LANCASTER
CITY COUNCIL

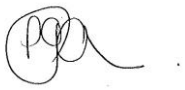
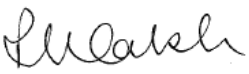
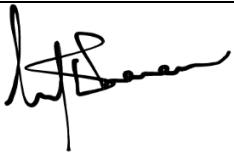
Promoting City, Coast & Countryside

2018 Air Quality Annual Status Report (ASR) for Lancaster City Council

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

October 2018

Local Authority Officer	Paul Cartmell
Department	Health and Housing Service
Address	Morecambe Town Hall, Marine Road, Morecambe, LA4 5AF
Telephone	01524 582728
E-mail	pcartmell@lancaster.gov.uk
Report Reference number	Lan/PC/ASR/2017
Date	October 2018

Prepared by	Paul Cartmell – Senior Environmental Health Officer, Lancaster City Council
Qualifications	BSc(Hons) Env. Sciences, MSc Env. Protection
Signature	
Checked by	Richard Walsh - Team Leader, Environmental Protection and Public Health
Signature	
Endorsed by	Susan Parsonage - Chief Executive, Lancaster City Council
Signature	
Endorsed by	Dr Sakthi Karunanithi, Director of Public Health and Wellbeing, Lancashire County Council. On behalf of the following Services: • Highways • Planning and Environment • Public Health
Signature	

Overview of Air Quality in Our Area

Local air quality is affected by the weather, making some years better or worse than others. Air Quality monitoring in Lancaster indicated that 2017 was a relatively good air quality year with general improvements in air quality measured at the vast majority of the Council's monitoring sites. Monitoring also indicated compliance with the air quality objectives in the Carnforth and Galgate Air Quality Management Areas (AQMAs) for the first time since area designation. It is considered that this compliance outcome is in part also due to traffic changes arising from the opening of the Bay Gateway in October 2016.

Although it is difficult to separate the impact of year to year variations and the changes resulting from the Bay Gateway, in some locations monitored levels have changed significantly which, subject to further review when traffic count data becomes available, are most likely to be attributable to the traffic changes arising from the opening of the new road. The roads indicating the most significant changes (reductions of between 7-11ug/m^3 annual mean nitrogen dioxide levels) in 2017 were on Morecambe Road/Owen Road and on Caton Road, Lancaster. Although changes in Carnforth and Galgate were less dramatic, they still were within the range of 0-6 ug/m^3 which is a significant change and also likely to be attributable in part to traffic changes resulting from the opening of the Bay Gateway.

In July 2017 Defra published the national plan to address roadside nitrogen dioxide levels (available at https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017). Unfortunately Lancaster was excluded from this plan as national modelling did not recognise monitored nitrogen dioxide exceedances in Lancaster, despite raising the issue through consultation on the plan (see item 7 in Appendix H). National support to progress plans (provided to local authorities included in the national plan) and to give priority support to local action (see Clean bus technology grant application below) has therefore not been forthcoming in 2017/18.

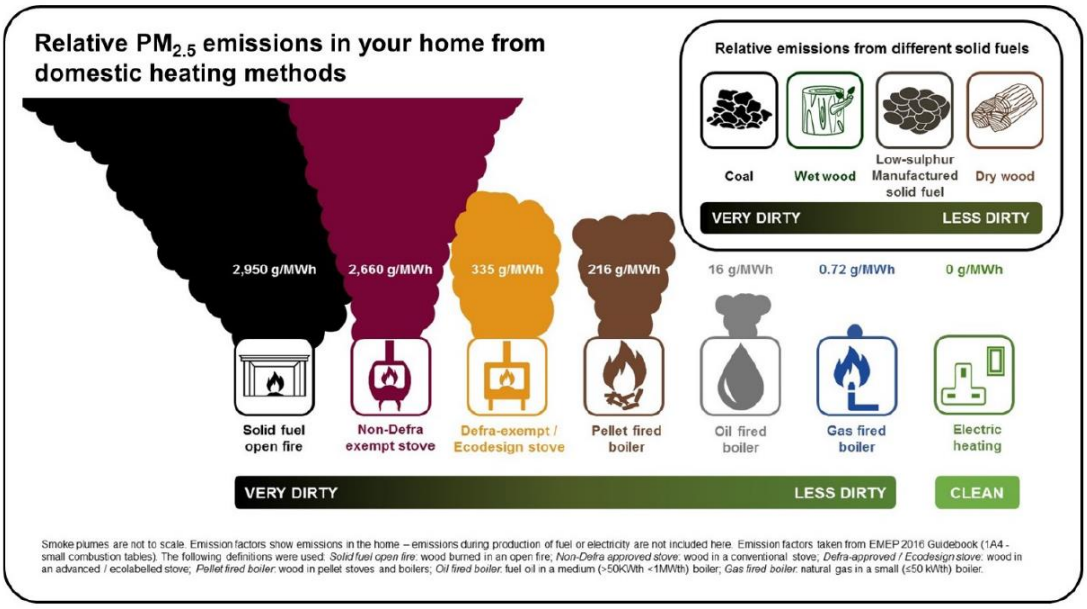
None-the-less the Council is progressing with a complete review of local air quality action plans through the linked Transport Masterplan for Lancaster. Some associated work streams have been delayed due to the need to establish current traffic baselines under 'normal' conditions which has been impeded by works to the Greyhound Bridge in Lancaster which has been closed for most of 2018. It is hoped that traffic data can be captured in October 2018 to provide a baseline for planned assessment work.

Closed Greyhound Bridge Lancaster

The increasing use of wood burning stoves has risen up the national agenda in 2017/18 as research indicates that nearly 40% of $PM_{2.5}$ particulate pollution may be attributable to the growth in people using stoves to heat their homes (see https://consult.defra.gov.uk/environmental-quality/clean-air-strategy-consultation/). Local information indicating the increase in use of solid fuels in the Lancaster district is not currently available, however, the Council annually receives complaints regarding the impact of such installations. Because of the potential air quality/pollutant impact of using a wood burning stove, the choice to install and regularly use such an appliance should be a key consideration for those thinking of selecting this method of heating. Repeatedly breathing air affected by smoke, either inside or outside your home, is not beneficial to health. Figure A below shows the

difference in particulate emissions inside your home from the various heating choices that are generally available.

Figure A – Figure showing the difference in particulate emissions inside your home from different heating methods.



Source : Consulataion on draft National Clean Air Strategy 2018, available at : https://consult.defra.gov.uk/environmental-quality/clean-air-strategy-consultation/

Despite the recognised growth in solid fuel use and associated air quality impact, currently, the main air quality issues in Lancaster are considered to remain highlighted by the three Air Quality Management Areas. The council continues to monitor air quality in these areas to track changes. The main pollution source in these areas continues to be road vehicles.

Electric vehicles are presented as the longer term prospect of significant air quality improvement at roadside locations within the air quality management areas and generally across the district. The Councils are therefore pursuing changes to support this. This includes changes to planning policy and guidance to drive the provision of vehicle charging infrastructure and the provision of charging infrastructure directly through grant funding awards to the County Council (see appendix G) and to the City Council through the ‘On Street Residential Chargepoint Scheme’ run by OLEV (See

Appendix I). The latter included a bid to support the 'Charge My Street' community project (see https://www.chargemystreet.co.uk/)

Although sales of electric vehicles are very much on the increase, petrol and diesel vehicles will still dominate vehicle sales in the UK in the short term and will obviously remain active for years to come. Therefore intervention is still required to meet compliance with air quality standards, particularly in central Lancaster (see Figure B below).

As an integral part of the transport masterplan process, consultation on a new air quality action plan for the Lancaster district will commence in 2018. Given their highways and public health roles, the main consultee in the process is the County Council. However other stakeholders will also be consulted to gather and consider options for the plan and to progress to the next assessment stage over the next 12 months. This consultation is open to everyone who would like to contribute. If you wish to provide any suggested actions that should be considered for the new plan please send them to environmentalhealth@lancaster.gov.uk under the subject heading of 'Suggested Air Quality Action Plan Measures for the Lancaster District '.

Although the two councils are progressing their roles to deliver better air quality, everyone still has a very important part to play in reducing air pollution. Simple things like walking or a bike ride to work or school will benefit air quality as well as have knock-on benefits for your health and the environment. Electric bikes present a new opportunity to make cycling more accessible to everyone. If you need to travel by car, consider lower emission options, particularly electric vehicles. If you live in an urban, built up area, choose not to use wood or other solid fuel to heat your home or having garden bonfires where garden waste could be composted, collected or taken to a recycling centre. The use of recreational garden wood or solid fuel burning heating appliances (fire bowls, fire pits, chimineas etc…) are also not helpful in reducing pollution as like bonfires, they emit relatively high levels of pollution which are released at low levels where they can easily affect both you and your neighbours. The choices and actions of individuals are key to improving the air we collectively breathe or making it worse.

Air quality in Lancaster

Currently the main air quality issues in Lancaster remain linked to emissions from road traffic. These emission continue to cause exceedance of air quality objectives for the pollutant nitrogen dioxide (NO_2) and contribute towards elevated levels of particulate (PM_{10} and $PM_{2.5}$).

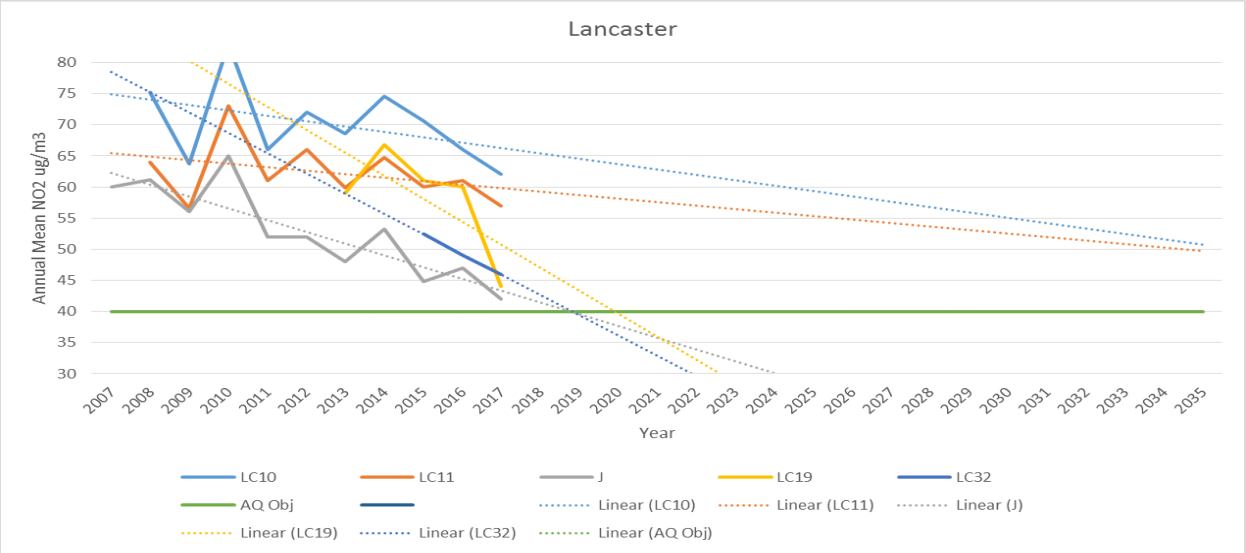
Exceedance of nitrogen dioxide levels has resulted in designation of three Air Quality Management Areas (AQMA's) located around the gyratory system in Lancaster City and at the main cross road junctions in Carnforth and Galgate (see Table 2.1 below for more information). The AQMA order for Lancaster was amended in February 2018 to include the potential exceedance of the short term nitrogen dioxide objective. The amended order is available at https://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality/lancaster-air-quality-management-area-aqma .

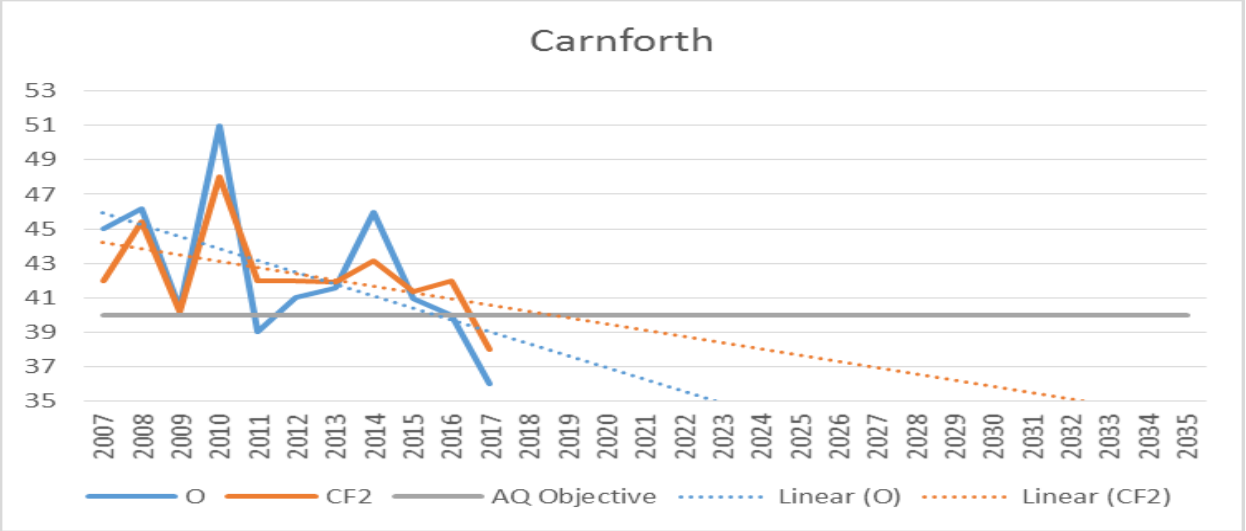
Monitoring results in 2017 for the first time indicate compliance with air quality objectives in both the Carnforth and Galgate AQMA's. Results in the Lancaster AQMA were mostly lower than previous years but still indicate exceedance of the annual mean/hourly mean nitrogen dioxide objectives. Overall monitoring results in 2017 indicated that 2017 was generally a better air quality year with results overall being reduced on levels monitored in 2016 by between 1 and 4 ug/m^3 and continue to indicate a declining trend (See Figure B below). For Lancaster centre there is however some way to go before pollution levels meet air quality objectives in all locations.

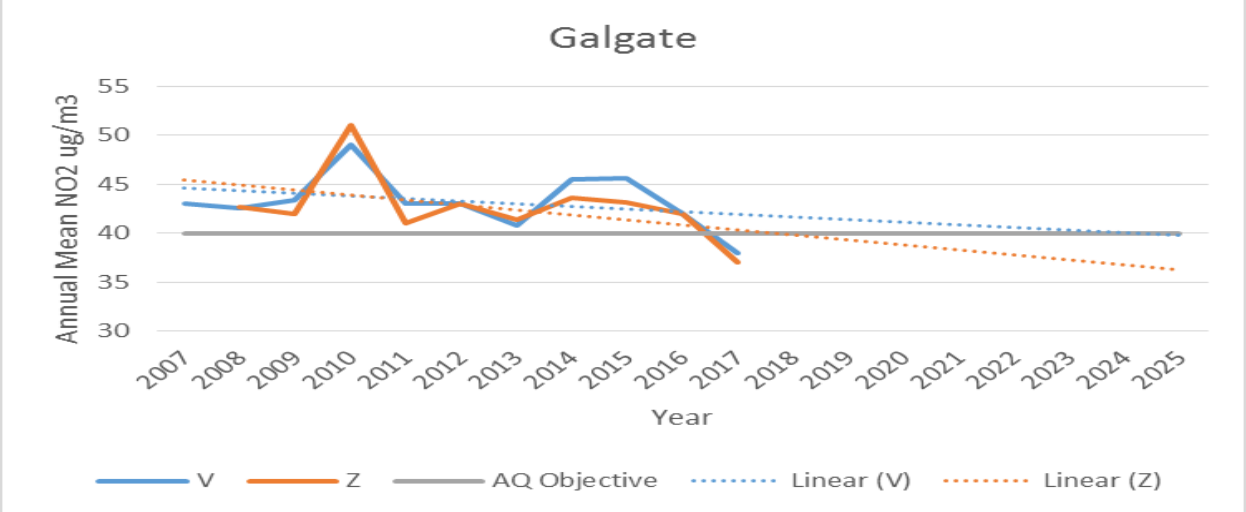
Traffic in Lancaster City Centre

In 2017 monitored roadside nitrogen dioxide levels at Dalton Square and Thurnham Street, Lancaster exceed the objective by around 50% (levels currently monitored are around 57-62 ug/m^3.) In China Street indicative levels monitored are between 44-60ug/m^3. The objective level is 40ug/m^3.)

Figure B – Graphs showing indicated declining roadside NO_2 pollution levels in Lancaster, Carnforth, Galgate AQMA's (annual mean NO_2 ug/m^3)







Local actions to improve air quality

There are currently remain three main actions in progress to address air quality issues in Lancaster:

- A Transport Masterplan for Lancaster was adopted in October 2016 (see http://www.lancashire.gov.uk/council/strategies-policies-plans/roads-parking-and-travel/highways-and-transport-masterplans.aspx). The production of an effective air quality action plan is scheduled within this plan and is reliant on other work to progress and detail the master plan. Unfortunately progress has been delayed in 2018 due to the need to obtain 'normal' traffic count data (to form the baseline for future assessment), this being thwarted by repairs to Greyhound Bridge.

Repair Work to Greyhound Bridge in Lancaster nears an end

Greyhound Bridge is due to reopen in October 2018 and traffic data will hopefully be gathered during October. Formal consultation on the measures to be considered within the new district wide air quality action plan will commence at the same time (October 2018) and the consultation will remain open for the first half of 2019.

Certain actions continue to be progressed in advance of the new action plan being adopted including the introduction of local air quality planning guidance. This was adopted as a Planning Advisory Note (PAN) in September 2017. The guidance aims to set basic air quality mitigation requirements for new development and set a new method of assessment to better account for contributory air quality impact. In Lancaster the intention is to adopt the guidance as a Supplementary Planning Guidance document during 2019 following required consultation. The adoption of the guidance as a PAN is an interim measure and sits alongside the existing PAN on electric vehicle charging requirements. The electric vehicle charging PAN was also updated in September 2017(see https://www.lancaster.gov.uk/planning/planning-policy/supplementary-planning-documents-spds).

- The Bay Gateway (M6/Heysham link road) opened in October 2016. Assessment of the impact resulting from traffic changes continues through ongoing air quality monitoring. In 2017 monitoring results indicated a marked improvement in air quality along Morecambe Road/Owen Road and along Caton Road Lancaster. Monitoring also indicated that both Galgate and Carnforth AQMAs met air quality objectives for the first time since area designation.

The Bay Gateway

- In November 2015 a bid was made to provide improvements to buses to reduce emissions (involving the County Council, the City Council, Stagecoach and Greenurban Limited) under the Department of Transport, Clean Bus Technology Fund 2015. This application was successful and a full bid award

of £288,180 was granted. Unfortunately procurement arrangements and contractual requirements have again delayed implementation which was originally planned for 2016/17. Delivery is now due to commence in February 2019. This measure is anticipated to have an impact of reducing nitrogen oxide levels in the Lancaster AQMA by around 4% (this was re-calculated using new emission factors available in 2017). Another grant bid to retrofit another 57 Stagecoach buses operating in Lancaster was made in 2017, however the bid was not successful. From the issued grant decision letter, this was considered to be primarily due to Lancaster's exclusion from the national roadside nitrogen dioxide plan.

There are also a number of other actions that are in progress or are being developed. A full list of actions is contained in Table 2.2 below, however the following are currently priorities:

- An ANPR camera system was installed in Lancaster centre in June 2017. The system was first used in September 2017 and will continue to be used to inform and monitor the transport masterplan/air quality action plan for Lancaster. The system is also planned to be used to provide annual air quality progress indicators. The installation of ANPR cameras was a Defra grant funded project (£30k award from the Air Quality Grant Fund).

- The city council is consulting local taxi operators and drivers with a view to encourage and support the use of electric vehicles as taxis. A Lancashire wide event run by CENEX was held at Morecambe Town Hall on national Clean Air Day. A follow up event took place on the 27 September 2018 proposing licensing changes to support a possible grant bid on the ULEV Taxi Charging Infrastructure grant scheme operated by OLEV (see https://www.gov.uk/government/publications/ultra-low-emission-taxi-infrastructure-scheme-round-2). The amended closing date for a grant application is the 30 November 2018.

- The city council has obtained funding from the OLEV On Street residential Chargepoint Scheme (see http://www.energysavingtrust.org.uk/transport/street-residential-chargepoint-scheme) to provided electric vehicle charging at a number of its car parks (located at the Charter House, Auction Mart and Upper Leonards Gate car parks in Lancaster and the Morecambe Library and West View Car Park in Morecambe). The charging points should be available for use by the end of March 2019 (See Appendix I).

- The council is working with a local community project (Charge My Street) to support the provision of charging facilities for electric vehicles (for residents who do not have off street parking at their homes). Funding was obtained through the OLEV 'On Street residential Chargepoint Scheme' to install charge points at the Dallas Road Boys and Girls Club in Lancaster. The charging points should be available for use by the end of March 2019 (see Appendix I).

- The county council is due to deliver 34 public accessible electric vehicle charging outlets in the Lancaster district (see appendix G). Delivery of infrastructure has been delayed but is now due to be installed by the end of March 2019.

- The Council has been working with Lancaster University and County Public Health to support a research programme looking at the effect of installing greening measures on roadside particulate pollution levels. Monitoring provided by the air quality station at Cable street Lancaster has temporarily being used to help assess the impact of 'greening' measures (using selected trees/plants to reduce particulate pollution). Lancaster University will provide a report on findings to potentially help inform the use of similar measures in other locations across Lancaster/Lancashire. The outcome of this research will be reported in the next annual status report.

Greening measures research project in Cable street Lancaster

- The Council has adopted indicators to track air quality progress. The first indicators (for roadside air quality and air quality away from roads (background)) were reported in 2017 and will be reported annually. It is planned for the indicators to be expanded to track the introduction of electric vehicles. Appendix L contains the two indicators reported in 2017.

Air Quality and County Council Public Health

The Director of Public Health and Wellbeing report 2016 for Lancashire makes clear the need to tackle the wider determinants of health including promoting healthy living environments through for example, increased walking and cycling whilst also making clear the need for sustainable behaviour change including tackling physical activity. It also outlines the need for telecare and harnessing digital technology whilst also joining up services in neighbourhoods. Combined these actions should reduce the level of road use and therefore ultimately reduce the levels of particulate matter emitted.

Within Lancashire County Council (LCC) Public Health is taking a central role internally to ensure services are aware of the impacts of air pollution and what changes they can make to reduce pollution and exposure to pollution for our residents, working with District Council partners. In Summary the following activity is underway or in development:

Lancashire and South Cumbria Air Quality Summit

An event to raise awareness of air quality issues, share what we already know and improve engagement for action was held at Lancaster University on 28th February 2018. The Summit was funded by Public Health England and Chaired by the Director of Public Health from Blackburn with Darwen with involvement from Public Health departments from Lancashire, Blackpool, Blackburn and Cumbria and the University. Over 60 people attended to hear presentations on the health impact of pollution, local approaches to action, including transport planning and Prof Barbara Maher from Lancaster University introduced her research, including emerging evidence of particulate matter in the brain of patients with Alzheimer's disease.

