Resid) | Existing | Single | Roadside | 347859 | 461126 | 3 | 9 |
| I | Parliament Street, Lancaster AQMA(Resid) | Existing | Single | Roadside | 347909 | 462015 | 3 | 3.5 |
| J | North Road, Lancaster AQMA(Resid) | Existing | Single | Roadside | 347852 | 461909 | 3 | 1.9 |
| K | Stonewell, Lancaster AQMA(Resid) | Existing | Single | Roadside | 347850 | 461791 | 3 | 4.4 |
| L | King Street, Lancaster AQMA(Resid) | Existing | Single | Roadside | 347613 | 461523 | 2.5 | 1.5 |
| CFO | Market Street, Carnforth AQMA (Resid) | Existing | Single | Roadside | 349909 | 470624 | 3 | 1.4 |
| Q | King Street 3, Lancaster AQMA(Resid) | Existing | Single | Roadside | 347664 | 461449 | 3 | 2 |
| V | Main Road, Galgate AQMA (Resid) | Existing | Single | Roadside | 348359 | 455352 | 3 | 1.6 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Z | Main Road, Galgate AQMA(Resid) | Existing | Single | Roadside | 348345 | 455272 | 2.5 | 2.3 |
| ZA | Salford Road, Galgate AQMA (Resid) | Existing | Single | Roadside | 348351 | 455381 | 3.5 | 1 |
| ZB | Main Road, Galgate (Resid) | Existing | Single | Roadside | 348388 | 455472 | 2 | 2 |
| ZC | Main Road, Galgate AQMA(Resid) | Existing | Single | Roadside | 348375 | 455393 | 3 | 2.3 |
| CF1 | Lancaster Road, Carnforth AQMA (Resid) | Existing | Single | Roadside | 349870 | 470524 | 2 | 5.9 |
| CF2 | Lancaster Road/Market Street, Carnforth AQMA (Resid) | Existing | Single | Roadside | 349934 | 470605 | 3.5 | 2.3 |
| CF3 | Market Street, Carnforth AQMA(Resid) | Existing | Single | Roadside | 349853 | 470615 | 3.5 | 2 |
| CF4 | Market Street, Carnforth AQMA(Resid) | Existing | Single | Roadside | 349888 | 470628 | 3 | 2.5 |
| CF5 | Scotland Road, Carnforth AQMA(Resid) | Existing | Single | Roadside | 349962 | 470618 | 3 | 1.8 |
| CF7 | Fernbank, Carnforth (Resid) | Existing | Single | Roadside | 349613 | 470223 | 2.5 | 5.9 |
| T1 | Lancaster Road Torrisholme (Resid) | Existing | Single | Roadside | 345631 | 463694 | 3.5 | 2.4 |
| LC18 | Brock Street 3, Lancaster (No. 14- Resid) | Existing | Single | Roadside | 347784 | 461565 | 3.5 | 2.5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| LC19 | China Street 1 Lancaster AQMA( Bombay Balti Lamp Post) | Existing | Single | Roadside | 347502 | 461841 | 3 | 1.5 |
| LC20 | China Street 2 Lancaster AQMA(Public House Lamppost ) | Existing | Single | Roadside | 347515 | 461835 | 3 | 1.5 |
| LC22 | South Road 2, Lancaster (No. 69 Resid) | Existing | Single | Roadside | 347928 | 461025 | 3 | 7.2 |
| LC23 | Greaves Road 1 Lancaster (1 Alma Road - Resid) | Existing | Single | Roadside | 347948 | 460893 | 3 | 5 |
| LC24 | Greaves Road 2 Lancaster (No.138 Resid) | Existing | Single | Roadside | 347974 | 460514 | 3 | 2.8 |
| LC25 | Scotforth Road1, Scotforth (No.65 Resid.) | Existing | Single | Roadside | 348084 | 459844 | 3 | 5.2 |
| LC26 | Scotforth Road 2, Scotforth (No.100 Resid.) | Existing | Single | Roadside | 347990 | 459418 | 3 | 5.5 |
| LC27 | Scotforth Road 3, Scotforth (No.110 Resid.) | Existing | Single | Roadside | 347989 | 459396 | 3 | 6.5 |
| BLS1 | Main Road, Bolton Le Sands (11A Resid) | Existing | Single | Roadside | 348594 | 468500 | 3 | 4 |
| H1 | Heysham Road, Heysham (109 Resid - downspout) | Existing | Single | Roadside | 341964 | 463273 | 2.5 | 2.5 |
| CF8 | Lancaster Road Resid (No.101/103 downspout) | Existing | Single | Roadside | 349568 | 470044 | 3 | 2.4 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| LC28 | Newton Terrace, Caton Road Lancaster (No 7) | Existing | Single | Roadside | 348517 | 463243 | 2.5 | 6 |
| LC29 | 11/12 Newton Terrace, Caton Road Lancaster | Existing | Single | Roadside | 348527 | 463270 | 2.5 | 5.3 |
| LC30 | 3 Newton Terrace, Caton Road Lancaster | Existing | Single | Roadside | 348511 | 463226 | 2.5 | 6.5 |
| LC31 | 3 St Leonards Gate Lancaster | Existing | Single | Roadside | 348114 | 462071 | 3 | 3 |
| LC33 | Avis Caton Road, Lancaster AQMA | Existing | Single | Roadside | 348045 | 462120 | 3 | 2.7 |
| MC4 | Shrimp Roandabout Morecambe | Existing | Single | Kerbside | 345240 | 463663 | 3 | 1 |
| LC34 | Derwent Road Lancaster | Existing | Single | Roadside | 348623 | 461870 | 2.2 | 5 |

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

| | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| AN1 - Cable St | 347684 | 461963 | Roadside | - | 99.0 | - | 39.6 | 34 | 28 | 32 |
| AN2 - Dalton Sq | 347852 | 461610 | Roadside | - | 99.9 | 32 | 32 | 34 | 21 | 26 |

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16**

☒ **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.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

## Table A.4 – Annual Mean $NO_2$ Monitoring Results: 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 2020 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| LC1 | 347852 | 461682 | Roadside | - | 100 | **46** | **43** | **43** | 34 | 38 |
| LC4 | 347904 | 460508 | Urban Background | - | 100 | 15 | 14 | 13 | 10 | 12 |
| LC5 | 347846 | 462448 | Roadside | - | 100 | 31 | 30 | 29 | 23 | 29 |
| LC8 | 347796 | 461853 | Roadside | - | 91.7 | 30 | 25 | 29 | 20 | 24 |
| LC9 | 347808 | 461564 | Roadside | - | 100 | 37 | 32 | 30 | 22 | 24 |
| LC10 | 347834 | 461596 | Roadside | - | 100 | **62** | **55** | **53** | **42** | **48** |
| LC11 | 347821 | 461404 | Roadside | - | 100 | **57** | **48** | **48** | 37 | **43** |
| LC13 | 347580 | 461593 | Roadside | - | 100 | 34 | 34 | 32 | 26 | 27 |
| LC14 | 347685 | 461389 | Roadside | - | 91.7 | 32 | 28 | 27 | 25 | 29 |
| A | 347582 | 462451 | Kerbside | - | 91.7 | 25 | 26 | 23 | 19 | 22 |
| B1,B2, B3 | 347852 | 461611 | Roadside | - | 100 | 32 | 28 | 27 | 21 | 23 |
| C1,D1,E1 | 347685 | 461963 | Roadside | - | 100 | 38 | 36 | 36 | 27 | 32 |
| H | 347859 | 461126 | Roadside | - | 100 | 28 | 27 | 26 | 21 | 25 |
| I | 347909 | 462015 | Roadside | - | 100 | 36 | 33 | 32 | 23 | 27 |
| J | 347852 | 461909 | Roadside | - | 100 | **42** | **40** | **40** | 28 | 35 |
| K | 347850 | 461791 | Roadside | - | 100 | 38 | 35 | 34 | 27 | 31 |
| L | 347613 | 461523 | Roadside | - | 83.3 | **40** | 37 | 34 | 22 | 29 |
| CFO | 349909 | 470624 | Roadside | - | 100 | 36 | 34 | 34 | 26 | 28 |
| Q | 347664 | 461449 | Roadside | - | 100 | 35 | 28 | 26 | 21 | 23 |
| V | 348359 | 455352 | Roadside | - | 100 | 38 | 33 | 33 | 24 | 27 |
| Z | 348345 | 455272 | Roadside | - | 100 | 37 | 33 | 32 | 22 | 25 |
| ZA | 348351 | 455381 | Roadside | - | 100 | 27 | 26 | 24 | 18 | 21 |
| ZB | 348388 | 455472 | Roadside | - | 100 | 24 | 24 | 22 | 16 | 18 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ZC | 348375 | 455393 | Roadside | - | 100 | 34 | 31 | 31 | 22 | 24 |
| CF1 | 349870 | 470524 | Roadside | - | 100 | 27 | 27 | 30 | 25 | 25 |
| CF2 | 349934 | 470605 | Roadside | - | 100 | 38 | 33 | 25 | 17 | 22 |
| CF3 | 349853 | 470615 | Roadside | - | 100 | 30 | 28 | 25 | 20 | 22 |
| CF4 | 349888 | 470628 | Roadside | - | 100 | 34 | 33 | 31 | 24 | 26 |
| CF5 | 349962 | 470618 | Roadside | - | 100 | 33 | 32 | 29 | 22 | 25 |
| CF7 | 349613 | 470223 | Roadside | - | 100 | 27 | 25 | 22 | 17 | 21 |
| T1 | 345631 | 463694 | Roadside | - | 91.7 | 29 | 28 | 24 | 21 | 21 |
| LC18 | 347784 | 461565 | Roadside | - | 100 | 31 | 29 | 25 | 19 | 22 |
| LC19 | 347502 | 461841 | Roadside | - | 100 | **60** | **43** | **45** | **40** | **42** |
| LC20 | 347515 | 461835 | Roadside | - | 100 | **44** | 39 | 38 | 29 | 33 |
| LC22 | 347928 | 461025 | Roadside | - | 100 | 26 | 25 | 22 | 17 | 21 |
| LC23 | 347948 | 460893 | Roadside | - | 100 | 31 | 27 | 26 | 20 | 23 |
| LC24 | 347974 | 460514 | Roadside | - | 100 | 29 | 25 | 24 | 18 | 20 |
| LC25 | 348084 | 459844 | Roadside | - | 100 | 22 | 21 | 19 | 14 | 16 |
| LC26 | 347990 | 459418 | Roadside | - | 100 | 32 | 29 | 27 | 20 | 23 |
| LC27 | 347989 | 459396 | Roadside | - | 100 | 28 | 26 | 25 | 18 | 21 |
| BLS1 | 348594 | 468500 | Roadside | - | 100 | 27 | 26 | 24 | 18 | 20 |
| H1 | 341964 | 463273 | Roadside | - | 100 | 21 | 22 | 20 | 15 | 17 |
| CF8 | 349568 | 470044 | Roadside | - | 100 | 29 | 27 | 26 | 20 | 22 |
| LC28 | 348517 | 463243 | Roadside | - | 100 | 28 | 23 | 26 | 19 | 23 |
| LC29 | 348527 | 463270 | Roadside | - | 100 | 27 | 26 | 24 | 17 | 19 |
| LC30 | 348511 | 463226 | Roadside | - | 100 | 24 | 28 | 22 | 16 | 19 |
| LC31 | 348114 | 462071 | Roadside | - | 91.7 | 30 | 33 | 31 | 22 | 27 |
| LC33 | 348045 | 462120 | Roadside | - | 91.7 | 35 | 35 | 34 | 23 | 26 |
| MC4 | 345240 | 463663 | Kerbside | - | 100 | | | 26 | 22 | 25 |
| LC34 | 348623 | 461870 | Roadside | - | 100 | | | | 10 | 11 |

