2018 Air Quality Annual Status Report (ASR)

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

June 2018

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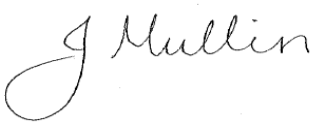
Signature	
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Executive Summary: Air Quality in Our Area

Air Quality in South Ribble

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

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

The principle pollutants of concern within South Ribble are those associated mainly with traffic, these being Nitrogen Dioxide, and Particulate matter. The Council only monitors Nitrogen Dioxide emissions via a network of diffusion tubes and currently has five declared Air Quality Management Areas within the borough, all declared for the potential exceedance of the annual average Nitrogen Dioxide objective value. The fifth AQMA was declared in December 2017 following monitored exceedances of the objective value within Leyland and recent granting of a substantial number of new houses within the area.

Trend data over the last five years indicates that levels were reducing however the results from 2016 show a slight increase over the 2015 levels in all areas. Exceedances of the annual mean objective value have been identified over 2017 in AQMA 3, Lostock hall with the other areas being close to the objective value.

The *'South Ribble Borough Council Air Quality Action Plan'* was finalised and published in 2016 and work has begun on many of the actions contained within it. Following declaration of the Leyland AQMA the Action Plan is in the process of being revised and updated.

Air Quality has also been identified within the Council's new Corporate Plan as a key priority for the Council helping to raise awareness throughout the Council, with elected members and to wider stakeholders.

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

Actions to Improve Air Quality

The action plan identified a number of key strategic transport improvements throughout the borough aimed at improving the flow of traffic and reducing congestion and hence improving air quality. These improvements form part of the large Preston and South Ribble City Deal. Work has begun on these, with some improvements to current road junctions already completed and the process started on others including a by-pass around Penwortham and one of the areas declared AQMA's.

The Council has continued its commitment to improve the electrical vehicle charging infrastructure by requiring charging points on all appropriate planning permissions granted over the last year.

Likewise the provision of cycle storage, changing facilities and provision of some cycle paths have been achieved through the planning process. A new county council Cycle and Walking Strategy is to be launched shortly encouraging the use of alternative forms of transport and providing suitable facilities.

Following the declaration of the borough's fifth Air Quality Management Area covering Leyland the borough wide action Plan is being reviewed to identify further actions to help improve air quality.

Conclusions and Priorities

The results from this year's review of Air Quality across the borough have highlighted a slight general decrease in Nitrogen Dioxide levels at nearly all monitoring locations over the previous year. The exceptions being one site within AQMA 3 at Lostock Hall and one site within AQMA 5 in Leyland.

However many of the monitoring locations remain close to the objective value highlighting the need to continue the work on air quality improvements. To this end the new corporate plan has identified air quality as a priority for the council and work on a revised Action Plan has begun through the recently established steering group.

A number of large new housing estates have been granted permission as part of the City Deal, the air quality impact of these has been considered and suitable mitigation measures required by condition.

Over the next year the Council will continue with the monitoring programme already established while it is hoped through some of the planning permissions granted and the road improvement works additional continuous monitoring may become available.

The steering group will also ensure that the revised Action Plan is completed and published by the end of the calendar year with work continuing on currently identified actions.

Local Engagement and How to get involved

If you would like to get involved in the work being undertaken to tackle air pollution within South Ribble; or you would like more information on how you can help reduce your personal emissions then please contact the Environmental Health Department at South Ribble Borough Council on 01772 421491 or via e-mail at envhealth@southribble.gov.uk. Further information will be made available on the Council's website in the near future.

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1 Local Air Quality Management

This report provides an overview of air quality in South Ribble 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 South Ribble Borough 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 E.1 in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by South Ribble can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://www.southribble.gov.uk/content/air-quality-management-area-locations. Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMAs, which provides for a map of air quality monitoring locations in relation to the AQMA(s).

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
AQMA 1	Declared August 2005	NO2 Annual Mean	Penwortham	An area encompassing a number of residential properties at the junction of Cop Lane, Liverpool Road and Priory Lane	NO	44.7	µg/m3	33.6	µg/m3	South Ribble Borough Council Air Quality Action plan, 2016	2016	link
AQMA 2	Declared August 2005	NO2 Annual Mean	Walton-le-Dale	An area encompassing a number of residential properties along Victoria Road.	NO	52	µg/m3	32.7	µg/m3			
AQMA 3	Declared August 2005	NO2 Annual Mean	Lostock Hall	An area encompassing residential properties at the Tardy Gate Junction.	NO	48	µg/m3	40	µg/m3			

AQMA 4	Declared August 2005	NO2 Annual Mean	Bamber Bridge	An area encompassing a number of residential properties along Station Road.	NO	44.9	µg/m3	35.1	µg/m3			
AQMA 5	Declared Dec 2017	NO2 Annual Mean	Leyland	An area encompassing a number of residential properties along Turpin Green Lane, through Churchill Way to Golden Hill Lane. Also encompassing properties along Chapel Brow.	NO	41	µg/m3	35.6	µg/m3	Review of the above action plan currently underway to include AQMA 5		

☒ **South Ribble Borough Council confirm the information on UK-Air regarding their AQMA(s) is up to date**

2.2 Progress and Impact of Measures to address Air Quality in South Ribble

Defra's appraisal of last year's ASR concluded;

> *There is an expectation that pollution concentrations will be expected to fall below the objective levels unless there are roads with additional congested traffic.*
>
> *The Council need to carefully consider the future monitoring programme, to ensure changes in AQMA designations can be made on the basis of local monitoring evidence.*
>
> *A steering group is required to co-ordinate the measures identified in the action plan.*
>
> *It is clear that close engagement with Lancashire County Council is required, particularly in the development of the next Local Transport Plan.*
>
> *The impacts of the planning residential developments in South Ribble need to be considered.*

A new steering group has been established to assist with the revision of the Action plan and to ensure identified actions both current and new are progressed. A closer working relation has developed with Lancashire County Council and a number of Lancashire wide meetings have been held through the Environmental Health Lancashire, Air Quality Subgroup officers meetings in conjunction with the county council. This include an Air Quality Summit involving members and planners from across the county.

South Ribble has taken forward a number of direct measures during the current reporting year of 2017 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

More detail on these measures can be found in the South Ribble Air Quality Action Plan 2016, and the Central Lancashire Highways and Transport Masterplan, March 2013.

Key completed measures are:

Requirement for electric vehicle recharging points on all suitable planning applications.

Require travel plans on all major planning applications, although this measure is in the process of being altered as detailed below in Table 1.2.

Requirement for cycle storage and changing facilities on major developments.

Air Quality identified as a key priority within the Council's Corporate Plan.

Opening of the Leyland Loop. A 12 mile cycle/walking path around Leyland to improving connectivity and safer routes for alternative transport.

The Penwortham Bypass Road has begun construction.

Progress on the identified action plan measures has been slower than expected due to lack of financial and staffing resources to adequately progress the identified measures within the Action Plan, and engagement with identified partners. It is anticipated that given the revived priority of Air Quality within the corporate plan additional measures will be secured over the next year.

The current AQAP is in the process of being reviewed following the declaration of the fifth AQMA in Leyland and whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, South Ribble anticipates that further additional measures will be identified as part of the review and others not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of the AQMA's.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Develop Lancashire Wide Air Quality Planning Guidance Document	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	EHL, AQ subgroup, Public health Lancs	<Mar 2016	Dec-17	Implementation of policy	Reduce emissions promote alternative forms of travel	Draft document produced and presentation to planners made	01/04/2021	The Local Plan and Central Lancashire Core Strategy are being revised. It is hoped to include a policy specific to Air Quality to which suitable measures and the guidance document can be attached.
2	Develop Lancashire Wide Air Quality Planning Guidance Document.	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	EHL, AQ subgroup, Public health Lancs	<Mar 2017	Jan-18	Implementation of policy	Reduce emissions promote alternative forms of travel	Draft document produced and presentation to planners made	01/04/2021	The Local Plan and Central Lancashire Core Strategy are being revised. It is hoped to include a policy specific to Air Quality to which suitable measures and the guidance document can be attached.

3	Encourage the greater use of public transport	Promoting Travel Alternatives	Other	LA, via planning	Apr 2016>	Ongoing	Increase use of Public transport	Reduce vehicle emissions	Use of travel plans requested on planning applications, started internal consultation re travel plans and using public transport	Ongoing	Local bus company has closed, use of condition varied LCC requesting Travel plan as well and are being reviewed and accepted by them. New condition with specific measures/info pack/ expected contents required
4	Improve signage in the area to re-direct traffic around the major conurbations, Leyland, Bamber Bridge, Lostock Hall	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	LA Environmental Health, LCC Transport Dept.	2018	2018	Re-direct HGV's	Reduced vehicle emissions			Resources, LCC Highways,
5	Re-design the road layout to keep traffic moving,	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	LCC highways	Apr-15	Mar-20	Road Improvements built	Reduce congestion	Work has started on the road improvements		Ikea has pulled out of Cuerden development jeopardising City Deal plans

6	Securing four major road developments identified within the Lancashire County Council 'Central Lancashire highways and transport masterplan'	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	LCC highways	Apr-15	Mar-20	Road Improvements built	Reduce congestion	Work has started on the road improvements		Ikea has pulled out of Cuerden development jeopardising city deal plans.
7	Buses replaced by cleaner (euro 6) vehicles, whole fleet replaced by 2020	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	LA; Env Health, Fund to obtained	Dec-17	Mar-20	All bus euro VI+	Reduce vehicle emissions	Defra bid unsuccessful		Local Bus company has closed, bid submitted to Defra with Preston council and LCC for retrofitting buses - unsuccessful
8	Plant more trees in AQMA's, place tree preservation orders on the existing trees	Policy Guidance and Development Control	Other policy	LA	Dec-17	Mar-18	No. of additional tress planted/preservation orders declared	Reduce emissions		01/03/2020	Funding, Planning, lack of space, community works dept.
9	Use of experimental traffic order to redesign traffic flows	Traffic Management	Other	Lead + Funded: LA Env. Health, LCC Highways	Jan-19	Mar-19	Use of orders	reduce emissions, redirect HGV's		01/03/2020	Identifying acceptable alternatives
10	Stop taxis waiting within AQMA	Promoting Low Emission Plant	Taxi Licensing conditions	Lead: LA Env Health & Licensing	Sep-17	Apr-18	Introduction of new conditions	Reduced vehicle emissions		01/04/2019	Licensing committee and trade
11	Introduce maximum age limit for taxis	Promoting Low Emission Plant	Taxi Licensing conditions	Lead: LA Env Health & Licensing	Sep-17	Apr-18	Introduction of new conditions	Reduced vehicle emissions	Age restrictions imposed	01/04/2017	Licensing committee and trade