Feedback from the event is being collated to form the basis of a report to identify priorities and inform future action planning, to be published on National Clean Air Day on 21 June 2018 (the arising communication plan is included within Appendix J and

report available at https://www.lancashire.gov.uk/health-and-social-care/your-health-and-wellbeing/keeping-physically-healthy/air-quality/).

Health Impact Data

Information about the impact of air pollution on health is available on the Lancashire Insights webpages. This includes an Air Quality and Health 'dashboard' published in May 2018 on the respiratory disease pages. The dashboard provides information on emissions and prevalence of health conditions that can be affected by poor air quality such as Asthma and Chronic Obstructive Pulmonary Disorder (COPD). The dashboard also provides the mortality ranking for Lancashire for PM2.5 using the methodology outlined in the Air Quality Briefing for Directors of Public Health.

A summary of emissions by source is available on the air quality pages of the Lancashire Insights page and in November 2017 a detailed emissions inventory with further analysis of road transport emissions was published. When the National Atmospheric Emissions Inventory data is updated later this year the summary will be refreshed to include a breakdown by other emission sources.

Spatial Planning

There is closer working between Public Health and both county and district planning teams to consider how future local plans can mitigate the effect of poor air quality, as well as address wider public health issues, such as improved opportunities for physical activity and access to green and open space. Public Health is supporting the adoption of Air Quality Planning Policy Guidance developed by Lancaster City Council to assist developers to support action through the planning system to improve air quality.

Research, led by Lancaster University's Professor Barbara Maher, will be undertaken to look at the impact of plants on reducing particulate matter air pollution. Lancashire County Council Public Health and Highways attended an initial meeting with Lancaster City Council to discuss and agree the research which will involve placing plants in pots on the footpath and on railings alongside the road in the area of Cable Street to measure their impact at reducing particulate matter over a period of several months. Previous initial research by the University found a 50-60% reduction in

$PM_{2.5}$ in homes of those affected when vegetation strips were used. Lancashire County Council Public Health aims to use the evidence generated from this research, as well as evidence that already exists on this topic, to inform a public health advisory note about the use of strategically sited plants to reduce exposure to particulate matter air pollution at the end of this year.

Transport Planning

A significant number of air quality issues are a result of high volumes of traffic. Work to develop the next Local Transport Plan (LTP4) for Lancashire, Blackpool and Blackburn with Darwen is now underway and the Public Health team has submitted an evidence base to the process. It highlights transport related health challenges that affect the population of Lancashire and makes 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. Stakeholder engagement and consultation will be carried out during 2018-19.

The Strategic Highways Planning team incorporates air quality considerations in action planning to aid in the identification of highway measures. Local Highways and Transport Masterplans have been developed in consultation and set out major changes to the highways, public transport, walking and cycling facilities and drive investment highways and transport across the County. Funding is sought from a number of sources including National Productivity Investment Fund, Lancashire Growth Fund and City Deal to enable schemes identified in the plans to go ahead.

In time the Masterplans will be refreshed to align with the priorities of LTP4, which will provide an opportunity to identify network improvements that would have a positive impact on air quality.

A number of major transport schemes identified in the current masterplans are underway or being planned, including the East Lancashire Strategic Cycleway Network, Penwortham Bypass and Pennine Reach. Recently completed schemes include the Broughton Bypass and The Bay Gateway (the Heysham to M6 link road).

A future aim is to be able to measure the impact of major transport schemes on air quality in real terms.

Network Management

Reducing queues at and around junctions therefore removing waiting times, moving congestion away from junctions and smoothing the flows of traffic particularly at motorway junctions are priorities for all network management schemes that can also have a positive impact on air quality. An AQMA layer has been added to the County Council's mapping system enabling transport planners and network management to utilise this information when making decisions about the network.

In built up areas with traffic signal junctions, minimisation of start stop of traffic flow is currently achieved by the use of Intelligent Traffic Systems mostly via signal control systems. This software controls signal timings which minimises overall traffic delay (reducing start and stops) in a road network. The County Council also collects traffic count data to support district air quality modelling.

Sign-only 20mph areas have been introduced in many residential areas in Lancashire to reduce accidents and encourage walking and cycling, these will have a small effect on reducing particulate emissions. The impact of sign-only 20's has been the subject of a national DfT sponsored review and the impact on air quality is one of the elements being considered. The findings of the study are yet to be shared.

Active Travel

The Lancashire Walking and Cycling Strategy is due to be published later this year following formal approval from the three Lancashire Local Transport Authorities – Lancashire, Blackburn with Darwen and Blackpool Councils. Work has now commenced on the preparation of Local Cycling and Walking Infrastructure Plans (LCWIPs) for the five Lancashire Highway and Transport masterplan areas. With support from Department of Transport consultants, LCC are initially working to prepare LCWIPs for Lancaster and West Lancashire by the end of March 2019. The outcomes from the LCWIP preparation will be: a network plan for cycling and walking infrastructure; a prioritised list of schemes for delivery over short, medium

and long term timeframes; and a robust evidence base report. The LCWIPs will then be used to guide future infrastructure decisions and funding requests and to integrate cycling and walking more effectively into local planning and transport policy.

Working in partnership with Blackburn with Darwen Council, Lancashire County Council is now in the second year of delivery of the three-year Connecting East Lancashire 'Access Fund' programme. A dedicated team of Business Travel Planners has been recruited to visit employers promoting active travel and modal shift. Grants have already been allocated to businesses, workplaces, colleges and relevant organisations in East Lancashire for showers, lockers and cycle storage etc. 'Love to Ride', an online business to business cycle challenge will be proactively promoted throughout Lancashire throughout the summer.

The County Council's Safe and Healthy Travel team work with schools, the community and workplaces to encourage sustainable modes of travel. LCC has a duty to produce an annual Sustainable Modes of Travel (SMOT) Strategy under the Education and Inspections Act 2006.
The strategy sets out approaches to promote sustainable travel to and from school. School travel plans are reviewed as required and can be discussed with Officers from the Safe and Healthy Travel Team during meetings with the school. The DFT backed national scheme for school travel plans called Modeshift STARS is supported by LCC.

Initiatives for schools to encourage walking and cycling include: theatre productions, school gate parking 'A' boards, Walk to School resources, digital board games, local zone route maps, safety promotional literature, high visibility jackets for walking and cycling uses, a bespoke training scheme for balance bikes and ongoing safety based training schemes for walking and cycling (e.g. Right Start, Bikeability and Passport to safer Cycling). These training schemes continue to be offered to all Lancashire primary schools and uptake is excellent. Walking school buses continue to be promoted and we are currently updating our walking bus literature to enable schools to set up a walking bus with parents/carers easily and effectively.

Low Emission Vehicles

The County Council has now signed a 10 year contract with Chargemaster to provide (initially) 150 electric vehicle charging spaces across the county. The initial mix of chargers is expected to be 18 Ultra chargers (capable of charging a car from 0-80% in around 30 mins) and 66 Dual outlet Fast chargers (capable of charging 2 cars from 0-80% in 3-4 hours).

The charge points will be on the POLAR network which is a nationally accessible scheme run by Chargemaster allowing existing customers visiting Lancashire to use the machines immediately. The current timetable is to have all these initial machines installed this calendar year. As part of the contract a basket price has been secured for the chargers to allow the purchase further machines. Further information is contained in Appendix G.

Bus operators and district councils are supported in applying for funding such as 'cleaner. bus grants. LCC submitted an application on behalf of Preston and South Ribble Councils to the Bus Retrofit Grant Fund, launched in September 2017 by DfT and Defra. The application was, however, unsuccessful.

Public Awareness

General information with links to the Defra national alert system and advice on what to do when pollution levels are high has been added to the County Council's "Your health and wellbeing" webpages as part of provision of information to the public on how to stay healthy and well.

Public Health continues to work with the Safe and Healthy Travel team to provide information to and engage with schools on the issues of air quality, particularly those schools close to AQMA areas, linking with existing work and resources to promote walking and cycling and inappropriate parking at school drop-off and pick-up times.

The County Council will join partners in promoting National Clean Air Day on 21st June 2018.

Public Health evidence reviews

A key role for Public Health is reviewing evidence to inform policy and intervention design. During 2018-19 evidence reviews under consideration include the impact of domestic wood burners, this is with a view to inform public behaviour and choice on the use of domestic burners, and effective actions to inform taxi licensing policy.

Local Priorities and Challenges for coming year (2019)

Within the three air quality management areas air pollution levels are still elevated and in the Lancaster AQMA remains above objective levels (see Figure 1 below). Monitoring results do however show indication of roadside levels decreasing, particularly over the last 4 years. The position however remains that the rate of decrease is insufficient to produce compliance with objective standards within the near future without new intervention (see Figure 1a below). Pollution levels at locations away from main roads (see Figure 1b below) continued to indicate gradual improvement.

Figure 1 - Pollution levels (nitrogen dioxide) in Lancaster AQMA for highest six monitoring sites 2007-2017

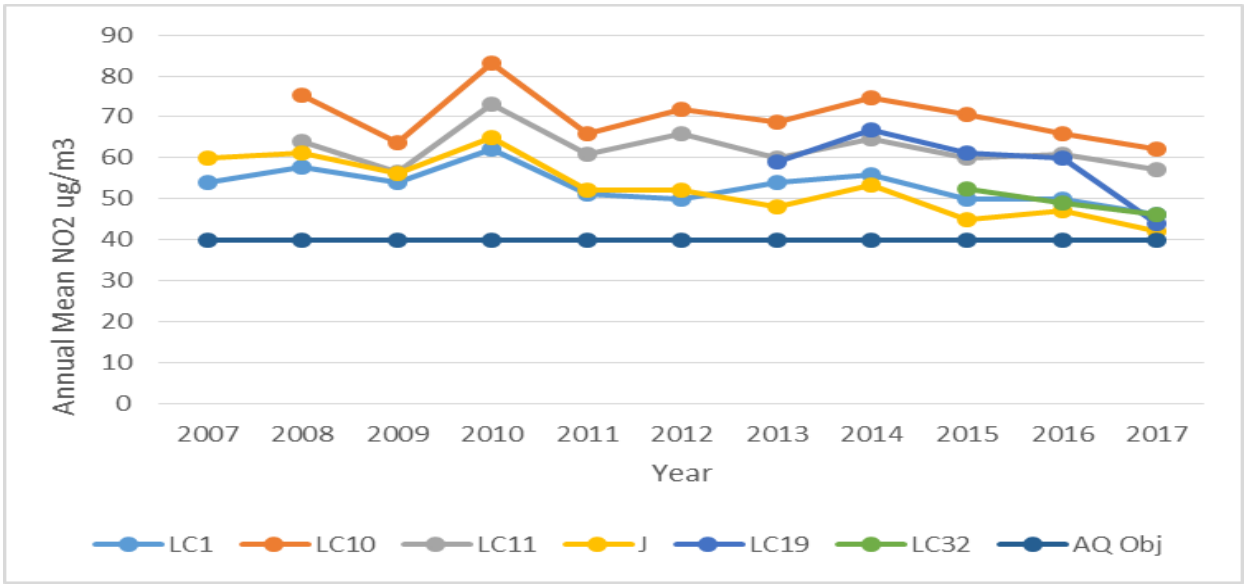


Figure 1a - Pollution levels trends at monitoring sites within the Lancaster AQMA 2007-2035

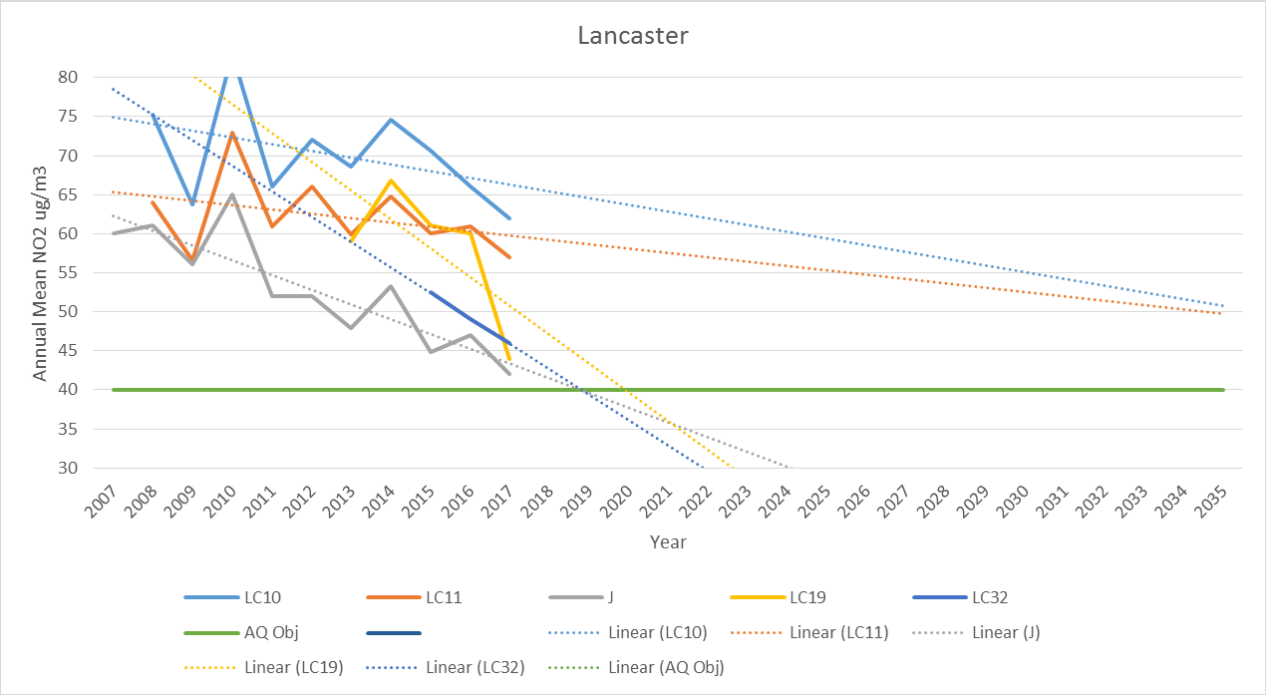
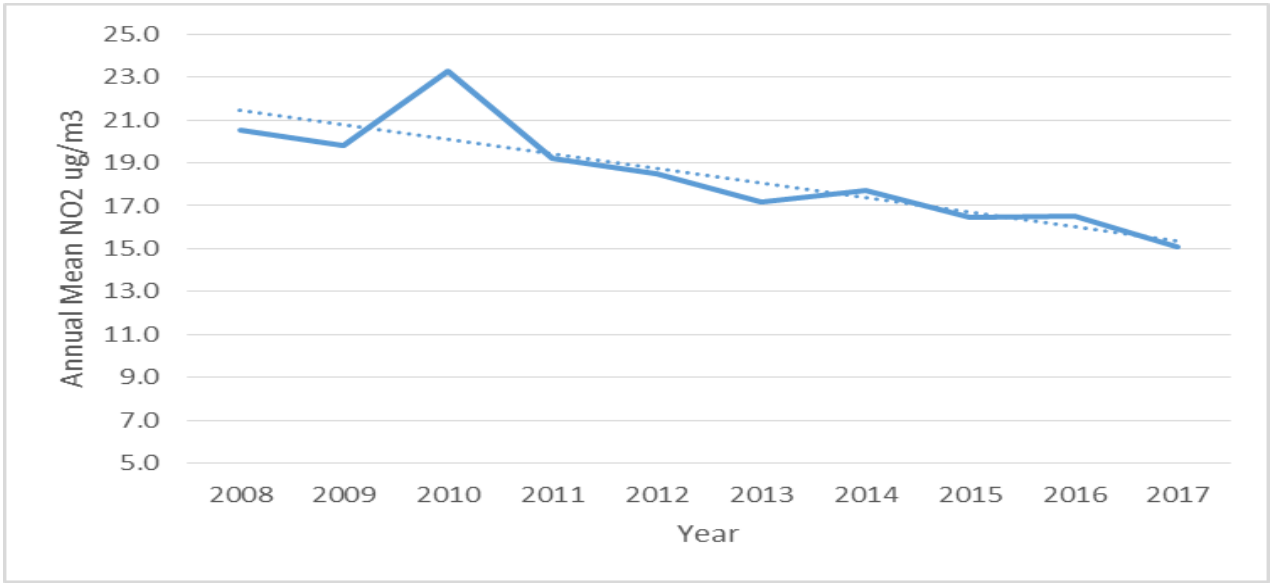


Figure 1b - Pollution levels (nitrogen dioxide) at urban background monitoring site in Lancaster 2008-2017



Although actions are in progress to reduce pollution levels (e.g. grant funded bus emission reduction, local planning guidance, the Bay Gateway etc..) and the ongoing introduction of newer vehicles are anticipated to lead to general improvement, the delivery of a robust and effective transport masterplan (and accompanying air quality action plan) remains the key to ensure future pollution levels continue to reduce and are below health based standards as soon as possible throughout the district.

Consideration of options under the plan (the bus rapid transit route, the cycling plan/cycle super highway) are underway however quantified impact assessment work has been delayed due to the need to obtain baseline traffic data following the opening of the Bay Gateway and pending opening of the repaired Greyhound bridge. Key measures put forward to improve air quality will most likely be based on the proposals put forward in the transport masterplan, however wider formal consultation to gather all substantive options to address air quality will commence in October 2018. The new air quality action plan will ultimately replace the existing air quality action plans for Lancaster and Carnforth and will form the required plan for the Galgate AQMA. Work to deliver the Masterplan/Air Quality Action Plan is therefore still in its infancy and will remain a top priority over the next 2 years.

Air quality monitoring in 2017 has indicated compliance with air quality objective levels in both the Carnforth and Galgate AQMA's and the opening of the Bay Gateway is considered to be in part responsible for this really positive outcome. However we still need to ensure levels monitored in 2017 indicate a true persistent trend and that air pollution levels do not regress as personal travel arrangements adapt and new traffic generating development comes forward. Air quality monitoring will therefore continue subject to the usual annual review of sites in December 2018.

At a national level, 2017/18 again saw increased attention on the impact of wood burning (which is a growing source of local $PM_{2.5}$ emissions). Responses to national consultations on measures to address this impact has been sent as part of the consultation on the national clean air strategy (see https://www.gov.uk/government/consultations/air-quality-draft-clean-air-strategy-2018). A copy of the Lancashire authorities response to the consultation is contained in

Appendix K to this report. A further consultation response will be sent in October 2018 to the specific consultation on domestic solid fuel use (available at :- https://consult.defra.gov.uk/airquality/domestic-solid-fuel-regulations/)
This subject will therefore remain a priority during 2018/19.

Air quality planning guidance for new development has been produced in 2016 in partnership with the Low Emission Partnership (see http://www.lowemissionstrategies.org/) and adopted as guidance in 2017. The introduction of approaches it contains and the transition from planning advice to a supplementary planning document (SPD) for Lancaster (and Lancashire) will be a priority for the remainder 2018 until anticipated adoption as an SPD in spring/summer 2019.

Particulate monitoring at the Cable Street continued to be affected by equipment faults into 2017 but is now running consistently. The station has been utilised in 2018 as part of a greening research project run by Lancaster University (see p13/14 above). If results demonstrate significant benefits from this type of intervention consideration will be given to greening approaches in other areas of the district as a means to reduce particulate pollution levels at roadside locations. Lancashire Public Health will consider the results of this study to consider recommendations for such an approach across Lancashire (particularly at locations such as schools).

Air Quality station at Cable Street, Lancaster and greening measures installation

How to get involved

Air quality impacts are not generally the result of single source but are as a result of a number of combined impacts. Small contributions to air pollution are therefore more important than they may seem, and need to be addressed if current issues are to be resolved. The principle 'look after the pennies and the pounds will look after themselves' comes to mind. Road traffic is an obvious example of an impact arising from numerous sources with control in the hands of each vehicle owner. The choice to use a wood burning/solid fuel stove to heat your home is another example. The choices individuals (you) make are therefore crucial to improve air quality. The following are therefore some suggested actions which if adopted would significantly contribute to improving air quality in the Lancaster area:-

1) *Internet technology available today allows communication and transactions to take place without the need for personal travel. Where ever possible the use of technology can remove or reduce polluting emissions and also save you valuable time.*

2) *Where a journey is needed, choosing to walk or cycle means that you are not adding to pollution and has the added benefit of keeping you fit and healthy. Some good information and suggestions can be found at the following link*: *http://www.lancashire.gov.uk/roads-parking-and-travel/alternative-ways-to-travel.aspx*

3) *If you need a car, consider using or purchasing a lower emission vehicle such as an electric car. If an electric car does not currently meet your specific needs or is not a possibility, if you can, choose a smaller, more fuel efficient car. This will usually have significant emission benefits.*

4) *Take the bus or train if this is an option. The Council and its partners are working to improve the emissions from public transport. Information on public transport is available from http://www.traveline-northwest.co.uk/cms/content/lancashire.xhtml ,*

https://www.stagecoachbus.com/about/cumbria-and-north-lancashire and other general information web sites such as http://www.nationalrail.co.uk/ .

In addition to reducing the pollution you create you can also do things to reduce your exposure to air pollution. These are a few suggestions:-

Get out of your car

Not only will you be reducing pollution if you don't drive, you will reduce how much pollution you breathe as often sitting in traffic surrounded by vehicles exhausts can be the worst place to be.

Choose where you walk

Air pollution along main roads with buildings close to the road can be particularly high. If possible avoid walking along main roads, choose side roads. If you can't avoid them walk as far away from the kerb as possible – pollution levels usually decrease quickly the further you get away from them. If you need to cross the road, do this as quickly as you can, but don't get run over as this would defeat the objective! Watch out for your young children also. If they are in a pram don't forget that they can be even closer to vehicles exhaust!

Choose where you exercise

Don't run or cycle along busy roads if you can avoid them. Choose locations where traffic is lower or ideally where there is no traffic at all.

Get out of town

Not always an option, but if you can go out to places where the air is cleaner (the country or the coastal areas of Lancashire are great). But if you can, use public transport, walk or cycle so you don't add to the problem.

Avoid times when pollution is worst

If you can, don't travel when traffic is busiest as this will usually be when the pollution is at its worst. This will not be a favourite for many, but walking in the rain reduces the pollution we breathe in.

Wear a mask?

You could wear a mask, but if you do it needs to fit tightly or its effect will be small. Also, if you don't change it regularly and it becomes dirty it could even be worse for you.

Air pollution indoors?

Air pollution inside can be an issue as we often produce dust for activities such as DIY, cleaning and also some pollution from cooking and heating out homes. Ventilate you home and minimise obviously dusty or smoky activities. Choose to heat your home using a 'clean' fuel. Obviously if you smoke this the first thing to stop doing.

Wood burning stoves and garden bonfires

Pollution emissions from wood burning stoves are much higher than from gas or electric heating systems and the combined impact of a number of stoves in urban areas can lead to noticeably poorer air quality. Garden bonfires can also similarly add to local pollution. It is therefore very helpful if these more polluting choices can be avoided.

Tell us what you think!

We would be really grateful for people to be involved in improving local air quality, particularly regarding actions we should consider as part of the new Lancaster district air quality action plan. If you can participate please let us know your action plan suggestions before 30 June 2019 by emailing your response comments to :-

environmentalhealth@lancaster.gov.uk
(please present the email subject as ' Suggested Air Quality Action Plan measures 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

Table of contents

List of Tables

List of Figures

1 Local Air Quality Management

This report provides an overview of air quality in the Lancaster City Council area during 2017. 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 can be found in Table 1.1 in Appendix D.

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.