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16**

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

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

**Notes:**

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

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

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

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

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

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

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

**Figure A.1 – Trends in Annual Mean $NO_2$ Concentrations**

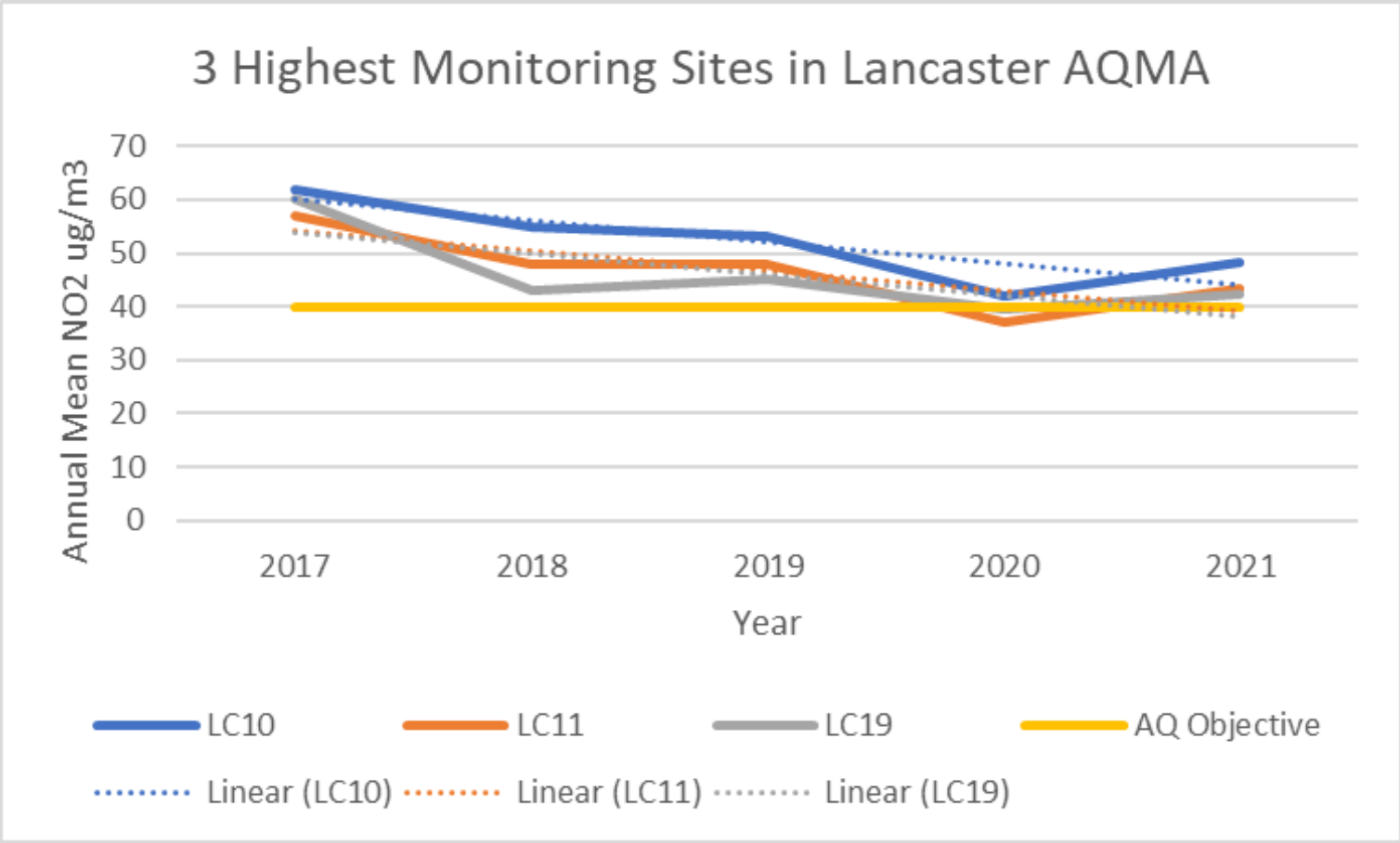


Figure A1 above shows the monitored annual mean nitrogen dioxide levels at the three sites still showing exceedance of the objective standard in 2021. As can be seen the results, although higher that in 2020 (the pandemic year) show an overall continuing declining trend.

**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 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| AN1 - Cable St | 347684 | 461963 | Roadside | | 99 | | 0(98) | 0 | 0 | 0 |
| AN2 - Dalton Sq | 347852 | 461610 | Roadside | | 99.9 | 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%).

Table A.5 above shows that no exccedances of the of the 1-hour objective for nitrogen dioxide were monitored at the Cable Street and Dalton Square monitoring sites over the past 5 years. Annual mean level monitoring in other parts of the Lancaster AQMA indicate that exceedance of the 1-hour objective standard for nitrogen dioxide is unlikely at other locations in the AQMA is now unlikely.

## 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 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| APM1 - Cable Street | 347684 | 461963 | Roadside | | 90.9 | 22.5 | 22 | 17 | 17 | 17 |

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16**

**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.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

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

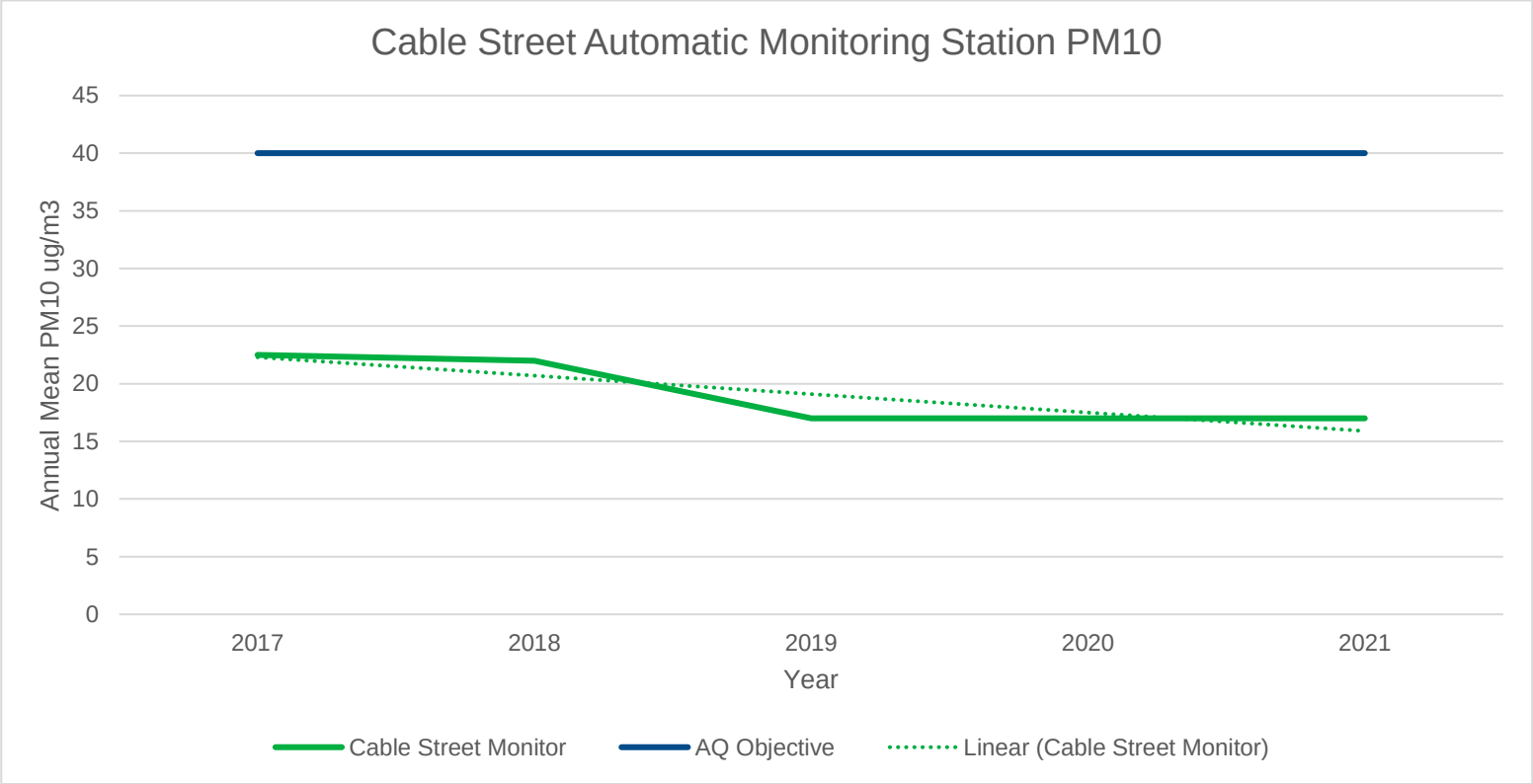


Figure A.3 above shows annual mean particulate ($PM_{10}$) levels monitored at the Cable Street Lancaster automatic monitoring station. As can be seen levels monitored are well below the objective standard (40ug/$m^3$) and over the last 5 years and there is shown to be a declining trend. Notably however, over the last 3 years levels have remained static, indicating that a continuing decline may not be assumed in this location. Given that particulate pollution is a non-threshold pollutant (no lower safe level) elevated particulate levels remain a concern despite results showing compliance with the objective standard for $PM_{10}$.

**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 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| APM1 - Cable Street | 347684 | 461963 | Roadside | | 90.9 | 0(34) | 1 | 1 | 0(27) | 2 |

**Notes:**

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

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

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

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

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

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

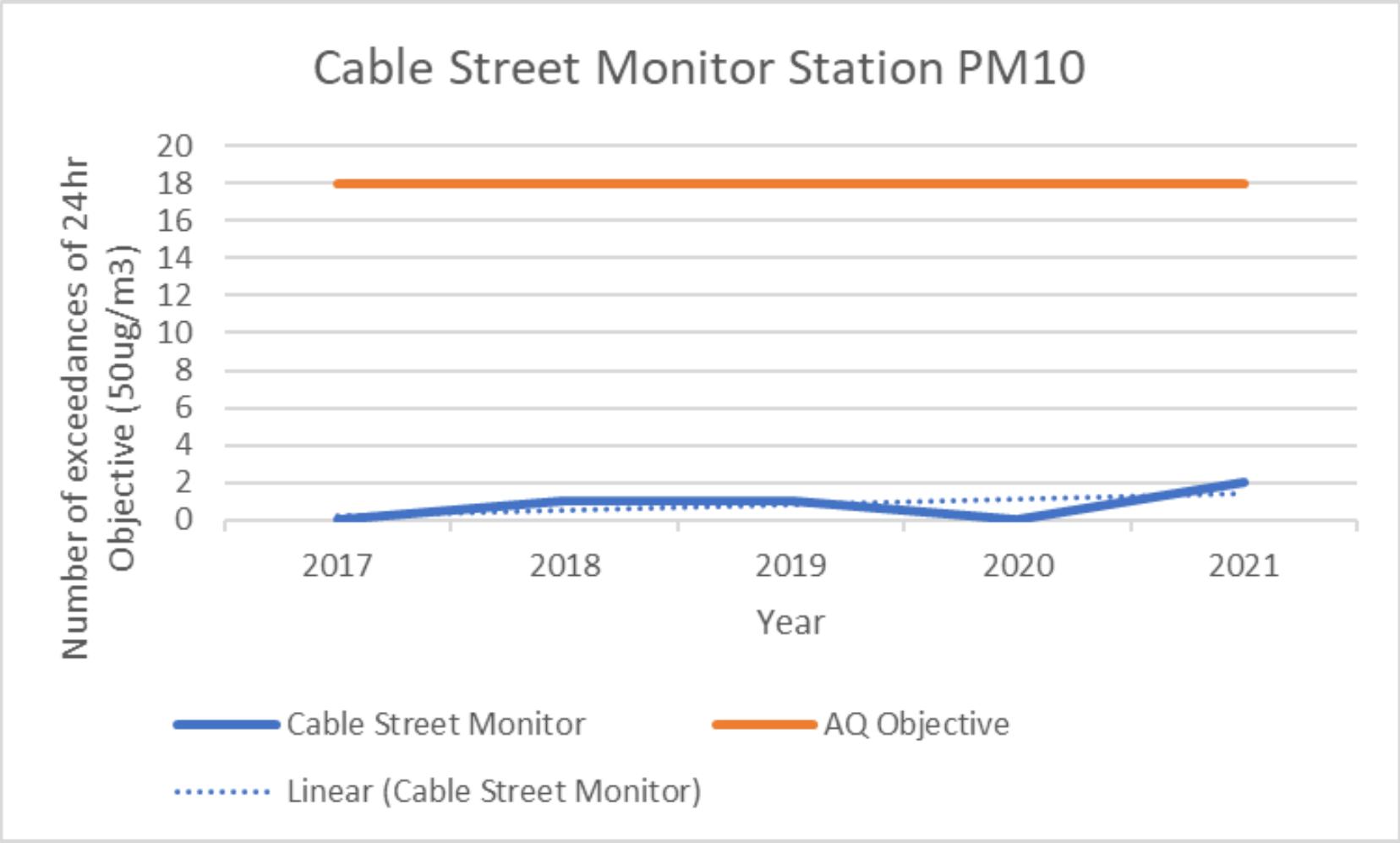


Figure A.4 shows the number of monitored exceedances of the 24hr mean objective for $PM_{10}$ (50ug/$m^3$). The results show compliance with the objective standard. The overall trend is a slight increase over the period shown. These results perhaps also indicate that a gradual reduction in $PM_{10}$ particulate levels monitored at this location may not continue to be observed.