12	Install cycle routes to encourage bike use over motor vehicles	Alternatives to private vehicle use	Other	LA Environmental Health, LA Transport Dept.	Dec-16	2020	Increase use of cycles	Reduced vehicle emissions	Implementation on-going		Planning, LCC highways, Funding, Community Works Dept.
13	Reduced – rate parking for low emission vehicles.	Promoting Low Emission Transport	Priority parking for LEV's	Lead + Funded: LA	Sep-17	Apr-18	Reduced rate parking for LEV's	Reduce emissions		01/04/2019	May have to wait until electric charging points are available.
14	Install electric vehicle recharge points to all council car parks and buildings	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	LA Property Services	Sep-17	Apr-21	Installation of EVR points, 1st ones by Apr 19	Reduced vehicle emissions	Work has commenced on internal discussions	01/04/2021	Funding
15	Require electric vehicle recharge points on all planning applications	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Lead LA Env Health, Planning	<Mar 16	ongoing	EVR points required on all suitable planning applications	Reduce vehicle emissions	ongoing	ongoing	Reluctance on Commercial industrial applications
16	Require detailed travel plans on every large planning application	Promoting Travel Alternatives	Other	LA Env. Health, Planning	<Mar 17	ongoing	travel plans requested on all significant apps	Reduce vehicle emissions	travel plans requested, however no support from County and plan to devise alternative model/template has commenced	ongoing	reluctance and conflict with LCC requirements new wording required for condition and template doc.

17	Develop an internal Travel plan and encourage large employers, industrial estates and education facilities to follow suite.	Promoting Travel Alternatives	Other	LA Env. Health	Dec-17	ongoing	Use of travel plans by LA and large businesses in the borough	Reduce dependency on cars		ongoing, internal roll out by Sep 19	resources, commitment
18	Encourage car sharing within the borough	Alternatives to private vehicle use	Car Clubs	LCC Transport Dept. LA Environmental Health,	<Mar 17	ongoing	Reduce Congestion, increase uptake of car sharing schemes	Reduce Congestion	Signage placed across borough	ongoing	resources
19	Encourage use of cycles and walking (schools and workplaces)	Alternatives to private vehicle use	Other	Lead + Funded: LA Environmental Health	Mar-18	Apr-20	Increase use of alternative forms of travel	Reduce emissions		01/04/2020	resources
20	Encourage provision of cycle storage on all planning applications and changing facilities in commercial developments	Alternatives to private vehicle use	Other	LA planning	<Mar 17	ongoing	Requirement for cycle storage and changing rooms on planning applications	Reduce Emissions	Being requested	ongoing	Reluctance to attached conditions
21	Raise awareness of air quality and the harmful effect of poor AQ	Public Information	Other	LA Env. Health, Public Health Lancashire	<Mar 17	Ongoing	Number and types of promotional events	Reduce emissions through improved knowledge	Member training sessions held. Lancashire wide promotional day with planners re new guidance document and air quality generally	Ongoing	Lack of resources but new priority in corporate plan will help moving forward.

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

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

South Ribble Borough Council is taking the following measures to address PM2.5: A review of the national background maps has been undertaken and this has confirmed no areas of likely exceedance of the objective level for PM2.5. A number of measures proposed within the South Ribble Air Quality Action Plan will also help to reduce PM2.5 emissions levels, these include:

- The continuation of the borough wide Smoke Control Area.
- The inclusion of PM2.5 assessment within Air Quality Assessments carried out through the planning process.
- Encouraging the use of alternative travel options e.g. cycling, walking, and use of public transport.
- The four major road improvements to divert traffic away from residential areas.
- Provision of EVR points on all new developments.
- The provision of EVR points on Council car parks.
- Raise awareness of the harmful effects of PM2.5 using the Public Health Indicator's which demonstrate that South Ribble suffers from the third highest adult mortality attributed to particulate matter in Lancashire at 4.3%, encouraging people to take actions to reduce their own emission rates.
- Work with the County Public Health Lancashire to develop actions to tackle PM2.5 levels.
- As part of the transport improvement works funding is being sought to provide a continuous analyser to monitor pollutant levels within the Penwortham AQMA 1. This monitor will have the function to monitor NO_2, $PM_{10,}$ and $PM_{2.5.}$ Providing additional data on the actual pollutant levels within the area.

2.4 Lancashire County Council Update

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. 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.

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.

In the next few months Lancaster University, led by Professor Barbara Maher, will be starting a piece of research in Lancaster regarding the impact of plants on reducing particulate matter air pollution. Lancashire County Council Public Health and Highways have 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.

Bus operators and district councils are supported in applying for funding such as 'cleaner. bus grants. LCC submitted an application 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.

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

3.1 Changes to the Local Authority Area

A review of the area has been undertaken to assess any changes that have occurred over the last 12 months and the potential for these to impact either negatively or positively on air quality.

As part of the Preston, South Ribble and Lancashire City Deal, significant residential development has been granted planning permission, particularly in the Leyland area, Bamber Bridge, adjacent to the declared AQMA's and Lostock Hall with construction already commenced, and some plots already occupied. The large residential development detailed in the 2017 Annual Status Report had progressed with work starting on the roadways. Unfortunately the main commercial developer and key occupier of the site, Ikea, has pulled out claiming financial reasons. The future of this site is therefore currently unknown.

Air quality has been considered for most of the above developments, with those using nationally recognised assessment methodology unsurprising concluding a negligible impact. In line with the proposed Lancashire wide guidance document mitigation measures have been requested on all of these sites. Monitoring of the area using diffusion tubes is currently being undertaken by the Council and the results are detailed below.

Progress is continuing on the major road infrastructure improvements identified in the 'South Ribble Borough Council Air Quality Action Plan' and 'Central Lancashire Highways and transport Masterplan'. These road improvements once completed should help to reduce congestion and improve air quality within the towns of South Ribble.

Work to electrify the Preston to Blackpool rail network is still underway, and the rail sidings at Centurion way are now in daily use.

Other developments which may have an impact on air quality include a number of small scale power plants, emissions assessments have been requested on these developments.

3.2 Summary of Monitoring Undertaken

The results of this review of air quality have concluded that there are no exceedances or likely exceedances of the particulate matter (PM10 & PM2.5) or Sulphur Dioxide objective values.

Annual Mean Nitrogen Dioxide levels have reduced slightly across the borough from the previous year. Exceedances of the annual mean Nitrogen Dioxide objective value have been identified in the Lostock Hall AQMA, with levels increasing slightly. Levels within the other AQMA's remain close to the objective value.

In 2013 the main route into Leyland including Turpin Green Lane and Golden Hill Lane was identified as an area of concern, and due to the number of proposed residential developments in that area and high monitoring results. In December 2017 the area was finally declared as an AQMA.

3.2.1 Automatic Monitoring Sites

South Ribble Borough Council do not undertake any automatic monitoring of any pollutants within the borough. However as part of the Penwortham by-pass project continuous monitoring is being sort within the declared AQMA so that the impact of the by-pass can be accurately monitored. The monitoring will include Nitrogen Dioxide and Particulate Matter.

3.2.2 Non-Automatic Monitoring Sites

South Ribble undertook non- automatic (passive) monitoring of NO_2 at 27 sites during 2017. **Error! Reference source not found.** in Appendix A shows the details of the sites.

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

3.3 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, “annualisation” and distance correction. Further details on adjustments are provided in Appendix C.

3.3.1 Nitrogen Dioxide (NO_2)

Table A. in Appendix A compares the ratified and adjusted 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.

The results obtained from the monitoring undertaekn by South Ribble show a reduction in NO_2 levels on the 2016 data with the exception of Lostock hall, AQMA 3, which has identified an exceedance of the objective value over the year. Other declared AQMA’s are close to the objective value.

3.3.2 Particulate Matter (PM_{10} & $PM_{2.5}$)

South Ribble Borough Council does not monitor PM_{10} or $PM_{2.5}$ levels. However a check of the Defra background maps indicates no likely exceedances of the objective levels for either of these two pollutants.

3.3.3 Sulphur Dioxide (SO2)

South Ribble Borough Council does not monitor SO2 levels. However a check of the Defra background maps indicates no likely exceedances of the objective levels for either of these two pollutants.

Appendix A: Monitoring Results

Table A.1 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
1	Civic Centre, Leyland	Urban Background	353626	421783	NO2	no	N/A	N/A	N	2.35
2	12 Turpin Green Lane/Charnock St, Leyland	Roadside	354527	422371	NO2	no	0	5.2	N	2.8
3	38 Turpin Green Lane, Leyland	Roadside	354588	422269	NO2	no	0	5.6	N	2.75
4	"Gentle Touch" 65 Turpin Green Lane, Leyland	Roadside	354678	422249	NO2	no	0	5.6	N	2.08
5	66 Turpin Green Lane, Leyland	Roadside	354730	422212	NO2	no	0	7.8	N	2.8
6	87 Turpin Green Lane, Leyland	Roadside	354744	422231	NO2	no	0	5.7	N	2.56
7	36 Golden Hill Lane	Roadside	354438	422645	NO2	no	0	2.9	N	2.4
8	130 Golden Hill Lane	Roadside	353890	422654	NO2	no	0	2.6	N	2.85
9	57 Leyland lane	Roadside	353048	422809	NO2	no	0	4.9	N	2.6

10	The Mill, Longmeanygate	Roadside	352970	422796	NO2	no	0	1.8	N	2.56
11	28-30 Watkin Lane, Lostock Hall	Roadside	354515	425695	NO2	AQMA 3	4	2.1	N	2.8
12	Spar, Watkin Lane, Lostock Hall	Roadside	354368	425783	NO2	AQMA 3	0	5.4	N	2.4
13	13 Brownedge Road, Lostock Hall	Roadside	354410	425835	NO2	AQMA 3	0	2.4	N	2.9
14	Tardy Gate PH, Leyland Rd, Lostock Hall	Roadside	354353	425844	NO2	AQMA 3	0	2.7	N	2.8
15	477 Leyland Road, Lostock Hall	Roadside	354296	425903	NO2	AQMA 3	0	4.1	N	2.9
16	11 Library Liverpool Road, Penworthham	Roadside	352122	428449	NO2	AQMA 1	6	2.6	N	2.05
17	"Robert&Co", 36e Liverpool Road, Penwortham	Roadside	351875	428427	NO2	AQMA 1	0	9.8	N	2.75
18	Fleece Inn, 43 Liverpool Road, Penwortham	Roadside	351884	428404	NO2	AQMA 1	0	2.4	N	2.75
19	14 Victoria Road, Walton-le-Dale	Roadside	355370	428571	NO2	AQMA 2	0	6.4	N	2.6
20	40 Victoria Road, Walton-le-Dale	Roadside	355429	428518	NO2	AQMA 2	4.3	2.8	N	2.5
21	69 Victoria Road, Walton-le-Dale	Roadside	355521	428467	NO2	AQMA 2	0	2	N	2.8

22	146/Library, Station Road, Bamber Bridge	Roadside	356437	426303	NO2	AQMA 4	0	2	N	2.65
23	243 Station Road, Bamber Bridge	Roadside	356530	425840	NO2	AQMA 4	0	6.1	N	2.62
24	244 Station Road, Bamber Bridge	Roadside	356506	425793	NO2	AQMA 4	0	8.9	N	2.9
25	266 Station Road, Bamber Bridge	Roadside	356511	425692	NO2	AQMA 4	6	1.6	N	3
26	309-311 Station Road, Bamber Bridge	Roadside	356000	425578	NO2	AQMA 4	4	3	N	2.55
27	361 Station Road, Bamber Bridge	Roadside	356426	425364	NO2	AQMA 4	0	1.6	N	2.52

Notes:

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

(2) N/A if not applicable.