A summary of AQMAs declared by Lancaster City Council can be found in Table 2.1 below. Further information related to declared AQMAs, including maps of AQMA boundaries are available online at http://www.lancaster.gov.uk/air-quality/ . A national list of AQMA's is available at: http://uk-air.defra.gov.uk/aqma/list .

Amendment of the Lancaster AQMA to include likely exceedance of the 1 hour objective for NO_2 was approved by Lancaster City Council cabinet in June 2017. The amended order is available at the council's web site (see https://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality/lancaster-air-quality-management-area-aqma) and a copy of the amended order has been sent to Defra.

Table 2.1 – Declared Air Quality Management Areas in Lancaster

AQMA Name	Pollutants and Air Quality Objectives	City / Town	One Line Description	Max Monitored annual mean Concentration 2008 (ug/m^3)	Max Monitored annual mean Concentration 2017 (ug/m^3)	Action Plan
City of Lancaster AQMA	Annual Mean and hourly mean Objectives NO_2	Lancaster	Covers gyratory system in Lancaster city centre	75	62	New Action Plan to be delivered as part of Transport Masterplan. See :http://www.lancashire.gov.uk/council/strategies-policies-plans/roads-parking-and-travel/highways-and-transport-masterplans.aspx See also https://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality/lancaster-air-quality-management-area-aqma
Carnforth AQMA	Annual Mean Objective NO_2	Carnforth	Covers main cross road area in Carnforth	45	38	New Action Plan to be delivered as part of Transport Masterplan. See :http://www.lancashire.gov.uk/council/strategies-policies-plans/roads-parking-and-travel/highways-and-transport-masterplans.aspx See also https://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality/carnforth-air-quality-management-area-aqma
Galgate AQMA	Annual Mean Objective NO_2	Galgate	Covers main cross road area in Galgate	43	38	Action Plan to be delivered as part of Transport Masterplan. See :http://www.lancashire.gov.uk/council/strategies-policies-plans/roads-parking-and-travel/highways-and-transport-masterplans.aspx See also https://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality/galgate-air-quality-management-area-aqma

NB All air quality action plans are planned are to be superseded by the plan incorporated and arising from the Transport Masterplan for Lancaster adopted in 2016. New district air quality action plan is scheduled to be delivered during 2019/20.

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

Lancaster City Council has taken forward a number of measures during the current reporting year of 2017/18 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2 below. More detail on these measures can be found in their respective Action Plans, the Air Quality Strategy for Lancaster, local planning guidance documents and the Transport Master Plan for Lancaster. Key completed/in progress measures during 2017/18 are:

- Progress towards the delivery of the Transport Master Plan for Lancaster incorporating the Air Quality Action Plan for the district/AQMA's (Masterplan adopted October 2016)
- Grant funding to reduce emissions from buses in Lancaster (emission reducing equipment now due to be installed to buses in Spring 2019).
- Provision of 34 electric vehicle charge points across the Lancaster district due to be delivered by the end of March 2019 (see Appendix G and I)
- Work to review local/regional taxi licensing policies (ongoing October 2018).
- Potential Lancashire application for OLEV grant for electric taxi charging infrastructure (due by 30 Nov 2018).
- Completion and activation of automatic vehicle number plate recognition system in central Lancaster (first used Sept 2017).
- Electric taxi event (coordinated by CENEX) on national clean air day (21 June 2018). Further follow up event on 27 September 2018.
- Feedback on Defra National roadside NO_2 plan and Clean Air Strategy consultations (responses contained in Appendices H and K).
- Introduction of electric cars/supporting infrastructure to Council's pool car fleet.
- OLEV grant funding obtained for residential off street charging scheme, to install electric vehicle charging points in Council car parks and to support local community scheme (Charge my Street) to assist with a charging installation at Dallas Road Boys and Girls Club, Lancaster (See Appendix I).
- Working with Lancaster University to investigate the impact of greening measures (at Cable Street, Lancaster).

Progress on the following measures has been slower than expected due to issues beyond the city council's control. The measures, although delayed, are all likely to be progressed or resolved within the period 2018/19:

- Linking air quality stations to traffic management system in Lancaster (to be included as part of wider air quality action plan/transport masterplan measures for central Lancaster).
- Procurement and delivery of emission reduction technology to buses through the Cleaner Bus Fund grant allocation (equipment was initially due to be installed in 2017). Contractual and procurement arrangements have now been agreed and are now due for delivery in spring 2019.
- Delivery of electric charging points by the county council (new due to be delivered by March 2019).
- Progress to transport Masterplan including the delivery of new air quality action plan has been delayed due to the need to gather baseline traffic data under 'normal' conditions (closure of the Greyhound Bridge has delayed progress but is due to open in October 2018 when traffic data will be gathered).

The key actions and priorities for the coming year are:-

- Progress the production of a new district wide air quality action plan (as scheduled in the transport masterplan).
- Reduction in bus emissions impacting on roads between Lancaster University and Heysham and particularly the Lancaster AQMA (through DfT Cleaner Bus Technology Grant - to be completed in 2019).
- Transition of local air quality planning guidance from its current status as a Planning Advice Note to a Supplementary Planning Document. The guidance will provide minimum air quality impact mitigation requirements for traffic generating development. It will also require new assessment/mitigation requirements for larger impacting developments and options to consider contributions to air quality action plan/ transport masterplan measures (due spring/summer 2019)).

- Working with county public health particularly in relation to taxi policy/electric vehicle infrastructure plans.
- Provision of ‘rapid’ and ‘fast’ electric vehicle charging points at street locations and at council car parks/Dallas Road Boys and Girls Club now (all due March 2019).
- Promote and assist where possible with the uptake of electric vehicles by the local taxi fleet including a potential grant application bid for taxi electric vehicle charging infrastructure in November 2018.
- Promote the uptake of electric vehicles within the Council’s fleet.

Longer term actions include the following:-

- Assessment and Implementation of Transport Masterplan for Lancaster and production and delivery of final Air Quality action Plan for Lancaster (2016-2024).

Table 2.2 - Progress on Measures to Improve Air Quality – Lancaster District

Measure No.	Measure	EU Category	EU 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 2024	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	Work to consider the detailed proposals for the Bus Rapid Transit Route and Cycle Superhighway is progressing. Traffic data for use in impact assessment is due to be gathered in October 2018 following reopening of the Greyhound Bridge. Formal consultation on options for the new plan is due to commence in October 2018 also.	2024	The production of a new air quality action plan for the district is linked and scheduled within Transport Masterplan delivery. Plan available at:- http://www.lancashire.gov.uk/council/strategies-policies-plans/roads-parking-and-travel/highways-and-transport-masterplans.aspx Delivery of a new air quality action plan to cover the Lancaster district (including the three AQMAs) is due is scheduled for delivery in 2019/20.
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

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
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 2024	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 three AQMAs) is scheduled for delivery in the plan for 2019/20 http://www.lancashire.gov.uk/council/strategies-policies-plans/roads-parking-and-travel/highways-and-transport-masterplans.aspx
4	Lancaster Parking Strategy	Traffic Management	Emission based parking or permit charges	Lancaster City Council	2015-18	-	-	-	Production of a parking strategy is to be commissioned in 2018 for delivery for Lancaster by April 2019 and Morecambe shortly after.	2019	More information available at: https://www.lancaster.gov.uk/parking/

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
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 2018.	2020	*LCC's traffic* systems database was planned to be upgraded to receive real time information from Lancaster CC air quality monitoring stations to aid traffic management and reduce emissions. Unfortunately procurement has been delayed. Lancashire County Council are still intending to pursue the procurement of a UTMC common database in 2018. The common database would effectively accept an air quality input from the AQ stations in Lancaster. The government's Digital Market place is now the intended procurement route for the new system.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
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	2017 results indicated significant reductions (annual mean NO_2) on Morecambe Road and Caton Road, Lancaster, (7-11ug/m^3) Most sites generally were lower between 1-4ug/m^3 No objective exceedances were monitored in the Carnforth and Galgate AQMAs Reductions in Carnforth AQMA 0-6ug/m^3 Reductions in Galgate AQMA 3-5ug/m^3 Changes in central gyratory of Lancaster AQMA mixed - 0-5ug/m^3 reductions and increases 1-2ug/m^3 (King Street/Brock Street)	Road opened October 2016 More information available at: http://heyshamlink.lancashire.gov.uk/	AQ monitoring to assess changes will continue in 2018/19. Further analysis is planned following availability of traffic count data (county council survey due Oct 2018)

Measure No.	Measure	EU Category	EU 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
8	Promoting home working	Promoting Travel Alternatives	Encourage / Facilitate home-working	Lancaster City Council and Lancashire County Council	-	ongoing	-	-	ongoing	-	-
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 2018.	-	Events usually consist of try a bike sessions and fun activities such as mini bikes, penny farthing, provision of maps and other info and options to sign up for a personal journey plan. For more information see: :http://www.lovetoride.net/lancashire https://www.cyclinguk.org/cycle/cycling-lancashire

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
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
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
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

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
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	-	http://www.traveline-northwest.co.uk/cms/content/lancashire.xhtml http://www3.lancashire.gov.uk/corporate/web/index.asp?siteid=4404&pageid=19915 http://www.lancashire.gov.uk/roads-parking-and-travel/alternative-ways-to-travel.aspx http://www.lancashire.gov.uk/roads-parking-and-travel/public-transport.aspx

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
18	Air Quality information	Public Information	via the Internet	Lancaster City Council	-	-	-	-	Ongoing Web link to continuous air quality monitoring sites provided in 2017. http://www.ukairquality.net	-	http://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality
19	Burning of waste Fact sheet	Public Information	via leaflets	Lancaster City Council and	-	2014	-	-	ongoing	-	Available at: http://www.lancaster.gov.uk/environmental-health/environmental-protection/smoke-control
20	Direct Communication/Education	Public Information	Other	Lancaster City Council and Lancashire County Council	-	-	-	-	Short campaign ran in 2017 by city council to discourage allotment and garden bonfires around national clean air day.	-	General communication through Environmental Health role and through schools education programme via County Council
21	Cycle Hire	Transport Planning and Infrastructure	Public cycle hire scheme	Lancaster City Council	-	-	-	-	ongoing	-	More information available at: http://www.visitlancashire.com/cycling-lancashire/cycle-hire

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
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	2024	Plan of measures to be submitted to prevent relief offered by new road being eroded. Plan to be submitted before link road is fully opened (Schedule 2, 10 requirements). See Transport Masterplan at http://www.lancashire.gov.uk/council/strategies-policies-plans/roads-parking-and-travel/highways-and-transport-masterplans.aspx for more information.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
23	Caton Road Park and Ride	Alternatives to private vehicle use	Bus based Park & Ride	Lancashire County Council	-	2014-16	-	-	Operational December 2016	2016	A daytime bus service is operational every 30 mins 6 days a week. Passenger journeys have increased from approximately 380 in Dec/Jan 2017 to around 2,100 in June 2018. Ticket detail is available at : http://www.lancashire.gov.uk/roads-parking-and-travel/public-transport/park-and-ride/lancaster-park-and-ride.aspx See item '32' below.
24	Shared Wheels Car Sharing	Alternatives to private vehicle use	Car & lift sharing schemes	Lancashire County Council	-	-	Members registered	-	4129 members registered in Lancashire area (Sept 2017)	-	See: https://sharedwheels.liftshare.com/ 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	EU Category	EU 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	-	2011-21	-	-	Development of new plan is currently in progress (2017-19). The plan will link to the transport masterplan for the district.	2019	Current plan available at: http://www.lancashire.gov.uk/council/strategies-policies-plans/roads-parking-and-travel/local-transport-plan.aspx
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	2016/17	-	-	Guidance produced. - Launch Event took place in October 2016 Guidance adopted as a planning advisory note September 2017. Adoption as SPD anticipated Spring /summer 2019.	2017(PAN adoption) and 2019(SPD adoption)	Templates also produced for regional adoption. Survey undertaken in May 2017 indicted 9 of 14 Lancashire authorities are looking to adopt the guidance in one of the three template forms.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
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 (see Appendix E)	-	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 Appendix E) See AQ and County Council public health section above (p15) for more detail on action in 2017/18
30	Lancaster Air Quality Strategy	Policy Guidance and Development Control	Other policy	Lancaster City Council	-	2015-24	-	-	Approach detailed in Strategy to be adopted in Transport Masterplan for Lancaster	2024	Available at: http://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality/air-quality-reviews-and-assessments

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
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 subject to examination by planning inspectorate Jan 2019 See: http://www.lancaster.gov.uk/planning/planning-policy/examination-stage	2019	To ensure new exposure to poor AQ is prevented and to minimise emissions from new development Available at: http://www.lancaster.gov.uk/planning/local-plan/local-planning-policy/adopted-documents/development-management-dpd/ Policy being reviewed to support new air quality planning guidance (item 28 above).
32	Guidance on electric vehicle charging point requirements for new development	Policy Guidance and Development Control	Other policy	Lancaster City Council	2015	2016	-	-	Guidance adopted as Planning Advisory Note 2016 – Updated Sept 2017 Due to be adopted as SPD in 2019	2019	Guidance available at: https://www.lancaster.gov.uk/planning/planning-policy/supplementary-planning-documents-spds

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
33	Planning Policy – Carnforth former TDG site	Policy Guidance and Development Control	Other policy	Lancaster City Council	-	2012	-	-	Site is currently being returned to commercial use. Attempts by the owner to redevelop the site in line with the policy did not prove successful. The policy is therefore no longer active at the site.	2018	Planning Policy to direct use of former TDG Haulage site in Carnforth to reduce impact of site on Carnforth AQMA See 2014 Progress report for more information :Available at: http://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality/air-quality-reviews-and-assessments Policy did not achieve objective.

Measure No.	Measure	EU Category	EU 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 in place 2016	2016	HGV traffic to use J34 Link Road http://heyshamlink.lancashire.gov.uk/ 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

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
35	Clean bus technology fund grant Phase 1	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	Lancashire County Council with Lancaster City Council and Stagecoach	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 17 buses providing most frequent bus services through Lancaster. Progress delayed due to procurement and contract issues. Legal agreement has now been made and procurement should commence winter/spring 2018/19	2019 (Implementation (retrofitting process)due Feb 2019)	More information available at: https://www.gov.uk/government/collections/clean-bus-technology-fund
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	-	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.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
37	ULEV Cities/Fleet OLEV Grant applications	Vehicle Fleet Efficiency	Other	Lancashire County Council with Lancaster City Council	2015	-	-	-	Grant bids not successful	-	-
38	Lancaster City Council carbon reduction commitment	Promoting Low Emission Plant	Public Procurement of stationary combustion sources	Lancaster City Council	-	ongoing	34% reduction in carbon emissions by 2020 (3.4% annual target)	-	ongoing	-	Further information at: https://www.lancaster.gov.uk/sustainable-living/climate-change/responding-climate-change/
39	Provision of roadside electric charging points for electric vehicles	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Lancashire County Council Highways	2015/16	2017/18	-	-	Grant monies awarded for 150 points across Lancashire	March 2019	Project to be delivered by March 2019 (has been delayed). Two rapid chargers and 4 fast chargers are proposed to be installed in Lancaster. One 'rapid' charger and two 'fast' chargers in Morecambe. One 'fast' charger in Carnforth and one in Heysham. Three 'fast' chargers at Lancaster Caton Road Park and Ride.(NB each 'fast' charger will have two outputs)

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
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.
41	Promoting the use of electric vehicles as taxis	Promoting Low Emission Transport	Taxi emission incentives	Lancaster City Council	2017/18	2018/19	-	-		2020	The Council is consulting local operators and drivers regarding the uptake of EV's.
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	2019/20	Installation of charging points	-	Two taxi events at Morecambe, Public Health leading on consultation with Licensing/Chief Officers regarding policy/incentive changes.	2020	6 Lancashire authorities potentially bidding with Lancaster as lead. Bid due Nov 2018
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	2018/19	Installation of charging points and purchase of electric vehicles	-	Vehicles pending but charging infrastructure available at White Lund Depot and Lancaster Town Hall	-	Replacement of further fleet vehicles with electric vehicles is up for review in 2019

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

Local Authorities are expected under Chapter 7 of Policy Guidance LAQM.PG (16) to work towards reducing emissions and/or concentrations of pollutant $PM_{2.5}$. There is clear evidence that particulate matter ($PM_{2.5}$) 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

A review of monitoring provision undertaken in 2016 concluded that the provision of additional local monitoring facilities to assess $PM_{2.5}$ levels would not be feasible at this time and this remains the case. The council together with the other Lancashire authorities are responding to Defra's consultations on the national response proposals to the growth in use of solid fuels (see https://consult.defra.gov.uk/airquality/domestic-solid-fuel-regulations/) .

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with objectives.

Lancaster City Council undertook automatic (continuous) monitoring at the Dalton Square, Lancaster and Cable Street, Lancaster monitoring sites during 2017. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at http://uk-air.defra.gov.uk/ .

Maps showing the location of the automatic monitoring sites are provided in Appendix A. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C. Local monitoring results can be obtained from the UK Air Quality website (available at : http://www.ukairquality.net).

3.1.2 Non-Automatic Monitoring Sites

Lancaster City Council undertook non- automatic (passive) monitoring of NO_2 at 54 diffusion tube sites during 2017. Table A.2 in Appendix A shows the details of the sites. Two new sites were introduced in 2017 at Caton Road, Lancaster (near to junction with Bulk Road – site LC33) and Newlands Road (near to M6 – site M6) Lancaster.

Maps showing the location of the monitoring sites are provided at: https://localview.lancaster.gov.uk/LocalViewWeb/Sites/AirQualityMonitors/. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

3.2 Individual pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias. Further details on adjustments are provided in Tables C.4, C.5 and C.6 in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted continuously monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

For diffusion tubes, the full 2017 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

The data as shown in Figure 2 below indicates a declining trend at the Dalton Square automatic monitoring site, and a flat/very slightly declining trend at the Cable Street. Both sites indicated annual mean levels below the Objective in 2017, however in the case of Cable Street, only just below. It should be also noted that data capture

at the Cable street site was just below the required 75% minimum required and therefore the result was annualised in accordance with Defra technical guidance (TG16) using data from the nearest monitoring sites (Wigan, Blackpool and Preston). There was no monitored exceedance of the hourly NO_2 objective at either continuous automatic monitoring site. A more detailed report for the 2017 results from the Dalton Square site is available at http://www.lancaster.gov.uk/air-quality/ .

Figure 2 - Annual Mean NO_2 at the two continuous automatic monitoring sites in Lancaster

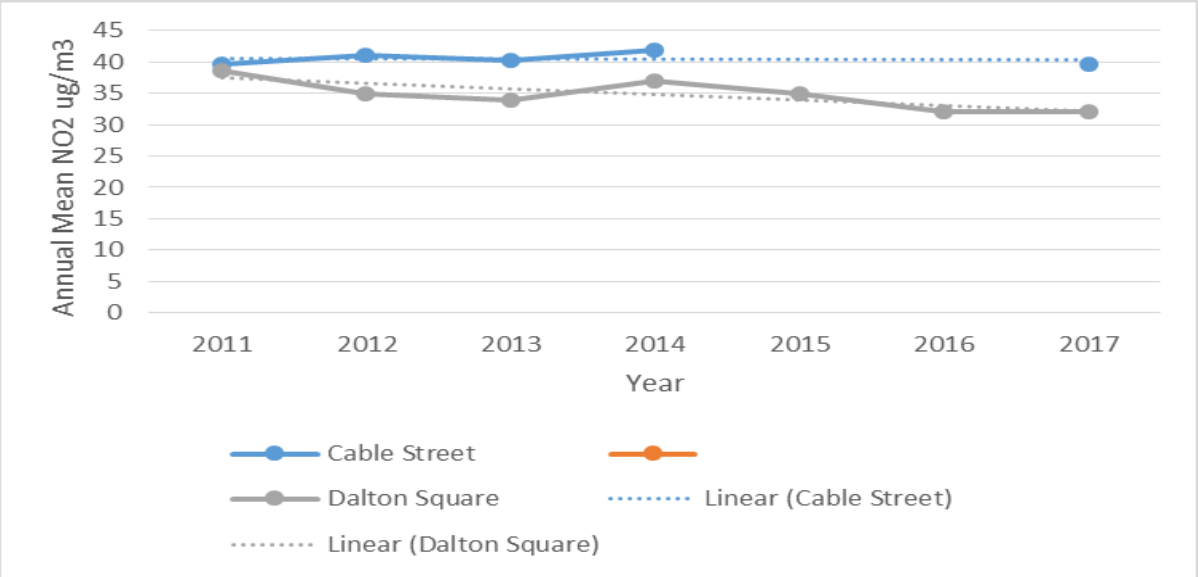


Figure 2a Annual Mean NO_2 at the two highest level monitoring sites located in Galgate

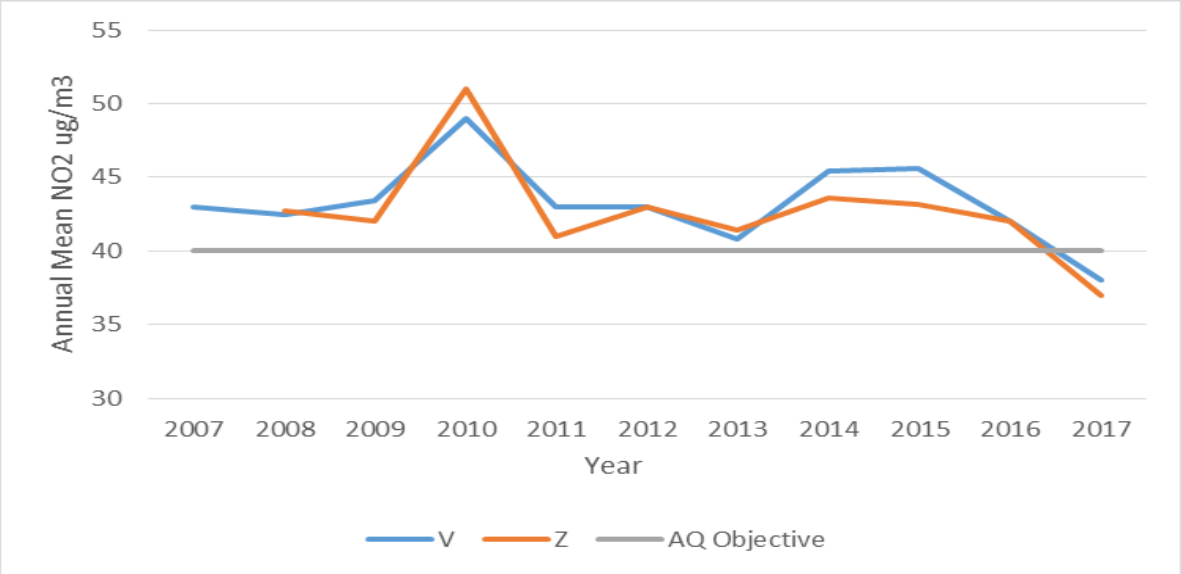


Figure 2b Graph showing trend in Annual Mean NO_2 levels at the two hhighest level monitoring sites located in Galgate