## 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 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|
| APM1 - Cable Street | 347684 | 461963 | Roadside | | 90.6 | - | - | - | - | 8 |

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16**

**Notes:**

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

All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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%).

# Appendix B: Full Monthly Diffusion Tube Results for 2021

**Table B.1 – $NO_2$ 2021 Diffusion Tube Results (µg/m$^3$)**

| DT ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Mean: Raw Data | Annual Mean: Annualised and Bias Adjusted (0.84) | Annual Mean: Distance Corrected to Nearest Exposure |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LC1 | 347852 | 461682 | 49.6 | 48.4 | 45.7 | 32.2 | 50.5 | 47 | 41.4 | 38.3 | 44.2 | 48.5 | 49.2 | | 45 | 37.8 | |
| LC4 | 347904 | 460508 | 18.1 | 20.3 | 15.7 | 10.6 | 15.2 | | 17.2 | 8.3 | 7.1 | 14.4 | 15.4 | 17.2 | 14.5 | 12.2 | |
| LC5 | 347846 | 462448 | 35.4 | 43.3 | 33.8 | 26.9 | 44.2 | 32.5 | 28.6 | 29.8 | 28.5 | 37 | 33.6 | 35.9 | 34.1 | 28.7 | |
| LC8 | 347796 | 461853 | 33 | 32.1 | 27.4 | 20.4 | 31.6 | 30.1 | 23.9 | 24.8 | 22.9 | 29.3 | 29.9 | 31 | 28 | 23.6 | |
| LC9 | 347808 | 461564 | 33.2 | 27.1 | 29.3 | 22.6 | 28.1 | 29.6 | 24.5 | 25.8 | 24.3 | 30.1 | 33.2 | 33.5 | 28.4 | 23.9 | |
| LC10 | 347834 | 461596 | 53.7 | 62.5 | 46.3 | 51 | 60.8 | 63.6 | 60.2 | 60 | 46.7 | 61.5 | 63.5 | 59.6 | 57.4 | 48.3 | |
| LC11 | 347821 | 461404 | 44.8 | 52.8 | 42.3 | 43.6 | 61 | 59.7 | 45.6 | 56.6 | 43.4 | 54.2 | 56.5 | 58.5 | 51.6 | 43.3 | |
| LC13 | 347580 | 461593 | 35.5 | 19.1 | | 31.5 | 32.3 | 32.4 | 28.1 | 31.5 | 27.6 | 37.3 | 40.4 | 34.5 | 31.9 | 26.8 | |
| LC14 | 347685 | 461389 | 39.2 | 38 | 33 | 29.6 | 37.1 | 36.1 | 31.7 | 31.9 | 27.1 | 40.3 | 38.2 | 37.2 | 35 | 29.4 | |
| A | 347582 | 462451 | | 32.7 | 23.4 | 17.8 | 28.5 | 30.4 | 22.8 | 23.4 | | | 30 | 24 | 25.9 | 21.7 | |
| B1,B2, B3 | 347852 | 461611 | 32.4 | 33.5 | 28.3 | 25.5 | 27.8 | 26.1 | 21.9 | 22.5 | 17.8 | 28 | 29.5 | 34.1 | 27.3 | 22.9 | |
| C1,D1,E1 | 347685 | 461963 | 37.6 | 45.5 | 33.7 | 34.5 | 49.3 | 40.4 | 33.6 | 36.8 | 35.6 | 39.9 | 36.8 | 39.4 | 38.6 | 32.4 | |
| H | 347859 | 461126 | 38.6 | 27.4 | 30.8 | 24.4 | 37.5 | 30.6 | 24.6 | 25.2 | 26.0 | 27.4 | 20.7 | 41.5 | 29.5 | 24.8 | |
| I | 347909 | 462015 | 36.9 | 37.6 | 33.1 | 25.5 | 35.3 | 33.5 | 27.3 | 27.5 | 28.4 | 37.0 | | 37.1 | 32.6 | 27.4 | |
| J | 347852 | 461909 | 46.8 | 47.0 | 37.0 | 33.8 | 43.6 | 42.5 | 37.2 | 37.9 | 36.0 | 47.0 | 43.7 | 45.1 | 41.5 | 34.8 | |
| K | 347850 | 461791 | 38.9 | 41.5 | 39.4 | 30.8 | 40.0 | 43.4 | 31.8 | 30.6 | | | | 32.1 | 36.5 | 30.7 | |
| L | 347613 | 461523 | 40.3 | 38.0 | 32.8 | 27.3 | 34.8 | 26.5 | | 53.2 | 24.3 | 35.2 | 37.2 | | 35.0 | 29.4 | |
| CFO | 349909 | 470624 | 34.7 | 38.2 | 28.2 | 33.5 | 41.5 | 35.6 | 30.1 | 31.6 | 34.5 | 27.9 | 35.2 | | 33.7 | 28.3 | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q | 347664 | 461449 | 40.2 | 10.8 | 30.5 | 21.5 | 34.9 | 29.2 | 22.8 | 22.0 | 26.1 | 29.6 | 29.4 | 33.9 | 27.6 | 23.2 | |
| V | 348359 | 455352 | 35.0 | 35.2 | 25.8 | 26.6 | 35.4 | 28.7 | 32.4 | 33.9 | 21.8 | 41.4 | 35.6 | 37.1 | 32.4 | 27.2 | |
| Z | 348345 | 455272 | 34.2 | 34.5 | 26.3 | 23.2 | 36.4 | 21.5 | 28.0 | 18.8 | 22.0 | 36.5 | 32.7 | 38.7 | 29.4 | 24.7 | |
| ZA | 348351 | 455381 | 27.8 | 28.6 | 24.8 | 17.6 | 25.1 | 28.6 | 17.8 | 29.5 | 16.9 | 30.6 | 26.9 | 29.0 | 25.3 | 21.2 | |
| ZB | 348388 | 455472 | 25.8 | 26.9 | 22.5 | 15.5 | 23.3 | 18.1 | 16.3 | 15.2 | 15.7 | 26.6 | 22.8 | 26.5 | 21.3 | 17.9 | |
| ZC | 348375 | 455393 | 36.5 | 26.2 | 28.9 | 20.7 | 29.8 | 28.0 | 22.2 | 23.8 | 19.9 | 37.4 | 31.6 | 31.1 | 28.0 | 23.5 | |
| CF1 | 349870 | 470524 | 29.2 | 34.9 | 26.2 | 35.0 | 26.4 | 30.1 | 31.2 | 31.4 | 30.1 | 31.0 | 27.0 | 28.1 | 30.0 | 25.2 | |
| CF2 | 349934 | 470605 | 26.5 | 27.5 | 20.4 | 23.2 | 32.7 | 21.8 | 22.9 | 23.5 | 24.0 | 23.7 | 37.9 | 37.4 | 26.8 | 22.5 | |
| CF3 | 349853 | 470615 | 30.4 | 29.6 | 27.1 | 25.0 | 26.5 | 26.9 | 19.9 | 18.7 | 24.3 | 23.2 | 29.0 | 28.9 | 25.8 | 21.7 | |
| CF4 | 349888 | 470628 | 35.0 | 34.5 | 31.2 | 31.1 | 36.4 | 31.9 | 27.9 | 26.2 | 30.0 | 27.6 | 34.1 | | 31.5 | 26.4 | |
| CF5 | 349962 | 470618 | 31.2 | 36.3 | 26.3 | 27.6 | 29.5 | 30.3 | 27.8 | 27.6 | 32.1 | 29.1 | 30.3 | 31.6 | 30.0 | 25.2 | |
| CF7 | 349613 | 470223 | 24.9 | 26.0 | | 24.6 | 28.7 | 24.2 | 23.1 | 25.7 | 23.4 | 21.2 | 24.9 | 27.0 | 24.9 | 20.9 | |
| T1 | 345631 | 463694 | 28.7 | 31.0 | 29.0 | 22.7 | 21.3 | 24.1 | 22.6 | 21.9 | 23.8 | 23.7 | 27.3 | 25.8 | 25.2 | 21.1 | |
| LC18 | 347784 | 461565 | 29.9 | 28.4 | 25.4 | 19.4 | 33.4 | 27.5 | 19.7 | 22.1 | 32.8 | 25.3 | 25.8 | 30.1 | 26.6 | 22.4 | |
| LC19 | 347502 | 461841 | 51.3 | 58.2 | 44.3 | 45.9 | 48.4 | 51.8 | 47.5 | 53.2 | 41.6 | 56.9 | 50.2 | 57.2 | 50.6 | 42.5 | |
| LC20 | 347515 | 461835 | 46.7 | 41.9 | 35.5 | 30.9 | 36.9 | 39.6 | 36.0 | 38.3 | 31.5 | 46.5 | 40.5 | 42.9 | 38.9 | 32.7 | |
| LC22 | 347928 | 461025 | 33.0 | 35.9 | 23.3 | 19.6 | 30.2 | 23.9 | 18.2 | 19.1 | 18.6 | 23.5 | 26.6 | 32.0 | 25.3 | 21.3 | |
| LC23 | 347948 | 460893 | 27.6 | 36.1 | 26.4 | 22.9 | 28.8 | 26.6 | 23.3 | 20.3 | 21.3 | 30.3 | 31.2 | 30.3 | 27.1 | 22.8 | |
| LC24 | 347974 | 460514 | 32.9 | 31.1 | 22.4 | 18.0 | 25.3 | 21.9 | 18.3 | 20.4 | 14.3 | 28.4 | 28.2 | 27.4 | 24.0 | 20.2 | |
| LC25 | 348084 | 459844 | 27.6 | 26.2 | 19.1 | 13.8 | 19.2 | 16.6 | 12.6 | 13.1 | 13.5 | 19.6 | 21.0 | 23.1 | 18.8 | 15.8 | |
| LC26 | 347990 | 459418 | 31.2 | 29.7 | 25.3 | 23.6 | 30.3 | 26.8 | 21.3 | 24.3 | 18.5 | 32.7 | 31.9 | 32.6 | 27.3 | 23.0 | |
| LC27 | 347989 | 459396 | 34.5 | 31.6 | | 19.0 | 28.9 | 24.2 | 18.0 | 18.5 | 14.7 | 28.3 | 26.9 | 30.2 | 25.0 | 21.0 | |
| BLS1 | 348594 | 468500 | 27.9 | 27.1 | 23.1 | 21.9 | 23.0 | 22.2 | 23.0 | 21.1 | 24.2 | 19.4 | 23.5 | 25.1 | 23.4 | 19.7 | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H1 | 341964 | 463273 | 29.8 | 29.2 | 27.0 | 18.0 | 20.6 | 18.2 | 13.3 | 14.1 | 15.3 | 19.5 | 18.4 | 18.7 | 20.2 | 16.9 | |
| CF8 | 349568 | 470044 | 33.3 | 30.1 | 29.3 | 22.0 | 25.7 | 25.6 | 20.7 | 21.8 | 25.8 | 23.4 | 28.5 | 28.4 | 26.2 | 22.0 | |
| LC28 | 348517 | 463243 | 27.4 | 32.5 | 26.3 | 23.3 | 29.7 | 27.6 | 21.7 | 23.6 | 19.7 | 34.8 | 28.2 | 34.4 | 27.4 | 23.0 | |
| LC29 | 348527 | 463270 | 24.6 | | 21.9 | 19.1 | 23.9 | | 19.2 | 19.9 | 15.6 | 27.3 | 25.2 | 27.2 | 22.4 | 18.8 | |
| LC30 | 348511 | 463226 | 27.1 | 30.6 | 21.9 | 18.8 | 23.7 | 21.4 | 16.4 | 19.3 | 15.7 | 28.2 | 23.9 | 27.6 | 22.9 | 19.2 | |
| LC31 | 348114 | 462071 | 28.8 | 37.9 | 22.9 | 27.1 | 31.7 | 27.3 | 24.1 | 31.5 | | 61.1 | | | 32.5 | 27.3 | |
| LC33 | 348045 | 462120 | 37.2 | 36.4 | 29.6 | 24.3 | 31.7 | 29.4 | 25.0 | 28.4 | 19.5 | 38.4 | 31.9 | 33.3 | 30.4 | 25.5 | |
| MC4 | 345240 | 463663 | 34.1 | 37.3 | 32.8 | 28.0 | 35.8 | 28.8 | 24.9 | 27.0 | 24.4 | 30.6 | 26.9 | 32.2 | 30.2 | 25.4 | |
| LC34 | 348623 | 461870 | 23.9 | 20.1 | 13.4 | 9.6 | 12.1 | | 8.7 | 10.9 | 8.3 | 16.2 | | | 13.7 | 11.5 | |

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

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16**

☒ **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 2021 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 District During 2021/22

Lancaster City Council has not identified any major new air pollution sources within the Lancaster district within the reporting year of 2021/22.