Table A.2 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2013	2014	2015	2016	2017
Civic Centre, Leyland	Urban Background	Diffusion Tube	100	100	16.00	18.00	11.63	15.30	13.57
12 Turpin Green Lane/Charnock St, Leyland	Roadside	Diffusion Tube	100	100	29.00	32.00	26.81	31.73	30.38
38 Turpin Green Lane, Leyland	Roadside	Diffusion Tube	100	100	34.00	33.00	29.00	32.26	32.66
"Gentle Touch" 65 Turpin Green Lane, Leyland	Roadside	Diffusion Tube	83	83	37.00	37.00	31.54	**41.45**	35.34
66 Turpin Green Lane, Leyland	Roadside	Diffusion Tube	100	100	30.00	28.00	24.20	28.04	25.25
87 Turpin Green Lane, Leyland	Roadside	Diffusion Tube	100	100	36.00	34.00	31.29	**40.81**	34.77
36 Golden Hill Lane	Roadside	Diffusion Tube	100	100	**39.00**	35.00	30.00	38.20	34.74
130 Golden Hill Lane	Roadside	Diffusion Tube	100	100	36.00	33.00	31.00	38.03	32.51
57 Leyland lane	Roadside	Diffusion Tube	100	100		36.00	21.80	28.59	25.09
The Mill, Longmeanygate	Roadside	Diffusion Tube	92	92		35.00	20.37	25.12	23.32
28-30 Watkin Lane, Lostock Hall	Roadside	Diffusion Tube	100	100	28.00	28.00	22.00	26.30	25.70

Spar, Watkin Lane, Lostock Hall	Roadside	Diffusion Tube	100	100	33.00	30.00	27.64	32.25	33.11
13 Brownedge Road, Lostock Hall	Roadside	Diffusion Tube	100	100	**43.00**	37.00	33.68	38.11	**40.03**
Tardy Gate PH, Leyland Rd, Lostock Hall	Roadside	Diffusion Tube	97	97	37.00	34.48	29.78	37.68	35.32
477 Leyland Road, Lostock Hall	Roadside	Diffusion Tube	100	100	34.00	34.00	30.00	32.26	27.73
11 Library Liverpool Road, Penworthham	Roadside	Diffusion Tube	100	100	28.00	28.00	23.00	28.20	28.20
"Robert&Co", 36e Liverpool Road, Penwortham	Roadside	Diffusion Tube	92	92	26.00	38.00	19.61	24.61	23.22
Fleece Inn, 43 Liverpool Road, Penwortham	Roadside	Diffusion Tube	100	100	32.00	32.00	27.30	31.07	29.02
14 Victoria Road, Walton-le-Dale	Roadside	Diffusion Tube	100	100	37.00	36.00	31.43	36.15	32.09
40 Victoria Road, Walton-le-Dale	Roadside	Diffusion Tube	100	100	37.00	36.00	29.00	31.60	27.70
69 Victoria Road, Walton-le-Dale	Roadside	Diffusion Tube	100	100	35.00	36.00	27.70	35.83	30.82

146/Library, Station Road, Bamber Bridge	Roadside	Diffusion Tube	92	92	31.00	30.00	26.00	32.46	29.19
243 Station Road, Bamber Bridge	Roadside	Diffusion Tube	100	100	32.00	29.00	23.32	30.35	28.72
244 Station Road, Bamber Bridge	Roadside	Diffusion Tube	92	92	22.00	24.00	19.14	25.02	24.80
266 Station Road, Bamber Bridge	Roadside	Diffusion Tube	100	100	29.00	30.00	27.00	28.10	26.20
309-311 Station Road, Bamber Bridge	Roadside	Diffusion Tube	92	92	27.00	26.00	22.00	24.70	22.90
361 Station Road, Bamber Bridge	Roadside	Diffusion Tube	92	92	34.00	35.00	32.06	39.90	35.09

☒ **Diffusion tube data has been bias corrected (confirm by selecting in box)**

☒ **Annualisation has been conducted where data capture is <75% (confirm by selecting in box)**

Notes:

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

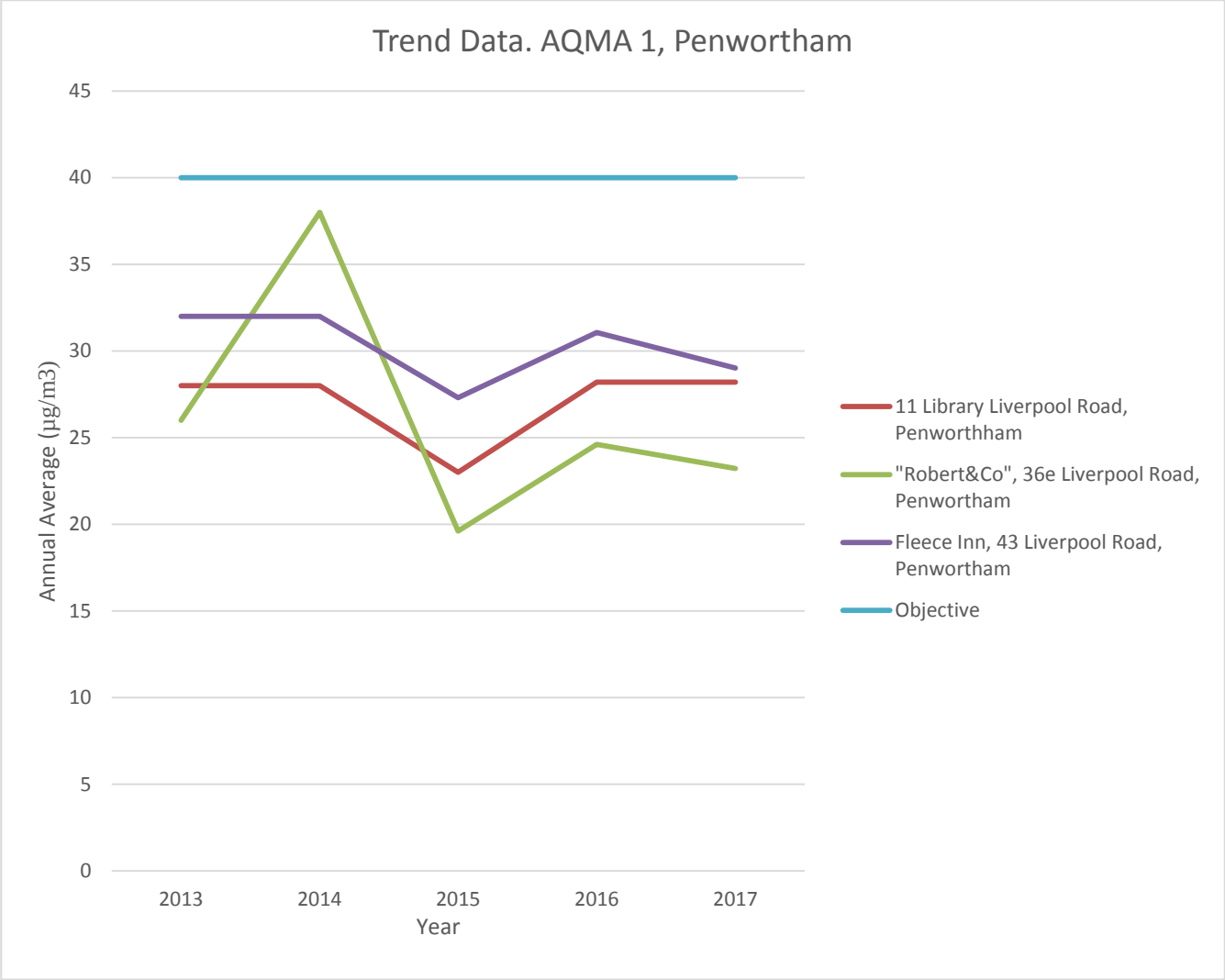
NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined.**