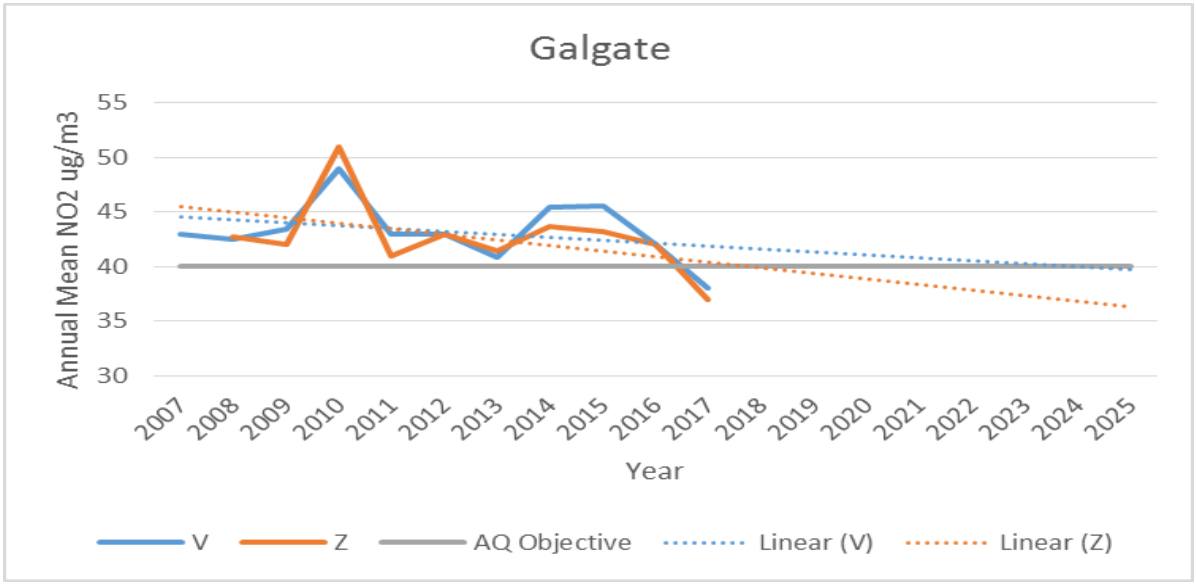


Figure 2c Annual Mean NO_2 at the two highest level monitoring sites located in Carnforth

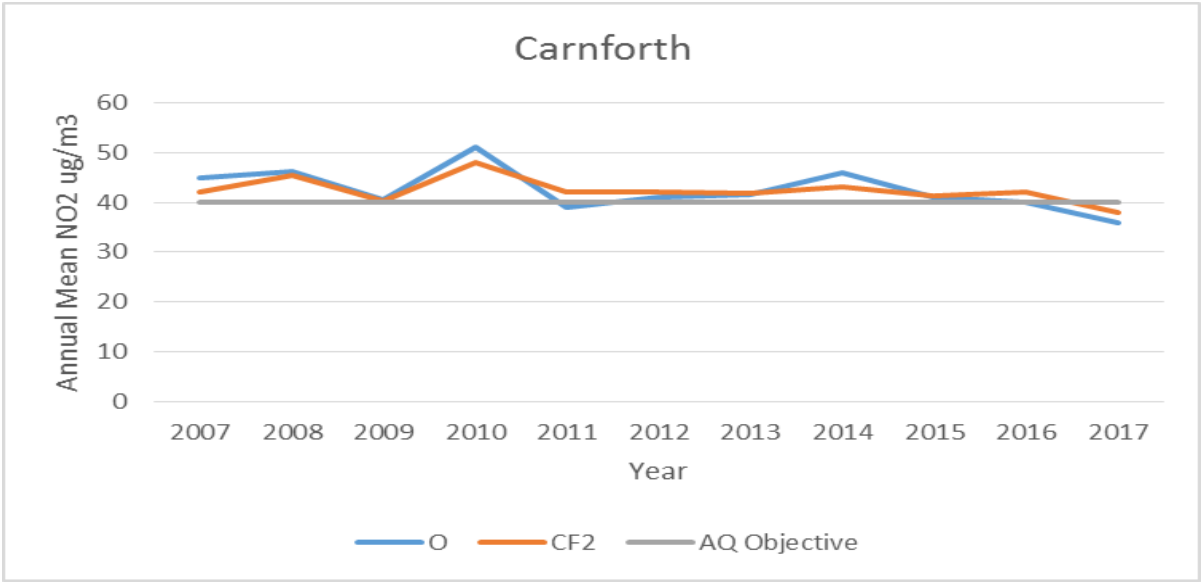
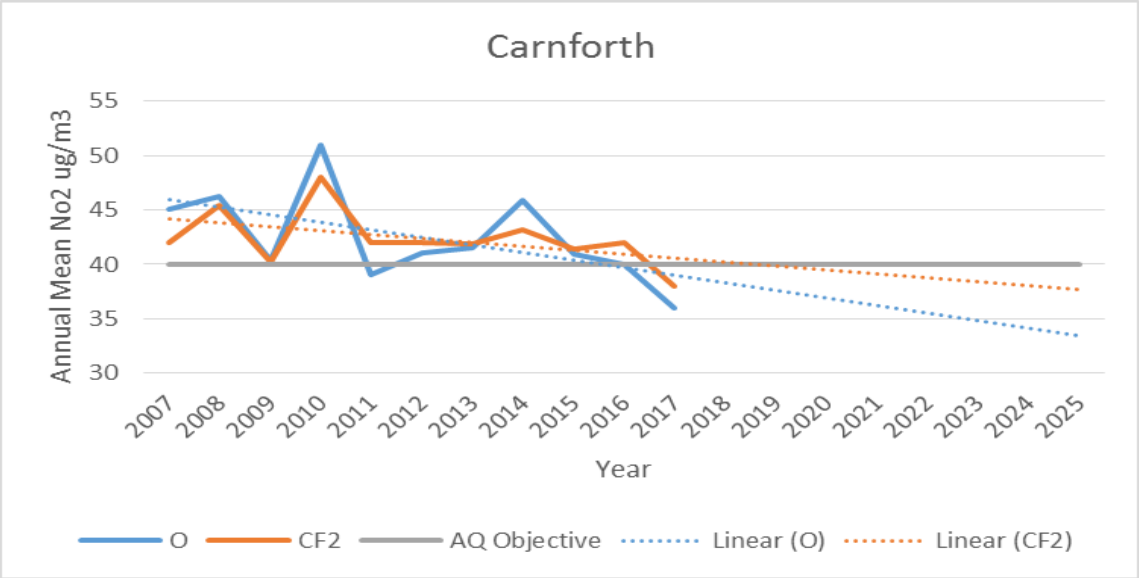


Figure 2d Graph showing trend in Annual Mean NO_2 levels at the two highest level monitoring sites located in Carnforth



Results from nitrogen dioxide diffison tubes in 2017 were generally lower. A general declining trend, particularly over the past 4 years, can be observed in nitrogen dioxide at monitored roadside locations in the Lancaster district. Only tubes located within the Lancaster AQMA continued to indicate exceedance of objective levels, although most of these sites also indicate a decline in levels. The rate of decline indicates that without intervention it may still be many years before the Objectives are met within the Lancaster AQMA. Compliance within the Galgate and Carnforth AQMA's looks more likley within the next few years. Levels in Galgate and Carnforth in 2017 were only just below the air quality objective (annual mean nitrogen dioxide) and 2017 was generally a 'better' air quality year. It is therefore too early and incorrect at this time to assume that future compliance is assured. Weather and local traffic changes may still result in exceedances in these locations and therefore monitoring will continue unchanged in 2019.

Exceedance of the hourly mean objective was still indicated at two monitoring sites (located at Thurnham Street and China Street) in the Lancaster AQMA (see Figure 1 above) indicated by annual mean NO_2 levels still being above 60ug/m^3 (see http://uk-air.defra.gov.uk/reports/cat18/0806261511_TG_NO2relationship_report_draft1.pdf).

All locations monitored are generally indicative of relevant exposure (see table A.2 below for more information).

Conclusion

From an assessment of the monitoring results there is no intention to create any new AQMA's or revoke any existing AQMAs at this time within the Lancaster area. The main areas of concern persist to be within the three existing AQMAs. Overall collected results indicate a declining trend in polltion levels at both background and roadside locations. Pollution levels monitored in the Lancaster AQMA indicate that it will still be many years before the Objective levels are met without additional intervention. The impact of the new link road in 2017 (the Bay Gateway) is considered to be positive with significant reductions monitored on Caton Road and Morecambe Road. Monitoring within the Carnforth and Galgate AQMAs indicated compliance with objectives for the first time since AQMA designation. Further analysis of the impact of the Bay Gateway will be carried out when traffic count/composition data becomes available (planned traffic survey in October 2018).

3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

Conclusion

The PM_{10} monitor in Lancaster was not operational during 2016 due to a sequence of equipment faults. PM_{10} monitoring in 2017 improved but continued to be subject to some equipment breakdown and repair resulting in under 75% data capture for 2017. The monitoring results obtained were therefore annualised in accordance with Defra technical guidance (TG16) using data from the nearest available monitoring sites at Salford and Liverpool. The results indiated compliance with annual mean and 24hr objectives for PM_{10}. (See tables A.5 and A.6 below for monitoring results over the last 5 years).

Despite PM_{10} objectives being anticipated to be met, particulate pollution is considered to be a none threshold pollutant and therefore pollutant level reduction is still an important priority for Lancaster City Council. Monitoring results in 2018 will be affected to some extent by the ‘greening’ research project being carried out on Cable Street, Lancaster. The results of this research will be reported in the next annual ststus report.

List of Appendices

Appendix A: Monitoring Results

Appendix B: Full Monthly NO_2 Diffusion Tube Results

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

Appendix D: Summary of Air Quality Objectives in England

Appendix E Lancashire County Council Public Health Air Quality Guidance Note

Appendix F Summary results of survey of Lancashire authorities regarding the adoption of regional air quality planning guidance

Appendix G Electric Vehicle Charge Point delivery Plan - Lancashire County Council

Appendix H Lancashire response to national consultation on national roadside NO2 plan

Appendix I Grant Offer Letter – Onstreet Residential Chargepoint Scheme

Appendix J Air Quality report / Clean Air Day 2018- Communications Plan

Appendix K Lancashire response to national consultation on national Clean Air Strategy 2018

Appendix L Local Air quality Key Performance Indicator results.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Inlet Height (m)	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
AN1	Cable Street	Roadside	347684	461963	2.0	NO_2	Y	APNA-370 NO_x analyser	Y(0.4m)	4	Y
APM1	Cable Street	Roadside	347684	461963	2.0	PM_{10}	Y	PM_{10} – TEOM 1400a	Y(0.4m)	4	Y
AN2	Dalton Square	Roadside	347852	461611	2.0	NO_2	Y	APNA-360 NO_x analyser	Y – 0m (Dalton Square is a sitting area)	3.5	N

(1) 0 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.

Figure 3 - Map showing location (red marker) of Cable Street, Lancaster air quality monitoring station (monitors AN1 and APM1) and now closed Water Street station (blue marker) - (transparent grey area is the Lancaster AQMA)

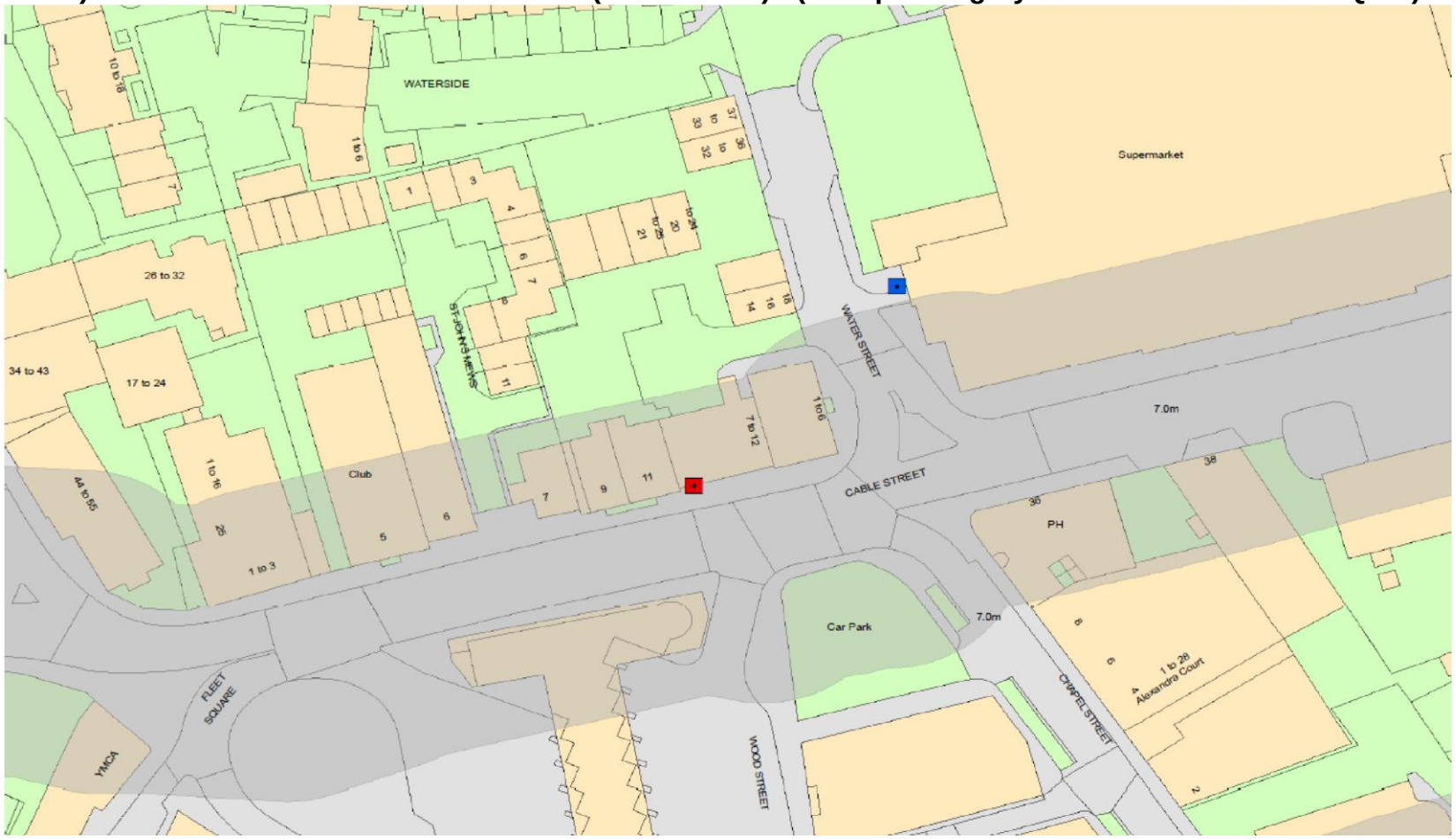


Figure 4 - Map Showing Location (red marker) of Dalton Square Lancaster Air Quality Automatic Monitoring Station (analyser AN2) (transparent grey area is the Lancaster AQMA)

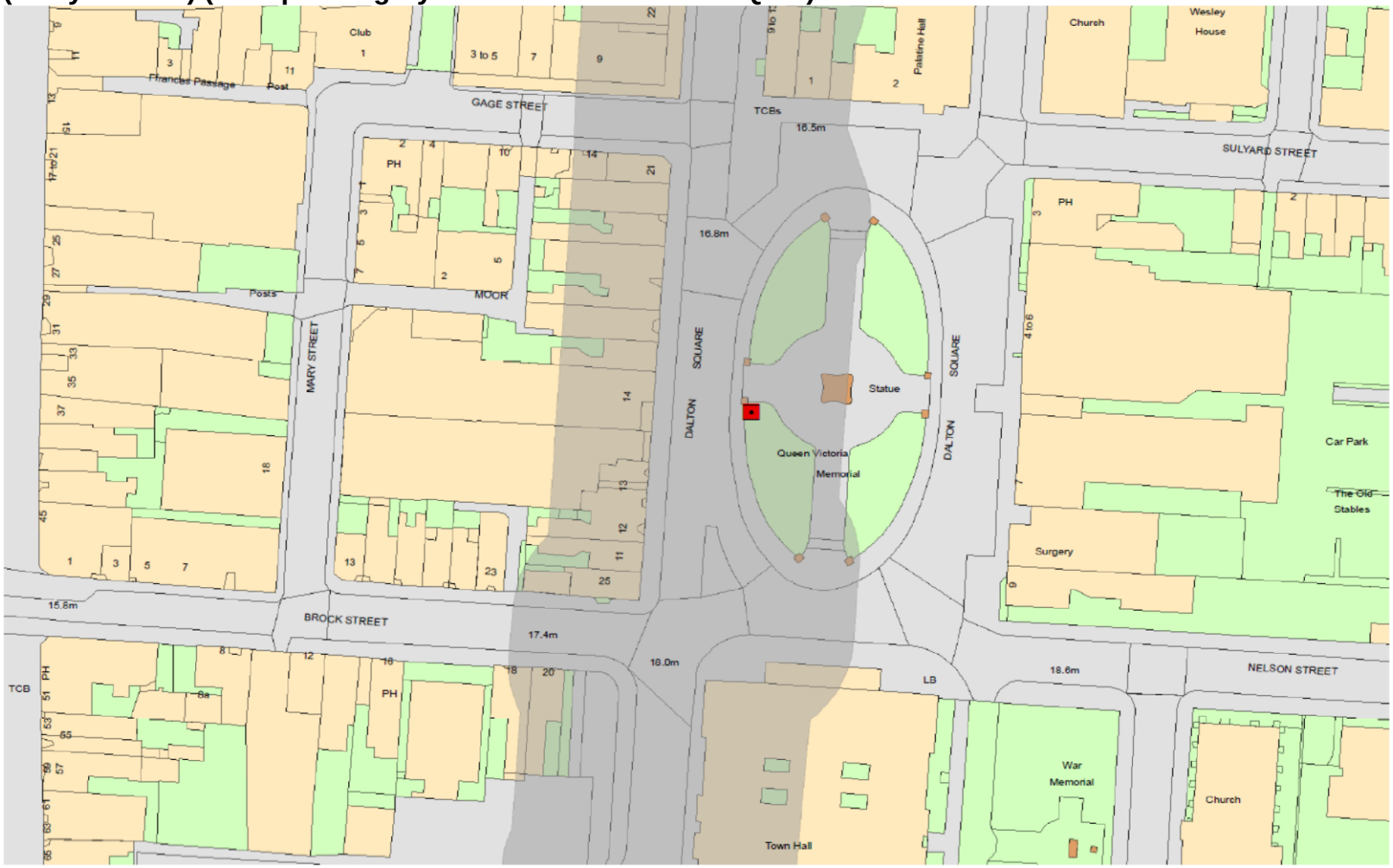


Table A.2 – Details of Non-Automatic Monitoring Sites (sites shown in grey no longer operating)

Site ID	Site Name	Site Type	OS Grid Ref		Site Height (m)	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m)[2]	Distance (m) to kerb of nearest road *(N/A if not applicable)*	Worst-case Location (exposure)?
			X	Y						
LC1	Lancaster 1	Roadside	347853	461682	3.5	NO_2	Y	2.5	2.5	Y
LC2	Lancaster 2	Urban Background	347906	461202	*3.5*	NO_2	N	N/A	N/A	N/A
LC3	Lancaster 3	Intermediate	347791	461498	*3*	NO_2	N	N/A	0	N/A
LC4	Lancaster 4	Urban Background	347517	461714	3.5	NO_2	N	N/A	1.5	N/A
LC5	Lancaster 5	Roadside	347847	462448	3	NO_2	Y	0.2	2.5	Y
LC6	Lancaster 6	Roadside	348075	462037	*4*	NO_2	N	0.2	2.7	Y
LC7	Lancaster 7	Roadside	347824	461906	3.5	NO_2	Y	0.2	2.3	Y
LC8	Lancaster 8	Roadside	347792	461858	3.5	NO_2	Y	0.2	1.7	Y
LC9	Lancaster 9	Roadside	347808	461563	3	NO_2	Y	0.2	2.7	Y
LC10	Lancaster 10	Roadside	347834	461594	3	NO_2	Y	0.2	3.3	Y
LC11	Lancaster 11	Roadside	347823	461406	3	NO_2	Y	0.2	3.1	Y
LC12	Lancaster 12	Roadside	347619	461508	*3*	NO_2	Y	0.2	1.8	N
LC13	Lancaster 13	Roadside	347582	461593	3	NO_2	Y	0.2	2.4	Y
LC14	Lancaster 14	Roadside	347684	461389	3	NO_2	Y	0.2	2.2	Y
MC1	Morecambe 1	Roadside	345258	463674	*2*	NO_2	N	N/A	2.2	N/A
MC2	Morecambe 2	Urban Background	345237	463483	*3*	NO_2	N	N/A	2.5	N/A
MC3	Morecambe 3	Roadside	343570	464326	*3.5*	NO_2	N	0.2	5.5	Y
A	Lancaster A	Kerbside	347579	462450	3	NO_2	Y	N/A	0.3	Y
B1*	Lancaster B1	Roadside	347852	461610	2	NO_2	Y	N/A	3.3	N
B2*	Lancaster B2	Roadside	347852	461610	2	NO_2	Y	N/A	3.3	N
B3*	Lancaster B3	Roadside	347852	461610	2	NO_2	Y	N/A	3.3	N
B*	Lancaster B	Roadside	*347601*	*462200*	*3*	NO_2	*Y*	0.2	*15*	*N*
C*	Lancaster C	*Urban Centre*	*347715*	*461997*	*3*	NO_2	*N*	*N/A*	*26*	*N*
C1*	Lancaster C1	Roadside	347684	461963	2	NO_2	Y	0.4	3.7	Y
D*	Lancaster D	Urban Centre	347715	461997	*3*	NO_2	N	N/A	26	N

Site ID	Site Name	Site Type	OS Grid Ref		Site Height (m)	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m)	Distance (m) to kerb of nearest road *(N/A if not applicable)*	Worst-case Location?
			X	Y						
D1*	Lancaster D1	Roadside	347684	461963	2	NO_2	Y	0.4	3.7	Y
E*	Lancaster E	Urban Centre	347715	461997	*3*	NO_2	N	N/A	26	N
E1*	Lancaster E1	Roadside	347684	461963	2	NO_2	Y	0.4	3.7	Y
F	Lancaster F	Suburban	349600	464222	*2*	NO_2	N	0.2	20	N
G	Lancaster G	Roadside	348199	462353	*3.5*	NO_2	Y	0.2	9.2	N
H	Lancaster H	Roadside	347860	461127	3	NO_2	N	0.2	9	Y
I	Lancaster I	Roadside	347909	462015	3	NO_2	Y	0.2	3.5	Y
J	Lancaster J	Roadside	347852	461909	3	NO_2	Y	0.2	1.9	Y
K	Lancaster K	Roadside	347852	461791	3	NO_2	Y	0.2	4.4	Y
L	Lancaster L	Roadside	347612	461523	2.5	NO_2	Y	0.2	1.5	Y
M	Lancaster M	Roadside	347517	461714	*2.5*	NO_2	Y	0.3	2.4	Y
N	Lancaster N	Roadside	347686	461960	*3*	NO_2	Y	0.2	3.5	Y
O	Carnforth O	Roadside	349906	470624	3	NO_2	Y	0.2	1.4	Y
P	Lancaster P	Roadside	345759	463163	*2.5*	NO_2	N	0.2	22	N
Q	Lancaster Q	Roadside	347665	461447	3	NO_2	Y	0.2	2	Y
R	Lancaster R	Suburban	349694	464299	*2*	NO_2	N	0.2	48	Y
S	Lancaster S	Roadside	349835	470463	*2*	NO_2	Y	0.2	3.9	Y
T	Lancaster T	Roadside	347588	461958	*3*	NO_2	Y	0.2	3	Y
U	Carnforth U	Roadside	349899	470613	*3.0*	NO_2	Y	0.2	2.6	Y
V	Galgate V	Roadside	348359	455352	3.0	NO_2	Y	0.2	1.6	Y
W	Galgate W	Roadside	348372	455381	*3.0*	NO_2	Y	0.2	2.5	Y
X	Galgate X	Roadside	348388	455564	*2.5*	NO_2	N	0.2	5.5	Y
Y	Galgate Y	Roadside	348352	455249	*3.0*	NO_2	Y	0.2	3.0	N
Z	Galgate Z	Roadside	348345	455273	2.5	NO_2	Y	0.2	2.3	Y
ZA	Galgate ZA	Roadside	348351	455381	3.5	NO_2	Y	0.2	1.0	Y
ZB	Galgate ZB	Roadside	348386	455471	2.0	NO_2	N	0.2	2.0	N
ZC	Galgate ZC	Roadside	348375	455391	3.0	NO_2	Y	0.4	2.3	Y
CF1	Carnforth CF1	Roadside	349871	470525	2.0	NO_2	Y	0.2	5.9	N
CF2	Carnforth CF2	Roadside	349934	470605	3.5	NO_2	Y	0.2	2.3	Y