## Additional Air Quality Works Undertaken by Lancaster City Council During 2021/22

Lancaster City Council has advanced action plan measures around the delivery of a new air quality action plan, contributing to the development and assessment of proposals for the city centre and south Lancaster, new electric vehicle charging facilities, the revision of the local development plan policies and guidance to consider climate emergency requirements, implementation of various actions to deliver climate change emission reductions (with associated air quality benefits ), measures around the adoption of electric vehicles, progressing the delivery of the Defra grant assisted solid fuel burning pollution impact awareness project, developed and assisted in the development of two Defra air quality grant bids within the reporting rear of 2021/22. More detail on actions is contained in table 2.2. above.

## 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 2021 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 2021**

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<br>2187<br><br>Accredited to<br>ISO/IEC 17025:2005 | **Schedule of Accreditation**<br>**issued by**<br>**United Kingdom Accreditation Service**<br>2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK<br><br>**Gradko International Ltd**<br>**(Trading as Gradko Environmental)**<br>**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:<br>Benzene<br>1,3-Butadiene<br>1,2-Dichloro(Z)ethene,<br>Ethylbenzene<br>Indane<br>Naphthalene<br>Styrene<br>Tetrachloroethylene<br>Toluene<br>Trichloroethylene<br>1,2,3-Trimethylbenzene<br>1,2,4-Trimethylbenzene<br>1,3,5-Trimethylbenzene<br>p-Xylene<br>o-Xylene<br><br>**The laboratory holds a flexible scope of accreditation for these tests.**<br>**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<br>Toluene<br>Ethyl benzene<br>Xylene | GLM 4 by Thermal Desorption/ FID Gas Chromatography |
| | Hydrogen chloride<br>Nitrogen dioxide<br>Sulphur dioxide<br>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 |

Assessment Manager: LB

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tel.: 01962 860331 fax: 01962 841339 email:diffusion@gradko.com

## AIR PT Nitrogen Dioxide Proficiency Scheme Results 2021

Methods: GLM 7 – CARY 60 Spectrophotometer

| AIR PT Proficiency Scheme - Nitrogen Dioxide 2021 | | | | | |
|---|---|---|---|---|---|
| | | | Procedure GLM 7 | | |
| Date | Round | Assigned value | Measured concentration | z-Score | % Bias |
| Feb-21 | AIR PT 42-1 | 1.71 | 1.13 | -4.17 | -33.9% |
| Feb-21 | AIR PT 42-2 | 1.74 | 0.81 | -6.29 | -53.4% |
| Feb-21 | AIR PT 42-3 | 1.40 | 0.83 | -5.43 | -40.7% |
| Feb-21 | AIR PT 42-4 | 1.37 | 1.16 | -1.91 | -15.3% |
| Mar-21 | AIR PT 42-1 Rpt | 1.71 | 1.79 | 0.62 | 4.7% |
| Mar-21 | AIR PT 42-2 Rpt | 1.74 | 1.75 | 0.08 | 0.6% |
| Mar-21 | AIR PT 42-3 Rpt | 1.40 | 1.40 | 0 | 0.0% |
| Mar-21 | AIR PT 42-4 Rpt | 1.37 | 1.41 | 0.39 | 2.9% |
| May-21 | AIR PT 43-1 | 1.19 | 1.23 | 0.35 | 3.4% |
| May-21 | AIR PT 43-2 | 1.19 | 1.22 | 0.26 | 2.5% |
| May-21 | AIR PT 43-3 | 2.00 | 1.97 | -0.2 | -1.5% |
| May-21 | AIR PT 43-4 | 1.94 | 1.98 | 0.26 | 2.1% |
| Aug-21 | AIR PT 45-1 | 1.58 | 1.58 | 0 | 0.0% |
| Aug-21 | AIR PT 45-2 | 1.57 | 1.56 | -0.08 | -0.6% |
| Aug-21 | AIR PT 45-3 | 2.43 | 2.41 | -0.08 | -0.8% |
| Aug-21 | AIR PT 45-4 | 2.42 | 2.37 | -0.28 | -2.1% |
| Oct-21 | AIR PT 46-1 | 2.7 | 2.77 | 0.33 | 2.6% |
| Oct-21 | AIR PT 46-2 | 2.71 | 2.6 | -0.49 | -4.1% |
| Oct-21 | AIR PT 46-3 | 2.17 | 2.06 | -0.65 | -5.1% |
| Oct-21 | AIR PT 46-4 | 2.13 | 2.15 | 0.13 | 0.9% |

Results from AIR-PT 42 showed a significant negative bias. An investigation was carried out and a repeat set of samples ordered (Mar-21) to confirm results.

Results from the investigation showed for AIR PT samples, extraction of nitrite was not complete and required further time on the shaker to extract all nitrite from the tubes. Successful extraction was demonstrated on the repeat Air PT samples in March 2021.

The investigation also showed that for laboratory standards and customer samples, extraction of nitrite from tubes was complete without further shaking, and there was no risk associated with results reported to customers.

For any queries please contact the Laboratory Manager at linda@gradkolab.com

Linda Gates 05/05/2022

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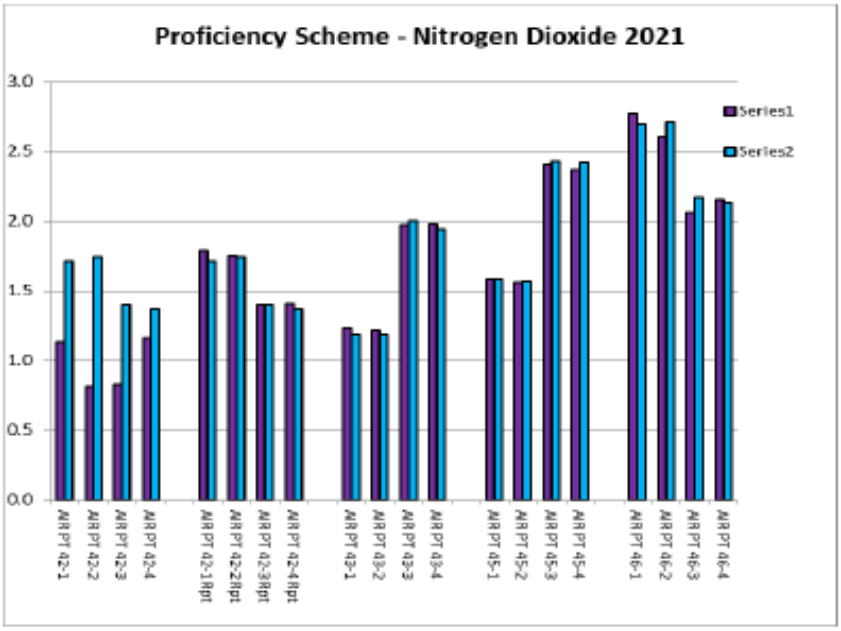



## Diffusion Tube Annualisation

All diffusion tube monitoring locations within the Lancaster 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 2021 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance 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 submitted local co-location study results to the national system operated by NPL and applied their generated national bias adjustment factor of 0.84 to the 2021 monitoring data. This approach meets accepted good practice. A summary of bias adjustment factors used by Lancaster City Council over the past five years is presented in Table C.1 below.

### Table C.1 – Collected $NO_2$ diffusion tube bias adjustment factors for 2017-2021

| **Tube/Supplier Analyst** | **Method** | **2017** | **2018** | **2018** | **2019** | **2019** | **2020** | **2020** | **2021** | **2021** |
|---|---|---|---|---|---|---|---|---|---|---|
| *Local Factors* | | *Dalton Sq* | *Dalton Sq* | *Cable St* | *Cable St* | *Dalton Sq* | *Cable St* | *Dalton Sq* | *Cable St* | *Dalton Sq* |
| Gradko 2015 - 2020 | 20% TEA in water | 0.91 | 1.09 | 0.89 | 0.86 | 0.98 | 1.07 | 0.83 | 0.95 | 0.84 |
| *National Factors* | | | | | | | | | | |
| Gradko (national factors) 2015 – 2020* | 20% TEA in water | 0.87 | 0.92 | | 0.91 | | 0.81 | | 0.84 | |

* National bias adjustment factors available at : http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html
**NB** The National Bias Correction factor (0.84 from V06/22 spreadsheet shown immediately below formed from 34 separate studies) was used to bias correct Lancaster diffusion tube results in 2021 (this report). Using the highest local bias factor (Cable St. – 0.95) results in tube results being slightly higher, but all exceedances still lying within the AQMAs. The bias correction factor selected in this report (0.84) represents accepted good practice.

### $NO_2$ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the $NO_2$ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/$NO_2$ fall-off with distance calculator available on the LAQM Support website.

No diffusion tube $NO_2$ monitoring locations within the Lancaster district required distance correction during 2021.

# QA/QC of Automatic Monitoring

The Council currently has two operational automatic air quality monitoring stations, one located at Cable Street, Lancaster, the other at Dalton Square, Lancaster. The Cable Street station monitors both nitrogen dioxide ($NO_2$) and particulate matter ($PM_{10}$ and $PM_{2.5}$). The Dalton Square site monitors nitrogen dioxide only. The two stations commenced monitoring in 2011 and both currently (2022) remain operational.

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 currently (2021/22) 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.

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

The type of $PM_{10}$ and $PM_{2.5}$ monitor utilised within Lancaster City Council do not required the application of a correction factor.

## Automatic Monitoring Annualisation

All automatic monitoring locations within the Lancaster 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 has been estimated using the $NO_2$ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean $NO_2$ concentrations corrected for distance are presented in Table B.1.

No automatic $NO_2$ monitoring locations within Lancaster City Council required distance correction during 2021.