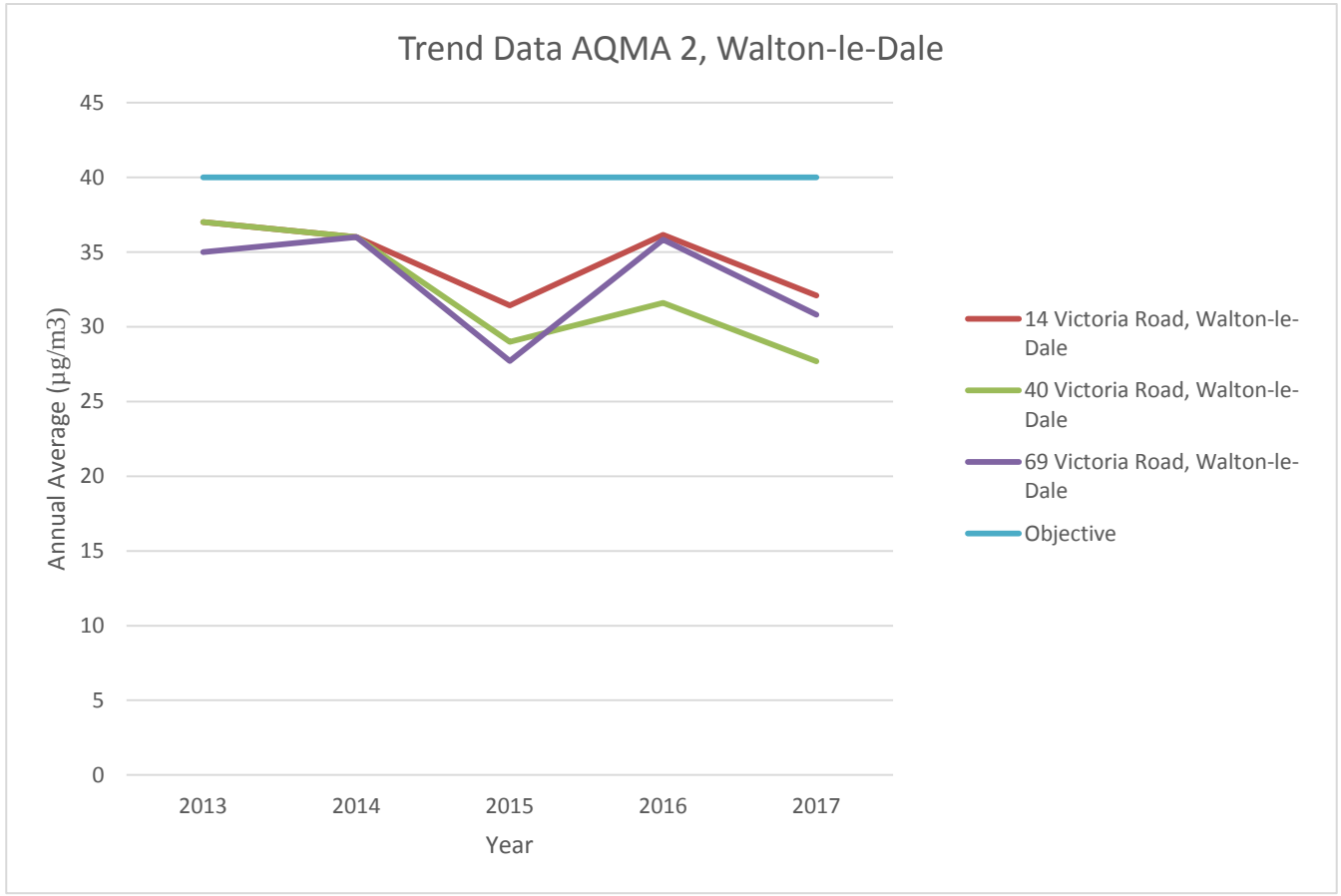
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

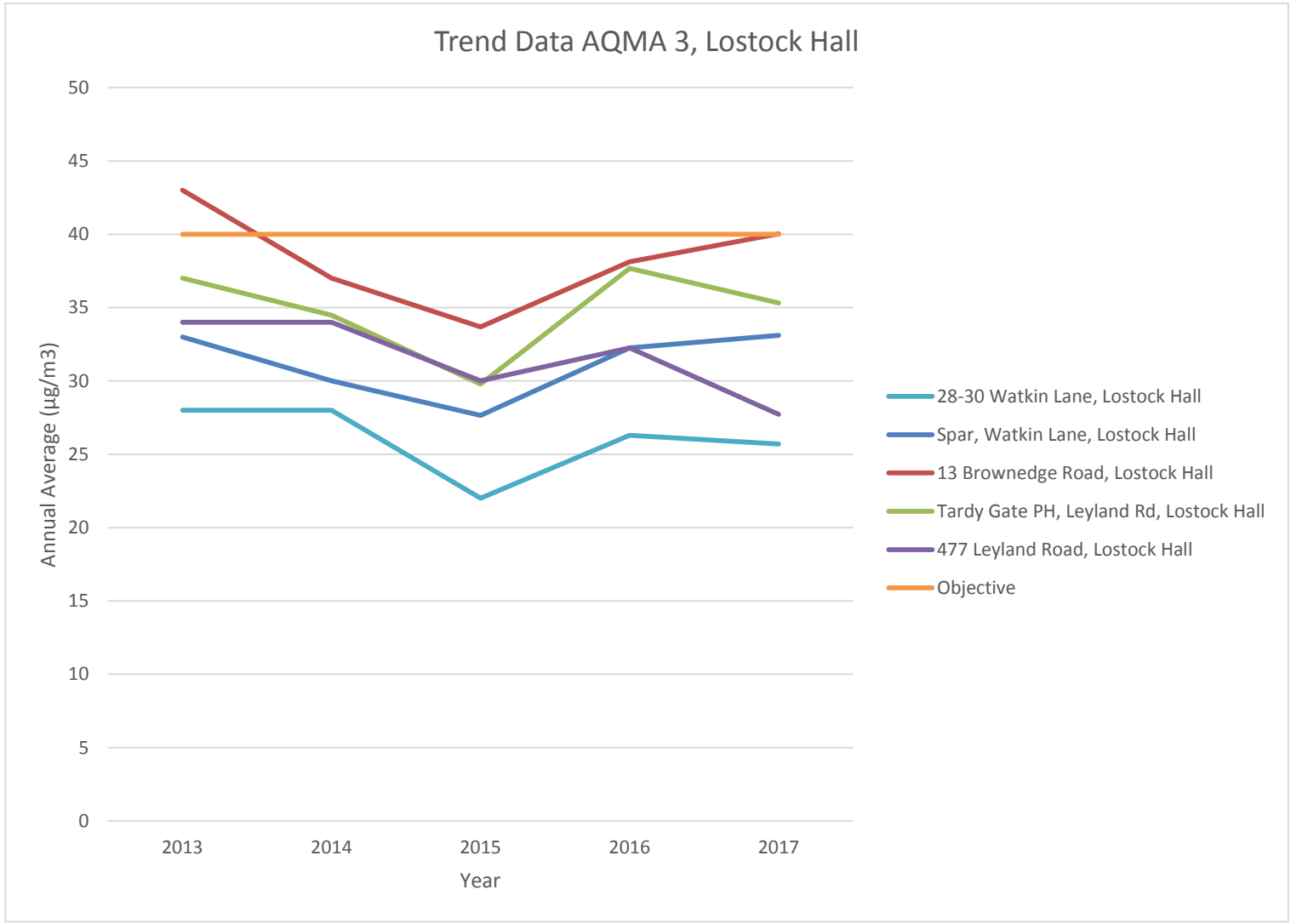
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

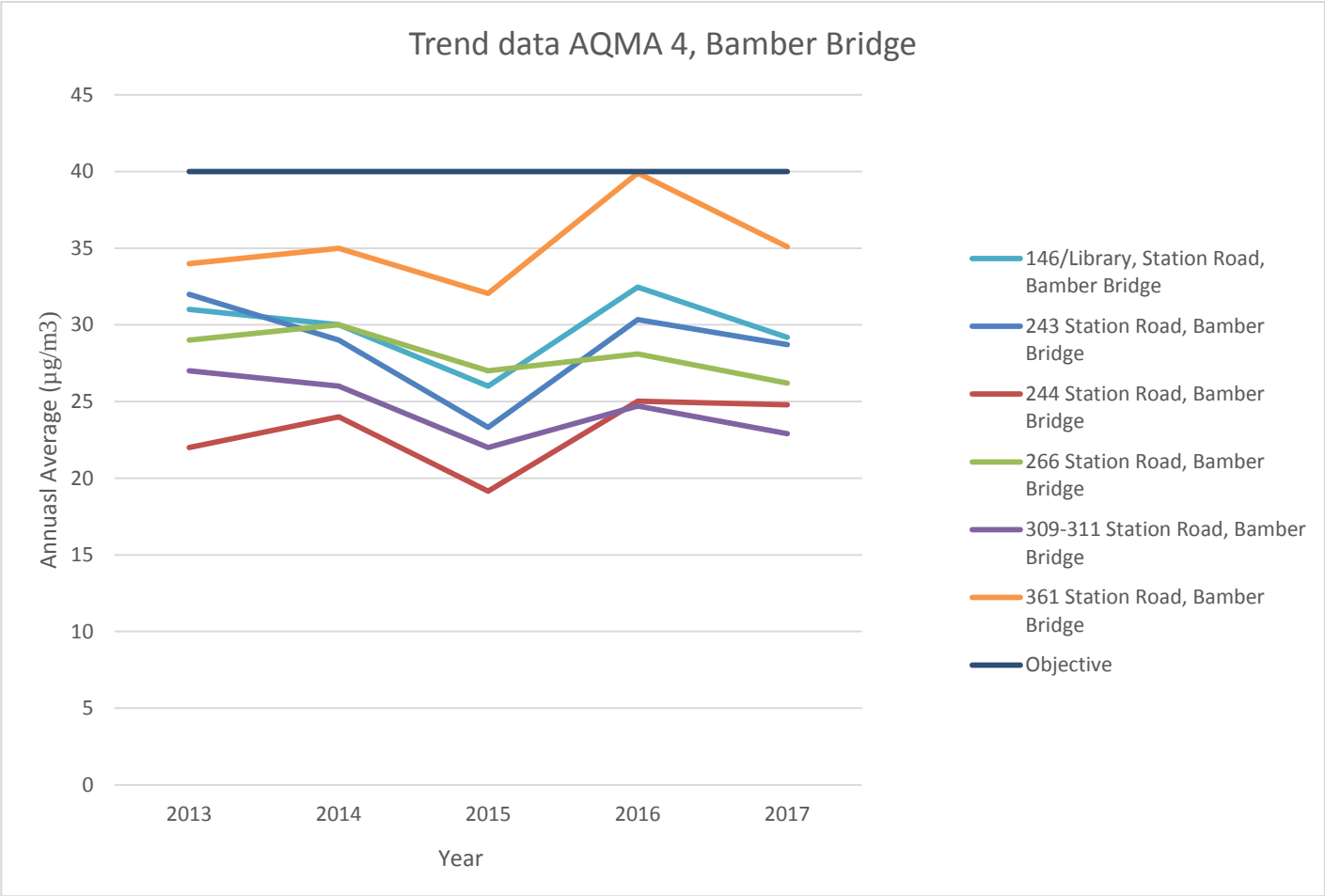
(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