CF3	Carnforth CF3	Roadside	349853	470615	3.5	NO_2	Y	0.2	2.0	N
CF4	Carnforth CF4	Roadside	349890	470628	3.0	NO_2	Y	0.4	2.5	Y
CF5	Carnforth CF5	Roadside	349963	470618	3.0	NO_2	Y	0.2	1.8	Y
CF6	Carnforth CF6	Roadside	350000	470667	3.5	NO_2	Y	0.2	2.6	Y
CF7	Carnforth CF7	Roadside	349613	470225	2.5	NO_2	N	0.2	5.9	N
T1	Torrisholme T1	Roadside	345631	463693	3.5	NO_2	N	0.2	2.4	N
T2	Torrisholme T2	Roadside	345598	463685	*3.5*	NO_2	N	0.2	2.4	N
T3	Torrisholme T3	Roadside	345586	463698	*3.0*	NO_2	N	0.2	4.3	Y
T4	Torrisholme T4	Roadside	345613	463705	*4.0*	NO_2	N	0.2	5.3	Y
T5	Torrisholme T5	Roadside	345642	463715	*3.0*	NO_2	N	0.2	6.7	N
T6	Torrisholme T6	Roadside	345688	463715	*3.0*	NO_2	N	0.2	2.8	Y
T7	Torrisholme T7	Roadside	345522	463676	*3.0*	NO_2	N	0.2	11.1	N
LC15	Lancaster 15	Roadside	348199	462361	5	NO_2	Y	0.2	4.9	Y
LC16	Lancaster 16	Roadside	348269	462222	2	NO_2	N	0	4.6	Y
LC17	Lancaster 17	Roadside	347792	461577	3.5	NO_2	N	0.2	2.3	N
LC18	Lancaster 18	Roadside	347784	461565	3.5	NO_2	N	0.2	2.4	N
LC19	Lancaster 19	Roadside	347502	461841	3	NO_2	Y	0.5	1.6	Y
LC20	Lancaster 20	Roadside	347515	461835	3	NO_2	Y	0.4	1.6	N
LC21	Lancaster 21	Roadside	347627	461895	3	NO_2	N	0.3	1.5	N
LC22	Lancaster 22	Roadside	347928	461025	3	NO_2	N	0.2	7.2	Y
LC23	Lancaster 23	Roadside	347948	460893	3	NO_2	N	0.2	5	Y
LC24	Lancaster 24	Roadside	347974	460514	3	NO_2	N	0.2	2.8	Y
LC25	Lancaster 25	Roadside	348084	459844	3	NO_2	N	0.2	5.3	Y
LC26	Lancaster 26	Roadside	347990	459418	3	NO_2	N	0.2	5.5	Y
LC27	Lancaster 27	Roadside	347989	459396	3	NO_2	N	0.2	6.5	Y
BLS 1	Bolton-le-Sands 1	Roadside	348594	468500	3	NO_2	N	0.2	4	Y
H1	Heysham 1	Roadside	341964	463273	2.5	NO_2	N	0.5	2.5	Y
CF8	Carnforth CF8	Roadside	349568	470044	3	NO_2	N	0.2	4.5	Y
LC28	Lancaster 28	Roadside	348517	463243	2.5	NO_2	N	0.2	6	Y
W1	Warton 1	Roadside	349420	472092	3	NO_2	N	0.2	1.4	Y
W2	Warton 2	Roadside	349843	472218	3	NO_2	N	0.2	1.0	Y
W3	Warton 3	Roadside	349897	472490	3	NO_2	N	0.2	3.7	Y
LC29	Lancaster 29	Roadside	348527	463270	2.5	NO_2	N	0.2	5.3	Y
LC30	Lancaster 30	Roadside	348511	462226	2.5	NO_2	N	0.2	6.5	Y
LC31	Lancaster 31	Roadside	348114	462071	3	NO_2	N	0.4	3	Y
LC32	Lancaster 32	Roadside	347511	461744	3.5	NO_2	Y	0.3	2	N
LC33	Lancaster 33	Roadside	348043	462118	3.5	NO_2	Y	-	2	N
M6	Lancaster M6	Roadside	349271	460208	2	NO_2	N	0.2	-	Y

(1) * - Monitoring co-located with a continuous analyser

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

(3) N/A if not applicable. - A map showing the location of all diffusion tube monitoring sites (past and present) is available at: : https://localview.lancaster.gov.uk/LocalViewWeb/Sites/AirQualityMonitors/

Table A.3 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2017 % [b]	Annual Mean Concentration μg/m³				
					2013	2014	2015	2016	2017
AN1 - Cable St	Roadside	Y	-	74.0	**40.2**	**42.0[c] (39.7)[d]**	**-**	**-**	39.6[c]
AN2 - Dalton Sq	Roadside	Y	-	99.7	34.0	36.9	34.9	32	32

Notes: Exceedences of the NO_2 annual mean objective of 40μg/m³ are shown in **bold and shaded boxes**.

NO_2 annual means exceeding 60μg/m³, indicating a potential exceedence of the NO_2 1-hour mean objective are shown in **bold and underlined.**

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

(b) 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%).

(c) Means should be "annualised" as in Box 3.2 of TG(09) (http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if valid data capture is less than 75%. Results were annualised using data from Preston, Wigan and Blackpool monitoring sites for 2017.The calculation was checked by the LAQM helpdesk.

(d) Period mean value

Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2017 %[b]	Number of Exceedences of Hourly Mean (200 µg/m³)				
					2013	2014[c]	2015	2016	2017[c]
AN1 - Cable St	Roadside	Y	-	74.0	0	0 (119.5ug/m³)	-	-	0(98ug/m³)
AN2 - Dalton Sq	Roadside	Y	-	99.7	0	0	0	0	0

Notes: Exceedences of the NO_2 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold and shaded boxes.**

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

(b) 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%).

(c) If the period of valid data is less than 90%, the 99.8th percentile of 1-hour means is provided in brackets.

Table A.5 - Annual Mean PM_{10} Monitoring Results

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2017 %[b]	Annual Mean Concentration μg/m^3 [c]				
					2013	2014	2015	2016	2017
APM1 - Cable Street	Roadside	Y	-	59.2	27	21.1	24.6	-	22.5[c]

Notes: Exceedences of the PM_{10} annual mean objective of 40μg/m^3 are shown in **bold and shaded boxes.**

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

(b) 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%).

(c) All means have been "annualised" as per Technical Guidance LAQM.TG (16), valid data capture for the full calendar year is less than 75%. Data from sites at Salford and Liverpool were used to annualise the data. The calculation was checked by the LAQM helpdesk.

(d) Adjustments to reference method carried out using the Volatile Correction Model (VCM) tool. .

Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2017 %[b]	Number of Exceedences of 24-Hour Mean (50 μg/m^3)[c]				
					2013	2014	2015	2016	2017
APM1 - Cable Street	Roadside	Y	-	59.2	20	9(35.2)[c]	9(38.9)[c]	- (16)[c]	0(34)[c]

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

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

(b) 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%).

(c) If the period of valid data is less than 90%, the 90.4th percentile of 24-hour means is provided in brackets.

Table A.7 Results of Nitrogen Dioxide Diffusion Tubes - 2010 to 2017 (sites showing an exceedance of the annual mean objective are shown in bold and shaded boxes. Sites indicating the potential for exceedance of the 1 hour objective for nitrogen dioxide are shown in bold and underlined)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) µg/m^3						
			2011 (Bias Adjustment Factor = 0.869)	2012 (Bias Adjustment Factor = 0.926)	2013 (Bias Adjustment Factor = 0.918)	2014 (Bias Adjustment Factor = 1.034)	2015 (Bias Adjustment Factor = 1.030)	2016 (Bias Adjustment Factor = 0.97)	2017 (Bias Adjustment Factor = 0.91)
LC1	Roadside	Y	**51**	**50**	**54**	**56**	**50**	**50**	**46**
LC2	Urban Background	N	22	23	-	-	-	-	-
LC4	Urban Background	N	19	19	17	18	16	17	15
LC5	Roadside	Y	39	39	39	**47**	**42**	**40**	31
LC6	Roadside	N	32	32	32	-	-	-	-
LC7	Roadside	Y	37	37	35	37	35	33	32
LC8	Roadside	Y	35	36	35	37	34	33	30
LC9	Roadside	Y	37	**42**	**40**	**41**	39	39	37
LC10	Roadside	Y	**66**	**72**	**69**	**75**	**71**	**66**	**62**
LC11	Roadside	Y	**61**	**66**	**60**	**65**	**60**	**61**	**57**
LC12	Roadside	Y	38	38	-	-	-	-	-
LC13	Roadside	Y	**41**	**43**	**42**	**43**	**41**	34	34
LC14	Roadside	Y	35	35	33	38	35	32	32
MC3	Roadside	N	27	26	24	-	-	-	
A	Kerbside	Y	39	**40**	36	39	35	36	25
B1	Roadside	Y	35	33	33	36	35	31	32
B2	Roadside	Y	36	34	33	37	36	33	32
B3	Roadside	Y	37	35	34	37	37	33	32
C1	Roadside	Y	**40**	**43**	**42**	**44**	39	**41**	39
D1	Roadside	Y	**42**	**42**	**40**	**45**	**41**	**41**	37
E1	Roadside	Y	**41**	**42**	**41**	**46**	**41**	**43**	38
G	Roadside	Y	35	35	-	-	-	-	-

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) µg/m³						
			2011 (Bias Adjustment Factor = 0.869)	2012 (Bias Adjustment Factor = 0.926)	2013 (Bias Adjustment Factor = 0.918)	2014 (Bias Adjustment Factor = 1.034)	2015 (Bias Adjustment Factor = 1.030)	2016 (Bias Adjustment Factor = 0.97)	2017 (Bias Adjustment Factor = 0.91)
H	Roadside	N	30	33	34	34	32	32	28
I	Roadside	Y	**40**	37	38	**42**	37	38	36
J	Roadside	Y	**52**	**52**	**48**	**53**	**45**	**47**	**42**
K	Roadside	Y	**45**	**43**	**43**	**47**	**42**	**42**	38
L	Roadside	Y	**42**	**42**	**43**	**48**	**43**	38	**40**
M	Roadside	Y	38	38	-	-	-	-	-
O	Roadside	Y	39	**41**	**42**	**46**	**41**	**40**	36
Q	Roadside	Y	36	34	39	**45**	39	37	35
S	Roadside	Y	30	30	31	-	-	-	-
T	Roadside	Y	25	25	-	-	-	-	-
U	Roadside	Y	37	36	37		-	-	-
V	Roadside	Y	**43**	**43**	**41**	**45**	**46**	**42**	38
Y	Roadside	Y	36	38	-	-	-	-	-
Z	Roadside	Y	**41**	**43**	**41**	**44**	**43**	**42**	37
ZA	Roadside	Y	29	29	29	34	30	31	27
ZB	Roadside	N	26	28	29	32	27	29	24
ZC	Roadside	Y	37	**40**	39	**44**	39	37	34

CF1	Roadside	Y	29	32	32	36	34	33	27
CF2	Roadside	Y	**42**	**42**	**42**	**43**	**41**	**42**	38
CF3	Roadside	Y	34	31	31	40	38	30	30
CF4	Roadside	Y	36	34	38	**42**	39	36	34
CF5	Roadside	Y	32	33	39	**45**	39	39	33
CF6	Roadside	Y	33	30	32	38	36	35	35
CF7	Roadside	N	30	30	30	34	33	30	27
T1	Roadside	N	37	37	33	38	34	32	29
T2	Roadside	N	35	34	-	-	-	-	-
T3	Roadside	N	29	30	28	-	-	-	-
T4	Roadside	N	26	26	-	-	-	-	-
T5	Roadside	N	27	26	-	-	-	-	-
T6	Roadside	N	29	28	24	-	-	-	-
T7	Roadside	N	23	24	27	-	-	-	
LC15	Roadside	Y	-	-	35	**43**	38	35	29
LC16	Roadside	N	-	-	20	24	27	-	-
LC17	Roadside	N	-	-	30	39	36	34	30
LC18	Roadside	N	-	-	35	35	32	30	31
LC19	Roadside	Y	-	-	**59**	**67**	**61**	**60**	**60**
LC20	Roadside	Y	-	-	**45**	**55**	45	48	**44**
LC21	Roadside	N			-	39	33	33	**42**
LC22	Roadside	N	-	-	28	31	27	28	26
LC23	Roadside	N	-	-	31	39	35	35	31
LC24	Roadside	N	-	-	30	32	33	32	29
LC25	Roadside	N	-	-	29	27	24	24	22
LC26	Roadside	N	-	-	36	**41**	38	36	32
LC27	Roadside	N	-	-	29	35	31	31	28
BLS 1	Roadside	N	-	-	31	37	34	32	27
H1	Roadside	N	-	-	24	28	25	25	21
CF8	Roadside	N	-	-	33	38	36	33	29
LC28	Roadside	N	-	-	-	**45**	39	36	28
W1	Roadside	N	-	-	-	20	18	-	-
W2	Roadside	N	-	-	-	22	16	-	-
W3	Roadside	N	-	-	-	23	21	-	-
LC29	Roadside	N	-	-	-	-	38	35	27
LC30	Roadside	N	-	-	-	-	32	31	24
LC31	Roadside	N	-	-	-	-	36	33	30

LC32	Roadside	Y	-	-	-	-	**53**	**49**	**46**
LC33	Roadside	Y	-	-	-	-	**-**	**-**	35
M6									20

Results shown in red have data capture less than 75%

Appendix B: Full Monthly Diffusion Tube Results for 2017

Table B.1 – NO_2 Monthly Diffusion Tube Results – 2017 ug/m^3

Null Result | suspect | possible suspect | tube gone

NITROGEN DIOXIDE MONTHLY RESULTS 2017(ugm3)												
SITE					GRADKO TUBES							AV
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Raw
L/C1	63.00	70.28	47.85	52.14	46.16	47.51	39.56	42.96	53.37	45.41	55.61	41.19	50
L/C4	27.81	20.58	17.65	13.86	12.03	9.35	10.23	10.23	18.41	14.98	22.73	21.81	17
L/C5	44.50	37.21	37.79	38.08	34.73	28.50	27.76	25.57	34.79	26.96	39.67	32.72	34
L/C6													
L/C7	42.13	39.82	36.92	38.06	30.88	34.23	27.55	29.43	33.74	35.02	41.25	36.81	35
L/C8	45.42	38.62	35.14	30.84	34.29	27.87	25.42	25.07	34.20	30.26	40.73	32.50	33
L/C9	47.24	53.56	43.20	36.72	38.26	36.58	30.53	31.32	34.87	42.84	45.27	42.76	40
L/C10	77.75	71.71	49.15	92.20	61.55	86.11	69.02	54.68	46.00	57.15	69.93	83.50	68
L/C11	74.15	57.73	60.92	78.01	54.58	59.94	54.43	50.08	56.25	73.30	67.39	67.25	63
L/C13	43.25	39.17	31.49	30.59	29.16	28.87	26.45	32.99	39.94	40.81	47.75	46.05	36
L/C14	49.21	42.30	42.36	37.13	31.53	31.05	29.57	28.63	32.60		45.54	35.60	37
M/C 3													
A	37.32	31.09	29.07	23.57	25.61	28.09	17.50	26.40	28.35	23.17	34.87	28.56	28
B1	44.72	39.36	38.35	35.10	28.67	34.65	28.15	32.40	31.15	31.23	40.59	36.86	35
B2	45.14	38.69	39.45	39.32	28.48	32.40	28.07	29.48	32.02	33.21	40.12	40.90	36
B3	45.30	41.96	42.32	39.42	27.90	32.41	23.46	30.84	30.52	31.57	42.37	37.75	35
C1	53.08	43.31	46.40	47.44	41.24	39.32	34.51	34.79	42.86	34.43	51.44	41.30	43
D1	52.86	44.35	43.77	43.83	39.25	35.14	34.27	33.87	40.72	32.90	44.63	40.03	40
E1	50.19	44.26	44.09	44.15	36.83	38.16	35.27	32.72	40.69	34.51	55.31	45.33	42

G													
H	33.58	36.75	33.43	27.90	35.87	24.32	24.40	22.49	31.21	25.58	36.84	33.84	31
I	64.50	43.07	37.94	35.65	37.73	32.19	31.39	29.11	43.24	35.49	41.35	39.42	39
J	46.86		45.57	46.45	45.57	44.20	40.27	39.32	47.34	46.16	58.63	49.67	46
K	51.85	46.78	45.28	42.02	41.66	37.15	37.71	33.36	39.80	42.89	43.64	41.06	42
L	52.76	45.78	40.18	46.64	41.13	44.60	37.39	37.47	43.49	43.13	49.86	44.47	44
O	53.19	46.68	41.59	39.71	35.36	36.57	36.54	28.27	36.99	35.55	48.03	41.72	40
Q	56.02	45.58	39.14	43.57	36.85	43.28	36.65	26.79	34.54	25.35	41.95	36.51	39
S													
U													
V	53.29	41.79	42.88	47.26	36.46	39.99	37.85	36.22	36.92	42.83	44.50	45.93	42
Y													
Z	54.36	39.52	43.76	46.48	35.34	37.72	38.32	31.41	35.85	36.35	51.90	41.52	41
ZA	37.90	33.25	30.66	25.57	27.03	24.63	24.51	22.11	34.79	27.81	35.33	34.04	30
ZB	38.67	32.74	30.65	21.35	27.20	20.56	20.78	19.91	24.87	25.18		30.90	27
ZC	52.85	47.38	41.73	29.94	28.15	30.40	28.44	27.29	35.39	35.55	49.36	39.87	37
cf1	38.22	30.84	31.64	35.76	26.91	27.32	24.27	25.78	29.28	26.82	31.61	33.77	30
cf2	50.69	41.82	45.97	46.40	33.21	41.09	36.53	37.79	38.20	38.29	47.71	44.41	42
cf3	48.11	38.42	38.29	31.95	28.85	26.68	24.96	25.29	28.53	31.08	35.91	32.84	33
cf4	47.73	44.77	39.89	35.50	33.59			29.69	34.57	31.60	42.53	38.76	38
cf5	50.77	39.53	44.61	32.70	33.57	29.05		28.35	36.87	28.55	42.98	36.51	37
cf6	44.04	34.54	36.71	27.68	27.10	26.24	25.82	24.52	30.04	28.03	31.33	34.56	31
cf7	37.51	28.98	29.51	34.44	23.83	23.91	23.47	24.71	28.12	26.50	38.80	34.81	30
T1	44.93	35.94	37.07	31.14	27.84	29.45	25.16	25.25	33.57	32.90	32.60		32
T2													
T3													
T4													
T5													
T6													
T7													
LC15	42.54	33.39	36.09	33.04	26.02	28.37	24.55	26.59	29.48	30.93	36.03	40.27	32
LC16													
LC17	46.59	39.99	37.65	35.00		23.83	22.43	21.59	29.48	28.23	38.55	34.36	33

LC18	37.13	33.64	36.01	29.61	30.00	34.30	27.92	28.32	33.56	35.35	43.82	39.95	34
LC19	79.34	55.99	62.53	71.65	108.71	60.27	57.21	50.41	59.24	60.60	64.44	65.91	66
LC20	65.98	51.12	51.05	44.84	43.29	41.26	39.08	35.44	46.42	46.38	56.87	54.37	48
LC21	46.11												46
LC22	40.73	29.22	29.54	22.58	24.45	20.26	21.29	18.58	25.18	30.66	39.96	34.49	28
LC23	46.88	37.48	40.19	32.11	26.05	28.27	27.00	25.64	30.19	35.05	40.89	37.88	34
LC24	43.85	31.76	33.22	28.71	24.49	26.93	24.35	23.56	30.08	29.73	42.34	38.33	31
LC25	38.77	28.77	27.22	19.51	20.30	17.67	16.69	16.29	23.07	20.77	32.69	32.27	25
LC26	46.9	34.50	37.08	35.99	29.11	30.58	26.51	25.65	31.44	32.68	49.71	45.43	35
LC27	43.51	33.01	35.27	28.90	27.05	22.21	23.37	21.58	28.09	28.67	43.47	40.06	31
BLS1	40.37	29.28	32.49	23.07	29.04	28.27	23.60	24.24	28.94	27.32	31.15	34.94	29
H1	38.72	28.36	27.75	18.24	22.01	17.37	14.36	15.86	19.30	19.80	23.50	30.95	23
CF8	48.67	36.93	34.73	25.68	30.43	24.77	23.64	26.64	30.79	31.97	32.35	41.10	32
LC28	40.09	31.67	34.39	28.36	27.11	23.31	25.52	22.72	30.25	29.48	37.61	35.13	30
W1													
W2													
W3													
LC29	40.5	29.68	34.78	31.88	25.85	23.54	23.04	21.80	26.82	27.46	34.74	33.50	29
LC30	35.26	28.42	27.68	21.93	21.27	18.59	20.88	19.34	28.44	23.45	36.07	32.03	26
LC31	40.84	34.56	36.16	32.81	26.12		26.56	25.20	29.60	35.52	41.37	38.99	33
LC32	64.02	53.05	56.65	45.94	56.90	46.12	40.06	38.24	46.82	39.71	63.69	56.16	51
LC33		38.89	44.68	39.24	31.78	34.56	33.45	28.14	36.90	42.56	44.80	52.61	39
M6					22.74	20.90	11.76	15.64	23.46	25.72	25.73	31.22	22

(1) See Appendix C for details on bias adjustment

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

Automatic Monitoring Sites

The Council currently has two operational automatic air 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}). The Dalton Square site monitors nitrogen dioxide only. The two stations commenced monitoring in 2011 and both currently (2018) remain operational.

Equipment at the two sites is (2 No. APNA 360/370 NO_2 analysers and 1No. TEOM PM_{10} particulate monitor) are maintained and serviced by Horiba Instruments Limited, 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.

Figure 5 - Gradko Accreditation Certificate and Schedule (for provision and analysis of NO_2 diffusion tubes used in Lancaster)

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).