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

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

### Figure D.2 – Map of 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:

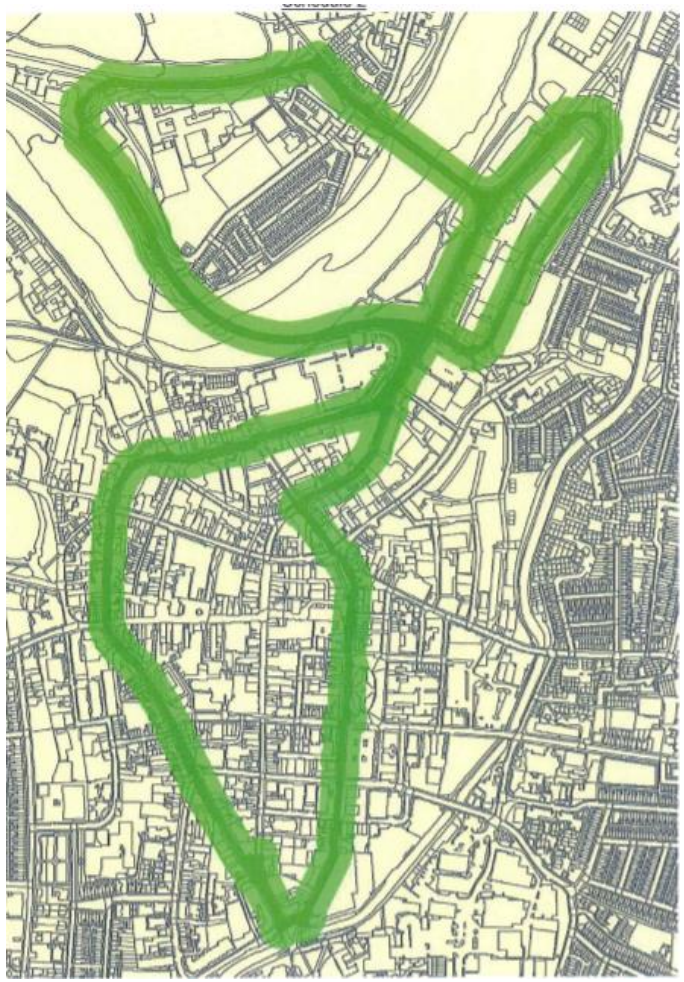
Diffusion Tube Map

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

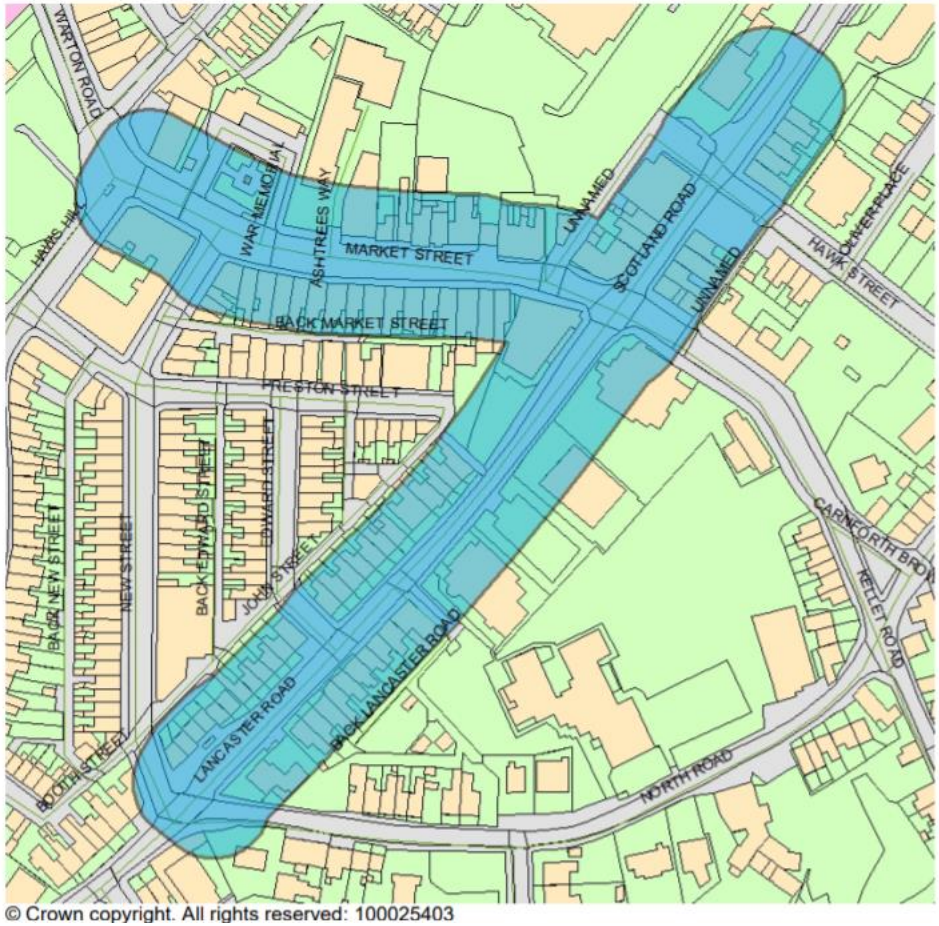
Lancaster AQMA
Carnforth AQMA
Galgate AQMA

Maps showing monitoring locations and AQMAs are also shown below.