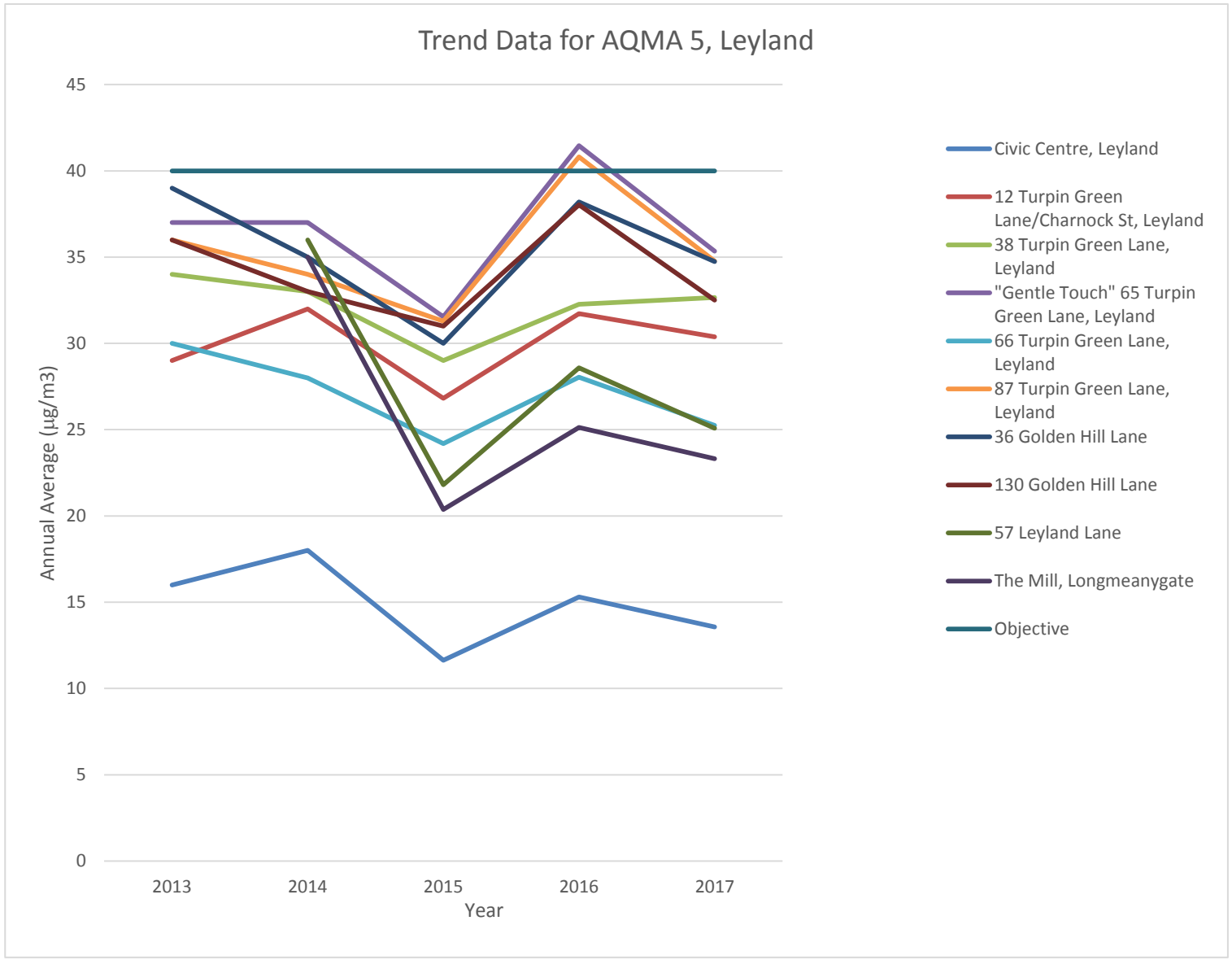
Figure A.1 – Trends in Annual Mean NO_2 Concentrations




Trend Data AQMA 2, Walton-le-Dale
Annual Average (µg/m3)
45
40
35
30
25
20
15
10
5
0
2013
2014
2015
2016
2017
Year
14 Victoria Road, Walton-le-Dale
40 Victoria Road, Walton-le-Dale
69 Victoria Road, Walton-le-Dale
Objective


Trend Data AQMA 3, Lostock Hall
Annual Average (µg/m3)
50
45
40
35
30
25
20
15
10
5
0
2013
2014
2015
2016
2017
Year
28-30 Watkin Lane, Lostock Hall
Spar, Watkin Lane, Lostock Hall
13 Brownedge Road, Lostock Hall
Tardy Gate PH, Leyland Rd, Lostock Hall
477 Leyland Road, Lostock Hall
Objective


Trend data AQMA 4, Bamber Bridge
45
40
35
30
25
20
15
10
5
0
Annuasl Average (µg/m3)
2013
2014
2015
2016
2017
Year
146/Library, Station Road, Bamber Bridge
243 Station Road, Bamber Bridge
244 Station Road, Bamber Bridge
266 Station Road, Bamber Bridge
309-311 Station Road, Bamber Bridge
361 Station Road, Bamber Bridge
Objective


Trend Data for AQMA 5, Leyland
Annual Average (µg/m3)
45
40
35
30
25
20
15
10
5
0
2013
2014
2015
2016
2017
Year
Civic Centre, Leyland
12 Turpin Green Lane/Charnock St, Leyland
38 Turpin Green Lane, Leyland
"Gentle Touch" 65 Turpin Green Lane, Leyland
66 Turpin Green Lane, Leyland
87 Turpin Green Lane, Leyland
36 Golden Hill Lane
130 Golden Hill Lane
57 Leyland Lane
The Mill, Longmeanygate
Objective

Appendix B: Full Monthly Diffusion Tube Results for 2017

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2017

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.97) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
Civic Centre, Leyland	22.34	16.75	14.65	8.52	10.35	8.62	9.85	9.84	13.21	12.95	18.04	20.96	13.84	13.42	
Civic Centre, Leyland	21.35	16.04	15.84	7.52	18.66	8.41	10.21	10.39	12.65	13.97	18.88	19.21	14.43	13.99	
Civic Centre, Leyland	23.64	15.47	14.80	4.85	11.10	8.53	9.65	9.99	12.42	12.79	19.72	21.54	13.71	13.30	
12 Turpin Green Lane/Charnock St, Leyland	38.68	33.91	30.39	20.21	27.98	25.28	28.27	26.68	30.22	28.31	44.90	40.98	31.32	30.38	
38 Turpin Green Lane, Leyland	38.02	32.94	35.25	29.25	29.01	29.97	29.15	31.13	32.28	33.43	42.28	41.35	33.67	32.66	
"Gentle Touch" 65 Turpin Green	29.92	35.48	38.31	30.96	40.56	30.85			36.05	31.27	50.79	40.16	36.43	35.34	

Lane, Leyland														
66 Turpin Green Lane, Leyland	33.57	29.22	23.96	21.22	22.04	20.53	21.47	19.44	38.83	20.83	28.46	32.80	26.03	25.25	
87 Turpin Green Lane, Leyland	41.01	37.27	33.09	34.98	39.52	32.90	36.95	30.38	23.92	30.78	46.82	42.48	35.84	34.77	
36 Golden Hill Lane	39.66	36.70	39.50	28.30	32.85	30.97	35.12	32.63	33.89	33.25	42.36	40.87	35.51	34.44	
36 Golden Hill Lane	38.30	36.80	36.00	27.62	33.70	33.41	34.08	33.23	33.54	34.35	44.42	41.37	35.57	34.50	
36 Golden Hill Lane	43.58	42.14	35.24	34.00	31.24	32.11	32.07	32.11	31.80	33.89	41.59	46.75	36.38	35.29	
130 Golden Hill Lane	43.58	38.36	34.65	24.03	31.76	27.92	26.80	27.78	29.70	34.26	36.48	37.12	32.70	31.72	
130 Golden Hill Lane	48.00	37.89	36.48	22.74	35.72	26.58	27.30	30.53	28.30	29.95	37.75	46.46	33.98	32.96	
130 Golden Hill Lane	42.74	42.72	35.86	24.18	33.73	24.58	26.05	34.74	31.40	32.67	38.79	39.10	33.88	32.86	
57 Leyland Lane	37.31	30.36	24.54	16.38	22.17	19.32	20.13	24.79	23.69	25.50	30.04	36.14	25.86	25.09	
The Mill, Longmeany gate	34.58	28.46	24.17	17.23	21.35	17.68	25.33	21.88	21.27	22.35		30.16	24.04	23.32	
28-30 Watkin Lane, Lostock Hall	39.65	33.78	29.10	24.73	22.00	21.61	27.19	27.08	30.56	25.76	39.80	37.43	29.89	28.99	25.7
Spar, Watkin Lane,	38.54	30.06	31.33	34.30	29.21	31.09	38.44	27.18	33.30	30.81	42.48	42.81	34.13	33.11	

Lostock Hall														
13 Brownedge Road, Lostock Hall	42.62	35.31	38.38	39.10	38.56	37.17	46.77	41.02	37.19	36.93	57.46	44.72	41.27	**40.03**	
Tardy Gate PH, Leyland Rd, Lostock Hall	45.65	34.84	31.97	28.68	33.67	29.69	39.87	32.67	32.74	33.45	49.17	51.30	36.98	35.87	
Tardy Gate PH, Leyland Rd, Lostock Hall	47.01	34.34	34.59	27.89	33.36	31.04	40.06	28.69	32.95	33.44	50.48	44.89	36.56	35.47	
Tardy Gate PH, Leyland Rd, Lostock Hall	41.78	32.18	30.96	29.87	31.39		37.12	29.20	34.31	31.98	48.35	45.51	35.70	34.63	
477 Leyland Road, Lostock Hall	36.90	33.20	30.89	21.36	27.83	20.74	20.65	29.61	26.25	24.62	35.29	35.71	28.59	27.73	
11 Library Liverpool Road, Penworthham	46.78	36.11	32.57	31.73	32.30	30.70	29.67	26.36	27.97	30.14	45.98	45.56	34.66	33.62	28.2
"Robert&Co", 36e Liverpool Road,	29.11	22.68		16.66	21.25	20.99	18.36	19.09	19.58	22.79	32.24	40.57	23.94	23.22	