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

UKAS TESTING

2187

Accredited to ISO/IEC 17025:2005

Gradko International Ltd (Trading as Gradko Environmental)

Issue No: 019 **Issue date:** 04 September 2015

St Martins House
77 Wales Street
Winchester
Hampshire
SO23 0RH

Contact: Mr A Poole
Tel: +44 (0)1962 860331
Fax: +44 (0)1962 841339
E-Mail: diffusion@gradko.co.uk
Website: www.gradko.co.uk

Testing performed at the above address only

DETAIL OF ACCREDITATION

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

Assessment Manager: LB

Page 1 of 2

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

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

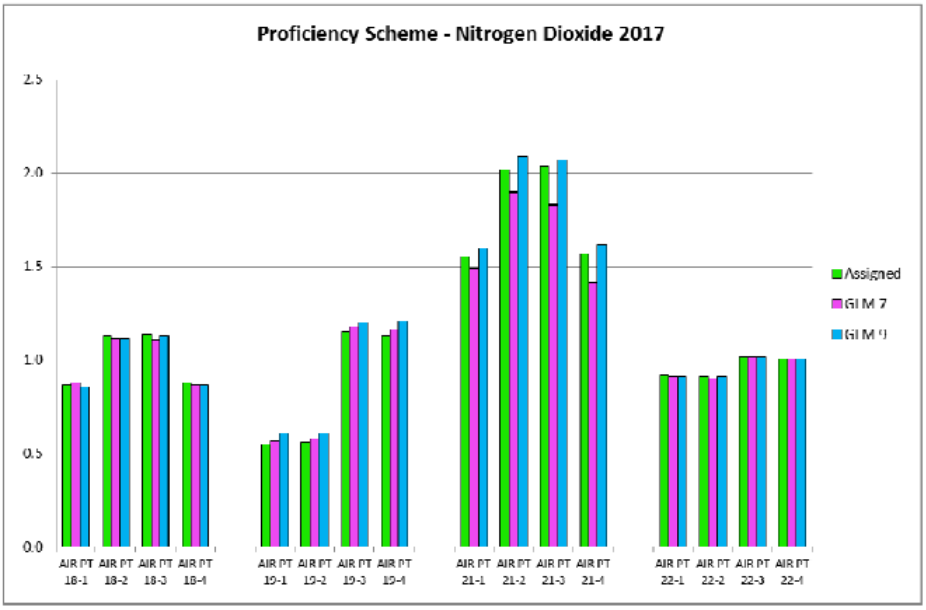
Table C.2 - Gradko NO_2 proficiency scheme results 2017

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

AIR PT Nitrogen Dioxide Proficiency Scheme Results 2017

Methods: GLM 7 – Camspec M550 Spectrophotometer, GLM 9 – QuAAtro Continuous Flow analyser

AIR PT Proficiency Scheme - Nitrogen Dioxide 2017								
Date	Round	Assigned value	Camspec M550 - GLM 7			QuAAtro - GLM 9		
			Measured concentration	z-Score	% Bias	Measured concentration	z-Score	% Bias
Feb-17	AIR PT 18-1	0.87	0.88	0.15	1.1%	0.86	-0.15	-1.1%
Feb-17	AIR PT 18-2	1.13	1.12	-0.12	-0.9%	1.12	-0.12	-0.9%
Feb-17	AIR PT 18-3	1.14	1.11	-0.35	-2.6%	1.13	-0.12	-0.9%
Feb-17	AIR PT 18-4	0.88	0.87	-0.15	-1.1%	0.87	-0.15	-1.1%
May-17	AIR PT 19-1	0.55	0.57	0.49	3.6%	0.61	1.46	10.9%
May-17	AIR PT 19-2	0.56	0.58	0.48	3.6%	0.61	1.19	8.9%
May-17	AIR PT 19-3	1.15	1.18	0.35	2.6%	1.20	0.58	4.3%
May-17	AIR PT 19-4	1.13	1.16	0.34	2.7%	1.21	0.90	7.1%
Aug-17	AIR PT 21-1	1.55	1.49	-0.49	-3.9%	1.60	0.41	3.2%
Aug-17	AIR PT 21-2	2.02	1.90	-0.79	-5.9%	2.09	0.46	3.5%
Aug-16	AIR PT 21-3	2.04	1.83	-1.28	-10.3%	2.07	0.18	1.5%
Aug-16	AIR PT 21-4	1.57	1.41	-1.29	-10.2%	1.62	0.40	3.2%
Oct-17	AIR PT 22-1	0.92	0.91	-0.14	-1.1%	0.91	-0.14	-1.1%
Oct-17	AIR PT 22-2	0.91	0.90	-0.15	-1.1%	0.91	0	0.0%
Oct-17	AIR PT 22-3	1.02	1.02	0	0.0%	1.02	0	0.0%
Oct-17	AIR PT 22-4	1.01	1.01	0.0	0.0%	1.01	0	0.0%



February 2017

Tables C.3 and C.4 Data submitted for national diffusion tube bias correction database (2017)

Diffusion Tube Collocation Data Questionnaire For Local Authorities

Please Read the "Notes" sheet and then fill in the white boxes of this questionnaire
Should you require assistance, email nick.martin@npl.co.uk or phone 020 8943 7088

	Date form filled in	Name of Local Authority	Your name	Phone number	Contact email
Your Details		Lancaster City Council	Paul Cartmell	01524 582728	pcartmell@lancaster.gov.uk

	Distance from kerb (m)	Site type (e.g. roadside, background). Definitions of site types are given on the "Notes" sheet	Distance from diffusion tube(s) to continuous analyser inlet (m) (this should be less than 1m from the analyser inlet)	Location (site name or a brief description)	Grid Reference of Site (if available)
Site Details	**3.3**	Roadside	0.15	Dalton Square	347852, 461611

	Prepared by	Analysed by	Example results sheet attached? (please attach a results sheet provided by the analysis laboratory)	Preparation method (e.g. 50% TEA in acetone; 50% TEA in water)	How are diffusion tubes deployed? (e.g. with a clip, spacer, shelter box, just tape)
Diffusion Tube Details	Gradko International Ltd.	Gradko International Ltd.		20% TEA in water	clip inside head/inlet cage

Continuous Analyser Details	Analyser type	QA/QC (e.g. local or network)
	Horiba APNA-370 chemiluminescence	Local

Data from the Automatic Analyser (Matching Individual Diffusion Tube Periods)

Period	Start Date (dd/mm/yy)	End Date (dd/mm/yy)	% Data Capture	Ratified / Provisional	NOx (if available) (ug/m^3)	Nitrogen Dioxide (ug/m^3)
1	05/01/2017	31/01/2017	99.5	ratified	91	38.9
2	31/01/2017	28/02/2017	99.9	ratified	65.8	33.7
3	28/02/2017	28/03/2017	99.9	ratified	70.3	36.6
4	28/03/2017	25/04/2017	99.9	ratified	55	31.5
5	25/04/2017	31/05/2017	99.4	ratified	47.1	26.9
6	31/05/2017	28/06/2017	99.1	ratified	46.7	24.3
7	28/06/2017	02/08/2017	99.9	ratified	46.9	22.8
8	02/08/2017	30/08/2017	99.4	ratified	50.9	24.4
9	30/08/2017	26/09/2017	99.8	ratified	57.1	28
10	26/09/2017	02/11/2017	99.4	ratified	67.1	32
11	02/11/2017	05/12/2017	99.6	ratified	101.2	47.5
12	05/12/2017	04/01/2018	99.2	provisonal from 01/01/2018	94.6	40.5
13						

Please express NOx as NO_2 (e.g. ppb x 1.913) or alternatively note the approach / units here:

When you are identifying the automatic monitoring periods that match your diffusion tube exposure periods, please be as precise as possible. It is not, however, necessary to match start times to the exact hour that you put out your tubes.

Individual Period (monthly) Mean Nitrogen Dioxide Data from the Diffusion Tubes (ug/m^3)

Period		Tube 1	Tube 2 (if available)	Tube 3 (if available)	Tube 4 (if available)
1		44.72	45.14	45.30	
2		39.36	38.69	41.96	
3		38.35	39.45	42.32	
4		35.10	39.32	39.42	
5		28.67	28.48	27.90	
6		34.65	32.40	32.41	
7		28.15	28.07	23.46	
8		32.40	29.48	30.84	
9		31.15	32.02	30.52	
10		31.23	33.21	31.57	
11		40.59	40.12	42.37	
12		36.86	40.90	37.75	
13					

Other Information	Are the concentrations stated in ug/m^3?	Did the diffusion tube supply or analysis method change during the monitoring period? When, from what, to what?	Were there any significant problems with the continuous analyser during the monitoring period?	Are there any other relevant issues with your data?
	Yes	No	No	No

Please Return Completed Questionnaires to: nick.martin@npl.co.uk
This questionaire is now maintained and distributed by the National Physical Laboratory on behalf of Defra and the DAs

Table C.5 Collected NO_2 diffusion tube bias adjustment factors for 2013-2017

Tube/Supplier Analyst	Method	2013	2013	2014	2014	2015	2016	2017
Local Factors		*Cable St*	*Dalton Sq*	*Cable St*	*Dalton Sq*	*Dalton Sq*	*Dalton Sq*	*Dalton Sq*
Gradko 2012 - 2016	20% TEA in water	0.907	0.941	0.936	1.034	1.030	0.97	0.91
National Factors								
Gradko (national factors) 2013 – 2017 (2017 factor from sheet 06/18)*	20% TEA in water	0.95		0.92		0.91	0.92	0.87

* National bias adjustment factors available at : http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

NB Dalton Square Bias Correction factor was used to bias correct Lancaster diffusion tube results in 2017 (this report). This was used in isolation as results indicated an unidentified analyser fault (normally an average of the two local sites has been previously used). Using the national bias factor results in tube results being slightly lower, but would not affect exceedances other that reported in Section 3.2.1 above. The bias correction factor selected in this report (0.91) represents the highest factor scenario.

Appendix D: Summary of Air Quality Objectives in England

Table 1.1

Pollutant	Air Quality Objective[1]	
	Concentration	**Measured as**
Nitrogen dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

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

Appendix E – Lancashire County Council Public Health Air Quality Guidance Note (April 2016).

Air Quality

- **Leadership**

Tackling air pollution is a priority for Central Government, the primary driver is the effect on the health of the population. Defra has recently reviewed the UK approach to air quality and published updated guidance to all Local Authorities in dealing with LAQM issues. (Local Air Quality Management Policy Guidance, 2016). It encourages Directors of Public Health to prioritise action on air quality in their local area to help reduce the health burden from air pollution.

The Director of Public Health and Wellbeing report 2016 for Lancashire makes clear the need to tackle the wider determinants of health including promoting healthy living environments.

- **What good looks like / aspirations on air quality for Lancashire…**

- There are no new AQMAs in Lancashire and there is a reduction in the number of declared areas exceeding EU thresholds.

- The prevalence and severity of health conditions affected by poor air quality is reduced. This includes cardiovascular disease, lung cancer, respiratory disease, asthma and stroke.

- Communities are aware of the impact of poor air quality on their own health and are empowered to change behaviour to reduce emissions and reduce their own exposure.

The current picture:
The Committee on the Medical Effects of Air Pollution (COMEAP) estimated the mortality burden of human-made particulate pollution in the UK in 2008 as an effect equivalent to approximately 29,000 deaths, a loss of 340,000 years of life and average loss of 6 months of life expectancy from birth.

DEFRA has made an initial estimate of the effects of Nitrogen Dioxide (NO_2) on mortality to be equivalent to 23,500 deaths in the UK annually.

It is noted that this figure will include some overlap with the impact quantified against exposure to PM2.5. It is difficult to reliably estimate the combined health burden of multiple pollutants from the same source but a report by the Royal College of Physicians (RCP) in February this year presents a combined

estimate of effect of around 40,000 deaths annually with an associated annual social cost of £22.6 billion.

In Lancashire 4.3% of all (adult) deaths can be attributed to particulate, PM2.5, air pollution (Public Health Outcomes Framework). This is slightly lower than the England figure (5%) – but varies across Lancashire from 3.66% in Wyre to 4.56% in Chorley. Further work is needed to estimate deaths attributable to Nitrogen Dioxide in Lancashire.

There are18 declared Air Quality Management Areas (AQMAs) in Lancashire in 8 districts. Chorley, Fylde and Hyndburn currently have none and Duke Bar in Burnley is being closely monitored due to exceedances of EU legal levels this past year.

The main sources of harmful air pollution in Lancashire are caused by traffic which emits both PM2.5 and Nitrogen Oxides/Dioxide (NO_x/NO_2).

• Taking Action

Action to address poor air quality is already under way. The district councils have responsibilities around monitoring air quality and reporting on the action being taken to improve areas of poor quality. They link to County Council services to deliver solutions across a number of service areas including; strategic and transport planning, development management, network management, new traffic schemes, sustainable and active travel, fleet management and public transport. Additionality district councils take action through their own service delivery; planning, taxi licensing and through their wider environmental health responsibilities.

To support this work Public Health will:

- Provide leadership on the impact of poor air quality on health, including lobbying of elected members and decision makers.
- Provide information and intelligence on the health impacts of air quality.
- Coordinate LCCs support to District Air Quality Officers who lead on Local Air Quality Management.
- Have an overview of LCC action (by all services) and district action on Air Quality.
- Review evidence and best practice on air quality actions to advise / input to LCC services and districts as required.
- Work with other LCC services & partners to identify and take forward potential county- wide projects to help support action on improving air

quality, including planning and submitting grant bids as agreed by partners.

- Raise awareness of health impacts and action with leaders, decision makers, officers and externally with businesses and the public.

- Input to local planning policy, transport plans, masterplans, etc. and consultations on planning applications regarding air quality issues.

From an initial review of existing action a number of gaps have been identified where Lancashire could do more, this is in line with recommendations included in recent air quality guidance (DEFRA, Local Air Quality Management Policy Guidance, 2016 draft NICE guidance Air pollution: outdoor air quality and health). Some of these gaps include business travel planning, driver training, public awareness campaigns, and trialling innovative mitigation actions such as green walls. There is also more that could be done to add to existing action taking place in a particular district by rolling out county-wide, for example taking forward planning guidance being developed in Lancaster across the county.

*****DRAFT *** Air Quality Priority Actions for Public Health and in partnership with others.**

What	Who
Coordinate LCCs support to district air quality officers who lead on LAQM locally, including: • Ensuring services are involved in developing and delivering district specific actions as needed. • Sign off of annual reports by the heads of main departments involved in air quality activity e.g. planning, transport and public health.	Public Health to co-ordinate with LCC services and district councils
Provide local up to date information on the health impacts of poor air quality on the population to enable prioritisation and targeting of future work. Including: • Deaths attributable to PM2.5 and NO_2 • Understanding, differentiating & communicating the impact for those living alongside main road/in AQMAs, urban locations and those living in rural locations • Prevalence of diseases where poor air quality is a contributory factor etc. • emission sources	Public Health working with PH Intelligence & PHE
Consider feasibility of identifying and agreeing areas 'at risk' of becoming AQMAs to introduce early action and to consider during planning process.	Public Health with district councils

Review evidence and best practice on air quality actions to inform future priority actions. This includes: • public awareness / behaviour change campaigns • cleaner vehicles, including electric vehicles • mitigating planting schemes / green walls • intelligent transport systems to provide real time information • clean air zones • driver behaviour change training	Public Health with support from PHE and district councils
Investigate and review the impact of non-traffic related emissions e.g. from wood burners, and what evidence there is for action.	Public Health with support from PHE and district councils
Input to the development of LTP4 and review of waste and minerals plan from an air quality perspective.	Public Health working with Strategic Planning
Review current policy and guidance and consider producing a Public Health 'Advisory Note' or other planning guidance on air quality if needed (roll out of Lancaster guidance?)	Public Health in liaison with county & district planners
Respond to consultations on planning applications, local plan and masterplan consultations to ensure air quality impacts and mitigating actions are considered	Public Health in liaison with county & district planners
Internal awareness session to be developed for LCC planners, Highways Developer Support & Network Management Officers	Public Health to co-ordinate
Public Awareness / behaviour change campaign – To be developed as key messages are agreed. Need to consider: • Short term episodes – email / text alerts to vulnerable residents?? • General awareness on long-term impact • Different audiences: - schools – information & education resources (work with safer travel team) - businesses, - general public • Different pollutant sources e.g. cars, vans, biomass etc.	LCC Public Health with district councils
Work with other LCC services & partners to identify and take forward potential county- wide projects to help support action on improving air quality, including planning and submitting grant bids as agreed by partners. Initial suggestions:	

Co-ordinate development of an electric vehicle charging / cleaner vehicles strategy and delivery plan for Lancashire.	LCC (PH / Highways ?) with district councils
Co-ordinate plans to submit a possible bid for ultra-low emission vehicle (ULEV) if funding becomes available. (It is anticipated that funding might become available during 2017)	LCC (PH / Highways ?) with district councils
Investigate the potential of green screens / planting schemes at significant locations, such as schools.	Public Health with district councils & Lancaster Uni.
Investigate feasibility of introducing workplace parking Levy	Public Health with district councils

Appendix F – Summary results of survey of Lancashire authorities regarding the adoption of regional air quality planning guidance

Local Authority	Option 3 (Full Guidance as SPD)	Option 2 (Standard measures + Mass Emission Assessment + Concentration Assessment)	Option 1 (Standard Measures + Concentration Assessment)	Planning Advisory Note (as either option 1 or 2)	Other
*Hyndburn	No decision yet	No decision yet	No decision yet	No decision yet	-
Ribble Valley	No	No	No	No	Own SPD Guidance
Burnley	Yes	-	-	-	-
Pendle	No	-	-	Yes (2)	-
Wyre	No	Yes(?)	Yes(?)	Yes (1or2) Interim	-
West Lancs	No	No	No	No	Own SPD Guidance
Lancaster	Yes	-	-	Yes(2) Interim	-
Blackburn	Yes	-	-	Yes(2) Interim	-
Blackpool	Yes	-	-	Yes(2) Interim	-
Preston	Yes	-	-	Yes(2) Interim	As Central Lancashire Guidance
*Chorley	Yes	-	-	Yes(2) Interim	
South Ribble	Yes	-	-	Yes(2) Interim	
Rossendale					
Fylde	No decision yet	No decision yet	No decision yet	No decision yet	-
South Lakeland	No	No	No	No	?

Appendix G

Electric Vehicle Charge Point delivery Plan - Lancashire County Council

We have just signed a 10 year contract with Chargemaster to provide (initially) 150 electric vehicle charging spaces across the county.

Based on the tender, and these are subject to change during the implementation process and site surveys etc, we pencilled in the following by district:

District	Ultracharge	F7 Dual	Outlets
Burnley	0	4	8
Chorley	1	2	5
Fylde	0	4	8
Hyndburn	1	8	17
Lancaster	4	15	34
Pendle	2	6	14
Preston	2	12	26
Ribble Valley	1	8	17
Rossendale	2	4	10
South Ribble	3	0	3
West Lancs	1	3	7
Wyre	1	9	19
Total	17	75	168

These numbers will be subject to change as it will be noted that we have 168 outlets listed when we will end up with 150.

The initial mix of chargers are expected to be 18 Ultra chargers (capable of charging a car from 0-80% in around 30 mins) and 66 Dual outlet Fast chargers (capable of charging 2 cars from 0-80% in 3-4 hours).

The charge points will be on the POLAR network which is a nationally accessible scheme run by Chargemaster allowing existing customers visiting Lancashire to use the machines immediately.

As part of the contract we have also secured a basket price for the chargers to allow us to purchase further machines (which we are doing for Preston bus station).

Our current timetable is to have all these initial machines installed this calendar year.

Appendix H - Lancashire response to consultation on draft national roadside NO_2 Plan

Response ID ANON-TWTA-YW1M-E

Submitted to **Improving air quality: national plan for tackling nitrogen dioxide in our towns and cities**
Submitted on **2017-06-14 15:35:26**

Introduction

1 What is your name?

Name:
Environmental Health Lancashire (Lancashire Local Authorities)

2 What is your email address?

Email:
pcartmell@lancaster.gov.uk

3 Are you responding as an individual or an organisation?

Organisation

4 If you are responding as an organisation please provide the name and nature of your organisation.

Name of organisation:
Environmental Health Lancashire (Lancashire Local Authorities Air Quality Sub Group)

Other public sector organisation

Other type of organisation:
Local Authority Regional Group

5 Which region are you based in?

Location:
England

6 Would you like your response to be confidential?

No

If you answered YES to this question, please give your reason:
Answer is No

7 How satisfied are you that the proposed measures set out in this consultation will address the problem of nitrogen dioxide as quickly as possible?

Very dissatisfied

Please provide comments to explain your answer:
Given the option based, far from finalised consultative nature of the plan, it is impossible to conclude whether or not the plan presents a package that can deliver air quality compliance as quickly as possible. The main element of the plan is for local authorities to deliver Clean Air Zones (CAZs). The route presented to the delivery of zones appears complicated and delivery far from assured given the potential controversial incidental impacts of charging schemes and absence of detail on funding criteria and funding availability. The accessibility of funding to local authorities faced with this prospect (by mandate or by conscientious responsible choice) both to implement and manage the undertaking and to execute and monitor actions is unclear and non-committal in the plan. These requirements and omissions do not create impetus for concerted effort and fast response by local authorities. In this way the plan does not provide a route which will address the problem of nitrogen dioxide as quickly as possible.

The plan presents Clean Air Zones as its flagship approach. For many road junction/ access road type AQMA areas the plan recognises that a CAZ approach may not be appropriate. It however does not appear to provide a range of proposals or stated support for local initiatives to address NO2 issues in these type of exceedance area. The plan is therefore not aimed a delivering NO2 compliance in these areas 'as quickly as possible'. Noting this omission, it is clear that the plan appears to represent proposals that are aimed at dealing with PCM model derived NO2 Limit Value compliance and are not aimed at addressing compliance with air quality Objectives or delivering best air quality health outcomes. In its aim of addressing NO2 Limit Value exceedances, the plan appears to forget the public health reason for addressing air pollutants. This is despite the specific recent engagement of public health over recent years and impact focus associated with PM2.5.

It is also felt that the emphasis (through Clean Air Zones) has been placed on a 'bottom up' approach to delivery of better air quality, with insufficient emphasis on nationally addressing the failings of vehicles with much higher real world emissions and taxation policies that promote the use of more polluting vehicles. It is felt that vehicle manufacturers should contribute air quality measures (based on differential pollutant damage costs?) to provide some redress the pollution issues resulting from their approach to EU emission standard compliance. There has been no discussion or explanation indicating the legal position or why this is not a possibility in the plan, and therefore is potentially a significant omission in an 'as quickly as possible' plan. It is considered that national government incentives and

taxation policies should be reviewed to support fast adoption of cleaner technologies. Perhaps and approach similar to that taken in Norway for electric vehicles could be adopted in the UK to help deliver an 'as quickly as possible' air quality improvement outcome?