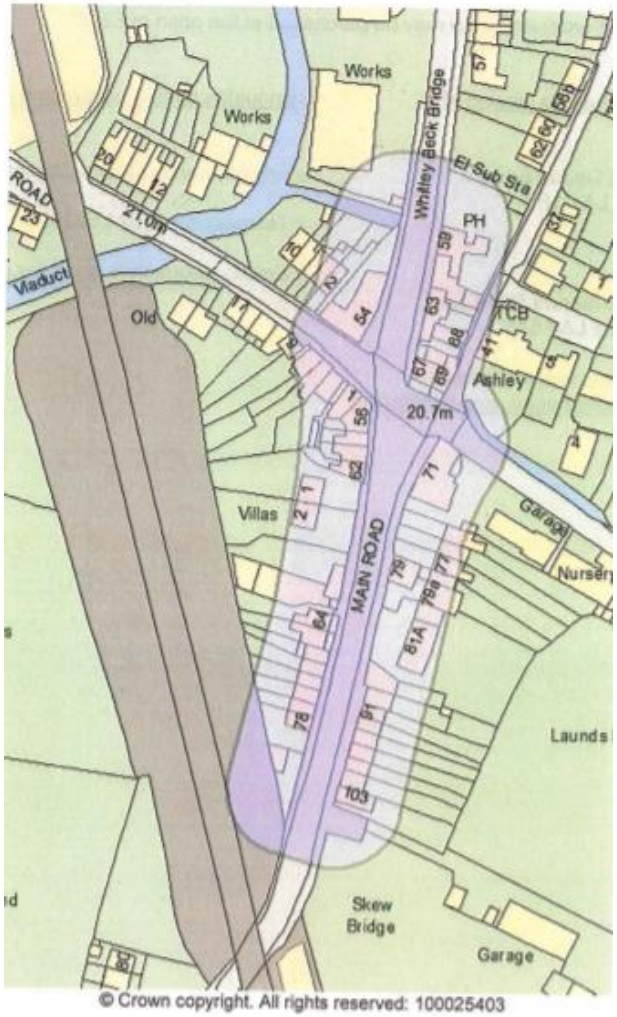
Lancaster AQMA



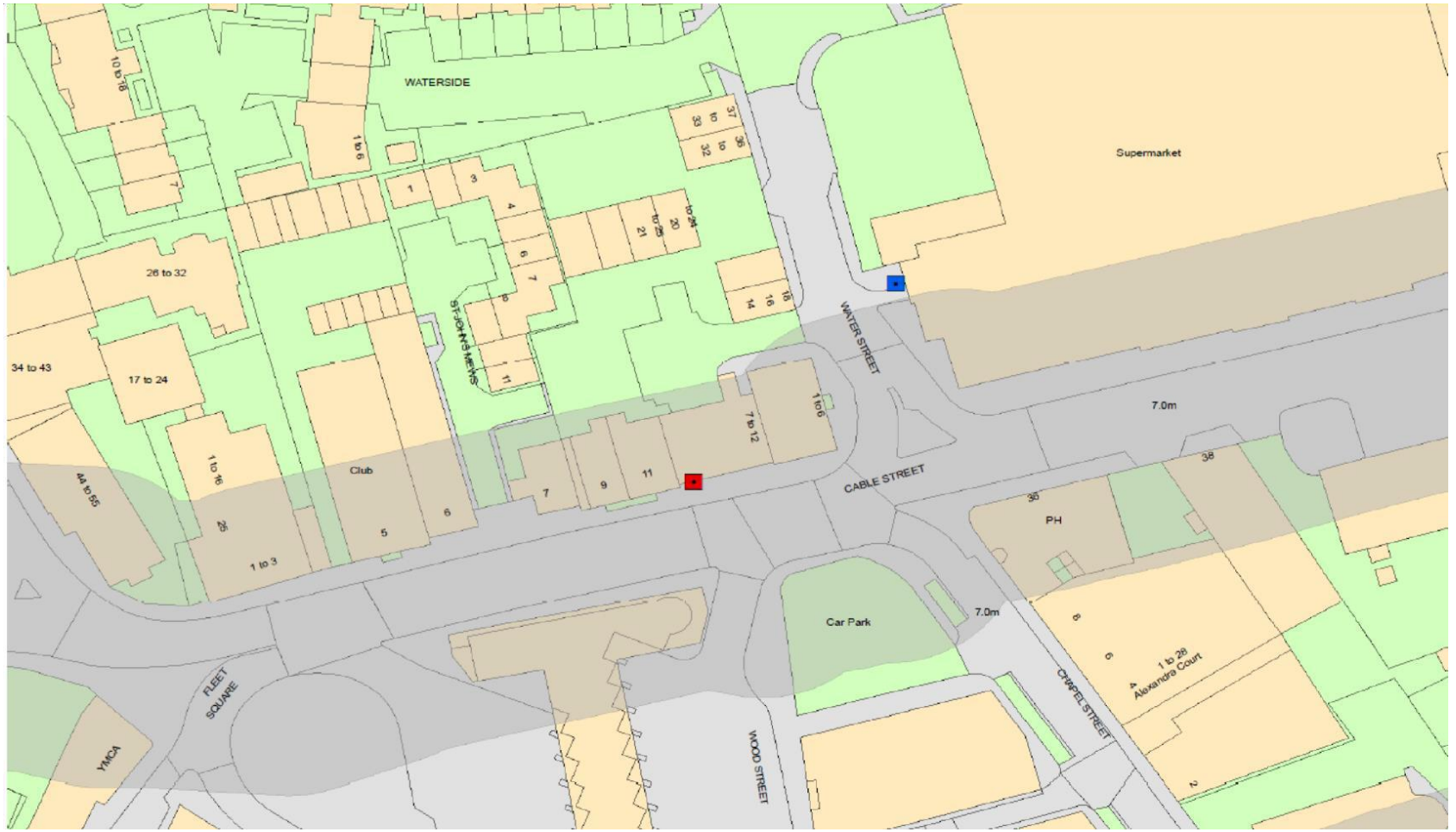
Carnforth AQMA



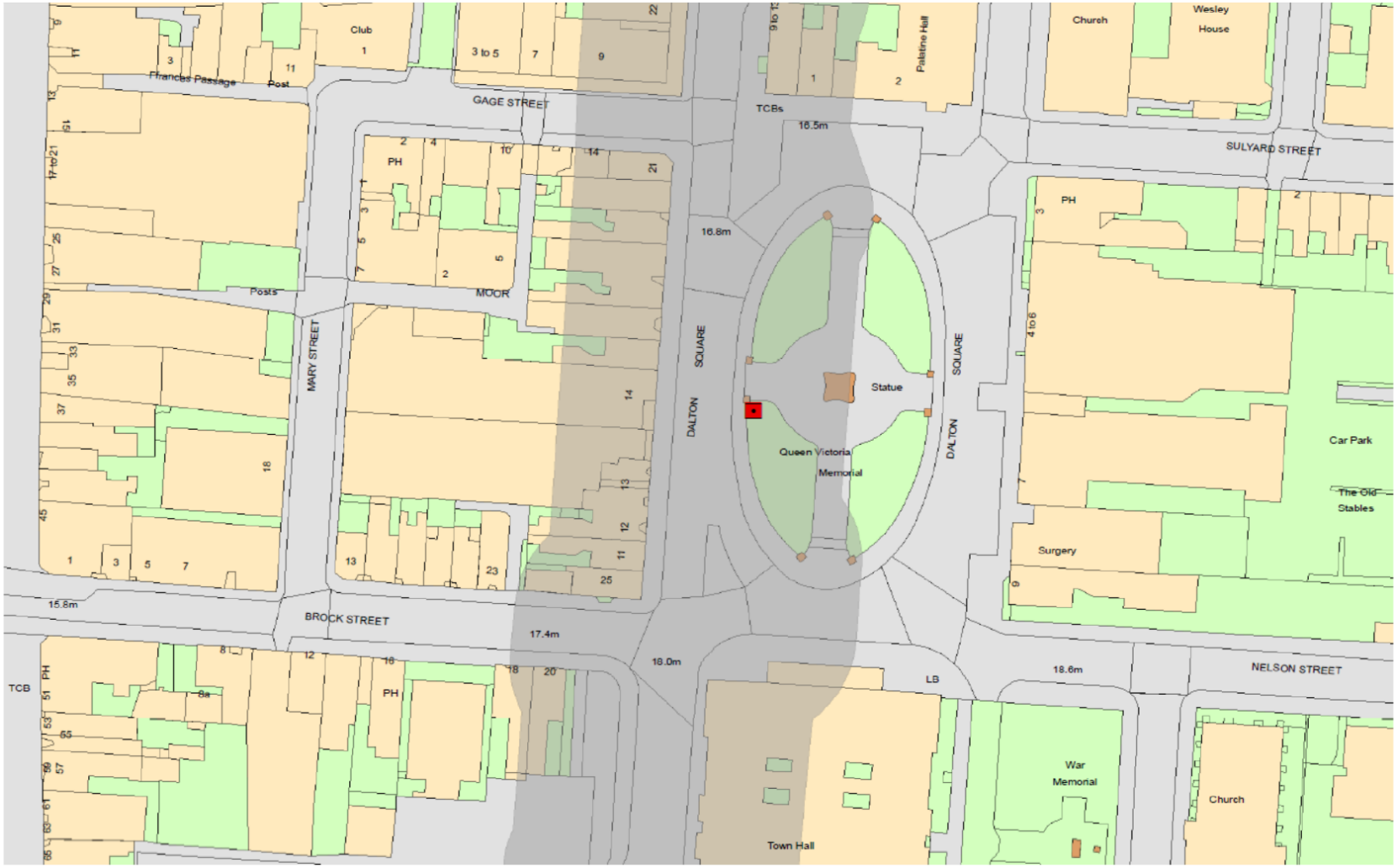
Galgate AQMA



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

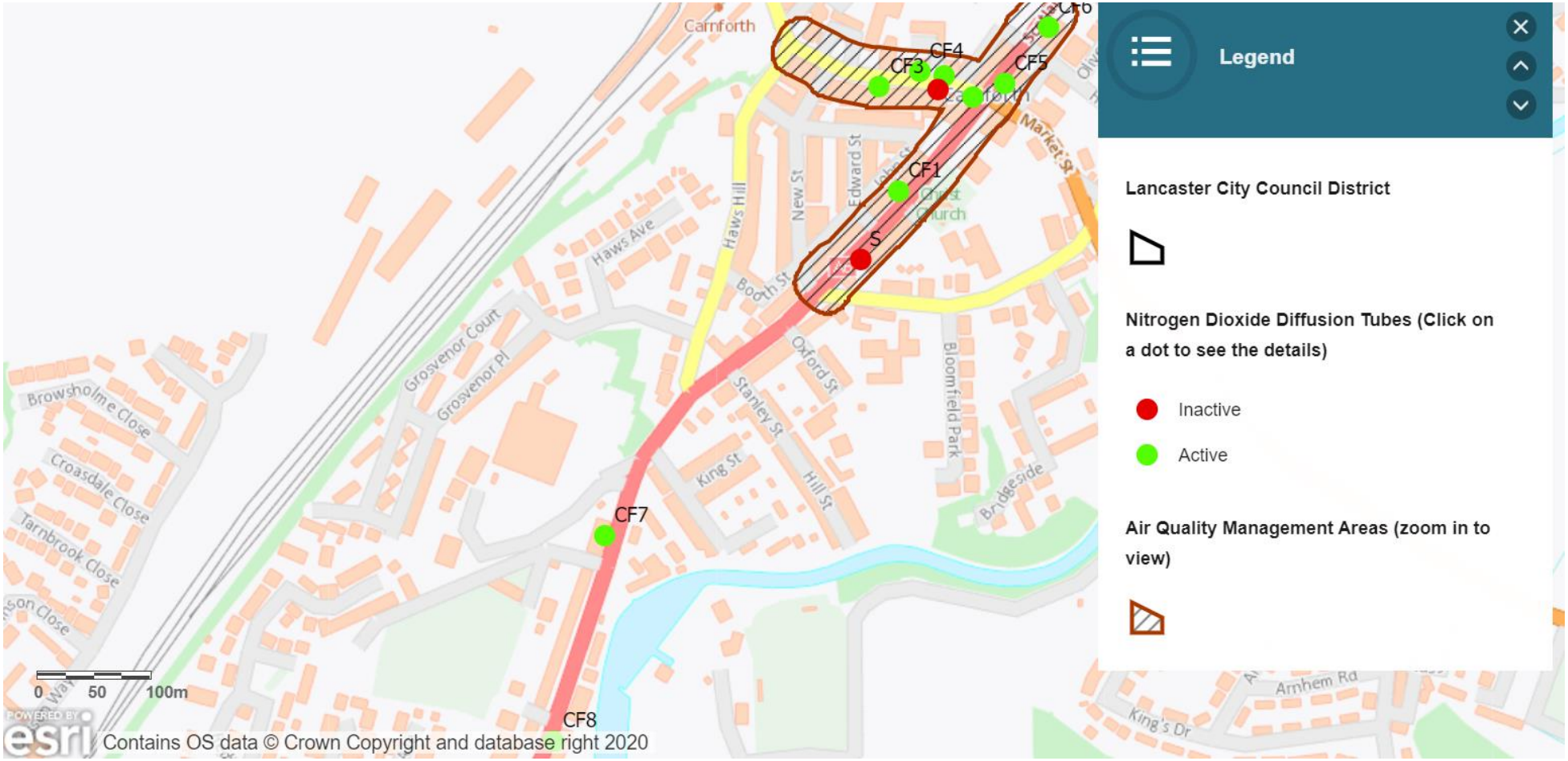


Automatic Air Quality Monitoring Station at Dalton Square Lancaster. Grey area is AQMA.