Penwortham														
Fleece Inn, 43 Liverpool Road, Penwortham	1.15	86.94	32.41	22.67	28.88	23.92	24.88	27.60	28.36	25.55	35.30	21.34	29.92	29.02	
14 Victoria Road, Walton-le-Dale	43.74	33.91	34.89	29.53	28.00	31.20	27.28	26.71	30.08	32.78	39.97	38.89	33.08	32.09	
40 Victoria Road, Walton-le-Dale	41.64	36.29	32.97	25.60	28.29	25.49	31.21	28.72	29.52	33.37	45.04	38.56	33.06	32.07	27.2
40 Victoria Road, Walton-le-Dale	42.89	33.89	37.66	26.57	29.20	27.23	28.09	39.92	28.47	32.52	41.85	43.00	34.27	33.25	28.1
40 Victoria Road, Walton-le-Dale	44.43	36.10	36.29	26.05	28.93	27.88	33.34	28.89	29.00	32.81	45.04	37.59	33.86	32.85	27.8
69 Victoria Road, Walton-le-Dale	41.27	29.95	30.09	22.92	26.31	25.45	32.57	26.14	31.15	28.63	47.83	38.91	31.77	30.82	
146/Library, Station Road, Bamber Bridge	38.92		29.25	22.43	27.85	23.20	32.10	24.95	28.45	28.42	41.56	33.94	30.10	29.19	
243 Station Road,	37.85	31.38	32.88	18.91	24.70	1.19	62.16	23.84	26.12	28.75	39.98	27.53	29.61	28.72	

Bamber Bridge														
244 Station Road, Bamber Bridge	31.22		20.51	14.58	19.27	15.68	25.40	18.18	30.14	37.59	29.56	39.06	25.56	24.80	
266 Station Road, Bamber Bridge	42.78	23.54	35.31	25.75	28.48	1.66	63.62	30.63	18.03	21.72	44.15	36.31	31.00	30.07	26.2
309-311 Station Road, Bamber Bridge	35.27	26.59	28.22	11.74	22.19	18.13	26.70	23.91	22.41		26.60	31.18	24.81	24.07	22.9
361 Station Road, Bamber Bridge	46.36	40.39	36.91		30.51	27.91	34.70	30.28	29.85	34.08	42.48	44.47	36.18	35.09	

☐ **Local bias adjustment factor used (confirm by selecting in box)**

☒ **National bias adjustment factor used (confirm by selecting in box)**

☒ **Annualisation has been conducted where data capture is <75% (confirm by selecting in box)**

☒ **Where applicable, data has been distance corrected for relevant exposure (confirm by selecting in box)**

Notes:

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

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

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

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

The diffusion tubes used by South Ribble Borough Council were supplied by Gradko Environmental Ltd, using a 50% TEA / Acetone solution. The Air Quality Review and Assessment website gives a bias adjustment figure of 0.97 for the 2017 data set.

No co-location study has been undertaken by South Ribble Borough Council, and so the national bias adjustment figured derived from the table below has been used to adjust all results obtained by South Ribble Borough Council.

The results of the AIR NO2 Proficiency Testing Scheme and a field intercomparison exercise precision survey indicated a good overall level of precision with collocated studies for the Gradko diffusion tubes.

National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 03/18

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies

Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods

Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet

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

This spreadsheet will be updated at the end of June 2018

LAQM Helpdesk Website

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

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

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data[2]

Step 4:

Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

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

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[5] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2017	R	West Berkshire	12	40	40	0.3%	G	**1.00**
Gradko	50% TEA in acetone	2017	UB	London Borough of Camden	12	40	40	1.9%	G	**0.98**
Gradko	50% TEA in acetone	2017	B	London Borough of Richmond upon Thames	12	21	21	0.4%	G	**1.00**
Gradko	50% TEA in acetone	2017	R	London Borough of Richmond upon Thames	12	35	31	11.6%	G	**0.90**
Gradko	50% TEA in acetone	2017	R	Royal Borough of Greenwich	12	33	36	-7.6%	G	**1.08**
Gradko	50% TEA in acetone	2017	R	Royal Borough of Greenwich	12	40	39	2.1%	G	**0.98**
Gradko	50% TEA in acetone	2017	R	Royal Borough of Greenwich	10	75	66	12.7%	G	**0.89**
Gradko	50% TEA in acetone	2017	R	Royal Borough of Greenwich	12	44	39	13.6%	G	**0.88**
Gradko	50% TEA in acetone	2017	R	Royal Borough of Greenwich	11	49	41	17.1%	G	**0.85**
Gradko	50% TEA in acetone	2017	SU	Royal Borough of Greenwich	12	20	21	-1.1%	G	**1.01**
Gradko	50% TEA in acetone	2017	UI	Falkirk Council	12	18	17	5.0%	G	**0.95**
Gradko	50% TEA in acetone	2017	R	Falkirk Council	10	38	35	8.3%	G	**0.92**
Gradko	50% TEA in acetone	2017	R	LB Newham	12	38	48	-19.6%	G	**1.24**
Gradko	50% TEA in acetone	2017	B	The City of London Corporation	12	41	38	8.7%	P	**0.92**
Gradko	50% TEA in acetone	2017	UI	Middlesbrough	10	17	14	21.3%	G	**0.82**
Gradko	50% TEA in acetone	2017	UB	Norwich City Council	11	13	14	-4.6%	G	**1.05**
Gradko	50% TEA in acetone	2017	R	RBWM	12	39	38	2.4%	G	**0.98**
Gradko	50% TEA in acetone	2017	R	RBWM	12	35	34	1.1%	G	**0.99**
Gradko	50% TEA in acetone	2017	UB	Reading Borough Council	12	20	29	-31.4%	G	**1.46**
Gradko	50% TEA in acetone	2017	SU	Redcar and Cleveland Borough Council	11	15	11	28.4%	P	**0.78**
Gradko	50% TEA in acetone	2017	R	Worthing Borough Council	12	42	38	9.0%	G	**0.92**
Gradko	50% TEA in acetone	2017	KS	Marylebone Road Intercomparison	12	83	79	6.0%	G	**0.94**
Gradko	50% TEA in acetone	2017		**Overall Factor[3] (22 studies)**				**Use**		**0.97**

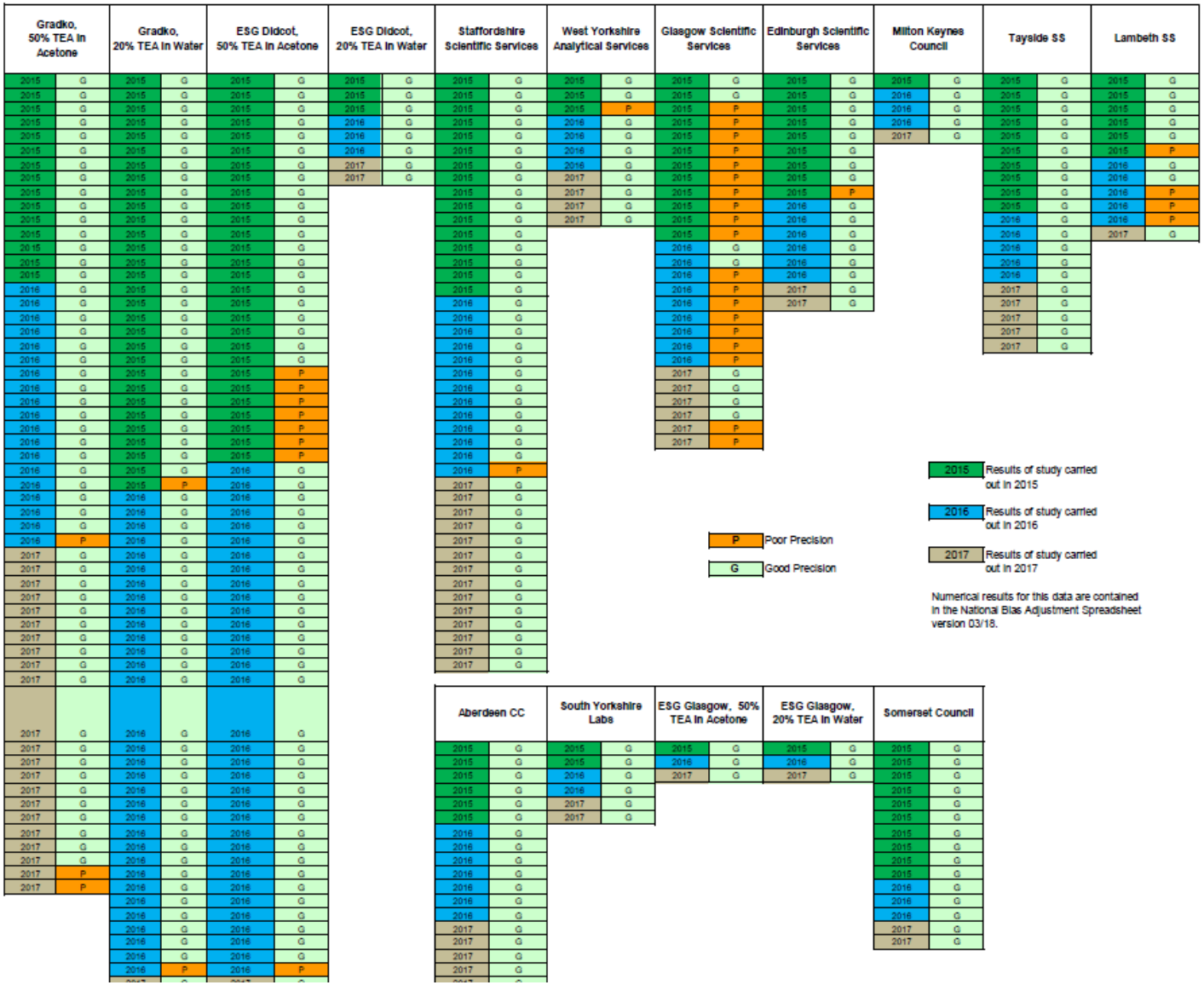
Table 1: Laboratory summary performance for AIR NO_2 PT rounds AR013, 15, 16, 18, 19, 21, 22 and 24

The following table lists those UK laboratories undertaking LAQM activities that have participated in recent AIR NO_2 PT rounds and the percentage (%) of results submitted which were subsequently determined to be **satisfactory** based upon a z-score of ≤ ± 2 as defined above.