The following provide examples of current air quality issues in Lancashire which are considered unlikely to resolved in the next few years :

• Blackburn with Darwen Borough Council currently has eight AQMAs. Significant long term improvements have been secured at three of these AQMAs, and they may be revoked in the near future. However, worst case exposure at the other five AQMAs, which contain a total of 276 households, remains in the region of 41 to 45 µg/m3. These AQMAs are at individual busy urban junctions across the Blackburn and Darwen conurbation where nitrogen dioxide from the exhausts of slow moving cars isn't readily dispersed because of nearby buildings. These problem AQMAs are not in the town centre or within one area, so a clean air zone does not appear to be feasible solution.
• Lancaster has three AQMAs. The AQMA around the centre of Lancaster comprises 4.2 kilometres of road, with monitored levels of nitrogen dioxide indicating continuing significant breach of the air quality objective (levels on the central section of the AQMA being monitored as high as 71ug/m3 (multiple monitoring points indicating levels ranged from 40ug/m3 - 71ug/m3 in the central section). There are 439 households located within the Lancaster AQMA. This area is currently deemed as compliant (as are the other two AQMAs in Lancaster) under Defra Limit Value modelling used in this plan.
• Pendle Council has one AQMA covering an area of approximately 9000 square metres that currently includes 60 households. NO2 levels in the AQMA are between 40 and 44 µg/m3. The AQMA is on a main traffic route from the centre of Colne to the M65 motorway. A Clean Air Zone is unlikely to be appropriate here because it is a through-route rather than a distinct central area.
• Preston City Council, which is part of the Preston Agglomeration currently has 5 AQMA's. 2 of these may be revoked in the future due to improvements in the bus fleet and routing. The 3 remaining AQMA's contain 82 households who are exposed to levels in the region of 40 to 61 µg/m3. 70 of these exposed households are currently within the area that has been deemed compliant under the Emission Limit Value modelling that formed part of this document.

The national air quality assessment and plan seems to ignore this position as national assessment indicates current compliance in all but one area (South Ribble) where compliance is predicted by 2019. The plan acknowledges the weaknesses of its assessment approach and suggest that a different approach could be adopted. Importantly however it does actually not commit to a nationally driven or supported approach to compensate for this PCM model driven failing. This would be expected in a plan aimed at delivering and ensuring compliance as quickly as possible. This omission intentional or otherwise, infers that the air quality problem in Lancashire is not important and that national assistance to resolve the issue is unlikely and will not be a priority. It is therefore considered that for Lancashire the assessment and resulting plan is lacking in proposals to stimulate and require direct action, never mind deliver compliance as quickly as possible. In fact for Lancashire it may be argued that the assessment and resulting plan has opposite effect, discouraging action by its dismissal and refusal to acknowledge air quality issues reported to Defra on an annual basis through the LAQM process.

8 What do you consider to be the most appropriate way for local authorities in England to determine the arrangements for a Clean Air Zone, and the measures that should apply within it? What factors should local authorities consider when assessing impacts on businesses?

Please provide your views:
If Clean Air Zones are mandated or voluntarily proposed for town/city centre type AQMA zones, it is considered that the assessment of necessary arrangements could be most efficiently, cost effectively and consistently be assessed through the utilisation of a nationally appointed consultant(s). This co-ordination will allow a standard content contract specification to be generated and applied and for results/outcomes to be collected and compared. In this way the appropriateness, extent and feasibility of local measures can be independently reviewed and assessed providing the best route to deliver a considered opinion unaffected by existing local positions or interests. Interaction with local authorities will take place through the provision of information to consultant and discussion through the project. Managing the process in this way will also promote centred experience, learning and knowledge gathering. This will enhance application and delivery and also act relieve local authorities who may struggle to manage the project given cuts to local authority funding. This approach is considered essential, particularly when reviewing the impact on business which will be particularly subject to interpretation and will affect the degree and scale of acceptable measures being applied within a CAZ. Defra based standardisation of approach to assessing impact on businesses (direct capital impacts and consequential trading impacts) will greatly assist in making the assessment robust, sufficient and acceptable to consultees or stakeholders.

9 How can government best target any funding to support local communities to cut air pollution? What options should the Government consider further, and what criteria should it use to assess them?Are there other measures which could be implemented at a local level, represent value for money, and that could have a direct and rapid impact on air quality? Examples could include targeted investment in local infrastructure projects. How can government best target any funding to mitigate the impact of certain measures to improve air quality, on local businesses, residents and those travelling into towns and cities to work? Examples could include targeted scrappage schemes, for both cars and vans, as well as support for retrofitting initiatives.How could mitigation schemes be designed in order to maximise value for money, target support where it is most needed, reduce complexity and minimise scope for fraud?

Please provide your views:
Funding should not be allocated through competitive time limited bidding, but simply through meeting set criteria. The criteria should be based on recognised air quality issues (designated AQMA's or Defra determined Limit Value exceedance areas) and the submission of assessed and costed plans to deliver pollution levels below Objective/Limit Value criteria (the process and assessment of plans being the same as that needed for CAZ's). It should be noted that if funding (statements on committed funding are absent from the current plan) is insufficient to deliver actions, then the plan could be considered insufficient (as queried in Question 1 above). If the funding pot is limited and cannot fully accommodate all plans, prioritisation may need to be applied. Prioritisation if adopted, should be transparent and fair (based on delivering the best health outcomes). Perhaps funding should be allocated in terms of the air quality improvement and the number of persons (meeting relevant exposure criteria) exposed within areas showing LAQM reported monitored/assessed Objective exceedance. Reduction in other health impacting air pollutants (other than nitrogen dioxide e.g. particulate) should not be discounted in this process. Given that health impact is the driving force behind air quality improvement it would seem perverse for delivery of EU limit values in areas with no Objective based exposure to be prioritised.

Given the large funding implications for mass scrappage of vehicles (unless funding is obtained from vehicle manufacturers?) it is difficult to see how this could proceed or practically be accepted. The implementation of a very limited vehicle scrappage scheme could remove some vehicles from local fleets, but

assessment indicates this would have a very limited effect on compliance. None the less, the overall health based impact arising from all emissions from older vehicles (not understood to be assessed in the plan) may still justify some attention in this way. Given vehicle ownership information is held centrally, it is considered that a national scheme, based on national criteria that would be the simplest way to remove the most polluting active vehicles and minimise scope for fraud.

Tackling buses and taxis should particularly be a priority given their proportionally significant emission contribution in polluted town and city areas. In this specific case national funding should be provided uncompetitively to facilitate change in all such town/city centre areas (mandatory/voluntary CAZ's or AQMA's) where air quality Objectives are exceeded. Retrofitting vehicles is now accepted as a valid and cost effective solution to reduce pollution from vehicles (particularly larger vehicles), although schemes which are viable and introduce zero emission vehicles should benefit from greater incentives.

Dependant on funding, HGV's and LGV should be next in line. However if source assessment indicates cars and not HGV's/LGVs are not the priority cause, then cars should be addressed. Hopefully measures short of scrappage for most vehicles can be used to drive compliance e.g. parking strategies, charging policies and management, infrastructure projects to deliver transport alternatives. Some examples of infrastructure projects that if funded could address air quality issues in Lancashire AQMA's are:

• In Blackburn a new link road has been identified as a suitable solution to issues at one of our problem AQMAs. The link road has gone in our master plan, but the implementation of the new link road has been delayed because of funding issues.

• In Lancaster an example of a local infrastructure plan, is that proposed to address the AQMA at Galgate. The plan is the provision of a bypass route which would also act to support the delivery of additional housing proposed in the Local Plan in this location. The proposal is contained in the adopted Transport Masterplan for Lancaster available at :
http://www.lancashire.gov.uk/council/strategies-policies-plans/roads-parking-and-travel/highways-and-transport-masterplans/lancaster-district-highways-and-transport).

If funding was made available for these proposals, delivery of this planned action could be accelerated and serve to deliver NO2 compliance in these specific locations 'as quickly as possible'.

10 How best can governments work with local communities to monitor local interventions and evaluate their impact?

Please provide your views:
Defra should insist that where new or revised AQAP's are produced or where appropriate CAZ plans are required these should be properly assessed, costed and include checks to monitor outcomes. Plans that do not deliver this should be rejected. It is therefore suggested that government/Defra needs initially to fund the production of new plans where air quality levels are not considered likely to be in compliance by 2020. It is suggested that the package of measures presented in the new plan must be assessed to be sufficient to deliver compliance with air quality Objectives by 2025 or earlier if possible, based on a precautionary assessment approach. The use of local monitoring (air quality and traffic monitoring) along with both a count/ mass emission/concentration based assessment approach to both demonstrate potential outcomes and monitor actual outcomes. Existing monitoring may need to be supplemented in some areas. If Defra wish to appoint consultants on a national basis to carry out mandatory/voluntary CAZ/AQAP assessments for areas considered to be still in exceedance post 2020, this would be welcomed and considered a positive step to consistency, sharing and good outcomes.

11 Which vehicles should be prioritised for government-funded retrofit schemes?

Please provide your views:
The retrofit priority proposal is generally agreed, but should always be supported by nationally available schemes to incentivise the uptake of ULEV, particularly for taxi use. In the Lancashire areas most hackney carriages/private hire vehicles are not black cabs, but are diesel cars/people carriers. Retro fitting black cabs in Lancashire would therefore not be a priority for Lancashire.

12 What type of environmental and other information should be made available to help consumers choose which cars to buy?

Please provide your views:
Financial incentives are a much better lever than labels and proposals which influence consumer choice in this way should be the main consideration for government in directing consumers. Incentives should be particularly targeted to promote the accelerated uptake of electric vehicles.

13 How could the Government further support innovative technological solutions and localised measures to improve air quality?

Please provide your views:
It is the view in Lancashire that electric vehicles seem to offer the most likely future solution to transport based air quality issues, but wider uptake is impaired due mainly to vehicle range/charging issues (as purchase cost differentials with existing government grants are decreasing). The government should therefore place massive emphasis on supporting the development of vehicle design and specifically battery technologies which address these issues. Government should also ensure the delivery of national and local charging infrastructure. The government should be aware that even where local policies and/or guidance are in place, many developments in Lancashire are not providing charging infrastructure (or at best very limited infrastructure provision), using financial viability and current electric vehicle usage arguments to challenge local planning requests or recommendations. Clear unambiguous direction should be provided from government to ensure at the very least all new residential development is capable of facilitating EV usage.

With the aim of improving air quality in general (and not just transport related NO2), it is also considered there is great scope to reduce polluting emissions for buildings, by adopting more rigorously applied and ambitious energy efficiency and solar energy harnessing requirements (for new and existing buildings). Focus should also be placed on resolving a growing issue of wood burning appliances that are presenting an increasing pollution issue in many urban locations.

14 Do you have any other comments on the draft UK Air Quality Plan for tackling nitrogen dioxide?

Please provide your comments:

The plan seeking consultation comments is not a complete proposal. A further opportunity to comment on a revised and updated plan would therefore be seen as essential. It is hoped that a revised plan would be inclusive of areas monitoring continuing exceedance and would detail assistance arrangements available to assist in the delivery of mandatory/voluntary CAZs or for measures planned to deliver local air quality compliance where CAZ's are not the appropriate approach.

Although the plan is pursuing measures to deliver rapid improvement to air quality, most actions will take a period of time to be delivered, usually a number of years. It therefore important not to neglect some actions which perhaps would not initially be viewed as rapid solutions. Planning controls are one such action which I think should form part of a national air quality plan and be part of all CAZ requirements. The main current issue of concern is that there is recognised pressure to deliver new housing and businesses and that such development will add cumulatively to existing air quality issues. Also where mitigation measures are sought for new development to address or reduce air quality concerns, these measures are rarely quantified or assessed, meaning that often a large proportion of their impact often remains post mitigation. The Lancashire and Yorkshire authorities working with the Low Emission Partnership (see http://www.lowemissionstrategies.org/) have developed new planning guidance to address these issues and are looking governmental support to promote widespread adoption and advancement of the approach. However support has not recently been forthcoming. The obvious risk of not applying such an approach is that cumulative impact from small/medium sized development and larger relatively unmitigated development will negate any actions to reduce emissions in other ways e.g. actions to reduce emissions from bus and taxi fleets through retrospective retrofit/ULEV uptake schemes. The omission of planning controls from the plan will therefore not deliver an 'as quickly as possible' plan.

The shift to electric vehicles is perhaps the most likely, but slightly longer term solution to road transport derived air pollution problems. There is a strong likelihood that new vehicles sales will be dominated by electric vehicles within the next 10/15 years. Manufacturers are advising that the range of battery vehicles will at least double within the next two years and with vehicle costs decreasing and fuel and maintenance cost advantages, all will greatly enhance customer selection. A main priority for the plan should therefore be placed in supporting and accelerating the proportion of new electric vehicles entering the fleet. Again the planning system can play an important role in this process through the planned delivery of suitable infrastructure at new developments or contributing to other infrastructure through S106/CIL arrangements. Local planning requirements should therefore again not be excluded from air quality plans as local plans, policies and guidance are key to deliver change. If ignored change will still take place in time but the plan will not have provided an 'as quickly as possible' way forward and transition will be impaired. In Norway policy and investment has resulted in approximately 40% of all new cars registered being EV's.

Appendix I – Onstreet Residential Chargepoint Scheme Grant Offer Letter

Office for Low Emission Vehicles
Department for Transport
33, Horesferry Road
London
SW1P 4DR

Grant Offer Letter – Onstreet Residential Chargepoint Scheme

Thank you for your application dated 29 August 2018 for the above Grant Funding for the purpose of installing on-street chargepoints for local residents wishing to charge their plug-in electric vehicles.

Your application has been assessed against the priorities and criteria as set out in the Invitation to Apply. We are pleased to inform you that the Office for Low Emission Vehicles (OLEV) is offering your organisation, Lancaster City Council, a grant with a maximum value of **£42,240** (Forty Two Thousand, Two Hundred and Forty pounds) only. The Grant Funding Period is from 14 September 2018 and ending on 31 March 2019.

The award of this Grant Funding Offer is subject to the terms and conditions set out in Annex A. You should read these carefully before accepting the offer of funding. The Grant Funding Offer Terms and Conditions together with the approved application will form the Grant Agreement to be signed by both parties.

Failure to observe these terms and conditions may result in the funding being withdrawn.

ACCEPTANCE OF OFFER
If you wish to accept this offer on the conditions specified, please sign and date all the attached documentation and return to OLEV within 10 days from receipt.

Yours sincerely

For and on behalf of The Office for Low Emission Vehicles
Department for Transport

Web: https://www.gov.uk/government/organisations/department-for-transport

Appendix J – Lancashire Air Quality Summit Communication Plan

Air Quality report / Clean Air Day 2018

Communications Plan

Introduction:

A new report looking at tackling air pollution in Lancashire and South Cumbria has been launched.

The collective report **Reducing deaths and ill-health caused by poor air quality in Lancashire and Cumbria** http://www.healthierlsc.co.uk/latestnews/airqualityreport is backed by the four directors of Public Health responsible for Blackburn with Darwen, Lancashire, Cumbria and Blackpool and is designed to highlight issues around poor air quality.

Public Health England estimates that around 4% of all deaths across Lancashire and Cumbria are attributable to poor air quality, from conditions such as heart and chest disease, stroke and cancer.

The aim of the report is to start a conversation and improve awareness of the issues, prompting people to take both individual and collective action to help cut air pollution following the Lancashire and Cumbria Air Quality Summit held in February.

The launch of the report coincides with **Clean Air Day 2018**, taking place on Thursday, June 21. Spearheaded by the behaviour change charity Global Action Plan, Clean Air Day aims to improve public understanding of both indoor and outdoor air pollution and how it affects our health, especially that of young children and people with heart and lung problems.

Objectives:

- To promote the launch of the collective report of the Lancashire and Cumbria Directors of Public Health
- To promote Clean Air Day on 21st June
- To work with partners across Lancashire and Cumbria to promote messages related to both

- To push out messages via relevant Lancashire and Cumbria comms. networks and groups
- To link clean air messages with launch of local initiatives

Stakeholders:

- All Lancashire and Cumbria;
  - Local authorities
  - Clinical Commissioning Groups
  - Hospital Trusts
- LCFT
- Lancaster University and other academic partners
- Environmental Health Officer Networks
- Sustainable Development Unit (SDU)
- Voluntary sector partners including Living Streets, Lancashire Sports Partnership *(other)*

Channels:

- Social media - Twitter, Facebook
  - #cleanairday
  - #AirQualityL&SC
  - Facebook event bit.ly/CAD-2018
- The Shuttle news online (Blackburn with Darwen)
- Council websites
- Intranet/staff bulletins
- Stakeholder briefings
- Healthy Lancashire and South Cumbria website
- Together a Healthier Future website (Pennine Lancs.)
- Other partner communications channels

Key messages:

- Air pollution contributes to around 4% of all deaths across Lancashire and Cumbria every year.
- Air pollution increases the risk of heart disease, cancer and asthma attacks. Being exposed to air pollution during pregnancy and after birth may affect the development of a child's lungs.
- Children are particularly vulnerable to air pollution. Air pollution is linked to premature births, low birth weight, impaired lung development, asthma and increased hospital admissions.
- In Lancashire and Cumbria the Directors of Public Health have started a conversation about what we can all do to improve air quality
- Find out how you can take action on air pollution

To find out more visit **www.cleanairday.org.uk** where you can find:

• Ways to **AVOID** the worst air pollution, both outdoors and in your home

• Tips to **REDUCE** the amount of air pollution you create

• A detailed look at the health implications of air pollution

• Information on how air pollution affects children

Suggested tweets:

- Air pollution contributes to around 4% of all deaths across Lancashire and Cumbria every year. #CleanAirDay #AirQualityL&SC

- Air pollution increases the risk of heart disease, cancer and asthma attacks. Being exposed to air pollution during pregnancy and after birth may affect the development of a child's lungs. #CleanAirDay #AirQualityL&SC

- Children are particularly vulnerable to air pollution. Air pollution is linked to premature births, low birth weight, impaired lung development, asthma and increased hospital admissions. #CleanAirDay #AirQualityL&SC

- In Lancashire and Cumbria the Directors of Public Health have started a conversation about what we can all do to improve air quality #AirQualityL&SC http://www.healthierlsc.co.uk/latestnews/airqualityreport (needs people to shorten it with webbased twitter shortener)

- Find out how you can take action on air pollution #CleanAirDay bit.ly/CAD-2018 #AirQualityL&SC

- Join in with #CleanAirDay and help create a cleaner future for everyone bit.ly/CAD-2018 #AirQualityL&SC

- Take part in #CleanAirDay and find out how you can take action on air pollution bit.ly/CAD-2018 #AirQualityL&SC

- Make a pledge to reduce the pollution **you create this** #CleanAirDay bit.ly/CAD-2018 #AirQualityL&SC

- Reduce, avoid, talk – find out how you can take action on air pollution for #CleanAirDay bit.ly/CAD-2018 #AirQualityL&SC

- Reduce, avoid, talk – join the conversation on air pollution this #CleanAirDay #AirQualityL&SC bit.ly/CAD-2018

- On 21 June people around the UK will join together to take action on air pollution on #CleanAirDay. #AirQualityL&SC Join us: bit.ly/CAD-2018

- Leave your car at home on 21 June - reducing air pollution and protecting your health. www.cleanairday.org.uk #CleanAirDay #AirQualityL&SC

Pledges

People are pledging to act on air pollution for Clean Air Day. This is key content for social media.

Examples of the pledges people are making are:

- I pledge to leave my car at home on 21 June Clean Air Day
- I pledge to switch off my engine whenever I can on 21 June Clean Air Day
- I pledge to walk my children to school on 21 June Clean Air Day
- I pledge to share tips to cut air pollution with others on 21 June Clean Air Day
- You can always create your own pledge if you wish.

Please share what you are doing to improve air quality on Clean Air Day and join the discussion at #cleanairday and #AirQualityLandSC

Resources:

A comprehensive suite of resources can be found via the **Clean Air Day** website including the following helpful toolkits;

- Workplace
- Healthcare
- Schools
- Community
- Youth
- No-idling
- Social media

Appendix K – Lancashire response to national consultation on draft national Clean Air Strategy 2018

Response ID ANON-NSSN-MAHZ-J

Submitted to **Air quality: draft Clean Air Strategy 2018**
Submitted on **2018-08-10 01:05:28**

Introduction

What is your name?

Name:
Paul Cartmell

What is your email address?

Email:
pcartmell@lancaster.gov.uk

Are you responding as an individual or on behalf of an organisation?

Organisation

If you are responding on behalf of an organisation, please tell us the type of organisation.

Local government

What is the name of your organisation?

Organisation:
Lancaster City Council and on behalf of Lancashire Local Authorities (Environmental Health Lancashire)

Please tell us what your or your organisation's primary concern is in relation to clean air

Health

Please let us know whether you are / your organisation is based in a rural or urban area

Urban

Would you like your response to be confidential?

No

If you answered Yes, please give your reason:

1. Understanding the problem

Q1 What do you think about the actions put forward in this chapter (see drop-down menu above)? Please provide evidence in support of your answer if possible.

Views on chapter 1 actions:
Improvements in modelling and measures to increase transparency are welcomed. However Defra already has more detailed/precise information made available to it through local authority LAQM ASRs which it has not used and has in the case of Lancaster ignored by exclusion from the national NO2 plan. This in turn has thwarted steps to improve air quality.

Monitoring data where available should generally always be used in preference to modelling data, and therefore should be a focus for inclusion in the Clean Air Strategy to ensure areas of poor air quality are addressed and policies/Defra/government support give to remedy these exceedances.

In terms of tracking progress in relation to PM2.5 there is likely to be a need for more monitoring. National/local monitoring provision should therefore be reviewed to ensure it is fit for purpose.

Q2 How can we improve the accessibility of evidence on air quality, so that it meets the wide-ranging needs of the public, the science community, and other interested parties?

Ideas on accessibility of evidence:
Accessibility can be improved by presenting data gathered through monitoring in a single place and simplifying access/presentation of the data for the relevant audience.

Currently if someone accesses air quality information e.g. for Thurnham Street Lancaster. The output is that the air quality is 'good '(at https://www.bbc.co.uk/news/science-environment-42566393) - in fact the air quality is measured at over 60ug/m3 annual mean NO2. If you use the Defra site (

https://uk-air.defra.gov.uk/forecasting/locations?q=la1 1xu), the answer generally come back also that air quality/pollution is 'low'. If someone looks at Defra national modelling that would also indicate that there is no exceedance issues in this area. This is very misleading, confusing and for two of the above, simply incorrect. It serves to dismiss and deprioritise the issue and is therefore not helping Lancaster improve air quality where it is needed.

This situation is repeated in a number of locations across Lancashire. This presentation of air quality information therefore needs to be amended.

In addition to information on pollution levels, information communicated to direct personal action during periods of poorer air quality, needs to be accurate and useful for its intended audience. If information is inaccurate and advice offered of little use, access to this proposed national resource will not be sought.

2. Protecting the nation's health

Q3 What do you think of the package of actions put forward in this chapter (see drop down menu of proposed actions above for a summary)? Please provide evidence in support of your answer if possible.

Views on chapter 2 actions:
As particulate pollution levels are not currently declining as expected how does the government intend to halve the number of people exposed? With PM2.5 measurements being nationally limited in number and potentially not ideally located to monitor changes in PM2.5 how will this target be determined? Will a national level of 10ug/m3 for PM2.5 be adopted as an Objective/ national assessment criteria for consideration in planning or environmental permitting applications?

The WHO also provides a 24hr limit for PM2.5 (25ug/m3) and a lower limit for PM10 (20ug/m3 annual mean). Will these be set as Objectives for consideration under national regulation and for consideration in planning/environmental permitting assessments?

Q4 How can we improve the way we communicate with the public about poor air quality and what people can do?

Communicating about poor air quality:
By providing clear messages and clear policies.

Recent examples of diesel and biomass policies do not present a clear message to the public. The health message relating to the impact of pollutants (PM and NO2) is still undecided.

Information campaigns (TV and social media are probably the most relevant) should be used to persuade choice to help change behaviour (to steer or nudge people to make better choices) e.g. choice of vehicle, choice of means of travel, choice of heating appliance/fuel. There has been insufficient use of media to influence change. It is important that campaigns do not focus on data but instead tell a story that people can relate to.