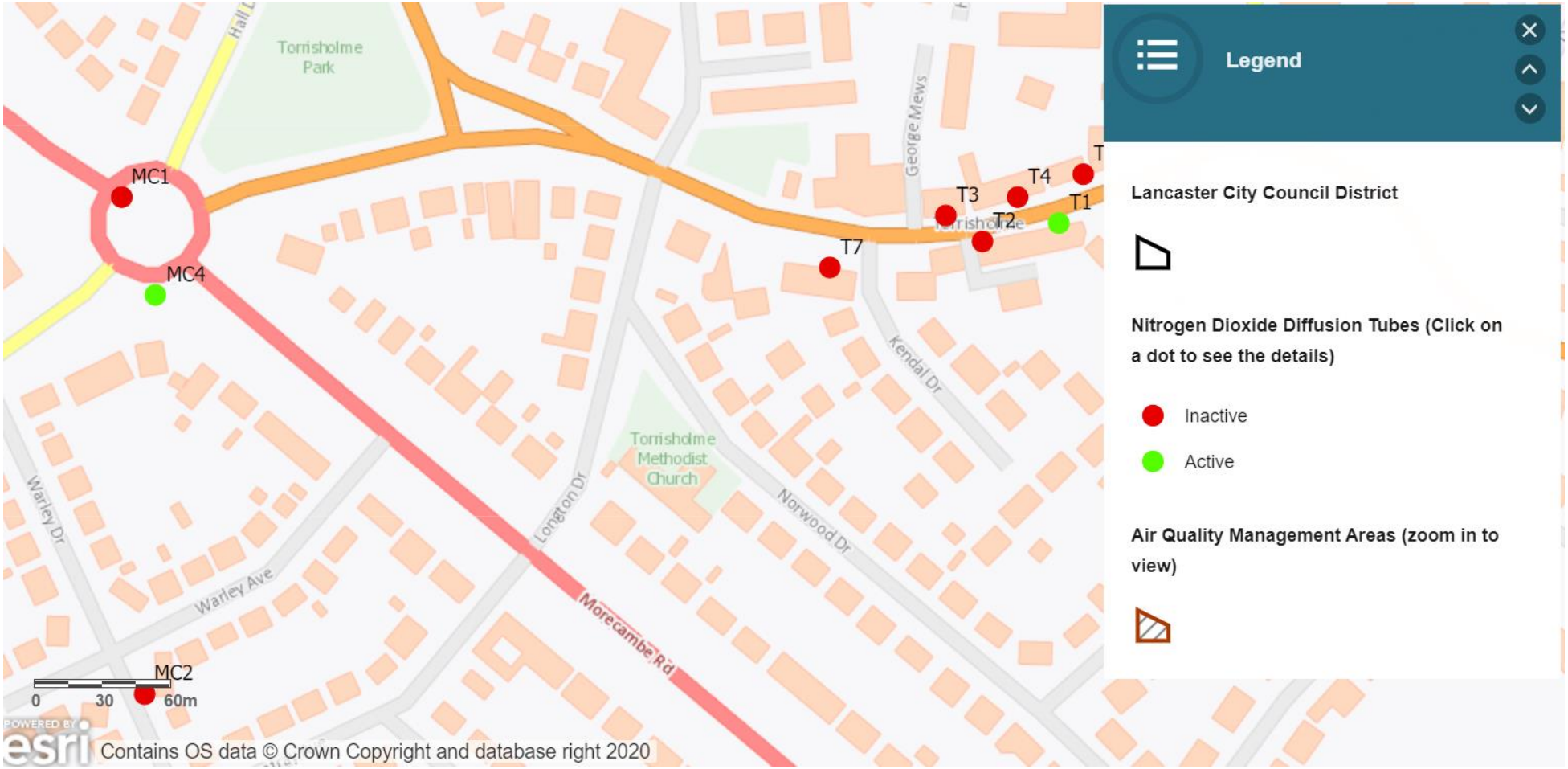
Diffusion Tube Monitoring Location Maps

Carnforth

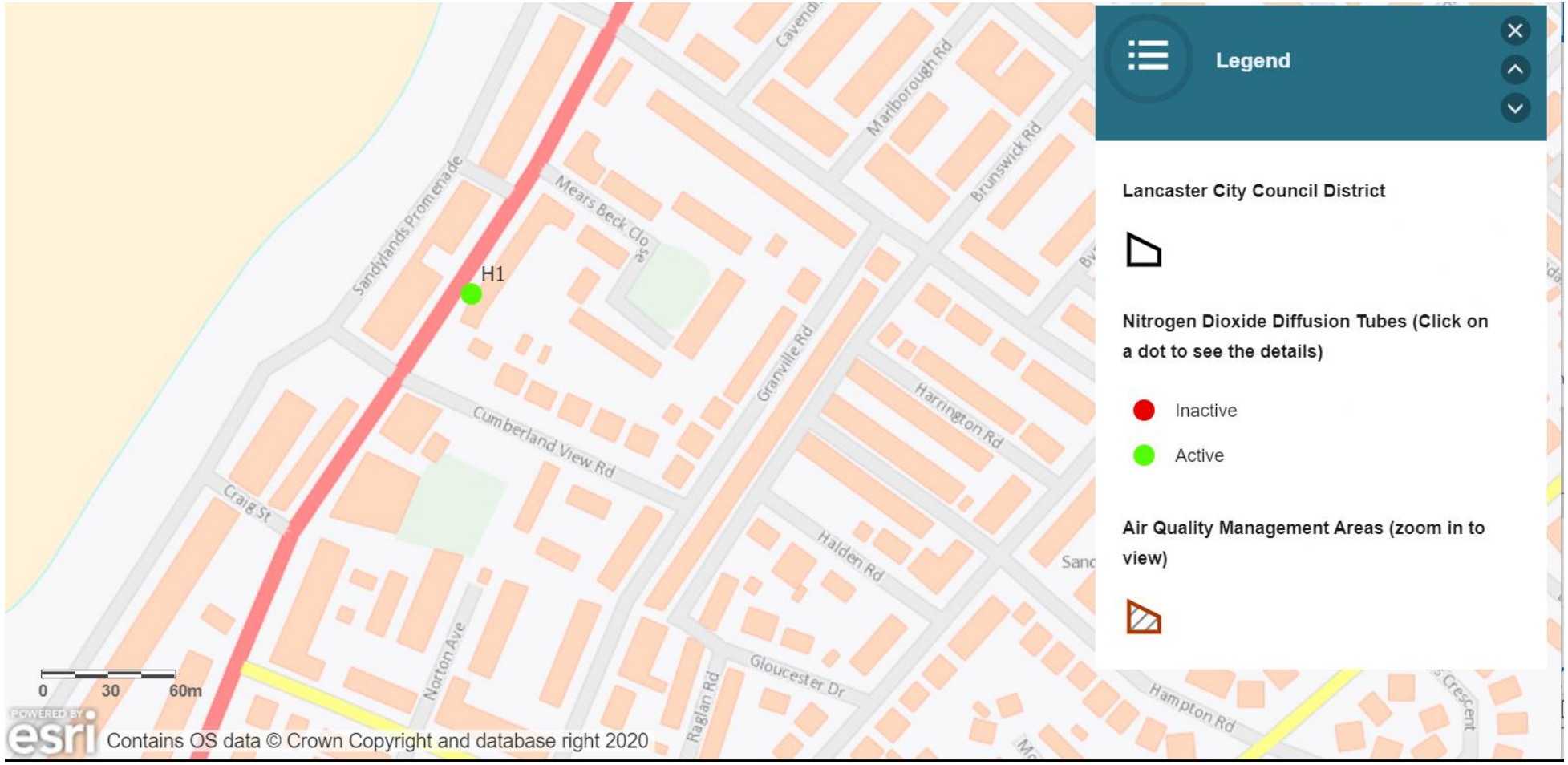


Bolton Le Sands

Morecambe

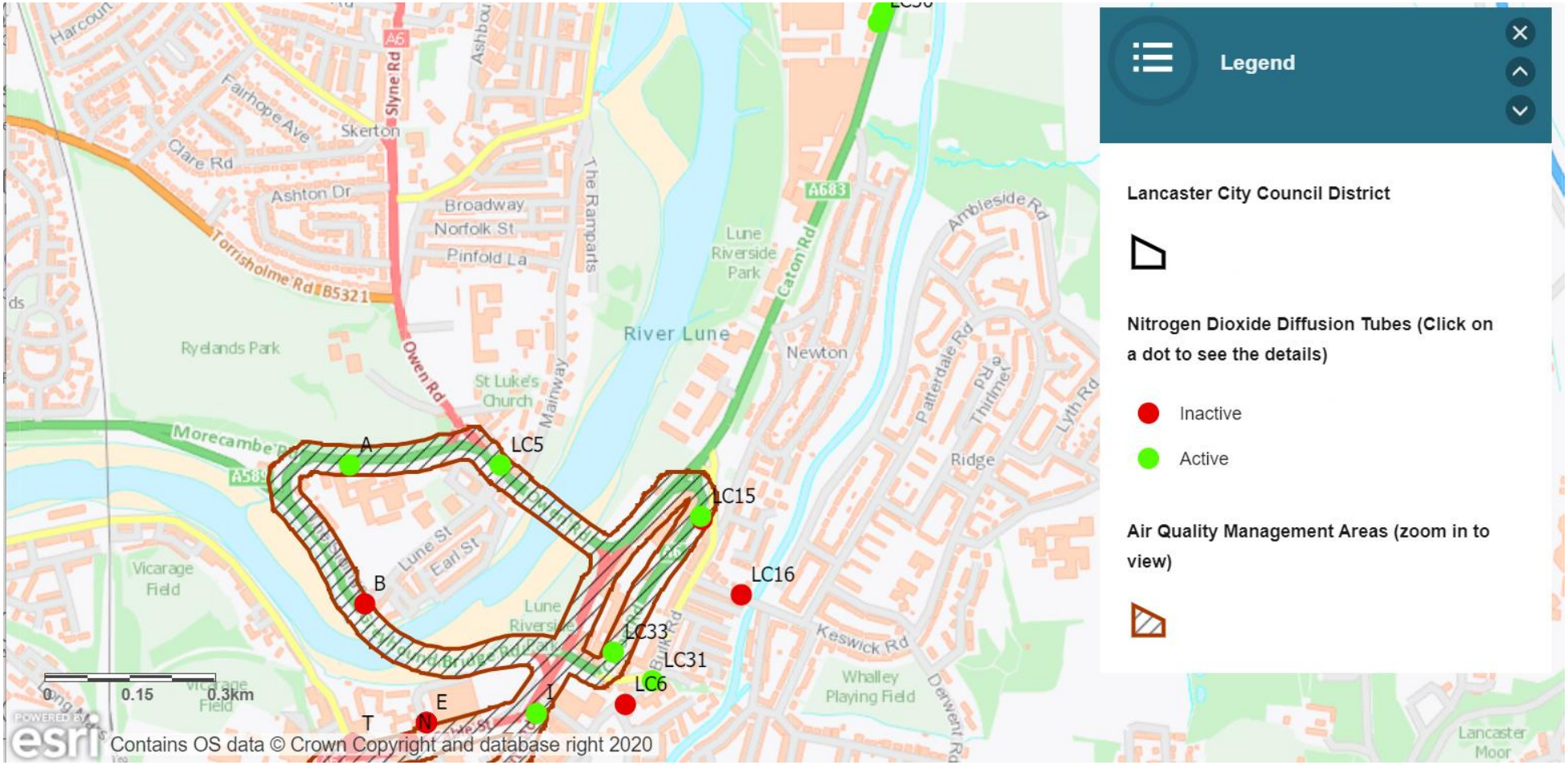

Legend
Lancaster City Council District
Nitrogen Dioxide Diffusion Tubes (Click on a dot to see the details)
Inactive
Active
Air Quality Management Areas (zoom in to view)
MC1
MC4
MC2
T1
T2
T3
T4
T7
Torrisholme Park
Torrisholme Methodist Church
George Mews
Kendal Dr
Longton Dr
Norwood Dr
Warley Dr
Warley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

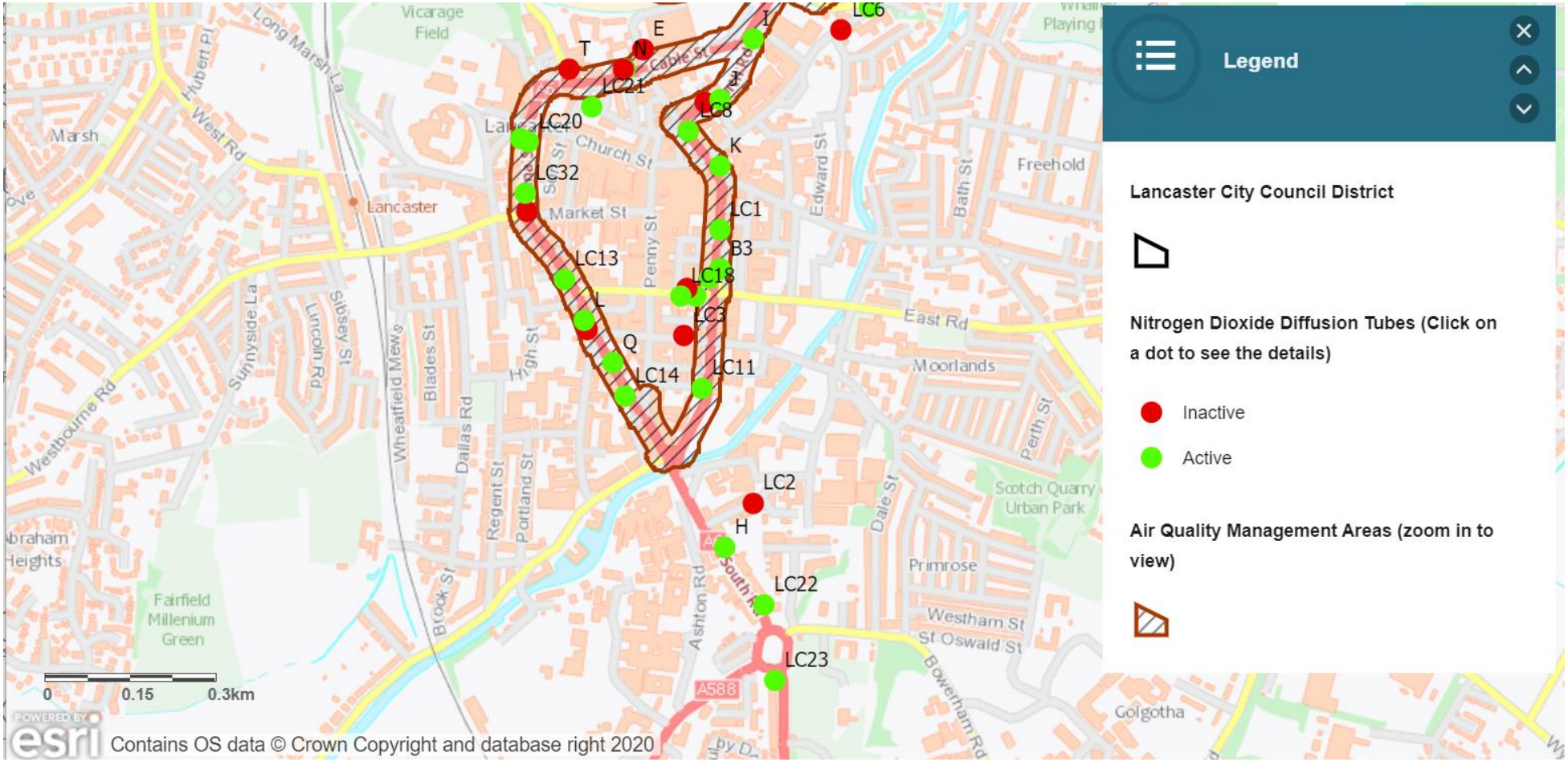
Heysham

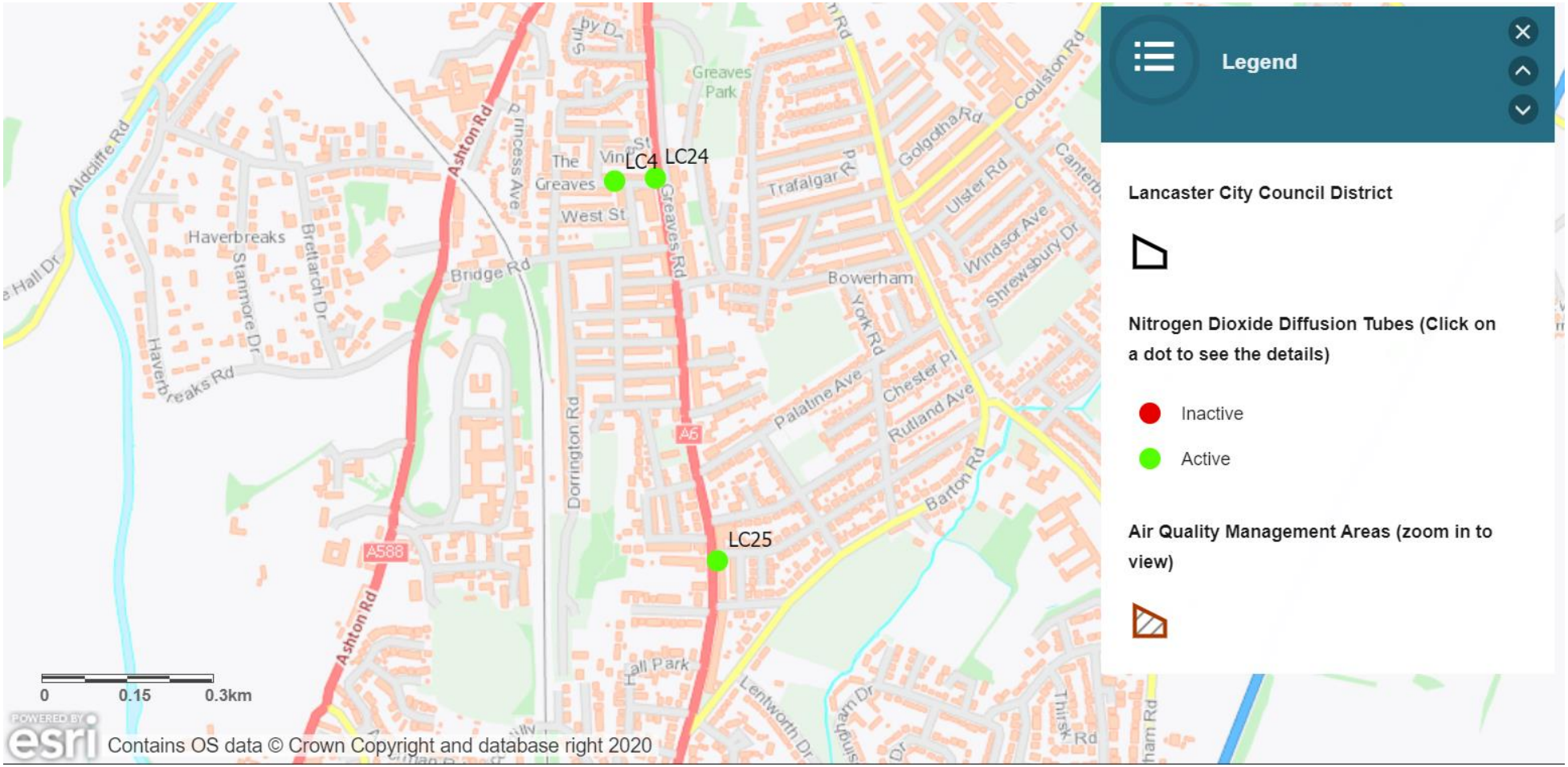

Legend
Lancaster City Council District
Nitrogen Dioxide Diffusion Tubes (Click on a dot to see the details)
Inactive
Active
Air Quality Management Areas (zoom in to view)
H1
Sandylands Promenade
Mears Beck Close
Marlborough Rd
Brunswick Rd
Granville Rd
Harrington Rd
Cumberland View Rd
Craig St
Halden Rd
Norton Ave
Gloucester Dr
Raglan Rd
Hampton Rd
0
30
60m
Contains OS data © Crown Copyright and database right 2020