AIR PT Round	AIR PT AR013	AIR PT AR015	AIR PT AR016	AIR PT AR018	AIR PT AR019	AIR PT AR021	AIR PT AR022	AIR PT AR024
Round conducted in the period	April – May 2016	July – August 2016	September – October 2016	January – February 2017	April – May 2017	July – August 2017	September – October 2017	January – February 2018
Aberdeen Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Cardiff Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Edinburgh Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Environmental Services Group, Didcot [1]	75 %	75 %	100 %	100 %	100 %	100 %	100 %	100 %
Exova (formerly Clyde Analytical)	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Glasgow Scientific Services	100 %	0 %	100 %	100 %	50 %	0 %	100 %	100 %
Gradko International [1]	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Kent Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Kirklees MBC	100 %	100 %	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Lambeth Scientific Services	100 %	100 %	75 %	100 %	NR [2]	NR [2]	100 %	NR [2]
Milton Keynes Council	100 %	100 %	75 %	100 %	75 %	0 %	75 %	100 %
Northampton Borough Council	100 %	NR [2]	75 %	0 %	NR [3]	NR [3]	NR [3]	NR [3]
Somerset Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	75 %	100 %
South Yorkshire Air Quality Samplers	100 %	75 %	100 %	100 %	100 %	100 %	100 %	100 %
Staffordshire County Council	75 %	100 %	NR [2]	100 %	100 %	100 %	100 %	50 %
Tayside Scientific Services (formerly Dundee CC)	NR [2]	100 %	NR [2]	100 %	NR [2]	100 %	NR [2]	100 %
West Yorkshire Analytical Services	100 %	NR [2]	50 %	100 %	100 %	100 %	100 %	50 %

[1] Participant subscribed to two sets of test samples (2 x 4 test samples) in each AIR PT round.
[2] NR No results reported
[3] Northampton Borough Council, Kent Scientific Services, Cardiff Scientific Services, Kirklees MBC and Exova (formerly Clyde Analytical) no longer carry out NO_2 diffusion tube monitoring and therefore did not submit results.

2015 - 2017 Summary of Precision Results for Nitrogen Dioxide Diffusion Tube Collocation Studies, by Laboratory