Campaigns to educate children within schools could be particularly beneficial to assist with future behavioural change to improve air quality. It is therefore suggested that a national air quality programme within schools should be part of the strategy to compliment or be integrated into a media focused approach.

3. Protecting the environment

Q5 What do you think of the actions put forward in this chapter (see drop-down menu above)? Please provide evidence in support of your answer if possible.

Views on chapter 3 actions:
Responsibility for the assessment and consideration of environmental/ecological (not human) impacts is unclear for most local authorities. The strategy should clarify how local authorities/regional authorities should address and deal with these issues.

National planning guidance and information on how to deal with planning applications for both human and environmental considerations is still lacking and should be a priority for the Clean Air Strategy.

Issued planning policy/guidance should give clear direction on the planning decision route for local authorities faced with development impacted areas exceeding air quality standards. Guidance on the significance of impact should not be left to the varying opinions and priorities of local authorities, planning inspectors and developers.

Q6 What further action do you think can be taken to reduce the impact of air pollution on the natural environment? Where possible, please include evidence of the potential effectiveness of suggestions.

Ideas for further environment action:
A ever increasing national focus on non-combustion related energy production/use.

4. Securing clean growth and driving innovation

Q.7 What do you think of the package of actions put forward in this chapter (see drop-down menu above for a summary)? Please provide evidence in support of your answer if possible.

Views on chapter 4:
There is little detail in the proposals.

As there is growth in domestic solid fuel use the strategy should perhaps look at measures to limit or restrict this growth. This could include prohibition, and appliance scrappage schemes. New development should be built with a cleaner future in mind. In this way there should be national requirements to make the provision/use of cleaner technologies mandatory. Examples could include mandated electric vehicle charging facilities for new homes and a set electric vehicle charging provision at certain other sites (offices, supermarkets, public car parks etc..) and use of solar energy systems within domestic and workplace developments. Prohibition of use of solid fuel for development in urban settings could also be a constraining national policy through the NPPF.

Q8 In what areas of the air quality industry is there potential for UK leadership?

Science, research and understanding of air pollution and its impacts, Monitoring and modelling of air pollution, Mitigation technology, Low or zero emissions technology, Other

If other, please specify:
Traditional approaches may be advanced (walking and cycling) - ebikes may present a real opportunity to change travel behaviour during good weather periods (and offer wider enviroment beneficial efficiencies over other most other transport modes).

If you would like to explain your answer further, please do so briefly here.:
Not doing, is usually environmentally preferable to doing and mitigating the impact. Approaches which remove impacts in the first place need to be a priority.

Q9 In your view, what are the barriers to the take-up of existing technologies which can help tackle air pollution?

Upfront costs, Operational costs, Lack of knowledge of the technologies available, Lack of information on the technologies available, Lack of reliable advice on the technologies available, Lack of track record for the technologies available, Familiarity with existing technology, Fit of older technology with other infrastructure and organisational processes, Lack of a strong reason to use a new technology

If other, please specify:

How can these barriers be overcome? :
Any of the above may be a consideration dependant on the circumstance presented. As already stated removing the impact (not doing) where possible should be the first approach rather than a technological solution. Where technological solutions are needed, someone needs to take a lead to offer clear guidance on the best approach. This guidance needs to be distilled (table with scores?) so it is readily useful to decision makers and annually reviewed to ensure it is up to date. In my view government departments/bodies should assume this role as hopefully they are best placed to fund the review of technologies and offer arising impartial advice or guidance to consumers/decision makers.

Q10 In your view, are the priorities identified for innovation funding the right ones (see drop down box below for the priorities)?

Don't know

Please briefly explain your answer:
More detail is need on what exactly will be funded. Battery technology is key to the delivery and utilisation of more sustainable power sources. Research in this area should be very significant.

5. Action to reduce emissions from transport

Q11 What do you think of the package of actions put forward in the this chapter (see summary in drop-down menu above)? Please provide evidence in support of your answer if possible.

Views on non-exhaust transport actions:
The statements are generally speaking, aims, but do not state how the aims will be achieved. To enable zero exhaust vehicles to operate in the UK will take a significant investment in infrastructure. I am unclear how this is planned to be delivered. Many houses are still being built without electric vehicle charging being integral to the development. Many public and residential areas and traffic routes still do not have a capacity to deal with any significant change in electric vehicle numbers.

Lancaster, Preston and South Ribble Councils sought investment (through the Clean Bus Technology Fund) to clean up emissions from buses, but despite considerable effort to demonstrate the need and outcome, the grant application was not supported. What is the government intending to do to clean up emissions from buses in particular. A national strategy to guarantee funding for the retrofit or replacement of older (none Euro 6) buses operating in areas with AQMA's would be a good strategy/plan.

What is the strategic approach for HGV's? There is no detail on this.

Will there be MOT emission test amendments to better check for NOx and Particulate emissions i.e. to ensure vehicles meet their correct Euro emission standard ? Robust testing arrangements to ensure vehicles are meeting expected emissions standards need to be part any strategy (to ensure as far as possible emission compliance).

Q12 Do you feel that the approaches proposed for reducing emissions from non-road mobile machinery are appropriate or not?

Don't know

Please briefly explain why.:
National requirements would simplify the process and avoid the need for local policies and regulation. The requirement could be a simple as plant operating in

'urban areas' (urban areas to be defined), should meet 'X' standard?

6. Action to reduce emissions at home

Q13 What do you think of the package of actions put forward to reduce the impact of domestic combustion (see summary in drop-down list above)? Please provide evidence in support of your answer if possible.

Views on domestic combustion actions:
Additional actions should be considered:-
Appliance scrappage scheme (there area lot of appliance already out there)
Stricter controls in urban areas
Public information campaigns (TV and social media) on human and environmental impact of using fuel products.
National planning requirements to exclude solid fuel use in new development in urban areas.

Q14 Which of the following measures to provide information on a product's non-methane volatile organic compound (NMVOC) content would you find most helpful for informing your choice of household and personal care products?

Views on NMVOC information - "A B C" label on product packaging:
Quite helpful

Views on NMVOC information - Information on manufacturer website:
Not sure

Views on NMVOC information - Leaflet at the point of sale:
Not sure

Views on NMVOC information - Inclusion in advertising campaigns:
Quite helpful

Please briefly explain your choices:
Regulating product composition is more effective that allowing public selection. Some VOC containing products may be perceived to perform better and therefore this is likely be the most important factor in choice of product (not VOC content).

Is there any other way of providing NMVOC information we should consider? Please briefly explain what and why.:

Q15 What further actions do you think can be taken to reduce human exposure from indoor air pollution?

Suggested further actions for indoor pollution:
1. Clear information on potential health/environmental impacts of using household/domestic products or heating choices. Highlighting good/less good approaches through clear story telling.
2. Consideration of the adoption of mechanical positive input ventilation to new buildings (accompanied by heat recovery) to aid better ventilation standards within homes.

7. Action to reduce emissions from farming

Q16 What do you think of the package of actions put forward in this chapter (see the drop-down menu above for a summary)? Please provide evidence in support of your answer if possible.

Views on chapter 7 actions:
All measures to reduce emissions and protect health and natural habitats are welcomed.

Q17 What are your preferences in relation to the 3 regulatory approaches outlined and the timeframe for their implementation: (1) introduction of nitrogen (or fertiliser) limits; (2) extension of permitting to large dairy farms; (3) rules on specific emissions-reducing practices? Please provide evidence in support of your views if possible.

Views on 3 regulatory approaches & timeframes:
Insufficient knowledge on subject to comment

Q18 Should future anaerobic digestion (AD) supported by government schemes be required to use best practice low emissions spreading techniques through certification?

Don't know

Please briefly explain:

If not, what other short-term strategies to reduce ammonia emissions from AD should be implemented? Please provide any evidence you have to support your suggestions.:

8. Action to reduce emissions from industry

Q19 What do you think of the package of actions put forward in this chapter (see summary in drop-down list above)? Please provide evidence in support of your answer if possible.

Views on chapter 8 actions:
Clear process structures and timetables for the review and updating of process guidance notes for permitted industrial activities are key to updating emission requirements in line with arising technologies and environmental needs. These activities have lost impetus over recent years.The strategy should reinforce and define this process .

There is a case for bringing plant below the suggested 500kw threshold within some kind of regulatory format where solid fuel is used (unless emissions are reliably controlled through plant/mitigation design).

Q20 We have committed to applying Best Available Techniques to drive continuous improvement in reducing emissions from industrial sites. What other actions would be effective in promoting industrial emission reductions?

Other actions beyond BAT:
see response to Q19 above

Q21 Is there scope to strengthen the current regulatory framework in a proportionate manner for smaller industrial sites to further reduce emissions? If so, how?

Ideas for strengthening current regulatory framework:
Emissions from some industrial sites/activities are perhaps greater than for some of the currently permitted activities. A review of permitting requirements may be useful.

Q22 What further action, if any, should government take to tackle emissions from medium combustion plants and generators? Please provide evidence in support of your suggestions where possible.

Ideas for medium combustion plants:

Q23 How should we tackle emissions from combustion plants in the 500kW-1MW thermal input range? Please provide evidence you might have to support your proposals if possible.

Ideas for 500kW-1MW combustion plants:
Similar requirements to MCP?

Q24 Do you agree or disagree with the proposal to exempt generators used for research and development from emission controls? Please provide evidence where possible.

Don't know

Please briefly explain your answer:
No local experience of such facilities.

9. Leadership at all levels

Q25 What do you think of the package of actions put forward in this chapter (see summary in the drop-down menu above)? Please provide evidence in support of your answer if possible.

Views of chapter 9 actions:
An overseeing regulator needs to have the ability and willingness to impose penalties/interventions where performance is inadequate. This needs to be a feature of any overseeing regulators powers.

Regulatory changes are not detailed and therefore it is not possible to comment on their sufficiency/effectiveness.

Q26 What are your views on the England-wide legislative package set out in section 9.2.2 of the draft strategy? Please explain, with evidence where possible.

Views on legislative package:
We support proposals, however a stronger approach may be possible to address particulate pollution.

Q27 Are there gaps in the powers available to local government for tackling local air problems?

Yes

If yes, what are they? :
1.Fixed Penalty Notices for bonfires burning waste (other than garden waste) would be helpful.
2. Solid fuel burning restrictions in urban locations.
3. Euro emission based MOT retest requirements for smoky vehicles (LA able to refer for retest). Costs to be borne by owner where fault identified but by

government where no fault/failure detected).

Q28 What are the benefits and risks of making changes to the balance of responsibility for clean local air between lower and upper tier authorities? [This question refers to the balance of responsibility for LAQM between two tier local authorities i.e. lower tier (District Councils) and upper tier (County Councils); it currently sits mainly with the district councils.]

What are the benefits?:
Placing responsibilities with authorities responsible for planning and undertaking actions would be very logical i.e. highways authority to be responsible for transport related air quality impacts as part of transport planning responsibilities. The none responsible authority (in two tier authorities) should have a consultative and overseeing input to ensure delivery of actions.

Legally mandating properly quantified and scheduled air quality plans should be a key part of the allocated responsibility.

What are the risks?:
Competing priorities may mean that air quality is not addressed or not addressed quickly. This is however an issue with the current responsibility position .

Q29 What improvements should be made to the Local Air Quality Management [LAQM] system? How can we minimise the bureaucracy and reporting burdens associated with LAQM?

Suggestions to minimise bureacracy and reporting:
Reporting requirements are reasonable however limited local authority staffing means time spent on air quality issues is affected by any requirement.

Quantification of action plans should be a mandatory requirement. Local authorities should be properly resourced to deliver such plans (as with local authorities mandated to produce CAZ/AQ plan feasibility studies). A renewed fresh approach to deliver this should be made available to all local/regional authorities with outstanding air quality Objective/Limit Value exceedances.

Suggestions for other improvements:
Competitive bidding for limited grant resources is very time consuming and frustrating. Schemes should be funded on a Defra set criteria basis rather than on a competitive bidding scenario. Where objective exceedances are monitored and valid/effective schemes are proposed, these should be supported and appropriately funded.

Under-resourced local/regional authorities competing with each other to deliver needed improvement action (to help meet air quality objectives) is obviously not a good strategy or plan for delivering better air quality across the UK.

10. Progress against our clean air goals

Q30 What do you think of the package of actions in the strategy as a whole?

Views on strategy actions as a whole:
Development Control and air quality does not seem to have attracted much attention in the draft strategy. It is important that standards/requirements set for new development are high, to minimise their impact in combination with other new and existing development. What we build now should be of the highest possible standard to minimise its impact. High standards set at a national level avoids complicated and varying approaches across UK authorities. This is the easiest and most efficient route to ensure the impact of development is reduced and that planners and developers are clear on expected emission reducing requirements.

Interpretation of what is acceptable or not (in terms of air quality impact) should not be left for developers, consultants and local authorities to debate, dismiss, treat superficially or prioritise. Significance decisions (directing planning decisions to approve or refuse development) where air quality exceedance considerations are an issue should be clearly defined through national guidance. The guidance should have quantified approaches to assessing impacts and importantly mitigation outcomes at their core .

Q31 Do you have any specific suggestions for additional or alternative actions that you think should be considered to achieve our objectives? Please outline briefly, providing evidence of potential effectiveness where possible.

Suggestons for additional/alternative actions:

Q32 If you have any further comments not covered elsewhere, please provide them here.

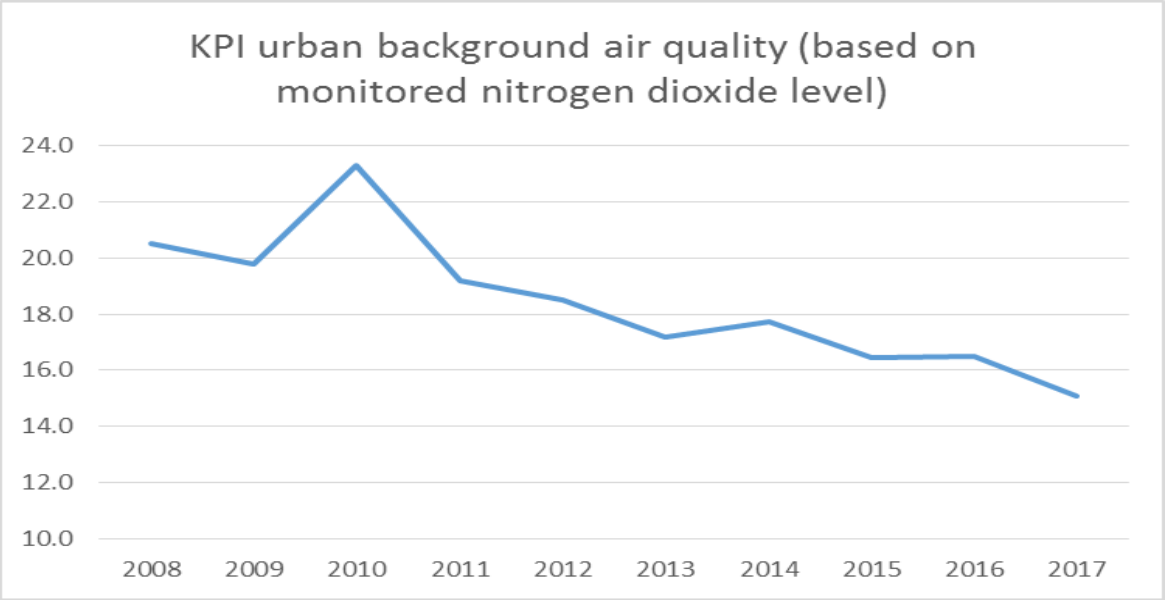
Further comments:
Nationally driven standards and requirements should be the solution to air quality issues. The strategy should not look to defer responsibility to local authorities in many cases but should take a firm and clear position to direct what happens. This in particular should apply to :-
1) Standards for new development which impact on air quality e.g. electric vehicle charging, solar requirements, restrictions on solid fuel in urban settings,
2)Public accessible electric vehicle charging infrastructure
3) Ensuring vehicle emission standards are met by all vehicels in real world settings
4)Providing funding to resolve air quality issues where solutions are available i.e. not through competitive bidding
5)Providing funding for quantified action plan feasibility studies where AQ exceedances exist.
6) Providing a national approach to address bus/HGV emissions affecting areas with air quality exceedances.
7) Presenting clear air quality messages and leading national campaigns to affect behaviour
8) Introduce regulation or schemes to reduce or eliminate polluting releases at source.
9) Ensuring air quality is properly considered when changes to other government policies are needed or being considered.
10) Dictating procurement where government funding is supporting the procurement.

Local authorities are able to help deliver air quality improvements, but to do this are substantially reliant on being given clear direction/leadership, effective tools and appropriate resources.

Appendix L – Local Air Quality Key Performance Indicators

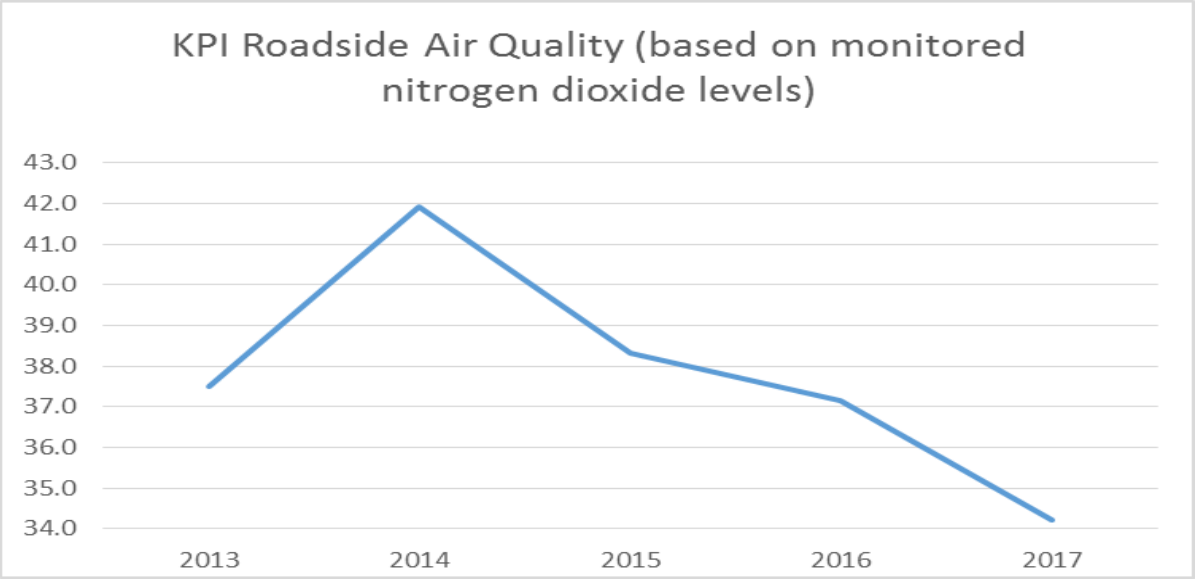
1. Key Performance Indicator for background air quality is based on local monitoring site LC4

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
20.5	19.8	23.3	19.2	18.5	17.2	17.7	16.4	16.5	15.1



2. Key Performance Indicator Roadside Air Quality

2013	2014	2015	2016	2017
37.5	41.9	38.3	37.2	34.2



Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA 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
ANPR	Automatic Number Plate Recognition
ASR	Air quality Annual Status Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
LEP	Low Emission Partnership
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
OLEV	Office for Low Emission Vehicles
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) 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
ULEV	Ultra Low Emission Vehicle

References

AEA (2008), Analysis of the relationship between annual mean nitrogen dioxide concentration and exceedences of the 1-hour mean AQS Objective. AEA Energy and Environment - May 2008 http://uk-air.defra.gov.uk/reports/cat18/0806261511_TG_NO2relationship_report_draft1.pdf

Air Quality Data Management, Dalton Square and Cable Street Automatic Monitoring Station Results 2017 (Jan 2018)*

Air Quality Data Management, Dalton Square Automatic Monitoring Station Results 2016 (April 2017)*

AQC (2016), Air Quality Monitoring: Lancaster City Council - January – December 2015, August 2015*

AQC (2015), Air Quality Monitoring: Lancaster City Council - January – December 2014, May 2015*

AQC (2013), Air Quality Monitoring: Lancaster City Council - January – December 2012, May 2013*

AQC (2012), Air Quality Monitoring: Lancaster City Council - January – December 2011, May 2012*

Defra (2009 LAQM Technical Guidance TG(09) February 2009.

Defra (2016) LAQM Technical Guidance TG(16) April 2016. Available at: http://laqm.defra.gov.uk/technical-guidance/

Defra (2016), Local Air Quality Management Policy Guidance PG(16) – Defra April 2016. Available at: http://laqm.defra.gov.uk/supporting-guidance.html

Defra (2009), Local Air Quality Management Policy Guidance PG(09) – Defra 2009 http://www.defra.gov.uk/environment/quality/air/air-quality/laqm/guidance/policy/

Lancaster City Council (2014). 2014 Air Quality Progress Report, Dec 2014*

Lancaster City Council Updating and Screening Assessment (including 2011 Progress Report) 2012, September 2012*

Lancaster City Council (2010), Draft Air Quality Action Plan for Carnforth, Final Draft, March 2010*

Lancaster City Council (Feb 2018) Air Quality Management Area (Lancaster)(No.2) Order 2018. **

Lancaster City Council (April 2007) Air Quality Management Area (Carnforth)(No.1) Order 2007 **

Lancaster City Council Further Assessment of Air Quality in Carnforth (December 2008)*.

Lancaster City Council (2007), Air Quality Action Plan for Lancaster, 2007*

LCC, 2008, Lancaster District Development Framework Core Strategy, 2003-2021, Adopted July 2008 available at: http://www.lancaster.gov.uk/planning/local-development-framework/local-planning-policy/adopted-documents/core-strategy/

LCCP, 2009, The Lancashire Climate Change Strategy 2009 – 2020, Lancashire Climate Change Partnership 2009 available at: http://www.lancashire.gov.uk/corporate/web/view.asp?siteid=3945&pageid=25809&e=e

LCC, 2011, Local transport Plan 2011-2021 – A Strategy for Lancashire, Lancashire County Council, May 2011 available at: http://www.lancashire.gov.uk/corporate/web/?siteid=5489&pageid=36949&e=e

LCC, 2013, The Air Quality Strategy for Lancaster, Lancaster City Council, November 2013*

LCC, 2013, LAQM Progress Report and Action Plan Update, September 2013*

LCC, 2016, LAQM Annual Status Report 2015, January 2016*

LCC, 2016, Provision of Electric Vehicle Charging Points for New development – Guidance for Developers February 2016, available at : https://www.lancaster.gov.uk/planning/planning-policy/supplementary-planning-documents-spds

LCC, 2016, LAQM Annual Status Report 2016, September 2016*

LCC, 2017, Low Emissions and Air Quality Planning Advisory Note and EV Charging Infrastructure PAN, September 2017, available at : https://www.lancaster.gov.uk/planning/planning-policy/supplementary-planning-documents-spds

Internet links

http://laqm.defra.gov.uk/review-and-assessment/review-and-assessment.html

http://www.environment-agency.gov.uk

http://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality/air-quality-reviews-and-assessments

http://www.lancaster.gov.uk/environmental-health/environmental-protection/air-quality/air-pollution-measurement-and-monitoring

***** Access to the Council's air quality reports is provided on the Council's website (link provided above).