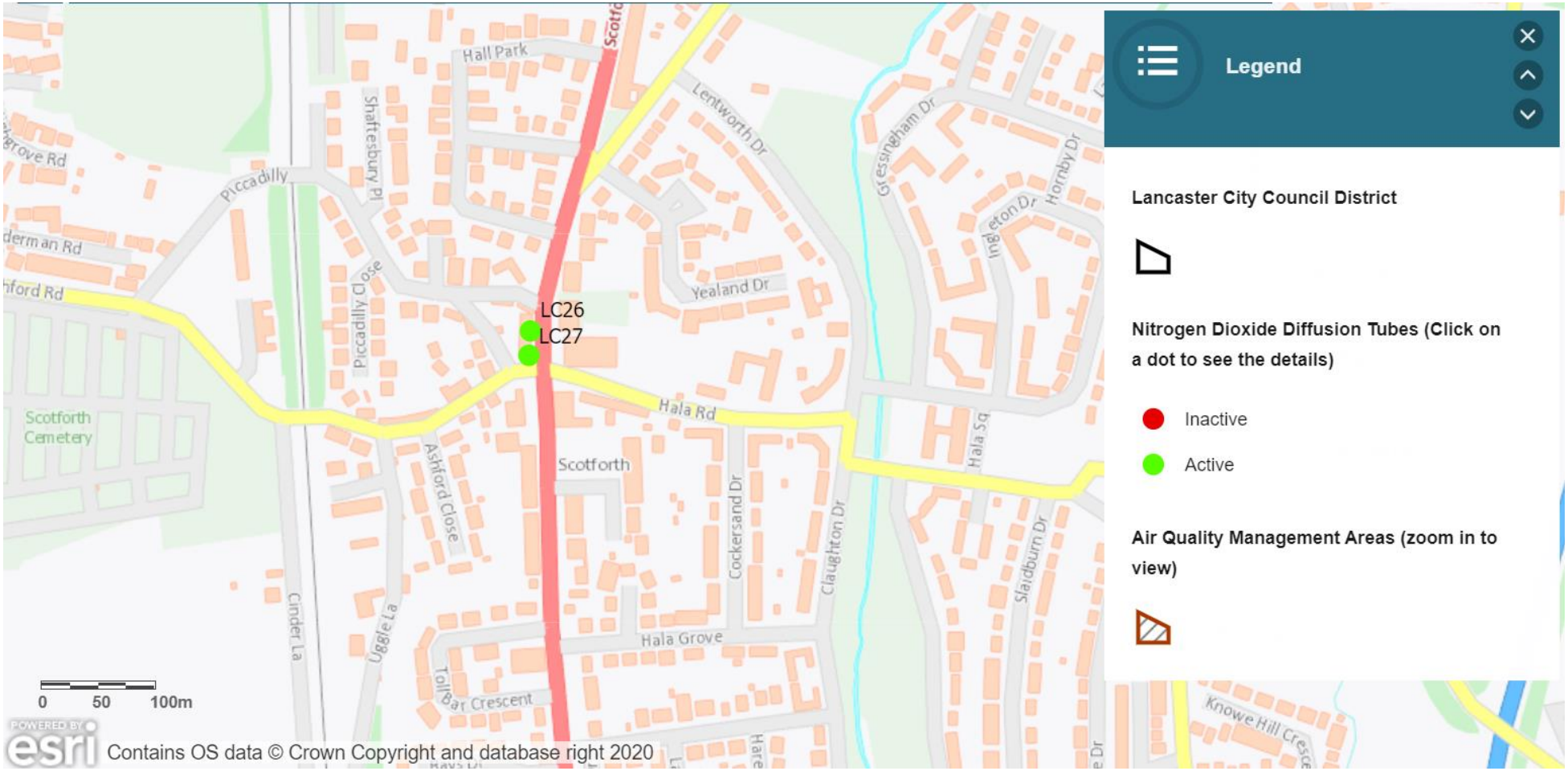
Lancaster


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
Newton
Skerton
Broadway
Norfolk St
Pinfold La
Ashton Dr
Clare Rd
Fairhope Ave
Slyne Rd
Owen Rd
Torrisholme Rd B5321
The Ramparts
Mainway
St Luke's Church
Lune St
Earl St
Caton Rd
A683
Ambleside Rd
Patterdale Rd
Thirlmere Rd
Lyth Rd
Ridge
Keswick Rd
Derwent Rd
Lancaster Moor
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
I
E
T
N
LC21
LC8
LC20
K
LC32
LC1
B3
LC13
LC18
L
LC3
Q
LC14
LC11
LC2
H
LC22
LC23
Vicarage Field
Marsh
Lancaster
Market St
Church St
Penny St
Edward St
Bath St
Freehold
East Rd
Moorlands
Scotch Quarry Urban Park
Primrose
Westham St
St Oswald St
Golgotha
Fairfield Millenium Green
Ashton Rd
Dalton Rd
Dale St
Perth St
Blades St
Dallas Rd
Regent St
Portland St
Brock St
Wheatfield Mews
Sibsey St
Lincoln Rd
Sunnyside La
Westbourne Rd
Hubert Pl
West Rd
Long Marsh La
Cable St
A588
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
Laund Gardens
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: Summary of electric taxi trade survey – August 2022

**Try before you buy type scheme for electric taxis - OVERVIEW**

| | | | |
|---|---|---|---|
| ***Number of visitors:*** | *138* | ***Number of responses:*** | *71* |

| **Who responded?** | |
|---|---|
| Licensed Driver | 25 |
| Hackney Carriage Proprietor | 28 |
| Private Hire Operator | 18 |

| **How many people would like to partcipate in the trial:** |
|---|
| 66 people said yes |
| 5 people said no |

| **Main barriers for partcipating in the trial:** |
|---|
| 1) Charging the car |
| 2) Mileage range |
| 3) Finanical impact of buying the vehicle and credit |

| **How long do you think a trial period should last?** |
|---|
| 45 people said 1 month |
| 7 people said 6 months |
| 5 people said 2 weeks |
| 1 person said 6 weeks |
| 1 person said 1 year |

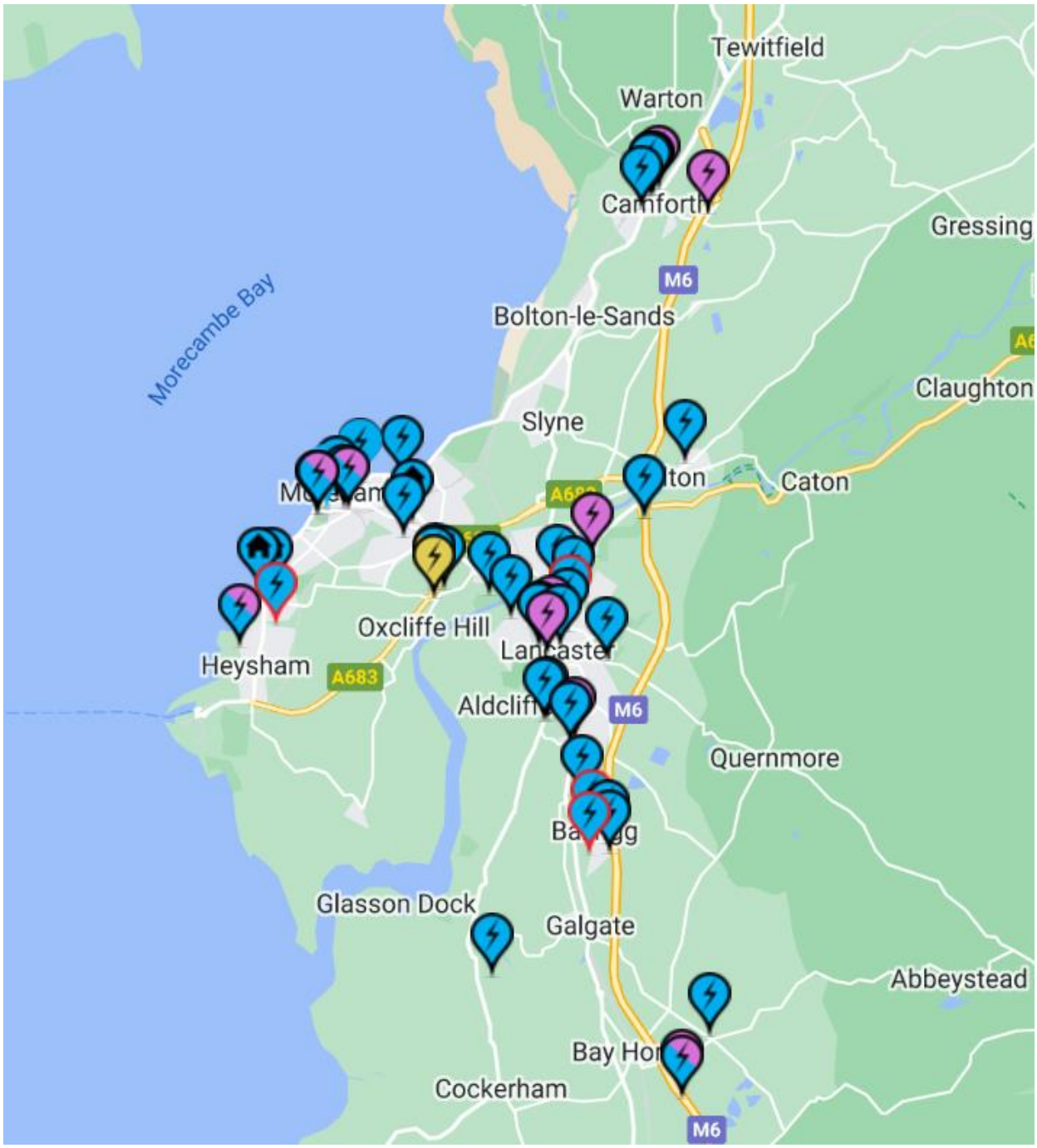
| **Are you interested in leasing an electric vehicle from us?** |
|---|
| 65 people said yes |
| 5 people said no |

| **Average miles?** |
|---|
| Common responses were between 100-300 miles |
| Some noted that on a good day they could do more than 500 miles |

| **Type of electric vehicle you would like for the trial?** |
|---|
| *Common responses included:* |
| 1) Hatchback |
| 2) A Saloon |
| 3) Estate Car |
| 4) 6 and 9 seater mini buses with wheelchair access |

| **Common suggestions?** |
|---|
| The main suggestion was placing chargers at home and queries over funding for installing one |
| Someone noted about the lack of choice of the type of electric vehicles currently available |
| Queries over terrace housing and parking issues - concerns over installing a charger and then permission to park outside the home in order to charge the car |

# Appendix G: Zap Map showing locations of electric vehicle chargers in the Lancaster district at Sept 2022.



# Glossary of Terms

| Abbreviation | Description |
|---|---|
| AQAP | Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values' |
| AQMA | Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives |
| ASR | Annual Status Report |
| Defra | Department for Environment, Food and Rural Affairs |
| DMRB | Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways |
| EU | European Union |
| FDMS | Filter Dynamics Measurement System |
| LAQM | Local Air Quality Management |
| $NO_2$ | Nitrogen Dioxide |
| $NO_x$ | Nitrogen Oxides |
| $PM_{10}$ | Airborne particulate matter with an aerodynamic diameter of 10µm or less |
| $PM_{2.5}$ | Airborne particulate matter with an aerodynamic diameter of 2.5µm or less |
| QA/QC | Quality Assurance and Quality Control |
| $SO_2$ | Sulphur Dioxide |

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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).