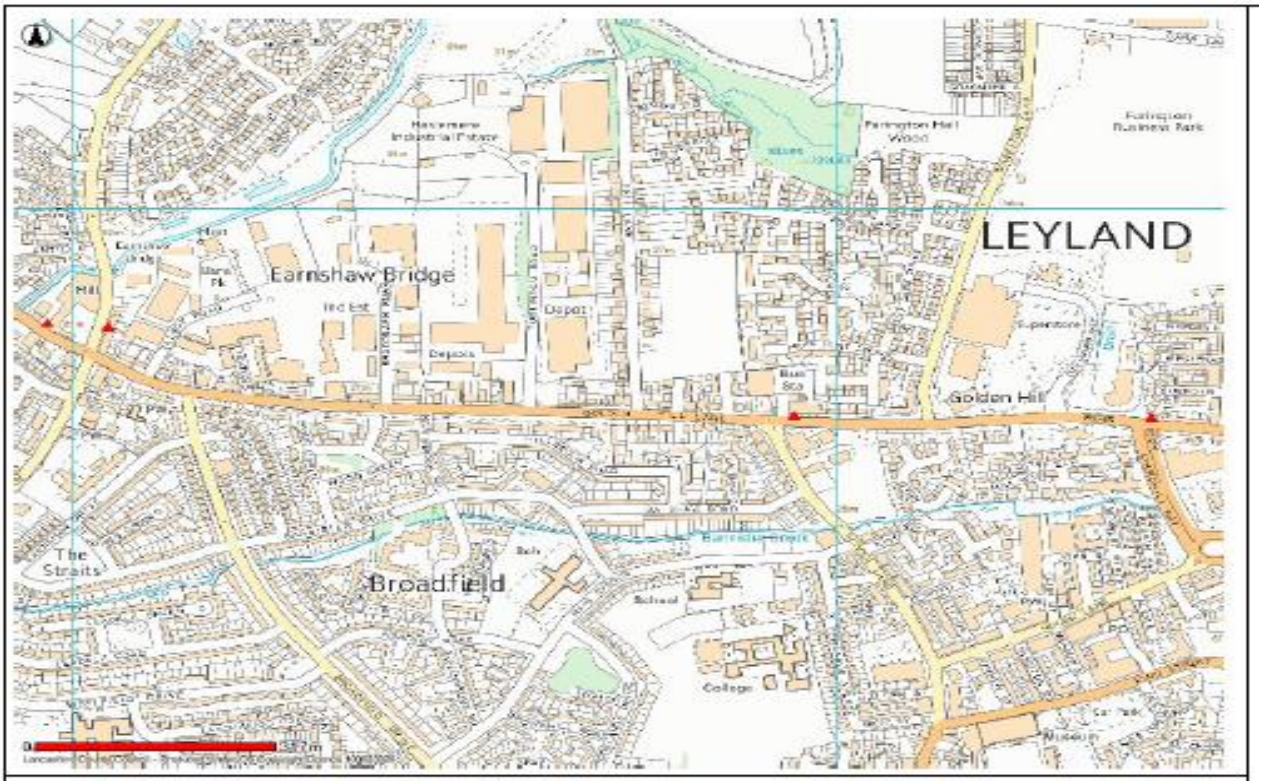


Appendix D: Map(s) of Monitoring Locations and AQMAs

Bamber Bridge

Bamber Bridge

Golden Hill Lane



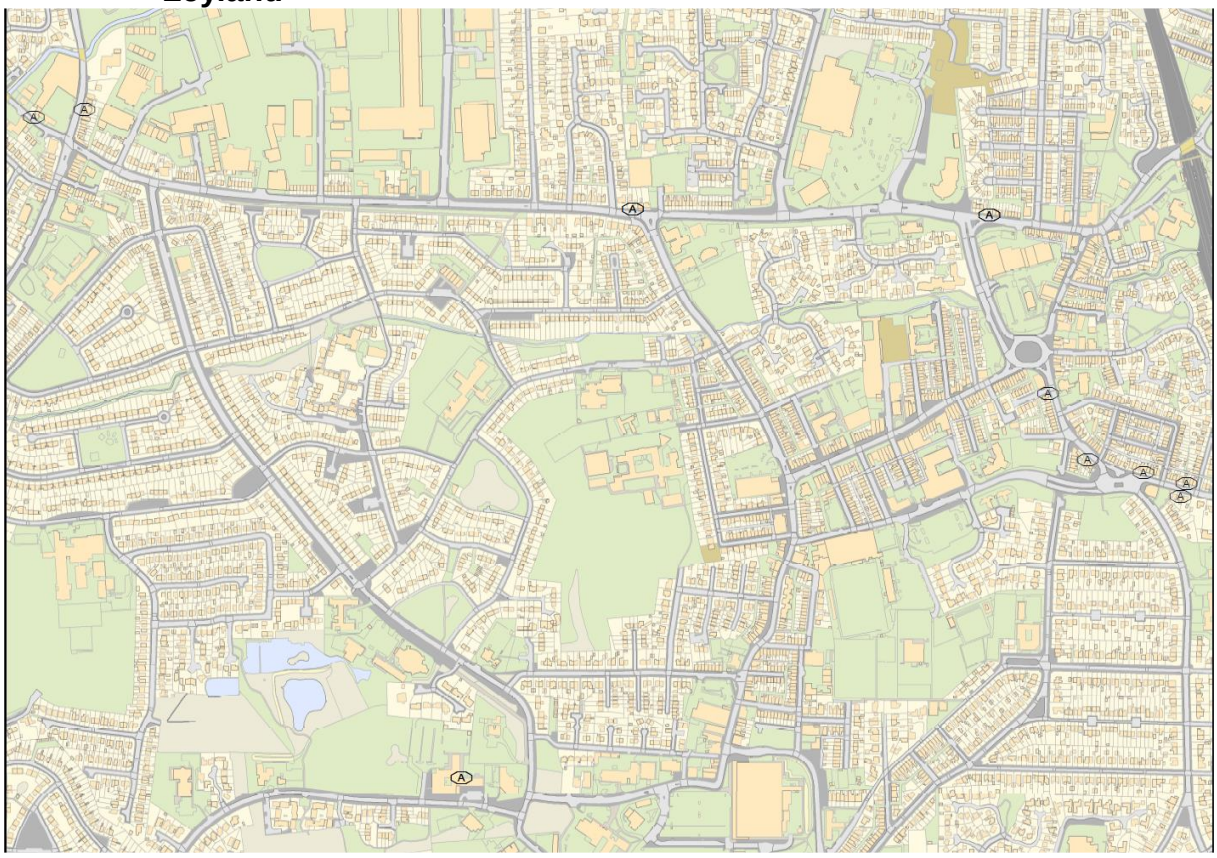
Golden Hill Lane

Lancashire County Council

Date: 30/04/2015

Centre of map: 353719:422692

Leyland

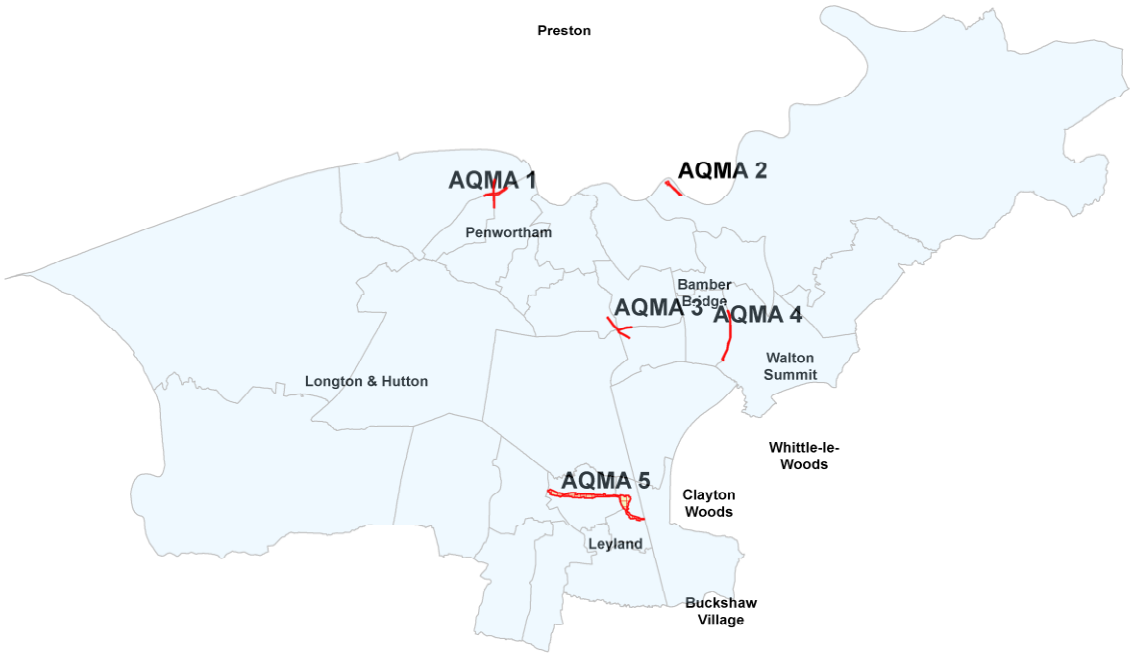


Liverpool Road, Penwortham

Lostock Hall

Victoria Road, Walton-le-Dale

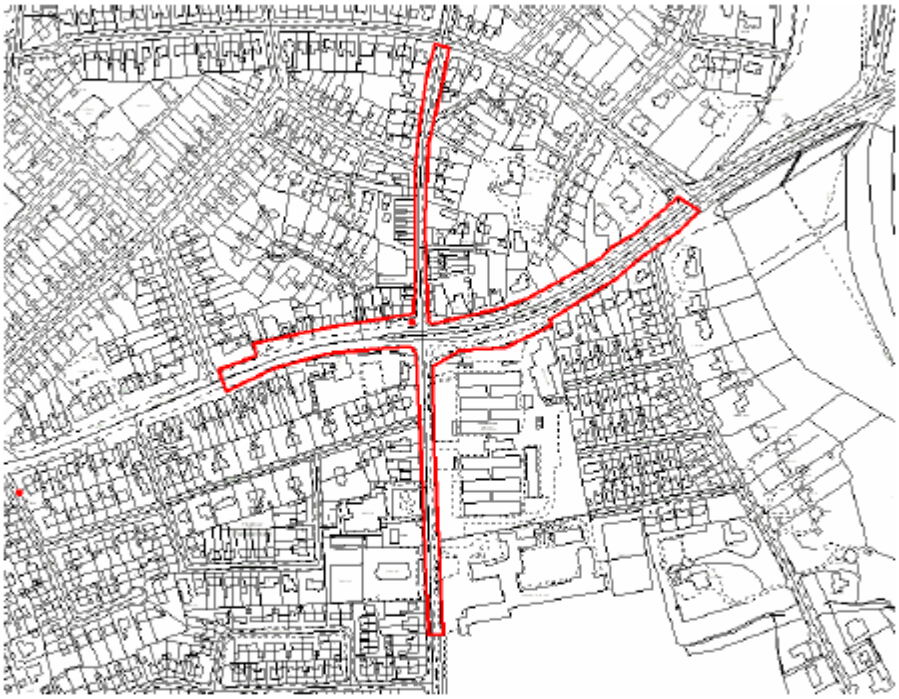
Declared AQMA's



Air Quality Management Area

Junction of Priory Lane and A59 Liverpool Road

Penwortham, Preston, Lancashire



KEY

- NO_2 Diffusion Tubes
- Boundary of AQMA

Air Quality Management Area

A6/A675 Victoria Road

Walton-le-Dale, Preston, Lancashire

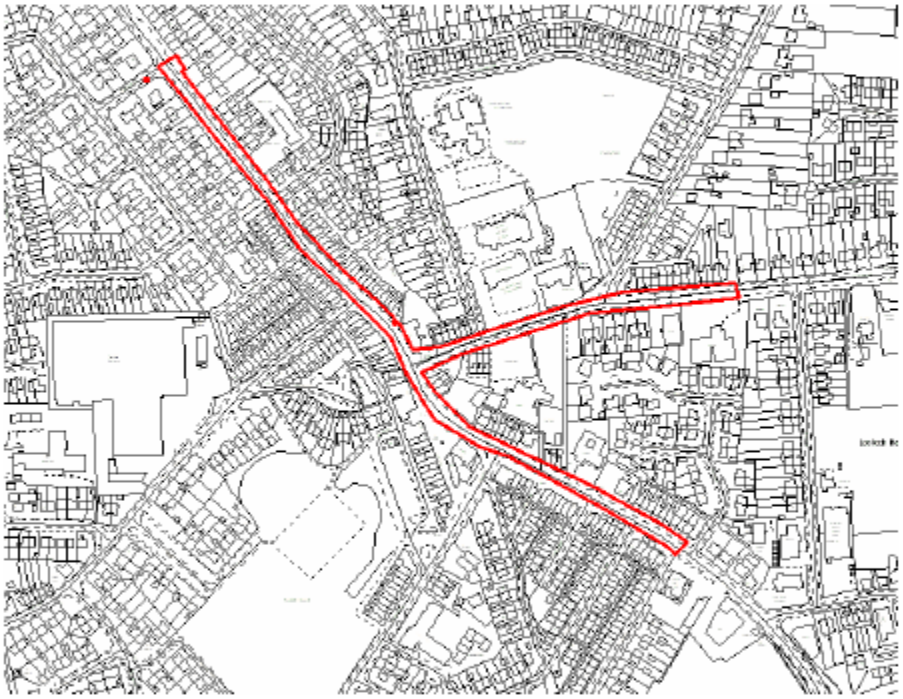
KEY

- NO_2 Diffusion Tubes
- Boundary of AQMA

Air Quality Management Area

Junction of Leyland Road and Brownedge Road

Lostock Hall, Preston, Lancashire



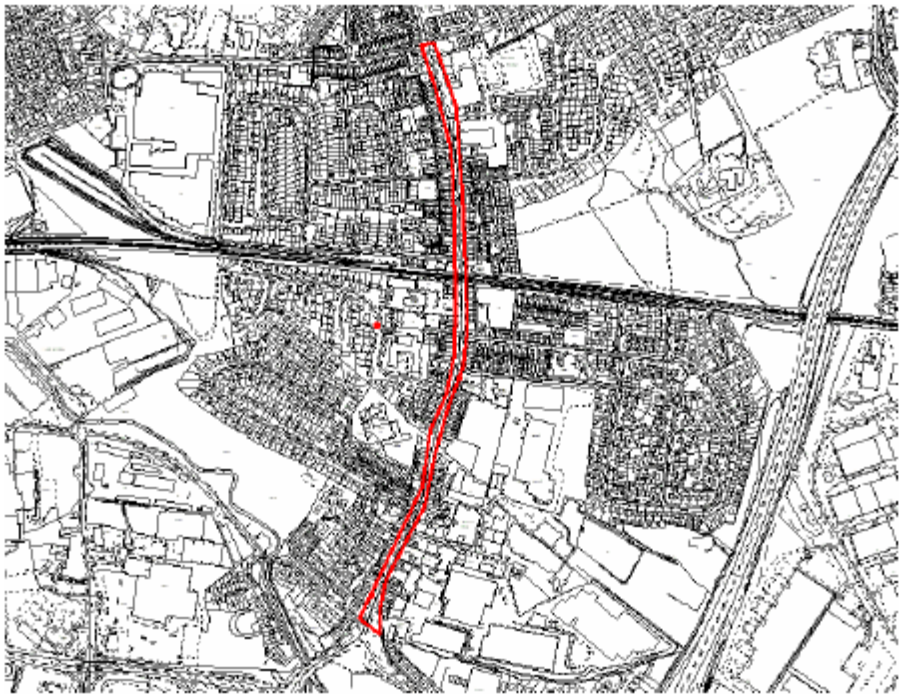
KEY

- NO_2 Diffusion Tubes
- Boundary of AQMA

Air Quality Management Area

Station Road

Bamber Bridge, Preston, Lancashire

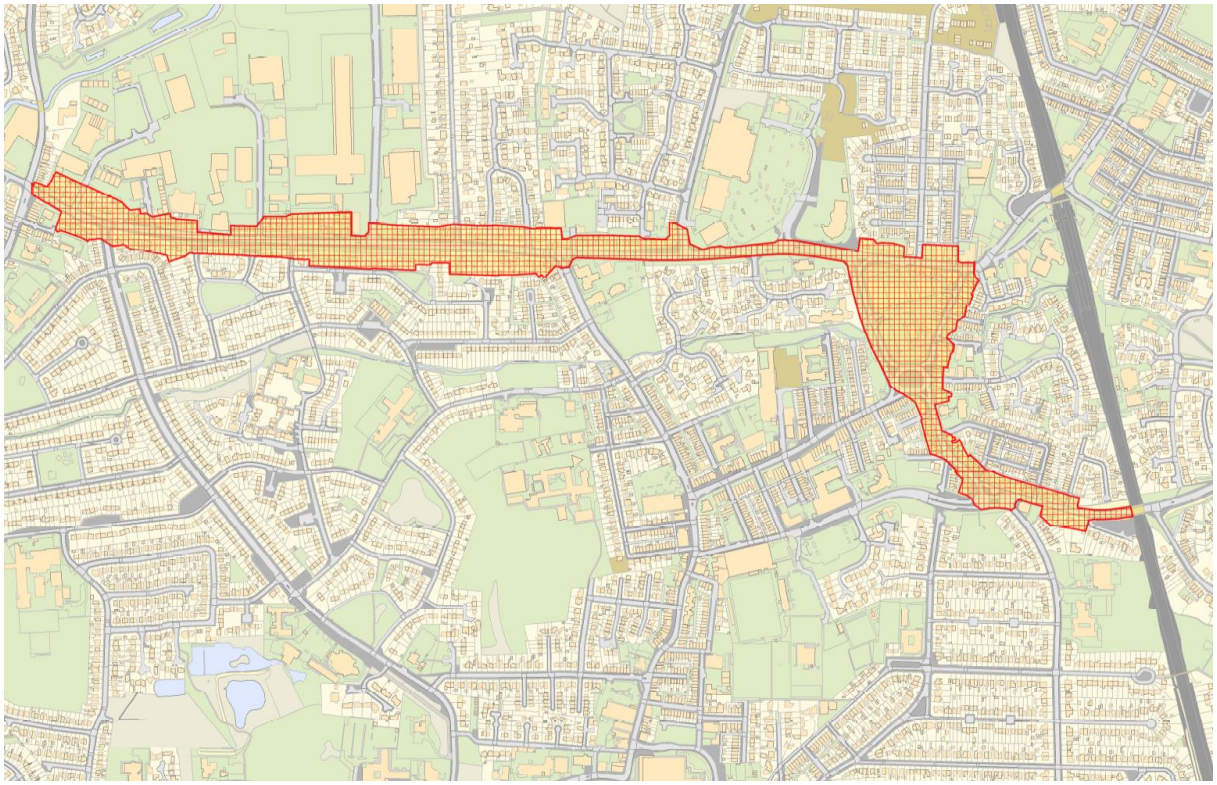


KEY

- NO_2 Diffusion Tubes
- Boundary of AQMA

Air Quality Management Area

Turpin Green Lane, Churchill Way, Chapel Brow and Golden Hill Lane
Leyland, Lancashire



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[4]	
	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

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

Glossary of Terms

Please add a description of any abbreviations included in the ASR – An example is provided below.

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

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Lancashire County Council Highways Department – traffic flows via mapzone website, http://mapzone.lancashire.gov.uk/